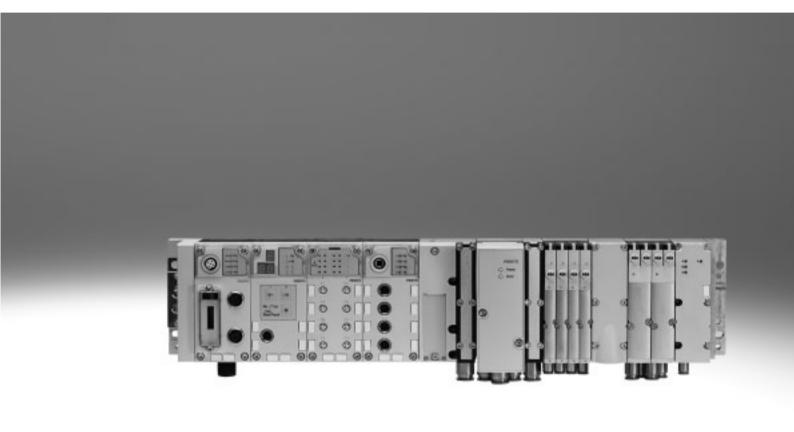
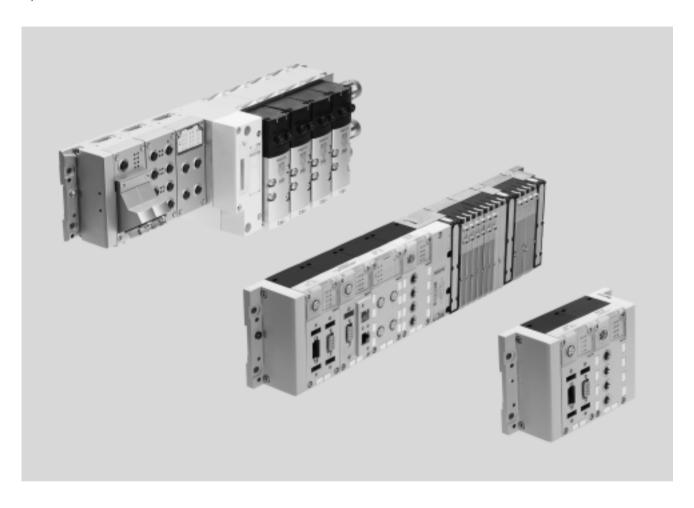
Modular electrical terminal CPX

FESTO



Key features



Key features

Installation concept

- Choice of several valve terminal types for different applications:
 - CPA
 - MPA-S
 - Type 32 MPA/MPA-F
 - MPA-F
 - MPA-L
- Economical from the smallest configuration up to the maximum number of modules
- Up to 9 electrical input/output modules plus bus nodes and pneumatic interface/electronic modules for valves
- Extensive range of functions and connection options for the electrical modules
- Choice of connection technology for technically and economically optimised connections
- Can be used as a dedicated remote I/O module

Electrical components

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

Assembly

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

Operation

- Fast troubleshooting thanks to an extensive selection of LEDs (some of which are multi-coloured) on the bus node and on all I/O modules
- Suitable for direct machine mounting (IP65/IP67) or in a control cabinet with a terminal connection (IP20)
- Supports module and channeloriented diagnostics
- On-the-spot diagnostics in plain text via handheld device
- Fieldbus/Ethernet remote diagnostics
- Innovative diagnostic support with integrated web server/web monitor or maintenance tool with USB adapter for PC
- Optimised commissioning thanks to parameterisable functions
- Reliability of service with connection blocks and modules that are quick to replace without changing the wiring

Key features

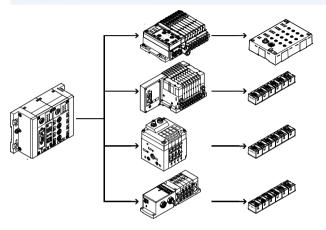
Pneumatic variants of the CPX terminal

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

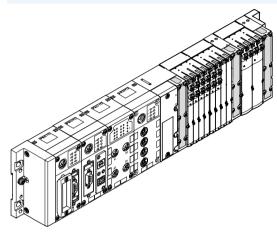
The system is specifically designed so that the valve terminal can be adapted to suit different applications.

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

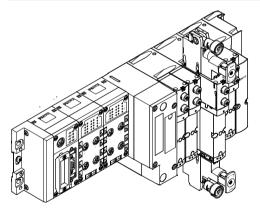
With valve terminal - decentralised



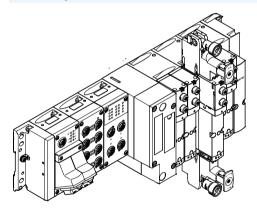
With valve terminal MPA-S – centralised



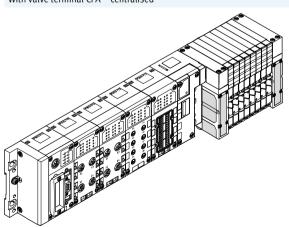
With valve terminal VTSA – centralised



In metal design with valve terminal VTSA – centralised



With valve terminal CPA – centralised



3

Key features

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

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

- PROFIBUS DP
- PROFINET
- INTERBUS

- DeviceNet
- CANopen
- CC-Link

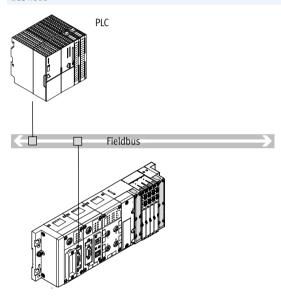
Integration in universal networks based on Ethernet opens up new possibilities. Faster data transmission, real-time capability and above all additional IT services such as file transfer, web server, web monitor as integrated website in the CPX terminal, text message/e-mail alerts, etc. open up a wide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

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

The following protocols are supported:

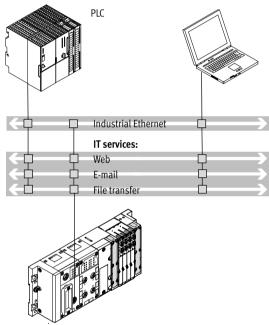
- EtherNet/IP
- Modbus/TCP
- PROFINET
- POWERLINK
- EtherCAT
- Sercos III

Bus node



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

Industrial Ethernet bus node



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



Every electrical connection can be combined with an appropriate number of I/O modules and/or pneumatic components, depending on its address capacity. Likewise, every pneumatic variant of the CPX terminal can be operated with every electrical connection variant.

Key features

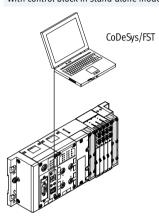
Variants of the CPX terminal controller (with preprocessing in the control block) Control block

The optional Front End Controllers CPX-FEC and CPX-CEC enable simultaneous access via Ethernet and an integrated web server (in the case

of CPX-FEC), in parallel with a bus node, as well as autonomous preprocessing. Access via Modbus/TCP and EasyIP is also possible.

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

With control block in stand-alone mode

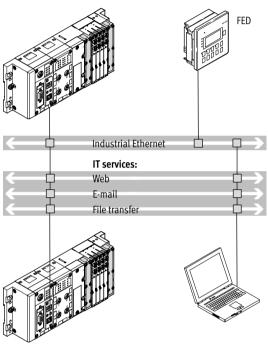


- Decentralised controller with direct machine mounting
- Interaction options via CPX-MMI or Front End Display (FED)
- Downloading of programs via Ethernet (or via the programming interface)
- Supports full expansion of all CPX peripherals
- More than 300 I/Os

Beneficial application areas:

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

With control block in Festo EasyIP mode



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

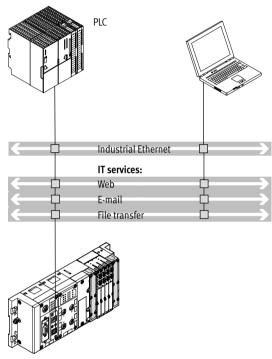
Key features

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

With control block as remote controller on Ethernet

Remote controller on Ethernet as the preprocessing unit for decentralised,

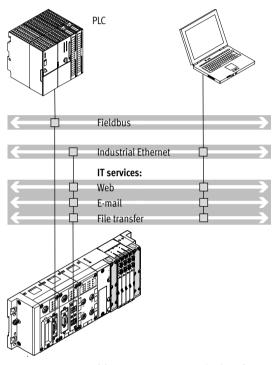
stand-alone subsystems using IT technology.



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

With control block as remote controller on the fieldbus

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

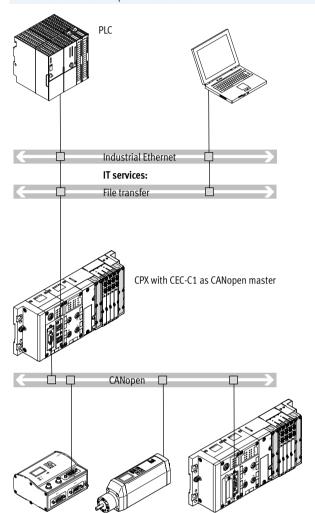


- Fast preprocessing of the CPX peripherals in the control block
- Communication with higher-order controller via fieldbus
- Optional additional monitoring via Ethernet and web applications
- Downloading of programs via programming interface
- More than 300 I/Os, bus node is only used for communication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

Key features

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

With control block as CANopen fieldbus master



Properties:

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

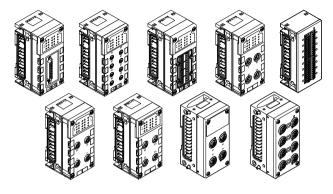
Operating modes:

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

Key features

Connection of inputs and outputs to the CPX terminal

Digital and analogue CPX I/O modules



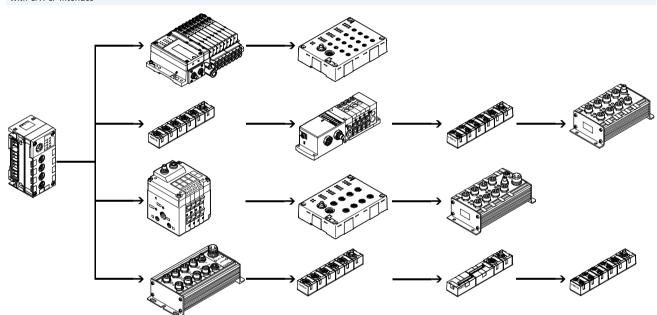
Electrical connection

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

- Metal design
- M12-5POL

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

With CPX-CP interface

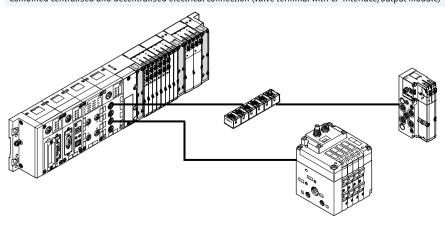


- Up to 4 strings per CP interface possible
- Up to 4 subordinate CP modules can be combined in one string
- Up to 32 I/Os can be connected per string
- Modules with M8, M12 and terminal connection

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

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

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



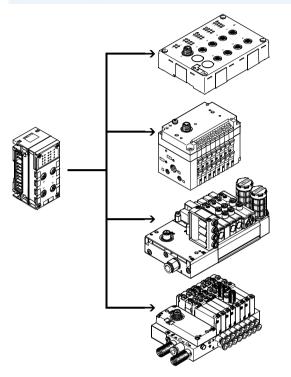
- Scalable to different requirements within a system
- One control interface in the system, reduces installation complexity with closely and widely spaced actuators
- Enables an optimum electrical and pneumatic control chain



Key features

Connection of inputs and outputs to the CPX terminal

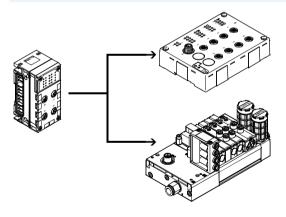
with CPX-CTEL interface



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

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

With CPX-CTEL-2 interface



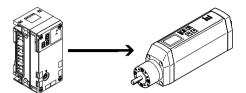
- Up to 2 individual electronically protected IO-Link devices per CPX-CTEL-2 interface
- Max. 16-byte inputs/ 16-byte outputs per IO-Link device
- The maximum length of a string is 20 m

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

Key features

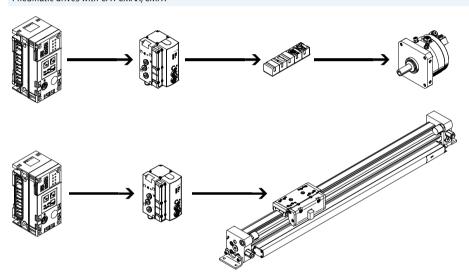
Connection of inputs and outputs to the CPX terminal

Electrical drives with CPX-CM-HPP axis interface



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

Pneumatic drives with CPX-CMAX/CMPX



CPX-CMAX

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

CPX-CMPX

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

10

Key features

Ordering

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

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

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

The order lists for the pneumatic components can be found on

- → Internet: vtsa (valve terminal VTSA)
- → Internet: vtsa-f (valve terminal VTSA-F)
- → Internet: cpa (valve terminal CPA)
- → Internet: mpa-s (valve terminal MPA-S)
- → Internet: mpa-l (valve terminal MPA-L)

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

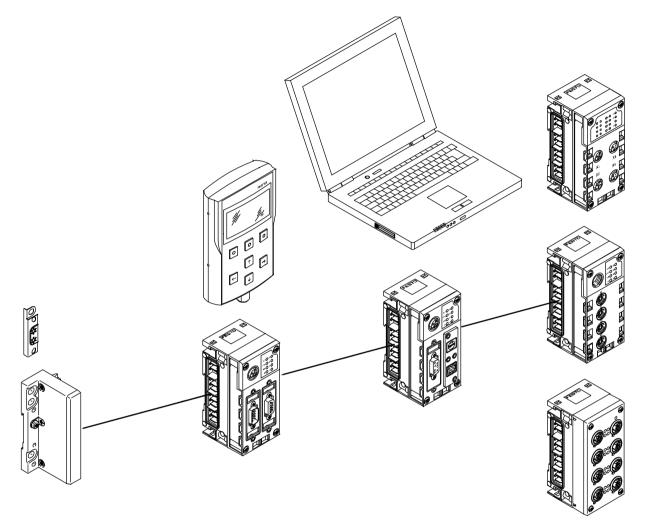
→ Internet: ctec (CPI installation system)

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

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

Peripherals overview

Complete overview of modules



End plate

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

Bus node

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

Control block

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

CP interface/CTEL interface

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

Operator unit

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

Web monitor

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

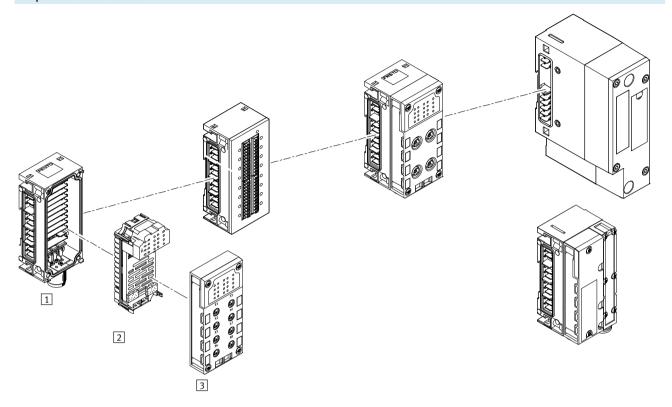
Input/output modules

Combination of

- Interlinking block
- Electronics module
- Connection block

Peripherals overview

Complete overview of modules



Input/output modules

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

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

3 Connection block

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

Pneumatics interface

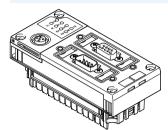
- Actuation of the solenoid coils
- MPA-S
- MPA-F
- MPA-L
- VTSA/VTSA-F
- CPA
- Actuation of pressure sensors
- Actuation of proportional pressure regulators

Peripherals overview



Individual overview of modules

Bus node

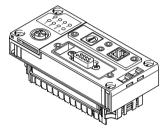


Bus node for

- PROFIBUS DP
- INTERBUS
- DeviceNet
- CANopen
- CC-LINK

- Ethernet/IP
- PROFINET
- POWERLINK
- EtherCAT
- Sercos III

Control block



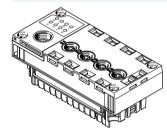
CPX-FEC

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

CPX-CEC

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

CP interface



Interface CPX-CP

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

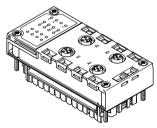
n master

→ 132

→ 71

→ 59

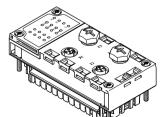
CTEL interface



CPX-CTEL interface

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

Electrical interface CPX-CTEL-2



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

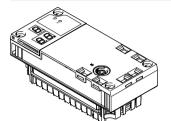
→ 137

Peripherals overview

FESTO

Individual overview of modules

Modules for actuating electric drive units

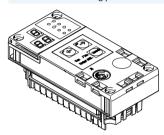


CPX-CM-HPP

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

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Modules for controlling pneumatic drive units



CPX-CMAX

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

CPX-CMPX

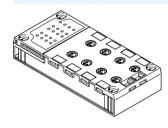
- End-position controller
- Fast travel between the mechanical end stops of the cylinder
- Smooth travel into the end position
- Improved control of downtime
- Control of a brake via the proportional directional control valve VPWP

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CPX-CMIX

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

Plastic connection block



Direct machine mounting (protection class IP65, IP67)

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

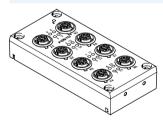
Protected fitting space (protection class IP20)

Spring-loaded terminal

Screening concept

 Optional screening plate for connection blocks with M12 connection technology

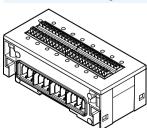
Metal manifold block



Direct machine mounting (protection class IP65, IP67)

• M12-5POL

Connection block including electronics module and interlinking block



Installation in the control cabinet (protection class IP20)

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

PROFIsafe input module

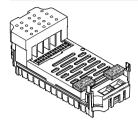
Terminal CPX

Peripherals overview

FESTO

Individual overview of modules

Digital electronics module for inputs/outputs



Digital inputs

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

Digital outputs

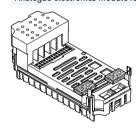
- 4 digital outputs (1 A per channel, individual channel diagnostics)
- 8 digital outputs (0.5 A per channel, individual channel diagnostics)
- 8 digital outputs (2.1 A/50 W lamp load per channel pair, individual channel diagnostics)

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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



Analogue inputs

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

Analogue temperature inputs

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

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Analogue outputs

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

PROFIsafe input module

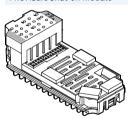


Digital inputs

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







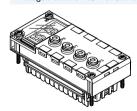
Digital outputs

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

- ---

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Analogue electronics module for pressure inputs



Analogue inputs

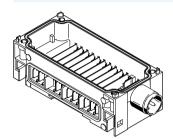
• 4 analogue supply ports (0 ... 10 bar, -1 ... +1 bar)

Peripherals overview

FESTO

Individual overview of modules

Plastic interlinking block – Interlinking by means of tie rods



System linking

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

System supply

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

In addition to system linking, power supply for the

- electronics plus sensors (16 A)
- valves plus actuators (16 A)

Additional power supply In addition to system linking, power supply for the

• actuators (16 A per supply)

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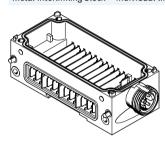
Power supply for the

• valves (16 A per supply)

Expandability

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

Metal interlinking block - Individual linking



Plastic interlinking blocks (tie rods)

and metal interlinking blocks (indi-

vidual linking) cannot be combined

due to their different interlinking

Note

systems.

System linking

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

System supply

- 7/8" 4-pin or 5-pin
- AIDA push-pull



- Note

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

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

In addition to system linking, power supply for the

- electronics plus sensors (16 A)
- valves plus actuators (16 A)

Additional power supply In addition to system linking, power supply for the

• actuators (16 A per supply)



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

→ 219

Power supply for the

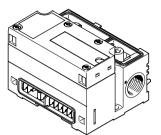
• valves (16 A per supply)

Expandability

 Can be expanded as required by up to 10 interlinking blocks

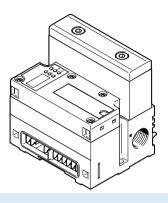


Peripherals overview



Valve terminal

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



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

FESTO

- For CPX plastic design
- · For CPX metal design

Individual overview of modules Pneumatic interface MPA-S

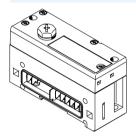


→ 233

Valve terminal

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

Pneumatic interface MPA-L

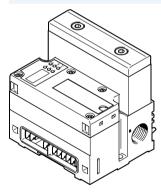


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Valve terminal

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

Pneumatic interface MPA-F

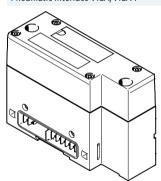


→ 236

Valve terminal

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

Pneumatic interface VTSA/VTSA-F



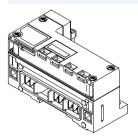
Valve terminal (valve flow rate according to width)

• 18 mm (700 l/min)

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

Pneumatic interface CPA



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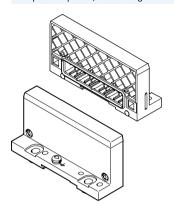
Valve terminal

- CPA14 (600 l/min)
- Up to 22 solenoid coils
- · Setting of the number of valves via DIL switch
- For CPX plastic design

Peripherals overview

Individual overview of modules

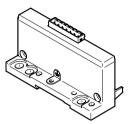
End plate for plastic/metal design



End plate

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

End plate with system power supply



→ 215

End plate

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

End plate with extension



End plate

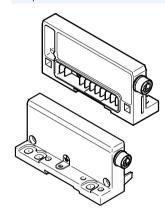
- Left-hand • Right-hand
- Enables the CPX terminal to be separated into two interconnected units (series)
- · Simplifies control cabinet installation
- · For plastic or metal design

Earthing plate (for end plate for plastic design)



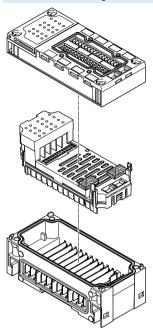
Earthing plate

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



Peripherals overview

General basic data and guidelines



Max. 11 modules in total:

- One bus node and/or one control block, freely positionable
- Up to 9 additional input/output modules, freely positionable
- An additional pneumatic interface always positioned as the last module on the right-hand side
- With VTSA, VTSA-F, MPA-F and CPA: fixed operating range, set using DIL switch
- With MPA-S:16 MPA modules can be configured
- With MPA-L: fixed operating range, set using rotary switch

- Address capacity max. 512 inputs and 512 outputs, depending on bus node or control block
- One interlinking block with system supply
- Multiple interlinking blocks with additional power supply, always positioned to the right of the interlinking block with system supply
- The connection blocks can, with just a few exceptions, be freely combined with the electronics modules for inputs/outputs, either in metal or plastic (table below)
- The electronics modules for inputs/ outputs can be combined with various interlinking blocks

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

Combinations of connection blocks and digital input modules										
	Digital electro	igital electronics modules								
	CPX-4DE	CPX-8DE	CPX-16DE	CPX-L-16DE	CPX-M-16DE-D	CPX-8DE-D	CPX-8NDE	CPX-F8DE-P		
Connection blocks, plastic design										
CPX-AB-8-M8-3POL			-	-	-			-		
CPX-AB-8-M8X2-4POL	-	-		-	-	-	-	-		
CPX-AB-4-M12x2-5POL			-	-	-			-		
CPX-AB-4-M12x2-5POL-R			-	-	-			-		
CPX-AB-8-M12X2-5POL	-	-	-	-		-	-	-		
CPX-AB-4-M12-8POL	-	-	-	-	-	-	-	-		
CPX-AB-8-KL-4POL				-	-					
CPX-AB-1-SUB-BU-25POL				-	-			-		
CPX-AB-4-HAR-4POL			-	-	-			-		
CPX-AB-ID-P	-	-	-	-	-	1				
Connection blocks, metal design										
CPX-M-AB-4-M12X2-5POL			-	_	_					
CPX-M-AB-4-M12X2-5POL-T	-	-	-	-	_	-				
CPX-M-AB-8-M12X2-5POL	-	-	-	-		-	-	-		



Peripherals overview

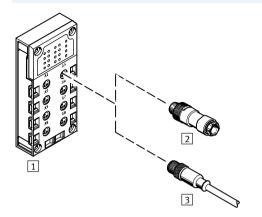
Combinations of connection blocks and	l digital output r	nodules/multi I/O	modules						
	Digital electronics modules								
	CPX-4DA	CPX-8DA	CPX-8DA-H	CPX-8DE-8DA	CPX-L-8DE-8DA	CPX-2ZE2DA	CPX-FVDA-P2		
Connection blocks, plastic design									
CPX-AB-8-M8-3POL		-	-	-	-	_	-		
CPX-AB-8-M8X2-4POL		-		-	-	_	-		
CPX-AB-4-M12x2-5POL			-	-	-	-	-		
CPX-AB-4-M12x2-5POL-R			•	-	-	-	-		
CPX-AB-8-M12X2-5POL	-	-	-	-	-	-	-		
CPX-AB-4-M12-8POL	-	-	-		-	_	-		
CPX-AB-8-KL-4POL		-			-	-	-		
CPX-AB-1-SUB-BU-25POL		-			-	-	_		
CPX-AB-4-HAR-4POL		-	-	-	-	_	-		
CPX-AB-ID-P	-	-	-	-	-	-	-		
Connection blocks, metal design									
CPX-M-AB-4-M12X2-5POL			-	_		_			
CPX-M-AB-4-M12X2-5POL-T	_	-	-	-	-	-	-		
CPX-M-AB-8-M12X2-5POL	_	-	-	_	_	-	_		

	Analogue el	Analogue electronics modules								
	CPX-2AE-U-I	CPX-4AE-U-I	CPX-4AE-I	CPX-2AA-U-I	CPX-4AE-P	CPX-4AE-T	CPX-4AE-TC			
Connection blocks, plastic design										
CPX-AB-8-M8-3POL	-		-			-	-			
CPX-AB-8-M8X2-4POL	-	-	-	-	-	-	-			
CPX-AB-4-M12x2-5POL		•			-	-				
CPX-AB-4-M12x2-5POL-R		•					•			
CPX-AB-8-M12X2-5POL	·O· –		-			-	-			
CPX-AB-4-M12-8POL	-	-	-	-	-	-	-			
CPX-AB-8-KL-4POL		•			-	-				
CPX-AB-1-SUB-BU-25POL		-			-	-	-			
CPX-AB-4-HAR-4POL	-	-	-	-	-	•	-			
CPX-AB-ID-P	-	-	-	-	-	-	_			
Connection blocks, metal design										
CPX-M-AB-4-M12X2-5POL	•	-	•	•	_	-				
CPX-M-AB-4-M12X2-5POL-T	_	-	-	_	_	-	-			
CPX-M-AB-8-M12X2-5POL	_	_	_	_	_	_	_			

Key features – Electrical components

Electrical connection – Connection block

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



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



Note

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

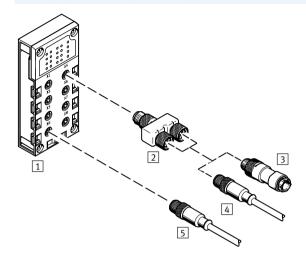
- Tailored to the application
- Perfect fit
- Saves installation space

onnection block	Connection technology	Plug connector/connecting cable	Selectable connection technology
CPX-AB-8-M8-3POL	Socket, M8, 3-pin	2 SEA-GS-M8	Solder lugs
		2 SEA-3GS-M8-S	Screw terminals
		3 KM8-M8-GSGD	Socket, M8, 3-pin
		(pre-assembled connecting cable)	
		3 NEBUM8G3	Socket, M5, 3-pin
		(modular system for choice of connecting cables)	Socket, M8, 3-pin
			Socket, M8, 4-pin
			Socket, M12, 5-pin
			Open cable end

Key features – Electrical components

Electrical connection – Connection block

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



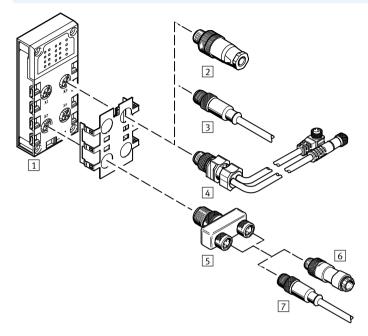
- Compact for pre-assembled individual connection
- 8 sockets
- 4-pin design for connecting 2 channels per socket

Connection block	Connection	Plug connector/	Selectable connection	Plug connector/	Selectable connection
	technology	connecting cable	technology	connecting cable	technology
1	Socket, M8,	4 NEBUM8G4	Socket, M5, 3-pin	-	-
CPX-AB-8-M8X2-4POL	4-pin	(modular system for	Socket M8, 3-pin	_	-
		choice of connecting	Socket, M8, 4-pin	-	-
		cables)	Socket, M12, 5-pin	_	-
			Open cable end	-	-
		2 NEDU-M8D3-M8T4	1x plug M8, 4-pin	3 SEA-GS-M8	Solder lugs
		(T-adapter)	to	3 SEA-3GS-M8-S	Screw terminals
			2x socket M8, 3-pin	4 KM8-M8-GSGD	Socket, M8, 3-pin
				(pre-assembled	
				connecting cable)	
				4 NEBUM8G3	Socket, M5, 3-pin
				(modular system for	Socket, M8, 3-pin
				choice of connecting	Socket, M8, 4-pin
				cables)	Socket, M12, 5-pin
					Open cable end

Key features – Electrical components

Electrical connection – Connection block

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



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

Key features – Electrical components

Connection block	Connection	Plug connector/	Connection technology	Plug connector/	Connection technology
	technology	connecting cable		connecting cable	
1	Socket, M12,	2 SEA-GS-7	Screw terminals	_	-
CPX-AB-4-M12x2-5POL	5-pin	2 SEA-4GS-7-2,5	Screw terminals	_	-
CPX-AB-4-M12x2-5POL-R		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-DU0	Screw terminals, for two	-	-
			cables		
		3 KM12-M12	Socket, M12, 4-pin	-	-
		(pre-assembled connecting			
		cable)			
		3 NEBUM12G4	Socket, M5, 4-pin	-	=:
		3 NEBUM12G5	Socket, M8, 4-pin	-	-
			Socket, M12, 5-pin	-	-
			Open cable end	-	=:
			1		
		4 KM12-DUO-M8	Plug M12, 4-pin	6 SEA-GS-M8	Solder lugs
		(pre-assembled connecting	to	6 SEA-3GS-M8-S	Screw terminals
		cable)	2x socket M8, 3-pin	7 KM8-M8-GSGD	Socket, M8, 3-pin
				(pre-assembled	
				connecting cable)	
		5 NEDU-M8D3-M12T4		7 NEBUM8G3	Socket, M5, 3-pin
		(T-adapter)		(modular system for	Socket, M8, 3-pin
				choice of connecting	Socket, M8, 4-pin
				cables)	Socket, M12, 5-pin
					Open cable end
		5 NEDU-M12D5-M12T4	Plug M12, 4-pin	6 SEA-GS-7	Screw terminals
		(T-adapter)	to	6 SEA-4GS-7-2,5	Screw terminals
			2x socket M12, 5-pin	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 KM12-M12	Socket, M12, 4-pin
				(pre-assembled	
				connecting cable)	
				7 NEBUM12G4	Socket, M5, 4-pin
				(modular system for	
				choice of connecting	
				cables)	
				7 NEBUM12G5	Socket, M8, 4-pin
				(modular system for	Socket, M12, 5-pin
				choice of connecting	Open cable end
				cables)	open cable end

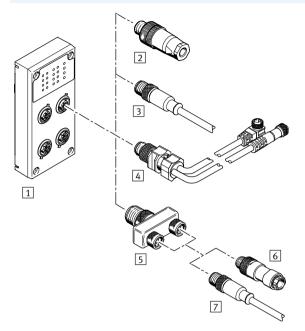


Key features – Electrical components

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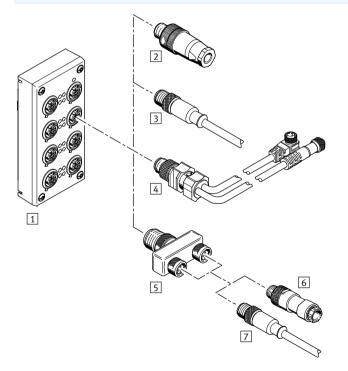
Electrical connection – Connection block (metal design)

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



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

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



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



Note

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



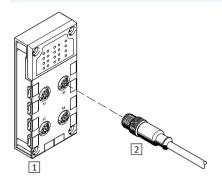
Key features – Electrical components

Combination of connection b	lock and electrica	~,			
Connection block	Connection	Plug connector/	Connection technology	Plug connector/	Connection technology
	technology	connecting cable		connecting cable	
1	Socket, M12,	2 SEA-GS-7	Screw terminals	_	-
CPX-M-AB-4-M12X2-5POL	5-pin	2 SEA-4GS-7-2,5	Screw terminals	-	-
CPX-M-AB-8-M12X2-5POL		2 SEA-GS-9	Screw terminals	_	-
CPX-AB-8-M12X2-5POL		2 SEA-M12-5GS-PG7	Screw terminals	-	-
		2 SEA-GS-11-DUO	Screw terminals, for two	-	-
			cables		
		2 SEA-5GS-11-DU0	Screw terminals, for two	-	-
			cables		
		3 KM12-M12	Socket, M12, 4-pin	-	_
		(pre-assembled connecting			
		cable)			
		3 NEBUM12G4	Socket, M5, 4-pin	_	-
		3 NEBUM12G5	Socket, M8, 4-pin	-	-
			Socket, M12, 5-pin	-	-
			Open cable end	_	-
		4 KM12-DUO-M8	Plug M12, 4-pin	6 SEA-GS-M8	Solder lugs
		(pre-assembled connecting	to	6 SEA-3GS-M8-S	Screw terminals
		cable)	2x socket M8, 3-pin	7 KM8-M8-GSGD	Socket, M8, 3-pin
				(pre-assembled	
				connecting cable)	
		5 NEDU-M8D3-M12T4		7 NEBUM8G3	Socket, M5, 3-pin
		(T-adapter)		(modular system for	Socket, M8, 3-pin
				choice of connecting	Socket, M8, 4-pin
				cables)	Socket, M12, 5-pin
					Open cable end
					1
		5 NEDU-M12D5-M12T4	Plug M12, 4-pin	6 SEA-GS-7	Screw terminals
		(T-adapter)	to	6 SEA-4GS-7-2,5	Screw terminals
			2x socket M12, 5-pin	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 KM12-M12	Socket, M12, 4-pin
				(pre-assembled	
				connecting cable)	C 1 4 145 : :
				7 NEBUM12G4	Socket, M5, 4-pin
				(modular system for	
				choice of connecting	
				cables)	G 1 4 Mg : 1
				7 NEBUM12G5	Socket, M8, 4-pin
				(modular system for	Socket, M12, 5-pin
				choice of connecting	Open cable end
				cables)	open cable cliu

Key features – Electrical components

Electrical connection - Connection block

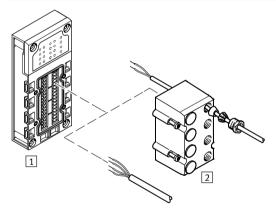
CPX-AB-4-M12-8POL with M12-8POL connection



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

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

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



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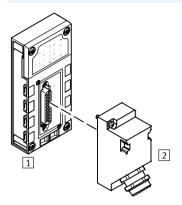
- Quick connection technology for use in control cabinets
- 32 spring-loaded terminals
- 4 spring-loaded terminals per channel
- Wire cross sections 0.05 ... 1.5 mm²
- Optional cover with fittings for IP65, IP67 connection
 - 8 through-holes M9
 - 1 through-hole M16
 - Blanking plug
- For I/O distributors, consoles or individual sensors/actuators

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

Key features – Electrical components

Electrical connection – Connection block

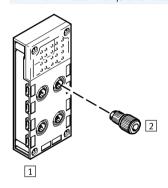
CPX-AB-1-SUB-BU-25POL with Sub-D connection



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

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

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



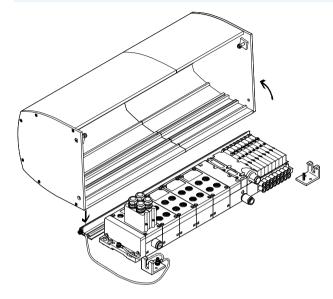
- Sturdy quick connection technology for individual connections
- 4 sockets
- 4-pin design per socket

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

Key features - Assembly

Hood

Description



The CPX hood CAFC is a space- and cost-saving alternative to a control cabinet.

It is designed as an extruded aluminium profile and is installed on a mounting plate.

The valve terminal (CPX with MPA-S or MPA-L) is well protected and is quick to install without the need for complex control cabinet installation for connecting cables and tubing.

→ 253

The rail and the two mounting brackets are mounted on a base plate. The hood is attached to the retaining rail and secured with two screws. There is also a stand-by position (locking of the hood in the open position). The hood is locked using two side screws (which meet the requirements for a special lock in compliance with ATEX).

The CPX hood can be ordered online using the valve terminal configurator.

Advantages of the CPX hood

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

Points to note when using the CPX hood

- Only in combination with valve terminal MPA-S and MPA-L
- No bus nodes with push-pull connection (CPX-M-FB34, CPX-M-FB35, CPX-M-FB41)
- CPX power supply via angled plugs, no T-plugs, no push-pull
- Electrical supply plate/additional power supply only possible with angled plug
- No MPA vertical stacking
- Use of larger fittings (for tubing 0.D. larger than 12 mm) only possible with the angled design
- Ducted exhaust air only with elbow connector
- The permissible ambient temperature of the valve terminal is reduced by 5 °C



Note

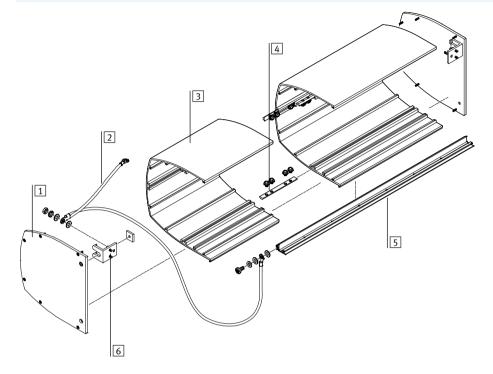
The CPX hood has no influence on the ATEX classification of the valve terminal or of the CPX terminal. The CPX hood has no influence on the IP protection class of the valve terminal or of the CPX terminal. The CPX hood does not protect against the effects of the weather in installations that are not in closed spaces.

Subject to change - 2016/03

FESTO Key features – Assembly

Hood

Mounting



Procedure:

- Assemble the rail and mounting bracket included in the mounting
- Attach the earth cable
- Assemble the hood (if applicable, screw together several hood sections before attaching the side pieces)
- Attach and secure the hood
- 1 Side piece
- 2 Earth cable
- 3 Hood section
- 4 Slot nut with screws, for joining the hood sections
- 5 Rail
- 6 Mounting bracket

Technical data

Weight:

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

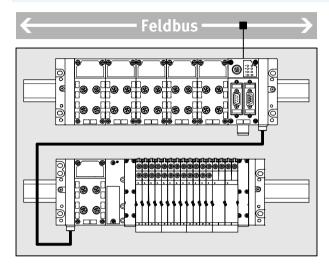
• Ambient temperature -5 ... +50 °C

• RoHS-compliant

Key features - Assembly

Extension

Functional principle



The extension enables the CPX terminal to be separated into or configured as two interconnected units (series).

The two parts are controlled by a common bus node or control block. An extensive CPX terminal can fit into limited installation spaces more easily in the form of two compact units.

Applications:

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

Performance limits

- A maximum of 10 CPX modules are permitted on the first row
- A maximum of 8 CPX modules and a pneumatic interface are permitted in the second row

The number of CPX modules and solenoid coils is additionally limited by:

- the address space made available by the control block/bus node
- their address requirement
- their current consumption

Optimisation

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

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

Configuration rules

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

first row max. 6 A

32

- second row max. 2 A
- first and second row together, max. 6 A

If the 3 m connecting cable is used, the following restrictions are in place:

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

Positioning output modules in the second row requires a corresponding power supply in the second row:

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



Key features – Assembly

	Туре	First row	Second row
Control blocks	CPX-FEC	Permissible, at least one control block or bus	Not permissible
Control blocks	CPX-CEC	node required	Not permissible
Bus node	CPX-FB	Permissible, at least one control block or bus	Not permissible
Bus node		•	Not permissible
	CPX-M-FB	node required	
Technology modules	CPX-CP	Permissible	Not permissible
	CPX-CTEL		
	CPX-CTEL-2		
	CPX-CM-HPP		
	CPX-CMAX		
	CPX-CMPX		
	CPX-CMIX		
Input/output modules	CPX	Permissible	Permissible
PROFIsafe shut-off module	CPX-FVDA-P2	Not permissible	Not permissible
Interlinking block/end plate with	CPX-EPL-EV-S	Permissible, at least one interlinking block/	Not permissible
system supply	CPX-GE-EV-S	end plate with system supply required	
	CPX-M-GE-EV-S		
Interlinking block with additional power	CPX-GE-EV-Z	Permissible	Permissible
supply	CPX-M-GE-EV-Z		
	CPX-GE-EV-V		
Interlinking block without supply	CPX-GE-EV	Permissible	Permissible
	CPX-M-GE-EV		
Pneumatics interface	VMPA-FB	Not permissible	Permissible
	VMPAL-EPL-CPX	Not permissible	Permissible
	VMPAF-FB	Not permissible	Permissible
	VABA-S6-1	Not permissible	Permissible
	CPX-GP-CPA	Not permissible	Not permissible

Key features – Assembly

Extension - Maximum number of CPX modules/solenoid coils			
Special features of the design	First row	Second row	
CPX terminal with valve terminal			
Connecting cable 3 m	10 CPX modules	Valve terminal MPA-S with: • Pneumatic interface for CPX metal interlinking module • Electrical air supply plate VMPA-FB-SP directly after the pneumatic interface • Electronics modules with galvanic isolation • 128 solenoid coils (64 valve positions) Valve terminal VTSA/VTSA-F with: • 1 CPX module with interlinking block with additional power supply for valves • 32 solenoid coils (32 valve positions)	
CDV towning with out value towning			
CPX terminal without valve terminal Control block/bus node not in position on the far right of the first	10 CPX modules	• 2 5 CPX modules, depending on the control block/bus node used	
row	10 Cr X modules	2 2 3 Cr A modules, depending on the control block/bus node used	
Control block/bus node in position on the far right of the first row	10 CPX modules	• 4 8 CPX modules, depending on the control block/bus node used	
CPX terminal with valve terminal MPA-S			
-	10 CPX modules	2 5 CPX modules and manifold blocks MPA-S, depending on the control block/bus node used	
 Electrical air supply plates VMPA-FB-SP Electronics modules with galvanic isolation	10 CPX modules	 2 5 CPX modules, depending on the control block/bus node used Up to 128 solenoid coils (64 valve positions) 	
Control block/bus node in position on the far right of the first row CPX-FB11 or CPX-CEC not possible	10 CPX modules	4 5 CPX modules and manifold blocks MPA-S, depending on the control block/bus node used	
CPX-FB13 or CPX-FB36 Control block/bus node in position on the far right of the first row Interlinking block with system supply in position on the far right of the first row	10 CPX modules	8 CPX modules and manifold blocks MPA-S	
CPX-FB13 or CPX-FB36 Control block/bus node in position on the far right of the first row Interlinking block with additional power supply for valves in position on the far right of the first row	10 CPX modules	8 CPX modules and manifold blocks MPA-S	
CPX-FB13 or CPX-FB36 Control block/bus node in position on the far right of the first row Interlinking block with additional power supply for valves in second row	10 CPX modules	8 CPX modules and manifold blocks MPA-S	



Key features – Assembly

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

Key features - Assembly

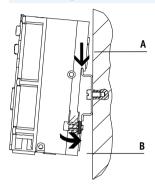


Mounting options

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

degree of high protection and control cabinet installation.

H-rail mounting



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

The CPX terminal is mounted on the H-rail for this purpose (see arrow A).

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

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

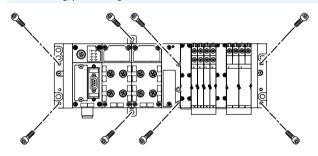
For H-rail mounting you will need the following mounting kit:

• CPX-CPA-BG-NRH

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

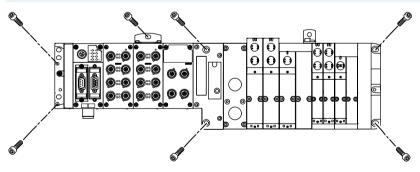
An additional mounting kit is required for combination with valve terminals.

Wall mounting, plastic design



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

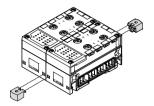
Wall mounting, metal design

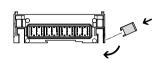


Key features - Assembly

Plastic design CPX terminal

Additional mountings





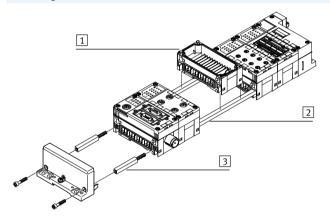
For longer valve terminals, there are additional mounting components for the CPX terminal that can be fitted between two modules.



Note

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

Interlinking with tie rods



The CPX modules are mechanically connected using special tie rods 2. Two screws in the end plates are all that are needed to assemble the entire unit.

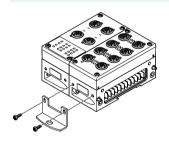
The tie rod ensures that the unit resists high mechanical loads and is therefore the mechanical backbone of the CPX terminal.

The open design enables interlinking blocks 1 to be replaced in the assembled state.

The tie rod expansion kit 3 enables an extra module to be added to the CPX terminal.

CPX terminal in metal design

Additional mountings



For longer valve terminals, there are additional mounting brackets for the CPX terminal that can be screwed onto the interlinking blocks.

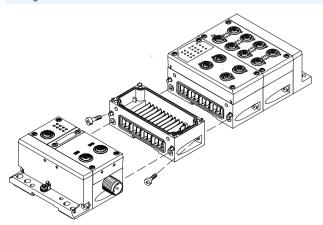
The mounting bracket CPX-M-BG-VT-2X enables a CPX terminal with valve terminal VTSA/VTSA-F to be mounted on a support system.



Note

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

Linking with screws



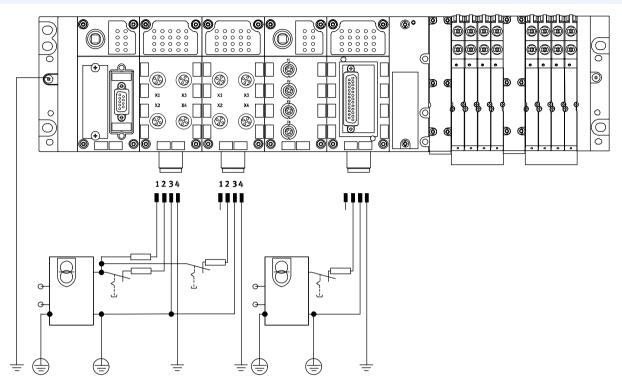
The CPX modules are mechanically connected using a special angled fitting

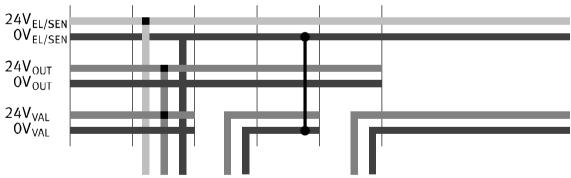
The CPX terminal can thus be expanded at any time.

Key features - Power supply

Power supply concept

General





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

- Electronics plus sensors
- Valves plus actuators in this case.

Selectable connection technology:

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

Interlinking blocks

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

as well as their bus connections. Many applications require the CPX terminal to be segmented into voltage zones. This applies in particular to the separate disconnection of solenoid coils and outputs.

The interlinking blocks provide either a space-saving central power supply

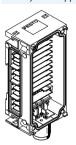
for the entire CPX terminal or galvanically isolated, all-pin disconnectable potential groups/ voltage segments.

Key features - Power supply

FESTO

Interlinking blocks

With system supply



Type for plastic design

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

Type for metal design

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

Connection technology

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

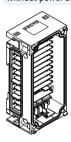
Connection technology

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

Power supply

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

Without power supply



Type for plastic design

CPX-GE-EV

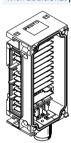
Type for metal design

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

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With additional power supply for outputs



Type for plastic design

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

Type for metal design

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

Connection technology

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

Connection technology

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

Power supply

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

With additional power supply for valves



Type for plastic design

- CPX-GE-EV-V
- CPX-GE-EV-V-7/8-4POL

Connection technology

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

Power supply

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



For 7/8":

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

Note

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

- Note

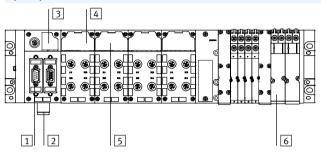
Suitable versions of the interlinking blocks with M18 and 7/8", 5-pin connection are available (CPX-GE-EV-...-VL) and CPX-M-GE-EV-...-VL) for use in ATEX environments as per certification (→ 46). The maximum current supply for these interlinking blocks in 8 A.

Key features - Diagnostics



Diagnostics

System performance



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

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

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

1 Diagnostics via bus interface

- 2 Undervoltage monitoring
- 3 Diagnostic overview LED
 - Fieldbus status
 - CPX status
- 4 Status and diagnostic LED for module and I/O channels
- 5 Module and channel-specific

diagnosis is supported, for example

• Undervoltage detection for outputs

· Short circuit detection for sensors,

· Open-load detection for a missing

· Storage of the last 40 causes of

errors with error start and error end

Module and channel-specific

and valves

solenoid coil

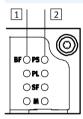
outputs and valves

diagnostics

- 6 Valve-specific diagnostics for module and solenoid coils
- 7 MPA pressure sensor integrated solution on the fieldbus
 - Pre-assembled for ducts 1, 3,
 5 and external pressures

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

Overview of LEDs on the bus node

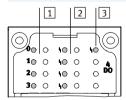


1 Fieldbus-specific LEDs
On each bus node, a maximum of
4 fieldbus-specific LEDs display
the fieldbus communication
status of the CPX terminal with
the higher-order controller.

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

- Power system
- Power load
- System fault
- Modification parameters

Input/output module status and diagnostic LEDs



Status LEDs for the inputs and outputs
 Each input and output channel is assigned a status LED.

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

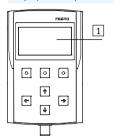
3 Group diagnostic LEDs An LED displays the group diagnostics for each module

Key features – Parameterisation



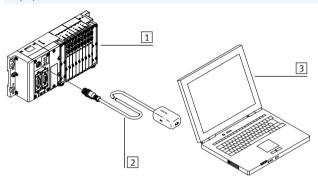
Diagnostics

Display on the operator unit



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

Display on a PC



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

Parameterisation

Changes to the application are often required during commissioning. The parameterisable characteristics of the CPX modules mean that functions can be very easily changed by means of configuration software. This reduces

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

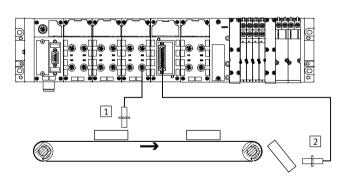
It is therefore possible, for example, to reduce the switch-on debounce time for an input module – normally 3 ms –

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

Depending on the modules used, parameterisation can be performed

via the following interfaces:

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



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

Key features – Addressing

Addressing

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

Maximum system configuration:

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

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



Note

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

Overview – Address sp		Protocol	Max. total		Max. digital		Max. analogue	2
		riotocot						1
			Inputs	Outputs	Inputs	Outputs	Inputs	Outputs
CPX-FEC		• TCP/IP	512 bits	512 bits	512 DI	512 DO	32 AI	18 AO
		Easy IP						
		 Modbus TCP 						
		 HTTP 						
CPX-CEC		CoDeSys level	512 bits	512 bits	512 DI	512 DO	32 AI	18 AO
		2						
		• TCP/IP						
		• Easy IP						
		 Modbus TCP 						
CPX-FB6		INTERBUS	96 bits	96 bits	96 DI	96 DO	6 Al	6 AO
CPX-FB11		DeviceNet	512 bits	512 bits	512 DI	512 DO	32 Al	18 AO
CPX-FB13		PROFIBUS	512 bits	512 bits	512 DI	512 DO	32 AI	18 AO
CPX-FB14		CANOpen	256 bits	256 bits	64 DI (+ 64 DI)	64 DO (+ 64 DO)	8 AI (+ 8 AI)	8 AO (+ 8 AO)
CPX-M-FB20		INTERBUS (LWL)	96 bits	96 bits	96 DI	96 DO	6 Al	6 AO
CPX-M-FB21		INTERBUS (LWL)	96 bits	96 bits	96 DI	96 DO	6 Al	6 AO
CPX-FB23-24		CC-Link	512 bits	512 bits	512 DI	512 DO	32 AI	18 AO
CPX-FB32		EtherNet/IP	512 bits	512 bits	512 DI	512 DO	32 AI	18 AO
CPX-FB33		PROFINET RT	512 bits	512 bits	512 DI	512 DO	32 AI	18 AO
CPX-M-FB34		PROFINET RT	512 bits	512 bits	512 DI	512 DO	32 AI	18 AO
CPX-M-FB35		PROFINET RT	512 bits	512 bits	512 DI	512 DO	32 AI	18 AO
CPX-FB36		EtherNet/IP	512 bits	512 bits	512 DI	512 DO	32 AI	18 AO
CPX-FB37	.0.	EtherCAT	512 bit	512 bit	512 DE	512 DA	32 AE	18 AA
CPX-FB38		EtherCAT	512 bits	512 bits	512 DI	512 DO	32 AI	18 AO
CPX-FB39	·O-	Sercos III	512 bit	512 bit	512 DE	512 DA	32 AE	18 AA
CPX-FB40	·O-	POWERLINK	512 bit	512 bit	512 DE	512 DA	32 AE	18 AA
CPX-M-FB41	·O·	PROFINET RT	512 bit	512 bit	512 DE	512 DA	32 AE	18 AA



Note

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

Example CPX-FB6 (INTERBUS)						
	Digital inputs	Digital outputs	Notes			
3x CPX-8DE	24	-	• The address space is occupied by 7 CPX I/O			
1x CPX-8DE-8DA	8	8	modules plus pneumatic interface			
2x CPX-2AE	64	-	No additional modules can be configured			
1x CPX-2AA	-	32				
3x VMPA1	-	24				
Allocated address space	96	96				

DI = Digital inputs (1 bit)

DO = Digital outputs (1 bit)

AO = Analogue outputs (16 bits)

AI = Analogue inputs (16 bits)



Key features – Addressing

Overview – Allocated addresses for	or CPX modules		
Overview /mocarca addresses in	Inputs [bit]	Outputs [bit]	
CPX-CP-4-FB	16, 32, 48, 64, 80, 96, 128 ¹⁾	16, 32, 48, 64, 80, 96, 128 ¹⁾	
CPX-CTEL-4-M12-5POL	0, 64, 128, 192, 256 ¹⁾	0, 64, 128, 192, 256 ¹⁾	
CPX-CTEL-4-M12-5POL-LK	64, 128, 192, 256 ¹⁾	64, 128, 192, 256 ¹⁾	
CPX-CM-HPP	256	256	
CPX-CMAX-C1-1	64	64	
CPX-CMPX-C1-1	48	48	
CPX-CMIX-M1-1	48	48	
CPX-4DE		40	
CPX-8DE	4		
	8		
CPX-8DE-D	8	-	
CPX-8NDE	8	-	
CPX-F8DE-P	·O· 48	56	
CPX-16DE	16	-	
CPX-M-16DE-D	16	-	
CPX-L-16DE-16-KL-3POL	16	-	
CPX-4DA	-	4	
CPX-8DA	-	8	
CPX-8DA-H	-	8	
CPX-8DE-8DA	8	8	
CPX-L-8DE-8DA-16-KL-3POL	8	8	
CPX-2ZE2DA	96	96	
CPX-2AE-U-I	2 x 16	-	
CPX-4AE-U-I	4 x 16	-	
CPX-4AE-I	4 x 16	-	
CPX-4AE-P-B2	4 x 16	-	
CPX-4AE-P-D10	4 x 16	-	
CPX-4AE-T	4 x 16	-	
CPX-4AE-TC	4 x 16	-	
CPX-2AA-U-I	-	2 x 16	
CPX-FVDA-P2	48	48	
VMPA1-FB-EMS-8	-	8	
VMPA1-FB-EMG-8	-	8	
VMPA2-FB-EMS-4	-	4	
VMPA2-FB-EMG-4	-	4	
VMPA1-FB-EMS-D2-8	-	8	
VMPA1-FB-EMG-D2-8	_	8	
VMPA2-FB-EMS-D2-4	_	4	
VMPA2-FB-EMG-D2-4	-	4	
VMPA-FB-PS-1	16	-	
VMPA-FB-PS-3/5	16	-	
VMPA-FB-PS-P1	16	_	
VMPA-FB-EMG-P1	16	16	
VMPAL-EPL-CPX	-	4, 8, 16, 24, 32 ¹⁾	
VMPAF-FB-EPL-PS	16	-	
VMPAF-FB-EPLM-PS	16	_	
VABA-S6-1-X1	-	8, 16, 24, 32 ¹⁾	
VABA-S6-1-X2		8, 16, 24, 32 ¹⁾	
	8, 16, 24, 32 ¹⁾	8, 16, 24, 32 ⁻⁷ 8, 16, 24, 32 ¹)	
VABA-S6-1-X2-D		8, 16, 24 ¹	
CPX-GP-CPA-10	-		
CPX-GP-CPA-14	-	8, 16, 24 ¹⁾	

¹⁾ Dependent on the DIL switch setting on the module

Technical data







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

Example

Protection class IP65/IP67 applies only to the fully assembled system with fitted plugs or covers (which must also conform to IP65/IP67). If components with a lower protection class are used, the protection level of the entire

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

General technical data		
Module No.		197330
Max. no. of modules ¹⁾	Control block	1
	Bus node	1
	I/O modules/CP interface/CTEL interface/	9
	electrical interface CPX-CTEL-2/multi-axis	
	interface	
	Pneumatic interface	1
Max. address capacity	Inputs [byte]	64
	Outputs [byte]	64
Internal cycle time	[ms]	<1
Configuration support		Fieldbus-specific
LED displays	Bus node/control block	Up to 4 LEDs, bus-specific
		4 LEDs, CPX-specific
		• PS = Power system
		• PL = Power load
		• SF = System fault
		• M = Modify parameter/forcing active
	I/O modules	Min. one group diagnostic LED
		Channel-oriented status and diagnostic LED, depending on module
	Pneumatic interface	One group diagnostic LED
		Valve status LED on valve
Diagnostics		Channel and module-oriented diagnostics for inputs/outputs and valves
		Detection of module undervoltage for the different voltage potential values
		Storage of the last 40 errors with timestamp (asynchronous access)

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)

Technical data

General technical data					
Module No.			197330		
Parameterisation			Module-specific and entire system, for example:		
			Diagnostic behaviour		
			Condition monitoring		
			Profile of inputs		
			Fail-safe response of outputs and valves		
Commissioning support			Forcing of inputs and outputs		
Protection class to EN 60529			IP65, IP67		
Nominal operating voltage		[V DC]	24		
Operating voltage range		[V DC]	18 30		
Current supply	Interlinking block				
	with system supply for				
	electronics plus sensors	[A]	16 (8/10 with 7/8" supply, 5-pin/4-pin)		
	actuators plus valves	[A]	16 (8/10 with 7/8" supply, 5-pin/4-pin)		
	Additional power supply				
	for actuators	[A]	16 (8/10 with 7/8" supply, 5-pin/4-pin)		
	Additional power supply	[A]	16 (10 with 7/8" supply, 4-pin)		
	for valves				
Current consumption			Depending on system configuration		
Power failure bridging (bus elect	ronics only)	[ms]	10		
Power supply connection			M18, 4-pin		
			7/8 ", 5-pin		
			7/8", 4-pin		
			AIDA push-pull, 5-pin		
Fuse concept			Per module with electronic fuses		
Tests	Vibration test to DIN IEC 68		With wall mounting: Severity level 2		
			With H-rail mounting: Severity level 1		
	Shock test to DIN IEC 68		With wall mounting: Severity level 2		
			With H-rail mounting: Severity level 1		
PWIS classification			PWIS-free (free of paint-wetting impairment substances)		
Interference immunity		EN 61000-6-2 (industry)			
Interference emission		EN 61000-6-4 (industry)			
Isolation test for galvanically iso	lated circuits to IEC 1131 Part 2	[V DC]	500		
Galvanic isolation of electrical vo	oltages	80			
Protection against direct and inc	direct contact		PELV (Protective Extra-Low Voltage)		
Materials			End plates: Die-cast aluminium		
Grid dimension		[mm]	50		

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

Technical data

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

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

Weight [g]		1			
Control block	FEC	140.0	Connection block	Plastic	70.0
	CEC	155.0		Metal	175.0
	CECV3	135.0	Interlinking block,	Without power supply	100.0
Bus node	FB6	125.0	plastic	With system supply	125.0
	FB11	120.0	Interlinking block,	Without power supply	162.0
	FB13	115.0	metal	With system supply, 7/8" 4-pin	228.0
	FB14	115.0		With system supply, 7/8" 5-pin	187.0
	FB20	1070.0		With system supply, Push-pull	245.0
	FB21	1255.0	Tie rod	1-fold	19.0 ±
	FB23-24	115.0		2-fold	32.5 ±
	FB32	125.0		3-fold	46.0 ±
	FB33	280.0		4-fold	59.5 ±
	FB34	280.0		5-fold	73.0 ±
	FB35	280.0		6-fold	86.5 ±
	FB36	125.0		7-fold	100.0
	FB37	125.0		8-fold	113.5
	FB38	125.0		9-fold	127.0
	FB39	125.0	End plate for plastic	10-fold	140.5
	FB40	125.0		Left-hand	77.0
	FB41	280.0	version	Left-hand, with system supply	145.0
/O module	CPX	38.0		Right-hand	70.0
	CPX-L	170.0	End plate for metal	Left-hand	113.0
Counter module	2ZE2DA	130.0	version	Right-hand	113.0
CP interface	СР	140.0	End plate with extension	Left-hand	190.0
TEL interface	CTEL	110.0		Right-hand	175.0
lectrical interface	CTEL-2	110.0	Pneumatic interface	MPA-S	238.4
xis interface	CM-HPP	140.0		MPA-F	690.0
xis controller	CMAX	140.0		VTSA/VTSA-F	485.0
nd-position controller	CMPX	140.0		CPA	150.0
Measuring module	CMIX	140.0			

Accessories

Ordering data – Acc	cessories			
Designation			Part No.	Туре
Mounting				71
	Attachment for wall mounting (for long valve	e terminals, 10 pieces).	529040	CPX-BG-RW-10x
0	design for plastic manifold sub-bases	325010		
	Attachment for wall mounting, design for	2 mounting brackets and 4 screws	550217	CPX-M-BG-RW-2X
	metal manifold sub-bases	1 mounting bracket and 2 screws	2721419	CPX-M-BG-VT-2X
ල ල ල	Mounting for H-rail	CPX without pneumatic components	526032	CPX-CPA-BG-NRH
		CPX-VTSA		
		CPX-VTSA-F		
		CPX-MPA		
		CPX-CPA		
Tie rod				
	Tie rod CPX	Extension 1-fold	525418	CPX-ZA-1-E
9393		1-fold	195718	CPX-ZA-1
ST. ST. ST.		2-fold	195720	CPX-ZA-2
		3-fold	195722	CPX-ZA-3
		4-fold	195724	CPX-ZA-4
		5-fold	195726	CPX-ZA-5
		6-fold	195728	CPX-ZA-6
		7-fold	195730	CPX-ZA-7
		8-fold	195732	CPX-ZA-8
		9-fold	195734	CPX-ZA-9
		10-fold	195736	CPX-ZA-10
Plastic interlinking			1	
	Without power supply	-	195742	CPX-GE-EV
	With system supply	M18	195746	CPX-GE-EV-S
		M18, for ATEX environment	8022170	CPX-GE-EV-S-VL
		7/8" – 5-pin	541244	CPX-GE-EV-S-7/8-5POL
		7/8" – 5-pin, for ATEX environment	8022172	CPX-GE-EV-S-7/8-5POL-VL
		7/8" – 4-pin	541248	CPX-GE-EV-S-7/8-4POL
·	With additional power supply for outputs	M18	195744	CPX-GE-EV-Z
		M18, for ATEX environment	8022166	CPX-GE-EV-Z-VL
		7/8" – 5-pin	541246	CPX-GE-EV-Z-7/8-5POL
		7/8" – 5-pin, for ATEX environment	8022173	CPX-GE-EV-Z-7/8-5POL-VL
		7/8" – 4-pin	541250	CPX-GE-EV-Z-7/8-4POL
	With additional power supply for valves	M18	533577	CPX-GE-EV-V
		M18, for ATEX environment	8022171	CPX-GE-EV-V-VL
		7/8" – 4-pin	541252	CPX-GE-EV-V-7/8-4POL
Metal interlinking b			FF000	CDV M CF D/
P. A	Without power supply	-	550206	CPX-M-GE-EV
	With system supply	7/8" – 5-pin	550208	CPX-M-GE-EV-S-7/8-5POL
		7/8" – 5-pin, for ATEX environment	8022165	CPX-M-GE-EV-S-7/8-5POL-VL
		7/8" – 4-pin	568956	CPX-M-GE-EV-S-7/8-CIP-4P
		Push-pull – 5-pin	563057	CPX-M-GE-EV-S-PP-5POL
	With additional power supply for outputs	7/8" – 5-pin	550210	CPX-M-GE-EV-Z-7/8-5POL
S		7/8" – 5-pin, for ATEX environment	8022158	CPX-M-GE-EV-Z-7/8-5POL-VL
		Push-pull – 5-pin	563058	CPX-M-GE-EV-Z-PP-5POL

Accessories

Ordering data – Acco	essories			
Designation			Part No.	Туре
Mounting accessorie				
	Screws for mounting the bus node/connection block on a plastic interlinking block	Bus node/metal connection block	550218	CPX-DPT-30X32-S-4X
	Screws for mounting the bus node/connection block on a metal interlinking block	Bus node/plastic connection block	550219	CPX-M-M3x22-4x
		Bus node/metal connection block	550216	CPX-M-M3x22-S-4x
End plates for plastic			1	
	End plate, left-hand	-	195716	CPX-EPL-EV
		With system supply	576315	CPX-EPL-EV-S
		With extension	576314	CPX-EPL-EV-X
	End plate, right-hand	-	195714	CPX-EPR-EV
		With extension	576313	CPX-EPR-EV-X
96 (#	Earthing element for right-hand/left-hand end plate	5 pieces	538892	CPX-EPFE-EV
nd plates for metal	version	J.		
	End plate, left-hand	-	550212	CPX-M-EPL-EV
		With extension	576317	CPX-M-EPL-EV-X
	End plate, right-hand	-	550214	CPX-M-EPR-EV
		With extension	576316	CPX-M-EPR-EV-X
ower supply				
	Plug socket for mains connection M18x1, straight,	For 1.5 mm ²	18493	NTSD-GD-9
	4-pin	For 2.5 mm ²	18526	NTSD-GD-13,5
	Plug socket for mains connection M18x1, angled,	For 1.5 mm ²	18527	NTSD-WD-9
	4-pin	For 2.5 mm ²	533119	NTSD-WD-11
	Plug socket for mains connection 7/8", straight, 5-pin	0.25 2.0 mm ²	543107	NECU-G78G5-C2
	Plug socket for mains connection 7/8", straight, 4-pin	0.25 2.0 mm ²	543108	NECU-G78G4-C2
	Plug socket for mains connection 7/8", angled, 5-pin – open cable end, 5-wire	2 m	573855	NEBU-G78W5-K-2-N-LE5
	Connection socket AIDA push-pull, spring-loaded terminal	5-pin	563059	NECU-M-PPG5-C1
	Straight plug, spring-loaded terminal, for end plate left-hand with system supply	7-pin	576319	NECU-L3G7-C1

Accessories

Ordering data – A	Accessories			
Designation			Part No.	Туре
Inscription labels			<u> </u>	
	== 0 == 0	scription labels 6x10, 64 pieces, in frames		
Hood				
	Mounting rail for securing the cover	1,000 mm	572256	CAFC-X1-S
	Mounting kit for CPX cover		572257	CAFC-X1-BE
TI-SON				
	Hood section for CPX terminal including mounting attachments for connecting several hood sections in series	200 mm	572258	CAFC-X1-GAL-200
	Series	300 mm	572259	CAFC-X1-GAL-300
Manual				
	CPX System Manual	German	526445	P.BE-CPX-SYS-DE
	>	English	526446	P.BE-CPX-SYS-EN
		Spanish	526447	P.BE-CPX-SYS-ES
\		French	526448	P.BE-CPX-SYS-FR
		Italian	526449	P.BE-CPX-SYS-IT
	Operator unit CPX-MMI-1	German	534824	P.BE-CPX-MMI-1-DE
		English	534825	P.BE-CPX-MMI-1-EN
		French	534827	P.BE-CPX-MMI-1-FR
		Italian	534828	P.BE-CPX-MMI-1-IT
		Spanish	534826	P.BE-CPX-MMI-1-ES

Accessories

User manuals - General information

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

- 1. Installation
- 2. Commissioning and parameterisation
- 3. Diagnostics

Application-oriented explanations are provided for integration of the CPX terminal in the programming and configuration software of the various controller manufacturers. Use the order code to select the language you want.

The manual for the configuration you have ordered is supplied automatically.

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

→ www.festo.com



Overview – User manuals		
Туре	Title	Description
Pneumatic components		
P.BE-VTSA-44	Valve terminals with VTSA and VTSA-F	Instructions on assembly, installation, commissioning and diagnostics
	pneumatics	of the VTSA and VTSA-F pneumatic components.
P.BE-CPA	Valve terminals with CPA pneumatics	Instructions on assembly, installation, commissioning and diagnostics
		of the CPA pneumatic components.
P.BE-MPA	Valve terminals with MPA-S pneumatics	Instructions on assembly, installation, commissioning and diagnostics
		of the MPA-S pneumatic components.
P.BE-MPAF	Valve terminals with MPA-F pneumatics	Instructions on assembly, installation, commissioning and diagnostics
		of the MPA-F pneumatic components.
P.BE-MPAL	Valve terminals	Instructions on assembly, installation, commissioning and diagnostics
		of the MPA-L pneumatic components.

Accessories

Overview – User manuals		
Туре	Title	Description
Electronic components		
P.BE-CPX-SYS	System description, installation	Overview of the design, components and mode of operation of the CPX ter-
	and commissioning	minal; installation and commissioning instructions as well as basic principles
		of parameterisation
P.BE-CPX-FVDA-P2	PROFIsafe shut-off module	Connection technology and instructions on mounting, installing and commis-
		sioning for the PROFIsafe shut-off module of the type CPX-FVDA-P2
P.BE-CPX-EA	CPX-EA modules, digital	Connection technology and assembly, installation and commissioning
		instructions for digital input and output modules of the type CPX as well as
		CPA, VTSA/VTSA-F and MPA-S/F/L pneumatic interface
P.BE-CPX-F8DE-P	Input module CPX-F8DE-P	Connection technology and assembly, installation and commissioning
		instructions for PROFIsafe input module of the type CPX-F8DE-P
P.BE-CPX-2ZE2DA	EA module CPX-2ZE2DA	Connection technology and instructions on mounting, installing and commis-
		sioning for the counter module of the type CPX-2ZE2DA
P.BE-CPX-AX	CPX-EA modules, analogue	Connection technology and assembly, installation and commissioning
		instructions for analogue input and output modules of the type CPX
		as well as pressure sensors and proportional pressure regulators.
P.BE-CPX-CP	CPX CP interface	Instructions on assembly, installation, commissioning and diagnostics
DDE CDV CTEL	CDV CTFL 1 C	of the CP interface
P.BE-CPX-CTEL	CPX CTEL interface	Instructions on assembly, installation, commissioning and diagnostics
DDE CDV CTEL LIV	Floring interfere CDV CTFL 2	of the CPX CTEL master
P.BE-CPX-CTEL-LK	Electrical interface CPX-CTEL-2	Instructions on assembly, installation, commissioning and diagnostics of the electrical interface CPX for IO-Link
P.BE-CPX-CM-HPP	CPX axis interface	
P.DE-CPA-CIVI-HPP	CPA dais illeriace	Instructions on assembly, installation, commissioning and diagnostics of the CPX axis interface (CM-HPP)
P.BE-CPX-CMAX-SYS	CPX axis controller	Instructions on assembly, installation, commissioning and diagnostics
T.DE CITA CIMAN STS	CI X dxi3 controller	of the CPX axis controller (CMAX)
P.BE-CPX-CMAX-CONTROL	CPX axis controller	Information on controlling, diagnosing and parameterising the axis controller
TIBE GIVENIA CONTROLL	CI A WAIS CONTIONED	via the fieldbus
P.BE-CPX-CMPX-SYS	CPX end-position controller	Instructions on assembly, installation, commissioning and diagnostics
		of the CPX end-position controller (CMPX)
P.BE-CPX-CMIX	CPX measuring module	Instructions on assembly, installation, commissioning and diagnostics
		of the CPX measuring module (CMIX)
P.BE-CPX-FB	CPX bus node	Instructions on assembly, installation, commissioning and diagnostics
		of the relevant bus nodes
P.BE-CPX-PNIO	CPX bus node for PROFINET	Instructions on assembly, installation, commissioning and diagnostics
		of the relevant bus nodes
P.BE-CPX-FEC	CPX control block	Instructions on assembly, installation, commissioning and diagnostics
		of the relevant control block
P.BE-CPX-CEC	CPX CoDeSys controller (control block)	Instructions on assembly, installation, commissioning and diagnostics
		of the relevant control block
P.BE-CPX-MMI-1	Universal handheld type CPX-MMI-1	Instructions on assembly, installation, commissioning and diagnostics
		of the CPX operator unit

User manuals – GSD, EDS, etc.

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

These can be downloaded quickly and easily from www.festo.com.

Technical data - Operator unit CPX-MMI-1



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



Application

Functions

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

Connection

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

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

Communication

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

This ensures the availability of up-to-date texts, messages, menus and displays.
Status information, diagnostic messages and parameter bits are then exchanged during operation.

Assembly

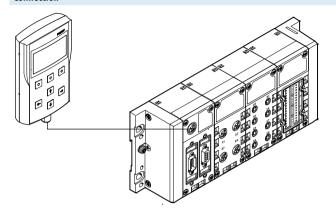
A mounting bracket for the operator unit offers the option of wall or H-rail mounting.

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

FESTO

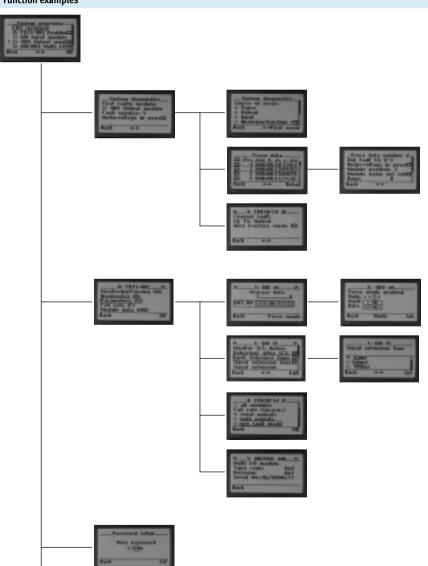
Technical data - Operator unit CPX-MMI-1

Connection



The operator unit is connected to the CPX terminal using a preassembled connecting cable.

Function examples



System overview

• Overview of configured modules and current diagnostic messages

Diagnostics

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

Commissioning

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

Setup

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

Technical data - Operator unit CPX-MMI-1

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

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

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

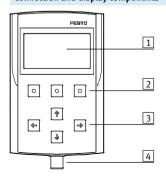
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.



When operating device combinations in hazardous areas, the lowest common zone, temperature class and

ambient temperature of the individual devices determine the possible use of the entire module.

Connection and display components



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

Accessories – Operator unit CPX-MMI-1

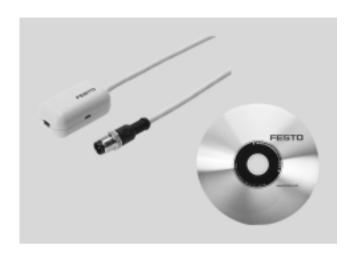
Ordering data				
Designation			Part No.	Туре
Operator unit				
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Provides data polling, configuration and diagnostic functions for CPX terminals		529043	CPX-MMI-1
Connecting cable		_		
	Connecting cable M12-M12, specially for CPX-MMI	1.5 m	529044	KV-M12-M12-1,5
	3.5 m			KV-M12-M12-3,5
Mounting				
	Bracket		534705	CPX-MMI-1-H
	Mounting for H-rail		536689	CPX-MMI-1-NRH
			· · · · · · · · · · · · · · · · · · ·	
User manual	T.,			
	User manual for operator unit CPX-MMI-1	German	534824	P.BE-CPX-MMI-1-DE
		English	534825	P.BE-CPX-MMI-1-EN
		French	534827	P.BE-CPX-MMI-1-FR
		Italian	534828	P.BE-CPX-MMI-1-IT
		Spanish	534826	P.BE-CPX-MMI-1-ES

Technical data - CPX Maintenance Tool

Function

CPX Maintenance Tool (CPX-FMT) combines service software with a connecting adapter. The service software is a tool for the design, parameterisation and online diagnostics of the CPX terminal. The USB-to-M12 adapter features built-in galvanic isolation (between CPX and PC) and enables a PC to be connected to the diagnostic interface of the CPX terminal.

- Adapter
- Software on CD-ROM



Application

Only from Festo

The CPX-FMT software enables access to CPX valve terminals via Ethernet with the control block CPX-FEC and the bus nodes EtherNet/IP (FB 32), Sercos III (FB 39) and PROFINET (FB 33, FB 34, FB 35, FB 41). The bus nodes or control block can be connected directly to the PC via a USB adapter from Festo.. Similar to the

CPX-MMI, diagnostic data such as the error trace or module diagnostics can be read out and parameters can be modified in plain text. In contrast to the CPX-MMI, the data can be used directly on a PC. There is an option, for example, to send screenshots of a configuration or the current error trace directly via e-mail. In addition, CPX configurations can also be saved and archived directly as a CPX-FMT project. Undocumented changes can subsequently be identified using the online/offline comparison function. On-site tests such as the actuation of valves or the emulation of sensor feedback (in both cases called "forcing"), for example, can be

performed without an existing controller infrastructure. It must be noted that with both the CPX-FMT and the CPX-MMI, only local parameters on the CPX valve terminal can be changed and saved. The configuration of the networks or controller software cannot be influenced.

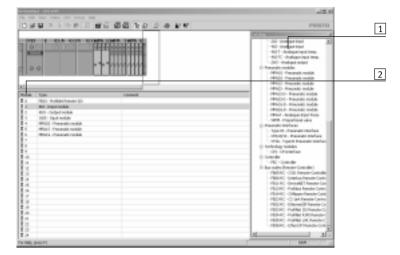
General technical data			
Туре		NEFC-M12G5-0.3-U1G5	
System requirements	PC	IBM-compatible	
	Drive	CD-ROM	
	Interfaces	USB port (specification USB 1.1 or higher)	
	Operating system	Microsoft Windows 2000 or XP	
Functional range		Configuration and parameterisation	
		Reading out of system, module, channel diagnostics and error trace	
		Saving of the configuration as a project	
		• Integration of plug-ins/links to self-executing programs	
Scope of delivery		Adapter M12, 5-pin to mini USB socket	
		CD-ROM with installation program	
Type of mounting		Screw-in	
Electrical connection		Plug M12x1, 5-pin	
Adapter cable composition		4 x 0.34 mm ²	
Cable length	[m]	0.3	
Protection class to EN 60529		IP20	
CE mark (see declaration of co	onformity)	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	

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Display components

Creating a device configuration using the editor

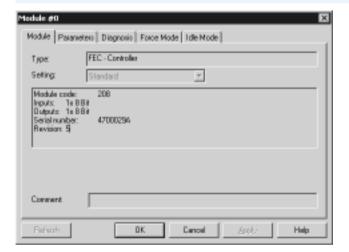
Technical data - CPX Maintenance Tool



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

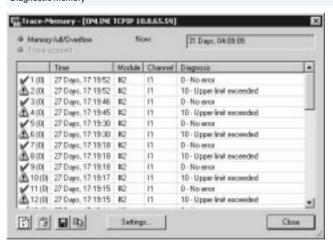
- 1 Module numbers from the graphic system overview
- Catalogue for selecting required modules

Module overview for a selected module



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

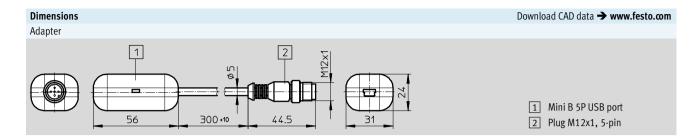
Diagnostic memory



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

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Technical data – CPX Maintenance Tool



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

Technical data – Control block CPX-FEC





IT services:



Powerful control block for pre-processing actuation of the CPX modules. The power supply to and communication with other modules takes place via the interlinking block. In addition to the connection for the Ethernet interface in RJ45 and a programming interface in Sub-D, LEDs are also provided for the bus status, operating status of the PLC and CPX peripherals information, as are switching elements and a diagnostic interface for CPX-MMI and CPX-FMT.



Application

Bus connection

The CPX-FEC is a remote controller that can be connected to a master PLC via the bus nodes of the CPX terminal or via Ethernet. At the same time, it is

possible to operate the CPX-FEC as a compact stand-alone controller directly on the machine.

Modbus/TCP (code T05)

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

Operating modes

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

Communication protocols

- PROFIBUS, PROFINET, DeviceNet, INTERBUS, CANopen, EtherCAT and CC-Link via CPX bus node
- Modbus/TCP
- EasyIP

- IP
- TCP
- UDPSMTP

- HTTP
- DHCP
- BootPTFTP

Setting options

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

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

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

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

Type Ethernet interface Data interface MMI/FMT interface			CPX-FEC-1-IE
Data interface			
			RJ45 (8-pin, socket)
MMI/FMT interface			RS232 (Sub-D, 9-pin, socket)
,			M12, 5-pin, socket
Baud rate E	Ethernet interface	[Mbit/s]	10/100 (to IEEE802.3, 10BaseT)
1	Data interface	[kbit/s]	9.6 115.2
<u> </u>	MMI/FMT interface	[kbit/s]	56.6
Protocol			• TCP/IP
			• Easy IP
			Modbus TCP
			• HTTP
Processing time for 1,024 binary instruc	ctions	[ms]	Approx. 1
Flags			M0.0 M9999, addressable as bits or words
	No. of time flags		T0 T255
	Time range	[s]	0.01 to 655.35
<u> </u>	No. of counting flags		Z0 Z255
(Counting range		0 to 65535
Register			RO R255, addressable as words
Special FE			FE 0 255, init flag
IP address setting			BOOTP/DHCP via FST or via MMI/FMT
	nputs	[byte]	64
	Outputs	[byte]	64
	Jser program	[kB]	250
V	Neb applications	[kB]	550
Programming language			• IL
			• LD
Arithmetic functions			+, -, *, :, further functions via functional modules
Functional modules			CPX diagnostic status
			Copy CPX diagnostic trace
			Read CPX module diagnostics
			Write CPX module parameter
			•
No. of programs/tasks			P0 P63
LED displays (FEC-specific)			RUN = Program is being executed/Modbus connection active
			STOP = Program is stopped/no Modbus connection
			ERR = Error in the program execution
			TP = Status of the Ethernet connection
Device-specific diagnostics			Module and channel-oriented diagnostics via peripherals error
Parameterisation			Start-up parameterisation via FST
			Parameterisation during the operating time via functional module
Control elements			DIL switch for setting the operating mode
			Rotary switch for program selection/program start
Additional functions			Storage of the last 40 errors with timestamp (access via PCP)
			8-bit system status in image table for inputs
			2-byte inputs and 2-byte outputs, system diagnostics in image table

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

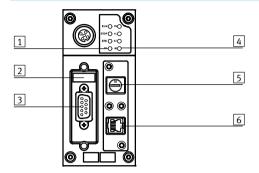


- Note

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

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

Connection and display components



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

Pin allocation for the programming interface (RS232)				
Pin allocation	Pin	Signal	Designation	
Sub-D socket				
	1	n.c.	Not connected	
(05)	2	RxD	Received data	
9004	3	TxD-P	Transmitted data	
8003	4	n.c.	Not connected	
7 0 0 2	5	GND	Data reference potential	
(6 ° ° ° 1)	6	n.c.	Not connected	
	7	n.c.	Not connected	
	8	n.c.	Not connected	
	9	n.c.	Not connected	
	Housing	Screened	Connection to functional earth (FE)	

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

Ordering data			
Designation		Part No.	Туре
Control block			
	For pre-processing actuation of the CPX modules	529041	CPX-FEC-1-IE

Accessories – Control block CPX-FEC

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

Technical data - Control block CPX-CEC





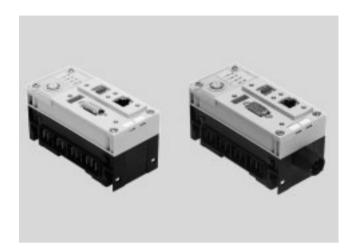
IT services:



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

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

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



Application

Bus connection

The CPX-CEC is a remote controller that can be connected to a master PLC via the fieldbus nodes of the CPX terminal or via Ethernet. At the same

time, it is possible to operate the CPX-CEC as a compact stand-alone controller directly on the machine.

Communication protocols

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

Operating modes

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

Setting options

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

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

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

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

Features

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

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

Materials		
Housing Reinforced PA		
	PC	
Note on materials	RoHS-compliant	

Operating and environmental conditions					
Ambient temperature	[°C]	−5 +50			
Storage temperature	[°C]	-20 +70			
Relative air humidity	[%]	95, non-condensing			
Corrosion resistance class CRC ¹⁾		2			

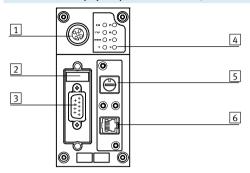
¹⁾ Corrosion resistance class CRC 2 to Festo standard FN 940070 Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial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

Electrical data			
Nominal operating voltage		[V DC]	24
Load voltage	Nominal operating voltage	[V DC]	24
	With pneumatics type CPA	[V DC]	20.4 26.4
	With pneumatics type MPA	[V DC]	18 30
	Without pneumatics	[V DC]	18 30
Power failure buffering		[ms]	10
Intrinsic current consumption at nominal operating voltage		[mA]	Typically 85
Degree of protection to EN 60)529		IP65, IP67

Technical data				,			
Туре			CPX-CEC-C1	CPX-CEC-C1-V3	CPX-CEC-M1-V3		
Additional functions			Motion functions for ele	ectric drives	SoftMotion functions for electric drives		
CPU data	Flash	[MB]	32	32	32		
	RAM	[MB]	32	256	256		
	Processor	[MHz]	400	800	800		
Control interface			CAN bus	CAN bus	CAN bus		
Parameterisation			CODESYS V2.3	CODESYS V3	CODESYS V3		
Configuration support			CODESYS V2.3	CODESYS V3	CODESYS V3		
Program memory, user program		[MB]	4	16	16		
Flags			CODESYS variable concept				
	Remanent data	[kB]	30	28	28		
	Global data memory	[MB]	8	-	-		
Control elements			DIL switch for CAN termination				
			Rotary switch for RUN/STOP				
Total number of axes			31	127	31		
Ethernet	Number		1				
	Connection technology		RJ45 socket, 8-pin				
	Data transmission speed	[Mbps]	10/100				
	Supported protocols		TCP/IP, EasyIP, Modbus	TCP			
Fieldbus interface	Number		1				
	Connection technology		Sub-D plug connector, 9-pin				
	Data transmission speed, can be	[kbps]	125, 250, 500, 800,	125, 250, 500, 800,	125, 250, 500, 800,		
	set via software		1000	1000	1000		
	Supported protocols		CAN bus				
	Galvanic isolation		Yes				

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

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

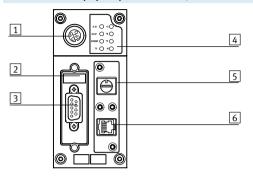


- 1 CPX-MMI connection
- 2 DIL switch
- Fieldbus interface (Sub-D plug connector, 9-pin)
- 4 Status LEDs, bus-specific and product-specific
- 5 RUN/STOP rotary switch
- 6 Ethernet interface (RJ45 socket, 8-pin)

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

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.

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



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

Pin allocation – CPX-CEC/CPX	in allocation – CPX-CEC/CPX-CEC-S1-V3						
	Pin	Signal	Meaning				
Fieldbus interface, Sub-D soc	ket						
	1	n.c.	Not connected				
(10)	2	RXD	Received data				
2006	3	TXD	Transmitted data				
30 7	4	n.c.	Not connected				
40 8	5	GND	Data reference potential				
50 9	6	n.c.	Not connected				
	7	n.c.	Not connected				
	8	n.c.	Not connected				
	9	n.c.	Not connected				
	Screening	Screening	Connection to functional earth				
Ethernet interface, RJ45 plug	connector						
	1	TD+	Transmitted data+				
¹ <u>≡</u>	2	TD-	Transmitted data-				
	3	RD+	Received data+				
` ა ■	4	n.c.	Not connected				
	5	n.c.	Not connected				
	6	RD-	Received data-				
	7	n.c.	Not connected				
	8	n.c.	Not connected				
	Housing	Screening	Screening				

Accessories – Control block CPX-FEC

Ordering data					
Designation		Parameterisation		Part No.	Туре
			[g]		
Control block		T			
15.55	Motion functions for electric drives	CODESYS V2.3	155	567347	CPX-CEC-C1
Tro iii		CODESYS V3	135	3473128	CPX-CEC-C1-V3
	SoftMotion functions for electric drives	CODESYS V3	135	3472765	CPX-CEC-M1-V3
	RS232 communication function	CODESYS V2.3	155	567346	CPX-CEC
		CODESYS V3	135	3472425	CPX-CEC-S1-V3
		1		1	
Fieldbus interface					
	Sub-D plug connector, 9-pin, for CANopen			532219	FBS-SUB-9-BU-2x5POL-B
	Connecting cable FED		539642	FEC-KBG7	
	Connecting cable FED		539643	FEC-KBG8	
	Micro Style bus connection, 2xM12 for DeviceNe		525632	FBA-2-M12-5POL	
	Socket for Micro Style connection, M12			18324	FBSD-GD-9-5POL
	Plug connector for Micro Style connection, M12			175380	FBS-M12-5GS-PG9
Sand Sand	Open Style bus connection for 5-pin terminal str	ip for DeviceNet/CANo	pen	525634	FBA-1-SL-5POL
A STATE OF THE STA	Terminal strip for Open Style connection, 5-pin	525635	FBSD-KL-2x5POL		
Ethernet interface					
	RJ45 plug connector		534494	FBS-RJ45-8-GS	
	Cover for RJ45 connection	534496	AK-Rj45		

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Accessories – Control block CPX-FEC

Ordering data	Ordering data							
Designation			Part No.	Туре				
Covers and attachmen	ts							
	Inspection cover, transparent, for Sub-D connection	533334	AK-SUB-9/15-B					
	Inscription label holder for manifold block			CPX-ST-1				
Handanin otation								
User documentation								
		German	569121	P.BE-CPX-CEC-DE				
		English	569122	P.BE-CPX-CEC-EN				

Technical data - Bus node CPX-FB6





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

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

The status of the CPX terminal is displayed as a common message via four CPX-specific LEDs.
The fieldbus communication status is displayed via four INTERBUS-specific LEDs.



Application

Bus connection

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

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

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

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

INTERBUS implementation

The CPX-FB6 supports the INTERBUS protocol to EN 50254. In addition to synchronous I/O exchange, the optional PCP channel can be used for parameterisation and diagnostic functions. The PCP channel provides access to advanced system information and assigns operation parameters while the controller is running via the user program.

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

With its address capacity of 96 inputs and 96 outputs, the CPX-FB6 supports a large number of I/O module configurations, including pneumatic interface.



Note

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

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

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

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

Communication between the control block and CPX bus node is established

via the interlinking of the CPX modules and occupies an address capacity of the CPX system of:

- 8 byte outputs
- 8 byte inputs

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

- 56 byte inputs
- 56 byte outputs

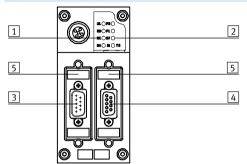
Technical data – Bus node CPX-FB6

General technical data			
Туре			CPX-FB6
Fieldbus interface			Sub-D, 9-pin, socket and pin
Baud rate		[Mbit/s]	0.5 and 2
Bus type			Remote bus
Ident. code			1, 2 or 3 (configuration-specific)
			243 (PCP-channel activated)
Profile			12 (I/O device)
PCP channel			Yes, 16 bit (optional via DIL switch)
Configuration support			Icons for CMD software
Max. no. of process data bits	Inputs	[bit]	96
	Outputs	[bit]	96
LED displays (bus-specific)			UL = Operating voltage for INTERBUS interface
			RC = Remotebus check
			BA = Bus active
			RD = Remotebus disable
			TR = Transmit/receive
Device-specific diagnostics			Via peripherals error
Parameterisation			Start-up parameterisation via user functions (CMD)
			Via PCP communication
Additional functions			Storage of the last 40 errors with timestamp (access via PCP)
			8-bit system status in image table for inputs
			2-byte inputs and 2-byte outputs, system diagnostics in image table
Control elements			DIL switch
Operating voltage	Nominal value	[V DC]	24 (reverse polarity protected)
	Permissible range	[V DC]	18 30
	Power failure buffering	[ms]	10
Current consumption		[mA]	Typically 200
Protection class to EN 60529			IP65, IP67
Temperature range	Operation	[°C]	-5 +50
	Storage/transport	[°C]	-20 +70
Materials			PA-reinforced PC
Grid dimension		[mm]	50
Dimensions (incl. interlinking blo	ck) W x L x H	[mm]	50 x 107 x 50
Weight		[g]	125



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

Connection and display components



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

n allocation for Sub-D	Pin	Signal	Designation	Pin	Pin allocation for M12
coming					
	1	D01	Data out	1	4, 7, 3
+ 1	2	DI1	Data in	3	7++1
6 + 2	3	GND	Reference conductor/ground	5	T +/
7 +	4	n.c.	Not connected	2	T 1 7 7 1 2
8 + 4	5	n.c.	Not connected	4	
9 +	6	/D01	Data out inverse		
	7	/DI1	Data in inverse		
	8	n.c.	Not connected		
	9	n.c.	Not connected		
	Hous-	Screened	Connection to FE (functional earth)	Hous-	
	ing		via R/C combination	ing	
	•	•	·	·	
utgoing					
	1	DO2	Data out	1	3, 4
(0 5	2	DI2	Data in	3	
90 04	3	GND	Reference conductor/ground	5	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
80	4	n.c.	Not connected	2	7
7 0 0 2	5	+5 V	Station detection ¹⁾	4	5 '
	6	/D02	Data out inverse		
(6 O O 1)	•			_	
	7	/DI2	Data in inverse		
		/DI2 n.c.	Data in inverse Not connected		
	7	,			
	7	n.c.	Not connected	Hous-	-

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

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

Accessories – Bus node CPX-FB6

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

Terminal CPX

Technical data – Bus node CPX-FB11





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

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

The status of the CPX terminal is displayed as a common message via four CPX-specific LEDs.
The fieldbus communication status is displayed via the three DeviceNetspecific LEDs.



Application

Bus connection

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

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

DeviceNet implementation

The CPX-FB11 operates with the "Predefined Master/Slave Connection Set" as a "Group 2 Only Server". The polled I/O, change of state or synchronous method is used for the transmission of synchronous I/O data. The type of transmission can be selected in the network configuration.

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

A comprehensive EDS file supports the display of asynchronous data. It is also possible to display system information and assign parameters while the controller is running via the user program or the configuration software. An example of this is access to the integrated diagnostic memory function, i.e. storage of the last 40 errors with timestamp, module, channel and error type.

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

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

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

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

Communication between the control block and CPX bus node is established

via the interlinking of the CPX modules and occupies an address capacity of the CPX system of:

- 8 byte outputs
- 8 byte inputs

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

- 56 byte inputs
- 56 byte outputs

General technical data				
Туре			CPX-FB11	
Fieldbus interface			Either	
			Micro Style bus connection: 2xM12 with IP65, IP67 protection	
			Open Style bus connection: 5-pin terminal strip, IP20	
Baud rate		[kbps]	125, 250, 500	
Addressing range			0 63	
			Set using DIL switch	
Product	Туре		Communication adapter (12 dec.)	
	Code		4554 dec.	
Communication types			Polled I/O, change of state/synchronous, strobed I/O and explicit messaging	
Configuration support			EDS file and bitmaps	
Max. address capacity	Inputs	[byte]	64	
	Outputs	[byte]	64	
LED displays (bus-specific)			MS = Module status	
			NS = Network status	
			IO = I/O status	
Device-specific diagnostics			Module and channel-oriented diagnostics by means of manufacturer-specific	
•			diagnostic object	
Parameterisation			Module and system parameterisation via configuration interface in plain text	
			(EDS)	
			Online in run or program mode	
Additional functions			Storage of the last 40 errors with timestamp (access via EDS)	
			8-bit system status in image table for inputs	
			2-byte inputs and 2-byte outputs, system diagnostics in image table	
Control elements			DIL switch	
Operating voltage	Nominal value	[V DC]	24	
	Permissible range	[V DC]	18 30	
	Power failure buffering	[ms]	10	
Current consumption		[mA]	Typically 200	
Protection class to EN 60529			IP65, IP67	
Temperature range	Operation	[°C]	-5 +50	
	Storage/transport	[°C]	-20 +70	
Materials			PA-reinforced PC	
Grid dimension		[mm]	50	
Dimensions (incl. interlinking bl	ock) W x L x H	[mm]	50 x 107 x 50	
Weight		[g]	120	

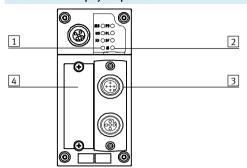


Please observe the general limits and guidelines for the system when configuring the electrical modules.

FESTO

Connection and display components

Technical data – Bus node CPX-FB11



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

Pin allocation for the DeviceNet interf	ace			
Pin allocation	Pin	Signal-specific	Signal	Designation
		core colour ¹⁾		
Sub-D plug				
	1	_	n.c.	Not connected
(+ 1)	2	Blue	CAN_L	Received/transmitted data low
6 + 2	3	Black	0 V bus	0 V CAN interface
	4	-	n.c.	Not connected
8 + 4	5	Blank	Screened	Connection to housing
((9 + + 5))	6	-	n.c.	Not connected
	7	White	CAN_H	Received/transmitted data high
	8	-	n.c.	Not connected
	9	Red	24 V DC bus	24 V DC supply for CAN interface
Micro Style bus connection (M12), inco			1.	
Incoming	1	Blank	Screened	Connection to housing
4 3	2	Red	24 V DC bus	24 V DC supply for CAN interface
(+ + + +	3	Black	0 V bus	0 V CAN interface
1 1 2	4	White	CAN_H	Received/transmitted data high
5	5	Blue	CAN_L	Received/transmitted data low
Outgoing	1	Blank	Screened	Connection to housing
2	2	Red	24 V DC bus	24 V DC supply for CAN interface
3	3	Black	0 V bus	0 V CAN interface
1 0 0 0	4	White	CAN_H	Received/transmitted data high
5 4	5	Blue	CAN_L	Received/transmitted data low
0 (1)				
Open Style bus connection	1	Black	0 V bus	0 V CAN interface
(+)	1	DIACK	U V DUS	V V CAN IIILEITACE
	2	Blue	CAN_L	Received/transmitted data low
 	3	Blank	Screened	Connection to housing
	4	White	CAN_H	Received/transmitted data high
<u>+</u>	5	Red	24 V DC bus	24 V DC supply for CAN interface
Bus connection 7/8"				
2. 1	1	Black	Screened	Connection to housing
	2	Blue	24 V DC	24 V DC supply for CAN interface
3 4 4 4	3	Blank	0 V	0 V CAN interface
\'+ + 7	4	White	CAN_H	Received/transmitted data high
,X\\.	5	Red	CAN_L	Received/transmitted data low
4 5	ر	NCU	CAN_L	necessed/transmitted data tow

¹⁾ Typical for DeviceNet connecting cables

Accessories – Bus node CPX-FB11

Ordering data					
Designation			Part No.	Туре	
Bus node			<u> </u>		
	DeviceNet bus node	526172	CPX-FB11		
Bus connection					
	Sub-D plug	532219	FBS-SUB-9-BU-2x5POL-B		
	Connection block, socket Sub-D 9-pin, plug 7/8"	, 5-pin	571052	CPX-AB-1-7/8-DN	
	Micro Style bus connection, 2xM12		525632	FBA-2-M12-5POL	
	Socket for MicroStyle connection, M12		18324	FBSD-GD-9-5POL	
	Plug for Micro Style connection, M12		175380	FBS-M12-5GS-PG9	
	Open Style bus connection for 5-pin terminal stri	Open Style bus connection for 5-pin terminal strip			
	Terminal strip for Open Style connection, 5-pin		525635	FBSD-KL-2x5POL	
	Inspection cover, transparent	Inspection cover, transparent			
	Inscription label holder for connection block	Inscription label holder for connection block			
	Adapter from 5-pin M12 to mini USB socket and	547432	NEFC-M12G5-0.3-U1G5		
User manual					
	User manual for bus node CPX-FB11	German	526421	P.BE-CPX-FB11-DE	
	>	English	526422	P.BE-CPX-FB11-EN	
		Spanish	526423	P.BE-CPX-FB11-ES	
		French	526424	P.BE-CPX-FB11-FR	
		Italian	526425	P.BE-CPX-FB11-IT	

Terminal CPX

Technical data - Bus node CPX-FB13





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

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

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

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



Application

Bus connection

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

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

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

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

PROFIBUS DP implementation

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

In addition to DPVO, asynchronous communication to the advanced specification DPV1 is supported. DPV1 provides asynchronous access to advanced system information and assigns operation parameters while the controller is running via the user program.

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

With its address capacity of 64 byte inputs and 64 byte outputs, the CPX-FB13 supports any configuration of I/O modules, including pneumatic interface.

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

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

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

Communication between the control block and CPX bus node is established

via the interlinking of the CPX modules and occupies an address capacity of the CPX system of:

- 8 byte outputs
- 8 byte inputs

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

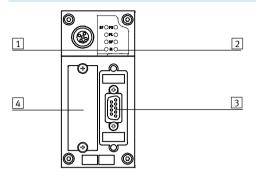
- 56 byte inputs
- 56 byte outputs

General technical data			
Туре			CPX-FB13
Fieldbus interface			Sub-D socket, 9-pin (EN 50 170)
			Galvanically isolated 5 V
Baud rate		[Mbit/s]	0.0096 12
Addressing range			1 125
			Set using DIL switch
Product range			4: Valves
Ident. number			0x059E
Communication types			DPV0: Synchronous communication
			DPV1: Asynchronous communication
Configuration support			GSD file and bitmaps
Max. address capacity	Inputs	[byte]	64
	Outputs	[byte]	64
LED displays (bus-specific)			BF: Bus fault
Device-specific diagnostics			Identifier and channel-oriented diagnostics to EN 50170 (PROFIBUS standard)
Parameterisation			Start-up parameterisation via configuration interface in plain text (GSD)
			Asynchronous parameterisation via DPV1
Additional functions			Storage of the last 40 errors with timestamp (access via DPV1)
			8-bit system status in image table for inputs
			2-byte inputs and 2-byte outputs, system diagnostics in image table
Control elements			DIL switch
Operating voltage	Nominal value	[V DC]	24
	Permissible range	[V DC]	18 30
	Power failure buffering	[ms]	10
Current consumption		[mA]	Typically 200
Protection class to EN 60529			IP65, IP67
Temperature range	Operation	[°C]	-5 +50
	Storage/transport	[°C]	-20 +70
Materials			PA-reinforced PC
Grid dimension		[mm]	50
Dimensions (incl. interlinking b	lock) W x L x H	[mm]	50 x 107 x 50
Weight		[g]	115



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

Connection and display components



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

Pin allocation for PROFIBUS DP interfa	Pin	Signal	Designation
	FIII	Signal	Designation
Sub-D socket		T	To a second seco
	1	n.c.	Not connected
9 0 5	2	n.c.	Not connected
04	3	RxD/TxD-P	Received/transmitted data P
8 0 0 3	4	CNTR-P ¹⁾	Repeater control signal
	5	DGND	Data reference potential (M5V)
[6 0 0 1]	6	VP	Supply voltage (P5V)
	7	n.c.	Not connected
	8	RxD/TxD-N	Received/transmitted data N
	9	n.c.	Not connected
	Housing	Screened	Connection to housing
Bus connection M12 adapter (B-coded)		
Incoming	1	n.c.	Not connected
4, 7, 3	2	RxD/TxD-N	Received/transmitted data N
(+)+	3	n.c.	Not connected
1 +/2	4	RxD/TxD-P	Received/transmitted data P
ј <u>7</u> ш 2	5 and M12	Screened	Connection to FE (functional earth)
	•	ı	
Outgoing	1	VP	Supply voltage (P5V)
3, 4	2	RxD/TxD-N	Received/transmitted data N
\[\oldot\)	3	DGND	Data reference potential (M5V)
	4	RxD/TxD-P	Received/transmitted data P
2/74-1	5 and M12	Screened	Connection to FE (functional earth)

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

Accessories – Bus node CPX-FB13

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

Accessories – Bus node CPX-FB13

Ordering data				
Designation			Part No.	Туре
Bus connection		<u>'</u>		
	Inscription label holder for connection block M1	Inscription label holder for connection block M12		
	Inspection cover, transparent			AK-SUB-9/15-B
	Adapter from 5-pin M12 to mini USB socket and	547432	NEFC-M12G5-0.3-U1G5	
User manual				
	User manual for bus node CPX-FB13	German	526427	P.BE-CPX-FB13-DE
		English	526428	P.BE-CPX-FB13-EN
		Spanish	526429	P.BE-CPX-FB13-ES
		French	526430	P.BE-CPX-FB13-FR
		Italian	526431	P.BE-CPX-FB13-IT

FESTO



Bus node for handling communication between the electrical CPX terminal and a CANopen network master or CANopen network.

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

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

The different CANopen statuses and the fieldbus communication status

are displayed via three additional

LEDs.



Application

Bus connection

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

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

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

CANopen implementation

The CPX-FB14 supports the CANopen protocol in accordance with the specifications DS 301 V4.01 and DS 401 V2.0.

Implementation is based on the CiA Pre-defined Connection Set. There are four PDOs available for fast I/O data exchange. Advanced system information can also be accessed by means of SDO communication. SDO communication also facilitates parameterisation before network startup or while the controller is running via the user program. An example of this is access to the integrated diagnostic memory function, i.e. storage of the last 40 errors with timestamp, module, channel and error type.

With its address capacity, the CPX-FB14 supports a large number of I/O module configurations, including pneumatic interface.

By default, 8 byte digital inputs and 8 byte digital outputs can be addressed via PDO 1.

8 analogue input channels and 8 analogue output channels can be addressed via PDO 2 and 3. Status and diagnostic information can be evaluated via PDO 4.

Additional 8 byte digital inputs and outputs as well as 8 analogue input and output channels can be addressed via mapping.

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

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

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

Communication between the control block and CPX bus node is established

via the interlinking of the CPX modules and occupies an address capacity of the CPX system of:

- 8 byte outputs
- 8 byte inputs

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

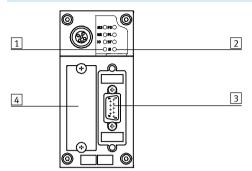
- 56 byte inputs
- 56 byte outputs

General technical data			
Туре			CPX-FB14
Fieldbus interface			Sub-D pin, 9-pin (to DS 102)
			Bus interface galvanically isolated via optocoupler 24 V supply for CAN interface
			via bus
Baud rate		[kbit/s]	125; 250; 500 and 1,000 can be set via DIL switch
Addressing range			Node ID 1 127
			Set using DIL switch
Product range			Digital inputs and outputs
Communication profile			DS 301, V4.01
Device profile			DS 401, V2.0
Number	PDO		4 Tx/4 Rx
	SDO		1 server SDO
Configuration support			EDS file and bitmaps
Max. address capacity	Inputs	[byte]	16 digital, 16 analogue channels
	Outputs	[byte]	16 digital, 16 analogue channels
LED displays (bus-specific)			MS = Module status
			NS = Network status
			IO = I/O status
Device-specific diagnostics			Via emergency message
			Object 1001, 1002 and 1003
Parameterisation			Via SDO
Additional functions			Storage of the last 40 errors with timestamp (access via SDO)
			8-bit system status via transmit PDO 4 (default)
			• 2-byte inputs and 2-byte outputs, system diagnostics via PDO 4
			Minimum boot-up
			Variable PDO mapping
			Emergency message
			Node guarding
			Heart beat
Control elements			DIL switch
Operating voltage	Nominal value	[V DC]	24
	Permissible range	[V DC]	18 30
	Power failure buffering	[ms]	10
Current consumption		[mA]	Typically 200
Protection class to EN 60529			IP65, IP67
Temperature range	Operation	[°C]	-5 +50
	Storage/transport	[°C]	-20 +70
Materials			PA-reinforced PC
Grid dimension		[mm]	50
Dimensions (incl. interlinking blo	ock) W x L x H	[mm]	50 x 107 x 50
Weight		[g]	115



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

Connection and display components



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

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

1) Connected internally via Pin 3

Accessories – Bus node CPX-FB14

Ordering data				
Designation			Part No.	Туре
Bus node				
	CANopen bus node		526174	CPX-FB14
Bus connection				
	Sub-D socket for CANopen with terminating resistor and	programming interface	574588	NECU-S1W9-C2-ACO
	Sub-D plug		532219	FBS-SUB-9-BU-2x5POL-B
	Sub-D plug, angled		533783	FBS-SUB-9-WS-CO-K
	Micro Style bus connection, 2xM12, 5-pin		525632	FBA-2-M12-5POL
	Fieldbus socket for Micro Style connection, M12, 5-pin		18324	FBSD-GD-9-5POL
	Plug for Micro Style connection, M12, 5-pin		175380	FBS-M12-5GS-PG9
	Open Style bus connection		525634	FBA-1-SL-5POL
	Terminal strip for Open Style connection, 5-pin		525635	FBSD-KL-2x5POL
	Inspection cover, transparent		533334	AK-SUB-9/15-B
	Inscription label holder for connection block		536593	CPX-ST-1
	Adapter from 5-pin M12 to mini USB socket and controll	er software	547432	NEFC-M12G5-0.3-U1G5
User manual				
	User manual for bus node CPX-FB14	German	526409	P.BE-CPX-FB14-DE
		English	526410	P.BE-CPX-FB14-EN
		Spanish French	526411 526412	P.BE-CPX-FB14-ES P.BE-CPX-FB14-FR
		Italian	526412	P.BE-CPX-FB14-IT
		ιτατίατι	J2U413	1.DE-CLV-1 D14-11

Terminal CPX FESTO



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

The bus node processes communication with the I/O modules.
The status of the terminal CPX is displayed as a common message via 4 CPX-specific LEDs.

The fieldbus communication status is displayed via 6 INTERBUS-specific LEDs.



Application

Bus connection

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

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

The I/O area is divided into:

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

INTERBUS implementation

The CPX-M-FB20 and CPX-M-FB21 support the INTERBUS protocol to EN 50254.

In addition to cyclic I/O exchange, the optional PCP channel can be used for parameterisation and diagnostic functions.

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

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



Note

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

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

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

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

General technical data					
Туре			CPX-M-FB20/CPX-M-FB21		
Fieldbus interface			Rugged Line fibre-optic cable connection		
Baud rate		[Mbit/s]	0.5 and 2		
Bus type			Remote bus		
Max. address capacity	Inputs	[bit]	96		
	Outputs	[bit]	96		
LED displays	INTERBUS-specific		BA = Bus active		
			FO1 = Fibre-optic cable 1		
			FO2 = Fibre-optic cable 2		
			RC = Remotebus check		
			RD = Remotebus disable		
			UL = Operating voltage for INTERBUS interface		
	CPX-specific		M = Parameterisation		
			SF = System fault		
			US1 = Electronics supply, sensor supply		
			US2 = Load supply		
Device-specific diagnostics			Diagnostic memory		
bevice specific diagnostics			Channel and module-oriented diagnostics		
			Module undervoltage		
Parameterisation			Diagnostic behaviour		
T didilicterisation			Fail-safe response		
			Forcing of channels		
			Signal setup		
			System parameters		
Additional functions			Module and system parameterisation via operator units		
Additional functions			Module and system parameterisation via operator units System status can be represented using process data		
Onerating elements			Additional diagnostic interface for operator units DIL switches		
Operating elements	Nominal value	IV DC1			
Operating voltage	Permissible range	[V DC]	24 (polarity-safe)		
	_	[V DC]	18 30		
Intrinsic current consumption a	t nominal operating voltage	[mA]	Typically 90		
Protection class to EN 60529	0 "	[0.0]	IP65, IP67		
Temperature range	Operation	[°C]	-5 +50		
55 11 (1 1 1 1 C	Storage/transport	[°C]	-20 +70		
CE marking (see declaration of conformity)			To EU EMC Directive		
Housing materials			Aluminium		
Note on materials			RoHS-compliant		
	Grid dimension [mm]		50		
Dimensions (incl. interlinking b		[mm]	100 x 110 x 130		
Product weight	CPX-FB20	[g]	1,070		
	CPX-FB21	[g]	1,255		

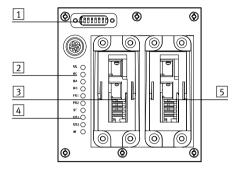


Please observe the general limits and guidelines for the system when configuring the electrical modules.

Terminal CPX FESTO

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

Connection and display components



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

FOC pin allocation	Pin	Wire colour	Designation
·	FIII	Wife Colour	Designation
Incoming			
	Α	Black	Transmitted data
О А	В	Orange	Received data
	1	-	24 V supply for electronics and inputs
В	2	-	0 V supply for electronics and inputs
	3	_	24 V supply for valves and outputs
2	4	_	0 V supply for valves and outputs
4 5	5	-	Functional earth
Outgoing			
	Α	Orange	Transmitted data
ГО	В	Black	Received data
	1	-	24 V supply for electronics and inputs
В	2	-	0 V supply for electronics and inputs
	3	-	24 V supply for valves and outputs
2	4	-	0 V supply for valves and outputs
4	5	_	Functional earth

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

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

FESTO



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

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

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

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



Application

Bus connection

The bus connection can be selected when ordering and is established by means of a screw terminal with IP20

protection, a Sub-D plug with IP65/IP67 protection from Festo or IP20 protection from other

manufacturers.

Both connection types have the function of an integrated T-distributor and

thus support the connection of an incoming and outgoing bus cable.

CC-Link implementation

The CPX bus node CPX-FB23-24 optionally supports the CC-Link versions 2.0 (as function module F24) and 1.1. (as function module F23). These designations are also found in the system diagram for the CPX Maintenance Tool (CPX-FMT) or in the operator unit (CPX-MMI-1) from Festo.

Function module F24 corresponds to CC-Link version 2.0 and supports a maximum of four stations per slave, up to an address capacity 64 bytes of digital I/O and 64 bytes of analogue I/O each.

It is possible to optimise the configuration of the addressing in terms of either cycle time or station.

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

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

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

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

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

Communication between the control block and CPX bus node takes place by interlinking of the CPX modules and takes up the following address capacity in the CPX system:

- 8 byte outputs
- 8 byte inputs

The following address capacity

remains in the control block or CPX system for actuation of the peripherals:

- 56 byte inputs
- 56 byte outputs

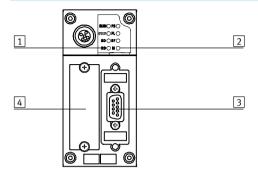
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General technical data				
Туре				CPX-FB23-24
Fieldbus interface				Either
				• Sub-D socket, 9-pin
				 Sub-D plug, for self-assembly
				Screw terminal strip, IP20
Baud rates			[kbps]	156 10,000
Protocol				CC-Link
Max. address capacity, inputs	FB23	RWr	[byte]	32
		Rx	[byte]	14
	FB24	RWr	[byte]	64
		Rx	[byte]	64
Max. address capacity, outputs	FB23	RWw	[byte]	32
		Ry	[byte]	14
	FB24	RWw	[byte]	64
		Ry	[byte]	64
LED displays (bus-specific)				RUN = Communication status
				ERROR = Communication error
				SD = Send data
				RD = Receive data
Device-specific diagnostics				Diagnostic memory
				Channel and module-oriented diagnostics
				Module undervoltage
Parameterisation				Diagnostic behaviour
				Fail-safe response
				 Forcing of channels
				Signal setup
				System parameters
Additional functions				System status can be displayed using process data
				Additional diagnostic interface for operator units
Control elements				DIL switches
Operating voltage	Nominal va	lue	[V DC]	24
	Permissible	e range	[V DC]	18 30
Current consumption			[mA]	Typically 200
Protection class to EN 60529				IP65, IP67
Temperature range	Operation		[°C]	-5 +50
	Storage/tra	insport	[°C]	-20 +70
Materials				PA reinforced, PC
Grid dimension			[mm]	50
Dimensions (incl. interlinking bloc	k) W x L x H		[mm]	50 x 107 x 50
Product weight			[g]	115



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

Connection and display components



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

Pin allocation for the CC-Link interface)		
Pin allocation	Pin	Signal	Designation
Sub-D socket			
	1	n.c.	Not connected
(0 5)	2	DA	Data A
9 0 4	3	DG	Data reference potential
8 0 3	4	n.c.	Not connected
	5	FE ¹⁾	Functional earth
\\ 6 \colon \cdot 1 \	6	n.c.	Not connected
	7	DB	Data B
	8	n.c.	Not connected
	9	n.c.	Not connected
		<u> </u>	
Screw terminal bus connection			
•	1	FG	Functional earth/housing
⊕ 44 ⊕ 88	2	SLD	Screening
<u> </u>	3	DG	Data reference potential
RBA-1-KL-SPOL	4	DB	Data B
PBA-1-K	5	DA	Data A

Accessories – Bus node CPX-FB23-24

Ordering data				
Description			Part No.	Туре
Bus node	CC-Link bus node		526176	CPX-FB23-24
Bus connection				
	Sub-D plug		532220	FBS-SUB-9-GS-2x4POL-B
	Screw terminal bus connection		197962	FBA-1-KL-5POL
	Inspection cover, transparent		533334	AK-SUB-9/15-B
	Inscription label holder for connection block		536593	CPX-ST-1
	Adapter from 5-pin M12 to mini USB socket and control	ller software	547432	NEFC-M12G5-0.3-U1G5
User documentation				
	User documentation for bus node CPX-FB23-24	German	526403	P.BE-CPX-FB23-24-DE
		English	526404	P.BE-CPX-FB23-24-EN
		Chinese	8026069	P.BE-CPX-FB23-24-ZH

Terminal CPX

Technical data – Bus node CPX-FB32

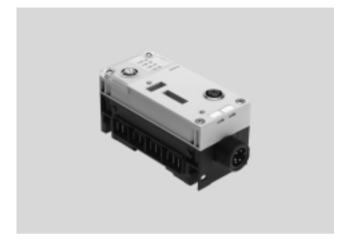




Bus node for handling communication between the electrical CPX terminal and the EtherNet/IP network.

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

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



Application

Bus connection

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

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

EtherNet/IP implementation

The CPX-FB32 supports the two remote I/O and remote controller operating modes.

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

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

In addition to actuation via a bus system, it is possible to use IT technol-

ogies. An integrated web server enables diagnostic data to be visualised via HTML. Various programs support direct access to the data of the device from the automation network.
The EtherNet/IP node for CPX supports the transmission technology that conforms to DIN EN 50173/CAT 5.

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

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

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

Communication between the control block and CPX bus node is established

via the interlinking of the CPX modules and occupies an address capacity of the CPX system of:

- 8 byte outputs
- 8 byte inputs

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

- 56 byte inputs
- 56 byte outputs

General technical data			
Туре			CPX-FB32
Fieldbus interface			Socket M12, D-coded, 4-pin
Baud rate		[Mbit/s]	10/100, full/half duplex
IP addressing			Via DHCP, DIL switch or network software
Max. address capacity, inputs		[byte]	64
Max. address capacity, outputs		[byte]	64
LED displays (bus-specific)			MS = Module status NS = Network status IO = I/O status TP = Link/traffic
Device-specific diagnostics			System, module and channel-oriented diagnostics
Parameterisation			Start-up parameterisation
			Asynchronous parameterisation via Explicit Messaging
Additional functions			 Storage of the last 40 errors with timestamp (access via system diagnostics) 8-bit system status in image table for inputs 2-byte I/O, system diagnostics via image table
Control elements			DIL switch
Operating voltage	Nominal value	[V DC]	24
	Permissible range	[V DC]	18 30
	Power failure buffering	[ms]	10
Current consumption		[mA]	Typically 65
Protection class to EN 60529			IP65, IP67
Temperature range	Operation	[°C]	- 5 +50
	Storage/transport	[°C]	-20 +70
Materials			PA-reinforced PC
Grid dimension		[mm]	50
Dimensions (incl. interlinking blo	ock) W x L x H	[mm]	50 x 107 x 50
Weight		[g]	125

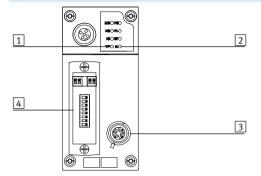


Please observe the general limits and guidelines for the system when configuring the electrical modules.

Terminal CPX FESTO

Technical data – Bus node CPX-FB32

Connection and display components



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

Pin allocation for the fieldbus interface			
Pin allocation	Pin	Signal	Designation
M12 socket, D-coded			
2	1	TD+	Transmitted data+
	2	RD+	Received data+
1-65	3	TD-	Transmitted data-
	4	RD-	Received data-
4	Housing		Screened

Accessories – Bus node CPX-FB32

Ordering data				
Designation			Part No.	Туре
Bus node				
	EtherNet/IP bus node		541302	CPX-FB32
Bus connection				
	Plug M12x1, 4-pin, D-coded		543109	NECU-M-S-D12G4-C2-ET
	Inspection cover, transparent	533334	AK-SUB-9/15-B	
	Inscription label holder for connection block	536593	CPX-ST-1	
	Adapter from 5-pin M12 to mini USB socket and	547432	NEFC-M12G5-0.3-U1G5	
User manual				
USEI IIIdiiudi	User manual for bus node CPX-FB32	German	693134	P.BE-CPX-FB32-DE
	OSCI Manual IOI Dus Houe CI A-1 DJ2	English	693135	P.BE-CPX-FB32-EN
		Spanish	693136	P.BE-CPX-FB32-ES
		French	693137	P.BE-CPX-FB32-FR
		Italian	693138	P.BE-CPX-FB32-IT
		παπαπ	0/3130	1,DE GIA-1072-11

Terminal CPX

Technical data – Bus node CPX-FB33





Bus node for operating the CPX valve terminal on PROFINET.

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

The status of the CPX terminal is displayed as a common message via four CPX-specific LEDs. The fieldbus communication status is displayed via three bus-specific LEDs.



Application

Bus connection

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

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

- Maximum segment length 100 m
- Transmission rate 100 Mbit/s

PROFINET implementation

The CPX-FB33 supports the PROFINET protocol on the basis of the Ethernet standard and TCP/IP technology to IEEE802.3.

This guarantees a data exchange with a high data transmission rate, for example I/O data from sensors, actuators or robot controllers, PLCs

or process equipment. In addition, non-real-time critical information such as diagnostic information, configuration information, etc. can be transferred. The Ethernet bandwidth is sufficient to transfer both data types (real-time and non-real-time) in parallel.

The bus node features LEDs for bus status and CPX peripheral information as well as switch elements, memory stick and a diagnostic interface.

The purpose of the memory stick is to guarantee fast replacement of the bus node in the event of an error.

PROFINET provides the user with

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

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

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

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

Communication between the control block and CPX bus node is established

via the interlinking of the CPX modules and occupies an address capacity of the CPX system of:

- 8 byte outputs
- 8 byte inputs

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

- 56 byte inputs
- 56 byte outputs

General technical data					
Туре			CPX-FB33		
Fieldbus interface			2x socket M12, D-coded, 4-pin		
Baud rate		[Mbit/s]	100		
Protocol			PROFINET RT		
			PROFINET IRT		
Max. address capacity	Inputs	[byte]	64		
, ,	Outputs	[byte]	64		
LED displays	(bus-specific)	- , -	M/P = Maintenance/PROFlenergy		
	, ,		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		
a construction of construction			Undervoltage of modules		
			Diagnostic memory		
Configuration support			GSDML file		
Parameterisation			System parameters		
T drameterisation			Diagnostic behaviour		
			• Signal setup		
			• Fail-safe response		
			• Forcing of channels		
Additional functions			Start-up parameterisation in plain text via fieldbus		
Additional functions			• Fast startup (FSU)		
			Channel-oriented diagnostics via fieldbus		
			Asynchronous data access via fieldbus		
			System status can be represented using process data		
			Additional diagnostic interface for operator units		
			Additional diagnostic interface for operator units Asynchronous data access via Ethernet		
Control elements			DIL switch		
control elements			Optional memory card		
Operating voltage	Nominal value	[V DC]	24		
operating voltage	Permissible range	[V DC]	18 30		
Current consumption	i cimissibic tange	[mA]	Typically 120		
Protection class to EN 60529		נווואן	IP65, IP67		
Temperature range	Operation	[°C]	- 5 +50		
	Storage/transport	[°C]	-20 +70		
Materials	Housing	[0]	Die-cast aluminium		
Grid dimension	Housing	[mm]	50		
Dimensions (incl. interlinking bloo	rk) W x I x H	[mm]	50 x 107 x 50		
Weight	LNJ W A L A II	[g]	280		
weight		เรา	200		



Note

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



- Note

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

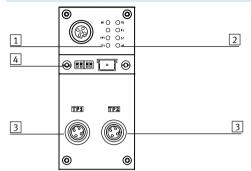
• Self-tapping screws for plastic interlinking blocks

• Screws with metric thread for metal interlinking blocks

Terminal CPX FESTO

Technical data – Bus node CPX-FB33

Connection and display components



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

Pin allocation for the fieldbus interface			
Pin allocation	Pin	Signal	Designation
M12 socket, D-coded			
2	1	TD+	Transmitted data+
	2	RD+	Received data+
1—65	3	TD-	Transmitted data-
919-3	4	RD-	Received data-
	Housing		Screened

Accessories – Bus node CPX-FB33

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

Terminal CPX

Technical data - Bus node CPX-M-FB34





Bus node for operating the CPX valve terminal on PROFINET.

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

The status of the CPX terminal is displayed as a common message via four CPX-specific LEDs. The fieldbus communication status is displayed via three bus-specific LEDs.



Application

Bus connection

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

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

- Maximum segment length 100 m
- Transmission rate 100 Mbit/s

PROFINET implementation

The CPX-M-FB34 supports the PROFINET protocol based on the Ethernet standard and the TCP/IP technology to IEEE802.3. This guarantees a data exchange with a high data transmission rate, for example I/O data from sensors, actuators or robot controllers, PLCs

or process equipment. In addition, non-real-time critical information such as diagnostic information, configuration information, etc. can be transferred.

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

The bus node features LEDs for bus status and CPX peripheral information as well as switch elements, memory stick and a diagnostic interface.

The purpose of the memory stick is to guarantee fast replacement of the bus node in the event of an error.

PROFINET provides the user with

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

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

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

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

Communication between the control block and CPX bus node is established

via the interlinking of the CPX modules and occupies an address capacity of the CPX system of:

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

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

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

General technical data					
Туре			CPX-M-FB34		
Fieldbus interface			2x RJ45 push-pull socket, AIDA		
Baud rate		[Mbit/s]	100		
Protocol			PROFINET RT		
			PROFINET IRT		
Max. address capacity	Inputs	[byte]	64		
	Outputs	[byte]	64		
LED displays	(bus-specific)		M/P = Maintenance/PROFlenergy		
			NF = Network fault		
			TP1 = Network active port 1		
			TP2 = Network active port 2		
	(product-specific)		M = Modify, parameterisation		
			PL = Load supply		
			PS = Electronic supply, sensor supply		
			SF = System fault		
Device-specific diagnostics			Channel and module-oriented diagnostics		
, -			Undervoltage of modules		
			Diagnostic memory		
Configuration support			GSDML file		
Parameterisation			System parameters		
			Diagnostic behaviour		
			Signal setup		
			Fail-safe response		
			Forcing of channels		
Additional functions			Start-up parameterisation in plain text via fieldbus		
			• Fast startup (FSU)		
			Channel-oriented diagnostics via fieldbus		
			Asynchronous data access via fieldbus and via Ethernet		
			System status can be represented using process data		
			Additional diagnostic interface for operator units		
Control elements			DIL switch, optional memory card		
Operating voltage	Nominal value	[V DC]	24		
	Permissible range	[V DC]	18 30		
Intrinsic current consumption at nominal operating voltage [mA]		[mA]	Typically 120		
Protection class to EN 60529			IP65, IP67		
Temperature range	Operation	[°C]	- 5 +50		
	Storage/transport	[°C]	-20 +70		
Material of housing			Die-cast aluminium		
Grid dimension [mm]		[mm]	50		
Dimensions (incl. interlinking block) W x L x H [mm]			50 x 107 x 80		
Weight [g]			280		



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



- Note

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

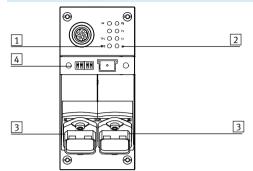
• Self-tapping screws for plastic interlinking blocks

• Screws with metric thread for metal interlinking blocks

Terminal CPX FESTO

Technical data – Bus node CPX-M-FB34

Connection and display components



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

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

Accessories – Bus node CPX-M-FB34

Ordering data									
Designation		Part No.	Туре						
Bus node									
	PROFINET bus node	548751	CPX-M-FB34						
Bus connection									
Du3 connection	RJ45 plug, 8-pin, push-pull		552000	FBS-RJ45-PP-GS					
	Cover cap for bus connection	548753	CPX-M-AK-C						
	Cover cap for bus connection	2873540	CPX-M-AK-D						
	Cover for DIL switch and memory card	548754	CPX-M-AK-M						
	Memory card for PROFINET bus node, 2 MB	568647	CPX-SK-2						
0° 0°	Screws for attaching an inscription label holder to the b	550222	CPX-M-M2,5X8-12X						
	Adapter from 5-pin M12 to mini USB socket and control	547432	NEFC-M12G5-0.3-U1G5						
User manual									
	Electronics manual, CPX bus node, type CPX-M-FB34	German	548759	P.BE-CPX-PNIO-DE					
		English	548760	P.BE-CPX-PNIO-EN					
		Spanish	548761	P.BE-CPX-PNIO-ES					
		French	548762	P.BE-CPX-PNIO-FR					
		Italian	548763	P.BE-CPX-PNIO-IT					

- New CPX-M-FB41

Terminal CPX

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





Bus node for operating the CPX valve terminal on PROFINET.

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

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

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



Application

Bus connection

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

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

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

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

PROFINET implementation

The CPX-M-FB35/CPX-M-FB41 supports the PROFINET protocol based on the Ethernet standard and TCP/IP technology to IEEE802.3. This guarantees a data exchange with a high data transmission rate, for example I/O data from sensors, actuators or robot controllers, PLCs or

process equipment. Furthermore, non real-time critical information such as diagnostic information, configuration information, etc. can be transferred. The Ethernet bandwidth is sufficient to transmit both data types (real-time and non real-time) in parallel.

The bus node features LEDs for bus status and CPX peripheral information as well as switch elements, memory stick and a diagnostic interface. The purpose of the memory stick is to guarantee fast replacement of the bus node in the event of an error.

PROFINET provides the user with

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

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

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

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

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

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

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

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

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



FESTO Terminal CPX

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

General technical data						
Туре			CPX-M-FB35	CPX-M-FB41	-0	
Fieldbus interface			2x SCRJ push-pull socket, AIDA	1x SCRJ push-pull socket, AIDA		
Baud rate		[Mbps]	100			
Protocol			PROFINET RT	PROFINET RT		
			PROFINET IRT	-		
Max. address capacity	Inputs	[byte]	64			
	Outputs	[byte]	64			
LED displays	(bus-specific)		M/P = Maintenance/PROFlenergy	NF = Network fault		
			NF = Network fault	TP1 = Network active port 1		
			TP1 = Network active port 1			
			TP2 = Network active port 2			
	(product-specific)		M = Modify, parameterisation			
			PL = Load supply			
			PS = Electronic supply, sensor su	apply		
			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 fiel	ldbus		
			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 a	t nominal operating voltage	[mA]	Typically 150	Typically 125		
Degree of protection to EN 6052	29		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 b	olock) W x L x H	[mm]	50 x 107 x 80			
Product weight		[g]	280			



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



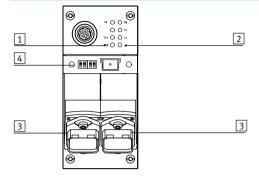
Always use the correct screws for the interlinking block; this depends on whether the block is made of metal $% \frac{1}{2}\left(\frac{1}{2}\right) =\frac{1}{2}\left(\frac{$ or polymer:

• Self-tapping screws for polymer interlinking blocks

• Screws with metric thread for metal interlinking blocks



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



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

Pin allocation for the fieldbus interface	Pin allocation for the fieldbus interface						
Terminal allocation	Pin	Signal	Designation				
SCRJ socket							
2 1	1	TX	Outgoing				
900	2	RX	Incoming				



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

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

Technical data – Bus node CPX-FB36





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

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

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



Application

Bus connection

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

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

EtherNet/IP implementation

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

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

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

In addition to actuation via a bus system, it is possible to use IT technologies. An integrated web server enables diagnostic data to be visualised via HTML. Various programs support direct access to the data of the device from the automation network.

The EtherNet/IP node for CPX supports the transmission technology that conforms to DIN EN 50173/CAT 5.

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

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

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

Communication between the control block and CPX bus node takes place via interlinking of the CPX modules and takes up the following address capacity in the CPX system:

- 8 byte outputs
- 8 byte inputs

The following address capacity

remains in the control block or CPX system for actuation of the peripherals:

- 56 byte inputs
- 56 byte outputs

Technical data – Bus node CPX-FB36

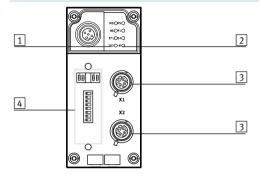
General technical data					
Туре			CPX-FB36		
Fieldbus interface			2x M12x1 socket, D-coded, 4-pin		
Baud rates		[Mbit/s]	10/100		
Protocol			EtherNet/IP		
			Modbus TCP		
Max. address capacity, inputs		[byte]	64		
Max. address capacity, outputs		[byte]	64		
LED displays (bus-specific)			MS = Module status		
			NS = Network status		
			TP1 = Network active port 1		
			TP2 = Network active port 2		
Device-specific diagnostics			Module and channel-oriented diagnostics		
			Module undervoltage		
			Diagnostic memory		
Configuration support			• EDS file		
			L5K export with CPX-FMT		
Parameterisation			Diagnostic behaviour		
			Fail-safe response		
			Forcing of channels		
			Idle mode characteristics		
			Signal setup		
			System parameters		
Additional functions			EtherNet/IP Quickconnect		
			Ring topology (DLR)		
			Acyclic data access via "Explicit Message" and Ethernet		
			Integrated switch		
			IP addressing via DHCP, DIL switch or operator unit		
			Channel-oriented diagnostics via fieldbus		
			Start-up parameterisation in plain text via fieldbus		
			System status can be represented using process data		
			Additional diagnostic interface for operator units		
Control elements			DIL switches		
Operating voltage	Nominal value	[V DC]	24		
	Permissible range	[V DC]	18 30		
Current consumption (at nominal volt	age, without MMI)	[mA]	Typically 100		
Protection class to EN 60529	0 '	[o.c.]	IP65, IP67		
Temperature range	Operation	[°C]	-5 +50		
	Storage/transport	[°C]	-20 +70		
Materials			PA reinforced		
Note on materials		f1	RoHS-compliant		
Grid dimension	Wy Ly II	[mm]	50		
Dimensions (incl. interlinking block)	WXLXH	[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.

Technical data – Bus node CPX-FB36



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

Pin allocation for the fieldbus interface			
Pin allocation	Pin	Signal	Designation
M12 socket, D-coded			
2	1	TD+	Transmitted data+
Ţ	2	RD+	Received data+
1—65	3	TD-	Transmitted data-
	4	RD-	Received data-
	Hous-	FE	Screening
Å	ing		

Accessories – Bus node CPX-FB36

Ordering data				
Designation			Part No.	Туре
Bus node				
	EtherNet/IP bus node	1912451	CPX-FB36	
Bus connection				
	Plug M12x1, 4-pin, D-coded		543109	NECU-M-S-D12G4-C2-ET
	Inspection cover, transparent	533334	AK-SUB-9/15-B	
	Inscription label holder for connection block		536593	CPX-ST-1
	5-pin M12 to mini USB socket adapter and controller s	547432	NEFC-M12G5-0.3-U1G5	
Manual				
	Electronics manual, CPX bus node, type CPX-FB36	German	8024074	P.BE-CPX-FB36-DE
	7,7,7	English	8024075	P.BE-CPX-FB36-EN
		Spanish	8024076	P.BE-CPX-FB36-ES
		French	8024077	P.BE-CPX-FB36-FR
		Italian	8024078	P.BE-CPX-FB36-IT
		Chinese	8024079	P.BE-CPX-FB36-ZH

Technical data – Bus node CPX-FB37





Bus node for operating the CPX valve terminal on EtherCAT.

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

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

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



Application

Bus connection

The bus connection is established via two M12x1 sockets, D-coded to IEC61076-2-101 with degree of protection to IP65, IP67. Both connections are equivalent 100BaseTX Ethernet ports with integrated auto MDI functionality (cross-over and patch cable can be used) that are brought together via an internal switch.

- Maximum segment length 100 m
- Transmission rate 100 Mbps

EtherCAT implementation

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

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

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

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

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

Specific EtherCAT functions:

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

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

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

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

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

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

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

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

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



Technical data - Bus node CPX-FB37

General technical data					
Туре			CPX-FB37		
Fieldbus interface			2x M12x1 socket, 4-pin, D-coded		
Baud rates		[Mbps]	100		
Protocol			EtherCAT		
Max. address capacity	Inputs	[byte]	64		
	Outputs	[byte]	64		
LED displays	Bus-specific		Error = Communication error		
			L/A1 = Network active port 1		
			L/A2 = Network active port 2		
			Run = Communication status		
	Product-specific		M = Modify, parameterisation		
			PL = Load supply		
			PS = Electronic supply, sensor supply		
			SF = System fault		
Device-specific diagnostics			Channel and module-oriented diagnostics		
			Undervoltage of modules		
			Diagnostic memory		
Configuration support			ESI file		
Parameterisation			System parameters		
			Diagnostic behaviour		
			Signal setup		
			Fail-safe response		
			Forcing of channels		
Additional functions			System status can be displayed using process data		
			Additional diagnostic interface for operator units		
			Emergency message		
			Acyclic data access via fieldbus		
			Diagnostic object		
			Compatibility mode for the CPX-FB38		
			Modular device profile (MDP)		
			Variable PDO mapping		
Control elements		0.00	DIL switches		
Operating voltage	Nominal value	[V DC]	24		
	Permissible range	[V DC]	18 30		
Current consumption		[mA]	Typically 100		
Degree of protection to EN 60529	Operation	[oc]	IP65, IP67		
Temperature range	Operation Storage /transport	[°C]	-5 +50 -20 +70		
Materials	Storage/transport Housing	[°C]	-20 +70 Reinforced PA		
Note on materials	HUUSHIK				
Grid dimension		[mm]	RoHS-compliant		
Dimensions (incl. interlinking block	V) W v I v H	[mm] [mm]	50		
Product weight	N) W A L A II	[g]	50 x 107 x 50 125		
i roduct weight		ISI	123		



Note

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



- Note

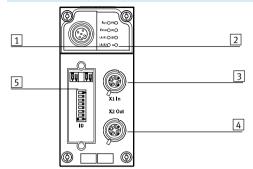
Always use the correct screws for the interlinking block; this depends on whether the block is made of metal or polymer:

• Self-tapping screws for polymer interlinking blocks

• Screws with metric thread for metal interlinking blocks



Technical data – Bus node CPX-FB37



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

Pin allocation for the fieldbus interface			
Terminal allocation	Pin	Signal	Designation
M12x1 socket, D-coded			
2	1	TD+	Transmitted data+
	2	RD+	Received data+
1—0	3	TD-	Transmitted data-
919	4	RD-	Received data-
4	Housing	FE	Screening



FESTO

Accessories – Bus node CPX-FB37

Ordering data				
Description			Part No.	Туре
Bus node				
	EtherCAT bus node	2735960	CPX-FB37	
Bus connection				
	Plug connector M12x1, 4-pin, D-coded		543109	NECU-M-S-D12G4-C2-ET
	Inspection cover, transparent	533334	AK-SUB-9/15-B	
	Cover cap for sealing unused bus connections (10 piec	es)	165592	ISK-M12
	Inscription label holder for connection block		536593	CPX-ST-1
	5-pin M12 adapter for mini USB socket and controller	547432	NEFC-M12G5-0.3-U1G5	
User documentation				
	Electronics manual, CPX bus node, type CPX-FB37	German	8029674	P.BE-CPX-FB37-DE
		English	8029675	P.BE-CPX-FB37-EN
		Spanish	8029676	P.BE-CPX-FB37-ES
~		French	8029677	P.BE-CPX-FB37-FR
		Italian	8029678	P.BE-CPX-FB37-IT
		Chinese	8029679	P.BE-CPX-FB37-ZH

Technical data – Bus node CPX-FB38

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Bus node for operating the CPX valve terminal on EtherCAT.

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

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



Application

Bus connection

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

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

- Maximum segment length 100 m
- Transmission rate 100 Mbit/s

EtherCAT implementation

The CPX-FB38 supports the EtherCAT protocol based on the Ethernet standard and the TCP/IP technology to IEEE802.3.

This guarantees a data exchange with a high data transmission rate, for example I/O data from sensors,

actuators or robot controllers, PLCs or process equipment. In addition, non-real-time critical information such as diagnostic information, configuration information, etc. can be transferred.

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

The bus node features LEDs for bus status and CPX peripheral information as well as switch elements and

a diagnostic interface. The bus node can be used as a remote I/O or remote controller. All information relevant to the CPX can be read out and, dependent on the function, changed via an MMI/FMT.

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

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

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

Communication between the control block and CPX bus node is established

via the interlinking of the CPX modules and occupies an address capacity of the CPX system of:

- 8 byte outputs
- 8 byte inputs

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

- 56 byte inputs
- 56 byte outputs

Technical data – Bus node CPX-FB38

General technical data					
Туре			CPX-FB38		
Fieldbus interface			2x M12x1 socket, 4-pin, D-coded		
Baud rate		[Mbit/s]	100		
Max. address capacity, inputs		[byte]	64		
Max. address capacity, outputs		[byte]	64		
LED displays	(bus-specific)		Error = Communication error		
			L/A1 = Network active port 1		
			L/A2 = Network active port 2		
			Run = Communication status		
	(product-specific)		M = Modify, parameterisation		
			PL = Load supply		
			PS = Electronic supply, sensor supply		
			SF = System fault		
Device-specific diagnostics			Channel and module-oriented diagnostics		
			Undervoltage of modules		
			Diagnostic memory		
Configuration support			XML file		
Parameterisation			System parameters		
			Diagnostic behaviour		
			Signal setup		
			Fail-safe response		
			Forcing of channels		
Additional functions			System status can be represented using process data		
			Additional diagnostic interface for operator units		
Control elements			DIL switch		
Operating voltage	Nominal value	[V DC]	24		
	Permissible range	[V DC]	18 30		
	Power failure buffering	[ms]	10		
Current consumption		[mA]	Typically 100		
Protection class to EN 60529			IP65, IP67		
Temperature range	Operation	[°C]	-5 +50		
	Storage/transport	[°C]	-20 +70		
Materials	Housing		Reinforced PA		
Grid dimension		[mm]	50		
Dimensions (incl. interlinking blo	ock) W x L x H	[mm]	50 x 107 x 50		
Weight		[g]	125		



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

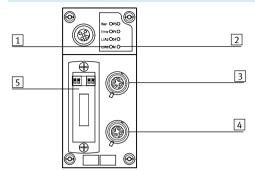


Always use screws appropriate to the interlinking block (metal or plastic):

• Self-tapping screws for plastic interlinking blocks

• Screws with metric thread for metal interlinking blocks

Technical data – Bus node CPX-FB38



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

Pin allocation for the fieldbus interface			
Pin allocation	Pin	Signal	Designation
M12x1 socket, D-coded			
2	1	TD+	Transmitted data+
	2	RD+	Received data+
1—0	3	TD-	Transmitted data-
	4	RD-	Received data-
4	Housing		Screened

Accessories – Bus node CPX-FB38

Ordering data				
Designation			Part No.	Туре
Bus node				
	EtherCAT bus node	552046	CPX-FB38	
Bus connection				
	M12x1 plug, 4-pin, D-coded		543109	NECU-M-S-D12G4-C2-ET
	Inspection cover, transparent	533334	AK-SUB-9/15-B	
(Arrival)	Cover cap for sealing unused bus connections (10 piec	es)	165592	ISK-M12
	Inscription label holder for connection block		536593	CPX-ST-1
	Adapter from 5-pin M12 to mini USB socket and contro	ller software	547432	NEFC-M12G5-0.3-U1G5
User manual			"	
OSCI IIIdiludi	Electronics manual, CPX bus node, type CPX-FB38	German	562524	P.BE-CPX-FB38-DE
	Literation in an automotion type of ATB30	English	562525	P.BE-CPX-FB38-EN
		Spanish	562526	P.BE-CPX-FB38-ES
		French	562527	P.BE-CPX-FB38-FR
		Italian	562528	P.BE-CPX-FB38-IT
		itatiali	302320	I.DE GIATIDOGII



Technical data – Bus node CPX-FB39



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

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

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



Application

Bus connection

The bus connection is established via two M12x1 plug connectors, D-coded to IEC947-5-2 with degree of protection to IP65, IP67. The connections are equipped with automatic detection for the incoming and outgoing connection.

The Sercos III bus node can be used to connect the CPX valve terminal to the standardised Sercos III bus.

Sercos II uses the Ethernet standard (IEEE802.3) and TCP/IP technology for communication in an industrial

environment.

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

information that is not real-time critical, such as diagnostics or configuration information.

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Web servers

In addition to activation via a bus system, it is possible to use IT

technologies. An integrated web server enables diagnostic data to be

visualised via HTML. Various programs support direct access to the device

data from the automation network.

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

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

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

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

provides the communication interface to the PLC.

Communication between the control block and CPX bus node takes place by interlinking the CPX modules and takes up the following address capacity in the CPX system:

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

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

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



Technical data – Bus node CPX-FB39

General technical data					
Туре			CPX-FB39		
Fieldbus interface			2x M12x1 socket, D-coded, 4-pin		
Baud rates		[Mbps]	100 full/half duplex		
Protocol			Sercos III		
Max. address capacity	Inputs	[byte]	64		
	Outputs	[byte]	64		
LED displays	Bus-specific		S = Sercos LED		
, .			SD = Sercos sub-device LED		
			TP1 = Network active port 1		
			TP2 = Network active port 2		
	Product-specific		M = Modify, parameterisation		
	,		PL = Load supply		
			PS = Electronics supply, sensor supply		
			SF = System fault		
Device-specific diagnostics			Module and channel-oriented diagnostics		
Derroe speeme anagmostics	bevice specific diagnostics		Undervoltage of modules		
			Diagnostic memory		
Configuration support			SDDML file		
Parameterisation			Diagnostic behaviour		
Talameterisation			Fallback output data		
			Forcing of channels		
			• Signal setup		
			• System parameters		
Additional functions			Acyclic and cyclic data access via Sercos		
Additional functions			IP addressing via Sercos parameters or operator unit		
			Channel-oriented diagnostics via fieldbus		
			Start-up parameterisation in plain text via fieldbus		
			System status can be displayed using process data		
			Additional diagnostic interface for operator units		
Control elements			DIL switches		
Operating voltage	Nominal value	[V DC]	24		
operating voltage	Permissible range	[V DC]	18 30		
Current consumption (at nomina		[mA]	Typically 100		
Degree of protection to EN 6052		liiivì	IP65, IP67		
Temperature range	Operation	[°C]	- 5 +50		
remperature range	Storage/transport	[°C]	-20 +70		
Materials	Storage/ transport	[~]	PA reinforced		
Note on materials			RoHS compliant		
Grid dimension		[mm]	50		
Dimensions (incl. interlinking b	lock) W x L x H	[mm]	50 x 107 x 50		
Product weight	IUCK) W A L A II	[g]	125		
r roudet weight		ISI	143		

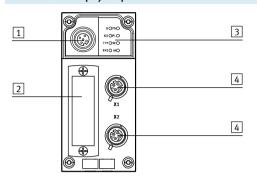


Please observe the general limits and guidelines for the system when configuring the electrical modules.



Technical data – Bus node CPX-FB39

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

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



Terminal CPX
Accessories – Bus node CPX-FB39

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Ordering data				
Description			Part No.	Туре
Bus node				
	Ethernet Sercos III bus node	2093101	CPX-FB39	
Bus connection				
	Plug connector M12x1, 4-pin, D-coded	543109	NECU-M-S-D12G4-C2-ET	
	Inspection cover, transparent	533334	AK-SUB-9/15-B	
Car D	Cover cap for sealing unused bus connections (10 pie	eces)	165592	ISK-M12
	Inscription label holder for connection block		536593	CPX-ST-1
	5-pin M12 to mini USB socket adapter and controller	547432	NEFC-M12G5-0.3-U1G5	
User Documentation				
	User Documentation for bus node CPX-FB39	8028632	P.BE-CPX-FB39-DE	
		English	8028633	P.BE-CPX-FB39-EN
		Spanish	8028634	P.BE-CPX-FB39-ES
		French	8028635	P.BE-CPX-FB39-FR
		Italian	8028636	P.BE-CPX-FB39-IT
		Chinese	8028637	P.BE-CPX-FB39-ZH

Technical data – Bus node CPX-FB40





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

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



Application

Bus connection

The bus connection is established via an M12x1 plug connector, D-coded to IEC947-5-2 with degree of protection to IP65, IP67.

Ethernet POWERLINK uses the Ethernet standards and TCP/IP technology (IEEE802.3) for communication in an industrial environment and integrates all CANopen mechanisms. It includes all the key features of standard Ethernet, including

internode communication, hotplug capability and free selection of network topology.

Ethernet POWERLINK fulfils the realtime requirements using a mix of timeslot and polling procedures. In other words, defined times are reserved on the Ethernet lines exclusively for transferring real-time data. Only network participants which have previously been polled by the controller are able to transmit data during these timeslots.

Ethernet POWERLINK implementation

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

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

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

diagnostic data to be visualised via HTML. Various programs support direct access to the device data from the automation network. The Ethernet POWERLINK node for CPX supports the transmission technology that conforms to DIN EN 50173/CAT 5 as an integrated interface.

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

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

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

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

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

- 8 byte outputs
- 8 byte inputs

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

- 56 byte inputs
- 56 byte outputs



Technical data – Bus node CPX-FB40

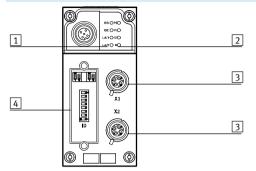
General technical data			
Туре			CPX-FB40
Fieldbus interface			2x M12x1 socket, D-coded, 4-pin
Baud rates		[Mbps]	100
Protocol		r spec	Ethernet POWERLINK V2
Max. address capacity	Inputs	[byte]	64
,	Outputs	[byte]	64
LED displays	Bus-specific	[.,,]	BE = POWERLINK error
			BS = POWERLINK status
			L/A1 = Link/activity port 1
			L/A2 = Link/activity port 2
	Product-specific		M = Modify, parameterisation
			PL = Load supply
			PS = Electronic supply, sensor supply
			SF = System fault
Device-specific diagnostics			Module and channel-oriented diagnostics
Server specific anagmostics			Undervoltage of modules
			Diagnostic memory
Configuration support			• XDC file
comgaration support			• XDD file
Parameterisation			Diagnostic behaviour
			• Fail-safe response
			Forcing of channels
			Signal setup
			System parameters
Additional functions			Acyclic data access via "SDO" and Ethernet
			Integrated hub
			IP addressing via DHCP, DIL switch or operator unit
			Channel-oriented diagnostics via fieldbus
			Start-up parameterisation in plain text via fieldbus
			System status can be displayed using process data
			Additional diagnostic interface for operator units
Control elements			DIL switches
Operating voltage	Nominal value	[V DC]	24
	Permissible range	[V DC]	18 30
	Protection against incor	rect polarity	For operating voltage
Current consumption (at nominal vo	ltage, without MMI)	[mA]	Typically 100
Degree of protection to EN 60529	-		IP65, IP67
Temperature range	Operation	[°C]	-5 +50
	Storage/transport	[°C]	-20 +70
Materials			PA reinforced
Note on materials			RoHS-compliant
Grid dimension		[mm]	50
Dimensions (incl. interlinking block)) W x L x H	[mm]	50 x 107 x 50
Product weight		[g]	125



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



Technical data – Bus node CPX-FB40



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

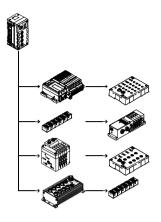
Pin allocation for the fieldbus interface			
Terminal allocation	Pin	Signal	Designation
M12x1 socket, D-coded			
2	1	TD+	Transmitted data+
	2	RD+	Received data+
1-65	3	TD-	Transmitted data-
□ □ 3	4	RD-	Received data-
	Hous-	FE	Screening
Å	ing		



Terminal CPXAccessories – Bus node CPX-FB40

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

Technical data – CPX-CP interface



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

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

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



Application

CP connection

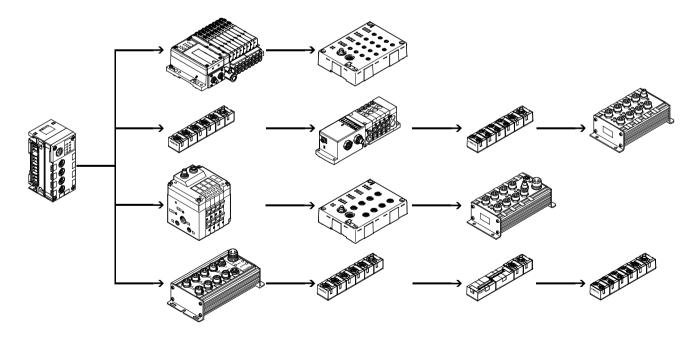
As well as transmitting the communication data, the max. four CP strings of a CPX-CP interface also transmit the supply voltage to the connected sensors and the load supply to the valves (or outputs). Both circuits are

supplied separately with 24 V, but with a common reference potential. The valve terminals with CP string extension (or outputs) are supplied with voltage for the electronics and valves by the interlinking block.

The following combinations are made possible by the CP interface:

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

Configuration example - CP interface with CP modules



Technical data - CPX-CP interface

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Implementation

The CPX-CP interface supports the CPI system:

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

The following CP module variants are available:

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

CPI modules support the following functions:

- · Module-oriented diagnostics
- Module/channel-oriented parameterisation
- Support for all functions by the CPX-MMI or CPX-FMT operator unit
- Module can be positioned anywhere within the string

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

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

Note

When arranging the CP modules it should be taken into consideration

that CP input modules without CPI functionality should always be placed at the end of a string.

Configuration

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

- Max. one output module or one valve terminal without CPI functionality
- Max. one output module without CPI functionality or one valve terminal with CP string extension
- Any number of CP modules with CPI functionality, up to the $\ensuremath{\mathsf{maximum}}$ limit of 4 modules and/ or 32 inputs/32 outputs per string



Note

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

Maximum extension:

- 4 input modules and 4 valve terminals/output modules without **CPI** functionality
- 16 CP modules with CPI functionality

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

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

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

Technical data – CPX-CP interface

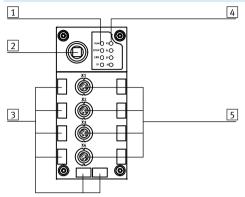
General technical data					
Туре			CPX-CP-4-FB		
Brief description			CP interface		
Max. number of	CP strings		4		
	CP modules per string		4		
	Outputs per string		32		
	Inputs per string		32		
CP connection			M9 socket, 5-pin		
Baud rate		[kbit/s]	1,000		
Cycle time	CP modules without CPI functionality	[ms]	4		
	CP modules with CPI functionality	[ms]	2		
LED displays			L1 4 = Status of the CP string 1 4 PS = Electronic supply, sensor supply PL = Load supply RN = Status of the CP system SF = System fault		
Device-specific diagnostics			Via bus node		
Operating voltage	Nominal value	[V DC]	24 (reverse polarity protected)		
, , ,	Permissible range	[V DC]	1830		
	Power failure buffering	[ms]	20		
Supply voltage of sensors		[V DC]	24 ±25% coming from bus node		
Load voltage of actuators		[V DC]	24 ±10% coming from bus node		
Current consumption	Without CP modules	[A]	Max. 0.2		
	Per CP string	[A]	Max. 1.6		
Protection class to EN 60529			IP65, IP67		
Temperature range	Operation	[°C]	-5 +50		
	Storage/transport	[°C]	-20 +70		
Materials			PA PA		
Grid dimension		[mm]	50		
Dimensions (incl. interlinking blo	ock) W x L x H	[mm]	50 x 107 x 45		
Weight		[g]	140		



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

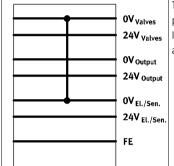
Accessories CPX-CP interface

Connection and display components



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

Power supply



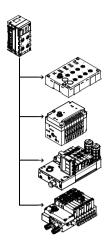
The module combines the 0 V potential of the power supply for electronics and sensors with the 0 V potential of the power supply for valves.

If all poles of the valves of a pneumatic interface connected to the right of the CP interface are to be switched off, an appropriate interlinking block with additional power supply must be used to the right of the CP interface.

Accessories CPX-CP interface

Ordering data				
Designation			Part No.	Туре
CP interface				
20003	Interface for max. 16 I/O modules and valve terminals of the CPI system			CPX-CP-4-FB
Bus connection				
	Cover cap	M12	165592	ISK-M12
	Connecting cable, angled plug, angled socket	0.25 m	540327	KVI-CP-3-WS-WD-0,25
	&))	0.5 m	540328	KVI-CP-3-WS-WD-0,5
		2 m	540329	KVI-CP-3-WS-WD-2
•		5 m	540330	KVI-CP-3-WS-WD-5
		8 m	540331	KVI-CP-3-WS-WD-8
	Connecting cable, straight plug, straight socket	2 m	540332	KVI-CP-3-GS-GD-2
		5 m	540333	KVI-CP-3-GS-GD-5
THE REAL PROPERTY.		8 m	540334	KVI-CP-3-GS-GD-8
	Inscription label holder for connection block		536593	CPX-ST-1
			•	
User manual				
	User manual for CPX-CP interface	German	539293	P.BE-CPX-CP-DE
	:	English	539294	P.BE-CPX-CP-EN
		Spanish	539295	P.BE-CPX-CP-ES
		French	539296	P.BE-CPX-CP-FR
		Italian	539297	P.BE-CPX-CP-IT

Technical data - Interface CPX-CTEL



The electrical interface CPX-CTEL master establishes the connection to modules with I-Port interface (device) from the CTEL/CTEU series. The I/O data from the connected devices is transferred to the connected CPX bus node and therefore transferred to the higher-level controller via fieldbus. A maximum of 4 devices can be connected to a CPX-CTEL master via appropriate M12- interfaces.



Application

I-Port interface

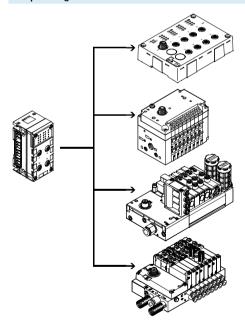
As well as transmitting the communication data, the I-Port interfaces of a CPX-CTEL master also transmit the power supply for the

connected sensors and the load supply for the valves (or outputs). Both circuits are supplied separately with 24 V, with a separate reference potential.

The connecting cables used must meet

the increased requirements resulting from their double function as a signal line and power supply cable.

Sample configuration – CPX-CTEL master with CTEL modules



The CPX-CTEL master provides four I-Port interfaces to which one device each can be connected. I-Port is an interface for exchanging serial data for connecting decentralised modules or valve terminals from Festo. The I-Port interface is based on IO-Link and is compatible with it in certain areas.

The connection type corresponds to a star topology. In other words, only one module or valve terminal can be connected to each I-Port.

The restrictions compared to IO-Link include:

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

Technical data – Interface CPX-CTEL

FESTO

Implementation

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

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

The following device variants are available:

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

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

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

Example:

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

Configuration

Setting

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

Manual configuration

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

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

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

Automatic configuration

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

Power supply for I-Port devices

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

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

The power supply for devices and inputs comes from the power supply for the electronics and sensors of the CPX terminal.

The power supply for outputs and valves comes from the power supply

for the valves of the CPX terminal.

The interlinking block with additional power supply enables a separate voltage supply for valves and outputs. This allows this supply voltage to be

switched off separately.
In other words, the valves and outputs of the connected I-Port devices can be switched off separately without having to switch off the devices themselves.

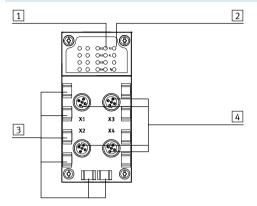
Technical data – Interface CPX-CTEL

General technical data			
Туре			CPX-CTEL-4-M12-5POL
Protocol			I-Port
Max. address capacity	Outputs	[bit]	256
	Inputs	[bit]	256
I-Port connection			4x M12 socket, 5-pin, A-coded
Number of I-Port interfaces			4
Max. cable length		[m]	20
Internal cycle time		[ms]	1 per 8 bits of user data
Electrical isolation	Channel – channel		No
	Channel – internal bus		Yes, using an intermediate supply
LED displays			X1 4 = Status of the I-Port interface 1 4
			PS = Electronics supply
			PL = Load supply
			- L - = Module fault
Diagnostics			Communication error
			Module short circuit
			Module-oriented diagnostics
			Undervoltage
Parameterisation			Diagnostic behaviour
			Failsafe per channel
			Forces per channel
			Idle mode per channel
			Module parameters
			Tool change mode
Additional functions			Tool change mode
Operating elements			DIL switch
Operating voltage	Nominal value	[V DC]	24 (reverse polarity protected)
	Permissible range	[V DC]	18 30
	Power failure buffering	[ms]	10
Intrinsic current consumption at	nominal operating voltage	[mA]	Typically 65
Max. power supply per channel		[A]	4x 1.6
Max. residual output current per	channel	[A]	4x 1.6
Protection class to EN 60529			IP65, IP67
Temperature range	Operating	[°C]	-5 +50
	Storage/transport	[°C]	-20 +70
Materials			PA reinforced, PC
Note on materials			RoHS-compliant
Grid dimension		[mm]	50
Dimensions (incl. interlinking blo	ock) W x L x H	[mm]	50 x 107 x 55
Product weight		[g]	110



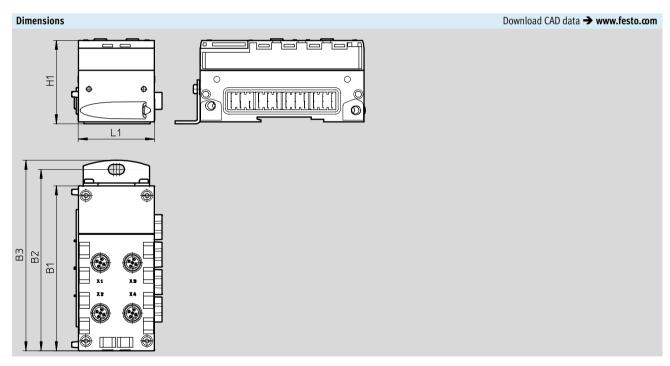
Please observe the general limits and guidelines for the system when configuring the electrical modules.

Technical data – Interface CPX-CTEL



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

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



Туре	B1	B2	В3	H1	L1
CPX-CTEL-4-M12-5POL	108.1	118.9	124.9	55.1	50



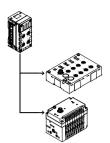
Accessories – Interface CPX-CTEL



Ordering data					
Designation			Part No.	Туре	
CPX-CTEL master					
	Interface for max. 4 I/O modules and valve ter	1577012	CPX-CTEL-4-M12-5POL		
Bus connection					
	Cover cap	M12	165592	ISK-M12	
	Inscription label holder for manifold block	536593	CPX-ST-1		
Connecting cable					
				NEBU-M12G5-E-5-Q8N-M12G5	
M To The second		574322	NEBU-M12G5-E-7.5-Q8N-M12G5		
N. S.		574323	NEBU-M12G5-E-10-Q8N-M12G5		
Manual					
	Manual CPX-CTEL master	German	574600	P.BE-CPX-CTEL-DE	
		English	574601	P.BE-CPX-CTEL-EN	
		Spanish	574602	P.BE-CPX-CTEL-ES	
		French	574603	P.BE-CPX-CTEL-FR	
		Italian			

Technical data – Interface CPX-CTEL-2





The electrical interface CPX-CTEL-2-... enables the connection of modules with IO-Link interface (IO-Link device) to the CPX terminal. The I/O data of the connected devices are transmitted to the connected CPX bus node and thus to the higher-order controller via fieldbus.

A maximum of two IO-Link devices can be connected to an electrical interface CPX-CTEL-2-... via the corresponding M12 interfaces.



Application

IO-Link interface

The communication system IO-Link is used to exchange serial data from decentralised function modules (devices) at the field level.

The electrical interface CPX-CTEL-2-... provides two IO-Link interfaces to the

outside, on each of which one device can be connected.

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

The address space that the module makes available and assigns accordingly in the CPX system can be configured according to various presettings.

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

Restrictions

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

 The process data length of the inputs and outputs is limited to 16 bytes per port for inputs and outputs • The driver strength on the C/Q line is limited to 250 mA

• SIO mode is not supported

Power supply for devices

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

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

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

The power supply for the outputs and valves is supplied by the power supply

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

separately.

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

Technical data – Interface CPX-CTEL-2

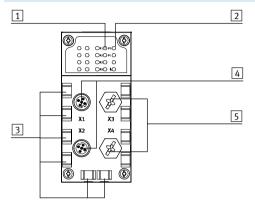
General technical data					
Туре			CPX-CTEL-2-M12-5POL-LK		
Protocol			IO-Link, master version V 1.0		
Max. address capacity	Outputs	[bit]	256		
	Inputs	[bit]	256		
I-Port connection			2x socket M12, 5-pin, A-coded		
Number of IO-Link interfaces			2		
Max. cable length		[m]	20		
Internal cycle time		[ms]	1 per 8 bits of user data		
Electrical isolation	Channel – channel		No		
	Channel – internal bus		Yes, using an intermediate supply		
LED displays			X1 2 = status of the IO-Link interface 1 2		
			PS = Electronic supply		
			PL = Load supply		
			- L - Module error		
Diagnostics			Communication error		
			Module short circuit		
			Module-oriented diagnostics		
			Undervoltage		
Parameterisation			Diagnostic behaviour		
			Fail-safe mode per channel		
			Forcing per channel		
			Idle mode per channel		
			Module parameters		
Additional functions			-		
Control elements			DIL switches		
Operating voltage	Nominal value	[V DC]	24 (polarity-safe)		
	Permissible range	[V DC]	18 30		
	Power failure buffering	[ms]	10		
Intrinsic current consumption at nor	ninal operating voltage	[mA]	Typically 65		
Max. power supply per channel		[A]	2 x 1.6		
Max. residual current of outputs per	channel	[A]	2x 1.6		
Degree of protection to EN 60529			IP65, IP67		
Temperature range	Operation	[°C]	-5 +50		
	Storage/transport	[°C]	-20 +70		
Materials			PA reinforced, PC		
Note on materials			RoHS-compliant		
Grid dimension [mm]		[mm]	50		
Dimensions (incl. interlinking block) W x L x H [mm]		[mm]	50 x 107 x 55		
Product weight		[g]	110		



- Note

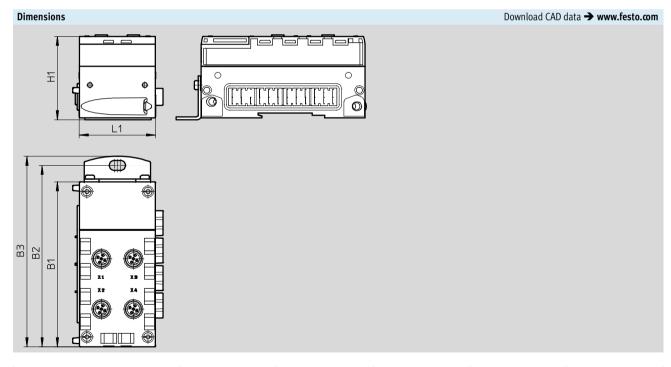
Please observe the general limits and guidelines for the system when configuring the electrical modules.

Technical data – Interface CPX-CTEL-2



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

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



Туре	B1	B2	В3	H1	L1
CPX-CTEL-2-M12-5POL-LK	108.1	118.9	124.9	55.1	50

Interface accessories CPX-CTEL-2

Ordering data				
Designation			Part No.	Туре
CPX CTEL-Master, I	O-Link			
	Interface for max. 2 I/O modules and valve terminals with IO-Link interface (devices)			CPX-CTEL-2-M12-5POL-LK
Bus connection				
	Cover cap	M12	165592	ISK-M12
	Connecting cable M12-M12, 5-pin, straight plug-	5 m	574321	NEBU-M12G5-E-5-Q8N-M12G5
	straight socket	7.5 m	574322	NEBU-M12G5-E-7.5-Q8N-M12G5
STATE OF THE PARTY		10 m	574323	NEBU-M12G5-E-10-Q8N-M12G5
	Inscription label holder for connection block		536593	CPX-ST-1
User documentatio	n			
	User documentation for CPX CTEL-Master	German	8034115	P.BE-CPX-CTEL-LK-DE
	•	English	8034116	P.BE-CPX-CTEL-LK-EN
		Spanish	8034117	P.BE-CPX-CTEL-LK-ES
		French	8034118	P.BE-CPX-CTEL-LK-FR
		Italian	8034119	P.BE-CPX-CTEL-LK-IT
		Swedish	8034120	P.BE-CPX-CTEL-LK-ZH

Control block CPX-CM-HPP

FESTO

Technical data

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

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



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

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

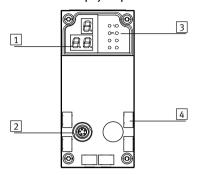
Operating and environmental conditions				
Ambient temperature	[°C]	−5 +50		
Storage temperature	[°C]	-20 +70		
CE mark (see declaration of conformity)		To EU Low Voltage Directive		

Control block CPX-CM-HPP



Technical data

Connection and display components



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

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

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

Control block CPX-CM-HPP



Accessories

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

Ordering data – Bus co	onnection		Part No.	Туре
Connecting cable			1 3.17	777-
	Connecting cable	2 m	563711	NEBC-M9W5-K-2-N-LE3
		5 m	563712	NEBC-M9W5-K-5-N-LE3
	Plug for CAN bus interface, Sub-D, 9-pin, without terminating resistor		533783	FBS-SUB-9-WS-CO-K
Inscription label	In a citation labelle alder from a cife (delta).		52/502	CDV CT 4
	Inscription label holder for manifold block		536593	CPX-ST-1
Documentation				
	Manual – Control block CPX-CM-HPP	German	568683	P.BE-CPX-CM-HPP-DE
		English	568684	P.BE-CPX-CM-HPP-EN

Axis controllers CPX-CMAX Technical data

FESTO

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



General technical data			
Operating voltage			
Operating voltage range		[V DC]	18 30
Nominal operating voltage		[V DC]	24
Current consumption at nominal operating voltage [mA]		[mA]	200
Fuse protection (short circuit)	Fuse protection (short circuit)		Electronic
Power failure bridging		[ms]	10
Load voltage			
Load voltage range		[V DC]	20 30
Nominal load voltage		[V DC]	24
Perm. load current		[A]	2.5
Fuse protection (short circuit)			Electronic
Number of axis strings			1
Axes per string			1
Length of connecting cable to a	xis	[m]	≤ 30
Max. no. of modules			7
Display			7-segment display
Assigned addresses	Outputs	[bit]	8x8
	Inputs	[bit]	8x8
Operating modes			Record Select mode
			Direct mode
Controller types			Position control
			Force control
Diagnostics			Module-orientated
			Via local 7-segment display
Status display			Module status
			Power Load
			Display/Error Axis X
			MC Axis X
Control interface			
Data			CAN bus with Festo protocol
			Digital
Electrical connection			5-pin
			M9
			Socket
Materials: Housing			Reinforced PA
Note on materials			RoHS-compliant
Product weight		[g]	140
Dimensions	Length	[mm]	107
Dimensions	Width	[mm]	50
	Height	[mm]	55
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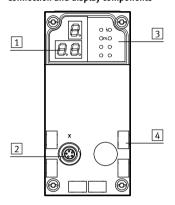
Axis controllers CPX-CMAX



Technical data

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

Connection and display components



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

Pin allocation – plug 2			
	Pin	Signal	Designation
/3	1	+24 V	Nominal operating voltage
2 4	2	+24 V	Load voltage
	3	0 V	Ground
1-5-5	4	CAN_H	CAN high
	5	CAN_L	CAN low
	Housing	Screened	Cable screening

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

 $PROFIBUS^{\circledR}, DeviceNet^{\circledR}, CANopen^{\circledR}, INTERBUS^{\circledR}, CC-LINK^{\circledR}, EtherCAT^{\circledR}, PROFINET^{\circledR}, Sercos^{\circledR}, EtherNet/IP^{\circledR} \ is \ a \ registered \ trademark \ of its \ respective \ trademark$ holder in certain countries.

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

Axis controllers CPX-CMAX



Accessories

	Brief description			Туре
	Order code in the CPX configurator: T21			CPX-CMAX-C1-1
dering data – Conne	cting cables Brief description	Cable length	Part No.	Tuno
	brief description	[m]	Pait No.	Туре
	Connecting cable with angled plug and angled socket	0.25	540327	KVI-CP-3-WS-WD-0,25
		0.5	540328	KVI-CP-3-WS-WD-0,5
		2	540329	KVI-CP-3-WS-WD-2
		5	540330	KVI-CP-3-WS-WD-5
		8	540331	KVI-CP-3-WS-WD-8
	Connecting cable with straight plug and straight socket	2	540332	KVI-CP-3-GS-GD-2
		5	540333	KVI-CP-3-GS-GD-5
		8	540334	KVI-CP-3-GS-GD-8
	Connector for control cabinet through-feed	-	543252	KVI-CP-3-SSD
rdering data – Screw			1	
	Brief description		Part No.	Туре
	For mounting on the metal interlinking block			CPX-M-M3X22-4X
ordering data – Inscrip	otion labels		ı	
,	Brief description	Number	Part No.	Туре
	Inscription labels 6x10, in frames	64	18576	IBS-6X10
ocumentation ¹⁾				
	I.		1	

Language

DE EN

ES

FR

IT

Part No. Type

559754

559750 P.BE-CPX-CMAX-SYS-DE

559751 P.BE-CPX-CMAX-SYS-EN

559752 P.BE-CPX-CMAX-SYS-ES

559753 P.BE-CPX-CMAX-SYS-FR

P.BE-CPX-CMAX-SYS-IT

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

End-position controllers CPX-CMPXTechnical data

FESTO

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



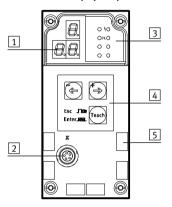
General technical data					
Operating voltage					
		[V DC]	18 30		
		[V DC]	24		
Current consumption at nominal o	perating voltage	[mA]	80		
Load voltage					
Load voltage range		[V DC]	20 30		
Nominal load voltage		[V DC]	24		
Perm. load current		[A]	2.5		
Number of axes per module			1		
Length of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

End-position controllers CPX-CMPX Technical data



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

Connection and display components



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

Pin allocation – plug 2			
	Pin	Signal	Designation
_ /3	1	+24 V	Nominal operating voltage
2 4	2	+24 V	Load voltage
$\frac{(\circ) \circ}{\circ}$	3	0 V	Ground
1-0-5	4	CAN_H	CAN high
	5	CAN_L	CAN low
	Housing	Screened	Cable screening

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

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

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End-position controllers CPX-CMPXAccessories



Ordering data – End-position controllers					
	Brief description	Part No.	Туре		
	Order code in the CPX configurator: T20	548931	CPX-CMPX-C-1-H1		

Ordering data – Connecting cables					
	Brief description	Cable length [m]	Part No.	Type	
	Connecting cable with angled plug and angled socket	0.25	540327	KVI-CP-3-WS-WD-0,25	
		0.5	540328	KVI-CP-3-WS-WD-0,5	
		2	540329	KVI-CP-3-WS-WD-2	
		5	540330	KVI-CP-3-WS-WD-5	
		8	540331	KVI-CP-3-WS-WD-8	
	Connecting cable with straight plug and straight socket	2	540332	KVI-CP-3-GS-GD-2	
		5	540333	KVI-CP-3-GS-GD-5	
		8	540334	KVI-CP-3-GS-GD-8	
	Connector for control cabinet through-feed	-	543252	KVI-CP-3-SSD	

Ordering data – Screws	Brief description	Part No.	Туре
	For mounting on the metal interlinking block	550219	CPX-M-M3X22-4X

Ordering data – Inscription labels					
	Brief description	Number	Part No.	Туре	
[IIIIIIII •	Inscription labels 6x10, in frames	64	18576	IBS-6X10	
•					
•					

Documentation ¹⁾					
	Language	Part No.	Туре		
	DE	555479	P.BE-CPX-CMPX-SYS-DE		
	EN	555480	P.BE-CPX-CMPX-SYS-EN		
	ES	555481	P.BE-CPX-CMPX-SYS-ES		
	FR	555482	P.BE-CPX-CMPX-SYS-FR		
	IT	555483	P.BE-CPX-CMPX-SYS-IT		

¹⁾ Manual in paper form is not included in the scope of delivery

Measuring modules CPX-CMIX Technical data

FESTO

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



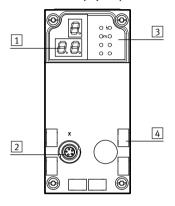
Operating voltage				
Operating voltage range [V DC		[V DC]	18 30	
Nominal operating voltage		[V DC]	24	
Current consumption at nom	inal operating voltage	[mA]	80	
Protection against short circ	uit		Yes	
Power failure bridging		[ms]	10	
No. of axis strings			1	
Axes per string			1	
Length of connecting cable to	o axis	[m]	≤ 30	
Max. no. of modules			9	
Display			7-segment display	
Assigned addresses	Outputs	[bit]	6x8	
	Inputs	[bit]	6x8	
Diagnostics			Channel and module-oriented	
			Via local 7-segment display	
			Undervoltage of modules	
			Undervoltage of measuring system	
Status display			Power Load	
			Error	
Control interface				
Data			CAN bus with Festo protocol	
			Digital	
Electrical connection			5-pin	
			M9	
			Socket	
Materials: Housing			Reinforced PA	
Note on materials			RoHS-compliant	
Product weight		[g]	140	
Dimensions	Length	[mm]	107	
	Width	[mm]	50	
	Height	[mm]	55	

Measuring modules CPX-CMIX Technical data



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

Connection and display components



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

Pin allocation – Plug 2						
	Pin	Signal	Designation			
2 0 0 4 1 0 0 5	1	+24 V	Nominal operating voltage			
	2	+24 V	Load voltage			
	3	0 V	Ground			
	4	CAN_H	CAN high			
	5	CAN_L	CAN low			
	Housing	Screened	Cable screening			

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

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

 $PROFIBUS^{\circledR}, DeviceNet^{\circledR}, CANopen^{\circledR}, INTERBUS^{\circledR}, CC-LINK^{\circledR}, EtherCAT^{\circledR}, PROFINET^{\circledR}, Sercos^{\circledR}, EtherNet/IP^{\circledR} \ is \ a \ registered \ trademark \ of its \ respective \ trademark$ holder in certain countries.

Measuring modules CPX-CMIX Accessories



lo.1				
Ordering data – Measurir	B module Description		Part No.	Туре
	Order code in the CPX configurator: T23		567417	CPX-CMIX-M1-1
Ordering data – Connecti	ng cables			
-	Description	Cable length [m]	Part No.	Type
	Connecting cable with angled plug and angled socket	0.25 0.5 2 5 8	540327 540328 540329 540330 540331	KVI-CP-3-WS-WD-0,5 KVI-CP-3-WS-WD-2 KVI-CP-3-WS-WD-5
2000	Connecting cable with straight plug and straight socket Connector for control cabinet through-feed	2 5 8 -	540332 540333 540334 543252	KVI-CP-3-GS-GD-5 KVI-CP-3-GS-GD-8
Connection between disable				
Connection between displ	acement encoder MME and measuring module CPX-CMIX For displacement encoder MME	2	575898	NEBP-M16W6-K-2-M9W5
Ordering data – Screws				
oracing acta Sciens	Description		Part No.	Туре
	For mounting on the metal interlinking block		550219	CPX-M-M3X22-4X
Ordering data – Inscription			i	
	Description	Number	Part No.	Туре
	Inscription labels 6x10, in frames	64	18576	IBS-6X10
Documentation ¹⁾	Language		Part No.	Туре
	DE EN ES		567053 567054 567055	P.BE-CPX-CMIX-DE P.BE-CPX-CMIX-EN P.BE-CPX-CMIX-ES
~	FR IT		567056 567057	P.BE-CPX-CMIX-FR P.BE-CPX-CMIX-IT

¹⁾ Manual in paper form is not included in the scope of delivery

FESTO Technical data – Input module, digital

Function

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

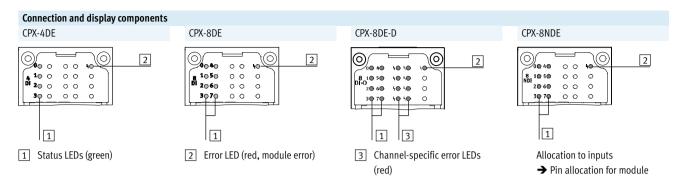
Applications

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



General technical data							
Туре			CPX-4DE	CPX-8DE	CPX-8DE-D	CPX-8NDE	
No. of inputs			4	8	8	8	
Max. residual current of inputs per module [A]			0.7	1	0.7	0.7	
Fuse protection			Internal elec-	Internal elec-	Internal elec-	Internal elec-	
			tronic fuse for	tronic fuse for	tronic fuse for	tronic fuse for	
			each module	each module	each channel	each module	
Intrinsic current consumption at o	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	≤ 5		≥ 11	
	Signal 1	[V DC]	≥ 11	≥11			
Input debounce time [ms]			3 (0.1, 10, 20 parameterisable)				
Input characteristic curve			IEC 1131 Part 2				
Switching logic			Positive logic (PN	P)		Negative logic (NPN)	
LED displays	Group diagnostics		1	1	1	1	
	Channel diagnostics		-	-	8	-	
	Channel status		4	8	8	8	
Diagnostics			Short circuit/overload per channel				
Parameterisation			Module monitor	oring			
			Behaviour afte	Behaviour after short circuit			
			Input debounce time				
			Signal stretching time				
Protection class to EN 60529			Depending on connection block				
Temperature range	Operation	[°C]	−5 +50				
	Storage/transport	[°C]	-20 +70	-20 +70			
Materials			Reinforced PA, PC	•			
Grid dimension		[mm]	50				
Dimensions (incl. interlinking blo	ck and connection block) W x L x H	[mm]	50 x 107 x 50				
Weight		[g]	38				

Technical data – Input module, digital



Connection block/digital input module combinations						
Connection blocks	Part No.	Digital input m	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 , , X5 ,	X1.1: 24 V _{SEN}	X5.1: 24 V _{SEN}	X1.1: 24 V _{SEN x}	X5.1: 24 V _{SEN x+4}
	X1.3: 0 V _{SEN}	X5.3: 0 V _{SEN}	X1.3: 0 V _{SEN x}	X5.3: 0 V _{SEN x+4}
4 X1 1 4 X5 1 3 3 4 X6 1 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	X1.4: Input x	X5.4: Input x+2	X1.4: Input x	X5.4: Input x+4
4 X2 1 4 X6 1				
, E	X2.1: 24 V _{SEN}	X6.1: 24 V _{SEN}	X2.1: 24 V _{SEN x+1}	X6.1: 24 V _{SEN x+5}
X3 , X7 ,	X2.3: 0 V _{SEN}	X6.3: 0 V _{SEN}	X2.3: 0 V _{SEN x+1}	X6.3: 0 V _{SEN x+5}
	X2.4: Input x+1	X6.4: Input x+3	X2.4: Input x+1	X6.4: Input x+5
X1 1 4 X5 1 3 X2 1 4 X6 1 3 X3 1 4 X7 1 3 X4 1 4 X8 1				
4 74 1 4 76 1	X3.1: 24 V _{SEN}	X7.1: 24 V _{SEN}	X3.1: 24 V _{SEN x+2}	X7.1: 24 V _{SEN x+6}
3,67	X3.3: 0 V _{SEN}	X7.3: 0 V _{SEN}	X3.3: 0 V _{SEN x+2}	X7.3: 0 V _{SEN x+6}
	X3.4: Input x+1	X7.4: Input x+3	X3.4: Input x+2	X7.4: Input x+6
	X4.1: 24 V _{SEN}	X8.1: 24 V _{SEN}	X4.1: 24 V _{SEN x+3}	X8.1: 24 V _{SEN x+7}
	X4.3: 0 V _{SEN}	X8.3: 0 V _{SEN}	X4.3: 0 V _{SEN x+3}	X8.3: 0 V _{SEN x+7}
	X4.4: n.c.	X8.4: n.c.	X4.4: Input x+3	X8.4: Input x+7
CPX-AB-4-M12X2-5POL, CPX-AB-4-M1	2X2-5POL-R ¹⁾ and CPX-M-AB	-4-M12X2-5POL		
3 ~ 4 3 ~ 4	X1.1: 24 V _{SEN}	X3.1: 24 V _{SEN}	X1.1: 24 V _{SEN X}	X3.1: 24 V _{SEN x+4}
5 6 5	X1.2: Input x+1	X3.2: Input x+3	X1.2: Input x+1	X3.2: Input x+5
± 1 ± 1 1	X1.3: 0 V _{SEN}	X3.3: 0 V _{SEN}	X1.3: 0 V _{SEN x}	X3.3: 0 V _{SEN x+4}
X1 X3	X1.4: Input x	X3.4: Input x+2	X1.4: Input x	X3.4: Input x+4
X 2 X3	X1.5: FE	X3.5: FE	X1.5: FE	X3.5: FE
X2 X4	X2.1: 24 V _{SEN}	X4.1: 24 V _{SEN}	X2.1: 24 V _{SEN x+2}	X4.1: 24 V _{SEN x+6}
	X2.2: n.c.	X4.2: n.c.	X2.2: Input x+3	X4.2: Input x+7
	X2.3: 0 V _{SEN}	X4.3: 0 V _{SEN}	X2.3: 0 V _{SENx+2}	X4.3: 0 V _{SEN x+6}
4 3 4 3	X2.4: Input x+1	X4.4: Input x+3	X2.4: Input x+2	X4.4: Input x+6
	X2.5: FE	X4.5: FE	X2.5: FE	X4.5: FE

¹⁾ Speedcon quick lock, screening additionally on metal thread

Technical data – Input module, digital

Pin allocation				
Connection block inputs	CPX-4DE		CPX-8DE, CPX-8DE-D and	CPX-8NDE
CPX-AB-8-KL-4POL	_		_	
X1 0. 0 .0 X5	X1.0: 24 V _{SEN}	X5.0: 24 V _{SEN}	X1.0: 24 V _{SEN} x	X5.0: 24 V _{SEN x+4}
	X1.1: 0 V _{SEN}	X5.1: 0 V _{SEN}	X1.1: 0 V _{SEN x}	X5.1: 0 V _{SEN x+4}
	X1.2: Input x	X5.2: Input x+2	X1.2: Input x	X5.2: Input x+4
X2 3 3 X6	X1.3: FE	X5.3: FE	X1.3: FE	X5.3: FE
X1				
X3 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	X2.0: 24 V _{SEN}	X6.0: 24 V _{SEN}	X2.0: 24 V _{SEN x+1}	X6.0: 24 V _{SEN x+5}
X3 1 1 1 X7	X2.1: 0 V _{SEN}	X6.1: 0 V _{SEN}	X2.1: 0 V _{SEN x+1}	X6.1: 0 V _{SEN x+5}
	X2.2: Input x+1	X6.2: Input x+3	X2.2: Input x+1	X6.2: Input x+5
X4 3 3 X8	X2.3: FE	X6.3: FE	X2.3: FE	X6.3: FE
A CO. 3 65.2	7,2,3, 1,2	7.0.51	7.2.51	7.0157 12
	X3.0: 24 V _{SEN}	X7.0: 24 V _{SEN}	X3.0: 24 V _{SEN x+2}	X7.0: 24 V _{SEN x+6}
	X3.1: 0 V _{SEN}	X7.1: 0 V _{SEN}	X3.1: 0 V _{SEN x+2}	X7.1: 0 V _{SEN X+6}
	X3.2: Input x+1	X7.2: Input x+3	X3.2: Input x+2	X7.2: Input x+6
	X3.3: FE	X7.3: FE	X3.3: FE	X7.3: FE
		77.5. 12	75.5. 12	77.5. 12
	X4.0: 24 V _{SEN}	X8.0: 24 V _{SEN}	X4.0: 24 V _{SEN x+3}	X8.0: 24 V _{SEN x+7}
	X4.1: 0 V _{SFN}	X8.1: 0 V _{SEN}	X4.1: 0 V _{SEN X+3}	X8.1: 0 V _{SEN x+7}
	X4.2: n.c.	X8.2: n.c.	X4.2: Input x+3	X8.2: Input x+7
	X4.3: FE	X8.3: FE	X4.2: Iliput X+3	X8.3: FE
	Λ4.3: ΓΕ	V0.3: LE	Λ4.3: FE	VO.): LE
CPX-AB-1-SUB-BU-25POL				
CFA-AB-1-30B-B0-23F0L	1: Input x	14: Input x+2	1: Input x	14: Input x+4
013	2: Input x+1	15: Input x+3	2: Input x+1	15: Input x+5
250 012	3: Input x+1	16: Input x+3	3: Input x+2	16: Input x+6
240 011	4: n.c.	17: n.c.	4: Input x+3	17: Input x+7
220 010	5: 24 V _{SEN}	17: 11.C. 18: 24 V _{SEN}	5: 24 V _{SEN x+1}	'
210 0 9	6: 0 V _{SEN}	19: 24 V _{SEN}	JEN ATT	18: 24 V _{SEN x+4} 19: 24 V _{SEN x+5}
200 0 8	7: 24 V _{SEN}		JEN ATT	20: 24 V _{SEN x+6}
19 0 0 7		SEIT	SER A. S	
18 O O 5	SEIT	21: 24 V _{SEN}	SEITAL	JLIN AT /
17 0 4	9: 24 V _{SEN}	22: 0 V _{SEN}	9: 24 V _{SEN} X	22: 0 V _{SEN x+2 and 3}
160	10: 24 V _{SEN}	23: 0 V _{SEN}	10: 24 V _{SEN x+2}	23: 0 V _{SEN x+2 and 3}
15 0 0 2	11: 0 V _{SEN}	24: 0 V _{SEN}	11: 0 V _{SEN X}	24: 0 V _{SEN x+2 and 3}
14001	12: 0 V _{SEN}	25: FE	12: 0 V _{SEN x+2}	25: FE
	13: FE	Housing: FE	13: FE	Housing: FE
CPX-AB-4-HAR-4POL				
CFA-AD-4-MAK-4FUL	V1.1. 24.V	V2 1. 2//V	V1.1. 2/.V	V2.1. 26.V
4 1 4 1	X1.1: 24 V _{SEN}	X3.1: 24 V _{SEN}	X1.1: 24 V _{SEN X}	X3.1: 24 V _{SEN x+4}
	X1.2: Input x+1	X3.2: Input x+3	X1.2: Input x+1	X3.2: Input x+5
3 2 3 2	X1.3: 0 V _{SEN}	X3.3: 0 V _{SEN}	X1.3: 0 V _{SEN X}	X3.3: 0 V _{SEN x+4}
X1 2 X3 2	X1.4: Input x	X3.4: Input x+2	X1.4: Input x	X3.4: Input x+4
	X2.1: 24 V _{SEN}	X4.1: 24 V _{SEN}	X2.1: 24 V _{SEN x+2}	X4.1: 24 V _{SEN X+6}
, X2 , X4 ,	X2.1: 24 VSEN X2.2: n.c.	X4.2: n.c.	X2.1: 24 VSEN X+2 X2.2: Input X+3	X4.2: Input x+7
			· ·	
	X2.3: 0 V _{SEN}	X4.3: 0 V _{SEN}	X2.3: 0 V _{SEN X+2}	X4.3: 0 V _{SEN X+6}
3 2 3 2	X2.4: Input x+1	X4.4: Input x+3	X2.4: Input x+2	X4.4: Input x+6
			<u>'</u>	·

Accessories – Input module, digital

Ordering data				
Designation			Part No.	Туре
Input module, digital				
	4 digital inputs, positive log	gic (PNP)	195752	CPX-4DE
	8 digital inputs, positive logic (PNP)			CPX-8DE
	8 digital inputs, positive log	gic (PNP), advanced diagnostic function	541480	CPX-8DE-D
	8 digital inputs, negative lo	- · · · · ·	543813	CPX-8NDE
ALE.	g	3·· (·· · ·)	7 10 0 2 0	
Connection block				
<u> </u>	Plastic	8x socket, M8, 3-pin	195706	CPX-AB-8-M8-3POL
		4x socket, M12, 5-pin	195704	CPX-AB-4-M12X2-5POL
		4x socket, M12 with quick-lock technology, 5-pin	541254	CPX-AB-4-M12X2-5POL-R
		Spring clip terminal, 32-pin	195708	CPX-AB-8-KL-4POL
Į.		1x Sub-D socket, 25-pin	525676	CPX-AB-1-SUB-BU-25POL
		4x socket, quick connection, 4-pin	525636	CPX-AB-4-HAR-4POL
	Metal	4x socket, M12, 5-pin	549367	CPX-M-AB-4-M12X2-5POL
Plug		1		
	Push-in T-connector	2x socket, M12, 5-pin	541596	NEDU-M12D5-M12T4
		1x plug, M12, 4-pin	5/4507	NEDU MODO MAOTA
		2x socket, M8, 3-pin	541597	NEDU-M8D3-M12T4
	Plug	1x plug, M12, 4-pin	19606	CEA CC MO
	Plug	M8, 3-pin, solderable M8, 3-pin, screw-in	18696 192009	SEA-GS-M8 SEA-3GS-M8-S
		M12, 4-pin, PG7	18666	SEA-GS-7
_		M12, 4-pin, r G/ M12, PG7, 4-pin for cable Ø 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
	C D 05 ;			CD CUD D CTA-
	Sub-D plug, 25-pin		527522	SD-SUB-D-ST25
(2 0)/ h				
Connecting cable				
Connecting capie	Connecting cable M8-M8	0.5 m	175488	KM8-M8-GSGD-0,5
	Connecting capie Mo-Mo	1.0 m	175489	KM8-M8-GSGD-1
		2.5 m	165610	KM8-M8-GSGD-2,5
		5.0 m	165611	KM8-M8-GSGD-5
	Connecting cable	2.5 m	18684	KM12-M12-GSGD-2,5
	M12-M12	5.0 m	18686	KM12-M12-GSGD-5
		1.0 m	185499	KM12-M12-GSWD-1-4
	Modular system for connect	ing cables	-	NEBU
				→ Info 322
				→ Internet: nebu
	DUO cable M12	2x straight socket	18685	KM12-DUO-M8-GDGD
		2x straight/angled socket	18688	KM12-DUO-M8-GDWD
		2x angled socket		
O		zx angled socket	18687	KM12-DUO-M8-WDWD

FESTO

Accessories – Input module, digital

Ordering data				
			Part No.	Timo
Designation				Туре
Cover				
6	Cover for CPX-AB-8-KL-4POL (IP65, IP67)		538219	AK-8KL
	- 8 cable through-feeds M9			
	- 1 cable through-feed for multi-pin plug			
	Fittings kit		538220	VG-K-M9
Screening plate				
	Screening plate for M12 connections		526184	CPX-AB-S-4-M12
User manual				
OSEI IIIAIIUAI	User manual	German	526439	P.BE-CPX-EA-DE
	osci manaat	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



Technical data - PROFIsafe input module

FESTO

Function

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

Scope of application

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



Description

Module-based passivation

While channel-by-channel passivation is disabled, the input module, in accordance with PROFIsafe specification,

switches all information in the input image to the safe status, even when there is only one channel error.

Channel-by-channel passivation

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

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

Applications

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

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

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

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

Range of applications

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



Note

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

Application examples

- Two-hand circuit for starting a function
- Emergency stop switch for incidents
- Operating mode selector switch with four positions
- Rotary indexing table
- Light curtain
- Acknowledge button with request
- End-position switches
- Protective door with two NO switches



Technical data – PROFIsafe input module

FESTO

General technical data			
Туре			CPX-F8DE-P
Number of inputs			8
Safety function			Reliable detection and evaluation of input statuses
Max. address capacity	Inputs	[byte]	6
	Outputs	[byte]	7
Max. cable length		[m]	200
Max. power supply	Per module	[A]	3
Current consumption of module		[mA]	Typ. 35 (power supply for electronics)
Operating voltage	Nominal value	[V DC]	24
	Permissible range	[V DC]	20.4 28.8
Voltage drop per channel		[V]	0.6
Residual ripple		[Vss]	2 within voltage range
Electrical isolation	Channel – channel		No
Input characteristic			To IEC 61131-2, type 2
Switching logic	Inputs		PNP (positive switching)
Safety integrity level	As per EN62061		Reliable detection and evaluation of input statuses up to SIL CL3
	As per EN61508		Reliable detection and evaluation of input statuses up to SIL3
Performance Level	As per ISO13849		Reliable detection and evaluation of input statuses up to Cat 4 and PL e
Failure rate per hour (PFH)			1.0x 10 ⁻⁹
Certificate issuing authority			01/205/5444.00/15
LED displays	Group diagnostics		1
	Channel diagnostics		8
	Channel status		8
	Failsafe protocol active		1
Diagnostics			Short circuit per channel
			Undervoltage
			Overvoltage
			Excessive temperature
			Crossover per channel
			Wire break per channel
			Communication
			Process data error
			• Self test
Control elements			DIL switches
Degree of protection to EN 60529			Depending on connection block
Grid dimension		[mm]	50
Dimensions (incl. interlinking bloc	k and connection block) W x L x H	[mm]	50 x 107 x 55



Terminal CPX FESTO

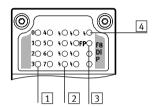
Technical data – PROFIsafe input module

Materials	
Note on materials	RoHS compliant

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

Connection and display components

CPX-F8DE-P



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

Combinations of bus nodes/control blocks with PROFIsafe input module					
Bus node/control block	Part No.	PROFIsafe input module			
		CPX-F8DE-P			
CPX-FB13	195740				
CPX-FB33	548755				
CPX-M-FB34	548751				
CPX-M-FB35	548749				



Note

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



Technical data – PROFIsafe input module

FESTO

Connection block/PROFIsafe input module combinations					
Connection blocks	Part No.	PROFIsafe input module			
	CPX-F8DE-P				
CPX-M-AB-4-M12X2-5POL	549367	•			
CPX-M-AB-4-M12X2-5POL-T	2639560				
CPX-AB-8-KL-4POL	195708				
CPX-AB-ID-P	2639571				

Pin allocation		
Connection block inputs	CPX-F8DE-P	
CPX-M-AB-4-M12X2-5POL		
3 4 3 5 5 5 5 1 X1 X3	X1.1: 24 V _{SEN} X1.2: Input x+1 X1.3: 0 V _{SEN} X1.4: Input x X1.5: FE	X3.1: 24 V _{SEN} X3.2: Input x+5 X3.3: 0 V _{SEN} X3.4: Input x+4 X3.5: FE
X2 X4 1 2 5 1 2 5 5 1 5 5 5 5 5 5 5 5 5 5 5 5	X2.1: 24 V _{SEN} X2.2: Input x+3 X2.3: 0 V _{SEN} X2.4: Input x+2 X2.5: FE	X4.1: 24 V _{SEN} X4.2: Input x+7 X4.3: 0 V _{SEN} X4.4: Input x+6 X4.5: FE
CDV M AD / M12V2 FDOLT		
CPX-M-AB-4-M12X2-5POL-T 3 4 5 2 1 X1-T X3-T	X1-T.124 V _{SEN x} X1-T.2Input x+1 X1-T3:0 V _{SEN} X1-T.4Input x X1-T.524 V _{SEN x+1}	X3.1: 24 V _{SEN x+4} X3.2: Input x+5 X3.3: 0 V _{SEN} X3.4: Input x+4 X3.5: 24 V _{SEN x+5}
X2-T X4-T 1 2 1 2 5 5 5 5 5 5 6 6 6 6 6 6 6 6 6 6 6 6 6	X2.1: 24 V _{SEN x+2} X2.2: Input x+3 X2.3: 0 V _{SEN} X2.4: Input x+2 X2.5: 24 V _{SEN x+3}	X4.1: 24 V _{SEN x+6} X4.2: Input x+7 X4.3: 0 V _{SEN} X4.4: Input x+6 X4.5: 24 V _{SEN x+7}
CPX-AB-8-KL-4POL		
X1	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	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
X4 □ 3 3 □ X8	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	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 FESTO

Technical data – PROFIsafe input module

Interlinking block/PROFIsafe input module combinations					
Interlinking blocks	Part No.	PROFIsafe input module			
		CPX-F8DE-P			
CPX-GE-EV-S	195746	-			
CPX-GE-EV-S-7/8-4POL	541248	-			
CPX-GE-EV-S-7/8-5POL	541244	-			
CPX-M-GE-EV-S-7/8-CIP-4P	568956				
CPX-M-GE-EV-S-7/8-5POL	550208				
CPX-M-GE-EV-S-PP-5POL	563057				
CPX-GE-EV	195742	-			
CPX-M-GE-EV	550206				
CPX-M-GE-EV-FVO	567806	-			
CPX-GE-EV-Z	195744	-			
CPX-GE-EV-Z-7/8-4POL	541250	-			
CPX-GE-EV-Z-7/8-5POL	541246	-			
CPX-M-GE-EV-Z-7/8-5POL	550210				
CPX-M-GE-EV-Z-PP-5POL	563058				
CPX-GE-EV-V	533577	-			
CPX-GE-EV-V-7/8-4POL	541252				



Accessories – PROFIsafe input module

FESTO

Ordering data				,	
	Description			Part No.	Туре
ROFIsafe input mo					
	8 digital inputs, positive logic (PN statuses	IP), for reliable detection and ev	2597424	CPX-F8DE-P	
onnection block				'	
<u> </u>	Polymer	Spring-loaded terminal, 32	2-pin	195708	CPX-AB-8-KL-4POL
		8-way DIL switch		2639571	CPX-AB-ID-P
	Metal	4x socket M12, 5-pin	Unclocked sensor supply	549367	CPX-M-AB-4-M12X2-5POL
, T			Clocked sensor supply	2639560	CPX-M-AB-4-M12X2-5POL-T
lug connector					
	Push-in T-connector	2x socket, M12, 5-pin 1x plug connector M12, 4-pin		541596	NEDU-M12D5-M12T4
	Plug connector	M12, PG7		18666	SEA-GS-7
		M12, PG7, 4-pin for cable	Ø 2.5mm	192008	SEA-4GS-7-2,5
		M12, PG9		18778	SEA-GS-9
		M12 for 2 cables		18779	SEA-GS-11-DUO
		M12 for 2 cables, 5-pin		192010	SEA-5GS-11-DUO
		M12, 5-pin		175487	SEA-M12-5GS-PG7
Connecting cable					
	Connecting cable M12-M12	Straight plug connector –	2.5 m	18684	KM12-M12-GSGD-2,5
	-	straight socket	5.0 m	18686	KM12-M12-GSGD-5
L'INTE		Straight plug connector –	1.0 m	185499	KM12-M12-GSWD-1-4
	M - d. d	angled socket			NEDU
	Modular system for all types of co	onnecting cable		_	NEBU → Internet: nebu
	DUO cable M12	2x straight socket		18685	KM12-DUO-M8-GDGD
		2x straight/angled socket		18688	KM12-DUO-M8-GDWD
////		2x angled socket		18687	KM12-DUO-M8-WDWD
0.879					
	n				
			German	8035496	P.BE-CPX-F8DE-P-DE
	n User documentation for PROFIsaf		German English	8035496 8035497	P.BE-CPX-F8DE-P-DE P.BE-CPX-F8DE-P-EN
			English	8035497	P.BE-CPX-F8DE-P-EN
			English Spanish	8035497 8035498	P.BE-CPX-F8DE-P-EN P.BE-CPX-F8DE-P-ES
User documentation			English	8035497	P.BE-CPX-F8DE-P-EN

Technical data – Input module, digital, 16 inputs

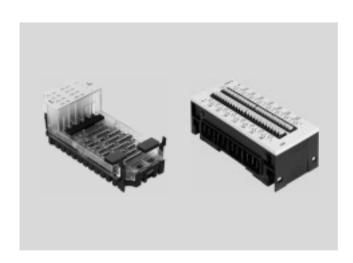
Function

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

Depending on the connection block selected, the module supports various connection concepts with different numbers of sockets (single or double allocation).

Application

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

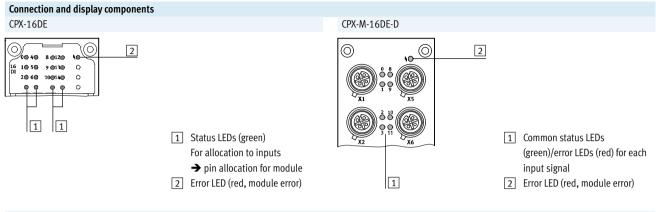


General technical data						
Туре			CPX-16DE	CPX-M-16DE-D	CPX-L-16DE	
Number of inputs			16	16	16	
Max. residual current of inputs per module [A]			1.8	1.8	1.8	
Intrinsic current consumption at operating voltage [mA]			Typically 15	Typically 34	Typically 15	
Fuse protection			Internal electronic fuse per module	Internal electronic fuse per channel pair, additional safety fuse	Internal electronic fuse per module	
Nominal operating voltage		[V DC]	24	24	24	
Operating voltage range		[V DC]	18 30	18 30	18 30	
Electrical isolation	Channel – channel		No	No	No	
	Channel – internal bus		No	No	No	
Switching level	Signal 0	[V DC]	≤ 5	≤ 5	≤ 5	
	Signal 1	[V DC]	≥ 11	≥ 11	≥ 15	
Input debounce time		[ms]	3 (0.1 ms, 10 ms, 20 ms parameterisable)			
Input characteristic			IEC 1131-T2	IEC 1131-T2	IEC 1131-T2, type 01	
Switching logic			Positive logic (PNP)	Positive logic (PNP)	Positive logic (PNP)	
LED displays	Group diagnostics		1	1	1	
	Channel diagnostics		-	16	-	
	Channel status		16	16	16	
Diagnostics			Short circuit/overload pe	r channel		
Parameterisation			 Module monitoring Behaviour after short of Input debounce time Signal extension time 	ircuit		
Protection class to EN 60529			Depending on connection block	Depending on connection block	IP20	
Temperature range	Operation	[°C]	-5 +50	-5 +50	-5 +50	
	Storage/transport	[°C]	-20 +70	-20 +70	-20 +70	
Materials			Reinforced PA, PC	Reinforced PA, PC	Reinforced PA	
Note on materials			-	-	RoHS-compliant	
Grid dimension		[mm]	50	50	50	
Dimensions (incl. interlinking	g block and connection block) W x L x H	[mm]	50 x 107 x 50	50 x 107 x 50	50 x 107 x 41	
Product weight		[g]	38	38	Approx. 170	

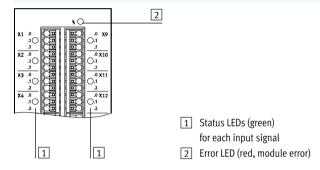


Terminal CPX FESTO

Technical data – Input module, digital, 16 inputs



CPX-L-16DE



Connection block/digital input module combinations						
Connection blocks	Part No.	Digital input modules CPX-16DE				
CPX-AB-8-M8X2-4POL	541256		-	-		
CPX-AB-8-M12X2-5POL	3606900	-		-		
CPX-AB-8-KL-4POL	195708		-	-		
CPX-AB-1-SUB-BU-25POL	525676		-	-		
CPX-M-AB-8-M12X2-5POL	549335	-		-		

Technical data – Input module, digital, 16 inputs

Pin allocation		
Connection block inputs	CPX-16DE	
CPX-AB-8-M8x2-4POL		
2 X1 2 X5 1	X1.1: 24 V _{SEN} X1.2: Input x+1	X5.1: 24 V _{SEN} X5.2: Input x+9
3 X2 X6 1	X1.3: 0 V _{SEN} X1.4: Input x	X5.3: 0 V _{SEN} X5.4: Input x+8
3 X3 3 X7 1	X2.1: 24 V _{SEN} X2.2: Input x+3	X6.1: 24 V _{SEN} X6.2: Input x+11
3X3 3X7 1 2 1 1 3 2 X4 2 X8 1	X2.3: 0 V _{SEN} X2.4: Input x+2	X6.3: 0 V _{SEN} X6.4: Input x+10
4 3 4 3	X3.1: 24 V _{SEN} X3.2: Input x+5	X7.1: 24 V _{SEN} X7.2: Input x+13
	X3.3: 0 V _{SEN} X3.4: Input x+4	X7.3: 0 V _{SEN} X7.4: Input x+12
	X4.1: 24 V _{SEN} X4.2: Input x+7	X8.1: 24 V _{SEN} X8.1: Input x+15
	X4.3: 0 V _{SEN} X4.4: Input x+6	X8.3: 0 V _{SEN} X8.4: Input x+14
CPX-AB-8-KL-4POL		
X1	X1.0: Input x+8 X1.1: 24 V _{SEN} X1.2: Input x X1.3: FE X2.0: Input x+9	X5.0: Input x+12 X5.1: 0 V _{SEN} X5.2: Input x+4 X5.3: FE X6.0: Input x+13
X2	X2.1: 24 V _{SEN} X2.2: Input x+1 X2.3: FE	X6.1: 0 V _{SEN} X6.2: Input x+5 X6.3: FE
	X3.0: Input x+10 X3.1: 24 V _{SEN} X3.2: Input x+2 X3.3: FE	X7.0: Input x+14 X7.1: 0 V _{SEN} X7.2: Input x+6 X7.3: FE
	X4.0: Input x+11 X4.1: 24 V _{SEN} X4.2: Input x+3 X4.3: 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		
25 ₀ 013 25 ₀ 012 24 ₀ 011	1: Input x 2: Input x+1 3: Input x+2	14: Input x+4 15: Input x+5 16: Input x+6
230 O10 220 O10 21 O 9 21 O 8	4: Input x+3 5: Input x+9 6: 24 V _{SEN}	17: Input x+7 18: Input x+12 19: Input x+13
19 O 7 0 6 18 O 0 5	7: Input x+11 8: 24 V _{SEN} 9: Input x+8	20: Input x+14 21: Input x+15 22: 0 V _{SEN}
16 O 3 15 O 2	10: Input x+10 11: 24 V _{SEN} 12: 24 V _{SEN}	23: 0 V _{SEN} 24: 0 V _{SEN} 25: FE
0 1	13: FE	Housing: FE

Terminal CPX FESTO

Technical data – Input module, digital, 16 inputs

Pin allocation		
Connection block inputs	CPX-M-16DE-D	
CPX-M-AB-8-M12X2-5POL and CPX-AB-	8-M12X2-5POL	
X1 2 X5 2	X1.1: 24 V _{SX}	X5.1: 24 V _{Sx+8}
1,000 2 1,000 2	X1.2: Input x+1	X5.2: Input x+9
	X1.3: 0 V _{Sx}	X5.3: 0 V _{Sx+8}
3 3 4	X1.4: Input x	X5.4: Input x+8
X2 X6	X1.5: FE	X5.5: FE
1,632		
5 3 5 3	X2.1: 24 V _{Sx+2}	X6.1: 24 V _{Sx+10}
4 4	X2.2: Input x+3	X6.2: Input x+11
X3 2 X7 2	X2.3: 0 V _{SX+2}	X6.3: 0 V _{Sx+10}
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	X2.4: Input x+2	X6.4: Input x+10
4 4 4	X2.5: FE	X6.5: FE
X4 X8 2		
1682	X3.1: 24 V _{SX+4}	X7.1: 24 V _{Sx+12}
5 3 5 3	X3.2: Input x+5	X7.2: Input x+13
4 4	X3.3: 0 V _{Sx+4}	X7.3: 0 V _{SX+12}
	X3.4: Input x+4	X7.4: Input x+12
	X3.5: FE	X7.5: FE
	X4.1: 24 V _{Sx+6}	X8.1: 24 V _{Sx+14}
	X4.2: Input x+7	X8.2: Input x+15
	X4.3: 0 V _{SX+6}	X8.3: 0 V _{Sx+14}
	X4.4: Input x+6	X8.4: Input x+14
	X4.5: FE	X8.5: FE

Technical data – Input module, digital, 16 inputs

Input x	X9.0: 24 V _{SEN} X9.1: Input x+8 X9.2: 0 V _{SEN}
Input x	X9.1: Input x+8
0 V _{SEN}	X9.2: 0 V _{SEN}
Input x+1 0 VSEN 24 VSEN Input x+2 0 VSEN 24 VSEN Input x+3 0 VSEN 24 VSEN Input x+4 0 VSEN 24 VSEN Input x+5 0 VSEN 24 VSEN Input x+6 0 VSEN	X10.0: 24 V _{SEN} X10.1: Input x+9 X10.2: 0 V _{SEN} X11.0: 24 V _{SEN} X11.1: Input x+10 X11.2: 0 V _{SEN} X12.0: 24 V _{SEN} X12.1: Input x+11 X12.2: 0 V _{SEN} X13.0: 24 V _{SEN} X13.1: Input x+12 X13.2: 0 V _{SEN} X14.1: Input x+13 X14.2: 0 V _{SEN} X14.1: Input x+14 X15.0: 24 V _{SEN} X15.1: Input x+14 X15.1: Input x+14 X15.1: Input x+14 X15.1: Input x+14 X15.1: Input x+15
	Input x+2 0 V _{SEN} 24 V _{SEN} Input x+3 0 V _{SEN} 24 V _{SEN} Input x+4 0 V _{SEN} 24 V _{SEN} Input x+5 0 V _{SEN} 24 V _{SEN} Input x+6 0 V _{SEN}



Terminal CPXAccessories – Input module, digital, 16 inputs **FESTO**

Ordering data				_		
Designation				Part No.	Туре	
Input module, digital						
	16 digital inputs,	internal electronic fuse per module		543815	CPX-16DE	
	16 digital inputs, internal electronic fuse per channel pair, for CPX in metal			550202	CPX-M-16DE-D	
	16 digital inputs, internal electronic fuse per module, for CPX in plastic, including interlinking block and connection block with spring-loaded terminals			572606	CPX-L-16DE-16-KL-3POL	
Connection block						
	Plastic	8x socket, M8, 4-pin		541256	CPX-AB-8-M8X2-4POL	
		8x socket, M12, 5-pin		3606900	CPX-AB-8-M12X2-5POL	
		Spring-loaded terminal, 32-pin		195708	CPX-AB-8-KL-4POL	
		1x socket, Sub-D, 25-pin		525676	CPX-AB-1-SUB-BU-25POL	
•	Metal	8x socket, M12, 5-pin		549335	CPX-M-AB-8-M12X2-5POL	
Dlug						
Plug	Push-in	2x socket, M8, 3-pin		544391	NEDU-M8D3-M8T4	
	T-connector	1x plug, M8, 4-pin		344391	NEDU-MOD3-MO14	
	Plug, M8, 3-pin		Solderable	18696	SEA-GS-M8	
			Screw-in	192009	SEA-3GS-M8-S	
	Plug, Sub-D, 25-p	oin		527522	SD-SUB-D-ST25	
Connecting cable						
	DUO cable M8-2x	xM8, 4-pin/2x3-pin	2x straight socket	574591	NEDU-L2R1-M8G3-K-1L1-1L2-M8G4	
	Connecting cable	M8-M8	0.5 m	175488	KM8-M8-GSGD-0,5	
			1.0 m	175489	KM8-M8-GSGD-1	
			2.5 m	165610	KM8-M8-GSGD-2,5	
9			5.0 m	165611	KM8-M8-GSGD-5	
	Modular system for connecting cables			-	NEBU → Internet: nebu	
Cover				•		
Cover	Cover for CDY_AD	8-KL-4POL (IP65, IP67)		538219	AK-8KL	
	- 8 cable through			330219	ARTORE	
	Fittings kit			538220	VG-K-M9	
· · · · · · · · · · · · · · · · · · ·						
Manual						
	Manual		German	526439	P.BE-CPX-EA-DE	
			English	526440	P.BE-CPX-EA-EN	
			Spanish	526441	P.BE-CPX-EA-ES	
~			French	526442	P.BE-CPX-EA-FR	
			Italian	526443	P.BE-CPX-EA-IT	

Technical data – Output module, digital

Function

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

Applications

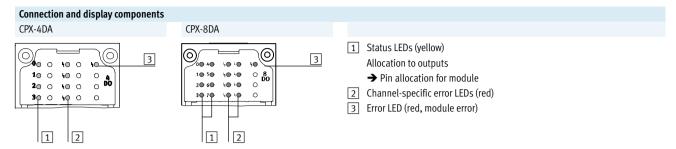
- Output module for 24 V DC supply voltage
- PNP logic
- Module features can be parameterised
- The output module receives the voltage supply for the electronics and the outputs from the interlinking block
- Module protection and diagnostics through integrated electronic fuse protection in each channel



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

Terminal CPX FESTO

Technical data – Output module, digital



Connection block/digital output module combinations						
Connection blocks	Part No.	Digital output modu	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-8DA		
CPX-AB-8-M8-3POL						
, X1 , , X5 ,	X1.1: n.c.	X5.1: n.c.	X1.1: n.c.	X5.1: n.c.		
X1 1 X5 1 3 3	X1.3: 0 V _{OUT}	X5.3: 0 V _{OUT}	X1.3: 0 V _{OUT}	X5.3: 0 V _{OUT}		
3,00	X1.4: Output x	X5.4: Output x+2	X1.4: Output x	X5.4: Output x+4		
4 $\mathbf{X2}_{1}$ 4 $\mathbf{X6}_{1}$						
X2 1 4 X6 1	X2.1: n.c.	X6.1: n.c.	X2.1: n.c.	X6.1: n.c.		
$\frac{3}{4}$ X3 $\frac{3}{1}$ $\frac{3}{4}$ X7 $\frac{3}{1}$	X2.3: 0 V _{OUT}	X6.3: 0 V _{OUT}	X2.3: 0 V _{OUT}	X6.3: 0 V _{OUT}		
X3 1 X7 1 3 3 3	X2.4: Output x+1	X6.4: Output x+3	X2.4: Output x+1	X6.4: Output x+5		
4 X4 1 4 X8 1	X3.1: n.c.	X7.1: n.c.	X3.1: n.c.	X7.1: n.c.		
, ®	X3.3: 0 V _{OUT}	X7.3: 0 V _{OUT}	X3.3: 0 V _{OUT}	X7.3: 0 V _{OUT}		
	X3.4: Output x+1	X7.4: Output x+3	X3.4: Output x+2	X7.4: Output x+6		
	X4.1: n.c.	X8.1: n.c.	X4.1: n.c.	X8.1: n.c.		
	X4.3: 0 V _{OUT}	X8.3: 0 V _{OUT}	X4.3: 0 V _{OUT}	X8.3: 0 V _{OUT}		
	X4.4: n.c.	X8.4: n.c.	X4.4: Output x+3	X8.4: Output x+7		

Technical data – Output module, digital

CPX-AB-8-M8X2-4POL 2X1 2X5 1	CPX-4DA		CPX-8DA and CPX-8DA-H	
2 X1 2 X5 1				
1, 200 1, 200 1,	X1.1: 0 V _{OUT}	X5.1: 0 V _{OUT}	X1.1: 0 V _{OUT}	X5.1: 0 V _{OUT}
4-69 4-69	X1.2: Output x+1	X5.2: n.c.	X1.2: Output x+1	X5.2: n.c.
$\frac{3}{2}$ X2 $\frac{3}{2}$ X6 $\frac{3}{2}$	X1.3: 0 V _{OUT}	X5.3: 0 V _{OUT}	X1.3: 0 V _{OUT}	X5.3: 0 V _{OUT}
~ 1 ~ 1	X1.4: Output x	X5.4: n.c.	X1.4: Output x	X5.4: n.c.
3				
${}_{2}^{\mathbf{X3}}{}_{1} \qquad {}_{2}^{\mathbf{X7}}{}_{1}$	X2.1: 0 V _{OUT}	X6.1: 0 V _{OUT}	X2.1: 0 V _{OUT}	X6.1: 0 V _{OUT}
4-69 4-69	X2.2: n.c.	X6.2: n.c.	X2.2: Output x+3	X6.2: n.c.
3/C 3/C	X2.3: 0 V _{OUT}	X6.3: 0 V _{OUT}	X2.3: 0 V _{OUT}	X6.3: 0 V _{OUT}
3 X3 2 X7 4 3 3 X8 4 3 X8 4 4 5 1	X2.4: Output x+1	X6.4: n.c.	X2.4: Output x+2	X6.4: n.c.
3 3				
	X3.1: 0 V _{OUT}	X7.1: 0 V _{OUT}	X3.1: 0 V _{OUT}	X7.1: 0 V _{OUT}
	X3.2: Output x+3	X7.2: n.c.	X3.2: Output x+5	X7.2: n.c.
	X3.3: 0 V _{OUT}	X7.3: 0 V _{OUT}	X3.3: 0 V _{OUT}	X7.3: 0 V _{OUT}
	X3.4: Output x+2	X7.4: n.c.	X3.4: Output x+4	X7.4: n.c.
	X4.1: 0 V _{OUT}	X8.1: 0 V _{OUT x+1}	X4.1: 0 V _{OUT}	X8.1: 0 V _{OUT}
	X4.2: n.c.	X8.2: n.c.	X4.2: Output x+7	X8.2: n.c.
	X4.3: 0 V _{OUT}	X8.3: 0 V _{OUT x+3}	X4.3: 0 V _{OUT}	X8.3: 0 V _{OUT}
	X4.4: Output x+3	X8.4: n.c.	X4.4: Output x+6	X8.4: n.c.
		<u> </u>	<u> </u>	+
CPX-AB-4-M12X2-5POL ¹⁾ and	d CPX-AB-4-M12X2-5POL-R ²⁾			
3 0 4 3 0 4	X1.1: n.c.	X3.1: n.c.	X1.1: n.c.	X3.1: n.c.
	X1.2: Output x+1	X3.2: Output x+3	X1.2: Output x+1	X3.2: Output x+5
+ 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1	X1.3: 0 V _{OUT}	X3.3: 0 V _{OUT}	X1.3: 0 V _{OUT}	X3.3: 0 V _{OUT}
X1 X3	X1.4: Output x	X3.4: Output x+2	X1.4: Output x	X3.4: Output x+4
X1 X3	X1.5: FE	X3.5: FE	X1.5: FE	X3.5: FE
X2 X4	X2.1: n.c.	X4.1: n.c.	X2.1: n.c.	X4.1: n.c.
	X2.2: n.c.	X4.2: n.c.	X2.2: Output x+3	X4.2: Output x+7
┴ ((***) 5 ┴ ((***)	5 X2.3: 0 V _{OUT}	X4.3: 0 V _{OUT}	X2.3: 0 V _{OUT}	X4.3: 0 V _{OUT}
4 3 4	3 X2.4: Output x+1	X4.4: Output x+3	X2.4: Output x+2	X4.4: Output x+6
	X2.5: FE	X4.5: FE	X2.5: FE	X4.5: FE
CDV AD O I/I / DOI				
CPX-AB-8-KL-4POL	V1 0. n.c	X5.0: n.c.	X1.0: n.c.	X5.0: n.c.
X1 8 .0 .0 .1 8 X5				
1 1 1 2 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3	X1.1: 0 V _{OUT}	X5.1: 0 V _{OUT}	X1.1: 0 V _{OUT}	X5.1: 0 V _{OUT}
	X1.2: Output x X1.3: FE	X5.2: Output x+2 X5.3: FE	X1.2: Output x X1.3: FE	X5.2: Output x+4 X5.3: FE
X2 - 1 1 X	X1.3: FE	A5.3: FE	X1.3: FE	A5.3: FE
x3 3 3 3 X	V2.0 n.e	V(0 - n c	V2.0 n.e	V(0 - 7 - 2
X3 2 2 2 X		X6.0: n.c.	X2.0: n.c.	X6.0: n.c.
	X2.1: 0 V _{OUT}	X6.1: 0 V _{OUT}	X2.1: 0 V _{OUT}	X6.1: 0 V _{OUT}
3 3 3 X	X2.2: Output x+1	X6.2: Output x+3	X2.2: Output x+1	X6.2: Output x+5
X4 □ 3 3 □	X2.3: FE	X6.3: FE	X2.3: FE	X6.3: FE
	X3.0: n.c.	X7.0: n.c.	X3.0: n.c.	X7.0: n.c.
	X3.1: 0 V _{OUT}	X7.1: 0 V _{OUT}	X3.1: 0 V _{OUT}	X7.1: 0 V _{OUT}
	X3.2: Output x+1	X7.2: Output x+3	X3.2: Output x+2	X7.1: 0 V ₀₀₁ X7.2: Output x+6
	X3.3: FE	X7.3: FE	X3.3: FE	X7.2: Output x+6
	AJ.J. 1L	۸/۰۶۰ ۱۲	۸۶.۶. ۱۵	Λ/.J. IL
	X4.0: n.c.	X8.0: n.c.	X4.0: n.c.	X8.0: n.c.
	X4.1: 0 V _{OUT}	X8.1: 0 V _{OUT}	X4.1: 0 V _{OUT}	X8.1: 0 V _{OUT}
	77-1. V VUII	70.1. 0 (00)		70.1. 0 1001
	X4.2: n.c.	X8.2: n.c.	X4.2: Output x+3	X8.2: Output x+7

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

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Technical data – Output module, digital

Pin allocation				
Connection block outputs	CPX-4DA		CPX-8DA and CPX-8DA-H	
CPX-AB-1-SUB-BU-25POL				
	1: Output x	14: Output x+2	1: Output x	14: Output x+4
250 013	2: Output x+1	15: Output x+3	2: Output x+1	15: Output x+5
240 - 11	3: Output x+1	16: Output x+3	3: Output x+2	16: Output x+6
230 011	4: n.c.	17: n.c.	4: Output x+3	17: Output x+7
220 010	5: n.c.	18: n.c.	5: n.c.	18: n.c.
210	6: 0 V _{OUT}	19: n.c.	6: 0 V _{OUT}	19: n.c.
200 0 7	7: n.c.	20: n.c.	7: n.c.	20: n.c.
18006	8: 0 V _{OUT}	21: n.c.	8: 0 V _{OUT}	21: n.c.
170 05	9: n.c.	22: 0 V _{OUT}	9: n.c.	22: 0 V _{OUT}
16 0 4	10: n.c.	23: 0 V _{OUT}	10: n.c.	23: 0 V _{OUT}
15 0 3	11: 0 V _{OUT}	24: 0 V _{OUT}	11: 0 V _{OUT}	24: 0 V _{OUT}
14 0 0 1	12: 0 V _{OUT}	25: FE	12: 0 V _{OUT}	25: FE
	13: FE	Housing: FE	13: FE	Housing: FE
PX-AB-4-HAR-4POL ¹⁾				
4, 1 4, 1	X1.1: n.c.	X3.1: n.c.	X1.1: n.c.	X3.1: n.c.
	X1.2: Output x+1	X3.2: Output x+3	X1.2: Output x+1	X3.2: Output x+5
	X1.3: 0 V _{OUT}	X3.3: 0 V _{OUT}	X1.3: 0 V _{OUT}	X3.3: 0 V _{OUT}
3° X1 2° X3 2°	X1.4: Output x	X3.4: Output x+2	X1.4: Output x	X3.4: Output x+4
	X2.1: n.c.	X4.1: n.c.	X2.1: n.c.	X4.1: n.c.
X2 X4 1	X2.2: n.c.	X4.2: n.c.	X2.2: Output x+3	X4.2: Output x+7
KX KX	X2.3: 0 V _{OUT}	X4.3: 0 V _{OUT}	X2.3: 0 V _{OUT}	X4.3: 0 V _{OLIT}
	X2.4: Output x+1	X4.4: Output x+3	X2.4: Output x+2	X4.4: Output x+6
3 2 3 2				

¹⁾ Not suitable for CPX-8DA-H.

Accessories – Output module, digital

Ordering data					
Designation	-				Туре
Output module, digita	al				
	4 digital output	s, power supply 1 A per channel		195754	CPX-4DA
	8 digital outputs, power supply 0.5 A per channel				CPX-8DA
	8 digital outputs, power supply 2.1 A per channel pair			550204	CPX-8DA-H
٧	1				
Connection block					
	Plastic	Plastic 8x socket, M8, 3-pin			CPX-AB-8-M8-3POL
		8x socket, M8, 4-pin		541256	CPX-AB-8-M8X2-4POL
		4x socket, M12, 5-pin		195704	CPX-AB-4-M12X2-5POL
		4x socket, M12 with quick-lock	technology, 5-pin	541254	CPX-AB-4-M12X2-5POL-R
1		Spring clip terminal, 32-pin		195708	CPX-AB-8-KL-4POL
		1x Sub-D socket, 25-pin		525676	CPX-AB-1-SUB-BU-25POL
		4x socket, quick connection, 4	-pin	525636	CPX-AB-4-HAR-4POL
	Metal	4x socket, M12, 5-pin		549367	CPX-M-AB-4-M12X2-5POL
				•	
Plug					
	Push-in	1x plug M8, 4-pin	2x socket M8, 3-pin	544391	NEDU-M8D3-M8T4
	T-connector	1x plug M12, 4-pin	2x socket M12, 5-pin	541596	NEDU-M12D5-M12T4
			2x socket M8, 3-pin	541597	NEDU-M8D3-M12T4
	Plug	M8, 3-pin	Solderable	18696	SEA-GS-M8
			Screw-in	192009	SEA-3GS-M8-S
		M12, PG7		18666	SEA-GS-7
		M12, PG7, 4-pin for cable \varnothing 2	.5 mm	192008	SEA-4GS-7-2,5
		M12, PG9		18778	SEA-GS-9
		M12 for 2 cables		18779	SEA-GS-11-DUO
		M12 for 2 cables, 5-pin		192010	SEA-5GS-11-DUO
		M12, 5-pin		175487	SEA-M12-5GS-PG7
	HARAX plug, 4-pin			525928	SEA-GS-HAR-4POL
~:	Sub-D plug, 25-	pin		527522	SD-SUB-D-ST25
Connecting cable					
	Connecting cab	le M8-M8	0.5 m	175488	KM8-M8-GSGD-0,5
			1.0 m	175489	KM8-M8-GSGD-1
			2.5 m	165610	KM8-M8-GSGD-2,5
	5.0 m			165611	KM8-M8-GSGD-5
	Connecting cab	le M12-M12	2.5 m	18684	KM12-M12-GSGD-2,5
			5.0 m	18686	KM12-M12-GSGD-5
			1.0 m	185499	KM12-M12-GSWD-1-4
	Modular system for connecting cables			-	NEBU → Internet: nebu
	DUO cable M12-2xM8, 4-pin/2x3-pin 2x		2x straight socket	18685	KM12-DUO-M8-GDGD
	200 cabic M12	2,2, 7 pin/2/2 pin	1x straight	18688	KM12-DUO-M8-GDWD
			1x angled socket	2000	12 555 1115 65115
a later		2x angled socket			KM12-DUO-M8-WDWD
			2x straight socket	18687 574591	NEDU-L2R1-M8G3-K-1L1-1L2-M8G4
	2X Straight Socke			J/7J/1	1120 FELT 11003-11-11-115-141004

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Accessories – Output module, digital

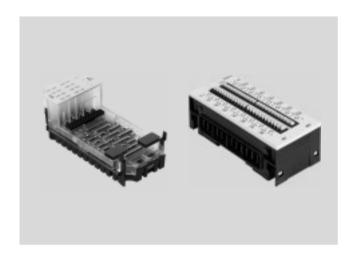
Ordering data				
Designation			Part No.	Туре
Cover				
	Cover for CPX-AB-8-KL-4POL (IP65, IP67) — 8 cable through-feeds M9 — 1 cable through-feed for multi-pin plug		538219	AK-8KL
	Fittings kit			VG-K-M9
Screening plate				
0000 0000 0000 0000	Screening plate for M12 connections		526184	CPX-AB-S-4-M12
User manual				
	User manual	German	526439	P.BE-CPX-EA-DE
		English	526440	P.BE-CPX-EA-EN
		Spanish	526441	P.BE-CPX-EA-ES
		French	526442	P.BE-CPX-EA-FR
		Italian	526443	P.BE-CPX-EA-IT

Technical data - Input/output module, digital

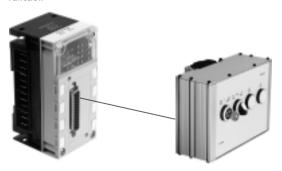
FESTO

Application

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



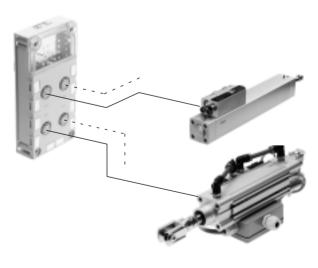
Function



The multi I/O module controls devices with a high number of inputs and outputs per connection point.

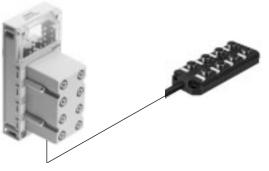
Since the module supports Sub-D connection blocks, consoles with pushbuttons and lamps can be connected to the terminal CPX using a minimal amount of installation space.

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



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

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



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

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

Technical data – Input/output module, digital

General technical data						
Туре			CPX-8DE-8DA	CPX-L-8DE-8DA		
Number	Inputs		8	8		
	Outputs		8	8		
Max. power supply	Sensor supply	[A]	0.7	1.8		
per module	Outputs	[A]	4	2		
Max. power supply per channel		[A]	0.5 (12 W lamp load,	0.25 (6 W lamp load)		
			channels 00 003 can be connected			
			in parallel to 04 07)			
Fuse protection (short circuit)			Internal electronic fuse per channel	1		
Intrinsic current consumption at no	minal operating voltage	[mA]	Typically 22	Typically 15		
Operating voltage	Nominal value	[V DC]	24	24		
	Permissible range	[V DC]	18 30	18 30		
Electrical isolation, inputs	Channel – channel		No	No		
	Channel – internal bus		No	No		
Electrical isolation, outputs	Channel – channel		No	No		
	Channel – internal bus		Yes, using an intermediate supply	No		
Characteristic	Inputs		IEC 1131-T2	IEC 1131-T2, type 01		
	Outputs		IEC 1131-T2	IEC 1131-T2		
Switching level, inputs	Signal 0	[V DC]	≤ 5	≤ 5		
	Signal 1	[V DC]	≥ 11	≥ 15		
Input debounce time		[ms]	3 (0.1 ms, 10 ms, 20 ms parameterisable)			
Switching logic			Positive logic (PNP)	Positive logic (PNP)		
LED displays	Group diagnostics		1	1		
	Channel diagnostics		-	-		
	Channel status		16	16		
Diagnostics			Short circuit/overload per channel			
			Undervoltage at outputs			
Parameterisation			Input debounce time			
			Failsafe per channel			
			Forces per channel			
			Idle mode per channel			
			Signal extension time			
			Module monitoring			
D + 1 + 50 (0500			Behaviour after short circuit	Linea		
Protection class to EN 60529	0 "	[0.0]	Depending on connection block	IP20		
Temperature range	Operation	[°C]	-5 +50	-5 +50		
Matariala	Storage/transport	[°C]	-20 +70	-20 +70		
Materials Note on materials			Reinforced PA, PC	Reinforced PA		
Grid dimension		[mm]	-	RoHS-compliant		
Dimensions (incl. interlinking block	and connection black)	[mm] [mm]	50 50 50 50 x 107 x 50 50 x 107 x 41			
WxLxH	and connection block)	[IIIIII]	30 X 10/ X 30	JU X 10/ X 41		
Product weight		[6]	38	Approx. 170		
r rouuci weigni		[g]	70	Αμβιον. 170		

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Technical data – Input/output module, digital

Connection and display components CPX-8DE-8DA CPX-L-8DE-8DA 1 Status LEDs (green) 1 Status LEDs (green) 2 3 For allocation to inputs for each input signal → pin allocation for module 2 Error LED (red, module error) 2 Status LEDs (yellow) For allocation to outputs → pin allocation for module 1 2 3 Error LED (red) (module error) 1 1

Connection block/digital I/O modu	ule combinations				
Connection blocks	onnection blocks Part No. Digital I/O module				
		CPX-8DE-8DA	CPX-L-8DE-8DA		
CPX-AB-4-M12-8POL	526178		-		
CPX-AB-8-KL-4POL	195708		-		
CPX-AB-1-SUB-BU-25POL	525676		_		

Pin allocation		
Connection block inputs/outputs	CPX-8DE-8DA	
CPX-AB-4-M12-8POL		
5, 6 5, 6	X1.1: 24 V _{SEN}	X3.1: 24 V _{SEN}
4 600 7 4 600 7	X1.2: Input x	X3.2: Input x+4
8 6 8 8 6 8	X1.3: Input x+1	X3.3: Input x+5
2^{\prime} X1 1 2^{\prime} X3 1	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
X2 2 X4 2	X1.7: Input x+4	X3.7: n.c.
1 3 1 3 3	X1.8: 0 V _{OUT}	X3.8: 0 V _{OUT}
6 5 4 6 5 4	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}

FESTO

Technical data – Input/output module, digital

Pin allocation		
Connection block inputs/outputs CP.	X-8DE-8DA	
CPX-AB-8-KL-4POL		
X10	.0: 24 V _{SEN}	X5.0: Output x+4
X1 0 0 X5 X1 X1	.1: 0 V _{SEN}	X5.1: 0 V _{OUT}
$\frac{3}{0}$ $\frac{3}{0}$ $\times 1$.2: Input x	X5.2: Output x
X2 3 3 X6 X1	.3: FE	X5.3: FE
X3	.0: Input x+4	X6.0: Output x+5
X2	.1: Input x+5	X6.1: 0 V _{OUT}
X2	.2: Input x+1	X6.2: Output x+1
X4 3 3 X8 X2	.3: FE	X6.3: FE
	.0: 24 V _{SEN}	X7.0: Output x+6
	.1: 0 V _{SEN}	X7.1: 0 V _{OUT}
	.2: Input x+2	X7.2: Output x+2
X3	.3: FE	X7.3: FE
	.0: Input x+6	X8.0: Output x+7
	.1: Input x+7	X8.1: 0 V _{OUT}
	.2: Input x+3	X8.2: Output x+3
X4	.3: FE	X8.3: FE
CDV AD 4 CUD DU 25DOL		
CPX-AB-1-SUB-BU-25POL	lament v	14: Output x
1: 250 0 13	•	•
250 012	•	15: Output x+1 16: Output x+2
240 0 11 230 0 11 4:	Input x+2 Input x+3	17: Output x+3
250 010 220 5:	•	18: Output x+4
210 0 9	Input x+5	19: Output x+5
200 0 7		20: Output x+6
19006	•	21: Output x+7
18005		22: 0 V _{OUT}
17 O O 4 1 10	SEN	23: 0 V _{OUT}
15003		24: 0 V _{OUT}
140 0 2 12	SEN	25: FE
0 1		Housing: FE
_		

Technical data – Input/output module, digital

Pin allocation			
Connection block inputs		CPX-L-8DE-8DA	
,		X1.0: 24 V _{SEN}	X9.0: 24 V _{SEN}
4 C	ਜ਼	X1.1: Input x	X9.1: Output x
X1 .0	.0 X9	X1.2: 0 V _{SEN} +out	X9.2: 0 V _{SFN} +out
	.2	7.1.2. O VSEIN OUT	75.2. O VSEN OUC
X2 .0	.0 X10 O.1	X2.0: 24 V _{SEN}	X10.0: 24 V _{SEN}
	.2		
	.0 X11).1	X2.1: Input x+1	X10.1: Output x+1
-2 X4 .0	.2 .0 X12	X2.2: 0 V _{SEN} +out	X10.2: 0 V _{SEN} +out
.10); ().1); .2	X3.0: 24 V _{SEN}	X11.0: 24 V _{SEN}
X5 .0	.0 X13	X3.1: Input x+2	X11.1: Output x+2
.10): ().1): ,2	X3.2: 0 V _{SEN} +out	X11.2: 0 V _{SEN} +out
X6.0 C C C C C C C C C	0 X14	JEN SEN	JEN SEN
).1).2	X4.0: 24 V _{SEN}	X12.0: 24 V _{SEN}
2 X7 .0 .1	.0 X15	X4.1: Input x+3	X12.1: Output x+3
	.2	X4.2: 0 V _{SEN} +out	X12.2: 0 V _{SEN} +out
2 X8 .0 .1 .2	.0 X16		J. C. Solin Factor
10	.2	X5.0: 24 V _{SEN}	X13.0: 24 V _{SEN}
		X5.1: Input x+4	X13.1: Output x+4
		X5.2: 0 V _{SEN} +out	X13.2: 0 V _{SEN} +out
		NSIZI O VSENIOUL	NISIZI O VSENI OUC
		X6.0: 24 V _{SEN}	X14.0: 24 V _{SEN}
		X6.1: Input x+5	X14.1: Output x+5
		X6.2: 0 V _{SEN} +out	X14.2: 0 V _{SEN} +out
		X7.0: 24 V _{SEN}	X15.0: 24 V _{SEN}
		X7.1: Input x+6	X15.1: Output x+6
		X7.2: 0 V _{SEN} +out	X15.2: 0 V _{SEN} +out
		X8.0: 24 V _{SEN}	X16.0: 24 V _{SEN}
		X8.1: Input x+7	X16.1: Output x+7
		X8.2: 0 V _{SEN} +out	X16.2: 0 V _{SEN} +out
Interlinking block		CPX-L-8DE-8DA	T
		The module combines the 0 V potential of the power supply	If all poles of the outputs of an output module connected to
	0V _{Valves}	for electronics and sensors with the 0 V potential of the	the right of the input/output module are to be switched off,
1	24V _{Valves}	power supply for outputs in the CPX interlinking module.	an appropriate interlinking block with additional power
	OV Output		supply for outputs must be used to the right of the input/
	24V _{Output}		output module.
	OV El./Sen.		
	24V _{El./Sen.}		
	FE		
	r E		

Accessories – Input/output module, digital

Ordering data Designation			Part No.	Туре
Input/output module	digital		Ture No.	1,500
mput/output module	8 digital inputs, 8	digital outputs	526257	CPX-8DE-8DA
		digital outputs, for CPX in plastic, including interlinking vith spring-loaded terminals	572607	CPX-L-8DE-8DA-16-KL-3POL
Connection block				
	Plastic	4x socket, M12, 8-pin	526178	CPX-AB-4-M12-8POL
		Spring-loaded terminal, 32-pin	195708	CPX-AB-8-KL-4POL
		1x socket, Sub-D, 25-pin	525676	CPX-AB-1-SUB-BU-25POL
T				
Plug				
	Plug, Sub-D, 25-pi	n	527522	SD-SUB-D-ST25
Connecting cable				
	Connecting cable N	M12	525617	KM12-8GD8GS-2-PU
			,	
Cover	Cover for CPX-AR-8	-KL-4POL (IP65, IP67)	538219	AK-8KL
	- 8 cable through		330217	AR ORE
		-feed for multi-pin plug		
	Fittings kit		538220	VG-K-M9
Companies mists				
Screening plate	Screening plate for	r M12 connections	526184	CPX-AB-S-4-M12
	Sercening plate to	THE CONNECTIONS	320104	CIXID 3 4 III.2
Manual				
Mulluat	Manual	Ge	erman 526439	P.BE-CPX-EA-DE
			glish 526440	P.BE-CPX-EA-EN
			anish 526441	P.BE-CPX-EA-ES
		Fre	ench 526442	P.BE-CPX-EA-FR
		Ita	lian 526443	P.BE-CPX-EA-IT

Technical data - Counter module, digital

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Function

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

Application

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



Description

Applications

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

Supported devices

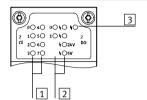
- 5 V incremental encoder, singleended or differential, with two 90° phase offset tracks
- 24 V incremental encoder, singleended, with two 90° phase offset tracks
- 24 V pulse generator with or without direction level
- 24 V direct current motors
- Absolute encoder with SSI interface (13 bits to 25 bits)

Technical data – Counter module, digital

General technical data			
Туре			CPX-2ZE2DA
Number	Inputs		2
	Outputs		2
Max. power supply	Inputs	[A]	2
per module	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 no	ominal operating voltage	[mA]	Typically 35
Operating voltage	Nominal value	[V DC]	24
	Permissible range	[V DC]	18 30
Electrical isolation, inputs	Channel – channel		No
	Channel – internal bus		No
Electrical isolation, outputs	Channel – channel		No
	Channel – internal bus		Yes, using an intermediate supply
Characteristic curve	Inputs		To IEC 1131-2, Type 02
	Outputs		IEC 1131-T2
Switching level	Signal 0	[V DC]	≤ 5
	Signal 1	[V DC]	≥11
Input debounce time		[µs]	0.1 (0.2 μs, 0.4 μs, 0.8 μs, 1 μs, 2 μs, 4 μs, 8 μs, 10 μs, 50 μs, 100 μs,
			500 μs, 1 ms, 3 ms, 10 ms, 20 ms parameterisable)
Switching logic	Inputs		Positive logic (PNP)
	Outputs		Negative logic (NPN)
			Positive logic (PNP)
			Push-pull driver
LED displays	Group diagnostics		1
	Channel diagnostics		2
	Channel status		10
D: .:	Module diagnostics		
Diagnostics			Operating mode-dependent diagnostics
Parameterisation			Switch-on/off delay Frequency output
			Speed measurement
			Pulse output
			Pulse train
			Rotational speed measurement
			Frequency measurement
			Duty cycle measurement
			Engine operating mode
			Determination of position
			Pulse width modulation
			One-off counting
			Continuous counting
			Periodic counting
Protection class to EN 60529			IP65, IP67
Temperature range	Operation	[°C]	-5 +50
	Storage/transport	[°C]	-20 +70
Certification			c UL us - Recognized (OL)
Housing material information			Plastic
Note on materials			RoHS-compliant
Grid dimension		[mm]	50
Dimensions (incl. interlinking bloc	k and connection block)	[mm]	50 x 107 x 50
WxLxH			
Product weight		[g]	130

Technical data – Counter module, digital

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

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Accessories – Counter module, digital

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

Technical data – Analogue module for inputs

Function

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

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

Application

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



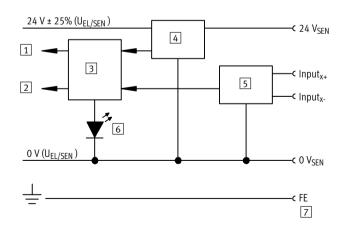
General technical data						
Туре		CPX-2AE-U-I	CPX-2AE-U-I			CPX-4AE-I
		Voltage input	Current input	Voltage input	Current input	Current
						input
No. of analogue inputs		2		4		2 or 4
Max. power supply per module	[A]	0.7				
Fuse protection		Internal electro	onic fuse			
Current consumption from 24 V sensor supply (quiescent current)	[mA]	Typically 50				
Current consumption from 24 V sensor supply (at full load)	[A]	Max. 0.7				
Nominal operating voltage, load voltage	[V DC]	24 ±2%				
Nominal operating voltage	[V DC]	24				
Operating voltage range	[V DC]	18 30				
Signal range		0 10 V	0 20 mA	1 5 V	0 20 mA	0 20 mA
(parameterisable for each channel by means of DIL switch or software)			4 20 mA	0 10 V	4 20 mA	4 20 mA
				−5 +5 V	-20 +20 mA	
				-10 +10 V		
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	40
					limited to 60	
Conversion time per channel	[µs]	Typically 150				
Cycle time (module)	[ms]	≤ 4		≤ 0.5		≤ 10
Data format		12 bit + prefix		15 bit + prefix		12 bit +
						prefix
		Scalable to 15	bit	Scalable to 15	bit	Scalable to
						15 bit
Cable length	[m]	Max. 30 (shiel	ded)	1		+

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Technical data – Analogue module for inputs

General technical data						
Туре			CPX-2AE-U-I	CPX-4AE-U-I	CPX-4AE-I	
Electrical isolation	Channel – channel		No			
	Channel – internal bus		Yes, with external sensor s	supply		
LED displays	Group diagnostics		1			
	Channel diagnostics		Via flashing frequency of	4	Via flashing frequency of	
			group diagnostics		group diagnostics	
Diagnostics			Wire break per channel	I	1	
		Limit value violation per c	hannel			
			Parameterisation error			
			Short circuit, input signal	Overload at input	Short circuit, input signal	
			-	Overflow/underflow	-	
			-	Short circuit in sensor	-	
				supply		
Parameterisation			Data format			
			Forces per channel			
			Limit value monitoring per channel			
			Measured value smoothing			
			Signal range per channel			
			Wire break monitoring per channel			
			Behaviour after short circuit			
			-	Behaviour after overload	-	
				at input		
			-	Sensor supply active	-	
Protection class to EN 60529			Depending on connection block			
Temperature range Operation		[°C]	-5 +50			
	Storage/transport	[°C]	-20 +70			
Materials			Reinforced PA, PC			
Note on materials			-	RoHS-compliant	-	
Grid dimension [mm]			50			
Dimensions (incl. interlinking block a	and connection block) W x L x H	[mm]	50 x 107 x 50			
Product weight		[g]	38	46	38	

Internal structure, basic representation



- 1 Diagnostics
- 2 Input_x

(PLC/IPC via fieldbus)

- 3 Logic
- 4 Monitoring/disconnection of the sensor supply
- 5 D/A conversion
- 6 Error LED (red, module error)
- 7 Connections on the connection block

Technical data – Analogue module for inputs

Connection and display components CPX-2AE-U-I and CPX-4AE-I CPX-4AE-U-I 1 Error LED (red, module error) 1 Error LED (red, module error) 0 0 10 0 10 4 0 0 10 0 0 01 0 0 10 0 000000 1 1 2 Channel-related error LEDs (red) 1

Connection block/analogue modu	lle combinations						
Connection blocks	Part No.	Analogue module	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	2-5POL-R ¹⁾ and CPX-M-A	AB-4-M12X2-5POL				
3 4 3 4 5 5 5 5 X1 X3	X1.2: Input U0+ X3 X1.3: 0 V _{SEN} X3 X1.4: Input U0- X3	3.2: Input U1+ 3.3: 0 V _{SEN}	X1.2: Input 0+ X3.3 X1.3: 0 V _{SEN} X3.4 X1.4: Input 0- X3.4	2: Input 2+ 3 3: 0 V _{SEN} 3 4: Input 2- 3	X1.1: 24 V _{SEN} X1.2: Input IO+ X1.3: 0 V _{SEN} X1.4: Input IO- X1.5: FE ²⁾	X3.1: 24 V _{SEN} X3.2: Input I2+ X3.3: 0 V _{SEN} X3.4: Input I2- X3.5: FE ²
X2 X4 1 2 1 2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	X2.2: Input I0+ X4 X2.3: 0 V _{SEN} X4 X2.4: Input I0- X4	4.2: Input I1+ 4.3: 0 V _{SEN}	X2.2: Input 1+ X4.2 X2.3: 0 V _{SEN} X4.2 X2.4: Input 1- X4.2	2: Input 3+ 3 3: 0 V _{SEN} 3 4: Input 3- 3	X2.1: 24 V _{SEN} X2.2: Input I1+ X2.3: 0 V _{SEN} X2.4: Input I1- X2.5: FE ²⁾	X4.1: 24 V _{SEN} X4.2: Input I3+ X4.3: 0 V _{SEN} X4.4: Input I3- X4.5: FE ²
CDV AD O KL 4 DOL						
X1	X1.1: 0 V _{SEN} X5 X1.2: Input U0- X5 X1.3: FE X5 X2.0: n.c. X6 X2.1: n.c. X6 X2.2: Input U0+ X6 X2.3: FE X6 X3.0: 24 V _{SEN} X7 X3.1: 0 V _{SEN} X7 X3.2: Input I0- X7 X3.3: FE X7 X4.0: n.c. X8 X4.1: n.c. X8 X4.2: Input I0+ X8	5.1: 0 V _{SEN} 5.2: Input U1– 5.3: FE 6.0: n.c. 6.1: n.c. 6.2: Input U1+ 6.3: FE 7.0: 24 V _{SEN} 7.1: 0 V _{SEN} 7.2: Input I1– 7.3: FE 8.0: n.c. 8.1: n.c. 8.2: Input I1+	X1.1: 0 V _{SEN} X5.1 X1.2: Input 0- X5.1 X1.3: FE X5.2 X2.0: n.c. X6.1 X2.1: n.c. X6.2 X2.2: Input 0+ X6.2 X2.3: FE X6.2 X3.0: 24 V _{SEN} X7.1 X3.1: 0 V _{SEN} X7.2 X3.2: Input 1- X7.2 X3.3: FE X7.2 X4.0: n.c. X8.1 X4.0: n.c. X8.2 X4.2: Input 1+ X8.2	1: 0 V _{SEN} 2: Input 2- 3: FE 0: n.c. 1: n.c. 2: Input 2+ 3: FE 0: 24 V _{SEN} 1: 0 V _{SEN} 2: Input 3- 3: FE 0: n.c. 2: Input 3- 3: FE 0: n.c. 2: Input 3+	X1.0: 24 V _{SEN} X1.1: 0 V _{SEN} X1.2: Input I0– X1.3: FE X2.0: n.c. X2.1: n.c. X2.2: Input I0+ X2.3: FE X3.0: 24 V _{SEN} X3.1: 0 V _{SEN} X3.2: Input I1– X3.3: FE X4.0: n.c. X4.1: n.c. X4.2: Input I1+ X4.3: FE	X5.0: 24 V _{SEN} X5.1: 0 V _{SEN} X5.2: Input I2– X5.3: FE X6.0: n.c. X6.1: n.c. X6.2: Input I2+ X6.3: FE X7.0: 24 V _{SEN} X7.1: 0 V _{SEN} X7.1: 0 V _{SEN} X7.2: Input I3– X7.3: FE X8.0: n.c. X8.1: n.c. X8.2: Input I3+ X8.3: FE

Speedcon quick lock, shield additionally on metal thread
 FE/shield additionally on metal thread

FESTO

Technical data – Analogue module for inputs

Pin allocation												
Connection block inputs	CPX-2	2AE-U-I			CPX-4	AE-U-I			CPX-4	AE-I		
CPX-AB-1-SUB-BU-25POL												
	1:	Input U0-	14:	Input U1-	1:	Input 0-	14:	Input 2-	1:	Input IO-	14:	Input I2-
250 013	2:	Input U0+	15:	Input U1+	2:	Input 0+	15:	Input 2+	2:	Input I0+	15:	Input I2+
240 012	3:	Input IO-	16:	Input I1-	3:	Input 1-	16:	Input 3-	3:	Input I1-	16:	Input I3-
230 011 010	4:	Input I1+	17:	Input I1+	4:	Input 1+	17:	Input 3+	4:	Input I1+	17:	Input 13+
220	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.
200 0 7	7:	n.c.	20:	24 V _{SEN}	7:	n.c.	20:	24 V _{SEN}	7:	n.c.	20:	24 V _{SEN}
18006	8:	n.c.	21:	n.c.	8:	n.c.	21:	n.c.	8:	n.c.	21:	n.c.
170 05	9:	24 V _{SEN}	22:	0 V _{SEN}	9:	24 V _{SEN}	22:	0 V _{SEN}	9:	24 V _{SEN}	22:	0 V _{SEN}
16 0 4	10:	24 V _{SEN}	23:	0 V _{SEN}	10:	24 V _{SEN}	23:	0 V _{SEN}	10:	24 V _{SEN}	23:	0 V _{SEN}
150 3	11:	0 V _{SEN}	24:	0 V _{SEN}	11:	0 V _{SEN}	24:	0 V _{SEN}	11:	0 V _{SEN}	24:	0 V _{SEN}
14 0 0 2	12:	0 V _{SEN}	25:	FE	12:	0 V _{SEN}	25:	FE	12:	0 V _{SEN}	25:	FE
	13:	Shield ¹⁾	Housi	ing: FE	13:	Shield ¹⁾	Housi	ng: FE	13:	Shield ¹⁾	Housi	ng: FE

¹⁾ Connect shield to functional earth FE

Accessories – Analogue module for inputs

Ordering data					
g				Part No.	Туре
nput module, analo	ogue	i			•
	2 analogue current or v	voltage inputs		526168	CPX-2AE-U-I
	4 analogue current or v	oltage inputs		573710	CPX-4AE-U-I
	2 or 4 analogue current	t inputs		541484	CPX-4AE-I
onnection block					
A	Plastic 4x socket, M12, 5-pin			195704	CPX-AB-4-M12X2-5POL
		4x socket, M12 with quick-lo	ock 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
r	Metal	4x socket, M12, 5-pin		549367	CPX-M-AB-4-M12X2-5POL
	_			·	
lug					
	Plug, M12, 5 pin			175487	SEA-M12-5GS-PG7
	Plug, Sub-D, 25-pin			527522	SD-SUB-D-ST25
Cover					
<u> </u>	Cover for CPX-AB-8-KL-4	4POL (IP65, IP67)		538219	AK-8KL
	- 8 cable through-feed				
	- 1 cable through-feed	d for multi-pin plug			
	Fittings kit			538220	VG-K-M9
creening plate					
10000 10000	Screening plate for M12 connections			526184	CPX-AB-S-4-M12
Manual					
Manual	Manual		German	526415	P.BE-CPX-AX-DE
Manual	Manual		German English	526415 526416	P.BE-CPX-AX-DE P.BE-CPX-AX-EN
Manual	Manual		English	526416	P.BE-CPX-AX-EN
Manual	Manual				

Technical data – Analogue input module with pressure sensors

Function

The pressure input modules enable a maximum of four pressures to be processed. The internal measured value of the sensor (analogue value with 10 bit resolution) is converted into an internal numerical format as appropriate to the parameterisation and made available to the bus node as an image table. It is also possible to combine two channels into one differential pressure channel.

Applications

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



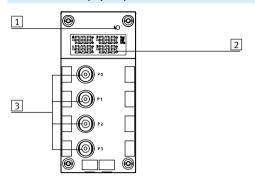
General technical data							
Туре			CPX-4AE-P-B2	CPX-4AE-P-D10			
No. of analogue inputs			4				
Pneumatic connection			QS-4				
Nominal operating voltage		[V DC]	24				
Operating voltage range		[V DC]	1830				
Intrinsic current consumption		[mA]	Typically 50				
Measured variable			4x relative or 2x differential p	ressure measurement			
Displayable units			• kPa				
			• mbar				
			• psi				
Pressure measuring range	Starting value	[bar]	-1	0			
	Final value	[bar]	1	10			
Internal cycle time		[ms]	5				
Data format			• 15 bits + prefix				
			Binary representation in m	bar, kPa, psi			
LED displays				Group diagnostics			
Diagnostics			Limit value violation per channel				
			Parameterisation error				
			Sensor limit per channel				
Parameterisation			Diagnostic delay per channel				
			Hysteresis per module				
			Unit of measurement				
			Measured value smoothing per channel				
			Limit value monitoring per channel				
			Sensor limit per channel				
			Measurement of relative/d	ifferential pressure			
Protection class to EN 60529			IP65, IP67				
Operating medium			Compressed air in accordance with ISO 8573-1:2010 [7:4:4]				
Note on operating/pilot medium			Operation with lubricated medium possible (in which case lubricated opera-				
			tion will always be required)				
Ambient temperature		[°C]	-5 50				
	Storage temperature [°C]		-20 70				
Temperature of medium		[°C]	0 50				
Note on materials			RoHS-compliant				
Materials			Reinforced PA, PC				
Grid dimension	12.14	[mm]	50				
Dimensions (incl. interlinking bloc	k) W x L x H	[mm]	50 x 107 x 55				
Weight		[g]	112				



Extreme pneumatic conditions, for example high cycle frequency with large pressure amplitudes, can damage the sensors. $\frac{1}{2} \left(\frac{1}{2} \right) = \frac{1}{2} \left(\frac{1}{2} \right) \left($

Accessories – Analogue input module with pressure sensors

Connection and display components



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

Ordering data							
Designation		Part No.	Туре				
Input module, analo			1 4.101	.,,,,,			
imput module, anato	4 analogue pressure inputs, pressure range –1 +1 bar			CPX-4AE-P-B2			
	4 analogue pressure inputs, pressure range 0 10 bar			CPX-4AE-P-D10			
Inscription labels	Inscription labels						
• • • • • • • • • • • • • • • • • • •	Inscription labels 6x10, 64 pieces, in frames			IBS-6x10			
User manual							
	User manual	German	526415	P.BE-CPX-AX-DE			
		English	526416	P.BE-CPX-AX-EN			
		Spanish	526417	P.BE-CPX-AX-ES			
		French	526418	P.BE-CPX-AX-FR			
		Italian	526419	P.BE-CPX-AX-IT			

Technical data – Analogue module for temperature inputs

Function

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

Applications

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



General technical data			
Туре			CPX-4AE-T
			Temperature input
No. of analogue inputs			Choice of 2 or 4
Max. power supply per module		[A]	0.7
Fuse protection			Internal electronic fuse for sensor supply
Current consumption from 24 V ser	nsor supply (quiescent current)	[mA]	Typically 50
Supply voltage of sensors		[V DC]	24 ±25%
Sensor type (parameterisable for ea	ach channel by means of DIL switch)		PT100, PT200, PT500, PT1000
			Ni100, Ni120, Ni500, Ni1000
Temperature range	Pt standard	[°C]	-200 +850
	Pt climatic	[°C]	-120 +130
	Ni	[°C]	-60 +180
Sensor connection technology			2-wire, 3-wire and 4-wire technology
Resolution			15 bit + prefix
Operating error limit relative to inp	ut range	[%]	±0.06
Basic error limit (25 °C)	Standard	[K]	±0.6
	Pt climatic	[K]	±0.2
Temperature errors relative to inpu	t range	[%]	±0.001
Linearity errors (no software scaling	g)	[%]	±0.02
Repetition accuracy (at 25 °C) [%]		[%]	±0.05
Max. line resistance per wire		[Ω]	10
Max. permissible input voltage		[V]	±30
Cycle time (module)		[ms]	≤ 250

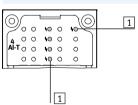
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Technical data – Analogue module for temperature inputs

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

Connection and display components

CPX-4AE-T



- Error LED (red, module error)Channel-specific error LEDs (red)

Connection block/analogue module combinations				
Connection blocks	Part No.	Temperature module		
		CPX-4AE-T		
CPX-AB-4-M12X2-5POL	195704			
CPX-AB-4-M12X2-5POL-R	541254			
CPX-AB-8-KL-4POL	195708			
CPX-AB-4-HAR-4POL	525636			
CPX-M-AB-4-M12X2-5POL	549367			

Technical data – Analogue module for temperature inputs

Pin allocation		
Connection block inputs	CPX-4AE-T	
CPX-AB-4-M12X2-5POL, CPX-AB-4-M12X	(2-5POL-R ¹⁾ and CPX-M-AB-4-M12X2-5POL	
3 @ 4 3 @ 4	X1.1: Input I0+	X3.1: Input I2+
369 5	X1.2: Input U0+	X3.2: Input U2+
<u> </u>	X1.3: Input I0-	X3.3: Input I2-
2 1 2 1	X1.4: Input U0-	X3.4: Input U2-
X1 X3	X1.5: FE ²⁾	X3.5: FE ²⁾
X2 X4	X2.1: Input I1+	X4.1: Input I3+
1 1 2	X2.2: Input U1+	X4.2: Input U3+
5 -	X2.3: Input I1-	X4.3: Input I3-
= 3 = 3	X2.4: Input U1-	X4.4: Input U3–
-	X2.5: FE ²⁾	X4.5: FE ²⁾
CPX-AB-8-KL-4POL		
	X1.0: Input I0+	X5.0: Input I2+
X1 0 0 0 X5	X1.1: Input IO-	X5.1: Input I2-
	X1.2: Input U0-	X5.2: Input U2–
	X1.3: FE	X5.3: FE
X3 1 1 1 X7	X2.0: n.c.	X6.0: n.c.
	X2.1: n.c.	X6.1: n.c.
	X2.2: Input U0+	X6.2: InputUI2+
X3	X2.3: FE	X6.3: FE
	X3.0: Input I1+	X7.0: Input I3+
	X3.1: Input I1-	X7.1: Input I3-
	X3.2: Input U1-	X7.2: Input U3-
	X3.3: FE	X7.3: FE
	X4.0: n.c.	X8.0: n.c.
	X4.1: n.c.	X8.1: n.c.
	X4.2: Input U1+	X8.2: Input U3+
	X4.3: FE	X8.3: FE
	1	I
CPX-AB-4-HAR-4POL		
4 - 1 4 - 1	X1.1: Input I0+	X3.1: Input I2+
	X1.2: Input U0+	X3.2: Input U2+
	X1.3: Input IO-	X3.3: Input I2-
$\frac{3}{2}$ X1 $\frac{2}{3}$ X3 $\frac{2}{3}$	X1.4: Input U0-	X3.4: Input U2-
	·	, ·
V2 V4	X2.1: Input I1+	X4.1: Input I3+
X2	X2.2: Input U1+	X4.2: Input U3+
	X2.3: Input I1-	X4.3: Input I3-
	X2.4: Input U1-	X4.4: Input U3-
3 2 3 2	· ·	·

- Speedcon quick lock, screening additionally on metal thread
 FE/screening additionally on metal thread

Accessories – Analogue module for temperature inputs

Ordering data				
Designation			Part No.	Туре
Input module, analo	gue			
	2 or 4 analogue temperat	ture inputs	541486	CPX-4AE-T
Connection block				
Connection block	Plastic	4x socket, M12, 5-pin	195704	CPX-AB-4-M12X2-5POL
	rasire	4x socket, M12 with quick-lock technology, 5-pin	541254	CPX-AB-4-M12X2-5POL-R
		Spring clip terminal, 32-pin	195708	CPX-AB-8-KL-4POL
		4x socket, quick connection, 4-pin	525636	CPX-AB-4-HAR-4POL
	Metal	4x socket, M12, 5-pin	549367	CPX-M-AB-4-M12X2-5POL
	metat	4x 300ket, 1112, 3 pm	347307	CIA III AD 4 III 2A2 31 CE
Plug				
	M12 plug, 5-pin		175487	SEA-M12-5GS-PG7
	HARAX plug, 4-pin		525928	SEA-GS-HAR-4POL
Course				
Cover	Cover for CPX-AB-8-KL-4P	OU (ID4E ID47)	538219	AK-8KL
	 8 cable through-feeds 		330219	AK-OKL
	 1 cable through-feed for 			
		or matti-pin piug		1/0 // 110
	Fittings kit		538220	VG-K-M9
6				
Screening plate	Communication and the state of		F2/40/	CDV AD C / M42
	Screening plate for M12 of	connections	526184	CPX-AB-S-4-M12
User manual	11	C	F0//4-	DDF CDV AV DF
	User manual	German	526415	P.BE-CPX-AX-DE
		English	526416	P.BE-CPX-AX-EN
		Spanish	526417	P.BE-CPX-AX-ES
•		French	526418	P.BE-CPX-AX-FR
		Italian	526419	P.BE-CPX-AX-IT

Technical data – Analogue module for thermocoupler

Function

The CPX-4AE-TC analogue input module with four channels for temperature measurement enables up to four thermocoupler sensors to be connected. The channels feature wire break and short circuit detection.

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

Applications

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



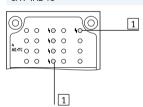
General technical data		
Туре		CPX-4AE-TC
		Temperature input
No. of analogue inputs		4
Fuse protection (short circuit)		Internal electronic fuse for each channel
Nominal operating voltage	[V DC]	24
Operating voltage range	[V DC]	18 30
Sensor type (parameterisable for each channel by means of software)		• Type B +400 +1,820 °C, 8 μV/°C
		• Type E −270 +900 °C, 60 µV/°C
		• Type J –200 +1,200 °C, 51 μV/°C
		• Type K −200 +1,370 °C, 40 µV/°C
		• Type N −200 +1,300 °C, 38 µV/°C
		• Type R 0 +1,760 °C, 12 μV/°C
		• Type S 0 +1,760 °C, 11 μV/°C
		• Type T –200 +400 °C, 40 μV/°C
Sensor connection technology		2-wire technology
Operating error limit relative to ambient temperature	[%]	Max. ±0.6
Basic error limit (at 25 °C)	[%]	Max. ±0.4
Repetition accuracy (at 25 °C)	[%]	±0.05
Max. line resistance per wire	[Ω]	10
Max. residual current per module	[mA]	30
Max. permissible input voltage	[V]	±30
Internal cycle time (module)	[ms]	250

Technical data – Analogue module for thermocoupler

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

Connection and display components

CPX-4AE-TC



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

Connection block/analogue module combinations		
Connection blocks	Part No.	Temperature module
		CPX-4AE-TC
CPX-AB-4-M12X2-5POL	195704	
CPX-AB-4-M12X2-5POL-R	541254	
CPX-AB-8-KL-4POL	195708	
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Technical data – Analogue module for thermocoupler

Pin allocation		
Connection block inputs	CPX-4AE-TC	
CPX-AB-4-M12X2-5POL, CPX-AB-4-M12X	2-5POL-R ¹⁾ and CPX-M-AB-4-M12X2-5POL	
3 ~ 4 3 ~ 4	X1.1: Input I0+	X3.1: Input I2+
5 - 100 5	X1.2: Input U0+	X3.2: Input U2+
	X1.3: Input IO-	X3.3: Input I2-
X1 X3	X1.4: Input U0-	X3.4: Input U2-
X1 X3	X1.5: FE ²⁾	X3.5: FE ²⁾
X2 X4	X2.1: Input I1+	X4.1: Input I3+
1 2 1 2	X2.2: Input U1+	X4.2: Input U3+
	X2.3: Input I1-	X4.3: Input I3-
= 4 3 = 4 3	X2.4: Input U1-	X4.4: Input U3-
	X2.5: FE ²⁾	X4.5: FE ²⁾
CPX-AB-8-KL-4POL		
X100X5	X1.0: Input I0+	X5.0: Input I2+
X1 0 0 X5 X5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	X1.1: Input I0-	X5.1: Input I2-
	X1.2: Input U0-	X5.2: Input U2-
X2 3 1 2 X6	X1.3: FE	X5.3: FE
X2		
X3 🔚 1 1 1 1 X7	X2.0: n.c.	X6.0: n.c.
X3	X2.1: n.c.	X6.1: n.c.
	X2.2: Input U0+	X6.2: InputUI2+
X4 3 3 3 X8	X2.3: FE	X6.3: FE
	X3.0: Input I1+	X7.0: Input I3+
	X3.1: Input I1-	X7.1: Input I3-
	X3.2: Input U1-	X7.2: Input U3-
	X3.3: FE	X7.3: FE
	X4.0: n.c.	X8.0: n.c.
	X4.1: n.c.	X8.1: n.c.
	X4.2: Input U1+	X8.2: Input U3+
	X4.3: FE	X8.3: FE

- Speedcon quick lock, screening additionally on metal thread
 FE/screening additionally on metal thread

Accessories – Analogue module for thermocoupler

Ordering data				
Designation			Part No.	Туре
Input module, anal	ogue			
	4 analogue temperature for cold junction compen	inputs, with 2-wire connection for a PT1000 sensor sation	553594	CPX-4AE-TC
Connection block				
	Plastic	4x socket, M12, 5-pin	195704	CPX-AB-4-M12X2-5POL
	Plastic			
		4x socket, M12 with quick-lock technology, 5-pin	541254	CPX-AB-4-M12X2-5POL-R
]	Spring clip terminal, 32-pin	195708	CPX-AB-8-KL-4POL
	Metal	4x socket, M12, 5-pin	549367	CPX-M-AB-4-M12X2-5POL
old junction comp	ensation			
		sor for cold junction compensation	553596	CPX-W-PT1000
lug				
	M12 plug, 5-pin		175487	SEA-M12-5GS-PG7
Cover				
	Cover for CPX-AB-8-KL-4F	POL (IP65, IP67)	538219	AK-8KL
	- 8 cable through-feeds	M9		
	- 1 cable through-feed f	or multi-pin plug		
	Fittings kit		538220	VG-K-M9
·	1		J.	
Screening plate				
0000	Screening plate for M12	connections	526184	CPX-AB-S-4-M12
Jser manual				
^	User manual	German	526415	P.BE-CPX-AX-DE
	, Joer manaat	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
		- Carrant	720717	

Technical data – Analogue module for outputs

Function

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

Applications

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



General technical data				
Туре			CPX-2AA-U-I	
			Voltage output	Current output
No. of analogue outputs			2	
Max. actuator supply per module		[A]	2.8	
Fuse protection			Internal electronic fuse for actu	ator supply
Current consumption from 24 V se		[mA]	Max. 150	
Current consumption from 24 V a	ctuator supply (at full load)	[A]	4 10	
Supply voltage of actuators		[V DC]	24 ±25%	
Signal range			0 10 V DC	0 20 mA
(parameterisable for each channe	l by means of DIL switch or software)			4 20 mA
Resolution		[bit]	12	
No. of units			4,096	
Absolute accuracy		[%]	±0.6	
Linearity errors (no software scali	ng)	[%]	±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	[μF]	Max. 1	-
	load			
	Load resistance for inductive	[mH]	-	Max. 1
	load			
	Short circuit protection analogue)	Yes	-
	output			
	Short circuit current analogue	[mA]	Approx. 20	-
	output			
	Open circuit voltage	[V DC]	-	18
	Destruction limit against	[V DC]	15	<u> </u>
	externally applied voltage			
	Actuator connection		2 wires	
Cycle time (module)		[ms]	≤ 4	

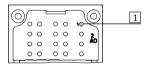
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Technical data – Analogue module for outputs

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

Connection and display components

CPX-2AA-U-I



1 Error LED (red, module error)

Connection block/analogue module combinations			
Connection blocks	Part No.	Analogue module	
		CPX-2AA-U-I	
CPX-AB-4-M12X2-5POL	195704	•	
CPX-AB-4-M12X2-5POL-R	541254		
CPX-AB-8-KL-4POL	195708		
CPX-AB-1-SUB-BU-25POL	525676		
CPX-M-AB-4-M12X2-5POL	549367		

Technical data – Analogue module for outputs

Pin allocation	Pin allocation				
Connection block outputs	Connection block outputs CPX-2AA-U-I				
CPX-AB-4-M12X2-5POL, CPX-AB-	4-M12X2-5POL-R ¹⁾ and CPX-M-AB-4-M12X2-5POL				
3. 4 3. 4	X1.1: 24 V _{OUT}	X3.1: 24 V _{OUT}			
5 -	X1.2: Output U0+	X3.2: Output U1+			
	X1.3: 0 V _{OUT}	X3.3: 0 V _{OUT}			
X1 X3	X1.4: Output GND	X3.4: Output GND			
	X1.5: FE ²⁾	X3.5: FE ²⁾			
X2 X4	V2.4 27.V	V/ 4 2/ V			
1 2 1 2	X2.1: 24 V _{OUT} X2.2: Output I0+	X4.1: 24 V _{OUT} X4.2: Output I1+			
	X2.3: 0 V _{OUT}	X4.3: 0 V _{OUT}			
+ 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1	X2.4: Output GND	X4.4: Output GND			
4 9 4 9	X2.5: FE ²⁾	X4.5: FE ²⁾			
CPX-AB-8-KL-4POL					
X1 🗀 9 9 🖂 X5	X1.0: 24 V _{OUT}	X5.0: 24 V _{OUT}			
1 1 1 2 2 3 3 3 3	X1.1: 0 V _{OUT}	X5.1: 0 V _{OUT}			
	X1.2: Output GND	X5.2: Output GND			
X2 3 2 X6	X1.3: FE	X5.3: FE			
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3					
X3 1 1 X7	X2.0: n.c.	X6.0: n.c.			
	X2.1: n.c.	X6.1: n.c.			
74 3 3 3 X8	X2.2: Output U0+	X6.2: Output U1+			
	X2.3: FE	X6.3: FE			
	V2.0. 24.V	N7.0. 24.14			
	X3.0: 24 V _{OUT}	X7.0: 24 V _{OUT}			
	X3.1: 0 V _{OUT}	X7.1: 0 V _{OUT}			
	X3.2: Output GDN X3.3: FE	X7.2: Output GND X7.3: FE			
	A3.3: FE	\(\lambda\).5: FE			
	X4.0: n.c.	X8.0: n.c.			
	X4.1: n.c.	X8.1: n.c.			
	X4.2: Output IO+	X8.2: Output l1+			
	X4.3: FE	X8.3: FE			
	I				
CPX-AB-1-SUB-BU-25POL					
	1: Output GND	14: Output GND			
250 013	2: Output U0+	15: Output U1+			
24O 012	3: Output GND	16: Output GND			
230 O10 220 O10	4: Output IO+	17: Output l1+			
220 0 9	5: n.c.	18: 24 V _{OUT}			
200 0 8	6: n.c.	19: n.c.			
19 0 0 7	7: n.c. 8: n.c.	20: 24 V _{OUT} 21: n.c.			
180 0.5	8: n.c. 9: 24 V _{OUT}				
170 04	9: 24 V _{OUT} 10: 24 V _{OUT}	22: 0 V _{OUT} 23: 0 V _{OUT}			
16 0 3	11: 0 V _{OUT}	29: 0 Vout 24: 0 V _{OUT}			
14 0 2	12: 0 V _{OUT}	25: FE			
0 1	13: Screening ³⁾	Housing: FE			
<u> </u>		0			

- Speedcon quick lock, screening additionally on metal thread
 FE/screening additionally on metal thread
 Connect screening to functional earth FE

Accessories – Analogue module for outputs

Ordering data				
Designation			Part No.	Туре
Output module, anal	ogue		<u>'</u>	
	2 analogue current or vol	tage outputs	526170	CPX-2AA-U-I
Connection block				
Connection block	Plastic	4x socket, M12, 5-pin	195704	CPX-AB-4-M12X2-5POL
		4x socket, M12 with quick-lock technology, 5-pin	541254	CPX-AB-4-M12X2-5POL-R
		Spring clip terminal, 32-pin	195708	CPX-AB-8-KL-4POL
		1x Sub-D socket, 25-pin	525676	CPX-AB-1-SUB-BU-25POL
	Metal	4x socket, M12, 5-pin	549367	CPX-M-AB-4-M12X2-5POL
	metat	4X 300RCC, M12, 3 pm	347307	CIA III AD 4 INIZAZ 51 OL
Plug				
	M12 plug, 5-pin		175487	SEA-M12-5GS-PG7
	Sub-D plug, 25-pin		527522	SD-SUB-D-ST25
Connecting cable				
	Modular system for conne	ecting cables	_	NEBU
				→ Internet: nebu
Cover				
<u> </u>	Cover for CPX-AB-8-KL-4P	OL (IP65, IP67)	538219	AK-8KL
	- 8 cable through-feeds			
	- 1 cable through-feed for			
	Fittings kit	F F0	538220	VG-K-M9
- *				
Screening plate				
10000 10000 10000	Screening plate for M12 of	connections	526184	CPX-AB-S-4-M12
,				
User manual				
	User manual	German	526415	P.BE-CPX-AX-DE
		English	526416	P.BE-CPX-AX-EN
		Spanish	526417	P.BE-CPX-AX-ES
		French	526418	P.BE-CPX-AX-FR
•		TTETTETT	526419	P.BE-CPX-AX-IT

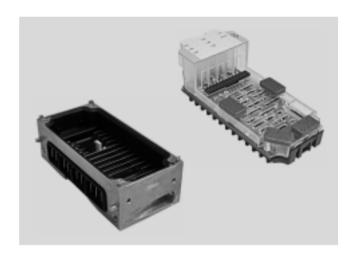
Technical data – PROFIsafe shut-off module

Function

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

Scope of application

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



General technical data			
Туре			CPX-FVDA-P2
Number of outputs			2
Note on outputs			1 internal channel for shutting off the supply voltage for valves
			2 external outputs
Max. power supply	Per module	[A]	5
	Per channel	[A]	1.5
Fuse protection (short circuit)			Internal electronic fuse for each channel
Current consumption of module		[mA]	Typ. 65 (power supply for valves)
		[mA]	Typ. 25 (power supply for electronics)
Operating voltage	Nominal value	[V DC]	24
	Permissible range	[V DC]	20.4 28.8
Voltage drop per channel		[V]	0.6
Residual ripple		[Vss]	2 within voltage range
Load capacity to FE		[nF]	400
Max. response time to shut-off comm	nand	[ms]	23
Electrical isolation	Channel – channel		No
	Channel – internal bus		Yes, using an intermediate supply
Switching logic	Outputs		P-M switching
Safety integrity level			Safe shut off, SIL 3
Performance level			Safe shut off/category 3, performance level e
Failure rate per hour (PFH)			1.0x10 ⁻⁹
Certificate issuing authority			01/205/50294/13
LED displays	Group diagnostics		1
	Channel diagnostics		3
	Channel status		3
	Failsafe protocol active		1
Diagnostics			Short circuit/overload per channel
			Undervoltage of valves
			Cross circuit
			Wire break per channel
Parameterisation			Wire break monitoring per channel
			Diagnostic behaviour
Protection class to EN 60529			Depending on connection block
Materials			PA reinforced, PC
Note on materials			RoHS-compliant
Grid dimension		[mm]	50
Dimensions (incl. interlinking block	and connection block) W x L x H	[mm]	50 x 107 x 55

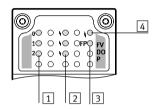
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Technical data – PROFIsafe shut-off module

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

Connection and display components

CPX-FVDA-P2



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

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

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



Note

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

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Technical data – PROFIsafe shut-off module

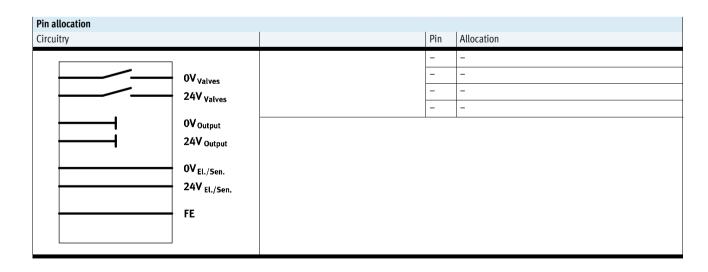
Combinations of connection blocks and PROFIsafe shut-off module			
Connection blocks	Part No.	PROFIsafe shut-off module	
		CPX-FVDA-P2	
CPX-M-AB-4-M12X2-5POL	549367		
CPX-AB-8-KL-4POL	195708		

Pin allocation		
Connection block outputs	CPX-FVDA-P2	
CPX-M-AB-4-M12X2-5POL		
3 4 3 4 5 5 5 5 X1 X3	X1.1: 0 V _{OUT} 1 (cannot be shut off) X1.2: 24 V _{OUT} 1 (cannot be shut off) X1.3: 0 V _{OUT} 1 (can be shut off via fieldbus) X1.4: 24 V _{OUT} 1 (can be shut off via fieldbus) X1.5: FE (earth)	X3.1: n.c. X3.2: n.c. X3.3: n.c. X3.4: n.c. X3.5: FE (earth)
X2 X4 1 2 1 2 2 3 5 4 3 5 5 5 5 5 5 6 6 6 6 6 6 6 6 6 6 6 6 6	X2.1: 0 V _{OUT} 2 (cannot be shut off) X2.2: 24 V _{OUT} 2 (cannot be shut off) X2.3: 0 V _{OUT} 2 (can be shut off via fieldbus) X2.4: 24 V _{OUT} 2 (can be shut off via fieldbus) X2.5: FE (earth)	X4.1: n.c. X4.2: n.c. X4.3: n.c. X4.4: n.c. X4.5: FE (earth)
CPX-AB-8-KL-4POL	T.,	T.,
X1	X1.0: 0 V _{OUT} 1 (cannot be shut off) X1.1: 0 V _{OUT} 1 (can be shut off via fieldbus) X1.2: 24 V _{OUT} 1 (can be shut off via fieldbus) X1.3: FE (earth) X2.0: n.c. X2.1: n.c. X2.2: 24 V _{OUT} 1 (cannot be shut off) X2.3: FE (earth)	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.
	X3.0: 0 V _{OUT} 2 (cannot be shut off) X3.1: 0 V _{OUT} 2 (can be shut off via fieldbus) X3.2: 24 V _{OUT} 2 (can be shut off via fieldbus) X3.3: FE (earth) X4.0: n.c. X4.1: n.c. X4.2: 24 V _{OUT} 2 (cannot be shut off) X4.3: FE (earth)	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.

Technical data – PROFIsafe shut-off module

Combinations of interlinking blocks and PROFIsafe shut-off module			
Interlinking blocks	Part No.	PROFIsafe shut-off module	
		CPX-FVDA-P2	
CPX-GE-EV-S	195746	-	
CPX-GE-EV-S-7/8-4POL	541248	-	
CPX-GE-EV-S-7/8-5POL	541244	-	
CPX-M-GE-EV-S-7/8-CIP-4P	568956	-	
CPX-M-GE-EV-S-7/8-5POL	550208	-	
CPX-M-GE-EV-S-PP-5POL	563057	-	
CPX-GE-EV	195742	-	
CPX-M-GE-EV	550206	-	
CPX-M-GE-EV-FVO	567806		
CPX-GE-EV-Z	195744	-	
CPX-GE-EV-Z-7/8-4POL	541250	-	
CPX-GE-EV-Z-7/8-5POL	541246	-	
CPX-M-GE-EV-Z-7/8-5POL	550210	-	
CPX-M-GE-EV-Z-PP-5POL	563058	-	
CPX-GE-EV-V	533577	-	
CPX-GE-EV-V-7/8-4POL	541252	-	

General technical data		
Туре		CPX-M-GE-EV-FVO
Nominal operating voltage	[V DC]	24
Acceptable current load (per contact/contact rail)	[A]	16
Protection class to EN 60529		Depending on connection block
Ambient temperature	[°C]	-5 +50
Material declaration		RoHS-compliant
Note on materials		Die-cast aluminium
Type of mounting		Angled fitting
Grid dimension	[mm]	50
Dimensions W x L x H	[mm]	50 x 107 x 35
Product weight	[g]	170



Accessories – PROFIsafe shut-off module

Ordering data	Description			Part No.	Туре
	Description			Part No.	іуре
ROFIsafe shut-off n					
	Metal connection block	4x socket, M12, 5-pin		549367	CPX-M-AB-4-M12X2-5POL
	Plastic connection block	Spring-loaded terminal, 32-pin		195708	CPX-AB-8-KL-4POL
	Electronics module (can only be used with	PROFINET, PROFIBL	JS	1971599	CPX-FVDA-P2
	CPX-M-GE-EV-FVO)	FROTINEI, FROTIBUS			
	Metal interlinking block (only for CPX-FVDA-	/DA-P2)		567806	CPX-M-GE-EV-FVO
	,				
lug					
	Push-in T-connector	2x socket M12, 5-pin 1x plug M12, 4-pin		541596	NEDU-M12D5-M12T4
	Plug	M12, PG7	M12, PG7		SEA-GS-7
		M12, PG7, 4-pin for cable Ø 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
onnecting cable					
	Connecting cable M12-M12	Straight plug –	2.5 m	18684	KM12-M12-GSGD-2,5
20	6060	straight socket	5.0 m	18686	KM12-M12-GSGD-5
N. W.		Straight plug –	1.0 m	185499	KM12-M12-GSWD-1-4
		angled socket			
	Modular system for connecting cables			-	NEBU → Internet: nebu
	DUO cable M12	2x straight socket		18685	KM12-DUO-M8-GDGD
		2x straight/angled socket		18688	KM12-DUO-M8-GDWD
0.00	2x angled socket		18687	KM12-DUO-M8-WDWD	
anual					
Manual for PROFIsafe shut-off module			German	8022606	P.BE-CPX-FVDA-P2-DE
	Manual IOI FROITSale Shut-on injudite		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	

Technical data – End plate with system power supply

Function

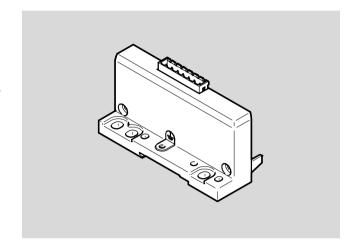
End plates form the outer edge of the CPX terminal.

The earth connection and mounting holes for wall or H-rail mounting are located on the left end plate.

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

Application

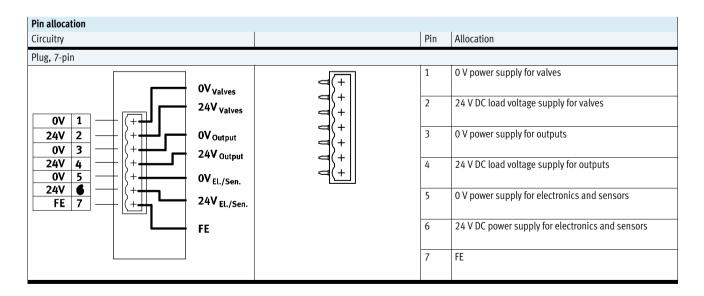
- 24 V DC supply voltage for the electronics of the CPX terminal
- 24 V DC supply voltage for inputs
- 24 V DC supply voltage for valves
- 24 V DC supply voltage for outputs



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

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

Operating and environmental conditions	
Approval certificate	cULus Recognized (OL)



Accessories – End plate with system power supply

Ordering data				
			Part No.	Туре
End plate with system	power supply		1	
	End plate for CPX terminal in plastic design		576315	CPX-EPL-EV-S
Terminal strip				
	Plug, 7-pin, straight	Spring-loaded terminal	576319	NECU-L3G7-C1

Technical data – End plate with extension

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Function

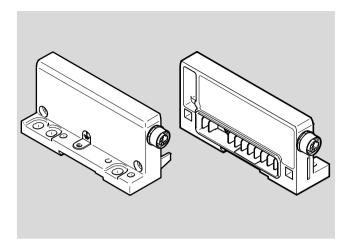
End plates form the outer edge of the CPX terminal.

The earth connection and mounting holes for wall or H-rail mounting are located on the left end plates.

The end plates with extension enable the CPX terminal to be separated into two interconnected terminals. Control is provided via a common bus node or control block.

Application

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

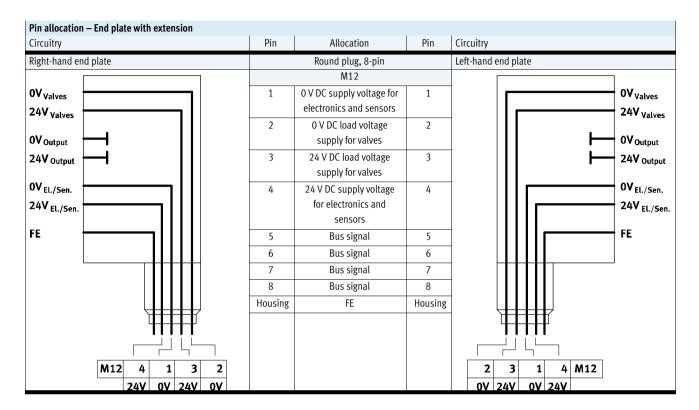


General technical data			
Туре		CPX-EP	CPX-M-EP
Type of mounting		Tie rod	Angled fitting
Maximum power supply	[A]	6	6

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

Operating and environmental conditions	
Approval certificate	cULus Recognized (OL)

Technical data – End plate with extension



Ordering data						
			Weight	Part No.	Туре	
			[g]			
End plate with extension	on					
	For CPX terminal in plastic design	Left-hand	190	576313	CPX-EPR-EV-X	
		Right-hand	175	576314	CPX-EPL-EV-X	
	For CPX terminal in metal design	Left-hand	190	576316	CPX-M-EPR-EV-X	
		Right-hand	175	576317	CPX-M-EPL-EV-X	
Connecting cable						
connecting capic	8-pin	2 m	1_	576015	NEBC-F12G8-KH-2-N-S-F12G8	
	ο-μιι	2 111		370013	NLDC-1 1200-KII-2-N-3-I 1200	
		3 m	-	576636	NEBC-F12G8-KH-3-N-S-F12G8	

Terminal CPX FESTO

Technical data – Interlinking block with system supply

Function

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

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

Applications

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



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

Technical data – Plastic in	terlinking blocks						
Type		CPX-GE-EV-S					
				-VL	-7/8-4POL	-7/8-5POL	-7/8-5POL-VL
Electrical connection			M18	M18	7/8", 4-pin	7/8", 5-pin	7/8", 5-pin
Current supply	Sensors and electronics	[A]	Max. 16	Max. 8	Max. 10	Max. 8	Max. 8
	Valves and outputs	[A]	Max. 16	Max. 8	Max. 10	Max. 8	Max. 8
Materials			PA, reinford	ed			<u>'</u>
Product weight		[g]	125				

Technical data – Metal interlinking blocks							
Туре		CPX-M-GE-EV-S	CPX-M-GE-EV-S				
			-7/8-CIP-4P	-7/8-5POL	-7/8-5POL-VL	-PP-5POL	
Electrical connection			7/8", 4-pin	7/8", 5-pin	7/8", 5-pin	AIDA push-pull, 5-pin	
Current supply	Sensors and electronics	[A]	Max. 10	Max. 8	Max. 8	Max. 16	
	Valves and outputs	[A]	Max. 10	Max. 8	Max. 8	Max. 16	
Materials			Die-cast aluminium				
Product weight		[g]	187	187	187	245	

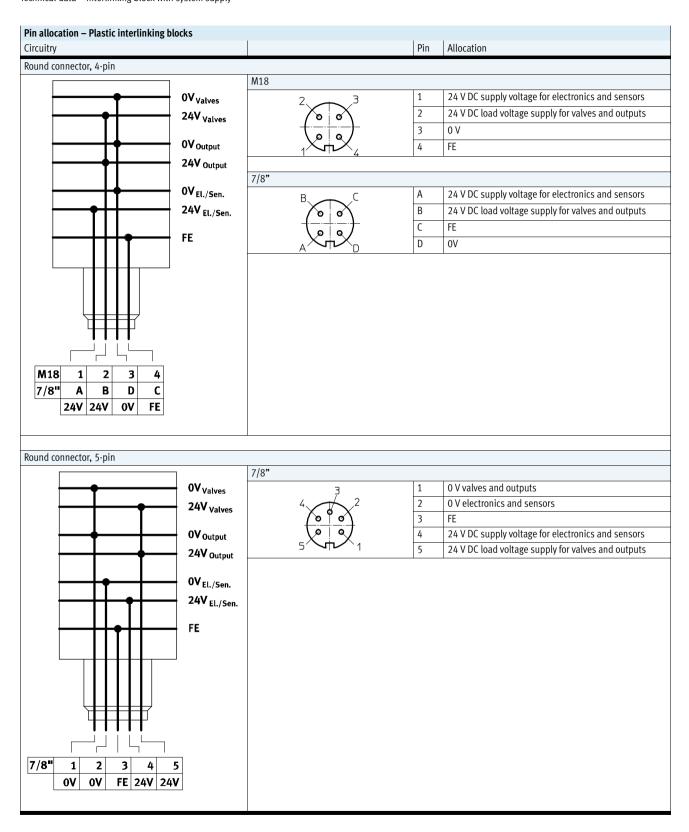


- Note

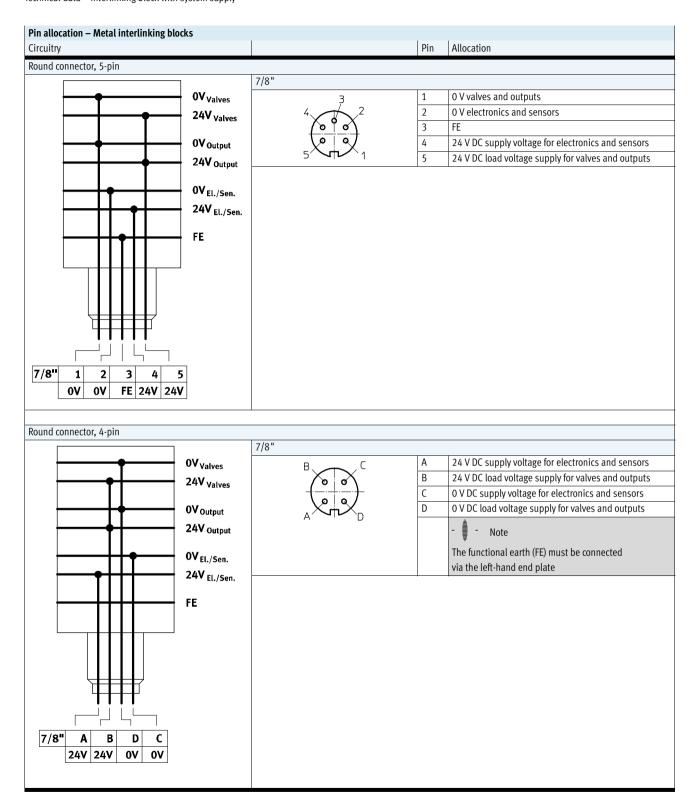
Note the following points about the interlinking block CPX-M-GE-EV-S-7/8-CIP-4P:

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

Technical data – Interlinking block with system supply

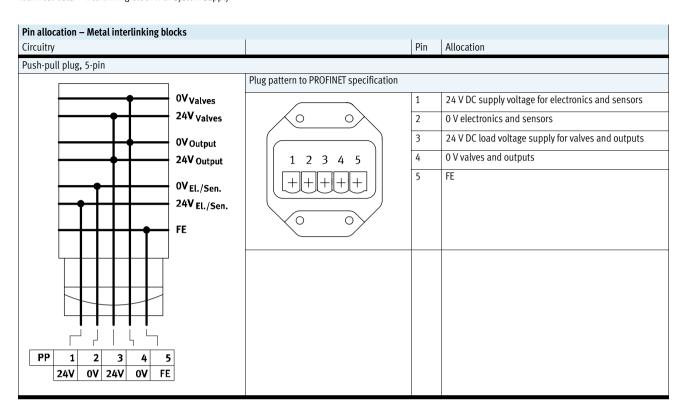


Technical data – Interlinking block with system supply



FESTO

Technical data – Interlinking block with system supply



Accessories – Interlinking block with system supply

Ordering data					
Designation				Part No.	Туре
Interlinking block wit	· · · ·				
	Connection M18, plastic interlinking block	4-pin	-	195746	CPX-GE-EV-S
			For ATEX environment	8022170	CPX-GE-EV-S-VL
	Connection 7/8", plastic interlinking block	4-pin	-	541248	CPX-GE-EV-S-7/8-4POL
		5-pin	_	541244	CPX-GE-EV-S-7/8-5POL
			For ATEX environment	8022172	CPX-GE-EV-S-7/8-5POL-VL
	Connection 7/8", metal interlinking block	4-pin	_	568956	CPX-M-GE-EV-S-7/8-CIP-4P
		5-pin	_	550208	CPX-M-GE-EV-S-7/8-5POL
·		J Pill	For ATEX environment	8022165	CPX-M-GE-EV-S-7/8-5POL-VL
	Connection push-pull plug (AIDA),	E nin	TOT ATEX CHANGING	563057	CPX-M-GE-EV-S-PP-5POL
	metal interlinking block	5-pin		563057	CPX-MI-UE-EV-3-PP-3POL
7/8" connection sock	kets				
	Power supply socket	5-pin		543107	NECU-G78G5-C2
		4-pin		543108	NECU-G78G4-C2
	Angled socket, 5-pin – Open cable end, 5-wire	2 m		573855	NEBU-G78W5-K-2-N-LE5
W18 connection sock	erts				
	Straight socket, screw terminal	4-pin	PG9	18493	NTSD-GD-9
		4-pin	PG13.5	18526	NTSD-GD-13,5
	Angled socket, screw terminal	4-pin	PG9	18527	NTSD-WD-9
	Angled socket, screw terminal	4-pin	PG11	533119	NTSD-WD-11
Connection socket Al	DA push-pull				
^ -	Socket, spring-loaded terminal	5-pin		563059	NECU-M-PPG5-C1
	Society Spring todated terminal) biii		303037	

FESTO

Accessories – Interlinking block with system supply

Ordering data				
Designation			Part No.	Туре
Mounting accessories				
	Screws for mounting the bus node/connection	Bus node/metal connection block	550218	CPX-DPT-30X32-S-4X
0 0 0	block on a plastic interlinking block			
	Screws for mounting the bus node/connection	Bus node/plastic connection block	550219	CPX-M-M3x22-4x
	block on a metal interlinking block	Bus node/metal connection block	550216	CPX-M-M3x22-S-4x

Terminal CPX FESTO

Technical data – Interlinking block

Function

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

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

Applications

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



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

in allocation iircuitry		Pin	Allocation
	7	-	-
	0V _{Valves}	-	-
	24V _{Valves}	-	-
		-	-
	OV Output		
	24V Output		
	OV _{El./Sen.}		
	FE		

FESTO

Accessories – Interlinking block

Ordering data – Mou	Ordering data – Mounting accessories						
Designation		Part No.	Туре				
Interlinking block without supply							
Plastic interlinking block				CPX-GE-EV			
3	Metal interlinking block	550206	CPX-M-GE-EV				
Mounting accessories							
	Screws for mounting the bus node/connection block	Bus node/metal connection	550218	CPX-DPT-30X32-S-4X			
0 0 0	on a plastic interlinking block	block					
	Screws for mounting the bus node/connection block	Bus node/plastic connection	550219	CPX-M-M3x22-4x			
	on a metal interlinking block	block					
		Bus node/metal connection	550216	CPX-M-M3x22-S-4x			
		block					

Terminal CPX FESTO

Technical data – Interlinking block with additional power supply for outputs

Function

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

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

Applications

• 24 V DC supply voltage for outputs

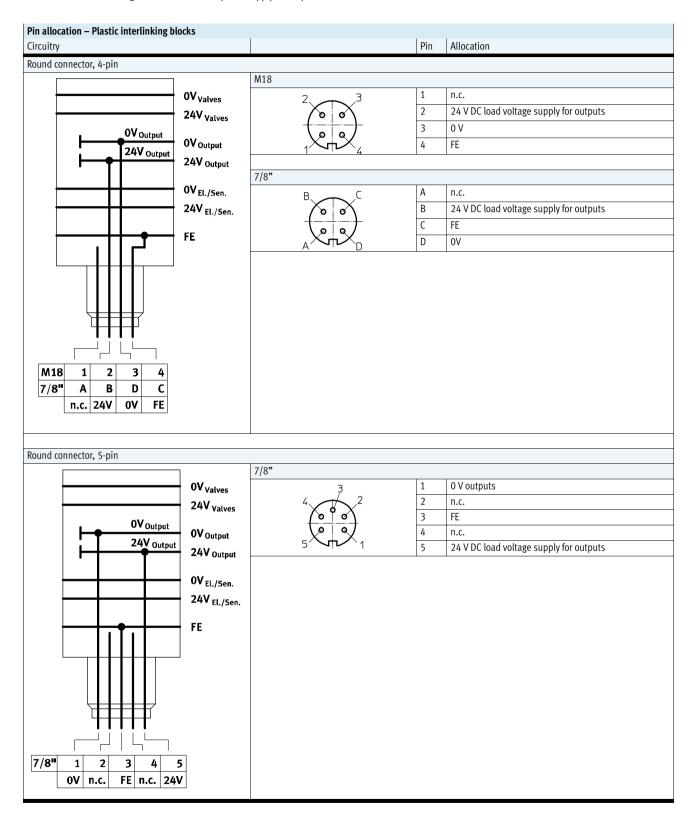


General technical data		
Nominal operating voltage	[V DC]	24
Protection class to EN 60529		Depending on connection block
Ambient temperature	[°C]	-5 +50
Note on materials		RoHS-compliant
Grid dimension	[mm]	50
Dimensions W x L x H	[mm]	50 x 107 x 35

Technical data – Plastic in	terlinking blocks						
Туре			CPX-GE-EV-	Z			
				-VL	-7/8-4POL	-7/8-5POL	-7/8-5POL-VL
Electrical connection			M18	M18	7/8", 4-pin	7/8", 5-pin	7/8", 5-pin
Current supply	Outputs	[A]	Max. 16	Max. 8	Max. 10	Max. 8	Max. 8
Materials			PA reinforce	ed			
Product weight		[g]	125				

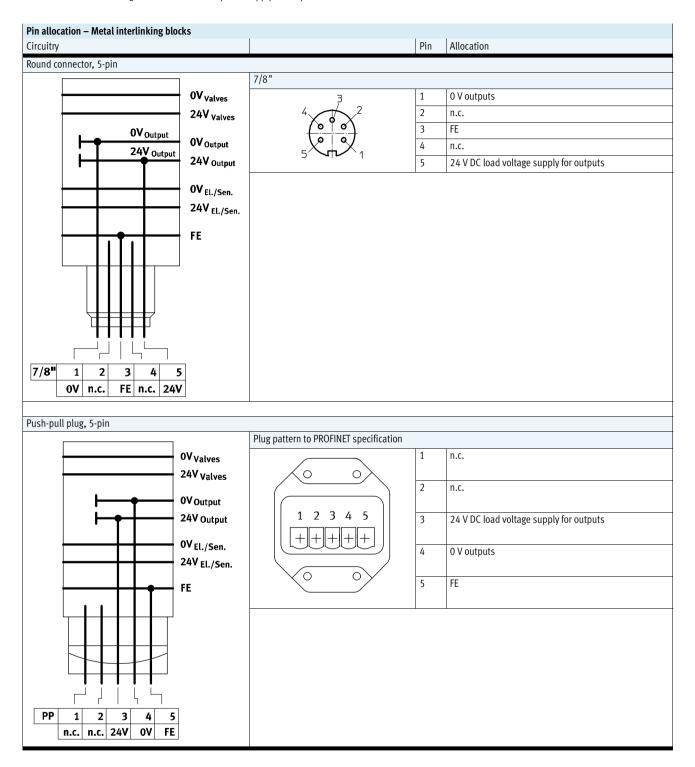
Technical data – Metal int	erlinking blocks				
Туре			CPX-M-GE-EV-Z		
			-7/8-5POL	-7/8-5POL-VL	-PP-5POL
Electrical connection			7/8", 5-pin	7/8", 5-pin	AIDA push-pull, 5-pin
Current supply	Outputs	[A]	Max. 8	Max. 8	Max. 16
Materials			Die-cast aluminium	1	
Product weight		[g]	187	187	245

Technical data – Interlinking block with additional power supply for outputs



FESTO

Technical data – Interlinking block with additional power supply for outputs



Accessories – Interlinking block with additional power supply for outputs

Ordering data					
Designation				Part No.	Туре
	a additional power supply for outputs				,,
The state of the s	Connection M18, plastic interlinking block	4-pin	_	195744	CPX-GE-EV-Z
			For ATEX environment	8022166	CPX-GE-EV-Z-VL
	Connection 7/8", plastic interlinking block	4-pin	-	541250	CPX-GE-EV-Z-7/8-4POL
		5-pin	For ATEX environment	541246 8022173	CPX-GE-EV-Z-7/8-5POL CPX-GE-EV-Z-7/8-5POL-VL
	Connection 7/8", metal interlinking block	5-pin	-	550210	CPX-M-GE-EV-Z-7/8-5POL
· · ·	Connection push-pull plug (AIDA),	5-pin	For ATEX environment	8022158 563058	CPX-M-GE-EV-Z-7/8-5POL-VL CPX-M-GE-EV-Z-PP-5POL
	metal interlinking block	3-μ ιιι		303038	CIA-MI-OL-EV-Z-FF-SFOL
7/8" connection socke	ets				
	Power supply socket	5-pin		543107	NECU-G78G5-C2
		4-pin		543108	NECU-G78G4-C2
	Angled socket, 5-pin – Open cable end, 5-wire	2 m		573855	NEBU-G78W5-K-2-N-LE5
M18 connection socke	ets Straight socket, screw terminal	4-pin	PG9	18493	NTSD-GD-9
			PG13.5	18526	NTSD-GD-13,5
	Angled socket, screw terminal	4-pin	PG9	18527	NTSD-WD-9
	Angled socket, screw terminal	4-pin	PG11	533119	NTSD-WD-11
Connection socket AID					
	Socket, spring-loaded terminal	5-pin		563059	NECU-M-PPG5-C1
Mounting accesses:		•			
Mounting accessories	Screws for mounting the bus node/connection block on a plastic interlinking block		/metal connection block	550218	CPX-DPT-30X32-S-4X
	Screws for mounting the bus node/connection block on a metal interlinking block		/plastic connection block /metal connection block	550219 550216	CPX-M-M3x22-4x CPX-M-M3x22-S-4x
	,	_		1	

Terminal CPX FESTO

Technical data – Interlinking block with additional power supply for valves

Function

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

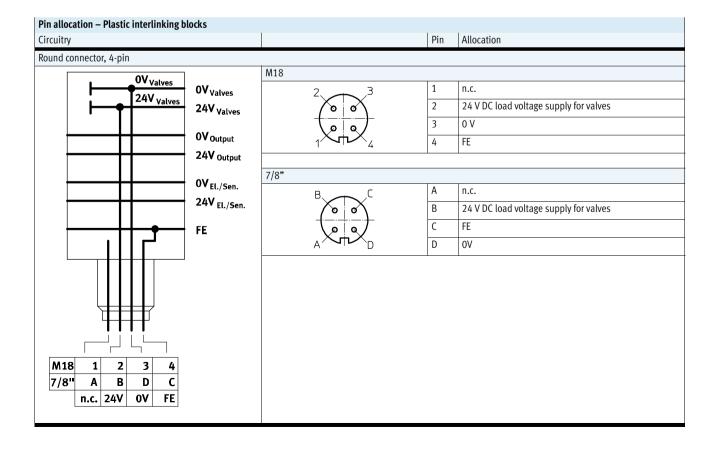
Internal division of the power supply makes it possible to switch off specific areas of the sensors and actuators individually.

Applications

• 24 V DC supply voltage for valves



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



Accessories – Interlinking block with additional power supply for valves

Ordering data				,	
Designation				Part No.	Туре
nterlinking block	with additional power supply for valves				
	Connection M18, plastic interlinking block	4-pin	-	533577	CPX-GE-EV-V
			For ATEX environment	8022171	CPX-GE-EV-V-VL
	Connection 7/8", plastic interlinking block	4-pin	-	541252	CPX-GE-EV-V-7/8-4POL
/8" connection s					
	Power supply socket	5-pin		543107	NECU-G78G5-C2
		4-pin		543108	NECU-G78G4-C2
	Angled socket, 5-pin – Open cable end, 5-wire	2 m		573855	NEBU-G78W5-K-2-N-LE5
18 connection s					
	Straight socket, screw terminal	4-pin	PG9	18493	NTSD-GD-9
		4-pin	PG13.5	18526	NTSD-GD-13,5
	Angled socket, screw terminal	4-pin	PG9	18527	NTSD-WD-9
	Angled socket, screw terminal	4-pin	PG11	533119	NTSD-WD-11
lounting accesso	Screws for mounting the bus node/connection	Bus nod	e/metal connection block	550218	CPX-DPT-30X32-S-4X
	block on a plastic interlinking block	_ 3334	-, - state of the		

Technical data - Pneumatic interface VMPA-FB

Function

The pneumatic interface VMPA-FB establishes the electromechanical connection between the CPX terminal and the valve terminal MPA-S. The signals from the bus node are forwarded to the control electronics in the electrical modules of the valve terminal MPA-S via the integrated CPX bus. The bus signal for activation of the solenoid coils is converted in the electronics module for max. 8 coils. From a technical point of view, the individual MPA pneumatic modules each represent a separate electrical module with digital outputs. Valves, which are galvanically isolated, can be supplied with power via the interlinking block CPX-GE-EV-V.

Applications

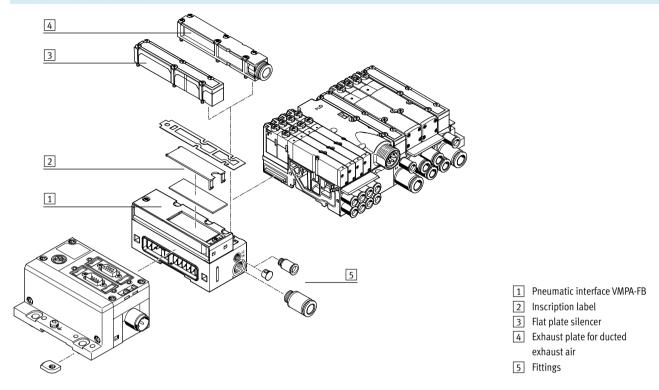
- Interface to the valve terminal MPA-S
- Max. 128 solenoid coils
- Features of the electronics module
 of the valve terminal MPA-S can be
 parameterised, for example status
 of the solenoid coils in the event
 of fieldbus communication being
 interrupted (fail-safe), individual
 channel diagnostics can be acti vated, 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				
Туре			VMPA-FB-EPL-G	VMPA-FB-EPL-E
No. of solenoid coils			128	
Pilot air supply			Internal	External
Pilot air connection 12/14			-	M7
Pneumatic connection 1			G1/4	G ¹ / ₄
Operating pressure		[bar]	3 8	-0.9 10
Pilot pressure		[bar]	3 8	3 8
Nominal operating voltage		[V DC]	24	,
Protection class to EN 60529	9		IP65	
Ambient temperature		[°C]	-5 +50	
Materials	Cover		PA	
	Housing		Die-cast aluminium	
Weight		[g]	Approx. 320	

Accessories – Pneumatic interface VMPA-FB

Overview – Pneumatic interface VMPA-FB



Ordering data			
Designation		Part No.	Туре
Pneumatic interface	for CPX plastic interlinking module		
	Ducted exhaust air, internal pilot air	533370	VMPA-FB-EPL-G
	Ducted exhaust air, external pilot air	533369	VMPA-FB-EPL-E
	Flat plate silencer, internal pilot air	533372	VMPA-FB-EPL-GU
	Flat plate silencer, external pilot air	533371	VMPA-FB-EPL-EU
Pneumatic interface	for CPX metal interlinking module		
<u> </u>	Ducted exhaust air, internal pilot air	552286	VMPA-FB-EPLM-G
	Ducted exhaust air, external pilot air	552285	VMPA-FB-EPLM-E
	Flat plate silencer, internal pilot air	552288	VMPA-FB-EPLM-GU
	Flat plate silencer, external pilot air	552287	VMPA-FB-EPLM-EU
Exhaust plate			
	For ducted exhaust air, with 10 mm push-in connector	533375	VMPA-AP
	For ducted exhaust air, with QS-3/8 connector	541629	VMPA-AP-3/8
	Flat plate silencer	533374	VMPA-APU

Terminal CPX FESTO

Technical data – Pneumatic interface VMPAL

Function

The pneumatic interface VMPAL establishes the electromechanical connection between the terminal CPX and the valve terminal MPA-L.

The bus signal for actuating the solenoid coils is converted in the pneumatic interface for the entire valve terminal.

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

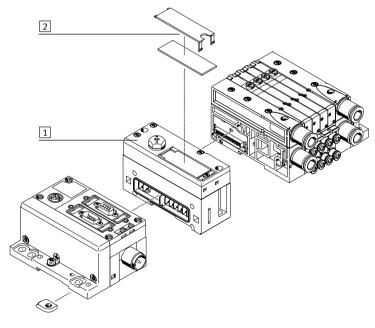
Application

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



General technical data		
Туре		VMPAL-EPL-CPX
Number of solenoid coils		32
Operating pressure	[bar]	-0.9 10
Pilot pressure	[bar]	38
Nominal operating voltage	[V DC]	24
Protection class to EN 60529		IP67
Ambient temperature	[°C]	-5 +50
Note on materials		RoHS-compliant

Overview - Pneumatic interface VMPAL



- 1 Pneumatic interface VMPAL
- 2 Inscription label

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

Type discontinued Available up until 2019

Terminal CPX FESTO

Technical data – Pneumatic interface VMPAF

Function

The pneumatic interface VMPAF establishes the electromechanical connection between the CPX terminal and the valve terminal MPA-F. The signals from the bus node are forwarded to the control electronics in the electrical modules of the valve terminal MPA-F via the integrated CPX bus. The bus signal for activation of the solenoid coils is converted in the electronics module for max. 8 coils. From a technical point of view, the individual MPA-F pneumatic modules each represent a separate electrical module with digital outputs. Valves, which are galvanically isolated, can be supplied with power via the interlinking block CPX-GE-EV-V.

Applications

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



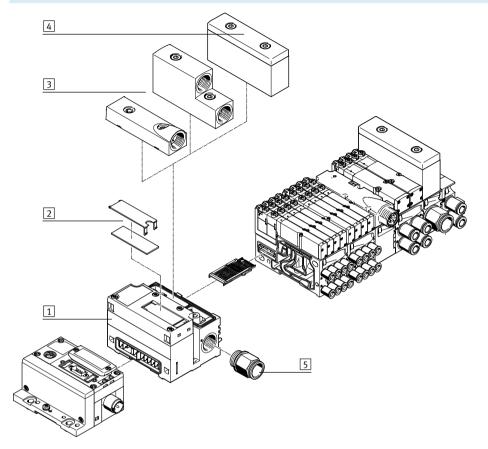
General technical data			
Туре		VMPAF-FB-EPL	VMPAF-FB-EPL-PS
Version		-	With integrated pressure sensor
			for channel 1
No. of solenoid coils		128	
Pneumatic connection 1		G½	
Operating pressure	[bar]	-0.9 10	0 10
Accuracy FS	[%]	-	2.5
Nominal operating voltage	[V DC]	24	
Protection class to EN 60529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

Type discontinued Available up until 2019

Terminal CPX FESTO

Accessories – Pneumatic interface VMPAF

Overview - Pneumatic interface VMPAF



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

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

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Terminal CPX FESTO

Technical data - Pneumatic interface VTSA/VTSA-F

Function

The pneumatic interface VTSA provides the electromechanical connection between the terminal CPX and valve terminal VTSA/VTSA-F.

A complete pneumatic control loop system (FB-valve-drive-sensor-FB) can therefore be connected to the fieldbus using the input modules of the terminal CPX.

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

Application

- Interface to the valve terminal VTSA and VTSA-F
- Max. 32 solenoid coils
- Address space allocation (configuration) of valve terminals can be set using integrated DIL switches
- Properties of the pneumatic interface can be parameterised,
 e.g. status of the solenoid coil when fieldbus communication is interrupted (failsafe)
- The pneumatic interface receives the voltage for the electronics and the supply voltage for the valves from the left-hand interlinking block
- Detection of missing solenoid coils and short circuit monitoring for the valves



General technical data			
Number of solenoid coils			32
Electrical actuation			Fieldbus
Electrical connection			Via CPX
Diagnostics			Undervoltage at valves
Parameterisation			Failsafe per channel
			Forces per channel
			Idle mode per channel
			Module monitoring
LED displays			• 1 Group diagnostics
			Channel status (on each valve)
Fuse protection (short circuit)			Internal electronic fuse per valve output
Electrical isolation channel - intern	al bus		Yes, when using an additional power supply for the valves
Nominal operating voltage		[V DC]	24
Operating voltage range		[V DC]	21.6 26.4
Intrinsic current consumption at	Electronic components	[mA]	Typically 15
nominal operating voltage	Valves	[mA]	Typically 50
Max. power supply per channel		[A]	0.2
Max. residual current per module		[A]	4
Protection class			• IP65 (to EN 60529)
			• NEMA 4
Ambient temperature		[°C]	-5 +50
Materials	Housing		Die-cast aluminium
	Bearing and end cap		PA PA
Note on materials			RoHS-compliant
Product weight		[g]	590

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

Technical data – Pneumatic interface MIDI/MAXI

Function

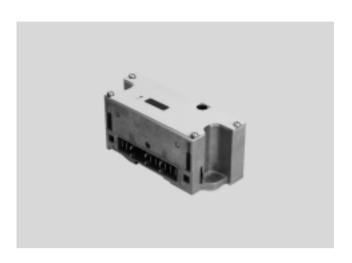
The pneumatic interface MIDI/MAXI connects the valve terminal MIDI/MAXI to the supported fieldbus protocols of the CPX terminal.

A complete pneumatic control loop system (FB-valve-drive-sensor-FB) can therefore be connected to the fieldbus using the input modules of the CPX terminal.

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

Applications

- Interface to valve terminals MIDI/MAXI
- Max. 26 solenoid coils
- Address space allocation (configuration) of valve terminals can be set using integrated DIL switches
- Pneumatic interface features can be parameterised, for example status of the solenoid coils in the event of fieldbus communication being interrupted (fail-safe)
- The pneumatic interface receives the voltage for the electronics and the supply voltage for the valves from the left-hand interlinking block

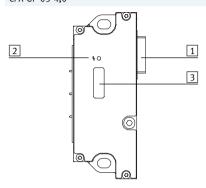


General technical data					
Туре			CPX-GP-03-4,0	CPX-M-GP-03-4,0	
Connection for CPX interlinking blocks made of			Plastic	Metal	
No. of solenoid coils			26		
Max. power supply	Per module	[A]	4		
	Per channel	[A]	0.2		
Fuse protection			Internal electronic fuse for	each valve output	
Current consumption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

Accessories – Pneumatic interface MIDI/MAXI

Connection and display components

CPX-GP-03-4,0



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

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

- Type discontinued Available up until 2018

Terminal CPX FESTO

Technical data - Pneumatic interface CPA

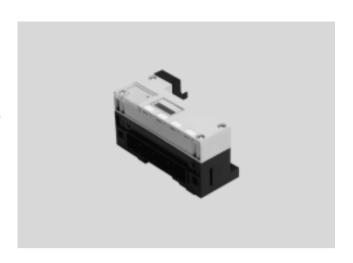
Function

The pneumatic interface CPA connects the valve terminal CPA to the supported fieldbus protocols of the CPX terminal. A complete pneumatic control loop system (FB-valve-drive-sensor-FB) can therefore be connected to the fieldbus using the input modules of the CPX terminal.

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

Applications

- Interface to valve terminals CPA14
- Max. 22 solenoid coils
- Address space allocation (configuration) of valve terminals can be set using integrated DIL switches
- Pneumatic interface features can be parameterised, for example status of the solenoid coils in the event of fieldbus communication being interrupted (fail-safe)
- The pneumatic interface receives the voltage for the electronics and the supply voltage for the valves from the left-hand interlinking block
- Detection of missing solenoid coils and short circuit monitoring for the valves



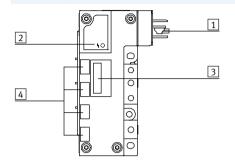
General technical data					
No. of solenoid coils			22		
Max. power supply	Per module	[A]	4		
	Per channel	[A]	0.2		
Fuse protection			Internal electronic fuse for each valve output		
Current consumption of modu	le from electronics/sensor supply	[mA]	Typically 15		
Supply voltage for valves		[V DC]	24 +10% -15%		
Electrical isolation	Channel – channel		No		
	Channel – internal bus		Yes, using an additional power supply for valves (in preparation)		
LED displays	Group diagnostics		1		
	Channel diagnostics		-		
	Channel status		- (on valves)		
Diagnostics			Load voltage of valves		
			Short circuit, solenoid coils (channel-oriented)		
			Wire break, solenoid coils (channel-oriented quiescent current detection		
			for solenoid coils)		
Parameterisation			Module monitoring		
			Wire break monitoring, channel x		
			Fail-safe behaviour, channel x		
Protection class to EN 60529			IP65		
Temperature range	Operation	[°C]	-5 +50		
	Storage/transport	[°C]	-20 +70		
Materials			Reinforced PA		
Grid dimension		[mm]	50		
Dimensions W x L x H		[mm]	50 x 110 x 58		
Weight		[g]	150		

Type discontinued Available up until 2018

Terminal CPX FESTO

Accessories – Pneumatic interface CPA

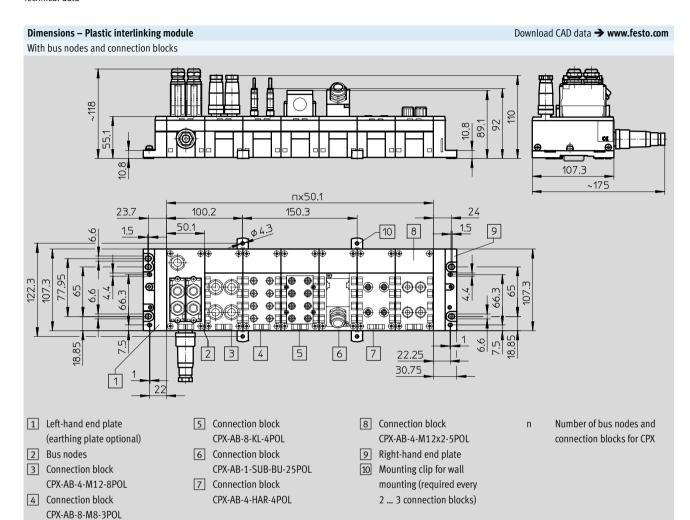
Connection and display components CPX-GP-CPA-...

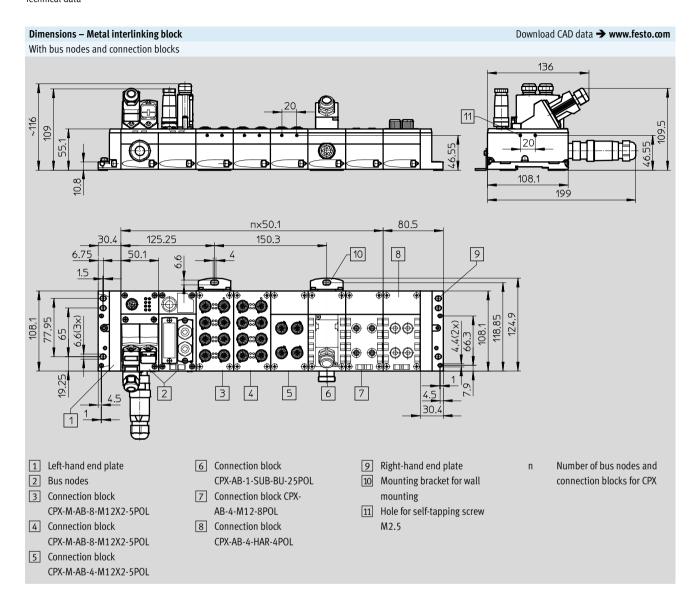


- 1 Connecting plug to valves
- 2 Error LED (red)
- 3 DIL switch under transparent cover
- 4 Inscription fields for addresses

Ordering data					
Designation		Part No.	Туре		
Pneumatic interface (PA				
	For CPA in 14 mm width	195712	CPX-GP-CPA-14		
H-rail mounting					
	For mounting CPX terminal and valve terminal CPA on H-rail	526032	CPX-CPA-BG-NRH		

FESTO





FESTO

Technical data

Download CAD data → www.festo.com **Dimensions** With bus nodes and valve terminal VTSA 17 7 15 14 5 18 5 8 H18 H12 23 26 1 Solenoid valve, width 18 mm 10 H-rail mounting 20 Plug socket M12x1 n02 Number of manifold 2 Solenoid valve, width 26 mm 11 Mounting hole 21 Electrical connection to sub-bases 38 mm 3 Solenoid valve, width 42 mm 12 Additional mounting bracket EN 175301-803, type C Number of manifold n01 13 Inscription label holder 4 Cover cap/manual override 22 Additional mounting bracket sub-bases 54 mm 5 Threaded connection G½ 14 Pneumatic interface CPX 23 Hole for additional mounting, Number of manifold n1 15 End plate 6 Threaded connection G3/8 diameter 6.4 2x sub-bases 43 mm 7 Threaded connection G1/4 CPX module/bus node 16 Solenoid valve, width 52 mm Number of manifold n2 8 Threaded connection G½ 17 90° connection plate 43 mm, 25 Supply plate sub-bases 59 mm 9 H-rail G3/8 26 Soft-start valve Number of supply plates 90° connection plate 18 (only with end plate with 54 mm, G1/4 pilot air selector) 19 Proximity sensor M12x1 Number of CPX modules B8 | B9 | B10 | B11 | B12 | B13 | B14 | B16 | B18 | B19 | B20 | B21 | B22 | B23 | B24 В3 B5 B6 B7 [mm] 107.3 142 121 18 48 26 78 66 29.6 19.5 10.5 65 57 46 33 12 18.9 Dim. L2 L3 L4 L5 L6 L7 L8 L9 L10 L11 L12 L13 L14 L15 L16 L17 L18 L19 L20 L21 L22 mx20.1 n02x38 nx38 [mm] 92.4 50 n2x59 n01x54 54 n1x43 43 38 37.3 20.5 6.3 Dim. L23 L24 H2 H4 Н6 H7 Н8 H9 H10 H11 | H12 | H13 | H14 | H15 | H16 | H17 | H18 | H19 L25 H3 H5 23.7 | 1.5 | 143.9 | 133.3 | 125 | 121.3 | 118.2 | 103 | 106.8 | [mm] 30.4 87 90.3 101.4 55.1 65 25.8 25.7 24.5 12 Width L1 18 mm 30.4 + m x 50.1 + 50 + n02 x 38 + n x 38 + 37.3 30.4 + m x 50.1 + 50 + n01 x 54 + n x 38 + 37.3 26 mm

42 mm

52 mm

30.4 + m x 50.1 + 50 + n1 x 43 + n x 38 + 37.3

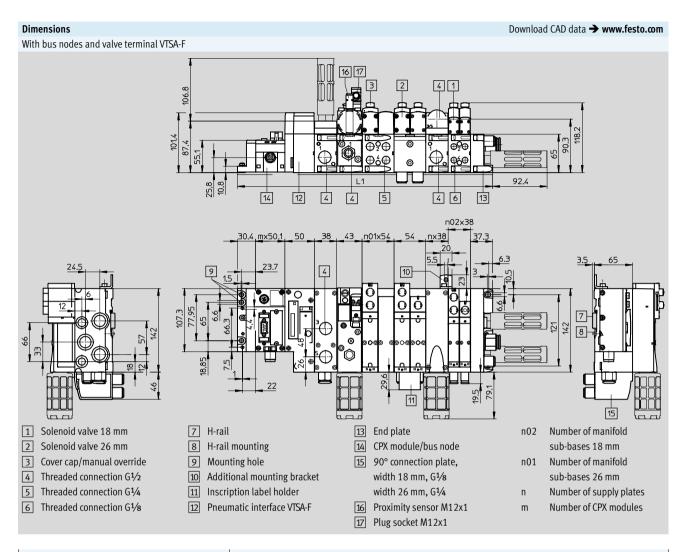
30.4 + m x 50.1 + 50 + n2 x 59 + n x 38 + 37.3

30.4 + m x 50.1 + 50 + n02 x 38 + n01 x 54 + n1 x 43 + n2x59 + n x 38 + 37.3

Mixture of 18 mm, 26 mm, 42 mm and 52 mm

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

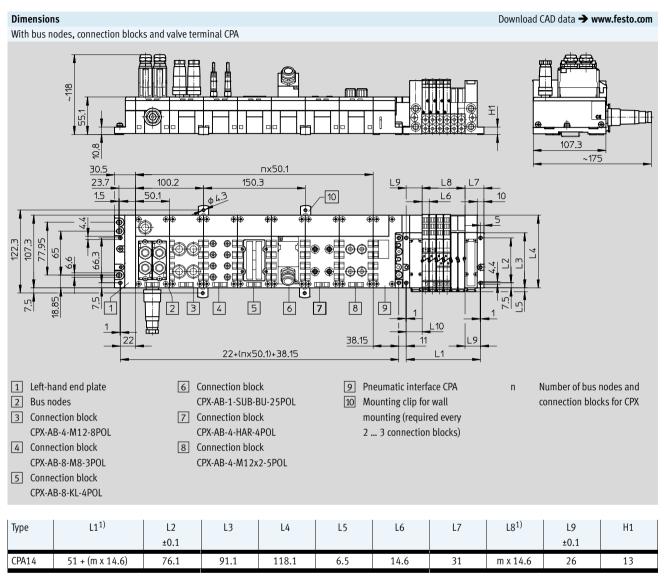
FESTO



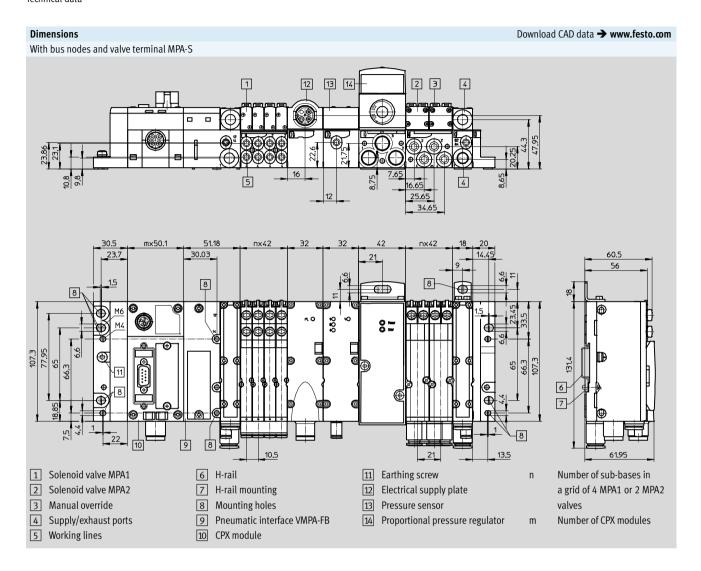
Width	L1
18 mm	30.4 + m x 50.1 + 50 + n02 x 38 + n x 38 + 37.3
26 mm	30.4 + m x 50.1 + 50 + n01 x 54 + n x 38 + 37.3
Mixture of 18 mm and 26 mm	30.4 m x 50.1 + 50 + n02 x 38 + n01 x 54 + n x 38 + 37.3

Type discontinued Available up until 2018

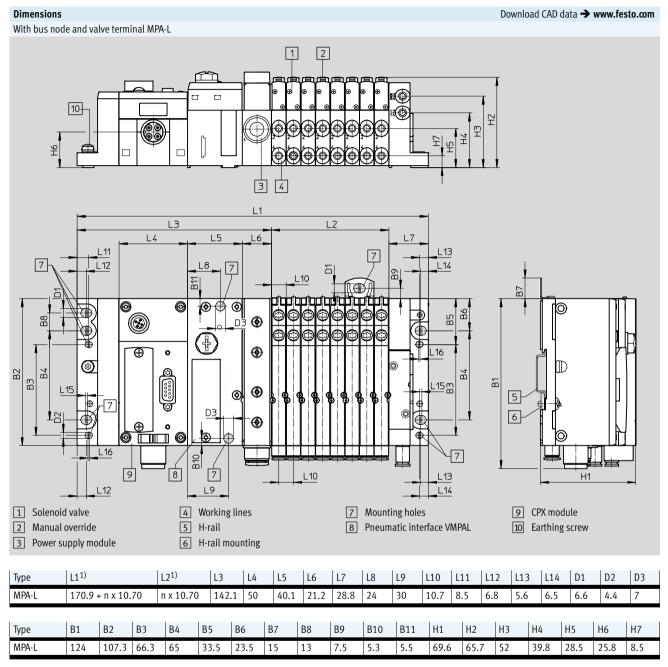
Terminal CPX FESTO



¹⁾ m = Number of valves



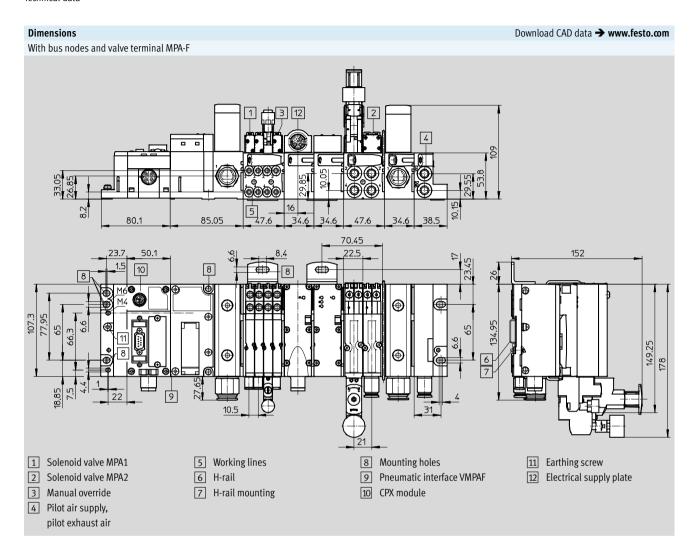




¹⁾ n = Number of sub-bases/valve positions

Type discontinued Available up until 2019

Terminal CPX FESTO



Ordering data – An Designation	CCC33VIIC3		Part No.	Туре
Plug connectors ar	nd accessories		l l	· ·
	Sub-D plug for INTERBUS	Incoming	532218	FBS-SUB-9-BU-IB-B
		Outgoing	532217	FBS-SUB-9-GS-IB-B
	Sub-D plug for DeviceNet/CANopen	532219	FBS-SUB-9-BU-2x5POL-B	
	Sub-D plug for PROFIBUS DP Sub-D plug for CC-Link		532216	FBS-SUB-9-GS-DP-B
V			532220	FBS-SUB-9-GS-2x4POL-B
	Sub-D plug		534497	FBS-SUB-9-GS-1x9POL-B
	Bus connection M12 adapter (B-coded) for PROFIBUS DF)	533118	FBA-2-M12-5POL-RK
	Micro Style bus connection, 2xM12 for DeviceNet/CANo	pen	525632	FBA-2-M12-5POL
	For Micro Style connection, M12	Socket	18324	FBSD-GD-9-5POL
		Plug	175380	FBS-M12-5GS-PG9
	M12x1 bus connection, 4-pin (D-coded) for Ethernet		543109	NECU-M-S-D12G4-C2-ET
30)	Connection block, Sub-D socket, 9-pin, plug 7/8", 5-pin	for DeviceNet	571052	CPX-AB-1-7/8-DN
	Connection block M12 adapter (B-coded)	For PROFIBUS DP	541519	CPX-AB-2-M12-RK-DP
		For INTERBUS	534505	CPX-AB-2-M12-RK-IB
	For self-assembly of a connecting cable for FBA-2-M12-SPOL-RK and CPX-AB-2-M12-RK-DP,	Socket	1067905	NECU-M-B12G5-C2-PB
	M12x1, 5-pin, straight	Plug	1066354	NECU-M-S-B12G5-C2-PB
	Open Style bus connection for 5-pin terminal strip for De	eviceNet/CANopen	525634	FBA-1-SL-5POL
10000	Terminal strip for Open Style connection, 5-pin		525635	FBSD-KL-2x5POL
	Screw terminal bus connection for CC-Link		197962	FBA-1-KL-5POL
	RJ45/plug		534494	FBS-RJ45-8-GS
	RJ45 plug, 8-pin, push-pull		552000	FBS-RJ45-PP-GS
	SCRJ plug, 2-pin, push-pull, for CPX-M-FB35		571017	FBS-SCRJ-PP-GS
	Socket/spring-loaded terminal, 5-pin, AIDA push-pull		563059	NECU-M-PPG5-C1
	Society Spring touted terminal, 5-piii, AlbA push-puth		303039	MECO III I I OF CI
	Plug for CAN-Bus interface, Sub-D, 9-pin, without terminating resistor		533783	FBS-SUB-9-WS-CO-K
	Sub-D socket with terminating resistor and programming interface	For CANopen	574588	NECU-S1W9-C2-ACO
	Sub-D straight plug connector with terminating resistor and programming interface	For PROFIBUS	574589	NECU-S1W9-C2-APB

Ordering data – Acce	essories			Dort N.	Time
Designation		ı		Part No.	Туре
Connecting cables	DUO cable M12-2xM8, 4-p	in/ava nin	2x straight socket	18685	KM12-DUO-M8-GDGD
	Duo cable M12-2xM6, 4-p	III/ 2X3-pIII	1x straight socket	18688	KM12-DUO-M8-GDWD
			=	10000	KW12-DOO-M6-GDWD
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			1x angled socket 2x angled socket	10/07	KM12-DUO-M8-WDWD
	DUO aabla MO 2vMO / nir	/2v2 min		18687	
	DUO cable M8-2xM8, 4-pir Push-in T-connector		2x straight socket	574591	NEDU-L2R1-M8G3-K-1L1-1L2-M8G4 NEDU-M8D3-M8T4
	Push-in r-connector	1x plug M8, 4-pin	2x socket M8, 3-pin	544391	
		1x plug M12, 4-pin	2x socket M8, 3-pin 2x socket M12, 5-pin	541597 541596	NEDU-M8D3-M12T4 NEDU-M12D5-M12T4
	Connecting cable M9, 5-pir		2 m	563711	NEBC-M9W5-K-2-N-LE3
	angled plug-open cable end				
% /			5 m	563712	NEBC-M9W5-K-5-N-LE3
	Connecting cable M8-M8, s	traight plug-straight socket	0.5 m	175488	KM8-M8-GSGD-0,5
			1.0 m	175489	KM8-M8-GSGD-1
			2.5 m	165610	KM8-M8-GSGD-2,5
			5.0 m	165611	KM8-M8-GSGD-5
	Connecting cable M12-M12		2.5 m	18684	KM12-M12-GSGD-2,5
	straight plug-straight socke		5.0 m	18686	KM12-M12-GSGD-5
	Connecting cable M12-M12	·	1.5 m	529044	KV-M12-M12-1,5
	straight plug-straight socke		3.5 m	530901	KV-M12-M12-3,5
	Connecting cable for CPX-C	•	5 m	574321	NEBU-M12G5-E-5-Q8N-M12G5
	straight plug-straight socke	t	7.5 m	574322	NEBU-M12G5-E-7.5-Q8N-M12G5
			10 m	574323	NEBU-M12G5-E-10-Q8N-M12G5
	Connecting cable M12-M12, 8-pin, straight plug-straight socket		2.0 m	525617	KM12-8GD8GS-2-PU
11 //	Connecting cable M12-M12	2, 4-pin,	1.0 m	185499	KM12-M12-GSWD-1-4
	straight plug-angled socket				
	Connecting cable M9, angle	ed plug-angled socket	0.25 m	540327	KVI-CP-3-WS-WD-0,25
			0.5 m	540328	KVI-CP-3-WS-WD-0,5
			2 m	540329	KVI-CP-3-WS-WD-2
_			5 m	540330	KVI-CP-3-WS-WD-5
			8 m	540331	KVI-CP-3-WS-WD-8
	Connecting cable M9, straig	ght plug-straight socket	2 m	540332	KVI-CP-3-GS-GD-2
			5 m	540333	KVI-CP-3-GS-GD-5
THE STATE OF THE S			8 m	540334	KVI-CP-3-GS-GD-8
	Modular system for connec	ting cables		-	NEBU → Internet: nebu
	Programming cable			151915	KDI-PPA-3-BU9
	Connecting cable FED (for C	PX-CEC)		539642	FEC-KBG7
	Connecting cable FED (for C	PX-CEC)		539643	FEC-KBG8

Ordering data – Acc	essories			
Designation			Part No.	Туре
	accessories – Power supply			
	Plug socket for mains connection M18, straight	For 1.5 mm ²	18493	NTSD-GD-9
		For 2.5 mm ²	18526	NTSD-GD-13.5
	Plug socket for mains connection M18, angled	For 1.5 mm ²	18527	NTSD-WD-9
		For 2.5 mm ²	533119	NTSD-WD-11
	Power supply socket	7/8" connection, 5-pin	543107	NECU-G78G5-C2
		7/8" connection, 4-pin	543108	NECU-G78G4-C2
	Angled socket, 5-pin – Open cable end, 5-wire	2 m	573855	NEBU-G78W5-K-2-N-LE5
	Connection socket AIDA push-pull, spring-loaded terminal	5-pin	563059	NECU-M-PPG5-C1
	Straight plug, spring-loaded terminal, for end plate left-hand with system supply	7-pin	576319	NECU-L3G7-C1
Hood	Mounting rail for securing the cover	1,000 mm	572256	CAFC-X1-S
	mounting rail for securing the cover	1,000 iiiii	372230	CAICAI-3
	Mounting kit for CPX cover		572257	CAFC-X1-BE
	Hood section for CPX terminal including mounting attachments for connecting several hood sections in	200 mm	572258	CAFC-X1-GAL-200
	series	300 mm	572259	CAFC-X1-GAL-300
~*				
Screws				
	Screws for mounting the bus node/connection block on a plastic interlinking block	Bus node/metal connection block	550218	CPX-DPT-30X32-S-4X
	Screws for mounting the bus node/connection block on a metal interlinking block	Bus node/plastic connection block	550219	CPX-M-M3x22-4x
		Bus node/metal connection block	550216	CPX-M-M3x22-S-4x
0° 0°	Screws for attaching an inscription label holder to the bus node (CPX-FB33, CPX-M-FB34, CPX-M-FB35)	12 pieces	550222	CPX-M-M2,5X8-12X

Ordering data – Acces	sories			
Designation			Part No.	Туре
Mounting			·	
0,5	Attachment for wall mounting (for long valve terminals, 10 pieces)	Design for plastic manifold sub-bases	529040	CPX-BG-RW-10x
	Attachment for wall mounting, design for metal manifold sub-bases	4 screws	550217	CPX-M-BG-RW-2X CPX-M-BG-VT-2X
		1 mounting bracket and 2 screws	2721419	CFA-WI-DU-VI-ZA
Covers and attachmen	ts			
	Cover for CPX-AB-8-KL-4POL (IP65, IP67) - 8 cable through-feeds M9 - 1 cable through-feed for multi-pin plug		538219	AK-8KL
	Fittings kit		538220	VG-K-M9
	Screening plate for M12 connections			CPX-AB-S-4-M12
PERMIT	Earthing component (5 pieces), for right-hand/left-hand p (interlinking blocks made from polymer material)	lastic end plate	538892	CPX-EPFE-EV
	Inspection cover, transparent			AK-SUB-9/15-B
	Transparent cover for DIL switch and memory card		548757	СРХ-АК-Р
3	Cover for DIL switch and memory card		548754	CPX-M-AK-M
	Blanking plate for covering the DIL switches of CPX-M-FB2	0/CPX-M-FB21	572818	CPX-M-FB21-IB-RL
	Cover for RJ45 connection			AK-Rj45
	Cover for RJ45 push-pull connection			CPX-M-AK-C
	Cover cap for bus connection		2873540	CPX-M-AK-D
	Cover cap for sealing unused connections (10 pieces)	For M8 connections	177672	ISK-M8
		For M12 connections	165592	ISK-M12

Ordering data – Acce	ssories			
Designation			Part No.	Туре
Functional modules				
	Memory card for PROFINET bus node (CPX-FB33, CPX-M-FB34, CPX-M-FB35), 2 MB		568647	CPX-SK-2
	Terminating resistor, M12, B-coded for PROFIBUS		1072128	CACR-S-B12G5-220-PB
	PT1000 temperature sensor for cold junction compe	ensation	553596	CPX-W-PT1000
	Adapter from 5-pin M12 to mini USB socket and con	troller software	547432	NEFC-M12G5-0.3-U1G5
Inscription labels				
	Inscription labels 6x10, 64 pieces, in frames		18576	IBS-6x10
	Inscription label holder for connection block		536593	CPX-ST-1
Multi-pin plug distrib	utors			
	Sub-D plug, 15-pin	8x socket M8, 3-pin	177669	MPV-E/A08-M8
		12x socket M8, 3-pin	177670	MPV-E/A12-M8
	Plug M12, 8-pin	4x socket M8, 3-pin	574586	NEDU-L4R1-M8G3L-M12G8
		6x socket M8, 3-pin	574587	NEDU-L6R1-M8G3L-M12G8
Connecting cable for	multi nin plug dietributore			
Connecting cable for	multi-pin plug distributors Sub-D socket, 15-pin,	5 m	177673	KMPV-SUB-D-15-5
	open cable end, 15-wire	10 m	177674	KMPV-SUB-D-15-10
	Angled socket M12, 8-pin,	Length 2 m	542256	NEBU-M12W8-2-N-LE8
	open cable end, 8-wire	Length 5 m	542257	NEBU-M12W8-5-N-LE8
		Length 10 m	570007	NEBU-M12W8-10-N-LE8
C	Straight socket M12, 8-pin,	Length 2 m	525616	SIM-M12-8GD-2-PU
	open cable end, 8-wire Length 5 m		525618	SIM-M12-8GD-5-PU
		Length 10 m	570008	SIM-M12-8GD-10-PU
Software				
	Programming software	German	537927	P.SW-FST4-CD-DE
		English	537928	P.SW-FST4-CD-EN