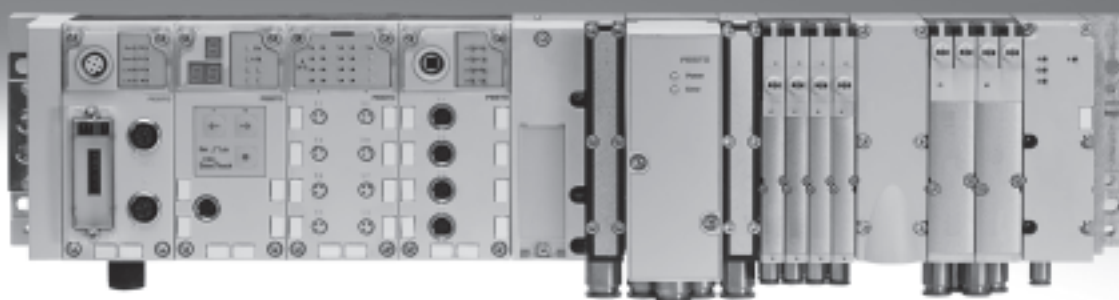


Modular electrical terminal CPX

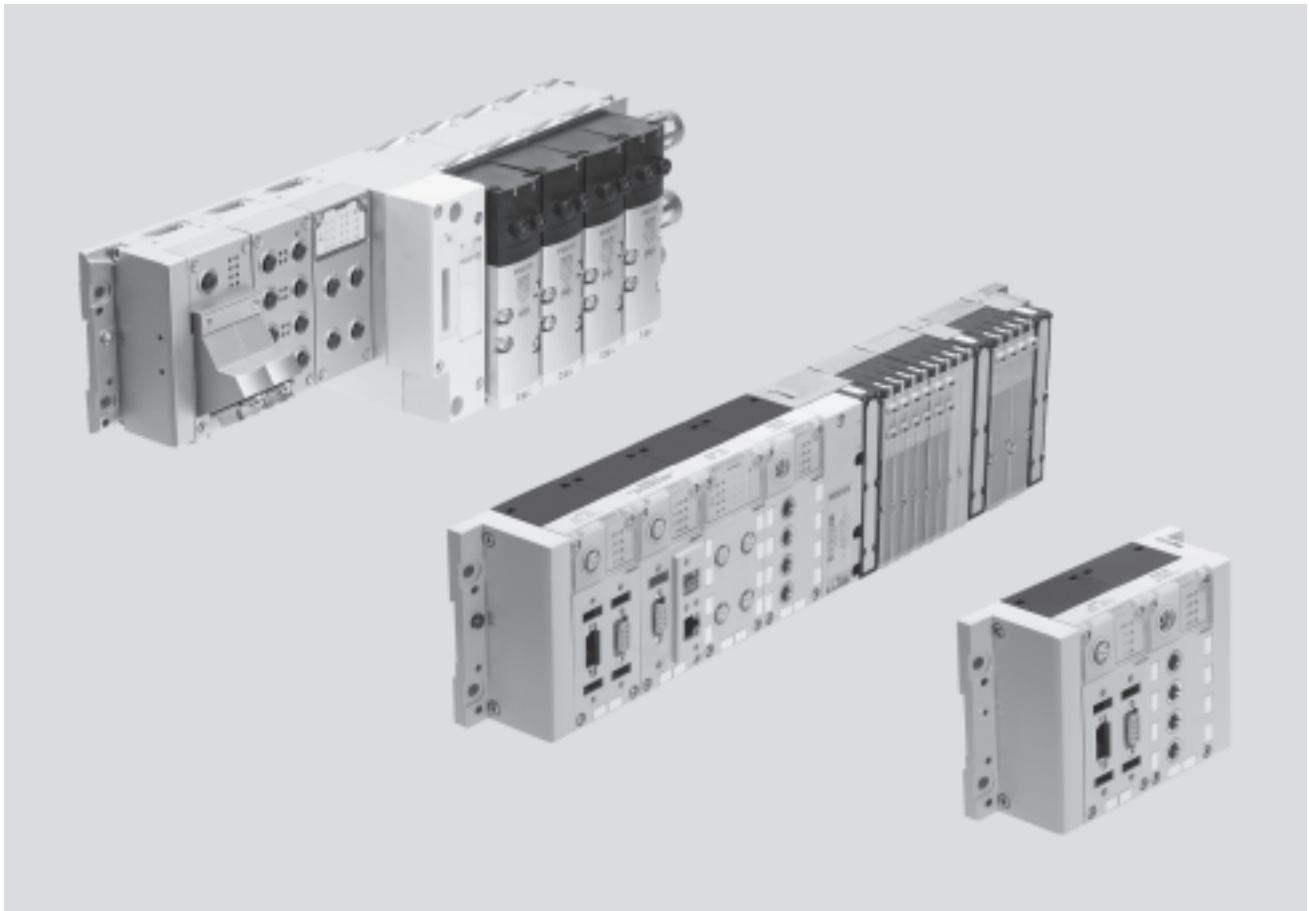
FESTO



Terminal CPX

Key features

FESTO



Key features

Installation concept	Electrical components	Assembly	Operation
<ul style="list-style-type: none"> Choice of several valve terminal types for different applications: <ul style="list-style-type: none"> – Type 03 MIDI/MAXI – Type 12 CPA – Type 32 MPA – Type 32 MPA/MPA-F – Type 44/45 VTSA/VTSA-F 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 	<ul style="list-style-type: none"> High operating voltage tolerance ($\pm 25\%$) Choice of M18, 7/8" or AIDA push-pull connection for power supply Open to all fieldbus protocols and Ethernet Optional function and technology modules for preprocessing IT services and TCP/IP such as remote maintenance, remote diagnostics, web server, text message and e-mail alert Digital inputs and outputs, 4-/8-/16-way, optionally available with individual channel diagnostics Analogue inputs and outputs, 2-/4-way Pressure inputs Temperature inputs Controllers for pneumatic and electrical axes IP65 and IP67 or IP20 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Fast troubleshooting thanks to an extensive selection of LEDs (some of which are multi-coloured) on the bus node and on all I/O modules Suitable for direct machine mounting (IP65/IP67) or in a control cabinet with a terminal connection (IP20) Supports module and channel-oriented diagnostics On-the-spot diagnostics in plain text via handheld device Fieldbus/Ethernet remote diagnostics Innovative diagnostic support with integrated web server/web monitor or maintenance tool with USB adapter for PC Optimised commissioning thanks to parameterisable functions Reliability of service with connection blocks and modules that are quick to replace without changing the wiring

Terminal CPX

Key features

FESTO

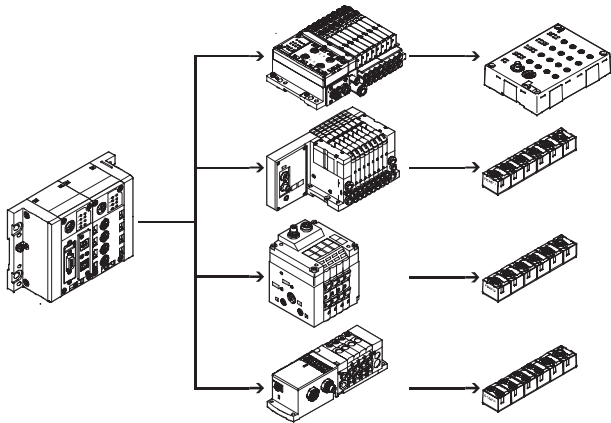
Pneumatic variants of the CPX terminal

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

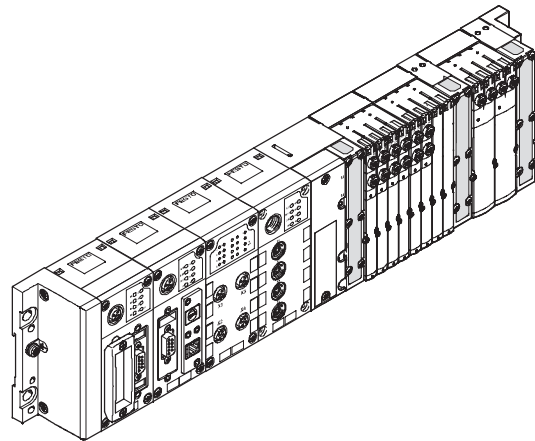
The system is specifically designed so that the valve terminal can be adapted to suit different applications.

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

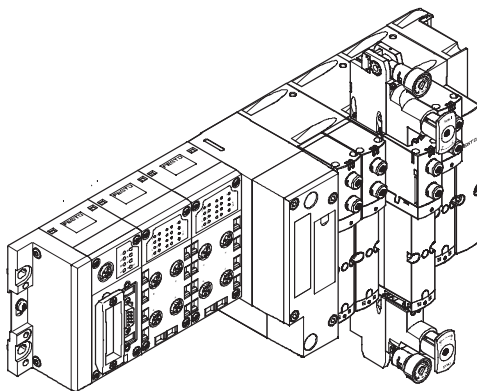
With valve terminal – decentralised



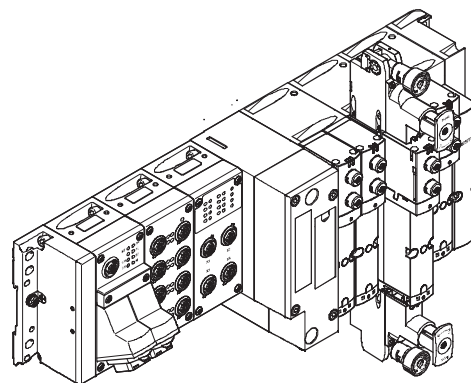
With valve terminal MPA – centralised



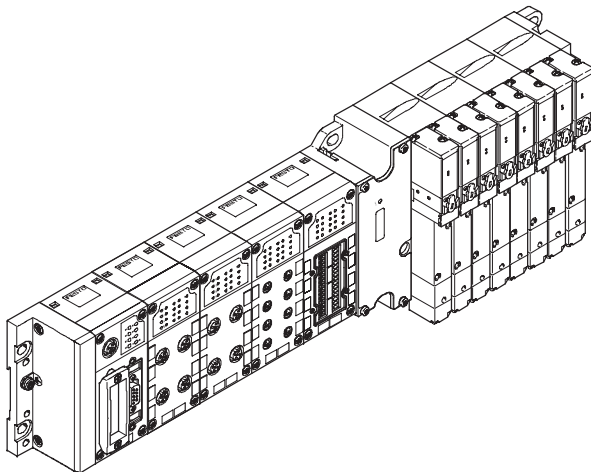
With valve terminal VTSA – centralised



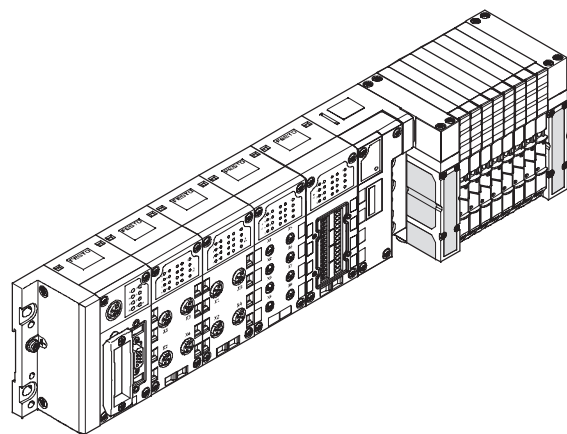
In metal design with valve terminal VTSA – centralised



With valve terminal MIDI/MAXI – centralised



With valve terminal CPA – centralised



Terminal CPX

Key features

FESTO

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

Fieldbus 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 RT
- 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.

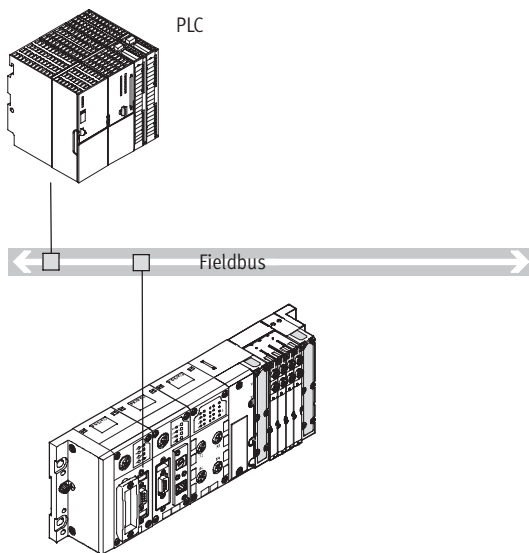
These include standardised and universal communication technology across all areas, including operating

level, management level and field level in the production environment, with protection to IP65/67.

The following protocols are supported:

- Ethernet/IP
- Modbus/TCP
- PROFINET
- EtherCAT

Fieldbus node



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

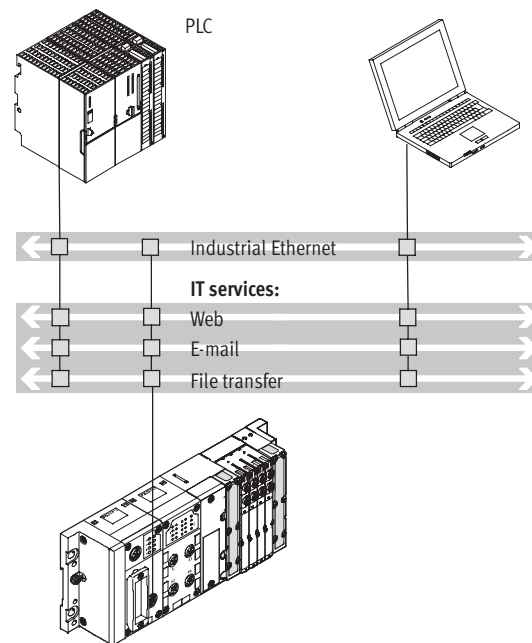
- Fieldbus protocol dependent on CPX fieldbus node used
- Up to 512 I/Os, depending on the fieldbus node used

Note

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

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

Industrial Ethernet fieldbus node



- Connection to a higher-order controller directly via Ethernet/IP, Modbus/TCP or ProfiNet
- No preprocessing

- Monitoring via Ethernet and web applications
- Up to 512 I/Os

Terminal CPX

Key features

FESTO

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

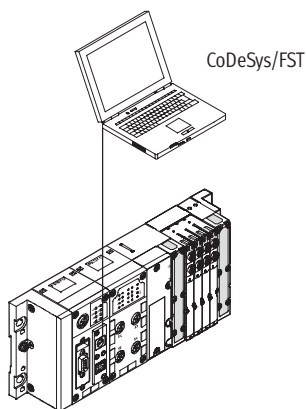
Control block

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 fieldbus 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

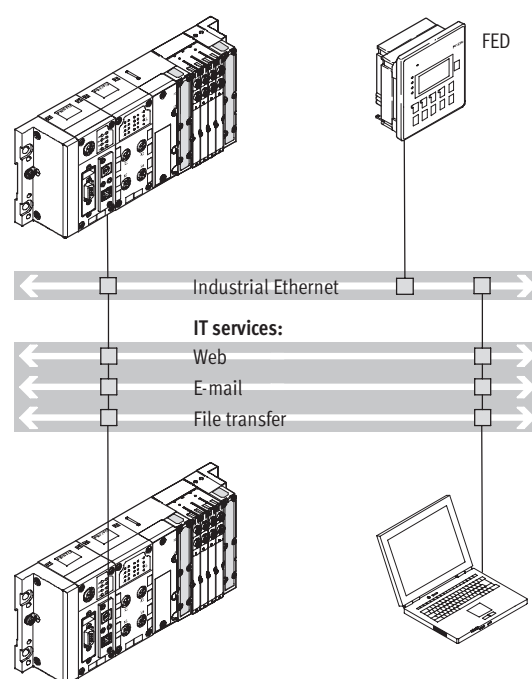


- Decentralised controller with direct machine mounting
- Interaction options via CPX-MMI or Front End Display (FED)
- Downloading of programs via Ethernet (or via the programming interface)
- Supports full expansion of all CPX peripherals
- More than 300 I/Os

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 via an FED and CPX web monitor (only with FST operating system)

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

Terminal CPX

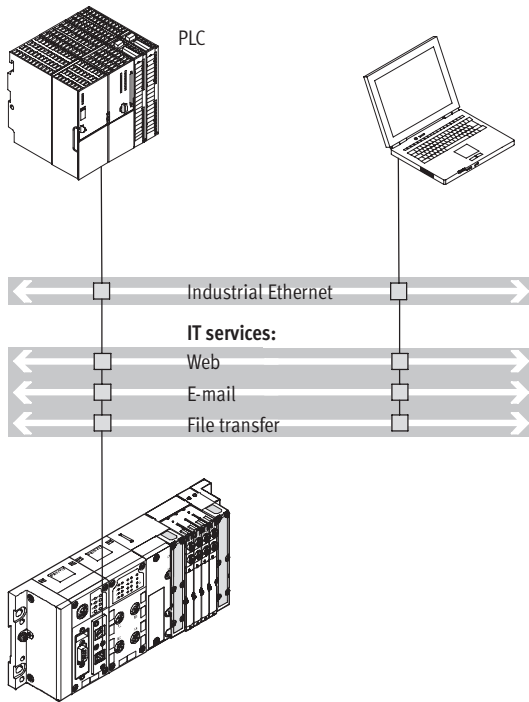
Key features

FESTO

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.



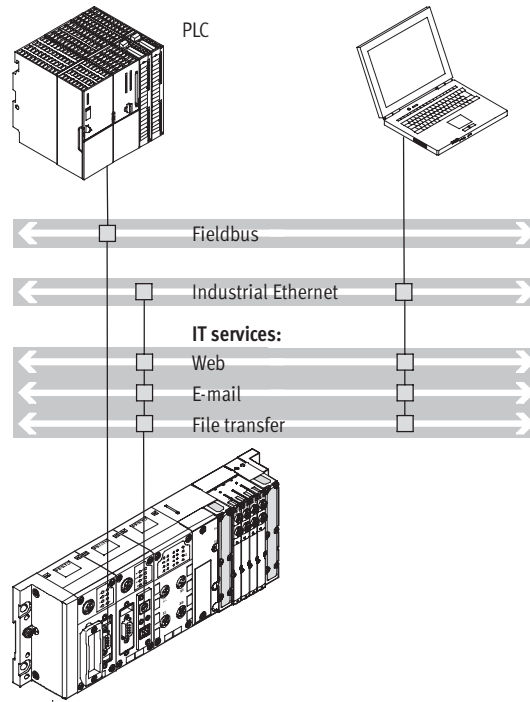
- Connection to a higher-order controller via Ethernet, no further fieldbus node is required
- Monitoring via Ethernet and web applications

- 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 fieldbus nodes for Interbus, Profibus DP, PROFINET, CANopen, DeviceNet, CC-Link or

EtherCAT) as the preprocessing unit for decentralised, stand-alone subsystems.



- Fast preprocessing of the CPX peripherals in the control block
- Communication with higher-order controller via fieldbus
- Optional additional monitoring via Ethernet and web applications

- Downloading of programs via programming interface
- More than 300 I/Os, fieldbus node is only used for communication with the higher-order PLC
- Two fieldbus nodes for redundant communication configuration

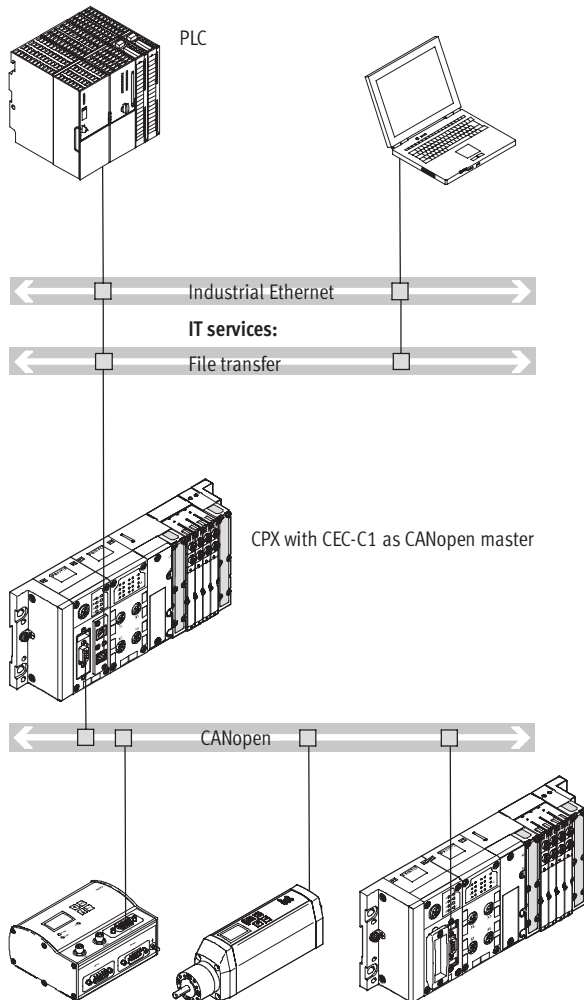
Terminal CPX

Key features

FESTO

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 fieldbus 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

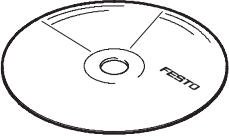
Operating modes:

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

Terminal CPX

Key features

FESTO

CPX Web Monitor – Online diagnostics for the CPX terminal		→ 62
What is a CPX Web Monitor?		What can a CPX Web Monitor do?
	<p>The CPX Web Monitor is a software tool from Festo for all CPX modules with integrated web server and Ethernet connection:</p> <ul style="list-style-type: none"> • Supplied on CD-ROM • Installation on PC • Adaptation to application • Loading via Ethernet to the web server of the CPX module 	<p>The Web Monitor dynamically visualises information about the CPX system and its modules via Ethernet in the browser of a PC:</p> <ul style="list-style-type: none"> • Status and diagnostics of the CPX system by modules and channels • Status of the channels/valves
		<ul style="list-style-type: none"> • Text message or e-mail alerts can be set • Reading of CPX error memory (fault trace) • Setting of outputs (force mode) <p>Three password-protected access levels protect access to the CPX terminal.</p>
How does the CPX Web Monitor communicate?		What advantages does a CPX Web Monitor offer?
<p>An IP address is allocated to the integrated web server. Depending on the performance of the connected Ethernet network, the CPX web server can be accessed from any PC.</p>	<p>Controllers or intelligent display and operating units can communicate with the CPX terminal.</p>	<ul style="list-style-type: none"> • Expensive servicing is avoided • Remote maintenance and monitoring of important device functions (counters) for the prevention of unjustified rights of recourse
		<ul style="list-style-type: none"> • Preventive maintenance for reduced downtimes • No engineering/no development of web applications
CPX Web Monitor – Application examples		
Channel-oriented diagnostics		Monitoring of analogue values
<ul style="list-style-type: none"> • Channel-specific status and error message of an I/O module • Plain-text error message about the type of error • Exact error identified and efficient service visits possible 	<p>Possible error messages:</p> <ul style="list-style-type: none"> • Short circuit • Overload • Open load • Supply voltage below the tolerance limit 	<ul style="list-style-type: none"> • Channel-specific status and error message of an analogue I/O module • Display in plain text • Dynamic display of the current values at the inputs/outputs
Error memory (fault trace)		Possible error messages:
<p>Quick access to the last 40 diagnostic results with timestamp.</p>	<p>Assistance in finding sporadic errors and statistical accumulations.</p>	<ul style="list-style-type: none"> • Open load • Upper or lower limit value exceeded

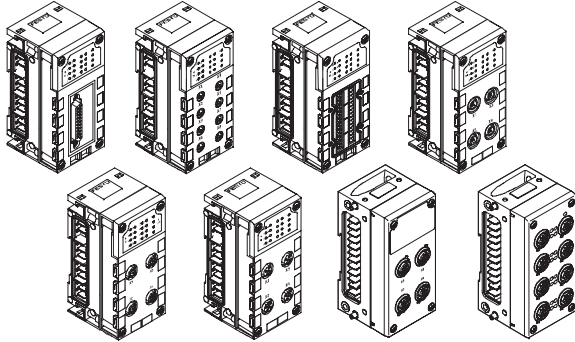
Terminal CPX

Key features

FESTO

Connection of inputs and outputs to the CPX terminal

Digital and analogue CPX I/O modules

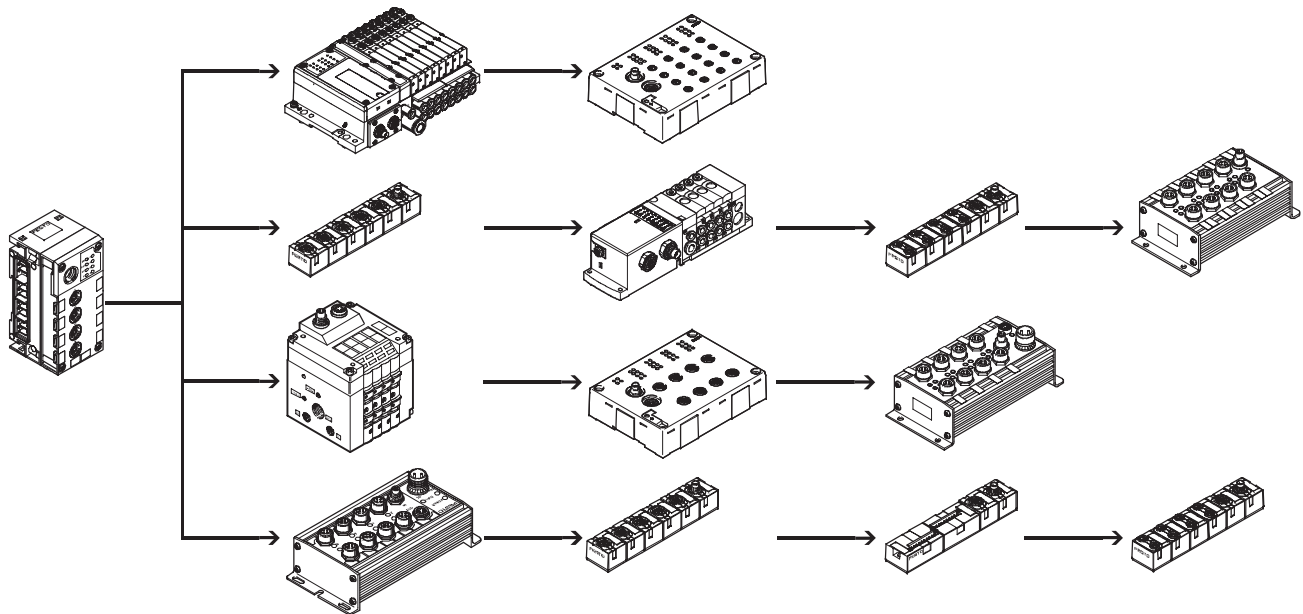


Electrical connection

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 IP65/67)

With CPX-CP interface



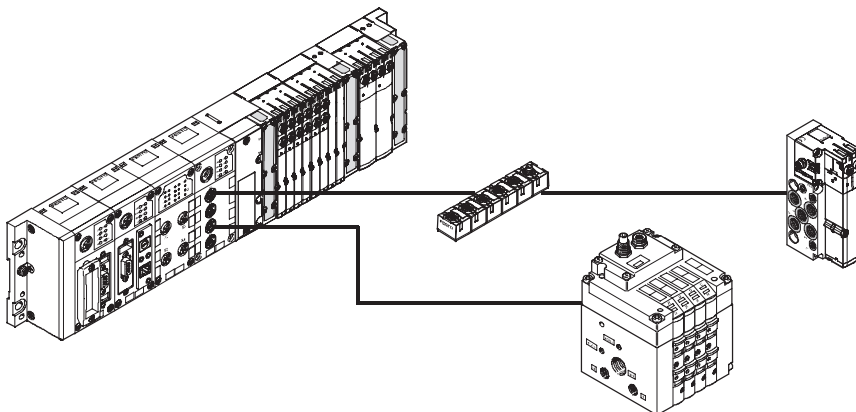
- Up to 4 strings per CP interface possible
- Up to 4 subordinate CP modules can be combined in one string

- Up to 32 I/Os can be connected per string
- Modules with M8, M12 and terminal connection

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

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

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



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

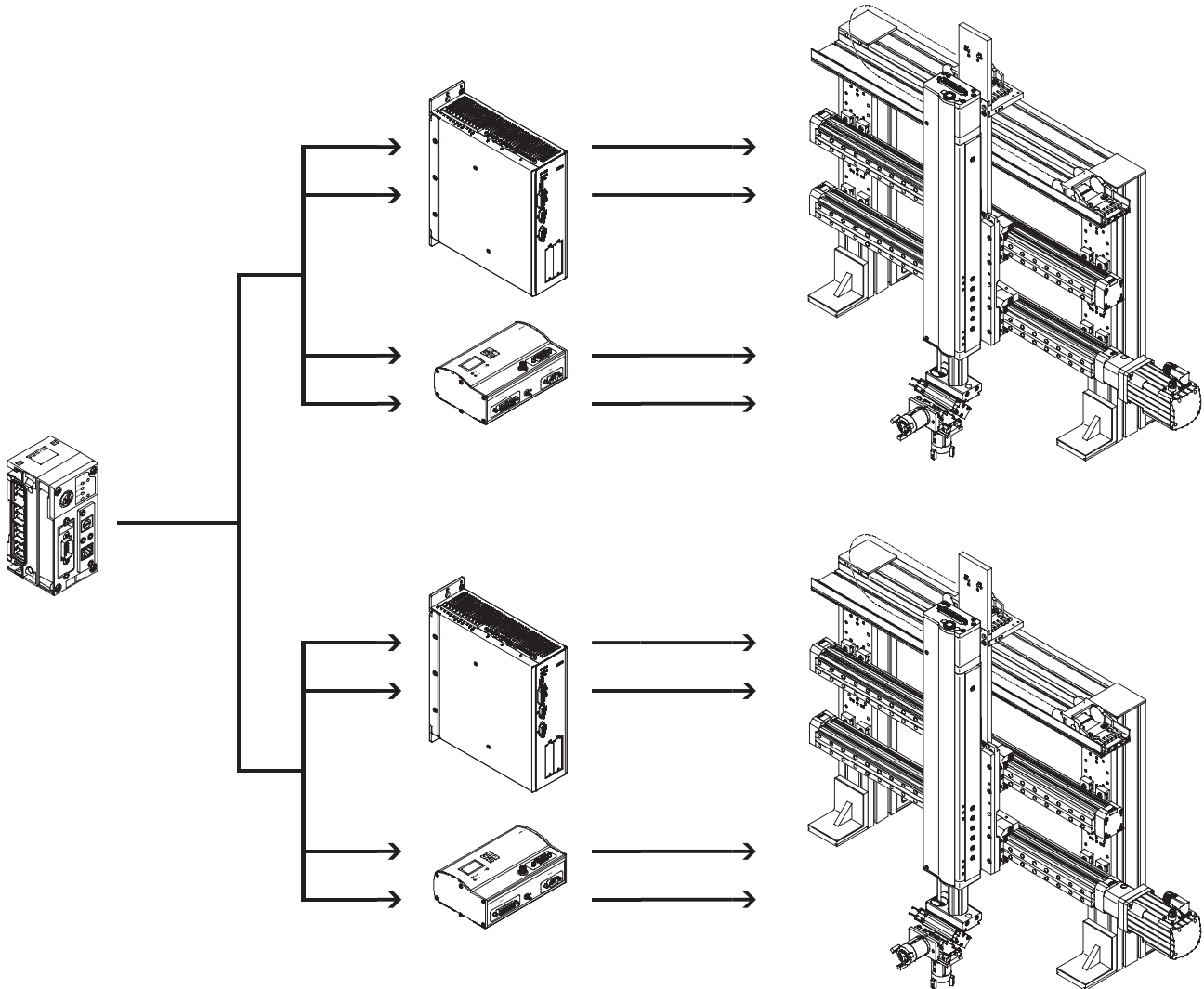
Terminal CPX

Key features

FESTO

Connection of inputs and outputs to the CPX terminal

Electrical drives with CPX-CMXX multi-axis interface



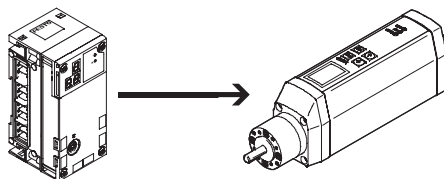
- Two axis groups, each with up to four axes, per CPX-CMXX
- 1,024 positioning records possible per axis group

- 2-axis gantries
- 3-axis gantries

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.

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 fieldbus node used
- Quick configuration and diagnostics via the operator unit CPX-MMI

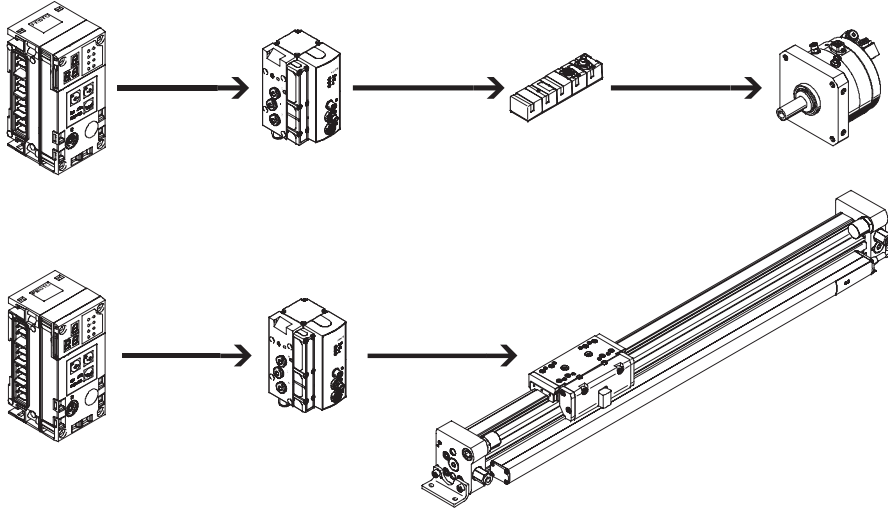
Terminal CPX

Key features

FESTO

Connection of inputs and outputs to the CPX terminal

Pneumatic drives with CPX-CMAX/CMPX



CPX-CMAX

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

CPX-CMPX

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

Ordering

The CPX terminal with valve terminal is fully assembled according to your order specifications and individually tested. The finished valve terminal consists of the electrical peripherals including the desired actuation and the selected components of the VTSA (ISO), VTSA-F, CPA, MPA or MIDI/MAXI 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: type 44 (valve terminal type 44 VTSA)
- ➔ Internet: type 45 (valve terminal type 45 VTSA-F)
- ➔ Internet: type 12 (valve terminal type 12 CPA)
- ➔ Internet: type 32 (valve terminal type 32 MPA)
- ➔ Internet: type 03 midi maxi (valve terminal VIMP-/VIFB-03)

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

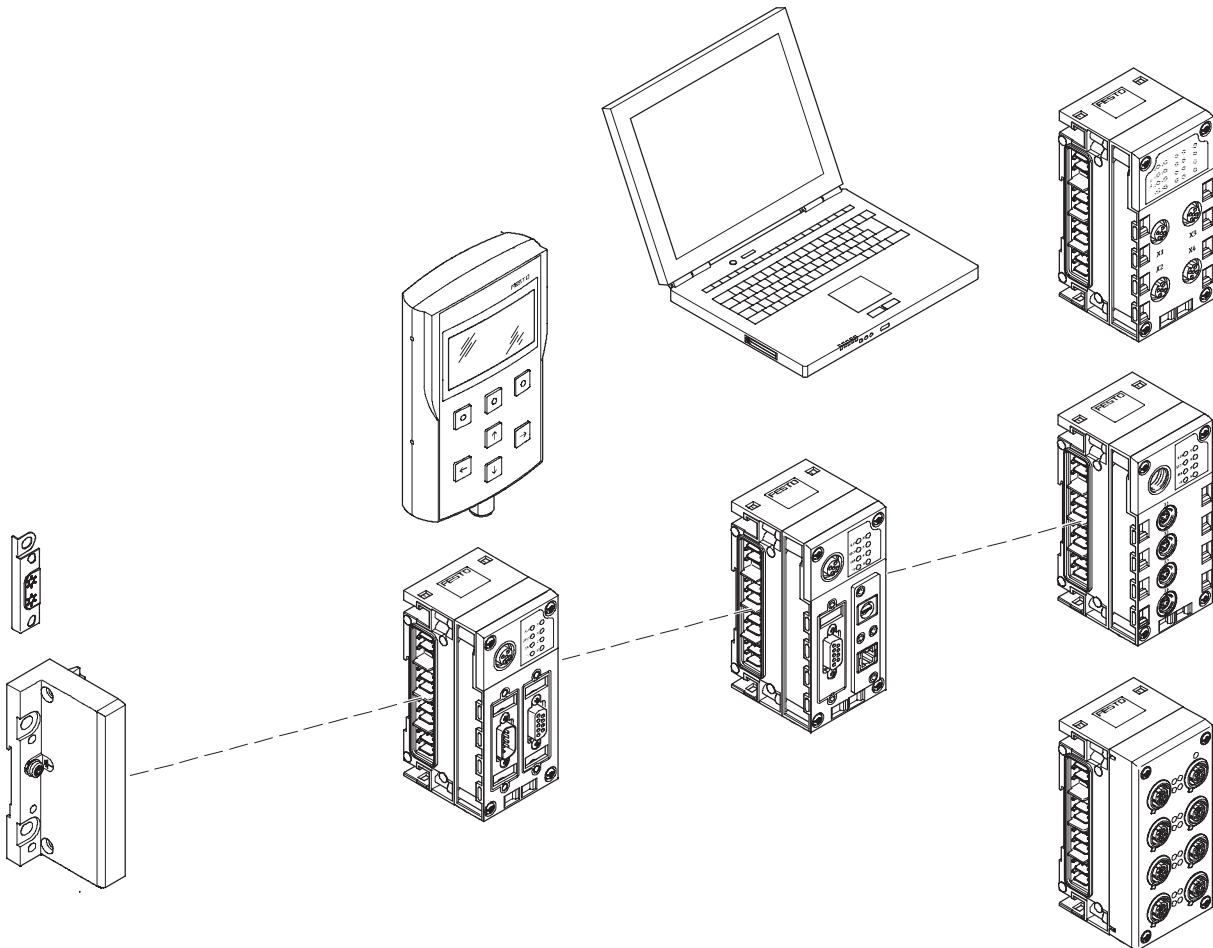
- ➔ Internet: ctec (CPI installation system)

Terminal CPX

Peripherals overview

FESTO

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

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

- Preprocessing, 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

- CP interface for decentralised installation systems, thus optimising the pneumatic control loop systems (short tubing lengths/short cycle times)
- Up to 4 strings with up to 4 modules each and up to 32 I/Os in total per string
- 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
- Text message/e-mail alert

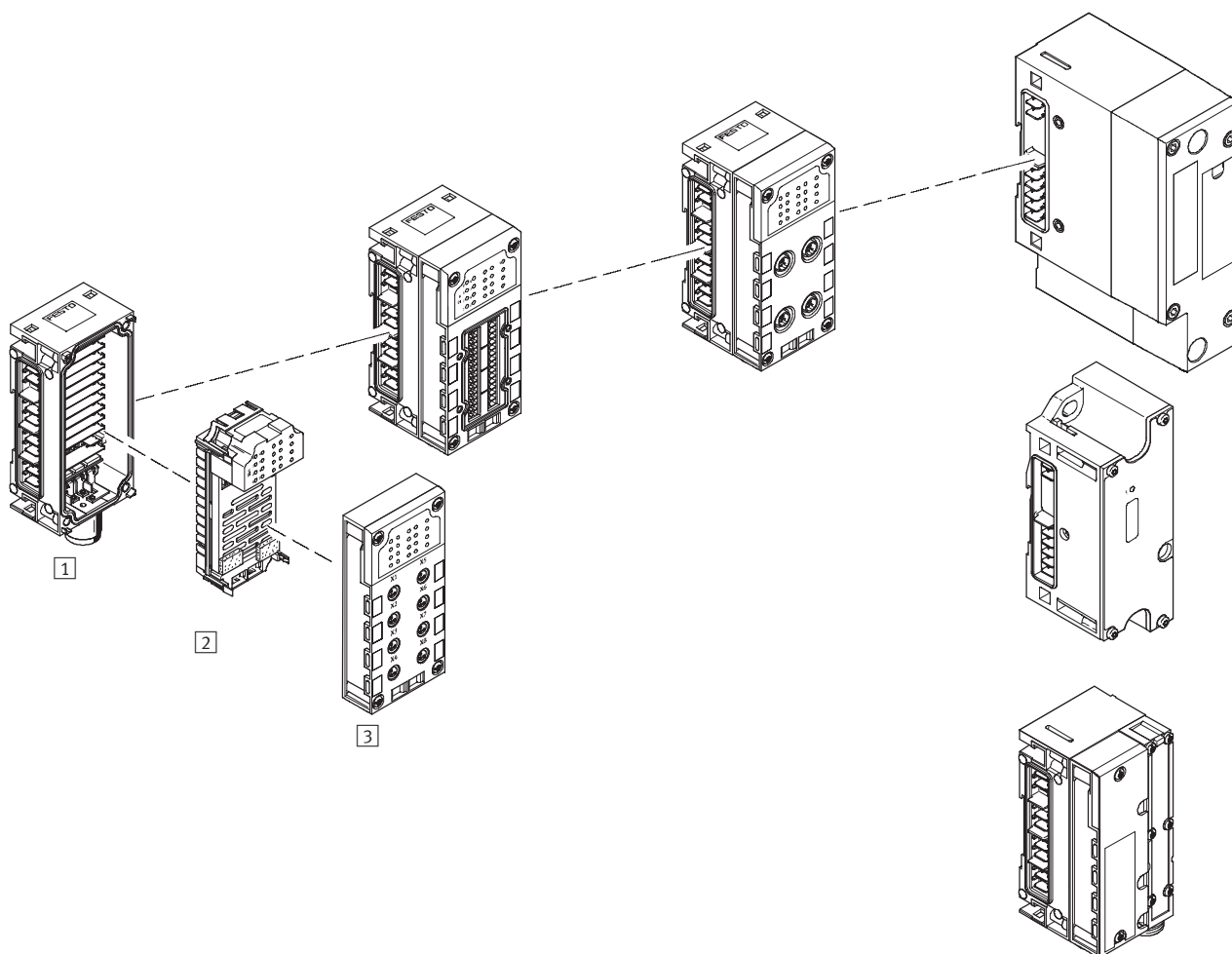
Input/output modules

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

Terminal CPX

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 version: linking with tie rods
- Metal version: 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

3 Connection block

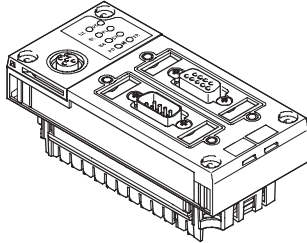
- Choice of 8 connection technology variants
- Protection class IP65/IP67 or IP20
- Freely combinable with the electronics modules
- Connection accessories for M8/M12/Sub-D/quick connector
- M8/M12/Sub-D, etc. connecting cables
- Modular system for M8/M12 connecting cables
- M12 connection technology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

Pneumatic interface

- Actuation of the solenoid coils
- MPA
- MPA-F
- VTSA/VTSA-F
- MIDI/MAXI
- CPA10/14
- Actuation of pressure sensors
- Actuation of proportional pressure regulators

Individual overview of modules

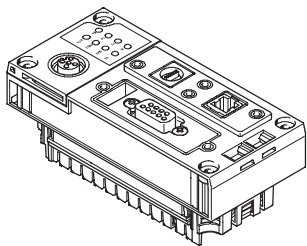
Bus node



Bus node for

- Profibus DP
- Interbus
- DeviceNet
- CANopen
- CC-Link
- Ethernet/IP
(integrated web server)
- PROFINET
(integrated web server)
- EtherCAT

Control block



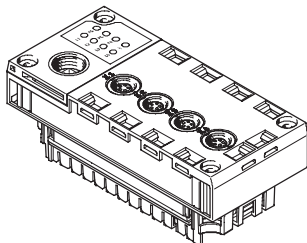
CPX-FEC

- 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

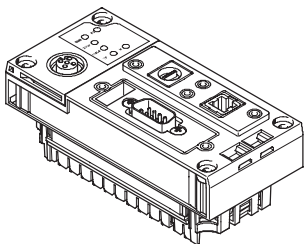
CP interface



CP interface

- 4 CP strings
- Max. 4 modules per string
- 32I/32O per string
- CPI functionality

Modules for actuating electric drive units



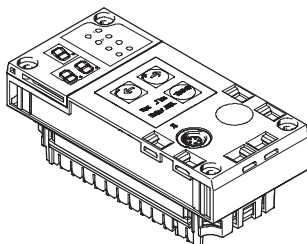
CPX-CMXX

- Multi-axis interface
- Ethernet interface
- 2 axis groups
with max. 4 axes per group
- Max. 1,024 positioning records
per axis group

CPX-CM-HPP

- Axis interface
- Max. 4 individual electric axes
can be controlled via CAN bus

Modules for actuating pneumatic drive units



CPX-CMAX

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

CPX-CMPX

- End-position controller
- Fast movement between the
mechanical end stops of the
cylinder
- Gentle stop in the end position
- Improved downtime control
- Actuation of a brake via the
proportional directional control
valve VPWP

CPX-CMIX

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

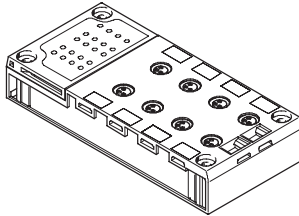
Terminal CPX

Peripherals overview

FESTO

Individual overview of modules

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

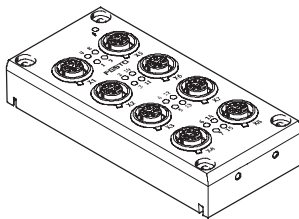
Protected fitting space
(protection class IP20)

- Spring-loaded terminal

Screening concept

- Optional screening plate for connection blocks with M12 connection technology

Metal connection block

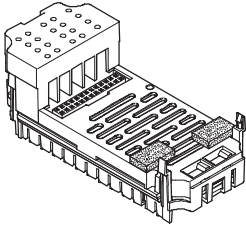


Direct machine mounting
(protection class IP65/IP67)

- M12-5POL

Individual overview of modules

Digital electronics module for inputs/outputs



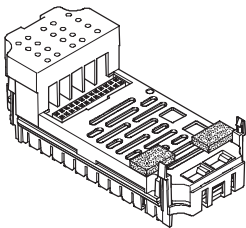
Digital inputs and outputs

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

Multi I/O modules

- 8 digital inputs and 8 digital outputs

Analogue electronics module for inputs/outputs



Analogue inputs

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

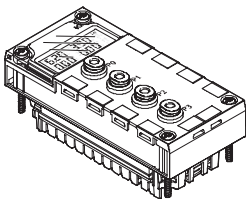
Analogue temperature inputs

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

Analogue outputs

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

Analogue electronics module for pressure inputs



Analogue inputs

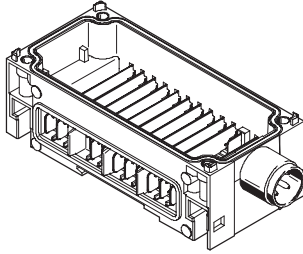
- 4 analogue pressure inputs (0 ... 10 bar, -1 ... +1 bar)

Terminal CPX

Peripherals overview

Individual overview of modules

Plastic interlinking block – Linking by means of tie rods



System linking

- Different voltage values for supplying the modules
- Serial communication between the modules

System supply

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

In addition to system linking, power supply for the

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

Additional power supply

In addition to system linking, power supply for the

- actuators (16 A per supply)

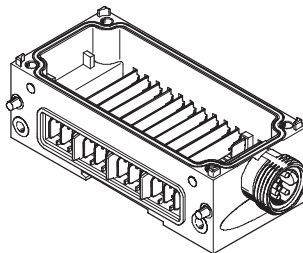
Power supply for the

- valves (16 A per supply)

Expandability

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

Metal interlinking block – Individual linking



System linking

- Different voltage values for supplying the modules
- Serial communication between the modules

System supply

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

In addition to system linking, power supply for the

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

Additional power supply

In addition to system linking, power supply for the

- actuators (16 A per supply)

Power supply for the

- valves (16 A per supply)

Expandability

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

Note

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

Note

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

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

Terminal CPX

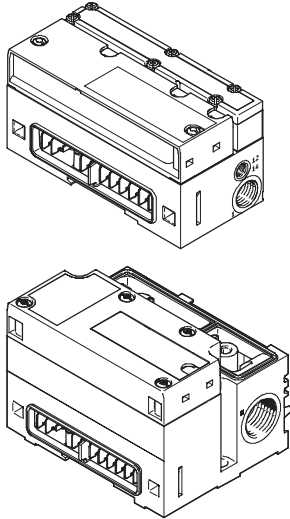
Peripherals overview

FESTO

Individual overview of modules

Pneumatic interface MPA

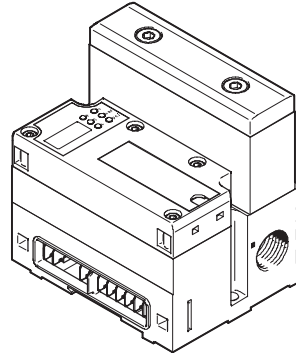
→ 191



- 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-F

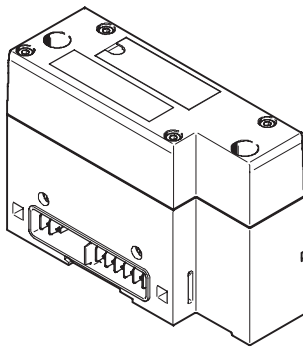
→ 193



- 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

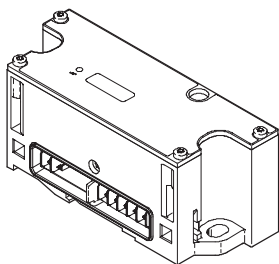
→ 195



- Valve terminal
- 18 mm: valve flow rate up to 700 l/min
 - 26 mm: valve flow rate up to 1,400 l/min
 - 42 mm: valve flow rate up to 1,500 l/min
 - Max. 32 valve positions/ max. 32 solenoid coils
 - For CPX plastic design
 - For CPX metal design

Pneumatic interface MIDI/MAXI

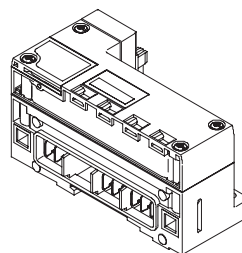
→ 196



- Valve terminal
- MIDI valves (500 l/min) and/or MAXI valves (1,250 l/min)
 - Up to 26 solenoid coils
 - Setting of the number of valves via DIL switch
 - For CPX plastic design
 - For CPX metal design

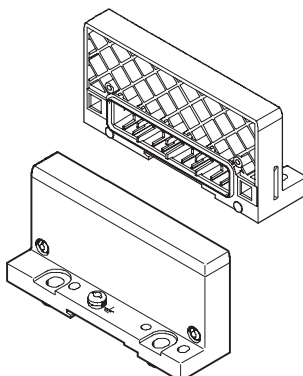
Pneumatic interface CPA

→ 198



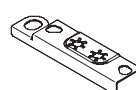
- Valve terminal
- CPA10 (300 l/min)
 - CPA14 (600 l/min)
 - Up to 22 solenoid coils
 - Setting of the number of valves via DIL switch
 - For CPX plastic design

End plate for plastic/metal design



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

Earthing plate (for end plate for plastic design)



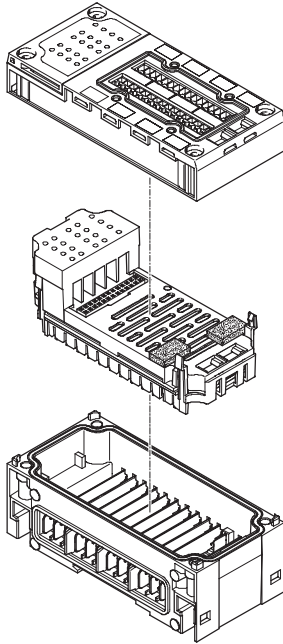
- Earthing plate
- For safe and easy connection to the machine bed or H-rail, suitable for right-hand and left-hand end plate
 - Assembly and earthing in a single processing step, which means:
 - 50% time saving
 - no additional material required

Terminal CPX

Peripherals overview

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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
- In addition a pneumatic interface, always positioned as the last module on the right-hand side
 - For VTSA, VTSA-F, CPA and MIDI/MAXI: fixed operating range, set using DIL switch
 - For MPA: 16 MPA modules can be configured
- Address capacity max. 512 inputs and 512 outputs, depending on bus node or control block

- One interlinking block with system supply, freely positionable
- 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)
- All electronics modules for inputs/outputs can be combined with any interlinking block
- Plastic interlinking blocks (tie rods) and metal interlinking blocks (individual linking) cannot be combined due to their different linking systems

Terminal CPX

Peripherals overview

FESTO

Combinations of connection blocks and digital input modules						
Connection blocks	Digital electronics modules					
	CPX-4DE	CPX-8DE	CPX-16DE	CPX-M-16DE-D	CPX-8DE-D	CPX-8NDE
Plastic design with mounting screws for assembly on plastic interlinking blocks						
CPX-AB-8-M8-3POL	■	■	–	–	■	■
CPX-AB-8-M8X2-4POL	–	–	■	–	–	–
CPX-AB-4-M12x2-5POL	■	■	–	–	■	■
CPX-AB-4-M12x2-5POL-R	■	■	–	–	■	■
CPX-AB-4-M12-8POL	–	–	–	–	–	–
CPX-AB-8-KL-4POL	■	■	■	–	■	■
CPX-AB-1-SUB-BU-25POL	■	■	■	–	■	■
CPX-AB-4-HAR-4POL	■	■	–	–	■	■
Plastic design with mounting screws for assembly on metal interlinking blocks						
CPX-AB-8-M8x2-4P-M3	–	–	■	–	–	–
CPX-AB-4-M12-8P-M3	–	–	–	–	–	–
CPX-AB-4-M12x2-5P-R-M3	■	■	–	–	■	■
Metal design with mounting screws for assembly on metal and plastic interlinking blocks						
CPX-M-4-M12x2-5POL	■	■	–	–	■	■
CPX-M-8-M12x2-5POL	–	–	–	■	–	–

Combinations of connection blocks and digital output modules/multi I/O modules				
Connection blocks	Digital electronics modules			
	CPX-4DA	CPX-8DA	CPX-8DA-H	CPX-8DE-8DA
Plastic design with mounting screws for assembly on plastic interlinking blocks				
CPX-AB-8-M8-3POL	■	■	–	–
CPX-AB-8-M8X2-4POL	■	■	■	–
CPX-AB-4-M12x2-5POL	■	■	–	–
CPX-AB-4-M12x2-5POL-R	■	■	■	–
CPX-AB-4-M12-8POL	–	–	–	■
CPX-AB-8-KL-4POL	■	■	■	■
CPX-AB-1-SUB-BU-25POL	■	■	■	■
CPX-AB-4-HAR-4POL	■	■	–	–
Plastic design with mounting screws for assembly on metal interlinking blocks				
CPX-AB-8-M8x2-4P-M3	■	■	■	–
CPX-AB-4-M12-8P-M3	–	–	–	■
CPX-AB-4-M12x2-5P-R-M3	■	■	■	–
Metal design with mounting screws for assembly on metal and plastic interlinking blocks				
CPX-M-4-M12x2-5POL	■	■	■	–
CPX-M-8-M12x2-5POL	–	–	–	–

Terminal CPX

Peripherals overview

FESTO

Combinations of connection blocks and analogue electronics modules for inputs/outputs						
Connection blocks	Analogue electronics modules					
	CPX-2AE-U-I	CPX-4AE-I	CPX-4AE-P	CPX-4AE-T	CPX-4AE-TC	CPX-2AA-U-I
Plastic design with mounting screws for assembly on plastic interlinking blocks						
CPX-AB-4-M12x2-5POL	■	■	–	■	■	■
CPX-AB-4-M12x2-5POL-R	■	■	–	■	■	■
CPX-AB-8-KL-4POL	■	■	–	■	■	■
CPX-AB-1-SUB-BU-25POL	■	■	–	–	–	■
CPX-AB-4-HAR-4POL	–	–	–	■	–	–
Plastic design with mounting screws for assembly on metal interlinking blocks						
CPX-AB-4-M12x2-5P-R-M3	■	■	–	■	■	■
Metal design with mounting screws for assembly on metal and plastic interlinking blocks						
CPX-M-4-M12x2-5POL	■	■	–	■	■	■

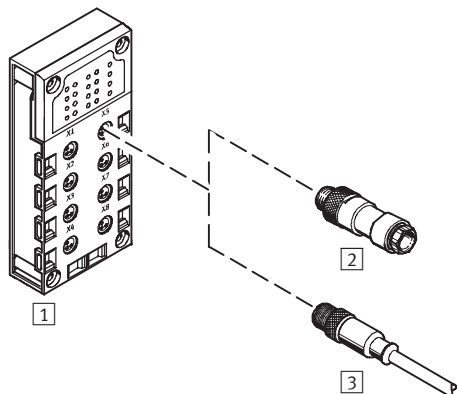
Terminal CPX

Key features – Electrical components

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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 connection of 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

Combination of connection block and electrical connection technology			
Connection block	Connection technology	Plug connector/connecting cable	Selectable connection technology
1 CPX-AB-8-M8-3POL	Socket, M8, 3-pin	2 SEA-GS-M8	Solder lugs
		2 SEA-3GS-M8-S	Screw terminals
		3 KM8-M8-GSGD-... (pre-assembled connecting cable)	Socket, M8, 3-pin
		3 NEBU-...-M8G3 (modular system for choice of connecting cables)	Socket, M5, 3-pin
			Socket, M8, 3-pin
			Socket, M8, 4-pin
			Socket, M12, 5-pin
			Open cable end

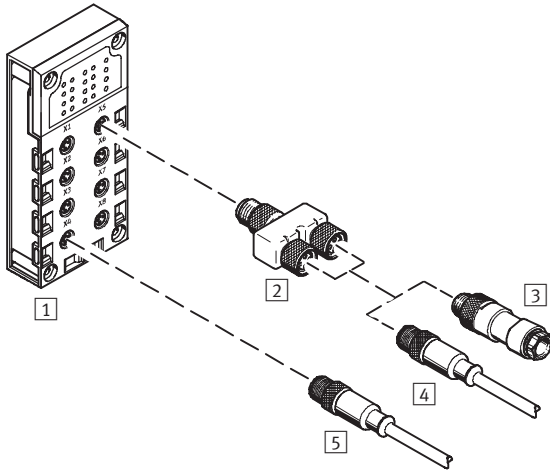
Terminal CPX

Key features – Electrical components

FESTO

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 connection of 2 channels per socket

Combination of connection block and electrical connection technology					
Connection block	Connection technology	Plug connector/connecting cable	Selectable connection technology	Plug connector/connecting cable	Selectable connection technology
1 CPX-AB-8-M8X2-4POL	Socket, M8, 4-pin	4 NEBU-...-M8G4 (modular system for choice of connecting cables)	Socket, M5, 3-pin	–	–
			Socket, M8, 3-pin	–	–
			Socket, M8, 4-pin	–	–
			Socket, M12, 5-pin	–	–
			Open cable end	–	–
		2 NEDU-M8D3-M8T4 (T-adaptor)	1x plug M8, 4-pin to	3 SEA-GS-M8	Solder lugs
			2x socket M8, 3-pin	3 SEA-3GS-M8-S	Screw terminals
				4 KM8-M8-GSGD-... (pre-assembled connecting cable)	Socket, M8, 3-pin
				4 NEBU-...-M8G3 (modular system for choice of connecting cables)	Socket, M5, 3-pin
					Socket, M8, 3-pin
					Socket, M8, 4-pin
					Socket, M12, 5-pin
					Open cable end

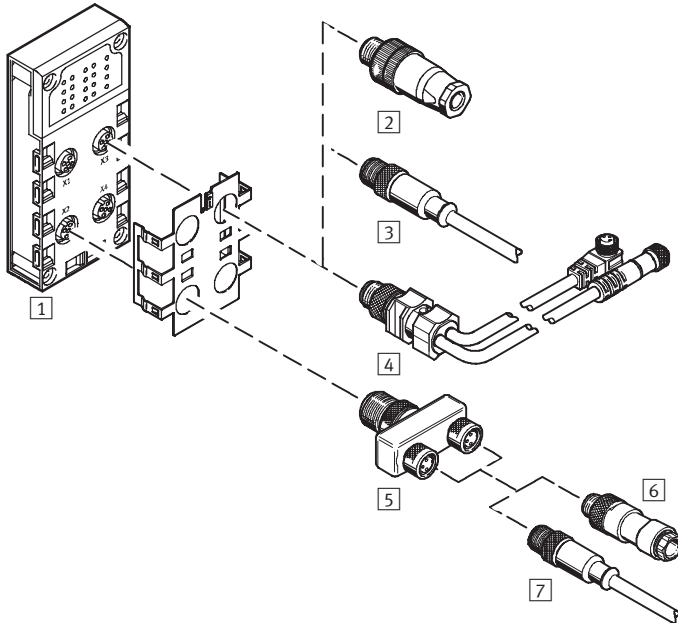
Terminal CPX

Key features – Electrical components

FESTO

Electrical connection – Connection block

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



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

Terminal CPX

Key features – Electrical components

FESTO

Combination of connection block and electrical connection technology							
Connection block	Connection technology	Plug connector/ connecting cable	Connection technology	Plug connector/connecting cable	Connection technology		
<div>1</div> <div>CPX-AB-4-M12x2-5POL</div> <div>CPX-AB-4-M12x2-5POL-R</div>	Socket, M12, 5-pin	<div>2</div> SEA-GS-7	Screw terminals	–	–		
		<div>2</div> SEA-4GS-7-2,5	Screw terminals	–	–		
		<div>2</div> SEA-GS-9	Screw terminals	–	–		
		<div>2</div> SEA-M12-5GS-PG7	Screw terminals	–	–		
		<div>2</div> SEA-GS-11-DUO	Screw terminals, for two cables	–	–		
		<div>2</div> SEA-5GS-11-DUO	Screw terminals, for two cables	–	–		
		<div>3</div> KM12-M12-... (pre-assembled connecting cable)	Socket, M12, 4-pin	–	–		
		<div>3</div> NEBU-...-M12G4	Socket, M5, 4-pin	–	–		
		<div>3</div> NEBU-...-M12G5	Socket, M8, 4-pin	–	–		
			Socket, M12, 5-pin	–	–		
			Open cable end	–	–		
		<div>4</div> KM12-DUO-M8-... (pre-assembled connecting cable)	Plug M12, 4-pin to 2x socket M8, 3-pin	<div>6</div> SEA-GS-M8	Solder lugs		
		<div>5</div> NEDU-M8D3-M12T4 (T-adapter)		<div>6</div> SEA-3GS-M8-S	Screw terminals		
				<div>7</div> KM8-M8-GSGD-... (pre-assembled connecting cable)	Socket, M8, 3-pin		
				<div>7</div> NEBU-...-M8G3 (modular system for choice of connecting cables)	Socket, M5, 3-pin		
					Socket, M8, 3-pin		
					Socket, M8, 4-pin		
					Socket, M12, 5-pin		
					Open cable end		
				<div>5</div> NEDU-M12D5-M12T4 (T-adapter)	Plug M12, 4-pin to 2x socket M12, 5-pin	<div>6</div> SEA-GS-7	Screw terminals
					<div>6</div> SEA-4GS-7-2,5	Screw terminals	
					<div>6</div> SEA-GS-9	Screw terminals	
					<div>6</div> SEA-M12-5GS-PG7	Screw terminals	
					<div>6</div> SEA-GS-11-DUO	Screw terminals, for two cables	
					<div>6</div> SEA-5GS-11-DUO	Screw terminals, for two cables	
					<div>7</div> KM12-M12-... (pre-assembled connecting cable)	Socket, M12, 4-pin	
					<div>7</div> NEBU-...-M12G4 (modular system for choice of connecting cables)	Socket, M5, 4-pin	
					<div>7</div> NEBU-...-M12G5 (modular system for choice of connecting cables)	Socket, M8, 4-pin	
						Socket, M12, 5-pin	
						Open cable end	

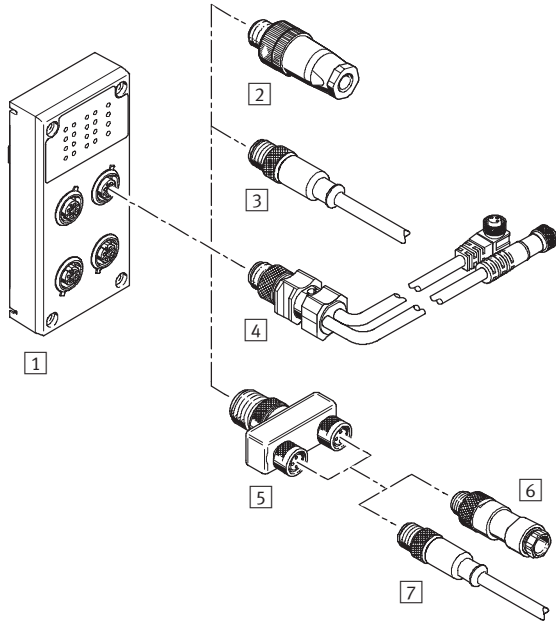
Terminal CPX

Key features – Electrical components

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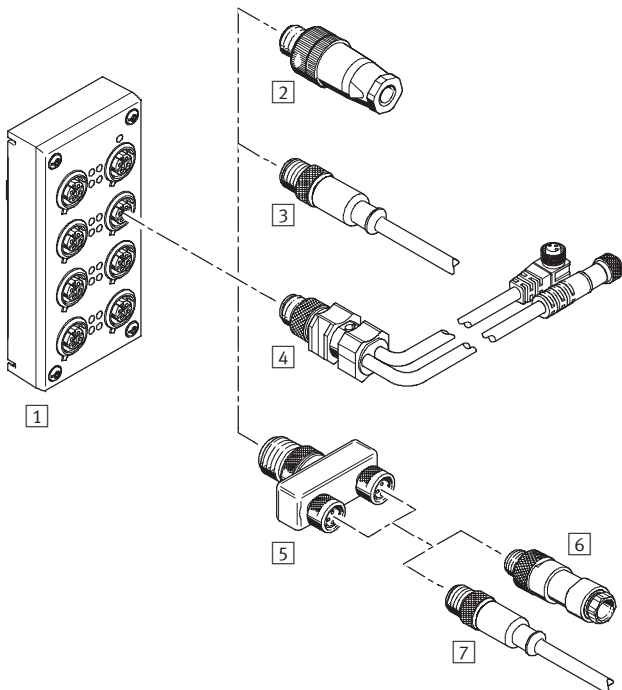
Electrical connection – Connection block (metal design)

CPX-M-4-M12x2-5POL with M12-5POL connection



- Pre-assembled and sturdy with 2 channels per socket
- 4 sockets
- 5-pin design per socket
- With two channels per socket, the corresponding input signals can be easily connected via a T-adapter and conventional cable with M8 connection

CPX-M-8-M12x2-5POL with M12-5POL connection



- Pre-assembled and sturdy with 2 channels per socket
- 8 sockets
- 5-pin design per socket
- With two channels per socket, the corresponding input signals can be easily connected via a T-adapter and conventional cable with M8 connection

Terminal CPX

Key features – Electrical components



Combination of connection block and electrical connection technology					
Connection block	Connection technology	Plug connector/ connecting cable	Connection technology	Plug connector/ connecting cable	Connection technology
<div>1</div> <div>CPX-M-4-M12x2-5POL</div> <div>CPX-M-8-M12x2-5POL</div>	Socket, M12, 5-pin	<div>2</div> SEA-GS-7	Screw terminals	–	–
		<div>2</div> SEA-4GS-7-2,5	Screw terminals	–	–
		<div>2</div> SEA-GS-9	Screw terminals	–	–
		<div>2</div> SEA-M12-5GS-PG7	Screw terminals	–	–
		<div>2</div> SEA-GS-11-DUO	Screw terminals, for two cables	–	–
		<div>2</div> SEA-5GS-11-DUO	Screw terminals, for two cables	–	–
		<div>3</div> KM12-M12-... (pre-assembled connecting cable)	Socket, M12, 4-pin	–	–
		<div>3</div> NEBU-...-M12G4	Socket, M5, 4-pin	–	–
		<div>3</div> NEBU-...-M12G5	Socket, M8, 4-pin	–	–
			Socket, M12, 5-pin	–	–
			Open cable end	–	–
		<div>4</div> KM12-DUO-M8-... (pre-assembled connecting cable)	Plug M12, 4-pin to 2x socket M8, 3-pin	<div>6</div> SEA-GS-M8	Solder lugs
				<div>6</div> SEA-3GS-M8-S	Screw terminals
				<div>7</div> KM8-M8-GSGD-... (pre-assembled connecting cable)	Socket, M8, 3-pin
		<div>5</div> NEDU-M8D3-M12T4 (T-adapter)		<div>7</div> NEBU-...-M8G3 (modular system for choice of connecting cables)	Socket, M5, 3-pin
					Socket, M8, 3-pin
					Socket, M8, 4-pin
					Socket, M12, 5-pin
					Open cable end
		<div>5</div> NEDU-M12D5-M12T4 (T-adapter)	Plug M12, 4-pin to 2x socket M12, 5-pin	<div>6</div> SEA-GS-7	Screw terminals
				<div>6</div> SEA-4GS-7-2,5	Screw terminals
				<div>6</div> SEA-GS-9	Screw terminals
				<div>6</div> SEA-M12-5GS-PG7	Screw terminals
				<div>6</div> SEA-GS-11-DUO	Screw terminals, for two cables
				<div>6</div> SEA-5GS-11-DUO	Screw terminals, for two cables
				<div>7</div> KM12-M12-... (pre-assembled connecting cable)	Socket, M12, 4-pin
				<div>7</div> NEBU-...-M12G4 (modular system for choice of connecting cables)	Socket, M5, 4-pin
				<div>7</div> NEBU-...-M12G5 (modular system for choice of connecting cables)	Socket, M8, 4-pin
					Socket, M12, 5-pin
					Open cable end

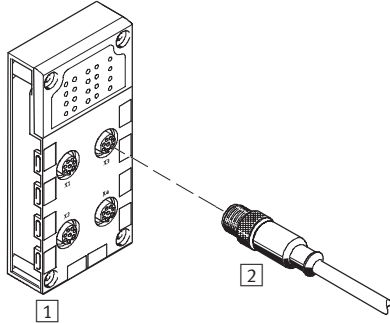
Terminal CPX

Key features – Electrical components

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Electrical connection – Connection block

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

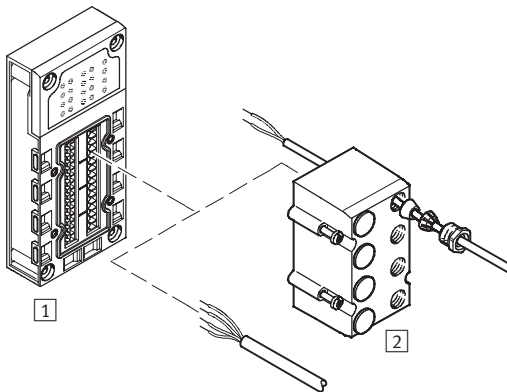


- Connection to cylinder-valve combinations with max. 3 inputs and 2 outputs
- 4 sockets
- 8-pin design per socket

Combination of connection block and electrical connection technology

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

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



- Fast connection technology for use in control cabinets
- 32 spring-loaded terminals
- 4 spring-loaded terminals per channel
- Wire cross sections 0.05 ... 1.5 mm²
- Optional cover with fittings for IP65/67 connection
 - 8 through-holes M9
 - 1 through-hole M16
 - Blanking plug
 - For I/O distributors, consoles or individual sensors/actuators

Combination of connection block and electrical connection technology

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

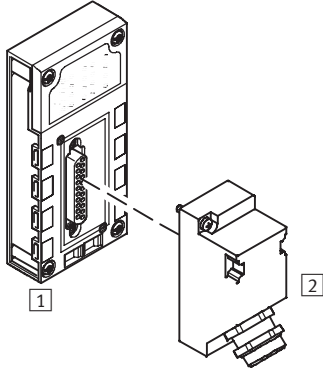
Terminal CPX

Key features – Electrical components

FESTO

Electrical connection – Connection block

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

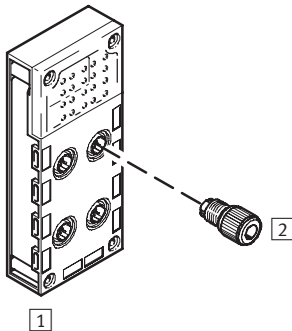


- Multi-pin plug connection for I/O distributor or console
- One socket
- 25-pin design

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 connector



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

Combination of connection block and electrical connection technology

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

Terminal CPX

Key features – Types of mounting

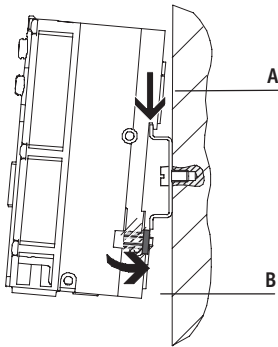
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Mounting options

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

protection and control cabinet installation.

H-rail mounting



The H-rail mounting is formed in 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 (see arrow A) and

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.

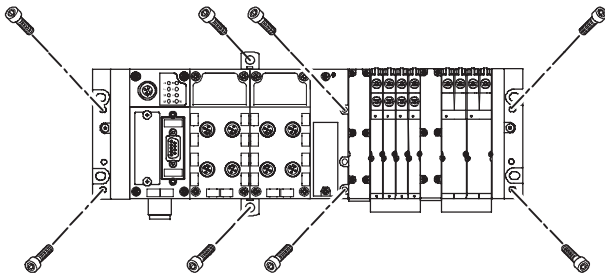
For H-rail mounting you will need the following mounting kit:

- CPA-BG-NRH

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

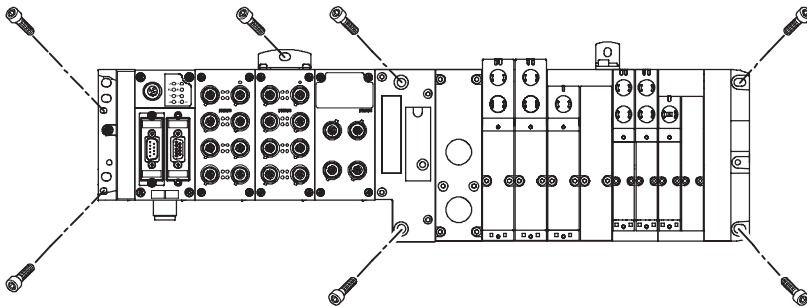
An additional mounting kit is required for combination with valve terminals.

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



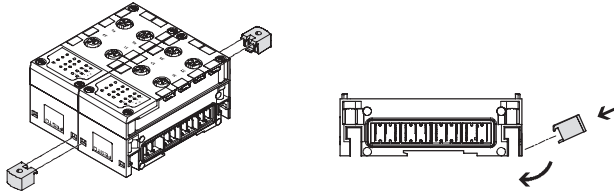
Terminal CPX

Key features – Types of mounting

FESTO

Plastic CPX terminal

Additional mountings

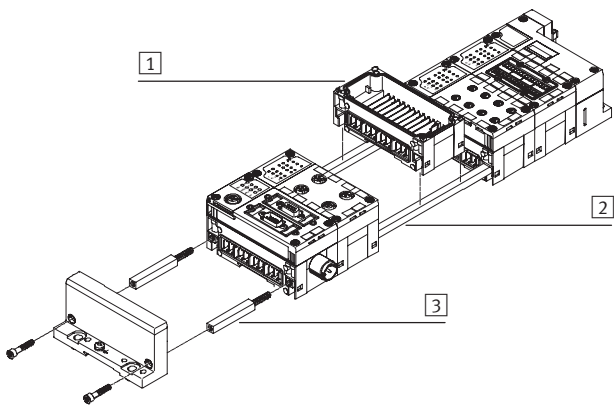


Additional mountings for the CPX terminal that can be fitted between two modules are available for longer valve terminals.

Note

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

Linking with tie rods

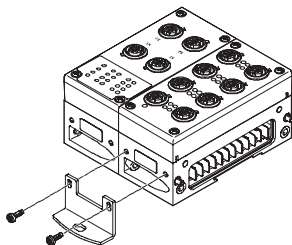


The mechanical connection between the CPX modules is created using special tie rods [2]. Two screws in the end plates are all that are needed to assemble the entire unit. The tie rod ensures that the unit resists high mechanical loads and is therefore the “mechanical backbone” of the CPX terminal.

The open design enables the 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.

Metal CPX terminal

Additional mountings

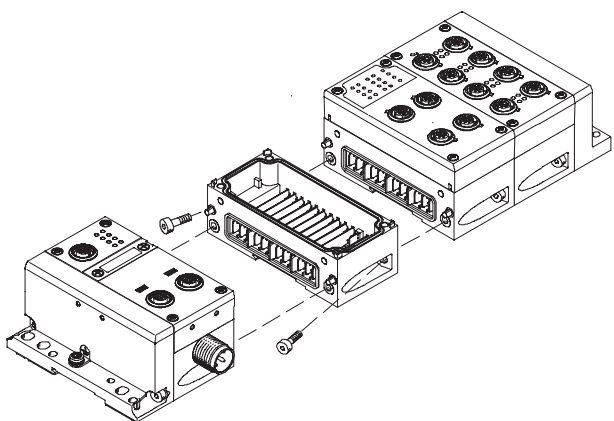


Additional mounting brackets for the CPX terminal that can be screwed onto the interlinking blocks are available for longer valve terminals.

Note

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

Linking with screws



The mechanical connection between the CPX modules is created using special angle fittings. The CPX terminal can thus be expanded at any time.

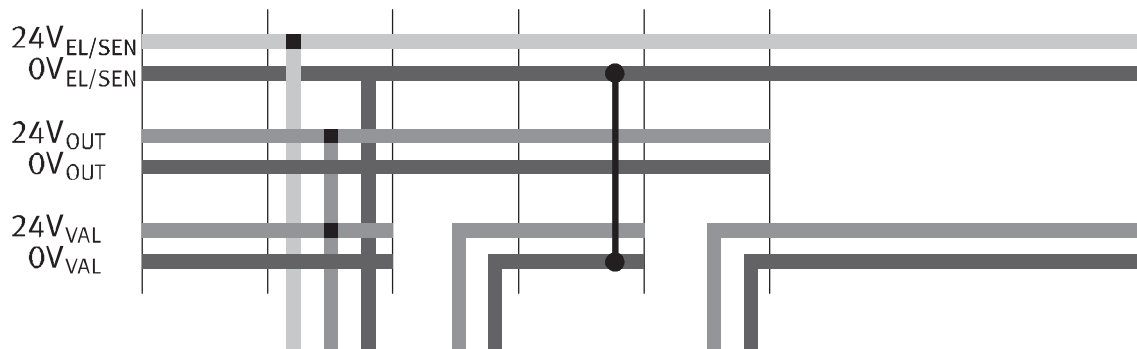
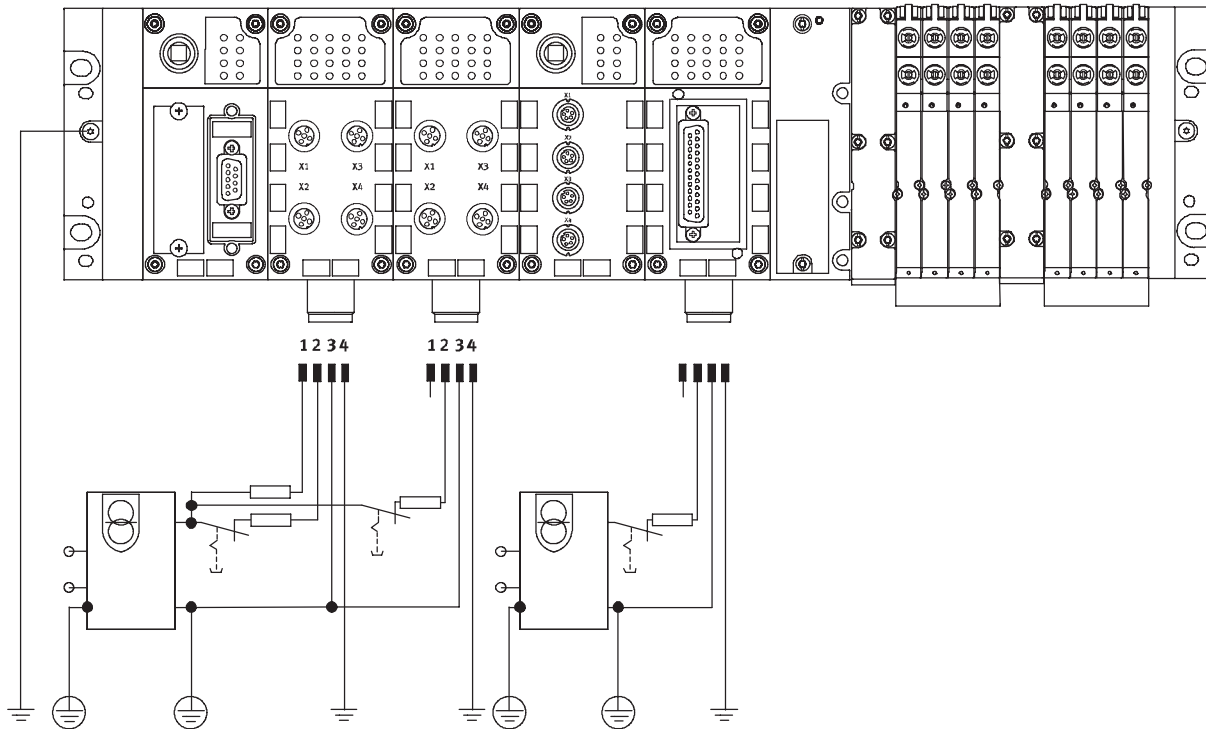
Terminal CPX

Key features – Power supply

FESTO

Power supply concept

General information



The use of decentralised devices on the fieldbus – particularly with high 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 socket.

A distinction is made between supplying the

- electronics plus sensors
- valves plus actuators.

The following connecting threads can be selected:

- 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

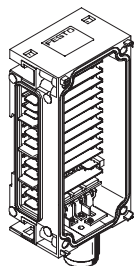
for the entire CPX terminal or galvanically isolated, all-pin disconnectable potential groups/voltage segments.

Terminal CPX

Key features – Power supply

Interlinking blocks

With system supply



Type for plastic design

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

Type for metal design

- CPX-M-GE-EV-S-7/8-5POL
- CPV-M-GE-EV-S-PP-5POL

Connection technology

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

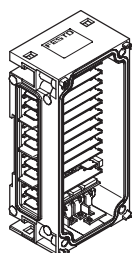
Connection technology

- 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 output modules of the CPX terminal

Without power supply



Type for plastic design

- CPX-GE-EV

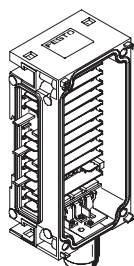
Type for metal design

- CPX-M-GE-EV

–

–

With additional power supply for outputs



Type for plastic design

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

Type for metal design

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

Connection technology

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

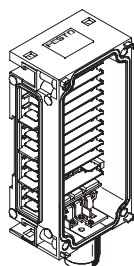
Connection technology

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

Power supply

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

With additional power supply for valves



Type for plastic design

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

Connection technology

- M18
- 7/8", 4-pin

Power supply

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

Note

For 7/8":

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

Note

Valve terminal type 32 MPA has either a 5-pin 7/8", 4-pin 7/8", 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.

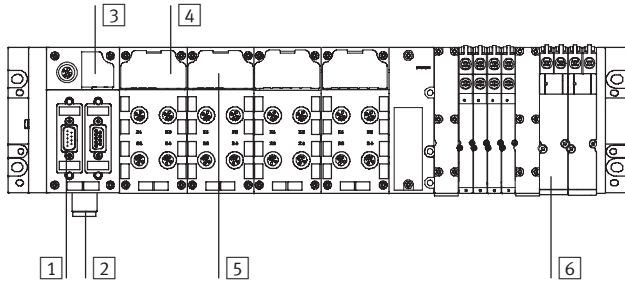
Terminal CPX

Key features – Diagnostics

FESTO

Diagnostics

System performance



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

diagnostics

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

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

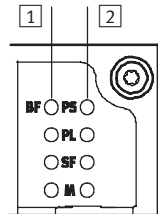
The CPX terminal supports on-the-spot diagnostics via a row of LEDs. This is separate from the connection area and therefore provides good visual access to status and diagnostic information.

Module and channel-specific diagnostics is supported, for example

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

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

Overview LED on the bus node



- 1 Fieldbus-specific LEDs

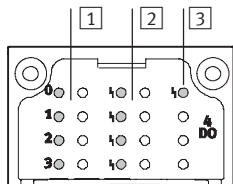
On each bus node, a maximum of 4 fieldbus-specific LEDs display the fieldbus communication status of the CPX terminal with the higher-order controller.

- 2 CPX-specific LEDs

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

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

Input/output module status and diagnostic LEDs



- 1 Status LEDs for the inputs and outputs

Each input and output channel is assigned a status LED.

- 2 Channel-oriented diagnostic LEDs

Depending on the module design, another diagnostic LED is available for each I/O channel.

- 3 Group diagnostic LEDs

An LED displays the group diagnostics for each module.

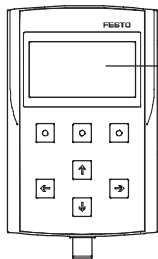
Terminal CPX

Key features – Parameterisation

FESTO

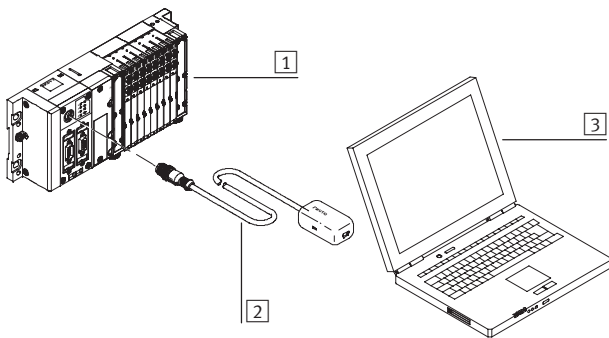
Diagnostics

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

Display on Web Monitor



CPX Web Monitor overview



Analogue module, channel-oriented diagnostics



Error memory (fault trace)

The web monitor displays all static and dynamic information on a CPX terminal online via Ethernet – in the web browser of the PC. This facility is optionally available via Intranet and Internet. Everything is plug & work – without the need for web programming such as HTML or JAVA.

Parameterisation

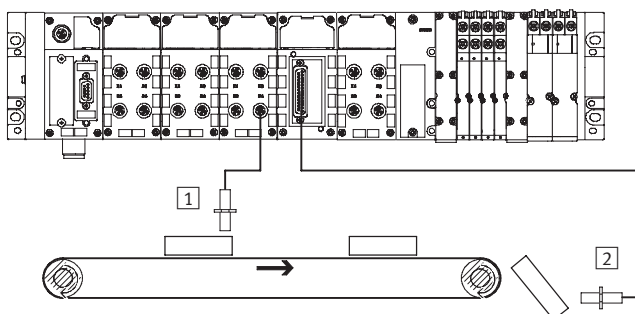
Changes to the application are often required during commissioning. The parameterisable characteristics of the CPX modules mean that functions can be very easily changed by means of configuration software. This reduces

the number of modules needed and, consequently, the amount of storage space required. It is therefore possible, for example, to reduce the input debounce time for an input module – normally 3 ms –

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

Terminal CPX

Key features – Addressing

FESTO

Addressing

General information on 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 with up to 16 MPA manifold sub-bases)

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 – Allocated addresses for CPX modules

	Inputs [bit]	Outputs [bit]
CPX-CMXX	2 x 64	2 x 64
CPX-CM-HPP	256	256
CPX-CMAX	64	64
CPX-CMPX	48	48
CPX-CMIX	48	48
CPX-4DE	4	–
CPX-8DE	8	–
CPX-16DE	16	–
CPX-M-16DE-D	16	–
CPX-8DE-D	8	–
CPX-8NDE	8	–
CPX-4DA	–	4
CPX-8DA	–	8
CPX-8DA-H	–	8
CPX-8DE-8DA	8	8
CPX-2AE	2 x 16	–
CPX-4AE-I	4 x 16	–
CPX-4AE-P	4 x 16	–
CPX-4AE-T	4 x 16	–
CPX-4AE-TC	4 x 16	–
CPX-2AA	–	2 x 16
VABA-S6-1-X1	–	8, 16, 24, 32 ¹⁾
VABA-S6-1-X2	–	8, 16, 24, 32 ¹⁾
CPX-GP-CPA-10	–	8, 16, 24 ¹⁾
CPX-GP-CPA-14	–	8, 16, 24 ¹⁾
CPX-GP-03-4,0	–	8, 16, 24, 32 ¹⁾
CPX-M-GP-03-4,0	–	8, 16, 24, 32 ¹⁾
VMPA1-FB-EMS-8	–	8
VMPA1-FB-EMG-8	–	8
VMPA2-FB-EMS-4	–	4
VMPA2-FB-EMG-4	–	4
VMPA1-FB-EMS-D2-8	–	8
VMPA1-FB-EMG-D2-8	–	8
VMPA2-FB-EMS-D2-4	–	4
VMPA2-FB-EMG-D2-4	–	4
VMPA-FB-PS-1	16	–
VMPA-FB-PS-3/5	16	–
VMPA-FB-PS-P1	16	–
VMPA-FB-EMG-P1	16	16

1) Depending on the DIL switch setting on the pneumatic interface

Terminal CPX

Key features – Addressing



Overview – Address space for CPX bus node and control block							
	Protocol	Max. total		Max. digital		Max. analogue	
		Inputs	Outputs	Inputs	Outputs	Inputs	Outputs
CPX-FEC	<ul style="list-style-type: none"> • TCP/IP • Easy IP • Modbus TCP • HTTP 	512 bits	512 bits	512 DI	512 DO	32 AI	18 AO
CPX-CEC	<ul style="list-style-type: none"> • CoDeSys Level 2 • TCP/IP • Easy IP • Modbus TCP 	512 bits	512 bits	512 DI	512 DO	32 AI	18 AO
CPX-FB6	Interbus	96 bits	96 bits	96 DI	96 DO	6 AI	6 AO
CPX-FB11	DeviceNet	512 bits	512 bits	512 DI	512 DO	32 AI	18 AO
CPX-FB13	Profibus	512 bits	512 bits	512 DI	512 DO	32 AI	18 AO
CPX-FB14	CANopen	192 bits	192 bits	64 DI (+ 64 DI)	64 DO (+ 64 DO)	8 AI (+ 8 AI)	8 AO (+ 8 AO)
CPX-FB23	CC-Link	–	–	64 DI	64 DO	16 AI	16 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-FB38	EtherCAT	512 bits	512 bits	512 DI	512 DO	32 AI	18 AO

Note

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

Example – CPX-FB6 (Interbus)			
	Digital inputs	Digital outputs	Remarks
3x CPX-8DE	24	–	<ul style="list-style-type: none"> • The address space is occupied by 7 CPX I/O modules plus pneumatic interface • No additional modules can be configured
1x CPX-8DE-8DA	8	8	
2x CPX-2AE	64	–	
1x CPX-2AA	–	32	
3x VMPA1	–	24	
Allocated address space	96	96	

DI = Digital inputs (1 bit)

DO = Digital outputs (1 bit)

AO = Analogue outputs (16 bits)

AI = Analogue inputs (16 bits)

Terminal CPX

Key features – Type codes for connection technology

FESTO

		SEA	–	GS	–	HAR	–	4POL
Type								
SEA	Plug connector for inputs/outputs, M12x1 connection							
Design								
GS	Straight plug connector							
Connection								
HAR	Quick connector							
Number of pins								
4POL	4-pin							

		SD	–	SUB-D	–	ST25
Type						
SD	Plug connector for inputs/outputs					
Design						
SUB-D	SUB-D					
Cable connection						
ST25	Connector pin, 25-pin					

		FBA	–	1	–	SL	–	5POL	–	
Type										
FBA	Sub-D socket bus connection, 9-pin									
Number of cable connections										
1	1 connection									
2	2 connections									
Cable connection										
M12	2x threaded connections M12x1, 5-pin (1x pin, 1x socket)									
SL	5-pin row									
Number of pins										
5POL	5-pin									
Coding										
RK	Reverse Key coded (B-coded)									

Terminal CPX

Key features – Type codes for connection technology

FESTO

		FBS	–	SUB	–	9	–	GS	–	1X9POL	–	B
Type												
FBS	Plug connector for bus connection											
Design												
SUB	SUB-D											
Number of pins												
9	9-pin											
Cable connection design												
BU	Socket											
GS	Straight plug connector											
Cable connection												
2X4POL	2x heavy duty cable gland connector (2x terminal block, 4-pin)											
1X9POL	PG9 connector (2x terminal block, 4-pin)											
IB	For Interbus											
Generation												
B	B series											

		SEA	–	GS	–	7	–	DUO
Type								
SEA	Plug connector for inputs/outputs							
Design								
GS	Straight plug connector							
Cable connection								
7	PG7 connector (cable opening 4 ... 6 mm)							
9	PG9 connector (cable opening 6 ... 8 mm)							
11	PG11 connector (cable opening 3 ... 5 mm)							
Number of outputs								
DUO	For 2 cables							

Terminal CPX

Key features – Type codes for connection technology

FESTO

	SEA	–	3GS	–	M8	–	S
Type							
SEA	Plug connector for inputs/outputs						
Design							
GS	Straight plug connector, 3-pin						
3GS	Straight plug connector, 3-pin						
Connection							
M8	Threaded connection M8x1						
Cable connection							
S	With screw terminals (cable opening 2.5 ... 5 mm)						

	SEA	–	4GS	–	7	–	2.5
Type							
SEA	Plug connector for inputs/outputs						
Design							
4GS	Straight plug connector, 4-pin						
Cable connection							
7	PG7 connector						
Cable opening							
2,5	2.5 ... 2.9 mm						

	SEA	–	M12	–	5GS	–	PG7
Type							
SEA	Plug connector for inputs/outputs						
Connection							
M12	Threaded connection M12x1						
Design							
5GS	Straight plug connector, 5-pin						
Cable connection							
PG7	PG7 connector						

Terminal CPX

Key features – Type codes for connection technology

FESTO

		NTSD	–	GD	–	13,5					
Type											
NTSD	Plug socket for mains connection										
Design											
GD	Straight socket, 4-pin										
Cable connection											
9	PG9 connector (cable opening 6 ... 8 mm)										
13,5	PG13.5 connector										

		NTSD	–	WD	–	9					
Type											
NTSD	Plug socket for mains connection										
Design											
WD	Angled socket, 4-pin										
Cable connection											
9	Cable opening 6 ... 11 mm										
11	Cable opening 5 ... 11 mm										

		CPX-AB	—	2	—	M12	—	RK	—	IB									
Type																			
CPX-AB	Connection block for CPX Profibus node																		
Number of cable connections																			
2	2 connections																		
Connection																			
M12	Threaded connection M12x1																		
Coding																			
RK	Reverse Key coded (B-coded)																		
Cable connection																			
IB	For Interbus																		
DP	For Profibus																		

Terminal CPX

Key features – Type codes for connection technology

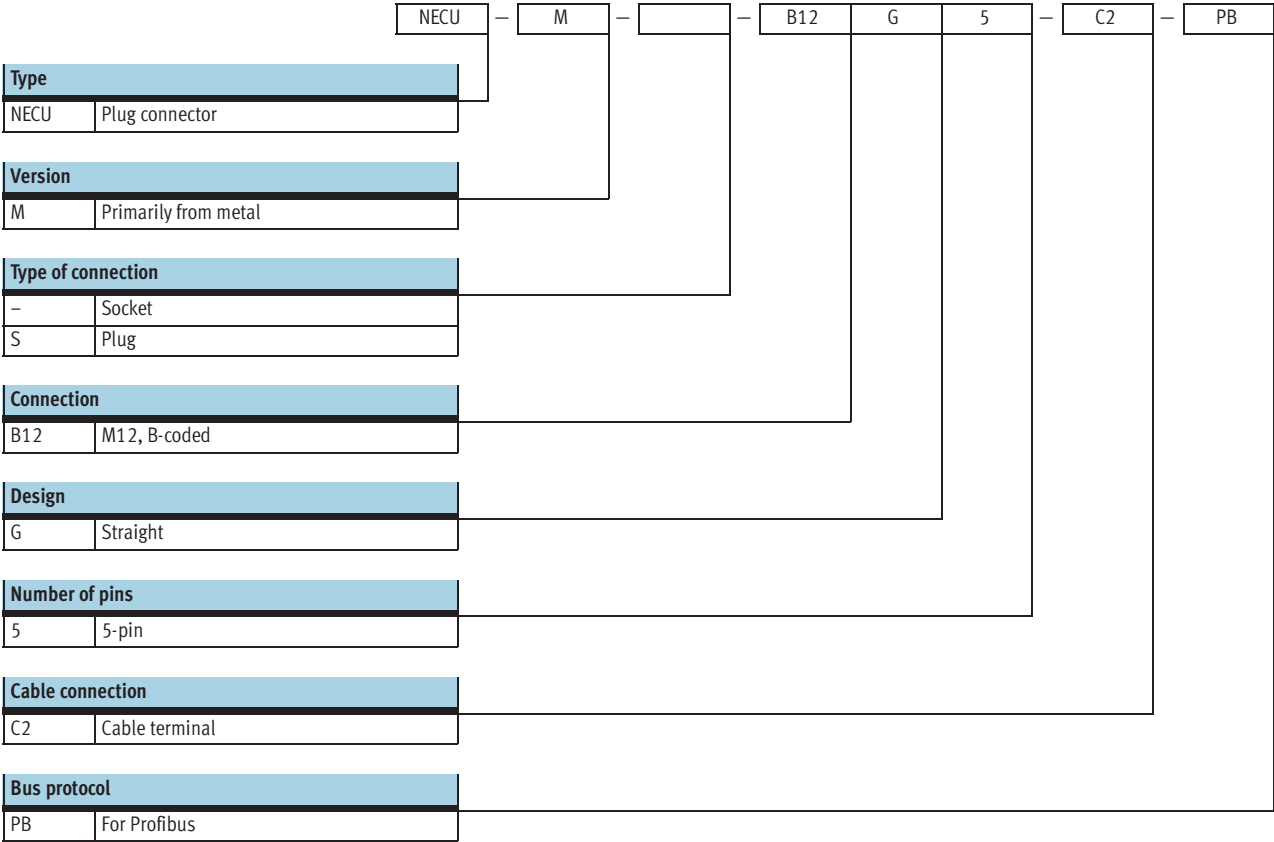
FESTO

	FBS	–	RJ45	–	8	–	GS
Type							
FBS	Fieldbus plug						
Connection							
RJ45	RJ45 push-in connector						
Number of pins							
8	8-pin						
PP	Push-pull						
Design							
GS	Straight plug connector						

	NECU	–		–		–	D12	G	4	–		–	
Type													
NECU	Plug connector												
Version													
–	Standard												
M	Primarily from metal												
Type of connection													
–	Socket												
S	Plug												
Connection													
D12	M12, D-coded												
G78	7/8" round plug connector												
Design													
G	Straight												
Number of pins													
4	4-pin												
5	5-pin												
Cable connection													
–	Standard												
C2	Cable terminal												
Bus protocol													
–	Standard												
ET	Ethernet												

Terminal CPX

Key features – Type codes for connection technology



Terminal CPX

Key features – Type codes for connection technology

FESTO

		NEBU	–	M12	W	5	P	–	K	–	2.5	–		–	LE		3
Function																	
NEBU	Connecting cable																
Connection technology, left																	
M5	Socket with connecting thread																
M8	Socket with connecting thread																
M12	Socket with connecting thread, A-coded																
Socket design																	
G	Straight																
W	Angled																
Number of pins/wires (left)																	
3	3-pin (suitable for M8 plug)																
4	4-pin (suitable for M8 plug)																
5	5-pin (suitable for 3, 4 and 5-pin M12 plug)																
Display																	
–	Without LED, DC (standard)																
P	LED, PNP																
N	LED, NPN																
Cable properties																	
K	Standard																
E	Suitable for use with energy chains																
R	Suitable for robot applications																
Cable length																	
0.1 ... 25	0.1 ... 25 m																
Alternative wire cross section																	
–	0.25 mm ² (standard)																
Q3	0.14 mm ²																
Cable designation																	
–	With inscription label holder (standard)																
N	Without inscription label holder																
Connection technology, right																	
LE	Open end																
M8	Socket with connecting thread																
M12	Socket with connecting thread, A-coded																
Plug design																	
G	Straight																
W	Angled																
Number of pins/wires (right)																	
3	3-pin (suitable for M8/M12 socket)																
4	4-pin (suitable for M8/M12 socket)																
5	5-pin (suitable for M12 socket)																

Terminal CPX

Key features – Type codes for connection technology

FESTO

		NEDU	–	M12	D	5	–	M12	T	4
Function										
NEDU	Push-in T-connector									
Connection technology, left										
M8	M8x1									
M12	M12x1, A-coded									
Socket design										
D	Multiple socket									
Number of pins/wires										
3	3-pin									
5	5-pin									
Connection technology, right										
M8	M8x1									
M12	M12x1, A-coded									
Plug design										
T	T-piece									
Number of pins/wires										
4	4-pin									

Terminal CPX

Technical data

FESTO

-  - Module width
50 mm



Note

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

Example

Protection class IP65/IP67 applies only to the fully assembled system with fitted plugs or covers (which must also conform to IP65/67). 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/multi-axis interface		9
	Pneumatic interface		1
Max. address capacity	Inputs	[byte]	64
	Outputs	[byte]	64
Internal cycle time		[ms]	< 1
Configuration support		Fieldbus-specific	
LED displays	Bus node/control block		Up to 4 LEDs, bus-specific 4 LEDs, CPX-specific • PS = Power system • PL = Power load • SF = System fault • M = Modify parameter/forcing active
	I/O modules		Min. one group diagnostic LED Channel-oriented status and diagnostic LED, depending on module
	Pneumatic interface		One group diagnostic LED Valve status LED on valve
Diagnostics		<ul style="list-style-type: none"> • 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)

Terminal CPX

Technical data

FESTO

General technical data		
Module No.		197330
Parameterisation		Module-specific and entire system, for example: <ul style="list-style-type: none"> • Diagnostic behaviour • Condition monitoring • Profile of inputs • Fail-safe response of outputs and valves
Commissioning support		Forcing of inputs and outputs
Protection class to EN 60529		IP65/IP67
Nominal operating voltage	[V DC]	24
Operating voltage range	[V DC]	18 ... 30
Current supply	Interlinking block with system supply for electronics plus sensors	[A] 16 (8/10 with 7/8" supply, 5-pin/4-pin)
	actuators plus valves	[A] 16 (8/10 with 7/8" supply, 5-pin/4-pin)
	Additional power supply for actuators	[A] 16 (8/10 with 7/8" supply, 5-pin/4-pin)
	Additional power supply for valves	[A] 16 (10 with 7/8" supply, 4-pin)
Current consumption		Depending on system configuration
Power failure bridging (bus electronics only)	[ms]	10
Power supply connection		M18, 4-pin
		7/8", 5-pin
		7/8", 4-pin
		AIDA push-pull, 5-pin
Fuse concept		Per module with electronic fuses
Tests	Vibration test to DIN/IEC 68/EN 60068 Part 2 – 6	<ul style="list-style-type: none"> • With wall mounting: Severity level 2 • With H-rail mounting: Severity level 1
	Shock test to DIN/IEC 68/EN 60068 Part 2 – 27	<ul style="list-style-type: none"> • With wall mounting: Severity level 2 • With H-rail mounting: Severity level 1
PWIS classification		PWIS-free (free of paint-wetting impairment substances)
Interference immunity		EN 61000-6-2 (industry)
Interference emission		EN 61000-6-4 (industry)
Isolation test for galvanically isolated circuits to IEC 1131 Part 2	[V DC]	500
Galvanic isolation of electrical voltages	[V DC]	80
Protection against direct and indirect contact		PELV (Protective Extra-Low Voltage)
Materials		End plates: Die-cast aluminium
Grid dimension	[mm]	50

Operating and environmental conditions		
Module No.		197330
Ambient temperature	[°C]	–5 ... +50
Storage temperature	[°C]	–20 ... +70
Relative air humidity (non-condensing)	[%]	5 ... 90
ATEX specification		<ul style="list-style-type: none"> • II 3D Ex tD A22 IP65 T90°C X • II 3G Ex nA II T4 X
ATEX temperature rating	[°C]	–5 ≤ Ta ≤ +50
CE mark (see declaration of conformity)		In accordance with EU Explosion Protection Directive (ATEX)
Certification		<ul style="list-style-type: none"> • cULus recognized (OL) • C-Tick

Terminal CPX

Technical data


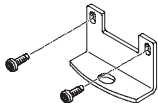
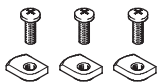
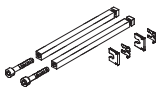
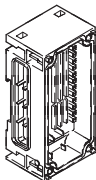
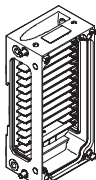
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Weight [g]					
Control block	FEC	140.0	Connection block	Plastic	70.0
	CEC	155.0		Metal	175.0
Bus node	FB6	125.0	Interlinking block, plastic	Without power supply	100.0
	FB11	120.0		With system supply	125.0
	FB13	115.0	Interlinking block, metal	Without power supply	162.0
	FB14	115.0		With system supply, 7/8"	187.0
	FB23	115.0		With system supply, push-pull	245.0
	FB32	125.0	Tie rod	1-fold	19.0 ±2.5
	FB33	280.0		2-fold	32.5 ±2.5
	FB34	280.0		3-fold	46.0 ±2.5
	FB38	125.0		4-fold	59.5 ±2.5
I/O module	38.0	5-fold		73.0 ±2.5	
CP interface	140.0	6-fold		86.5 ±2.5	
Multi-axis interface	CMXX	155.0		7-fold	100.0 ±2.5
Axis interface	CM-HPP	140.0		8-fold	113.5 ±2.5
Axis controller	CMAx	140.0		9-fold	127.0 ±2.5
End-position controller	CMPX	140.0		10-fold	140.5 ±2.5
Measuring module	CMIX	140.0	Plastic end plate	Left-hand	77.0
Pneumatic interface	MPA	238.4		Right-hand	70.0
	MPA-F	690.0	Metal end plate	Left-hand	113.0
	VTSA/VTSA-F	485.0		Right-hand	113.0
	MIDI/MAXI	390.0			
	CPA	150.0			

Terminal CPX

Accessories


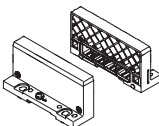
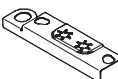
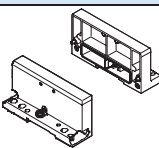
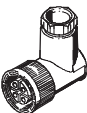
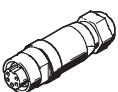
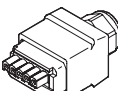
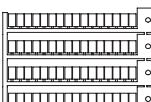
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Ordering data – Accessories				
Designation			Part No.	Type
Mounting				
	Attachment for wall mounting (for long valve terminals, 10 pieces), design for plastic manifold sub-bases		529040	CPX-BG-RW-10x
	Attachment for wall mounting (for long valve terminals, 2 mounting brackets and 4 screws), design for metal manifold sub-bases		550217	CPX-M-BG-RW-2x
	Mounting for H-rail	CPX without pneumatic components	173498	CPA-BG-NRH
		CPX-VTSA	526032	CPX-CPA-BG-NRH
		CPX-VTSA-F		
		CPX-MPA		
		CPX-CPA	526033	CPX-03-4,0
		CPX-MIDI		
		CPX-MAXI	526034	CPX-03-7,0
Tie rod				
	Tie rod CPX	Extension 1-fold	525418	CPX-ZA-1-E
		1-fold	195718	CPX-ZA-1
		2-fold	195720	CPX-ZA-2
		3-fold	195722	CPX-ZA-3
		4-fold	195724	CPX-ZA-4
		5-fold	195726	CPX-ZA-5
		6-fold	195728	CPX-ZA-6
		7-fold	195730	CPX-ZA-7
		8-fold	195732	CPX-ZA-8
		9-fold	195734	CPX-ZA-9
10-fold	195736	CPX-ZA-10		
Plastic interlinking block				
	Without power supply	–	195742	CPX-GE-EV
	With system supply	M18	195746	CPX-GE-EV-S
		7/8" – 5-pin	541244	CPX-GE-EV-S-7/8-5POL
		7/8" – 4-pin	541248	CPX-GE-EV-S-7/8-4POL
	With additional power supply for outputs	M18	195744	CPX-GE-EV-Z
		7/8" – 5-pin	541248	CPX-GE-EV-Z-7/8-5POL
		7/8" – 4-pin	541250	CPX-GE-EV-Z-7/8-4POL
	With additional power supply for valves	M18	533577	CPX-GE-EV-V
		7/8" – 4-pin	541252	CPX-GE-EV-V-7/8-4POL
Metal interlinking block				
	Without power supply	–	550206	CPX-M-GE-EV
	With system supply	7/8" – 5-pin	550208	CPX-M-GE-EV-S-7/8-5POL
		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
		Push-pull – 5-pin	563058	CPX-M-GE-EV-Z-PP-5POL

Terminal CPX

Accessories


FESTO

Ordering data – Accessories				
Designation			Part No.	Type
Mounting accessories				
	Screws for mounting the bus node/connection block on a plastic interlinking block	Bus node/metal connection block	550218	CPX-DPT-30X32-S-4X
	Screws for mounting the bus node/connection block on a metal interlinking block	Bus node/plastic connection block	550219	CPX-M-M3x22-4x
		Bus node/metal connection block	550216	CPX-M-M3x22-S-4x
Plastic end plates				
	End plate	Right-hand	195714	CPX-EPR-EV
		Left-hand	195716	CPX-EPL-EV
	Earthing element for right-hand/left-hand end plate	5 pieces	538892	CPX-EPFE-EV
Metal end plates				
	End plate	Right-hand	550214	CPX-M-EPR-EV
		Left-hand	550212	CPX-M-EPL-EV
Power supply				
	Plug socket for mains connection M18x1, straight, 4-pin	For 1.5 mm ²	18493	NTSD-GD-9
		For 2.5 mm ²	18526	NTSD-GD-13,5
	Plug socket for mains connection M18x1, angled, 4-pin	For 1.5 mm ²	18527	NTSD-WD-9
		For 2.5 mm ²	533119	NTSD-WD-11
	Plug socket for mains connection 7/8", straight, 5-pin	0.25 ... 2.0 mm ²	543107	NECU-G78G5-C2
	Plug socket for mains connection 7/8", straight, 4-pin	0.25 ... 2.0 mm ²	543108	NECU-G78G4-C2
	Connection socket AIDA push-pull, spring-loaded terminal	5-pin	563059	NECU-M-PPG5-C1
Inscription labels				
	Inscription labels 6x10, 64 pieces, in frames		18576	IBS-6x10

Terminal CPX

Accessories

FESTO

Ordering data – Accessories				
Designation			Part No.	Type
User manuals				
	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
		Swedish	526450	P.BE-CPX-SYS-SV
	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
		Swedish	534829	P.BE-CPX-MMI-1-SV
		Spanish	534826	P.BE-CPX-MMI-1-ES

Terminal CPX

Accessories

FESTO

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		
Type	Title	Description
Pneumatic components		
P.BE-VTSA-44-...	Valve terminals with VTSA and VTSA-F pneumatics	Instructions on assembly, installation, commissioning and diagnostics of the VTSA and VTSA-F pneumatic components.
P.BE-CPA-...	Valve terminals with CPA pneumatics	Instructions on assembly, installation, commissioning and diagnostics of the CPA pneumatic components.
P.BE-Midi/Maxi-03-...	Valve terminals with MIDI/MAXI pneumatics	Instructions on assembly, installation, commissioning and diagnostics of the MIDI/MAXI pneumatic components.
P.BE-MPA-...	Valve terminals with MPA pneumatics	Instructions on assembly, installation, commissioning and diagnostics of the MPA pneumatic components.

Accessories

Overview – User manuals		
Type	Title	Description
Electronic components		
P.BE-CPX-SYS-...	System description, installation and commissioning	Overview of the design, components and mode of operation of the CPX terminal; installation and commissioning instructions as well as basic principles of parameterisation
P.BE-CPX-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, MIDI/MAXI, VTSA/VTSA-F and MPA pneumatic interface
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 of the CP interface
P.BE-CPX-CMXX...	CPX multi-axis interface	Instructions on assembly, installation, commissioning and diagnostics of the CPX multi-axis interface (CMXX)
P.BE-CPX-CM-HPP...	CPX axis interface	Instructions on assembly, installation, commissioning and diagnostics of the CPX axis interface (CM-HPP)
P.BE-CPX-CMAX-SYS...	CPX axis controller	Instructions on assembly, installation, commissioning and diagnostics of the CPX axis controller (CMAX)
P.BE-CPX-CMAX-CONTROL...	CPX axis controller	Information on controlling, diagnosing and parameterising the axis controller via the fieldbus
P.BE-CPX-CMPX-SYS...	CPX end-position controller	Instructions on assembly, installation, commissioning and diagnostics of the CPX end-position controller (CMPX)
P.BE-CPX-CMIX...	CPX measuring module	Instructions on assembly, installation, commissioning and diagnostics of the CPX measuring module (CMIX)
P.BE-CPX-FB...	CPX fieldbus node	Instructions on assembly, installation, commissioning and diagnostics of the relevant bus nodes
P.BE-CPX-PNIO...	CPX fieldbus node for PROFINET	Instructions on assembly, installation, commissioning and diagnostics of the relevant bus nodes
P.BE-CPX-FEC...	CPX control block	Instructions on assembly, installation, commissioning and diagnostics of the relevant control block
P.BE-CPX-CEC...	CPX CoDeSys controller (control block)	Instructions on assembly, installation, commissioning and diagnostics of the relevant control block
P.BE-CPX-MMI-1-...	Universal handheld type CPX-MMI-1	Instructions on assembly, installation, commissioning and diagnostics of the CPX operator unit

User manuals – GSD, EDS, etc.


Device description files and icons are used to explain the integration of the CPX terminal in the configuration software of the various controller manufacturers. These can be downloaded quickly and easily from www.festo.com.

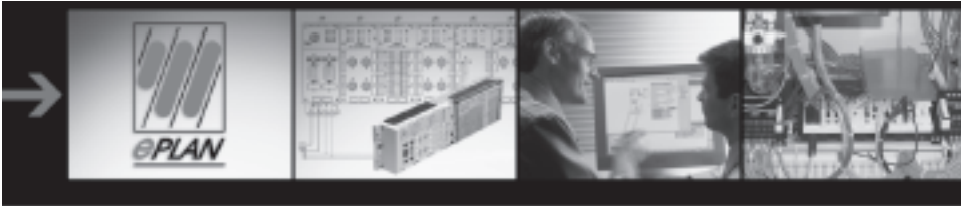


Terminal CPX

Accessories

FESTO

CPX macro library for ePLAN			
Type	GSWC-TE-EP-LA		
Part No.	537041		
<p>Project planning – total service: ePlan macros for fast and reliable planning of electrical projects in combination with valve terminals. Available in German and English.</p>  <p>Key technical data</p> <ul style="list-style-type: none"> • CD with CPX macro library ePLAN 5 and P8 for CPX terminal (supports the planning of bus nodes, interlinking blocks, I/O modules, connection blocks, pneumatic interface and valves) • Creation and administration of projects 	<p>Systematically more reliable: The CPX macro library contains symbols, graphics and master data. Result: a fast, reliable and standardised system for designing and documenting your circuits.</p> <ul style="list-style-type: none"> • Creation and editing of circuit diagrams, terminal and cable plans, cross-reference lists, assembly drawings, parts lists and maintenance plans • Connection to programmable logic controllers • Generation of the contact and potential cross-references 	<p>Simply practical: High level of planning reliability, standardisation of documentation, no need to create symbols, graphics and master data since everything is stored in the CPX macro library.</p> <ul style="list-style-type: none"> • Automatic protective contact mirroring • Generation of documents in paper format and HTML format for viewing in browsers, etc. Library in DXF format for use with AutoCad or other CAD programs 	<p>Design example: From an idea to a functional solution – quickly and reliably Project planning, design, production, assembly, commissioning, service</p> <p>↓</p> <p>Problem definition/ planning of electrical project</p> <p>↓</p> <p>Efficient PC-based design</p> <p>↓</p> <p>CPX macro</p> <p>↓</p> <p>ePLAN CAE software for electrical applications</p> <p>↓</p> <p>PC</p> <p>↓</p> <p>Documentation</p> <p>Circuit diagrams Parts lists in paper format, optional representation in browsers (HTML)</p>



fluidPLAN from ePLAN and FluidDRAW from Festo		
<p>ePLAN and Festo also work together in the creation of pneumatic circuit diagrams: The ePLAN fluid planning tool has a direct interface to the Festo electronic</p>	<p>catalogue (DKI). All of the relevant data for the parts lists as well as the pneumatic circuit symbols for Festo products are transferred using this import function.</p>	<p>The FluidDRAW software from Festo makes the creation of circuit diagrams for the pneumatic part on the PC both simple and intuitive.</p>

Terminal CPX

Technical data – Operator unit

FESTO

-  - Width
81 mm

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



Application

Functions

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

Connection

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

The voltage for the operator unit is supplied by the CPX component
➔ plug & work.

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.

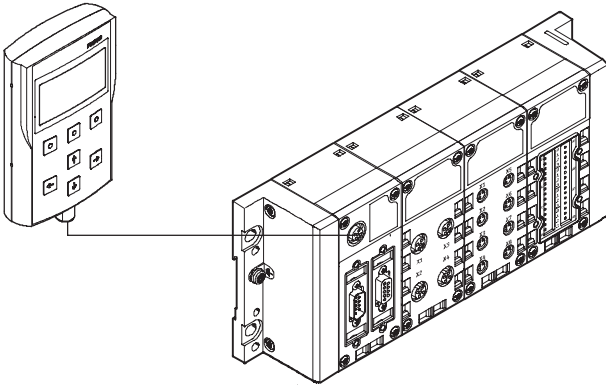
The mounting bracket also has an option for temporary mounting using a hanging device.

Terminal CPX

Technical data – Operator unit

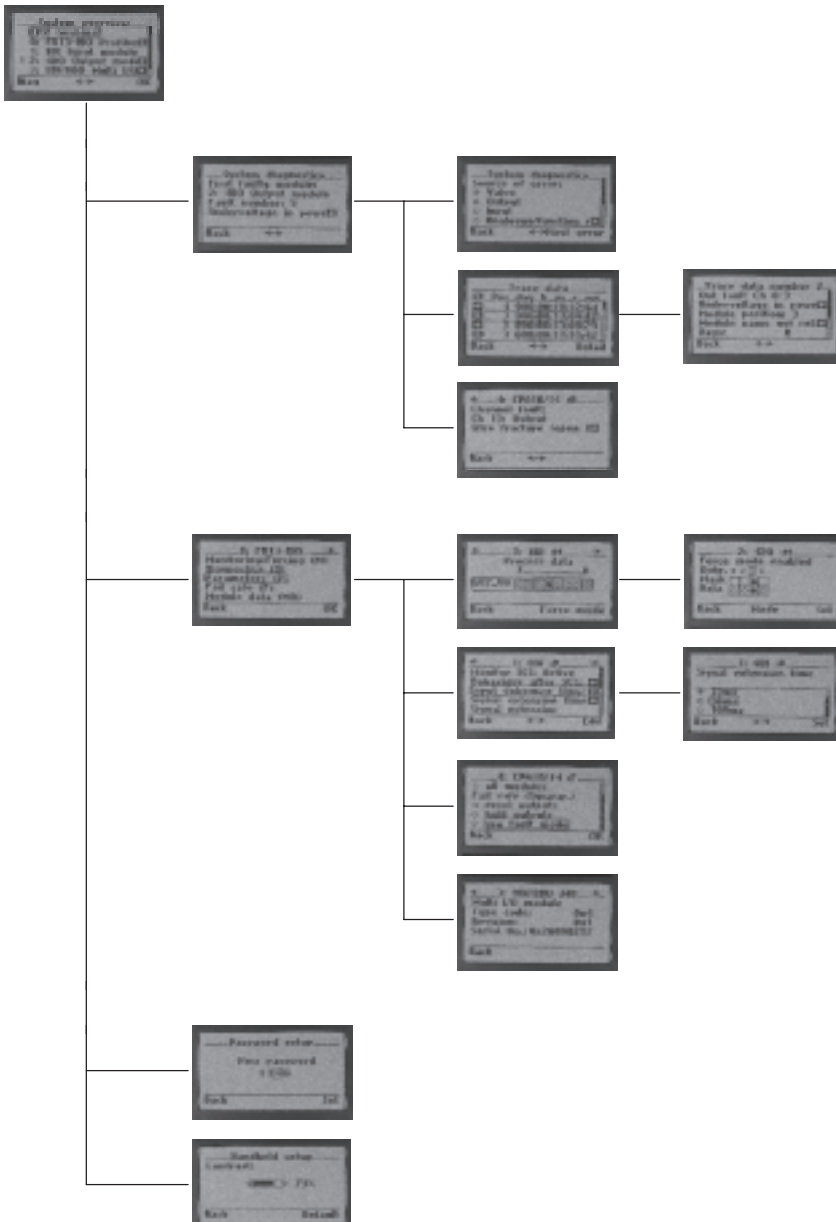
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Connection



The operator unit is connected to the CPX terminal using pre-assembled cables.

Function examples



System overview

- Overview of configured modules and current diagnostic messages

Diagnostics

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

Commissioning

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

Setup

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

Terminal CPX

Technical data – Operator unit

FESTO

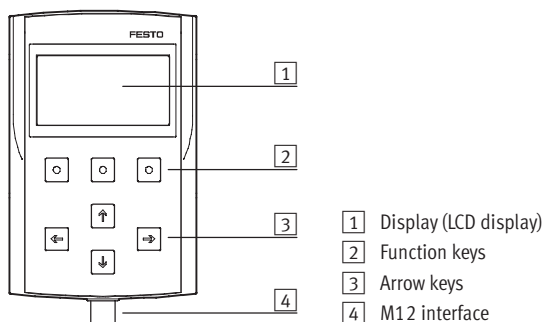
General technical data		
Type	CPX-MMI-1	
Data interface	RS232 interface, 57.6 kBaud, M12 socket, 4-pin	
Display component	LCD graphical display with background illumination (128 x 64 pixels)	
Control elements	7 keys: 4 arrow keys and 3 function keys, touch-sensitive keypad	
Electromagnetic compatibility	Interference emission tested to DIN EN 61000-6-4, industry	
	Interference immunity tested to DIN EN 61000-6-2, industry	
Nominal operating voltage	[V DC]	24, supplied by the connected device
Operating voltage range	[V DC]	18 ... 30
Current consumption	[mA]	50 ... 60
Protection class to IEC 60529	IP65	
Relative air humidity	[%]	90, non-condensing
Vibration resistance	Tested to DIN/IEC 68/EN 60068, Part 2-6	
	<ul style="list-style-type: none"> • 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	
	<ul style="list-style-type: none"> • With wall mounting: Severity level 2 • With H-rail mounting: Severity level 1 	
Materials	Reinforced polyamide	
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)	In accordance with EU Explosion Protection Directive (ATEX)	
ATEX category	II 3 G	
	II 3 D	
ATEX specification	II 3D Ex tD A22 IP65 T60°C X	
	II 3G Ex nA II T6 X	
ATEX temperature rating	[°C]	0 ≤ Ta ≤ +50

Note

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

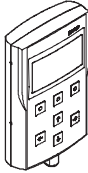

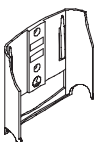
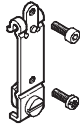
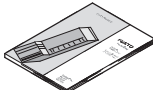
Connection and display components



Terminal CPX

Accessories – Operator unit

FESTO

Ordering data				
Designation			Part No.	Type
Operator unit				
	Provides data polling, configuration and diagnostic functions for CPX terminals		529043	CPX-MMI-1
Connecting cable				
	Connecting cable M12-M12, specially for CPX-MMI	1.5 m	529044	KV-M12-M12-1,5
		3.5 m	530901	KV-M12-M12-3,5
Mounting				
	Bracket		534705	CPX-MMI-1-H
	Mounting for H-rail		536689	CPX-MMI-1-NRH
User manual				
	User manual for operator unit CPX-MMI-1	German	534824	P.BE-CPX-MMI-1-DE
		English	534825	P.BE-CPX-MMI-1-EN
		French	534827	P.BE-CPX-MMI-1-FR
		Italian	534828	P.BE-CPX-MMI-1-IT
		Swedish	534829	P.BE-CPX-MMI-1-SV
		Spanish	534826	P.BE-CPX-MMI-1-ES

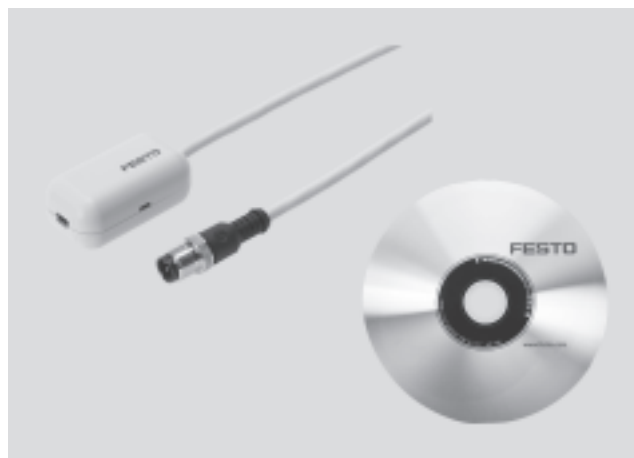
Terminal CPX

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 fieldbus nodes Ethernet IP (FB 32) and ProfiNET (FB 33, FB 34). The fieldbus nodes or control block can be connected directly to the PC via a USB adapter from Festo. Similar to the CPX-MMI, diagnostic data such as

the error trace or module diagnostics can be read out and parameters can be modified in plain text. In contrast to the CPX-MMI, the data can be used directly on a PC. There is an option, for example, to send screenshots of a configuration or the current error trace directly via e-mail. In addition, CPX configurations can also be saved

and archived directly as a CPX-FMT project. Undocumented changes can subsequently be identified using the online/offline comparison function. On-site tests such as the actuation of valves or the emulation of sensor feedback (in both cases called “forcing”), for example, can be

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

General technical data		
Type	NEFC-M12G5-0.3-U1G5	
System requirements	PC	IBM-compatible
	Drive	CD-ROM
	Interfaces	USB port (specification USB 1.1 or higher)
	Operating system	Microsoft Windows 2000 or XP
Functional range	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Adapter M12, 5-pin to mini USB socket • CD-ROM with installation program 	
Type of mounting	Screw-in	
Electrical connection	Plug M12x1, 5-pin	
Adapter cable composition	4 x 0.34 mm ²	
Cable length	[m]	0.3
Protection class to EN 60529	IP20	
CE mark (see declaration of conformity)	To EU EMC Directive	
Ambient temperature	[°C]	–5 ... +50
Material	Housing	Acrylic butadiene styrene
	Cable sheath	Polyurethane
	Pin contact	Gold-plated brass
Note on materials	RoHS-compliant	

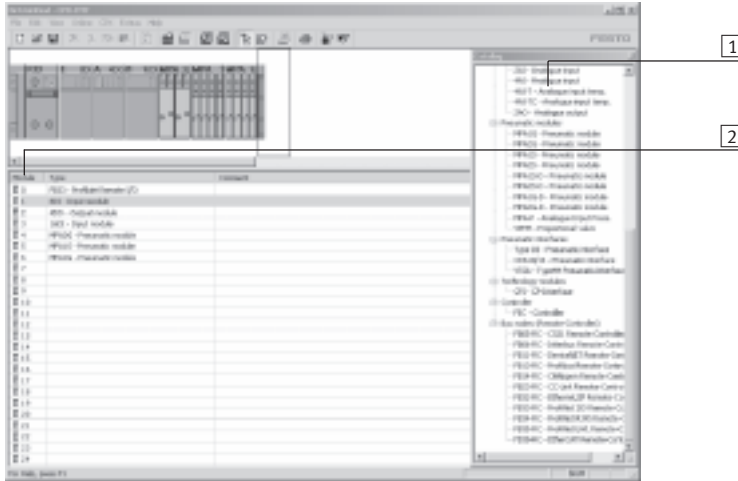
Terminal CPX

Technical data – CPX Maintenance Tool

FESTO

Display components

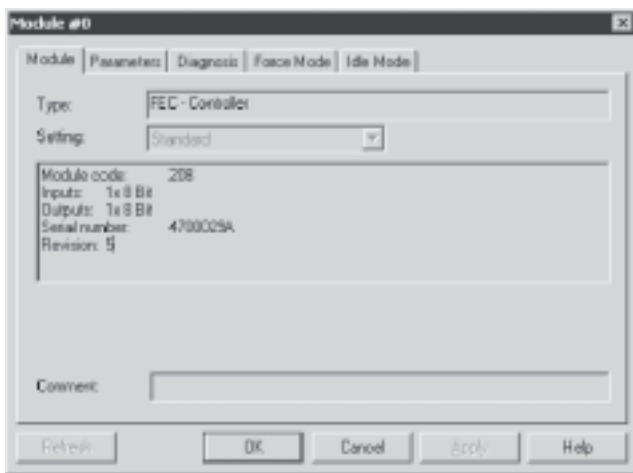
Creating a device configuration using the editor



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

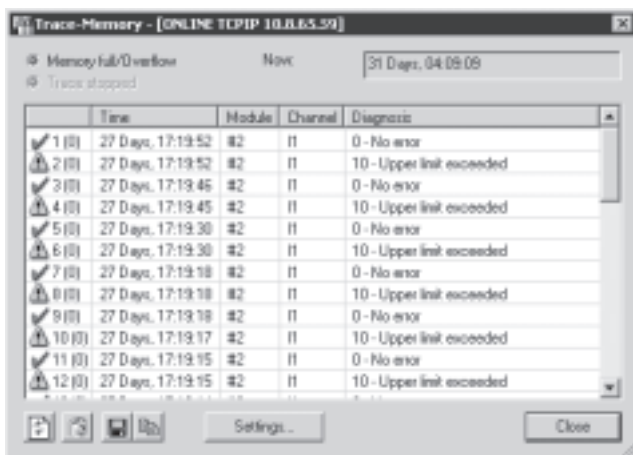
- 1 Module numbers from the graphic system overview
- 2 Catalogue for selecting required modules

Module overview for a selected module



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

Diagnostic memory



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.

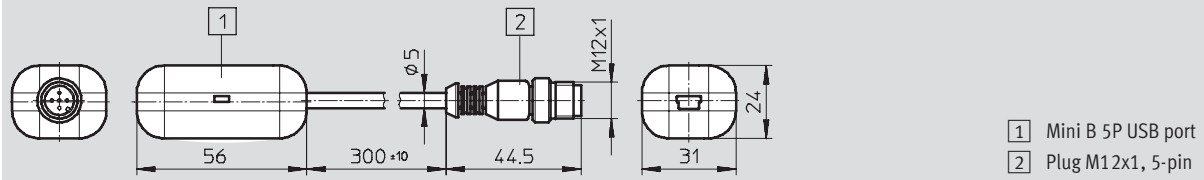
Terminal CPX

Technical data – CPX Maintenance Tool


Dimensions

Download CAD Data → www.festo.com/us/cad

Adapter



Ordering data

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

Terminal CPX

Technical data – Web Monitor

FESTO

Function

Web Monitor is a software tool from Festo for CPX modules with integrated web server and Ethernet connection for displaying the CPX service information in real time on a PC connected via a network. This tool provides virtually “free” access to diagnostic and service information, which offers the following benefits:

- Online, up-to-date
- No separate programming
- No separate visualisation

This saves a lot of time and means that there is no need to acquire in-house expertise.

- Supplied on CD-ROM
- Installation on PC
- Adaptation to application
- Loading via Ethernet to the web server of the CPX module
- Display option via touch displays installed on-site (FED 710, 1010, 2010 or 5010)



Application

Only from Festo


CPX is a modular electrical terminal for the connection of pneumatic and electrical control loop systems to automation systems – suitable for all currently used fieldbus systems.

Valve terminals with the comprehensive diagnostic package consisting of pneumatics, electrics and networking systems create unique synergies and simplify the

communication between the electrical and pneumatic control levels. Web Monitor makes this diagnostic and additional information visible at every

station and without extra programming. Convenient error analysis by Web Monitor provides permanent diagnostic reliability.

General technical data		
Type	CPX-WEB-MONITOR	
System requirements	PC	IBM-compatible, Pentium class or comparable
	Drive	CD-ROM
	Interfaces	Network connection and access
	Operating system	Microsoft Windows 98, ME, 2000 or XP
Browser requirements	Microsoft Internet Explorer	Version 5.5 and later
	Mozilla Firefox	Version 1.0 and later (full version of Web Monitor only)
	Java plug-in	Java Runtime Environment (JRE) 1.3 or higher
Java script	Enabled	
Cookies	Enabled	
Functional range	<ul style="list-style-type: none"> • Changing HTML links • Changing symbol names for system, module and channels • Incorporating own web pages • Changing passwords • Incorporating Java applets • Commands for dynamic contents 	
Scope of delivery	CD-ROM with	<ul style="list-style-type: none"> • Installation program • Description in German and English • E-mail driver for FST projects (only relevant when using CPX-FEC modules): SMTP-Driver V0.5 • HTML pages for the web server of CPX terminals
Configurable e-mail alerts	8	
Non-volatile storage of e-mail alerts	Yes	
Sending of e-mails	Initiated by events (positive edge at input bit, output bit, diagnostic bit, flag bit)	
E-mail text	Max. 255 characters	

Ordering data		
Designation	Part No.	Type
 Software for displaying the CPX service information in real time	545413	CPX-WEB-MONITOR

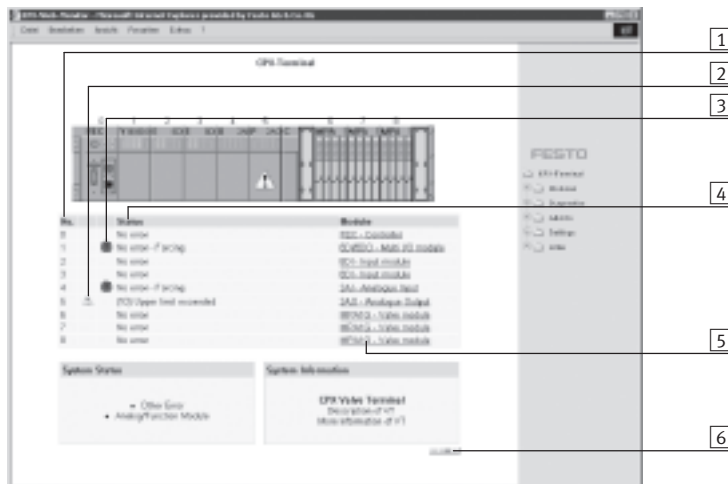
Terminal CPX

Technical data – Web Monitor

FESTO

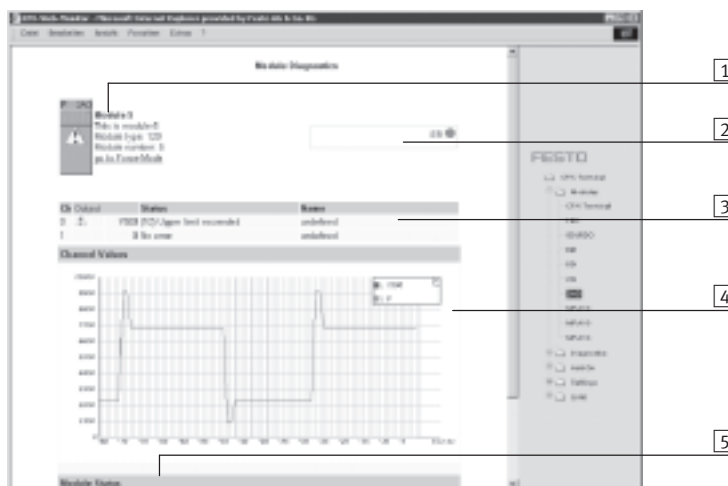
Display components

System overview of CPX terminal



- 1 Module numbers from the graphic system overview
- 2 Signalling of fault messages via yellow warning triangle analogous to graphic system overview opposite
- 3 Signalling of activated Force mode via exclamation mark on blue background
- 4 Status information in plain text
- 5 Module designations
- 6 Monitoring display for data communication

Module overview for a selected module



- 1 General information about the module
- 2 Replication of the module display components
- 3 Table with status information on all channels of the module
- 4 Graphic representation of the channel values plotted on a time axis
- 5 Graphic representation of the module status plotted on a time axis

Error log of the CPX Web Monitor

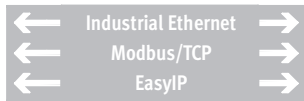
No.	Date	Time	Module	Channel	Message	Status
1	01.01.2010	10:00:00	001	1	No error	OK
2	01.01.2010	10:00:01	001	1	Module side incorrect	Warning
3	01.01.2010	10:00:02	001	1	Module side incorrect	Warning
4	01.01.2010	10:00:03	001	1	Module side incorrect	Warning
5	01.01.2010	10:00:04	001	1	Module side incorrect	Warning
6	01.01.2010	10:00:05	001	1	Module side incorrect	Warning
7	01.01.2010	10:00:06	001	1	Module side incorrect	Warning
8	01.01.2010	10:00:07	001	1	Module side incorrect	Warning
9	01.01.2010	10:00:08	001	1	Module side incorrect	Warning
10	01.01.2010	10:00:09	001	1	Module side incorrect	Warning
11	01.01.2010	10:00:10	001	1	Module side incorrect	Warning
12	01.01.2010	10:00:11	001	1	Module side incorrect	Warning
13	01.01.2010	10:00:12	001	1	Module side incorrect	Warning
14	01.01.2010	10:00:13	001	1	Module side incorrect	Warning
15	01.01.2010	10:00:14	001	1	Module side incorrect	Warning
16	01.01.2010	10:00:15	001	1	Module side incorrect	Warning
17	01.01.2010	10:00:16	001	1	Module side incorrect	Warning
18	01.01.2010	10:00:17	001	1	Module side incorrect	Warning
19	01.01.2010	10:00:18	001	1	Module side incorrect	Warning
20	01.01.2010	10:00:19	001	1	Module side incorrect	Warning
21	01.01.2010	10:00:20	001	1	Module side incorrect	Warning
22	01.01.2010	10:00:21	001	1	Module side incorrect	Warning
23	01.01.2010	10:00:22	001	1	Module side incorrect	Warning
24	01.01.2010	10:00:23	001	1	Module side incorrect	Warning
25	01.01.2010	10:00:24	001	1	Module side incorrect	Warning
26	01.01.2010	10:00:25	001	1	Module side incorrect	Warning
27	01.01.2010	10:00:26	001	1	Module side incorrect	Warning
28	01.01.2010	10:00:27	001	1	Module side incorrect	Warning
29	01.01.2010	10:00:28	001	1	Module side incorrect	Warning
30	01.01.2010	10:00:29	001	1	Module side incorrect	Warning
31	01.01.2010	10:00:30	001	1	Module side incorrect	Warning
32	01.01.2010	10:00:31	001	1	Module side incorrect	Warning
33	01.01.2010	10:00:32	001	1	Module side incorrect	Warning
34	01.01.2010	10:00:33	001	1	Module side incorrect	Warning
35	01.01.2010	10:00:34	001	1	Module side incorrect	Warning
36	01.01.2010	10:00:35	001	1	Module side incorrect	Warning
37	01.01.2010	10:00:36	001	1	Module side incorrect	Warning
38	01.01.2010	10:00:37	001	1	Module side incorrect	Warning
39	01.01.2010	10:00:38	001	1	Module side incorrect	Warning
40	01.01.2010	10:00:39	001	1	Module side incorrect	Warning
41	01.01.2010	10:00:40	001	1	Module side incorrect	Warning
42	01.01.2010	10:00:41	001	1	Module side incorrect	Warning
43	01.01.2010	10:00:42	001	1	Module side incorrect	Warning
44	01.01.2010	10:00:43	001	1	Module side incorrect	Warning
45	01.01.2010	10:00:44	001	1	Module side incorrect	Warning
46	01.01.2010	10:00:45	001	1	Module side incorrect	Warning
47	01.01.2010	10:00:46	001	1	Module side incorrect	Warning
48	01.01.2010	10:00:47	001	1	Module side incorrect	Warning
49	01.01.2010	10:00:48	001	1	Module side incorrect	Warning
50	01.01.2010	10:00:49	001	1	Module side incorrect	Warning
51	01.01.2010	10:00:50	001	1	Module side incorrect	Warning
52	01.01.2010	10:00:51	001	1	Module side incorrect	Warning
53	01.01.2010	10:00:52	001	1	Module side incorrect	Warning
54	01.01.2010	10:00:53	001	1	Module side incorrect	Warning
55	01.01.2010	10:00:54	001	1	Module side incorrect	Warning
56	01.01.2010	10:00:55	001	1	Module side incorrect	Warning
57	01.01.2010	10:00:56	001	1	Module side incorrect	Warning
58	01.01.2010	10:00:57	001	1	Module side incorrect	Warning
59	01.01.2010	10:00:58	001	1	Module side incorrect	Warning
60	01.01.2010	10:00:59	001	1	Module side incorrect	Warning
61	01.01.2010	10:01:00	001	1	Module side incorrect	Warning
62	01.01.2010	10:01:01	001	1	Module side incorrect	Warning
63	01.01.2010	10:01:02	001	1	Module side incorrect	Warning
64	01.01.2010	10:01:03	001	1	Module side incorrect	Warning
65	01.01.2010	10:01:04	001	1	Module side incorrect	Warning
66	01.01.2010	10:01:05	001	1	Module side incorrect	Warning
67	01.01.2010	10:01:06	001	1	Module side incorrect	Warning
68	01.01.2010	10:01:07	001	1	Module side incorrect	Warning
69	01.01.2010	10:01:08	001	1	Module side incorrect	Warning
70	01.01.2010	10:01:09	001	1	Module side incorrect	Warning
71	01.01.2010	10:01:10	001	1	Module side incorrect	Warning
72	01.01.2010	10:01:11	001	1	Module side incorrect	Warning
73	01.01.2010	10:01:12	001	1	Module side incorrect	Warning
74	01.01.2010	10:01:13	001	1	Module side incorrect	Warning
75	01.01.2010	10:01:14	001	1	Module side incorrect	Warning
76	01.01.2010	10:01:15	001	1	Module side incorrect	Warning
77	01.01.2010	10:01:16	001	1	Module side incorrect	Warning
78	01.01.2010	10:01:17	001	1	Module side incorrect	Warning
79	01.01.2010	10:01:18	001	1	Module side incorrect	Warning
80	01.01.2010	10:01:19	001	1	Module side incorrect	Warning
81	01.01.2010	10:01:20	001	1	Module side incorrect	Warning
82	01.01.2010	10:01:21	001	1	Module side incorrect	Warning
83	01.01.2010	10:01:22	001	1	Module side incorrect	Warning
84	01.01.2010	10:01:23	001	1	Module side incorrect	Warning
85	01.01.2010	10:01:24	001	1	Module side incorrect	Warning
86	01.01.2010	10:01:25	001	1	Module side incorrect	Warning
87	01.01.2010	10:01:26	001	1	Module side incorrect	Warning
88	01.01.2010	10:01:27	001	1	Module side incorrect	Warning
89	01.01.2010	10:01:28	001	1	Module side incorrect	Warning
90	01.01.2010	10:01:29	001	1	Module side incorrect	Warning
91	01.01.2010	10:01:30	001	1	Module side incorrect	Warning
92	01.01.2010	10:01:31	001	1	Module side incorrect	Warning
93	01.01.2010	10:01:32	001	1	Module side incorrect	Warning
94	01.01.2010	10:01:33	001	1	Module side incorrect	Warning
95	01.01.2010	10:01:34	001	1	Module side incorrect	Warning
96	01.01.2010	10:01:35	001	1	Module side incorrect	Warning
97	01.01.2010	10:01:36	001	1	Module side incorrect	Warning
98	01.01.2010	10:01:37	001	1	Module side incorrect	Warning
99	01.01.2010	10:01:38	001	1	Module side incorrect	Warning
100	01.01.2010	10:01:39	001	1	Module side incorrect	Warning

- 1 Sequence number of the entries
- 2 Link for updating the log ("Update trace")
- 3 Start/end time of the message
- 4 Text message
- 5 Module affected (module code/M. number/channel)

Terminal CPX

Technical data – Control block CPX-FEC

FESTO



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		Modbus/TCP (code T05)	
The CPX-FEC 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-FEC as a compact stand-alone controller directly on the machine.	Transmits data in binary format within TCP/IP packets. This ensures good data throughput.
Operating modes		Communication protocols	
<ul style="list-style-type: none">• Stand-alone/EasyIP• Fieldbus remote controller• Modbus/TCP remote controller• Remote I/O Modbus/TCP		<ul style="list-style-type: none">• Profibus, PROFINET, DeviceNet, Interbus, CANopen, EtherCAT and CC-Link via CPX fieldbus node• Modbus/TCP• EasyIP	<ul style="list-style-type: none">• IP• TCP• UDP• SMTP• HTTP• DHCP• BootP• TFTP
Setting options			
CPX-FEC has the following interfaces for monitoring, programming and commissioning:		<ul style="list-style-type: none">• For the CPX-MMI/-FMT• Serial interface RS232, for example, for a Front End Display (FED)• Ethernet interface for IT applications• Remote diagnostics via an FED and CPX Web Monitor	<p>The operating mode and fieldbus protocol are set using the DIL switch on the CPX-FEC.</p> <p>The integrated web server offers a convenient means of querying data saved in the CPX-FEC.</p>

Terminal CPX

Technical data – Control block CPX-FEC

FESTO

General technical data			
Type		CPX-FEC-1-IE	
Ethernet interface		RJ45 (8-pin, socket)	
Data interface		RS232 (Sub-D, 9-pin, socket)	
MMI/FMT interface		M12, 5-pin, socket	
Baud rate	Ethernet interface	[Mbps]	10/100 (to IEEE802.3, 10BaseT)
	Data interface	[kbps]	9.6 ... 115.2
	MMI/FMT interface	[kbps]	56.6
Protocol		<ul style="list-style-type: none"> • TCP/IP • Easy IP • Modbus TCP • HTTP 	
Processing time for 1,024 binary instructions		[ms]	Approx. 1
Flags			M0.0 ... M9999, addressable as bits or words
	No. of time flags		T0 ... T255
	Time range	[s]	0.01 to 655.35
	No. of counting flags		Z0 ... Z255
	Counting range		0 to 65535
Register		R0 ... R255, addressable as words	
Special FE		FE 0 ... 255, init flag	
IP address setting		BOOTP/DHCP via FST or via MMI/FMT	
Max. address capacity	Inputs	[byte]	64
	Outputs	[byte]	64
Program memory	User program	[kB]	250
	Web applications	[kB]	550
Programming language		<ul style="list-style-type: none"> • IL • LD 	
Arithmetic functions		+, -, *, /, further functions via functional modules	
Functional modules		<ul style="list-style-type: none"> • 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		<ul style="list-style-type: none"> • Start-up parameterisation via FST • Parameterisation during the operating time via functional module 	
Control elements		<ul style="list-style-type: none"> • DIL switch for setting the operating mode • Rotary switch for program selection/program start 	
Additional functions		<ul style="list-style-type: none"> • Storage of the last 40 errors with timestamp (access via PCP) • 8-bit system status in image table for inputs • 2-byte inputs and 2-byte outputs, system diagnostics in image table 	

Terminal CPX

Technical data – Control block CPX-FEC

FESTO

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

Note

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

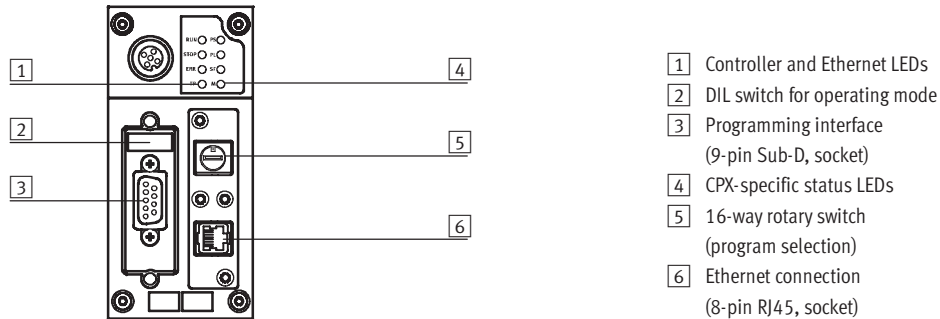
Overview of the operating modes				
	Stand-alone	Remote controller		Remote I/O
		Ethernet	Fieldbus	Modbus/TCP
CPX-FEC function	Control	Control and communication		Ethernet slave
CPX module controlled by	CPX-FEC	CPX-FEC		Higher-order controller
Pre-processing of data in the FEC	Yes	Yes		No
Communication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

Terminal CPX

Technical data – Control block CPX-FEC

FESTO

Connection and display components



Pin allocation for the programming interface (RS232)

Pin allocation	Pin	Signal	Designation
Sub-D plug			
	1	n.c.	Not connected
	2	RxD	Received data
	3	TxD-P	Transmitted data
	4	n.c.	Not connected
	5	GND	Data reference potential
	6	n.c.	Not connected
	7	n.c.	Not connected
	8	n.c.	Not connected
	9	n.c.	Not connected
Housing	Screened	Connection to functional earth (FE)	

Pin allocation for the Ethernet interface

Pin allocation	Pin	Signal	Designation
RJ45 plug			
	1	TD+	Transmitted data+
	2	TD-	Transmitted data-
	3	RD+	Received data+
	4	n.c.	Not connected
	5	n.c.	Not connected
	6	RD-	Received data-
	7	n.c.	Not connected
	8	n.c.	Not connected
Housing	Screened	Screened	

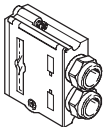
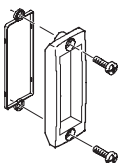
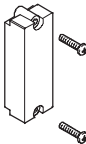
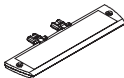


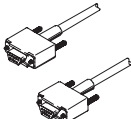
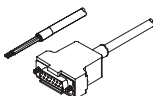
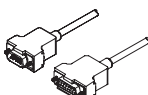

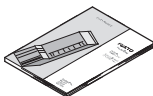

Ordering data

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

Terminal CPX

Accessories – Control block CPX-FEC

FESTO

Ordering data				
Designation			Part No.	Type
Bus connection				
	Sub-D plug		534497	FBS-SUB-9-GS-1x9POL-B
	Inspection cover, transparent		533334	AK-SUB-9/15-B
	Inspection cover, for use in Atex environments as per certification (➔ 47)		557010	AK-SUB-9/15
	Inscription label holder for connection block		536593	CPX-ST-1
	RJ45/plug		534494	FBS-RJ45-8-GS
	Cover for RJ45 connection		534496	AK-RJ45
	Programming cable		151915	KDI-PPA-3-BU9
	Connecting cable FED		539642	FEC-KBG7
	Connecting cable FED		539643	FEC-KBG8
	Adapter from 5-pin M12 to mini USB socket and controller software		547432	NEFC-M12G5-0.3-U1G5
User manual				
	User manual for control block CPX-FEC		German	538474 P.BE-CPX-FEC-DE
			English	538475 P.BE-CPX-FEC-EN
			Spanish	538476 P.BE-CPX-FEC-ES
			French	538477 P.BE-CPX-FEC-FR
			Italian	538478 P.BE-CPX-FEC-IT
			Swedish	538479 P.BE-CPX-FEC-SV
Software				
	CPX remote diagnostics and process visualisation		545413	CPX-WEB-MONITOR
	Programming software	German	537927	FST4.1DE
		English	537928	FST4.1GB

CPI installation system

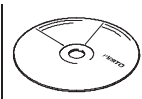
←	Industrial Ethernet	→
←	Modbus/TCP	→
←	EasyIP	→
←	IT services	→
←	Web	→
←	E-mail	→
←	File transfer	→

Powerful control block for preprocessing 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.



CPI installation system



CPX web monitor

FESTO

German		
English		

Control block CPX-CEC-C1

Technical data

FESTO

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

- Easy actuation of valve terminal configurations with MPA, VTSA
- Connection to all fieldbuses as a remote controller and for preprocessing
- Actuation of electric drives as individual axes via CANopen

- Diagnostics with flexible monitoring options for pressure, flow rate, cylinder operating time, air consumption
- Early warnings and visualisation options
- Actuation of decentralised installation systems on the basis of CPI actuation of applications in proportional pneumatics
- Servopneumatic applications
- AS-interface actuation via gateway



General technical data	
Protocol	CoDeSys level 2
	EasyIP
	Modbus TCP
	TCP/IP
CPU data	32 MB RAM
	32 MB flash
	400 MHz processor
Control interface	CAN bus
Processing time	Approx. 200 µs/1k instruction
Baud rate	10/100 bps to IEEE 802.3 (10BaseT) or 802.3u (100BaseTx)
Programming software	CoDeSys provided by Festo
Programming language	SFC, IL, FCH, LD and ST to IEC 61131-3
	Additionally CFC
Programming, operating language	German
	English
Programming, support for file handling	Yes
Program memory	4 MB user program
Flags	30 kB remanent memory
	8 MB global data memory
	CoDeSys variable concept
Device-specific diagnostics	Diagnostic memory
	Channel and module-oriented diagnostics
	Undervoltage/short circuit of modules
LED displays (bus-specific)	TP: Link/traffic
LED displays (product-specific)	RUN: PLC status
	STOP: PLC status
	ERR: PLC runtime error
	PS: Electronics supply, sensor supply
	PL: Load supply
	SF: System fault
Parameterisation	M: Modify/forcing active
Configuration support	CoDeSys
IP address setting	DHCP
	Via CoDeSys
	Via MMI
Control elements	DIL switch for CAN termination
	Rotary switch for RUN/STOP

Control block CPX-CEC-C1

Technical data

General technical data		
Function blocks		CPX diagnostic status
		Copy CPX diagnostic trace
		Read CPX module diagnostics
Additional functions		Diagnostic functions
		Motion functions for electric drives
Total number of axes		31
Nominal operating voltage	[V DC]	24
Nominal operating voltage of the load voltage	[V DC]	24
		18 ... 30, without pneumatics
		21.6 ... 26.4, with pneumatics type midi/maxi
		20.4 ... 26.4, with pneumatics type CPA
		18 ... 30, with pneumatics type MPA
Power failure bridging	[ms]	10
Intrinsic current consumption at nominal operating voltage	[mA]	Typically 85
Protection class		IP65
		IP67
Dimensions W x L x H (incl. interlinking block)	[mm]	50 x 107 x 55
Product weight	[g]	155
Materials		
Housing		Reinforced polyamide, polycarbonate
Note on materials		RoHS-compliant

Technical data – Interfaces		
Ethernet		
Number		1
Ethernet interface		RJ45
Connector plug		RJ45 socket, 8-pin
Data transmission speed	[Mbps]	10/100
Supported protocols		TCP/IP
		Easy IP
		Modbus TCP
Fieldbus interface		
Type		CAN bus
Connection technology		Sub-D plug, 9-pin
Transmission rate	[kbps]	125; 250; 500; 800; 1,000
		Adjustable via software
Electrical isolation		Yes

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

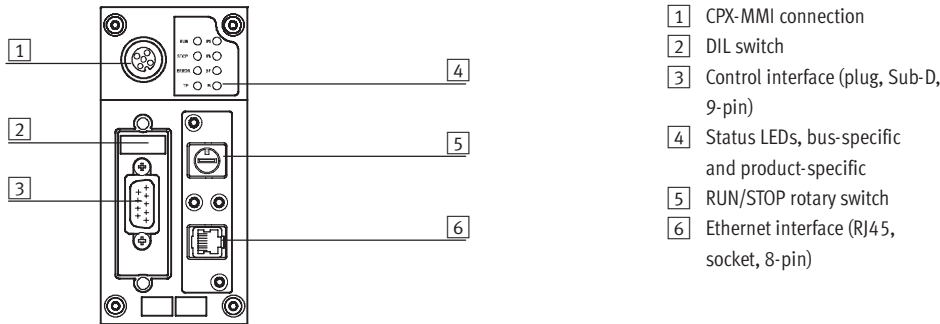
1) Corrosion resistance class 2 according to Festo standard 940 070
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents

Control block CPX-CEC-C1

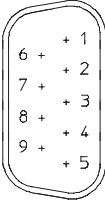
Technical data

FESTO

Connection and display components

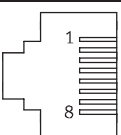


Pin allocation – Fieldbus interface

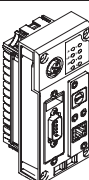
	Pin	Signal	Meaning
Sub-D plug			
	1	n.c.	Not connected
	2	CAN_L	CAN low
	3	CAN_GND	CAN ground
	4	n.c.	Not connected
	5	CAN_SHLD	Connection to functional earth (FE)
	6	CAN_GND	CAN ground (optional) ¹⁾
	7	CAN_H	CAN high
	8	n.c.	Not connected
	9	n.c.	Not connected
	Housing	Screened	Plug housing must be connected to FE

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

Pin allocation – Ethernet interface

	Pin	Signal	Meaning
RJ45 plug			
	1	TD+	Transmitted data+
	2	TD-	Transmitted data-
	3	RD+	Received data+
	4	n.c.	Not connected
	5	n.c.	Not connected
	6	RD-	Received data-
	7	n.c.	Not connected
	8	n.c.	Not connected
	Housing	Screened	Screened

Ordering data

Designation	Part No.	Type
	Control block	567347 CPX-CEC-C1

CPI installation system

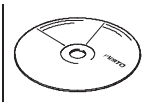
←	Industrial Ethernet	→
←	Modbus/TCP	→
←	EasyIP	→
←	IT services	→
←	Web	→
←	E-mail	→
←	File transfer	→

Powerful control block for preprocessing 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.



CPI installation system



CPX web monitor

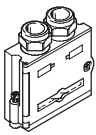





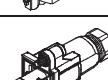

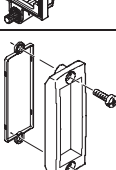
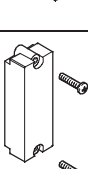
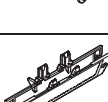
FESTO


German		
English		

Control block CPX-CEC-C1

Accessories

FESTO

Ordering data – Bus connection			
Designation		Part No.	Type
	Sub-D plug, 9-pin	532219	FBS-SUB-9-BU-2x5POL-B
	Bus connection, plug 2xM12, 5-pin	525632	FBA-2-M12-5POL
	Plug socket for fieldbus connection, M12, 5-pin	18324	FBSD-GD-9-5POL
	Plug, M12, 5-pin	175380	FBS-M12-5GS-PG9
	Bus connection, 5-pin	525634	FBA-1-SL-5POL
	Bus connection, screw terminal, 5-pin	525635	FBSD-KL-2x5POL
	RJ45 plug, 8-pin	534494	FBS-RJ45-8-GS
	Cover for RJ45 connection	534496	AK-RJ45
	Inspection cover, transparent for Sub-D plug/socket	533334	AK-SUB-9/15-B
	Cover for Sub-D plug/socket	557010	AK-SUB-9/15
	Inscription label holder for manifold block	536593	CPX-ST-1

Documentation			
Designation		Language	Part No. Type
	Manual for control block CPX-CEC-C1	German	569121 P.BE-CPX-CEC-DE
		English	569122 P.BE-CPX-CEC-EN

Terminal CPX

Technical data – Bus node CPX-FB6

FESTO



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 fieldbus 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 fieldbus node only provides the communication interface to the PLC.

Communication between the CPX-FEC and CPX fieldbus node is established

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

- 8 byte outputs
- 8 byte inputs

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

- 56 byte inputs
- 56 byte outputs

Terminal CPX

Technical data – Bus node CPX-FB6

FESTO

General technical data				
Type			CPX-FB6	
Fieldbus interface			Sub-D, 9-pin, socket and pin	
Baud rate			[Mbps]	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 bits (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			<ul style="list-style-type: none"> Start-up parameterisation via user functions (CMD) Via PCP communication 	
Additional functions			<ul style="list-style-type: none"> 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			Polymer	
Grid dimension			[mm]	50
Dimensions (incl. interlinking block) W x L x H			[mm]	50 x 107 x 50
Weight			[g]	125

Note

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

Terminal CPX

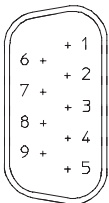
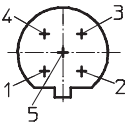
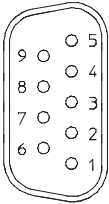
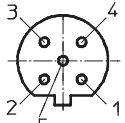
Technical data – Bus node CPX-FB6

FESTO

Connection and display components



Pin allocation for the INTERBUS interface

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

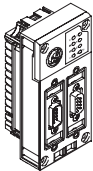
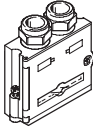
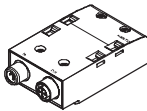
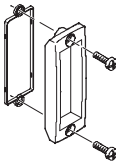
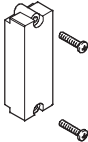
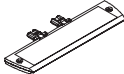

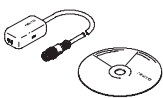

The incoming interface is galvanically isolated from the CPX peripherals. The plug housing is connected to the functional earth FE of the CPX terminal via an R/C combination.

1) The CPX terminal contains the protocol chip SUP1 3 OPC. This ensures automatic detection of additional connected INTERBUS stations. There is therefore no need for a bridge between pin 5 and pin 9.

Terminal CPX

Accessories – Bus node CPX-FB6

FESTO

Ordering data				
Designation			Part No.	Type
Bus node				
	INTERBUS fieldbus node		195748	CPX-FB6
Bus connection				
	Sub-D plug	Incoming	532218	FBS-SUB-9-BU-IB-B
		Outgoing	532217	FBS-SUB-9-GS-IB-B
	Connection block M12 adapter (B-coded)		534505	CPX-AB-2-M12-RK-IB
	Inspection cover, transparent		533334	AK-SUB-9/15-B
	Inspection cover, for use in Atex environments as per certification (➔ 47)		557010	AK-SUB-9/15
	Inscription label holder for connection block		536593	CPX-ST-1
	Threaded sleeve, 4 pieces		533000	UNC4-40/M3x6
	Adapter from 5-pin M12 to mini USB socket and controller software		547432	NEFC-M12G5-0.3-U1G5
User manual				
	User manual for bus node CPX-FB6	German	526433	P.BE-CPX-FB6-DE
		English	526434	P.BE-CPX-FB6-EN
		Spanish	526435	P.BE-CPX-FB6-ES
		French	526436	P.BE-CPX-FB6-FR
		Italian	526437	P.BE-CPX-FB6-IT
		Swedish	526438	P.BE-CPX-FB6-SV

Terminal CPX

Technical data – Bus node CPX-FB11

FESTO



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

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

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

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



Application

Bus connection

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

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

DeviceNet implementation

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

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

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

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

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

When a fieldbus 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 fieldbus node only provides the communication interface to the PLC. Communication between the CPX-FEC and CPX fieldbus node is established

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

- 8 byte outputs
- 8 byte inputs

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

- 56 byte inputs
- 56 byte outputs

Terminal CPX

Technical data – Bus node CPX-FB11

FESTO

General technical data				
Type			CPX-FB11	
Fieldbus interface			Either <ul style="list-style-type: none"> • Micro Style bus connection: 2xM12 with IP65/IP67 protection • Open Style bus connection: 5-pin terminal strip, IP20 	
Baud rate		[kbps]	125, 250, 500	
Addressing range			0 ... 63 Set using DIL switch	
Product	Type		Communication adapter (12 dec.)	
	Code		4554 dec.	
Communication types			Polled I/O, change of state/synchronous, strobed I/O and explicit messaging	
Configuration support			EDS file and bitmaps	
Max. address capacity	Inputs	[byte]	64	
	Outputs	[byte]	64	
LED displays (bus-specific)			MS = Module status NS = Network status IO = I/O status	
Device-specific diagnostics			Module and channel-oriented diagnostics by means of manufacturer-specific diagnostic object	
Parameterisation			<ul style="list-style-type: none"> • Module and system parameterisation via configuration interface in plain text (EDS) • Online in run or program mode 	
Additional functions			<ul style="list-style-type: none"> • 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			Typically 200	
Protection class to EN 60529			IP65/IP67	
Temperature range	Operation	[°C]	–5 ... +50	
	Storage/transport	[°C]	–20 ... +70	
Materials			Polymer	
Grid dimension			50	
Dimensions (incl. interlinking block) W x L x H			50 x 107 x 50	
Weight			120	

Note

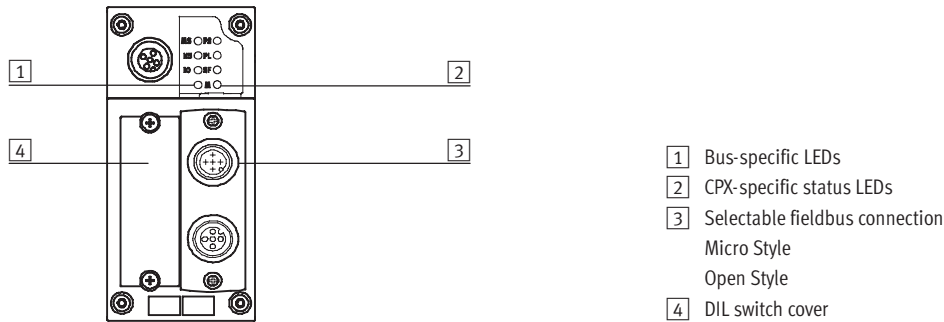
Please observe the general limits and guidelines for the system when configuring the electrical modules.

Terminal CPX

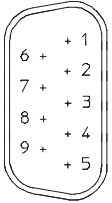
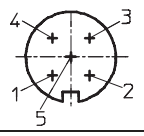
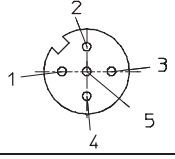
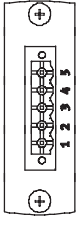
Technical data – Bus node CPX-FB11

FESTO

Connection and display components



Pin allocation for the DeviceNet interface


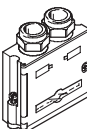




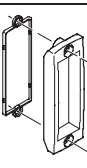
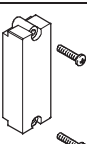


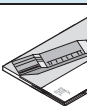
Pin allocation	Pin	Signal-specific core colour ¹⁾	Signal	Designation
Sub-D plug				
	1	–	n.c.	Not connected
	2	Blue	CAN_L	Received/transmitted data low
	3	Black	0 V bus	0 V CAN interface
	4	–	n.c.	Not connected
	5	Blank	Screened	Connection to housing
	6	–	n.c.	Not connected
	7	White	CAN_H	Received/transmitted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

1) Typical for DeviceNet cables

Terminal CPX

Accessories – Bus node CPX-FB11

FESTO

Ordering data				
Designation			Part No.	Type
Bus node				
	DeviceNet fieldbus node		526172	CPX-FB11
Bus connection				
	Sub-D plug		532219	FBS-SUB-9-BU-2x5POL-B
	Micro Style bus connection, 2xM12		525632	FBA-2-M12-5POL
	Socket for MicroStyle connection, M12		18324	FBSD-GD-9-5POL
	Plug for Micro Style connection, M12		175380	FBS-M12-5GS-PG9
	Open Style bus connection for 5-pin terminal strip		525634	FBA-1-SL-5POL
	Terminal strip for Open Style connection, 5-pin		525635	FBSD-KL-2x5POL
	Inspection cover, transparent		533334	AK-SUB-9/15-B
	Inspection cover, for use in Atex environments as per certification (➔ 47)		557010	AK-SUB-9/15
	Inscription label holder for connection block		536593	CPX-ST-1
	Adapter from 5-pin M12 to mini USB socket and controller software		547432	NEFC-M12G5-0.3-U1G5
User manual				
	User manual for bus node CPX-FB11	German	526421	P.BE-CPX-FB11-DE
		English	526422	P.BE-CPX-FB11-EN
		Spanish	526423	P.BE-CPX-FB11-ES
		French	526424	P.BE-CPX-FB11-FR
		Italian	526425	P.BE-CPX-FB11-IT
		Swedish	526426	P.BE-CPX-FB11-SV

Terminal CPX

Technical data – Bus node CPX-FB13

FESTO



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

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

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

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



Application

Bus connection

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

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

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

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

Profibus DP implementation

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

In addition to DPV0, asynchronous communication to the advanced specification DPV1 is supported. DPV1 provides asynchronous access to advanced system information and assigns operation parameters while the controller is running via the user program.

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

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

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

When a fieldbus 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 fieldbus node only provides the communication interface to the PLC. Communication between the CPX-FEC and CPX fieldbus node is established

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

- 8 byte outputs
- 8 byte inputs

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

- 56 byte inputs
- 56 byte outputs

Terminal CPX

Technical data – Bus node CPX-FB13

FESTO

General technical data				CPX-FB13
Type				
Fieldbus interface				Sub-D socket, 9-pin (EN 50 170) Galvanically isolated 5 V
Baud rate				[Mbps] 0.0096 ... 12
Addressing range				1 ... 125 Set using DIL switch
Product range				4: Valves
Ident. number				0x059E
Communication types				DPV0: 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				<ul style="list-style-type: none"> Start-up parameterisation via configuration interface in plain text (GSD) Asynchronous parameterisation via DPV1
Additional functions				<ul style="list-style-type: none"> 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				Polymer
Grid dimension				[mm] 50
Dimensions (incl. interlinking block) W x L x H				[mm] 50 x 107 x 50
Weight				[g] 115

Note

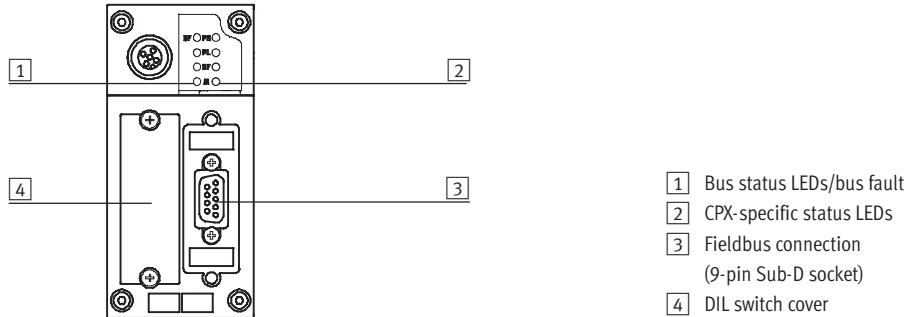
Please observe the general limits and guidelines for the system when configuring the electrical modules.

Terminal CPX

Technical data – Bus node CPX-FB13

FESTO

Connection and display components



Pin allocation for Profibus DP interface

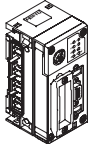
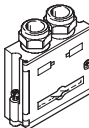
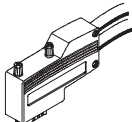

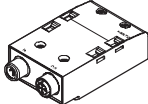
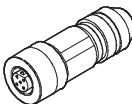
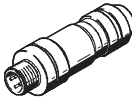

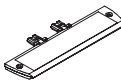
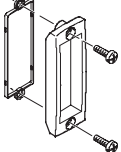
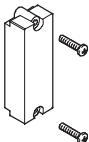

Pin allocation	Pin	Signal	Designation
Sub-D plug			
	1	n.c.	Not connected
	2	n.c.	Not connected
	3	RxD/TxD-P	Received/transmitted data P
	4	CNTR-P ¹⁾	Repeater control signal
	5	DGND	Data reference potential (M5V)
	6	VP	Supply voltage (P5V)
	7	n.c.	Not connected
	8	RxD/TxD-N	Received/transmitted data N
	9	n.c.	Not connected
	Housing	Screened	Connection to housing
Bus connection M12 adapter (B-coded)			
Incoming	1	n.c.	Not connected
	2	RxD/TxD-N	Received/transmitted data N
	3	n.c.	Not connected
	4	RxD/TxD-P	Received/transmitted data P
	5 and M12	Screened	Connection to FE (functional earth)
Outgoing	1	VP	Supply voltage (P5V)
	2	RxD/TxD-N	Received/transmitted data N
	3	DGND	Data reference potential (M5V)
	4	RxD/TxD-P	Received/transmitted data P
	5 and M12	Screened	Connection to FE (functional earth)

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

Terminal CPX

Accessories – Bus node CPX-FB13

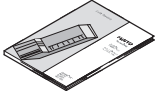
FESTO

Ordering data		
Designation	Part No.	Type
Bus node		
 Profibus fieldbus node	195740	CPX-FB13
Bus connection		
 Sub-D plug, straight	532216	FBS-SUB-9-GS-DP-B
 Sub-D plug, angled	533780	FBS-SUB-9-WS-PB-K
 Bus connection 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
 Inscription label holder for connection block M12	536593	CPX-ST-1
 Inspection cover, transparent	533334	AK-SUB-9/15-B
 Inspection cover, for use in Atex environments as per certification (→ 47)	557010	AK-SUB-9/15
 Adapter from 5-pin M12 to mini USB socket and controller software	547432	NEFC-M12G5-0.3-U1G5

Terminal CPX

Accessories – Bus node CPX-FB13

FESTO

Ordering data				
Designation			Part No.	Type
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
		Swedish	526432	P.BE-CPX-FB13-SV

Terminal CPX

Technical data – Bus node CPX-FB14

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 fieldbus 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 fieldbus node only provides the communication interface to the PLC. Communication between the CPX-FEC and CPX fieldbus node is established	via the interlinking of the CPX modules and occupies an address capacity of the CPX system of: <ul style="list-style-type: none">• 8 byte outputs• 8 byte inputs	The remaining address capacity of the control block or CPX system for actuating the peripherals is: <ul style="list-style-type: none">• 56 byte inputs• 56 byte outputs

Terminal CPX

Technical data – Bus node CPX-FB14

FESTO

General technical data				
Type				CPX-FB14
Fieldbus interface				Sub-D pin, 9-pin (to DS 102) Bus interface galvanically isolated via optocoupler 24 V supply for CAN interface via bus
Baud rate [kbps]				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				<ul style="list-style-type: none">• 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				Polymer
Grid dimension [mm]				50
Dimensions (incl. interlinking block) W x L x H [mm]				50 x 107 x 50
Weight [g]				115

Note

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

Terminal CPX

Technical data – Bus node CPX-FB14

FESTO

Connection and display components



Pin allocation for the CANopen interface

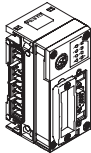
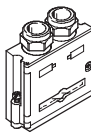
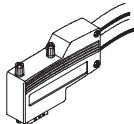




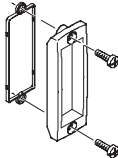
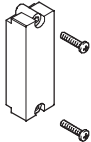
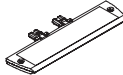

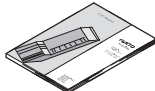
Pin allocation	Pin	Signal	Designation
Sub-D plug			
	1	n.c.	Not connected
	2	CAN_L	Received/transmitted data low
	3	CAN_GND	0 V CAN interface
	4	n.c.	Not connected
	5	CAN_Shld	Optional screened connection
	6	GND	Ground ¹⁾
	7	CAN_H	Received/transmitted data high
	8	n.c.	Not connected
	9	CAN_V+	24 V DC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

1) Connected internally via Pin 3

Terminal CPX

Accessories – Bus node CPX-FB14

FESTO

Ordering data				
Designation			Part No.	Type
Bus node				
	CANopen fieldbus node		526174	CPX-FB14
Bus connection				
	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
	Inspection cover, for use in Atex environments as per certification (➔ 47)		557010	AK-SUB-9/15
	Inscription label holder for connection block		536593	CPX-ST-1
	Adapter from 5-pin M12 to mini USB socket and controller software		547432	NEFC-M12G5-0.3-U1G5
User manual				
	User manual for bus node CPX-FB14	German	526409	P.BE-CPX-FB14-DE
		English	526410	P.BE-CPX-FB14-EN
		Spanish	526411	P.BE-CPX-FB14-ES
		French	526412	P.BE-CPX-FB14-FR
		Italian	526413	P.BE-CPX-FB14-IT
		Swedish	526414	P.BE-CPX-FB14-SV

Terminal CPX

Technical data – Bus node CPX-FB23

FESTO

CC-Link

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 four CPX-specific LEDs.

The fieldbus communication status is displayed via four 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.

The integrated interface with RS 485 transmission technology is designed for the typical CC-Link 3-wire connection technology (in accordance with CLPA CC-Link Spec. V1.1).

CC-Link implementation

The CPX-FB23 supports max. four stations per slave. The number of stations used can be set by means of a DIL switch. Synchronous data transmission for digital and analogue

I/Os is conducted using the bit and word ranges (Rx/Ry/RWr/RWw).

The CPX-FB23 supports an address space of max. 64 digital inputs and 64 digital outputs (Rx/Ry) or up to

16 analogue inputs and 16 analogue outputs (RWr/RWw). Mixed operation of digital and analogue inputs/outputs is possible.

Example:
Station 1 + 2 = 32 digital inputs and 32 digital outputs
Station 3 = 4 analogue inputs and 4 analogue outputs

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

When a fieldbus 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 fieldbus node only provides the communication interface to the PLC.

Communication between the CPX-FEC and CPX fieldbus node is established

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

- 8 byte outputs
- 8 byte inputs

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

- 56 byte inputs
- 56 byte outputs

Terminal CPX

Technical data – Bus node CPX-FB23

FESTO

General technical data				
Type			CPX-FB23	
Fieldbus interface			Either <ul style="list-style-type: none"> • Sub-D socket, 9-pin • Screw terminal bus connection, IP20 	
Baud rate			[kbps]	156 ... 10 000
Addressing range			1 ... 64 Set using DIL switch	
No. of stations per slave			1, 2, 3 or 4 stations Set using DIL switch	
Vendor code			0x0177	
Machine type			0x3C	
Communication types			Synchronous communication	
Configuration support			–	
Max. address capacity, inputs	Digital		Station 1, 2, 3, 4 = 64 Rx	
	Analogue		Station 1, 2, 3, 4 = 16 RWr	
Max. address capacity, outputs	Digital		Station 1, 2, 3, 4 = 64 Ry	
	Analogue		Station 1, 2, 3, 4 = 16 RWw	
LED displays (bus-specific)			RUN = Data communication OK ERROR = CRC error or data communication error SD = Send data RD = Receive data	
Device-specific diagnostics			<ul style="list-style-type: none"> • 8-bit system status in image table for inputs • 2 byte inputs and 2 byte outputs, system diagnostics in image table 	
Parameterisation			Hold/clear by means of DIL switch	
Additional functions			Storage of the last 40 errors with timestamp (access via system diagnostics)	
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			Polymer	
Grid dimension			[mm]	50
Dimensions (incl. interlinking block) W x L x H			[mm]	50 x 107 x 50
Weight			[g]	115

Note

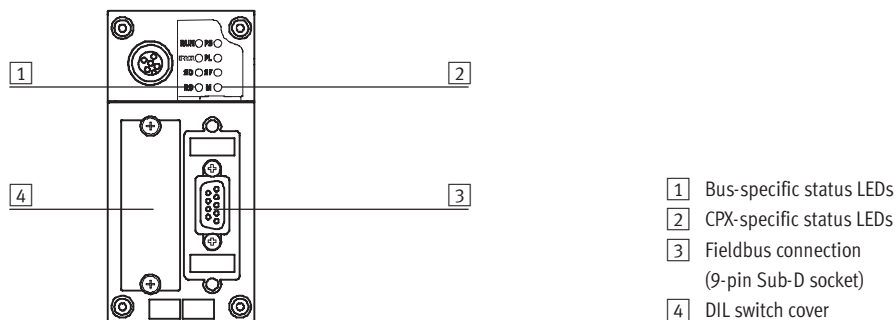
Please observe the general limits and guidelines for the system when configuring the electrical modules.

Terminal CPX

Technical data – Bus node CPX-FB23

FESTO

Connection and display components



Pin allocation for the CC-Link interface

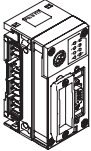
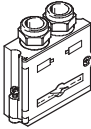

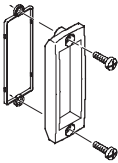
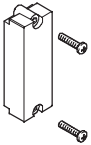
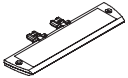


Pin allocation	Pin	Signal	Designation
Sub-D plug			
	1	n.c.	Not connected
	2	DA	Data A
	3	DG	Data reference potential
	4	n.c.	Not connected
	5	FE ¹⁾	Functional earth
	6	n.c.	Not connected
	7	DB	Data B
	8	n.c.	Not connected
	9	n.c.	Not connected
	Housing	SLD	Screened
Screw terminal bus connection			
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

1) Via RC element on housing

Terminal CPX

Accessories – Bus node CPX-FB23

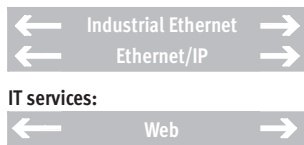
FESTO

Ordering data			
Designation		Part No.	Type
Bus node			
	CC-Link fieldbus node	526176	CPX-FB23
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
	Inspection cover, for use in Atex environments as per certification (→ 47)	557010	AK-SUB-9/15
	Inscription label holder for connection block	536593	CPX-ST-1
	Adapter from 5-pin M12 to mini USB socket and controller software	547432	NEFC-M12G5-0.3-U1G5
User manual			
	User manual for bus node CPX-FB23	German	526403 P.BE-CPX-FB23-DE
		English	526404 P.BE-CPX-FB23-EN

Terminal CPX

Technical data – Bus node CPX-FB32

FESTO



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 IP65/67 protection.		Ethernet/IP is an open bus system based on the Ethernet standard and TCP/IP technology (IEEE802.3).	
Ethernet/IP implementation			
The CPX-FB32 supports the two remote I/O and remote controller operating modes. In remote I/O operating mode, all functions of the CPX valve terminal are		directly controlled by the Ethernet/IP master (host). In addition to actuation via a bus system, it is possible to use IT technologies. An integrated web server	enables diagnostic data to be visualised via HTML. Various programs support direct access to the data of the device from the automation network. The Ethernet/IP node for CPX supports the transmission technology that conforms to DIN EN 50173/CAT 5.
Special points in combination with CPX-FEC/CPX-CEC			
When a fieldbus 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 fieldbus node only provides the communication interface to the PLC. Communication between the CPX-FEC and CPX fieldbus node is established via the interlinking of the CPX modules and occupies an address capacity of the CPX system of: <ul style="list-style-type: none">• 8 byte outputs• 8 byte inputs	The remaining address capacity of the control block or CPX system for actuating the peripherals is: <ul style="list-style-type: none">• 56 byte inputs• 56 byte outputs

Terminal CPX

Technical data – Bus node CPX-FB32

FESTO

General technical data			
Type		CPX-FB32	
Fieldbus interface		Plug connector M12, D-coded, 4-pin	
Baud rate	[Mbps]	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		<ul style="list-style-type: none"> Start-up parameterisation Asynchronous parameterisation via Explicit Messaging 	
Additional functions		<ul style="list-style-type: none"> 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		Polymer	
Grid dimension		[mm]	50
Dimensions (incl. interlinking block) W x L x H		[mm]	50 x 107 x 50
Weight		[g]	125

Note

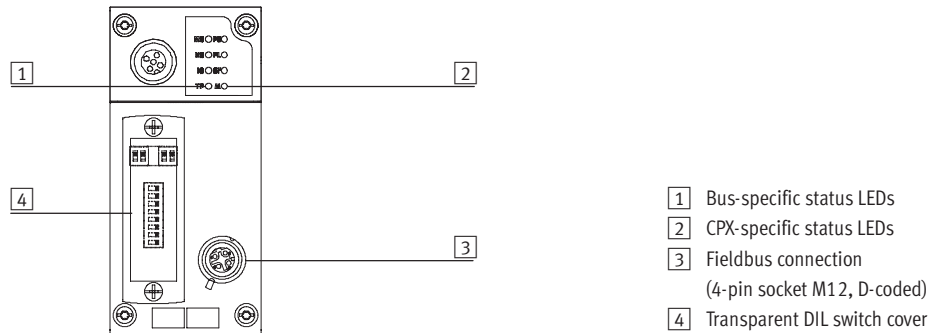
Please observe the general limits and guidelines for the system when configuring the electrical modules.

Terminal CPX

Technical data – Bus node CPX-FB32



Connection and display components



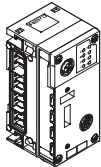
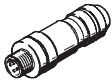
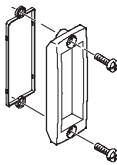
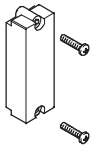
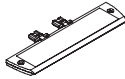


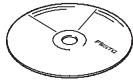
Pin allocation for the fieldbus interface

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

Terminal CPX

Accessories – Bus node CPX-FB32

FESTO

Ordering data				
Designation			Part No.	Type
Bus node				
	Ethernet/IP bus node		541302	CPX-FB32
Bus connection				
	Plug M12x1, 4-pin, D-coded		543109	NECU-M-S-D12G4-C2-ET
	Inspection cover, transparent		533334	AK-SUB-9/15-B
	Inspection cover, for use in Atex environments as per certification (→ 47)		557010	AK-SUB-9/15
	Inscription label holder for connection block		536593	CPX-ST-1
	Adapter from 5-pin M12 to mini USB socket and controller software		547432	NEFC-M12G5-0.3-U1G5
User manual				
	User manual for bus node CPX-FB32	German	693134	P.BE-CPX-FB32-DE
		English	693135	P.BE-CPX-FB32-EN
		Spanish	693136	P.BE-CPX-FB32-ES
		French	693137	P.BE-CPX-FB32-FR
		Italian	693138	P.BE-CPX-FB32-IT
		Swedish	693139	P.BE-CPX-FB32-SV
Software				
	CPX remote diagnostics and process visualisation		545413	CPX-WEB-MONITOR

Terminal CPX

Technical data – Bus node CPX-FB33

FESTO



Bus node for operating the CPX valve terminal on PROFINET RT. 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 IP65/67 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.	<ul style="list-style-type: none"> • Maximum segment length 100 m • Transmission rate 100 Mbps
PROFINET implementation			
The CPX-FB33 supports the PROFINET RT 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 fieldbus 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 fieldbus 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 fieldbus 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 fieldbus node only provides the communication interface to the PLC. Communication between the CPX-FEC and CPX fieldbus node is established	via the interlinking of the CPX modules and occupies an address capacity of the CPX system of: <ul style="list-style-type: none"> • 8 byte outputs • 8 byte inputs 	The remaining address capacity of the control block or CPX system for actuating the peripherals is: <ul style="list-style-type: none"> • 56 byte inputs • 56 byte outputs

Terminal CPX

Technical data – Bus node CPX-FB33

FESTO

General technical data				
Type			CPX-FB33	
Fieldbus interface			2x socket M12, D-coded, 4-pin	
Baud rate			[Mbps]	100
Protocol			ProfiNet RT	
Max. address capacity	Inputs	[byte]	64	
	Outputs	[byte]	64	
LED displays	(bus-specific)		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			<ul style="list-style-type: none">• Channel and module-oriented diagnostics• Undervoltage of modules• Diagnostic memory	
Configuration support			GSDML file	
Parameterisation			<ul style="list-style-type: none">• System parameters• Diagnostic behaviour• Signal setup• Fail-safe response• Forcing of channels	
Additional functions			<ul style="list-style-type: none">• Start-up parameterisation in plain text via fieldbus• Fast startup (FSU)• Channel-oriented diagnostics via fieldbus• Asynchronous data access via fieldbus• System status can be represented using process data• Additional diagnostic interface for operator units• Asynchronous data access via Ethernet	
Control elements			<ul style="list-style-type: none">• DIL switch• Optional memory card	
Operating voltage	Nominal value	[V DC]	24	
	Permissible range	[V DC]	18 ... 30	
Current consumption		[mA]	Typically 120	
Temperature range	Operation	[°C]	– 5... +50	
	Storage/transport	[°C]	–20 ... +70	
Materials	Housing		Die-cast aluminium	
Grid dimension		[mm]	50	
Dimensions (incl. interlinking block) W x L x H		[mm]	50 x 107 x 50	
Weight		[g]	280	

Note

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

Note

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

- Self-tapping screws for plastic interlinking blocks

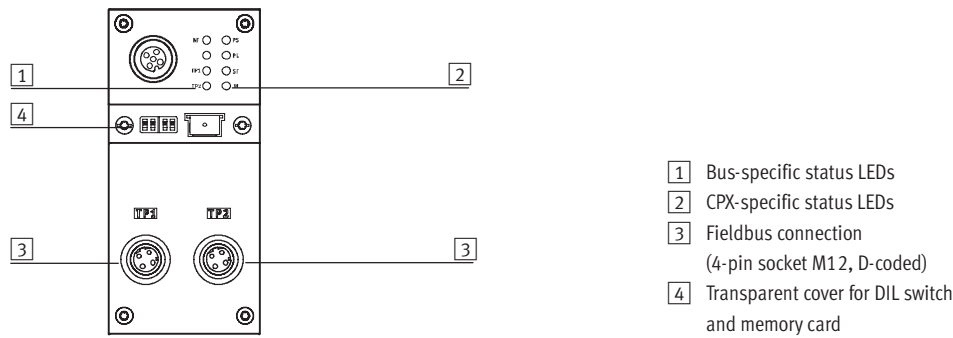
- Screws with metric thread for metal interlinking blocks

Terminal CPX

Technical data – Bus node CPX-FB33



Connection and display components

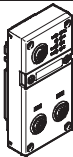

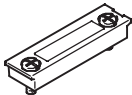
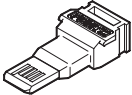


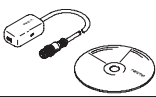
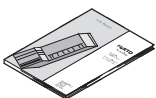


Pin allocation for the fieldbus interface			
Pin allocation	Pin	Signal	Designation
M12 socket, D-coded			
	1	TD+	Transmitted data+
	2	RD+	Received data+
	3	TD-	Transmitted data-
	4	RD-	Received data-
	Housing		Screened

Terminal CPX

Accessories – Bus node CPX-FB33

FESTO

Ordering data				
Designation			Part No.	Type
Bus node				
	PROFINET RT fieldbus 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		549526	CPX-SK
	Cover cap for sealing unused bus connections (10 pieces)		352059	ISK-M12
	Screws for attaching an inscription label holder to the fieldbus node (12 pieces)		550222	CPX-M-M2,5X6-12X
	Adapter from 5-pin M12 to mini USB socket and controller software		547432	NEFC-M12G5-0.3-U1G5
User manual				
	Electronics manual, CPX bus node, type CPX-FB33	German	548759	P.BE-CPX-PNIO-DE
		English	548760	P.BE-CPX-PNIO-EN
		Spanish	548761	P.BE-CPX-PNIO-ES
		French	548762	P.BE-CPX-PNIO-FR
		Italian	548763	P.BE-CPX-PNIO-IT
		Swedish	548764	P.BE-CPX-PNIO-SV

Terminal CPX

Technical data – Bus node CPX-M-FB34

FESTO



Bus node for operating the CPX valve terminal on PROFINET IO.

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 IP65/67 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.	<ul style="list-style-type: none"> • Maximum segment length 100 m • Transmission rate 100 Mbps
PROFINET implementation			
The CPX-M-FB34 supports the PROFINET IO 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	<p>or process equipment. In addition, non-real-time critical information such as diagnostic information, configuration information, etc. can be transferred.</p> <p>The Ethernet bandwidth is sufficient to transmit both data types (real-time and non-real-time) in parallel.</p>	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 fieldbus 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 fieldbus 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 fieldbus 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.	<p>In this case, the fieldbus node only provides the communication interface to the PLC.</p> <p>Communication between the CPX-FEC and CPX fieldbus node is established</p>	<p>via the interlinking of the CPX modules and occupies an address capacity of the CPX system of:</p> <ul style="list-style-type: none"> • 8 byte outputs • 8 byte inputs 	<p>The remaining address capacity of the control block or CPX system for actuating the peripherals is:</p> <ul style="list-style-type: none"> • 56 byte inputs • 56 byte outputs

Terminal CPX

Technical data – Bus node CPX-M-FB34

FESTO

General technical data				
Type			CPX-M-FB34	
Fieldbus interface			2x RJ45 push-pull socket, AIDA	
Baud rate			[Mbps]	100
Protocol			ProfiNet RT	
Max. address capacity	Inputs	[byte]	64	
	Outputs	[byte]	64	
LED displays	(bus-specific)		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			<ul style="list-style-type: none">• Channel and module-oriented diagnostics• Undervoltage of modules• Diagnostic memory	
Configuration support			GSDML file	
Parameterisation			<ul style="list-style-type: none">• System parameters• Diagnostic behaviour• Signal setup• Fail-safe response• Forcing of channels	
Additional functions			<ul style="list-style-type: none">• Start-up parameterisation in plain text via fieldbus• Fast startup (FSU)• Channel-oriented diagnostics via fieldbus• Asynchronous data access via fieldbus and via Ethernet• System status can be represented using process data• Additional diagnostic interface for operator units	
Control elements			DIL switch, optional memory card	
Operating voltage	Nominal value	[V DC]	24	
	Permissible range	[V DC]	18 ... 30	
Intrinsic current consumption at nominal operating voltage			[mA]	Typically 120
Protection class to EN 60529			IP65, IP67	
Temperature range	Operation	[°C]	– 5... +50	
	Storage/transport	[°C]	–20 ... +70	
Material of housing			Die-cast aluminium	
Grid dimension			[mm]	50
Dimensions (incl. interlinking block) W x L x H			[mm]	50 x 107 x 80
Weight			[g]	280

Note

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

Note

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

- Self-tapping screws for plastic interlinking blocks

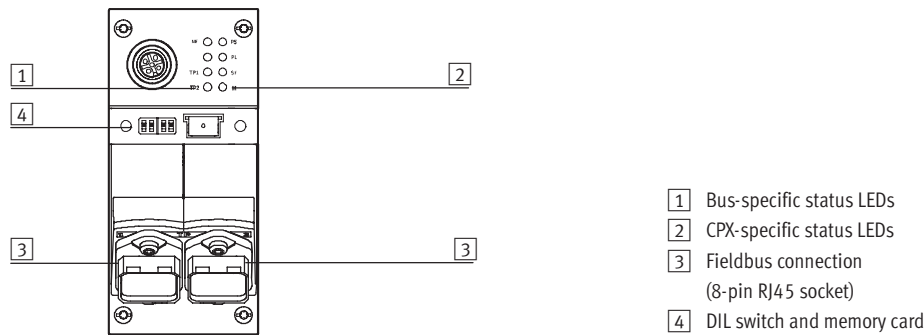
- Screws with metric thread for metal interlinking blocks

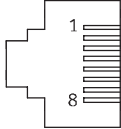
Terminal CPX

Technical data – Bus node CPX-M-FB34



Connection and display components

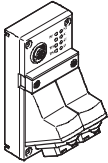
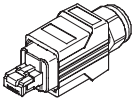
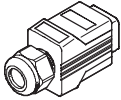
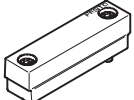
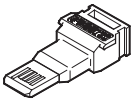





Pin allocation for the fieldbus interface			
Pin allocation	Pin	Signal	Designation
RJ45 plug			
	1	TD+	Transmitted data+
	2	TD-	Transmitted data-
	3	RD+	Received data+
	4	n.c.	Not connected
	5	n.c.	Not connected
	6	RD-	Received data-
	7	n.c.	Not connected
	8	n.c.	Not connected
	Housing	Screened	Screened

Terminal CPX

Accessories – Bus node CPX-M-FB34

FESTO

Ordering data			
Designation		Part No.	Type
Bus node			
	PROFINET IO fieldbus node	548751	CPX-M-FB34
Bus connection			
	RJ45 plug, 8-pin, push-pull	552000	FBS-RJ45-PP-GS
	Cover cap for bus connection	548753	CPX-M-AK-C
	Cover for DIL switch and memory card	548754	CPX-M-AK-M
	Memory card	549526	CPX-SK
	Screws for attaching an inscription label holder to the fieldbus node (12 pieces)	550222	CPX-M-M2,5X6-12X
	Adapter from 5-pin M12 to mini USB socket and controller software	547432	NEFC-M12G5-0.3-U1G5
User manual			
	Electronics manual, CPX bus node, type CPX-M-FB34	German	548759 P.BE-CPX-PNIO-DE
		English	548760 P.BE-CPX-PNIO-EN
		Spanish	548761 P.BE-CPX-PNIO-ES
		French	548762 P.BE-CPX-PNIO-FR
		Italian	548763 P.BE-CPX-PNIO-IT
		Swedish	548764 P.BE-CPX-PNIO-SV

Terminal CPX

Technical data – Bus node CPX-FB38

FESTO



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 IP65/67 protection.

Both connections are equivalent 100BaseTX Ethernet ports with integrated auto MDI functionality

(cross-over and patch cables can be used) that are brought together via an internal switch.

- Maximum segment length 100 m
- Transmission rate 100 Mbps

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 fieldbus 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 fieldbus 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 fieldbus node only provides the communication interface to the PLC.

Communication between the CPX-FEC and CPX fieldbus node is established

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

- 8 byte outputs
- 8 byte inputs

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

- 56 byte inputs
- 56 byte outputs

Terminal CPX

Technical data – Bus node CPX-FB38

General technical data				
Type			CPX-FB38	
Fieldbus interface			Two plug connectors M12, D-coded, 4-pin	
Baud rate		[Mbps]	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			<ul style="list-style-type: none">• Channel and module-oriented diagnostics• Undervoltage of modules• Diagnostic memory	
Configuration support			XML file	
Parameterisation			<ul style="list-style-type: none">• System parameters• Diagnostic behaviour• Signal setup• Fail-safe response• Forcing of channels	
Additional functions			<ul style="list-style-type: none">• 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			Typically 100	
Protection class to EN 60529			IP65/IP67	
Temperature range	Operation	[°C]	– 5... +50	
	Storage/transport	[°C]	–20 ... +70	
Materials	Housing		Reinforced polyamide	
Grid dimension			[mm]	50
Dimensions (incl. interlinking block) W x L x H			[mm]	50 x 107 x 50
Weight			[g]	125

Note

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

Note

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

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

Terminal CPX

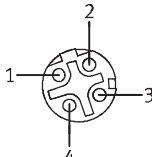
Technical data – Bus node CPX-FB38

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Connection and display components

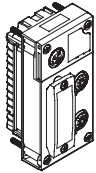
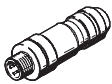
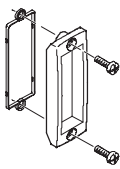

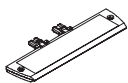
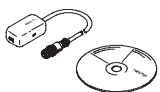
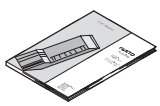


Pin allocation for the fieldbus interface

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

Terminal CPX

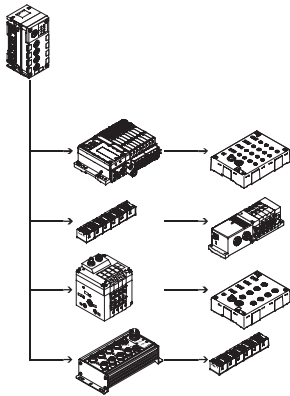
Accessories – Bus node CPX-FB38

Ordering data				
Designation			Part No.	Type
Bus node				
	EtherCAT fieldbus node		552046	CPX-FB38
Bus connection				
	M12x1 plug, 4-pin, D-coded		543109	NECU-M-S-D12G4-C2-ET
	Inspection cover, transparent		533334	AK-SUB-9/15-B
	Cover cap for sealing unused bus connections (10 pieces)		165592	ISK-M12
	Inscription label holder for connection block		536593	CPX-ST-1
	Adapter from 5-pin M12 to mini USB socket and controller software		547432	NEFC-M12G5-0.3-U1G5
User manual				
	Electronics manual, CPX bus node, type CPX-FB38	German	562524	P.BE-CPX-FB38-DE
		English	562525	P.BE-CPX-FB38-EN
		Spanish	562526	P.BE-CPX-FB38-ES
		French	562527	P.BE-CPX-FB38-FR
		Italian	562528	P.BE-CPX-FB38-IT
		Swedish	562529	P.BE-CPX-FB38-SV

Terminal CPX

Technical data – CPX-CP interface

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



Application

CP connection

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

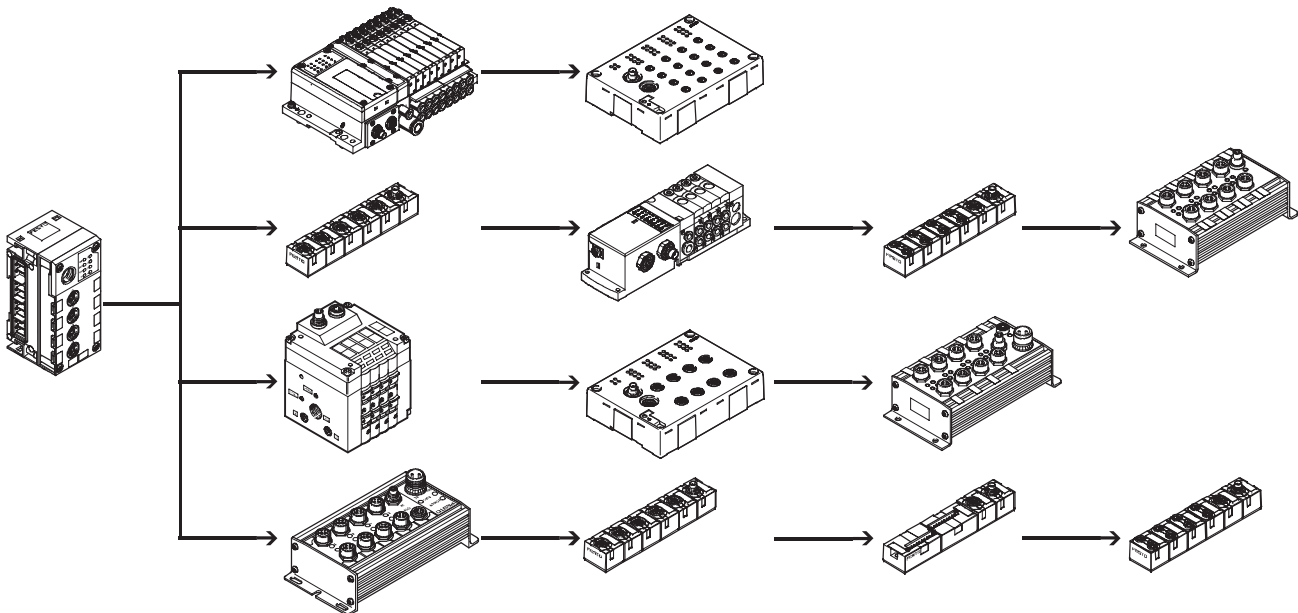
24 V, but with a common reference potential. The valve terminals with CP string extension (or outputs) are supplied with voltage for the electronics and valves by the interlinking block.

The following combinations are made possible by the CP interface:

- Centralised analogue and digital inputs and outputs of the CPX terminal

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

Configuration example – CP interface with CP modules



Terminal CPX

Technical data – CPX-CP interface

Implementation

The CPX-CP interface supports the CPI system:

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

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 maximum limit of 4 modules and/or 32 inputs/32 outputs per string

Maximum extension:

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

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

Note

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

Terminal CPX

Technical data – CPX-CP interface

FESTO

General technical data			
Type			CPX-CP-4-FB
Brief description			CP interface
Max. number of	CP strings		4
	CP modules per string		4
	Outputs per string		32
	Inputs per string		32
CP connection			M9 socket, 5-pin
Baud rate		[kbps]	1,000
Cycle time	CP modules without CPI functionality	[ms]	4
	CP modules with CPI functionality	[ms]	2
LED displays			L1 ... 4 = Status of the CP string 1 ... 4 PS = Electronic supply, sensor supply PL = Load supply RN = Status of the CP system SF = System fault
Device-specific diagnostics			Via bus node
Operating voltage	Nominal value	[V DC]	24 (reverse polarity protected)
	Permissible range	[V DC]	18 ... 30
	Power failure buffering	[ms]	20
Supply voltage of sensors		[V DC]	24 ±25% coming from bus node
Load voltage of actuators		[V DC]	24 ±10% coming from bus node
Current consumption	Without CP modules	[A]	Max. 0.2
	Per CP string	[A]	Max. 1.6
Protection class to EN 60529			IP65/IP67
Temperature range	Operation	[°C]	–5 ... +50
	Storage/transport	[°C]	–20 ... +70
Materials			Polyamide
Grid dimension		[mm]	50
Dimensions (incl. interlinking block) W x L x H		[mm]	50 x 107 x 45
Weight		[g]	140

Note

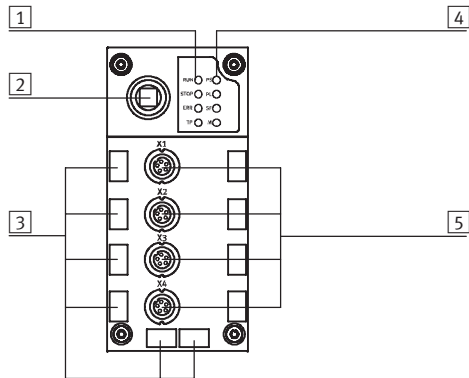
Please observe the general limits and guidelines for the system when configuring the electrical modules.

Terminal CPX

Accessories *2d CPX-CP interface

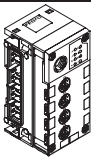



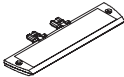

FESTO

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)

Ordering data

Designation			Part No.	Type
CP interface				
	Interface for max. 16 I/O modules and valve terminals of the CPI system		526705	CPX-CP-4-FB
Bus connection				
	Cover cap	M9	356684	FLANSCHDOSE SER.712
		M12	165592	ISK-M12
	Connecting cable WS-WD	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 GS-GD	2 m	540332	KVI-CP-3-GS-GD-2
		5 m	540333	KVI-CP-3-GS-GD-5
		8 m	540334	KVI-CP-3-GS-GD-8
	Inscription label holder for connection block		536593	CPX-ST-1
User manual				
	User manual for CPX-CP interface	German	539293	P.BE-CPX-CP-DE
		English	539294	P.BE-CPX-CP-EN
		Spanish	539295	P.BE-CPX-CP-ES
		French	539296	P.BE-CPX-CP-FR
		Italian	539297	P.BE-CPX-CP-IT
		Swedish	539298	P.BE-CPX-CP-SV

Control block CPX-CMXX

Technical data

FESTO

The control block CPX-CMXX is an intelligent module in the CPX terminal for controlling electric drive units. Individual axis and simple multi-axis applications can easily be implemented. Programming is not necessary. Configuration, parameterisation and commissioning of the application is easily achieved with the Festo Configuration Tool (FCT).

- Configuration of two axes groups with up to four axes each is possible
- There are 1024 position sets available per axes group
- Input or Teach-In of positions in specified set structure
- Parameterisation via Ethernet
- Communication protocol: FHPP-MAX, Festo handling and positioning profile for multi-axis movements.
- Control of drive units via CANopen



General technical data		
Protocol		FHPP-Max
Maximum address volume for inputs	[byte]	16
Maximum address volume for outputs	[byte]	16
LED displays (bus-specific)	RUN:	Program is executed
	STOP:	Program is stopped
	ERR:	Error in the program execution
	TP:	Status of Ethernet connection
LED displays (product-specific)	M:	Modify, parameterisation
	PS:	Electronic supply, sensor supply
Device-specific diagnostics	Diagnostic memory	
	Channel and module-oriented diagnostics	
	Undervoltage/short circuit of modules	
Parameterisation	System parameters	
Operating elements	Rotary switch for RUN/STOP	
Configuration support	Festo Configuration Tool (FCT)	
Additional functions	System status can be displayed using process data	
	Additional diagnostic interface for FCT	
Supported kinematic system	2-axis gantries (X-Z / Y-Z / X-Y)	
	3-axis gantries (X-Y-Z)	
Total number of axes	8	
Distribution of axes	2 groups with max. 4 axes	
Nominal operating voltage	[V DC]	24
Operating voltage range	[V DC]	18 ... 30
Power failure bridging	[ms]	10
Intrinsic current consumption at nominal operating voltage	[mA]	Typ. 85
Protection class to EN 60529	IP65/IP67	
Dimensions W x L x H (including interlinking block)	[mm]	50 x 107 x 55
Product weight	[g]	155
Materials		
Housing	Reinforced polyamide, polycarbonate	
Note on materials	RoHS-compliant	

Control block CPX-CMXX

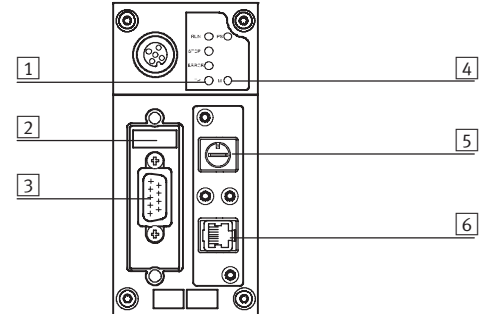
Technical data

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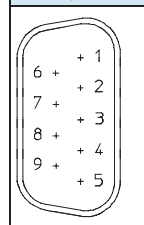
Technical data – Interfaces		
Ethernet		
Ethernet interface		Socket RJ45, 8-pin, for configuration only
Baud rate	[Mbit/s]	10/100
Interface		
Control interface		CAN bus
Baud rate	[Mbit/s]	1

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

Connection and display components



- 1 LED display, bus-specific
- 2 DIL switch
- 3 Control interface (plug, Sub-D, 9-pin)
- 4 LED display, product-specific
- 5 16-position rotary switch (RUN/STOP)
- 6 Ethernet interface (RJ45, socket, 8-pin)

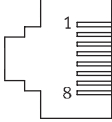
Pin allocation – Control interface			
	Pin	Signal	Meaning
Sub-D plug			
	1	n.c.	Not connected
	2	CAN_L	CAN low
	3	CAN_GND	CAN ground
	4	n.c.	Not connected
	5	CAN_SHLD	Connection to functional earth (FE)
	6	CAN_GND	CAN ground (optional) ¹⁾
	7	CAN_H	CAN high
	8	n.c.	Not connected
	9	n.c.	Not connected
	Housing	Screened	Plug housing must be connected to FE

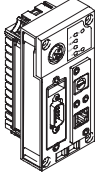
1) If a drive controller is connected to an external power supply, CAN ground (optional), pin 6, cannot be used on the CPX-CMXX.

Control block CPX-CMXX

Technical data

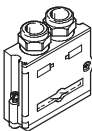





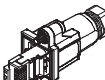

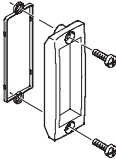
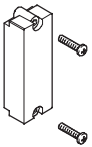
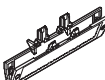
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Pin allocation – Ethernet interface			
	Pin	Signal	Meaning
Plug RJ45			
	1	TD+	Transmitted data+
	2	TD–	Transmitted data–
	3	RD+	Received data+
	4	n.c.	Not connected
	5	n.c.	Not connected
	6	RD–	Received data–
	7	n.c.	Not connected
	8	n.c.	Not connected
	Housing	Screened	Screened

Ordering data		
Designation	Part No.	Type
	Control block	555667 CPX-CMXX

Control block CPX-CMXX

Accessories

Ordering data – Bus connection			
Designation		Part No.	Type
	Sub-D plug, 9-pin	532219	FBS-SUB-9-BU-2x5POL-B
	Bus connection, plug 2xM12, 5-pin	525632	FBA-2-M12-5POL
	Plug socket for fieldbus connection, M12, 5-pin	18324	FBSD-GD-9-5POL
	Plug M12, 5-pin	175380	FBS-M12-5GS-PG9
	Bus connection, 5-pin	525634	FBA-1-SL-5POL
	Bus connection, screw terminal, 5-pin	525635	FBSD-KL-2x5POL
	Plug RJ45, 8-pin	534494	FBS-RJ45-8-GS
	Cover for RJ45 connection	534496	AK-RJ45
	Inspection cover, transparent for plug/socket Sub-D	533334	AK-SUB-9/15-B
	Cover for plug/socket Sub-D	557010	AK-SUB-9/15
	Inscription label holder for connection block	536593	CPX-ST-1

Documentation			
Designation		Language	Part No. Type
	Description of control block CPX-CMXX	German	564221 P.BE-CPX-CMXX-DE
		English	564222 P.BE-CPX-CMXX-EN
	Description of Festo handling and positioning profile for multi-axis movements FHPP-MAX	German	564223 P.BE-CMXX-FHPP-SW-DE
		English	564224 P.BE-CMXX-FHPP-SW-EN

Control block CPX-CM-HPP

Technical data

FESTO

The control block CPX-CM-HPP is a module in the CPX terminal for controlling electric drives.

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

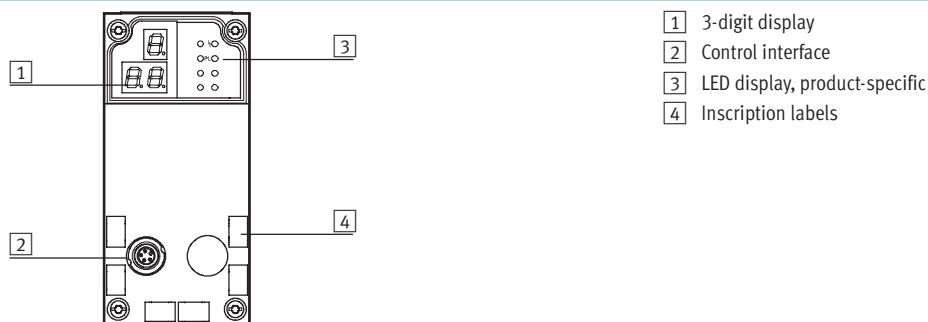
Control block CPX-CM-HPP

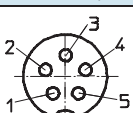
Technical data

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

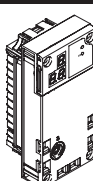
Operating and environmental conditions		
Ambient temperature	[°C]	–5 ... +50
Storage temperature	[°C]	–20 ... +70
CE mark (see declaration of conformity)		To EU Low Voltage Directive

Connection and display components



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

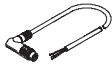
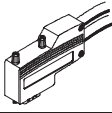
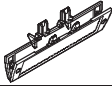
Permissible CPX modules		
CPX module	Protocol	Remarks
CPX-FEC	–	Revision 16 (R16) and above
CPX-CEC-...	–	In preparation
CPX-FB6	Interbus	Not available
CPX-FB11	DeviceNet	Revision 22 (R22) and above
CPX-FB13	Profibus DP	Revision 23 (R23) and above
CPX-FB14	CANopen	Revision 24 (R24) and above
CPX-FB23	CC-Link	In preparation
CPX-FB32	Ethernet/IP	In preparation
CPX-FB33, FB34, FB35	ProfiNet	In preparation
CPX-FB38	EtherCAT	In preparation


Ordering data		
Designation	Part No.	Type
	Control block	562214 CPX-CM-HPP

Control block CPX-CM-HPP

Accessories

FESTO

Ordering data – Bus connection				
Designation		Cable length [m]	Part No.	Type
	Connecting cable	2	563711	NEBC-M9W5-K-2-N-LE3
		5	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 holder for manifold block		536593	CPX-ST-1

Documentation				
Designation		Language	Part No.	Type
	Manual – Control block CPX-CM-HPP	German	568683	P.BE-CPX-CM-HPP-DE
		English	568684	P.BE-CPX-CM-HPP-EN

Axis controllers CPX-CMAX

Technical data

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



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

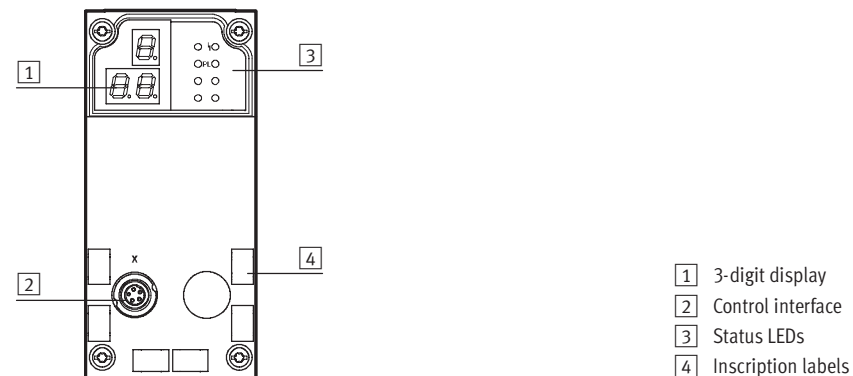
Axis controllers CPX-CMAX

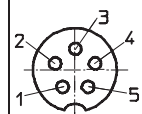
Technical data

FESTO

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

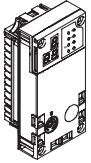


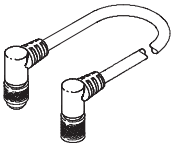
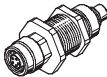
Pin allocation – plug 2			
	Pin	Signal	Designation
	1	+24 V	Nominal operating voltage
	2	+24 V	Load voltage
	3	0 V	Ground
	4	CAN_H	CAN high
	5	CAN_L	CAN low
	Housing	Screened	Cable screening


Permitted bus nodes/FEC			
Bus node/FEC	Protocol	Max. no. of CMAX modules	Remarks
CPX-FEC	–	7	On request
CPX-FB6	Interbus	1	On request
CPX-FB11	DeviceNet	7	Revision 20 (R20) and above
CPX-FB13	Profibus DP	7	Revision 23 (R23) and above
CPX-FB14	CANopen	2	On request
CPX-FB23	CC-Link	7	On request
CPX-FB32	Ethernet/IP	7	On request
CPX-FB33	Profinet, M12	7	On request
CPX-FB34	Profinet, RJ45	7	On request
CPX-FB38	EtherCat	7	On request


Axis controllers CPX-CMAX

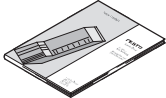
Accessories

Ordering data – Axis controllers			
	Brief description	Part No.	Type
	Order code in the CPX configurator: T21	548932	CPX-CMAX-C1-1

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.	Type
	For mounting on the metal interlinking block	550219	CPX-M-M3X22-4X

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

Documentation ¹⁾			
	Language	Part No.	Type
	DE	559750	P.BE-CPX-CMAX-SYS-DE
	EN	559751	P.BE-CPX-CMAX-SYS-EN
	ES	559752	P.BE-CPX-CMAX-SYS-ES
	FR	559753	P.BE-CPX-CMAX-SYS-FR
	IT	559754	P.BE-CPX-CMAX-SYS-IT
	SV	559755	P.BE-CPX-CMAX-SYS-SV

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

End-position controllers CPX-CMPX

Technical data

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

FESTO



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

End-position controllers CPX-CMPX

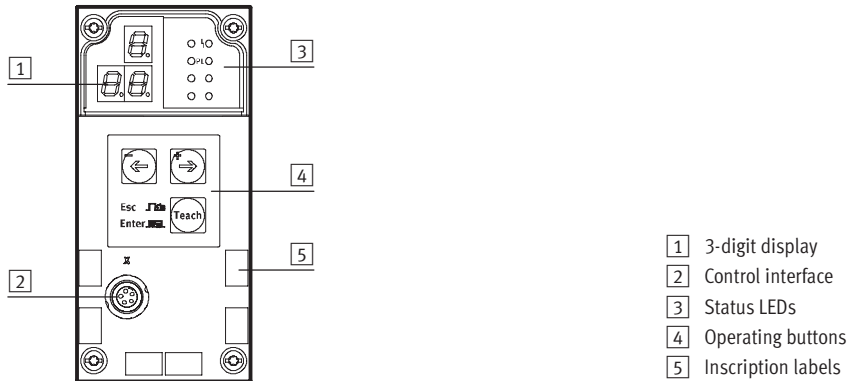
Technical data

FESTO

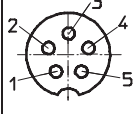
Operating and environmental conditions

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



Pin allocation – plug [2]

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

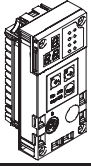
Permitted bus nodes/FEC

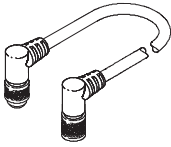
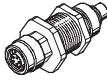
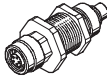
Bus node/FEC	Protocol	Max. no. of CMPX modules	Remarks
CPX-FEC	–	9	Revision 14 (R14) and above
CPX-FB6	Interbus	1	On request
CPX-FB11	DeviceNet	9	Revision 20 (R20) and above
CPX-FB13	Profibus DP	9	Revision 22 (R22) and above
CPX-FB14	CANopen	3	On request
CPX-FB23	CC-Link	9	On request
CPX-FB32	Ethernet/IP	9	On request
CPX-FB33	Profinet, M12	9	On request
CPX-FB34	Profinet, RJ45	9	On request
CPX-FB38	EtherCat	9	On request


End-position controllers CPX-CMPX

Accessories


FESTO

Ordering data – End-position controllers			
	Brief description	Part No.	Type
	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.	Type
	For mounting on the metal interlinking block	550219	CPX-M-M3X22-4X

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

Documentation ¹⁾			
	Language	Part No.	Type
	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
	SV	555484	P.BE-CPX-CMPX-SYS-SV

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

Measuring modules CPX-CMIX

Technical data

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



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

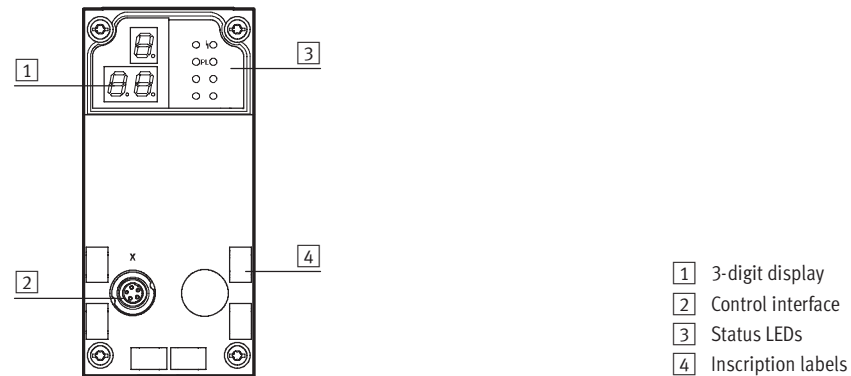
Measuring modules CPX-CMIX

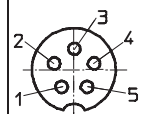
Technical data

FESTO

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

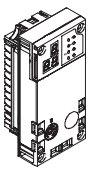


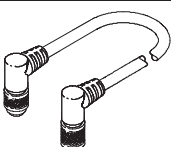
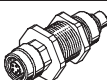
Pin allocation – Plug 2			
	Pin	Signal	Designation
	1	+24 V	Nominal operating voltage
	2	+24 V	Load voltage
	3	0 V	Ground
	4	CAN_H	CAN high
	5	CAN_L	CAN low
	Housing	Screened	Cable screening

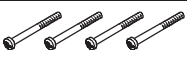
Permitted bus nodes/FEC			
Bus node/FEC	Protocol	Max. no. of CMIX modules	Remarks
CPX-FEC	–	9	On request
CPX-FB6	Interbus	2	On request
CPX-FB11	DeviceNet	9	Revision 20 (R20) and above
CPX-FB13	Profibus DP	9	Revision 23 (R23) and above
CPX-FB14	CANopen	3	On request
CPX-FB23	CC-Link	9	On request
CPX-FB32	Ethernet/IP	9	On request
CPX-FB33	Profinet, M12	9	On request
CPX-M-FB34	Profinet, RJ45	9	On request
CPX-FB38	EtherCat	9	On request


Measuring modules CPX-CMIX

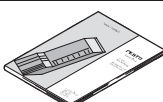
Accessories

Ordering data – Measuring module			
	Brief description	Part No.	Type
	Order code in the CPX configurator: T23	567417	CPX-CMIX-M1-1

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.	Type
	For mounting on the metal interlinking block	550219	CPX-M-M3X22-4X

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

Documentation ¹⁾			
	Language	Part No.	Type
	DE	567053	P.BE-CPX-CMIX-DE
	EN	567054	P.BE-CPX-CMIX-EN
	ES	567055	P.BE-CPX-CMIX-ES
	FR	567056	P.BE-CPX-CMIX-FR
	IT	567057	P.BE-CPX-CMIX-IT
	SV	567058	P.BE-CPX-CMIX-SV

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

Terminal CPX

Technical data – Input module, digital

FESTO

Function

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

Applications

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



General technical data							
Type			CPX-4DE	CPX-8DE	CPX-8DE-D	CPX-8NDE	
No. of inputs			4	8	8	8	
Max. residual current of inputs per module			[A]	0.7	1	0.7	0.7
Fuse protection			Internal electronic fuse for each module	Internal electronic fuse for each module	Internal electronic fuse for each channel	Internal electronic fuse for each module	
Intrinsic current consumption at operating voltage			[mA]	Typically 15			
Operating voltage	Nominal value		[V DC]	24			
	Permissible range		[V DC]	18 ... 30			
Electrical isolation	Channel – channel		No				
	Channel – internal bus		No				
Switching level	Signal 0		[V DC]	≤ 5		≥ 11	
	Signal 1		[V DC]	≥ 11		≤ 5	
Input debounce time			[ms]	3 (0.1, 10, 20 parameterisable)			
Input characteristic curve			IEC 1131 Part 2				
Switching logic			Positive logic (PNP)			Negative logic (NPN)	
LED displays	Group diagnostics		1	1	1	1	
	Channel diagnostics		–	–	8	–	
	Channel status		4	8	8	8	
Diagnostics			Short circuit/overload per channel				
Parameterisation			<ul style="list-style-type: none">• Module monitoring• Behaviour after short circuit• Input debounce time• Signal stretching time				
Protection class to EN 60529			Depending on connection block				
Temperature range	Operation		[°C]	–5 ... +50			
	Storage/transport		[°C]	–20 ... +70			
Materials			Reinforced polyamide, polycarbonate				
Grid dimension			[mm]	50			
Dimensions (incl. interlinking block and connection block) W x L x H			[mm]	50 x 107 x 50			
Weight			[g]	38			

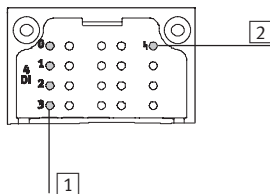
Terminal CPX

Technical data – Input module, digital

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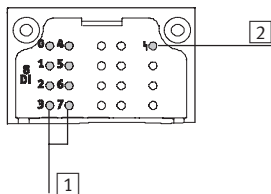
Connection and display components

CPX-4DE



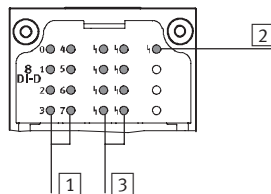
1 Status LEDs (green)

CPX-8DE



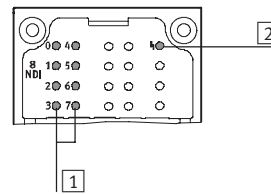
2 Error LED (red, module error)

CPX-8DE-D



3 Channel-specific error LEDs (red)

CPX-8NDE



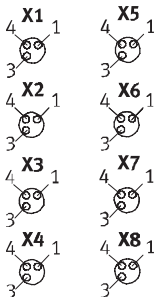
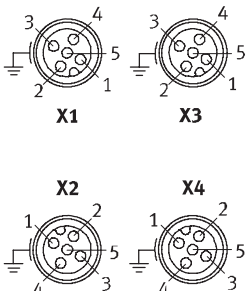
Allocation to inputs

➔ Pin allocation for module

Connection block/digital input module combinations

Connection blocks	Part No.	Digital input modules			
		CPX-4DE	CPX-8DE	CPX-8DE-D	CPX-8NDE
CPX-AB-8-M8-3POL	195706	■	■	■	■
CPX-AB-4-M12X2-5POL	195704	■	■	■	■
CPX-AB-4-M12X2-5POL-R	541254	■	■	■	■
CPX-AB-8-KL-4POL	195708	■	■	■	■
CPX-AB-1-SUB-BU-25POL	525676	■	■	■	■
CPX-AB-4-HAR-4POL	525636	■	■	■	■
CPX-M-4-M12x2-5POL	549367	■	■	■	■
CPX-AB-4-M12x2-5P-R-M3	546997	■	■	■	■

Pin allocation

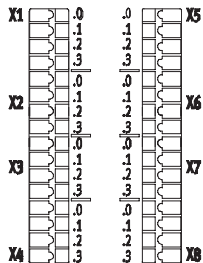
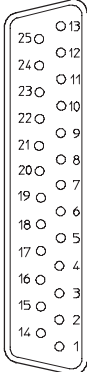
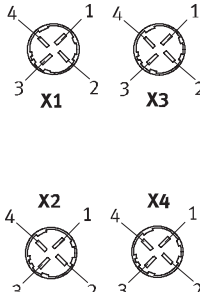
Connection block inputs		CPX-4DE	CPX-8DE, CPX-8DE-D and CPX-8NDE		
CPX-AB-8-M8-3POL					
	<p>X1.1: 24 V_{SEN} X1.3: 0 V_{SEN} X1.4: Input x</p> <p>X2.1: 24 V_{SEN} X2.3: 0 V_{SEN} X2.4: Input x+1</p> <p>X3.1: 24 V_{SEN} X3.3: 0 V_{SEN} X3.4: Input x+1</p> <p>X4.1: 24 V_{SEN} X4.3: 0 V_{SEN} X4.4: n.c.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

1) Speedcon quick lock, screening additionally on metal thread

Terminal CPX

Technical data – Input module, digital

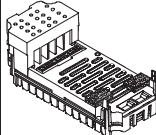
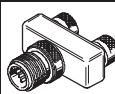


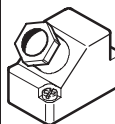

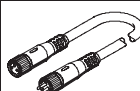
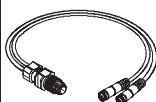
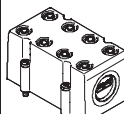

FESTO

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

Terminal CPX

Accessories – Input module, digital

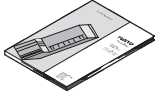
FESTO

Ordering data				
Designation			Part No.	Type
Input module, digital				
	4 digital inputs, positive logic (PNP)		195752	CPX-4DE
	8 digital inputs, positive logic (PNP)		195750	CPX-8DE
	8 digital inputs, positive logic (PNP)		541480	CPX-8DE-D
	8 digital inputs, negative logic (NPN)		543813	CPX-8NDE
Plug				
	Push-in T-connector	2x socket M12, 5-pin 1x plug M12, 4-pin	541596	NEDU-M12D5-M12T4
		2x socket M8, 3-pin 1x plug M12, 4-pin	541597	NEDU-M8D3-M12T4
	Plug	M8, 3-pin, solderable	18696	SEA-GS-M8
		M8, 3-pin, screw-in	192009	SEA-3GS-M8-S
		M12, 4-pin, PG7	18666	SEA-GS-7
		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
	Sub-D plug, 25-pin		527522	SD-SUB-D-ST25
Connecting cable				
	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
		5.0 m	165611	KM8-M8-GSGD-5
	Connecting cable 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-... ➔ 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	18687	KM12-DUO-M8-WDWD
Cover				
	Cover for CPX-AB-8-KL-4POL (IP65/67) – 8 cable through-feeds M9 – 1 cable through-feed for multi-pin plug		538219	AK-8KL
	Fittings kit		538220	VG-K-M9
Screening plate				
	Screening plate for M12 connections		526184	CPX-AB-S-4-M12

Terminal CPX

Accessories – Input module, digital

FESTO

Ordering data				
Designation			Part No.	Type
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
		Swedish	526444	P.BE-CPX-EA-SV

Terminal CPX

Technical data – Input module, digital, 16 inputs

FESTO

Function

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

Depending on the connection block selected, the module supports various connection concepts with different numbers of sockets (single or double allocation).

Applications

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



General technical data				
Type			CPX-16DE	CPX-M-16DE-D
No. of inputs			16	16
Max. power supply	Per module	[A]	1.8	1.8
	Per channel	[A]	0.5	0.5 (per channel pair)
Fuse protection			Internal electronic fuse for each module	Internal electronic fuse for each channel pair
Intrinsic current consumption at operating voltage			[mA]	Typically 15
Supply voltage of sensors			[V DC]	Typically 34
Electrical isolation	Channel – channel		No	No
	Channel – internal bus		No	No
Switching level	Signal 0	[V DC]	≤ 5	≤ 5
	Signal 1	[V DC]	≥ 11	≥ 11
Input debounce time			[ms]	3 (0.1 ms, 10, 20 parameterisable)
Input characteristic curve				IEC 1131-2
Switching logic				IEC 1131-2
LED displays			Positive logic (PNP)	Positive logic (PNP)
	Group diagnostics		1	1
	Channel diagnostics		–	16
	Channel status		16	16
Diagnostics			Short circuit/overload, sensor supply	Short circuit/overload per channel
Parameterisation			<ul style="list-style-type: none"> • Module monitoring • Behaviour after short circuit • Input debounce time • Signal stretching time 	<ul style="list-style-type: none"> • Module monitoring • Behaviour after short circuit • Input debounce time • Signal stretching time
Protection class to EN 60529			Depending on connection block	Depending on connection block
Temperature range	Operation	[°C]	–5 ... +50	–5 ... +50
	Storage/transport	[°C]	–20 ... +70	–20 ... +70
Materials			Polymer	Polymer
Grid dimension			[mm]	50
Dimensions (incl. interlinking block and connection block) W x L x H			[mm]	50 x 107 x 50
Weight			[g]	38

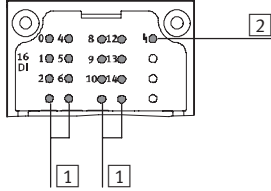
Terminal CPX

Technical data – Input module, digital, 16 inputs

FESTO

Connection and display components

CPX-16DE











- 1 Status LEDs (green)
Allocation to inputs
→ Pin allocation for module
- 2 Error LED (red, module error)

Connection block/digital input module combinations

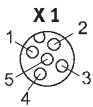
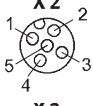
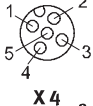
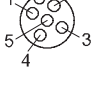
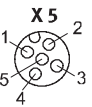
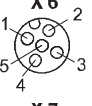
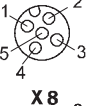
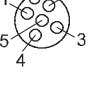
Connection blocks	Part No.	Digital input modules	
		CPX-16DE	CPX-M-16DE-D
CPX-AB-8-M8X2-4POL	541256	■	–
CPX-AB-8-KL-4POL	195708	■	–
CPX-AB-1-SUB-BU-25POL	525676	■	–
CPX-M-8-M12x2-5POL	549335	–	■
CPX-AB-8-M8x2-4P-M3	556166	■	–

Pin allocation

Connection block inputs		CPX-16DE	
CPX-AB-8-M8x2-4POL			
   	   	X1.1: 24 V _{SEN} X1.2: Input x+1 X1.3: 0 V _{SEN} X1.4: Input x	X5.1: 24 V _{SEN} X5.2: Input x+9 X5.3: 0 V _{SEN} X5.4: Input x+8
		X2.1: 24 V _{SEN} X2.2: Input x+3 X2.3: 0 V _{SEN} X2.4: Input x+2	X6.1: 24 V _{SEN} X6.2: Input x+11 X6.3: 0 V _{SEN} X6.4: Input x+10
		X3.1: 24 V _{SEN} X3.2: Input x+5 X3.3: 0 V _{SEN} X3.4: Input x+4	X7.1: 24 V _{SEN} X7.2: Input x+13 X7.3: 0 V _{SEN} X7.4: Input x+12
		X4.1: 24 V _{SEN} X4.2: Input x+7 X4.3: 0 V _{SEN} X4.4: Input x+6	X8.1: 24 V _{SEN} X8.1: Input x+15 X8.3: 0 V _{SEN} X8.4: Input x+14

Terminal CPX

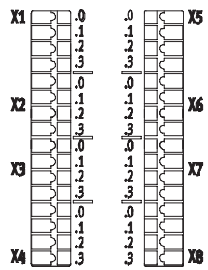
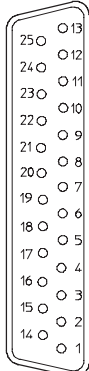
Technical data – Input module, digital, 16 inputs

Pin allocation		
Connection block inputs	CPX-M-16DE-D	
CPX-M-8-M12x2-5POL		
<div><div>X 1</div><div>X 2</div><div>X 3</div><div>X 4</div><div>X 5</div><div>X 6</div><div>X 7</div><div>X 8</div></div> <td><div><div>X1.1: 24 V_{SK}</div><div>X1.2: Input x+1</div><div>X1.3: 0 V_{SK}</div><div>X1.4: Input x</div><div>X1.5: FE</div><div>X2.1: 24 V_{SK+2}</div><div>X2.2: Input x+3</div><div>X2.3: 0 V_{SK+2}</div><div>X2.4: Input x+2</div><div>X2.5: FE</div><div>X3.1: 24 V_{SK+4}</div><div>X3.2: Input x+5</div><div>X3.3: 0 V_{SK+4}</div><div>X3.4: Input x+4</div><div>X3.5: FE</div><div>X4.1: 24 V_{SK+6}</div><div>X4.2: Input x+7</div><div>X4.3: 0 V_{SK+6}</div><div>X4.4: Input x+6</div><div>X4.5: FE</div></div></td> <td><div><div>X5.1: 24 V_{SK+8}</div><div>X5.2: Input x+9</div><div>X5.3: 0 V_{SK+8}</div><div>X5.4: Input x+8</div><div>X5.5: FE</div><div>X6.1: 24 V_{SK+10}</div><div>X6.2: Input x+11</div><div>X6.3: 0 V_{SK+10}</div><div>X6.4: Input x+10</div><div>X6.5: FE</div><div>X7.1: 24 V_{SK+12}</div><div>X7.2: Input x+13</div><div>X7.3: 0 V_{SK+12}</div><div>X7.4: Input x+12</div><div>X7.5: FE</div><div>X8.1: 24 V_{SK+14}</div><div>X8.2: Input x+15</div><div>X8.3: 0 V_{SK+14}</div><div>X8.4: Input x+14</div><div>X8.5: FE</div></div></td>	<div><div>X1.1: 24 V_{SK}</div><div>X1.2: Input x+1</div><div>X1.3: 0 V_{SK}</div><div>X1.4: Input x</div><div>X1.5: FE</div><div>X2.1: 24 V_{SK+2}</div><div>X2.2: Input x+3</div><div>X2.3: 0 V_{SK+2}</div><div>X2.4: Input x+2</div><div>X2.5: FE</div><div>X3.1: 24 V_{SK+4}</div><div>X3.2: Input x+5</div><div>X3.3: 0 V_{SK+4}</div><div>X3.4: Input x+4</div><div>X3.5: FE</div><div>X4.1: 24 V_{SK+6}</div><div>X4.2: Input x+7</div><div>X4.3: 0 V_{SK+6}</div><div>X4.4: Input x+6</div><div>X4.5: FE</div></div>	<div><div>X5.1: 24 V_{SK+8}</div><div>X5.2: Input x+9</div><div>X5.3: 0 V_{SK+8}</div><div>X5.4: Input x+8</div><div>X5.5: FE</div><div>X6.1: 24 V_{SK+10}</div><div>X6.2: Input x+11</div><div>X6.3: 0 V_{SK+10}</div><div>X6.4: Input x+10</div><div>X6.5: FE</div><div>X7.1: 24 V_{SK+12}</div><div>X7.2: Input x+13</div><div>X7.3: 0 V_{SK+12}</div><div>X7.4: Input x+12</div><div>X7.5: FE</div><div>X8.1: 24 V_{SK+14}</div><div>X8.2: Input x+15</div><div>X8.3: 0 V_{SK+14}</div><div>X8.4: Input x+14</div><div>X8.5: FE</div></div>

Terminal CPX

FESTO

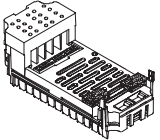
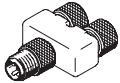

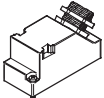

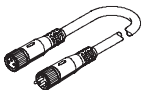
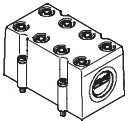
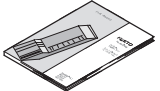
Technical data – Input module, digital, 16 inputs

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

Terminal CPX

Accessories – Input module, digital, 16 inputs

FESTO

Ordering data				
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 metal		550202	CPX-M-16DE-D
Plug				
	Push-in T-connector	2x socket M8, 3-pin 1x plug M8, 4-pin	544391	NEDU-M8D3-M8T4
	M8 plug, 3-pin	Solderable	18696	SEA-GS-M8
		Screw-in	192009	SEA-3GS-M8-S
	Sub-D plug, 25-pin		527522	SD-SUB-D-ST25
Connecting cable				
	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
		5.0 m	165611	KM8-M8-GSGD-5
	Modular system for connecting cables		–	NEBU-... → Info 322 → Internet: nebu
Cover				
	Cover for CPX-AB-8-KL-4POL (IP65/67) – 8 cable through-feeds M9 – 1 cable through-feed for multi-pin plug		538219	AK-8KL
	Fittings kit		538220	VG-K-M9
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
		Swedish	526444	P.BE-CPX-EA-SV

Terminal CPX

Technical data – Output module, digital

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Function

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

Applications

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



General technical data				
Type		CPX-4DA	CPX-8DA	CPX-8DA-H
No. of outputs		4	8	8
Max. power supply	Per module	4		8.4
	Per channel	1 (24 W lamp load, 4 channels can be connected in parallel)	0.5 (12 W lamp load, 8 channels can be connected in parallel)	2.1 (50 W lamp load), per channel pair
Fuse protection (short circuit)		Internal electronic fuse for each channel		
Module current consumption (voltage supply for electronics)		Typically 16		Typically 34
Operating voltage	Nominal value	24		
	Permissible range	18 ... 30		
Electrical isolation	Channel – channel	No		
	Channel – internal bus	Yes, using an intermediate supply		
Output characteristic curve		To IEC 11 31-2		
Switching logic		Positive logic (PNP)		
LED displays	Group diagnostics	1	1	1
	Channel diagnostics	4	8	8
	Channel status	4	8	8
Diagnostics		<ul style="list-style-type: none"> • Short circuit/overload, channel x • Undervoltage of outputs 		
Parameterisation		<ul style="list-style-type: none"> • Module monitoring • Behaviour after short circuit • Fail-safe channel x • Forcing channel x • Idle mode channel x 		
Protection class to EN 60529		Depending on connection block		
Temperature range	Operation	–5 ... +50		
	Storage/transport	–20 ... +70		
Materials		Reinforced polyamide, polycarbonate		
Grid dimension		50		
Dimensions (incl. interlinking block and connection block) W x L x H		50 x 107 x 50		
Weight		38		

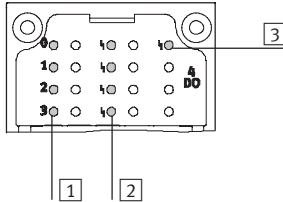
Terminal CPX

Technical data – Output module, digital

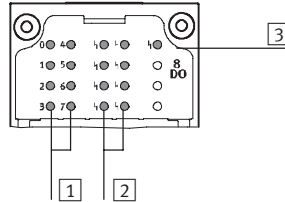
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Connection and display components

CPX-4DA



CPX-8DA

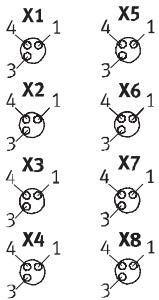


- 1 Status LEDs (yellow)
Allocation to outputs
→ Pin allocation for module
- 2 Channel-specific error LEDs (red)
- 3 Error LED (red, module error)

Connection block/digital output module combinations

Connection blocks	Part No.	Digital output module		
		CPX-4DA	CPX-8DA	CPX-8DA-H
CPX-AB-8-M8-3POL	195706	■	■	–
CPX-AB-8-M8X2-4POL	541256	■	■	■
CPX-AB-4-M12X2-5POL	195704	■	■	–
CPX-AB-4-M12X2-5POL-R	541254	■	■	■
CPX-AB-8-KL-4POL	195708	■	■	■
CPX-AB-1-SUB-BU-25POL	525676	■	■	■
CPX-AB-4-HAR-4POL	525636	■	■	–
CPX-AB-8-M8x2-4P-M3	556166	■	■	■
CPX-AB-4-M12x2-5P-R-M3	546997	■	■	■
CPX-M-4-M12x2-5POL	549367	■	■	■

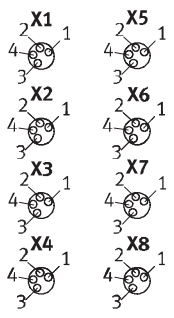
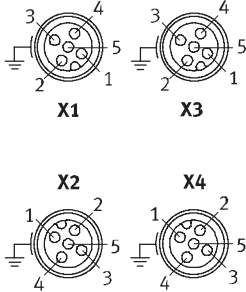
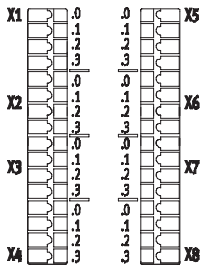
Pin allocation

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

Terminal CPX

Technical data – Output module, digital

FESTO

Pin allocation				
Connection block outputs		CPX-4DA		CPX-8DA and CPX-8DA-H
CPX-AB-8-M8X2-4POL and CPX-AB-8-M8x2-4P-M3				
	X1.1: 0 V _{OUT} X1.2: Output x+1 X1.3: 0 V _{OUT} X1.4: Output x X2.1: 0 V _{OUT} X2.2: n.c. X2.3: 0 V _{OUT} X2.4: Output x+1 X3.1: 0 V _{OUT} X3.2: Output x+3 X3.3: 0 V _{OUT} X3.4: Output x+2 X4.1: 0 V _{OUT} X4.2: n.c. X4.3: 0 V _{OUT} X4.4: Output x+3	X5.1: 0 V _{OUT} X5.2: n.c. X5.3: 0 V _{OUT} X5.4: n.c. X6.1: 0 V _{OUT} X6.2: n.c. X6.3: 0 V _{OUT} X6.4: n.c. X7.1: 0 V _{OUT} X7.2: n.c. X7.3: 0 V _{OUT} X7.4: n.c. X8.1: 0 V _{OUT} x+1 X8.2: n.c. X8.3: 0 V _{OUT} x+3 X8.4: n.c.	X1.1: 0 V _{OUT} X1.2: Output x+1 X1.3: 0 V _{OUT} X1.4: Output x X2.1: 0 V _{OUT} X2.2: Output x+3 X2.3: 0 V _{OUT} X2.4: Output x+2 X3.1: 0 V _{OUT} X3.2: Output x+5 X3.3: 0 V _{OUT} X3.4: Output x+4 X4.1: 0 V _{OUT} X4.2: Output x+7 X4.3: 0 V _{OUT} X4.4: Output x+6	X5.1: 0 V _{OUT} X5.2: n.c. X5.3: 0 V _{OUT} X5.4: n.c. X6.1: 0 V _{OUT} X6.2: n.c. X6.3: 0 V _{OUT} X6.4: n.c. X7.1: 0 V _{OUT} X7.2: n.c. X7.3: 0 V _{OUT} X7.4: n.c. X8.1: 0 V _{OUT} X8.2: n.c. X8.3: 0 V _{OUT} X8.4: n.c.
CPX-AB-4-M12X2-5POL ¹⁾ , CPX-AB-4-M12X2-5POL-R ²⁾ and CPX-AB-4-M12x2-5P-R-M3 ²⁾				
	X1.1: n.c. X1.2: Output x+1 X1.3: 0 V _{OUT} X1.4: Output x X1.5: FE X2.1: n.c. X2.2: n.c. X2.3: 0 V _{OUT} X2.4: Output x+1 X2.5: FE	X3.1: n.c. X3.2: Output x+3 X3.3: 0 V _{OUT} X3.4: Output x+2 X3.5: FE X4.1: n.c. X4.2: n.c. X4.3: 0 V _{OUT} X4.4: Output x+3 X4.5: FE	X1.1: n.c. X1.2: Output x+1 X1.3: 0 V _{OUT} X1.4: Output x X1.5: FE X2.1: n.c. X2.2: Output x+3 X2.3: 0 V _{OUT} X2.4: Output x+2 X2.5: FE	X3.1: n.c. X3.2: Output x+5 X3.3: 0 V _{OUT} X3.4: Output x+4 X3.5: FE X4.1: n.c. X4.2: Output x+7 X4.3: 0 V _{OUT} X4.4: Output x+6 X4.5: FE
CPX-AB-8-KL-4POL				
	X1.0: n.c. X1.1: 0 V _{OUT} X1.2: Output x X1.3: FE X2.0: n.c. X2.1: 0 V _{OUT} X2.2: Output x+1 X2.3: FE X3.0: n.c. X3.1: 0 V _{OUT} X3.2: Output x+1 X3.3: FE X4.0: n.c. X4.1: 0 V _{OUT} X4.2: n.c. X4.3: FE	X5.0: n.c. X5.1: 0 V _{OUT} X5.2: Output x+2 X5.3: FE X6.0: n.c. X6.1: 0 V _{OUT} X6.2: Output x+3 X6.3: FE X7.0: n.c. X7.1: 0 V _{OUT} X7.2: Output x+3 X7.3: FE X8.0: n.c. X8.1: 0 V _{OUT} X8.2: n.c. X8.3: FE	X1.0: n.c. X1.1: 0 V _{OUT} X1.2: Output x X1.3: FE X2.0: n.c. X2.1: 0 V _{OUT} X2.2: Output x+1 X2.3: FE X3.0: n.c. X3.1: 0 V _{OUT} X3.2: Output x+2 X3.3: FE X4.0: n.c. X4.1: 0 V _{OUT} X4.2: Output x+3 X4.3: FE	X5.0: n.c. X5.1: 0 V _{OUT} X5.2: Output x+4 X5.3: FE X6.0: n.c. X6.1: 0 V _{OUT} X6.2: Output x+5 X6.3: FE X7.0: n.c. X7.1: 0 V _{OUT} X7.2: Output x+6 X7.3: FE X8.0: n.c. X8.1: 0 V _{OUT} X8.2: Output x+7 X8.3: FE

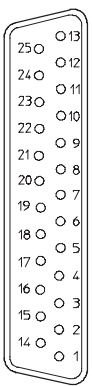
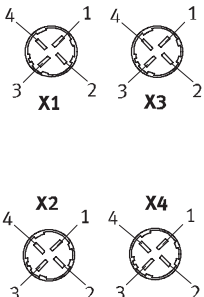
1) Not suitable for CPX-8DA-H.

2) Speedcon quick lock, screening additionally on metal thread

Terminal CPX

Technical data – Output module, digital

FESTO

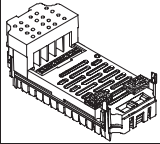
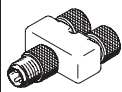
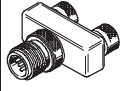


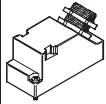

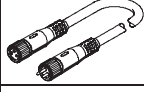

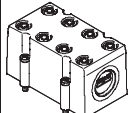
Pin allocation				
Connection block outputs	CPX-4DA		CPX-8DA and CPX-8DA-H	
CPX-AB-1-SUB-BU-25POL				
	1: Output x 2: Output x+1 3: Output x+1 4: n.c. 5: n.c. 6: 0 V _{OUT} 7: n.c. 8: 0 V _{OUT} 9: n.c. 10: n.c. 11: 0 V _{OUT} 12: 0 V _{OUT} 13: FE	14: Output x+2 15: Output x+3 16: Output x+3 17: n.c.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

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

Terminal CPX

Accessories – Output module, digital

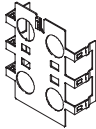
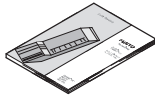
FESTO

Ordering data				
Designation			Part No.	Type
Output module, digital				
	4 digital outputs, power supply 1 A per channel		195754	CPX-4DA
	8 digital outputs, power supply 0.5 A per channel		541482	CPX-8DA
	8 digital outputs, power supply 2.1 A per channel pair		550204	CPX-8DA-H
Plug				
	Push-in T-connector	2x socket M8, 3-pin 1x plug M8, 4-pin	544391	NEDU-M8D3-M8T4
		2x socket M12, 5-pin 1x plug M12, 4-pin	541596	NEDU-M12D5-M12T4
	Push-in T-connector	2x socket M8, 3-pin 1x plug M12, 4-pin	541597	NEDU-M8D3-M12T4
		2x socket M12, 5-pin 1x plug M12, 4-pin		
	Plug	M8, 3-pin, solderable	18696	SEA-GS-M8
		M8, 3-pin, screw-in	192009	SEA-3GS-M8-S
		M12, PG7	18666	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
	HARAX plug, 4-pin		525928	SEA-GS-HAR-4POL
	Sub-D plug, 25-pin		527522	SD-SUB-D-ST25
Connecting cable				
	Connecting cable M8-M8	0.5 m	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
		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	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
Cover				
	Cover for CPX-AB-8-KL-4POL (IP65/67) – 8 cable through-feeds M9 – 1 cable through-feed for multi-pin plug		538219	AK-8KL
	Fittings kit		538220	VG-K-M9

Terminal CPX

Accessories – Output module, digital

FESTO

Ordering data				
Designation			Part No.	Type
Screening plate				
	Screening plate for M12 connections		526184	CPX-AB-S-4-M12
User manual				
	User manual	German	526439	P.BE-CPX-EA-DE
		English	526440	P.BE-CPX-EA-EN
		Spanish	526441	P.BE-CPX-EA-ES
		French	526442	P.BE-CPX-EA-FR
		Italian	526443	P.BE-CPX-EA-IT
		Swedish	526444	P.BE-CPX-EA-SV

Terminal CPX

Technical data – Input/output module, digital

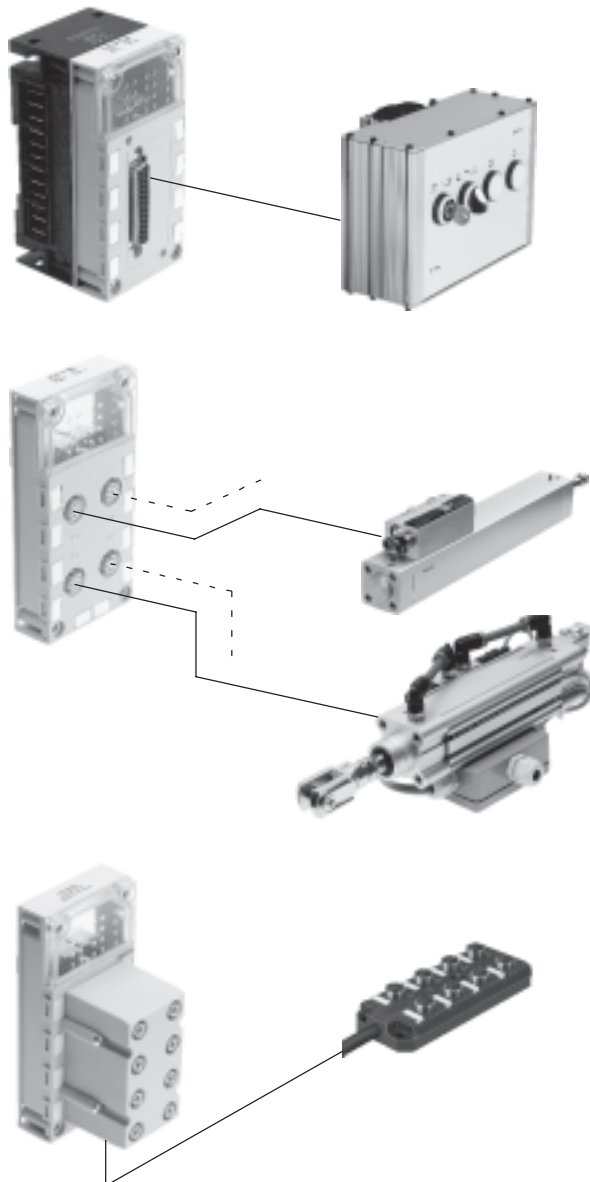
FESTO

Applications

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



Function



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

Up to eight inputs and outputs can be connected to a connection point with IP65 protection.

Support for the M12 connection block (8-pin) means that up to four cylinder-valve combinations with integrated sensors can be connected. Each cylinder-valve combination is supported by two inputs and two outputs per socket. It is therefore possible to control max. two solenoid coils and operate two sensors with a pre-assembled cable.

Two inputs on two sockets are bridged to provide support for the diagnostic module of the cylinder-valve combination. This effectively means that there are three inputs and two outputs available on two sockets.

As an alternative to the Sub-D and M12 connection block (8-pin) for installation with higher protection to IP65, the terminal connection block produces an identical result for installation with IP20 protection – or with IP65/67 protection with additional cover.

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

Terminal CPX

Technical data – Input/output module, digital

FESTO

General technical data			
Type			CPX-8DE-8DA
No. of	Inputs		8
	Outputs		8
Max. power supply per module	Sensor supply	[A]	0.7
	Outputs	[A]	4
Max. power supply per channel	Sensor supply	[A]	0.5
	Outputs	[A]	0.5
Max. power supply per channel		[A]	0.5 (12 W lamp load, channels A0 ... A03 can be connected in parallel with A4 ... A7)
Fuse protection	Sensor supply		Internal electronic fuse for sensor supply
	Outputs		Internal electronic fuse for each channel
Internal current consumption of electronic components	Inputs	[mA]	Typically 22
	Outputs	[mA]	Typically 34
Operating voltage	Nominal value	[V DC]	24
	Permissible range	[V DC]	18 ... 30
Galvanic isolation, inputs	Channel – channel		No
	Channel – internal bus		No
Galvanic isolation, outputs	Channel – channel		No
	Channel – internal bus		Yes, using an intermediate supply
Characteristic curve	Inputs		IEC 1131-2
	Outputs		IEC 1131-2
Switching level, inputs	Signal 0	[V DC]	≤ 5
	Signal 1	[V DC]	≥ 11
Input debounce time		[ms]	3 (0.1, 10, 20 parameterisable)
Switching logic			Positive logic (PNP)
LED displays	Group diagnostics		1
	Channel diagnostics		–
	Channel status		16
Diagnostics	Inputs		<ul style="list-style-type: none"> • Short circuit/overload, sensor supply
	Outputs		<ul style="list-style-type: none"> • Short circuit/overload, output channel x • Undervoltage of outputs
Parameterisation	Inputs		<ul style="list-style-type: none"> • Module monitoring • Behaviour after short circuit, sensor supply • Input debounce time • Signal stretching time, inputs
	Outputs		<ul style="list-style-type: none"> • Behaviour after short circuit • Fail-safe channel x • Forcing channel x • Idle mode channel x
Protection class to EN 60529			Depending on connection block
Temperature range	Operation	[°C]	–5 ... +50
	Storage/transport	[°C]	–20 ... +70
Materials			Reinforced polyamide, polycarbonate
Grid dimension		[mm]	50
Dimensions (including interlinking block and connection block)		[mm]	50 x 107 x 50
W x L x H			
Weight		[g]	38

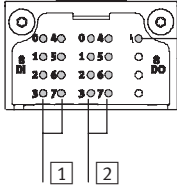
Terminal CPX

Technical data – Input/output module, digital

FESTO

Connection and display components

CPX-8DE-8DA



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

Connection block/digital I/O module combinations

Connection blocks	Part No.	Digital I/O module
		CPX-8DE-8DA
CPX-AB-4-M12-8POL	526178	■
CPX-AB-8-KL-4POL	195708	■
CPX-AB-1-SUB-BU-25POL	525676	■
CPX-AB-4-M12-8P-M3	556168	■

Pin allocation

Connection block inputs/outputs CPX-8DE-8DA

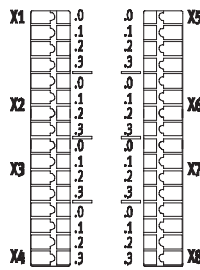
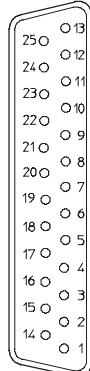
CPX-AB-4-M12-8POL and CPX-AB-4-M12-8P-M3

<p>Diagram showing pin allocation for X1, X2, X3, and X4. X1 and X3 are 8-pin modules, X2 and X4 are 8-pin modules. Pins are numbered 1-8 for each module.</p>	<p>X1.1: 24 V_{SEN} X1.2: Input x X1.3: Input x+1 X1.4: 0 V_{SEN} X1.5: Output x X1.6: Output x+1 X1.7: Input x+4 X1.8: 0 V_{OUT}</p> <p>X2.1: 24 V_{SEN} X2.2: Input x+2 X2.3: Input x+3 X2.4: 0 V_{SEN} X2.5: Output x+2 X2.6: Output x+3 X2.7: Input x+6 X2.8: 0 V_{OUT}</p>	<p>X3.1: 24 V_{SEN} X3.2: Input x+4 X3.3: Input x+5 X3.4: 0 V_{SEN} X3.5: Output x+4 X3.6: Output x+5 X3.7: n.c. X3.8: 0 V_{OUT}</p> <p>X4.1: 24 V_{SEN} X4.2: Input x+6 X4.3: Input x+7 X4.4: 0 V_{SEN} X4.5: Output x+6 X4.6: Output x+7 X4.7: n.c. X4.8: 0 V_{OUT}</p>
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Terminal CPX

Technical data – Input/output module, digital

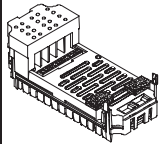
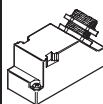
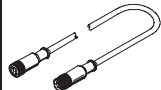
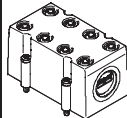
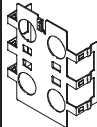
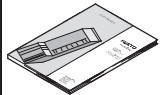
FESTO

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

Terminal CPX

Accessories – Input/output module, digital

FESTO

Ordering data				
Designation			Part No.	Type
Input/output module, digital				
	8 digital inputs, 8 digital outputs		526257	CPX-8DE-8DA
Plug				
	Sub-D plug, 25-pin		527522	SD-SUB-D-ST25
Connecting cable				
	Connecting cable M12		525617	KM12-8GD8GS-2-PU
Cover				
	Cover for CPX-AB-8-KL-4POL (IP65/67) – 8 cable through-feeds M9 – 1 cable through-feed for multi-pin plug		538219	AK-8KL
	Fittings kit		538220	VG-K-M9
Screening plate				
	Screening plate for M12 connections		526184	CPX-AB-S-4-M12
User manual				
	User manual	German	526439	P.BE-CPX-EA-DE
		English	526440	P.BE-CPX-EA-EN
		Spanish	526441	P.BE-CPX-EA-ES
		French	526442	P.BE-CPX-EA-FR
		Italian	526443	P.BE-CPX-EA-IT
		Swedish	526444	P.BE-CPX-EA-SV

Terminal CPX

Technical data – Analogue module for inputs

FESTO

Function

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

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

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



General technical data			
Type	CPX-2AE-U-I		CPX-4AE-I
	Voltage input	Current input	Current input
No. of analogue inputs	2		Choice of 2 or 4
Max. power supply per module [A]	0.7		
Fuse protection	Internal electronic fuse for sensor supply		
Current consumption from 24 V sensor supply (quiescent current) [mA]	Typically 50		
Current consumption from 24 V sensor supply (at full load) [A]	Max. 0.7		
Supply voltage of sensors [V DC]	24 ±25%		
Signal range (parameterisable for each channel by means of DIL switch or software)	0 ... 10 V DC	0 ... 20 mA 4 ... 20 mA	0 ... 20 mA 4 ... 20 mA
Resolution	12 bits		
No. of units	4,096		
Absolute accuracy [%]	±0.5	±0.6	±0.6
Linearity errors (no software scaling) [%]	±0.05	±0.05	±0.05
Repetition accuracy (at 25 °C) [%]	0.15	0.15	0.15
Input resistance	100 kΩ	≤ 100 Ω	≤ 100 Ω
Max. permissible input voltage [V DC]	30	–	–
Max. permissible input current [mA]	–	40	40
Conversion time per channel [µs]	Typically 150		
Cycle time (module) [ms]	≤ 4		≤ 10

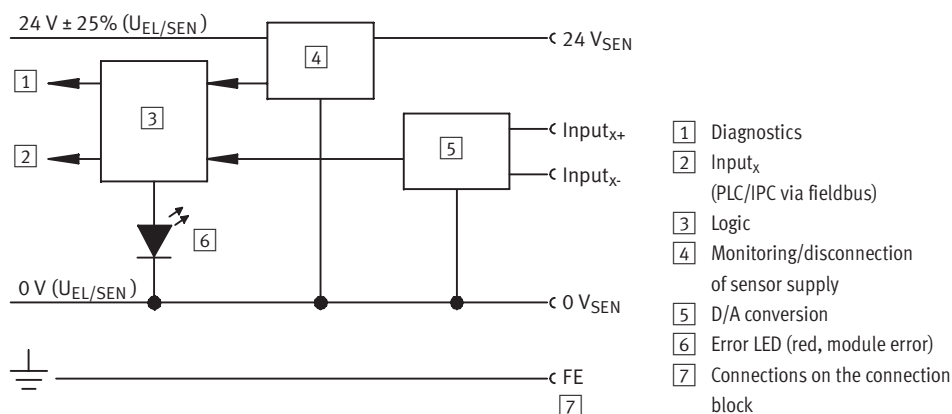
Terminal CPX

Technical data – Analogue module for inputs

FESTO

General technical data			
Data format		Prefix + 15 bits, linear scaling Prefix + 12 bits right-justified, type 03 compatible Prefix + 15 bits left-aligned, S7 compatible Prefix + 12 bits left-aligned + diagnostics, S5 compatible	
Cable length		[m]	Max. 30 (screened)
Electrical isolation	Channel – channel		No
	Channel – internal bus		Yes, with external sensor supply
	Channel – sensor supply		Yes, with external sensor supply
LED displays	Group diagnostics		1
	Channel diagnostics		Yes, by means of flashing frequency of group diagnostics
Diagnostics		<ul style="list-style-type: none"> • Short circuit/overload, sensor supply • Parameterisation error • Value falling below nominal range/full-scale value • Value exceeding nominal range/full-scale value • Wire break (with measuring range 4 ... 20 mA) 	
Parameterisation		<ul style="list-style-type: none"> • Short circuit monitoring, sensor supply • Behaviour after short circuit, sensor supply • Data format • Lower limit value/full-scale value • Upper limit value/full-scale value • Monitoring of value falling below nominal range/full-scale value • Monitoring of value exceeding nominal range/full-scale value • Monitoring of wire break (with measuring range 4 ... 20 mA) • Signal range • Measured value smoothing 	
Protection class to EN 60529		Depending on connection block	
Temperature range	Operation	[°C]	–5 ... +50
	Storage/transport	[°C]	–20 ... +70
Materials		Polymer	
Grid dimension		[mm]	50
Dimensions (incl. interlinking block and connection block) W x L x H		[mm]	50 x 107 x 50
Weight		[g]	38

Internal structure, basic representation



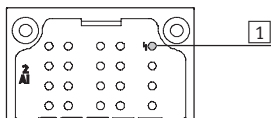
Terminal CPX

Technical data – Analogue module for inputs

FESTO

Connection and display components

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



1 Error LED (red, module error)

Connection block/analogue module combinations

Connection blocks	Part No.	Analogue module	
		CPX-2AE-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-AB-4-M12x2-5P-R-M3	546997	■	■
CPX-M-4-M12x2-5POL	549367	■	■

Pin allocation

Connection block inputs	CPX-2AE-U-I	CPX-4AE-I
CPX-AB-4-M12X2-5POL, CPX-AB-4-M12X2-5POL-R ¹⁾ , CPX-M-4-M12x2-5POL and CPX-AB-4-M12x2-5P-R-M3 ¹⁾		
	<p>X1.1: 24 V_{SEN} X1.2: Input U0+ X1.3: 0 V_{SEN} X1.4: Input U0- X1.5: FE²⁾</p> <p>X2.1: 24 V_{SEN} X2.2: Input I0+ X2.3: 0 V_{SEN} X2.4: Input I0- X2.5: FE²⁾</p>	<p>X3.1: 24 V_{SEN} X3.2: Input U1+ X3.3: 0 V_{SEN} X3.4: Input U1- X3.5: FE²⁾</p> <p>X4.1: 24 V_{SEN} X4.2: Input I1+ X4.3: 0 V_{SEN} X4.4: Input I1- X4.5: FE²⁾</p>
CPX-AB-8-KL-4POL		
	<p>X1.0: 24 V_{SEN} X1.1: 0 V_{SEN} X1.2: Input U0- X1.3: FE</p> <p>X2.0: n.c. X2.1: n.c. X2.2: Input U0+ X2.3: FE</p> <p>X3.0: 24 V_{SEN} X3.1: 0 V_{SEN} X3.2: Input I0- X3.3: FE</p> <p>X4.0: n.c. X4.1: n.c. X4.2: Input I0+ X4.3: FE</p>	<p>X5.0: 24 V_{SEN} X5.1: 0 V_{SEN} X5.2: Input U1- X5.3: FE</p> <p>X6.0: n.c. X6.1: n.c. X6.2: Input U1+ X6.3: FE</p> <p>X7.0: 24 V_{SEN} X7.1: 0 V_{SEN} X7.2: Input I1- X7.3: FE</p> <p>X8.0: n.c. X8.1: n.c. X8.2: Input I1+ X8.3: FE</p>

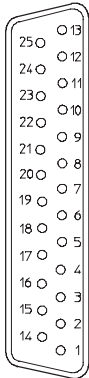
1) Speedcon quick lock, screening additionally on metal thread

2) FE/screening additionally on metal thread

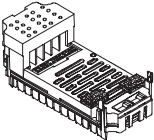

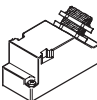
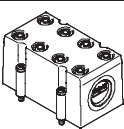
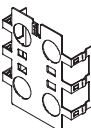
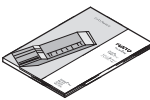
Terminal CPX

Accessories – Analogue module for inputs

FESTO

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

1) Connect screening to functional earth FE

Ordering data				
Designation			Part No.	Type
Input module, analogue				
	2 analogue current or voltage inputs		526168	CPX-2AE-U-I
	2 or 4 analogue current inputs		541484	CPX-4AE-I
Plug				
	M12 plug, 5-pin		175487	SEA-M12-5GS-PG7
	Sub-D plug, 25-pin		527522	SD-SUB-D-ST25
Cover				
	Cover for CPX-AB-8-KL-4POL (IP65/67) – 8 cable through-feeds M9 – 1 cable through-feed for multi-pin plug		538219	AK-8KL
	Fittings kit		538220	VG-K-M9
Screening plate				
	Screening plate for M12 connections		526184	CPX-AB-S-4-M12
User manual				
	User manual		German	526415 P.BE-CPX-AX-DE
			English	526416 P.BE-CPX-AX-EN
			Spanish	526417 P.BE-CPX-AX-ES
			French	526418 P.BE-CPX-AX-FR
			Italian	526419 P.BE-CPX-AX-IT
			Swedish	526420 P.BE-CPX-AX-SV

Terminal CPX

Technical data – Analogue input module with pressure sensors

Function

The pressure input modules enable a maximum of four pressures to be processed. The internal measured value of the sensor (analogue value with 10-bit resolution) is converted into an internal numerical format as appropriate to the parameterisation and made available to the fieldbus node as an image table. It is also possible to combine two channels into one differential pressure channel.

Applications

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



General technical data				
Type		CPX-4AE-P-B2		CPX-4AE-P-D10
No. of analogue inputs		4		
Pneumatic connection		QS-4		
Nominal operating voltage		[V DC]	24	
Operating voltage range		[V DC]	18...30	
Intrinsic current consumption		[mA]	Typically 50	
Measured variable		4x relative or 2x differential pressure measurement		
Displayable units		<ul style="list-style-type: none">• kPa• mbar• psi		
Pressure measuring range	Starting value	[bar]	–1	0
	Final value	[bar]	1	10
Internal cycle time		[ms]	5	
Data format		<ul style="list-style-type: none">• 15 bits + prefix• Binary representation in mbar, kPa, psi		
LED displays		Group diagnostics		
Diagnostics		<ul style="list-style-type: none">• Limit value violation per channel• Parameterisation error• Sensor limit per channel		
Parameterisation		<ul style="list-style-type: none">• Diagnostic delay per channel• Hysteresis per module• Unit of measurement• Measured value smoothing per channel• Limit value monitoring per channel• Sensor limit per channel• Measurement of relative/differential pressure		
Protection class to EN 60529		IP65/IP67		
Operating medium			Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm	
Ambient temperature		[°C]	–5... 50	
Storage temperature		[°C]	–20 ... 70	
Temperature of medium		[°C]	0... 50	
Note on materials		RoHS-compliant		
Materials		Reinforced polyamide, polycarbonate		
Grid dimension		[mm]	50	
Dimensions (incl. interlinking block) W x L x H		[mm]	50 x 107 x 55	
Weight		[g]	112	

Note

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

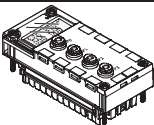
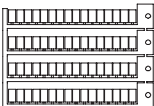

Terminal CPX

Accessories – Analogue input module with pressure sensors

FESTO

Connection and display components



Ordering data				
Designation			Part No.	Type
Input module, analogue				
	4 analogue pressure inputs, pressure range -1 ... +1 bar		560361	CPX-4AE-P-B2
	4 analogue pressure inputs, pressure range 0 ... 10 bar		560362	CPX-4AE-P-D10
Inscription labels				
	Inscription labels 6x10, 64 pieces, in frames		18576	IBS-6x10
User manual				
	User manual	German	526415	P.BE-CPX-AX-DE
		English	526416	P.BE-CPX-AX-EN
		Spanish	526417	P.BE-CPX-AX-ES
		French	526418	P.BE-CPX-AX-FR
		Italian	526419	P.BE-CPX-AX-IT
		Swedish	526420	P.BE-CPX-AX-SV

Terminal CPX

Technical data – Analogue module for temperature inputs

Function

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

Applications

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



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

Terminal CPX

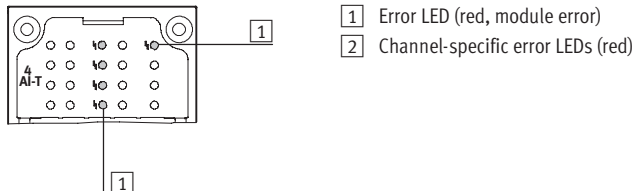
Technical data – Analogue module for temperature inputs

FESTO

General technical data		
Data format		15 bits + 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		<ul style="list-style-type: none"> • Short circuit/overload, channel • Parameterisation error • Value falling below nominal range/full-scale value • Value exceeding nominal range/full-scale value • Wire break
Parameterisation		<ul style="list-style-type: none"> • 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		Polymer
Grid dimension	[mm]	50
Dimensions (incl. interlinking block and connection block) W x L x H	[mm]	50 x 107 x 50
Weight	[g]	38

Connection and display components

CPX-4AE-T

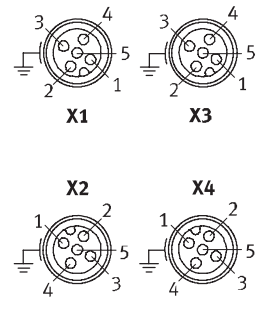
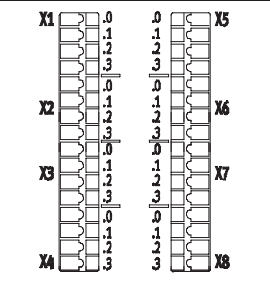
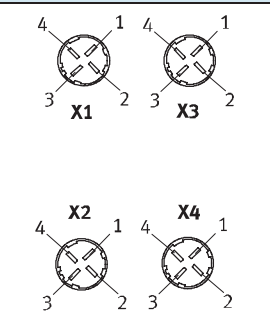


Connection block/analogue module combinations		
Connection blocks	Part No.	Temperature module
		CPX-4AE-T
CPX-AB-4-M12X2-5POL	195704	■
CPX-AB-4-M12X2-5POL-R	541254	■
CPX-AB-8-KL-4POL	195708	■
CPX-AB-4-HAR-4POL	525636	■
CPX-AB-4-M12x2-5P-R-M3	546997	■
CPX-M-4-M12x2-5POL	549367	■

Terminal CPX

Technical data – Analogue module for temperature inputs

FESTO

Pin allocation		
Connection block inputs		CPX-4AE-T
CPX-AB-4-M12X2-5POL, CPX-AB-4-M12X2-5POL-R ¹⁾ , CPX-AB-4-M12x2-5P-R-M3 ¹⁾ and CPX-M-4-M12x2-5POL		
	<p>X1.1: Input I0+ X1.2: Input U0+ X1.3: Input I0– X1.4: Input U0– X1.5: FE²⁾</p> <p>X2.1: Input I1+ X2.2: Input U1+ X2.3: Input I1– X2.4: Input U1– X2.5: FE²⁾</p>	<p>X3.1: Input I2+ X3.2: Input U2+ X3.3: Input I2– X3.4: Input U2– X3.5: FE²⁾</p> <p>X4.1: Input I3+ X4.2: Input U3+ X4.3: Input I3– X4.4: Input U3– X4.5: FE²⁾</p>
CPX-AB-8-KL-4POL		
	<p>X1.0: Input I0+ X1.1: Input I0– X1.2: Input U0– X1.3: FE</p> <p>X2.0: n.c. X2.1: n.c. X2.2: Input U0+ X2.3: FE</p> <p>X3.0: Input I1+ X3.1: Input I1– X3.2: Input U1– X3.3: FE</p> <p>X4.0: n.c. X4.1: n.c. X4.2: Input U1+ X4.3: FE</p>	<p>X5.0: Input I2+ X5.1: Input I2– X5.2: Input U2– X5.3: FE</p> <p>X6.0: n.c. X6.1: n.c. X6.2: Input U12+ X6.3: FE</p> <p>X7.0: Input I3+ X7.1: Input I3– X7.2: Input U3– X7.3: FE</p> <p>X8.0: n.c. X8.1: n.c. X8.2: Input U3+ X8.3: FE</p>
CPX-AB-4-HAR-4POL		
	<p>X1.1: Input I0+ X1.2: Input U0+ X1.3: Input I0– X1.4: Input U0–</p> <p>X2.1: Input I1+ X2.2: Input U1+ X2.3: Input I1– X2.4: Input U1–</p>	<p>X3.1: Input I2+ X3.2: Input U2+ X3.3: Input I2– X3.4: Input U2–</p> <p>X4.1: Input I3+ X4.2: Input U3+ X4.3: Input I3– X4.4: Input U3–</p>

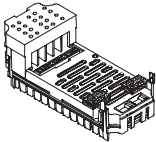


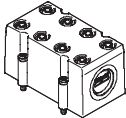
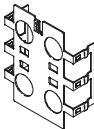

1) Speedcon quick lock, screening additionally on metal thread

2) FE/screening additionally on metal thread

Terminal CPX

Accessories – Analogue module for temperature inputs

FESTO

Ordering data				
Designation			Part No.	Type
Input module, analogue				
	2 or 4 analogue temperature inputs		541486	CPX-4AE-T
Plug				
	M12 plug, 5-pin		175487	SEA-M12-5GS-PG7
	HARAX plug, 4-pin		525928	SEA-GS-HAR-4POL
Cover				
	Cover for CPX-AB-8-KL-4POL (IP65/67) – 8 cable through-feeds M9 – 1 cable through-feed for multi-pin plug		538219	AK-8KL
	Fittings kit		538220	VG-K-M9
Screening plate				
	Screening plate for M12 connections		526184	CPX-AB-S-4-M12
User manual				
	User manual	German	526415	P.BE-CPX-AX-DE
		English	526416	P.BE-CPX-AX-EN
		Spanish	526417	P.BE-CPX-AX-ES
		French	526418	P.BE-CPX-AX-FR
		Italian	526419	P.BE-CPX-AX-IT
		Swedish	526420	P.BE-CPX-AX-SV

Terminal CPX

Technical data – Analogue module for thermocoupler

Function

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

The channels feature wire break and short circuit detection.

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

Applications

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



General technical data		
Type	CPX-4AE-TC	
	Temperature input	
No. of analogue inputs	4	
Fuse protection (short circuit)	Internal electronic fuse for each channel	
Nominal operating voltage	[V DC]	24
Operating voltage range	[V DC]	18 ... 30
Sensor type (parameterisable for each channel by means of software)	<ul style="list-style-type: none"> • Type B +400 ... +1,820 °C, 8 µV/°C • Type E -270 ... +900 °C, 60 µV/°C • Type J -200 ... +1,200 °C, 51 µV/°C • Type K -200 ... +1,370 °C, 40 µV/°C • Type N -200 ... +1,300 °C, 38 µV/°C • Type R 0 ... +1,760 °C, 12 µV/°C • Type S 0 ... +1,760 °C, 11 µV/°C • Type T -200 ... +400 °C, 40 µV/°C 	
Sensor connection technology	2-wire technology	
Operating error limit relative to ambient temperature	[%]	Max. ±0.6
Basic error limit (at 25 °C)	[%]	Max. ±0.4
Repetition accuracy (at 25 °C)	[%]	±0.05
Max. line resistance per wire	[Ω]	10
Max. residual current per module	[mA]	30
Max. permissible input voltage	[V]	±30
Internal cycle time (module)	[ms]	250

Terminal CPX

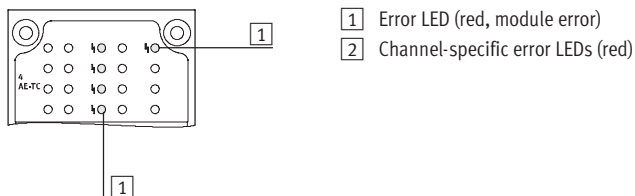
Technical data – Analogue module for thermocoupler

FESTO

General technical data		
Data format		<ul style="list-style-type: none"> • 15 bits + 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		<ul style="list-style-type: none"> • Parameterisation error • Wire break per channel • Limit value violation per channel
Parameterisation		<ul style="list-style-type: none"> • 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 polyamide, polycarbonate
Grid dimension	[mm]	50
Dimensions (incl. interlinking block and connection block) W x L x H	[mm]	50 x 107 x 50
Weight	[g]	38

Connection and display components

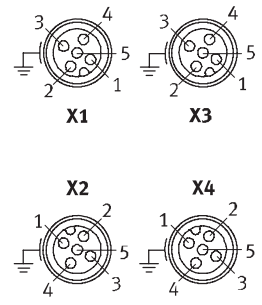
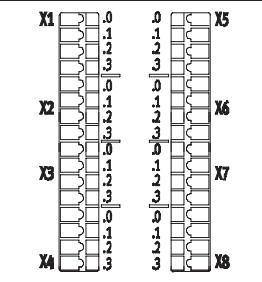
CPX-4AE-TC



Connection block/analogue module combinations		
Connection blocks	Part No.	Temperature module
		CPX-4AE-TC
CPX-AB-4-M12X2-5POL	195704	■
CPX-AB-4-M12X2-5POL-R	541254	■
CPX-AB-8-KL-4POL	195708	■
CPX-AB-4-M12x2-5P-R-M3	546997	■
CPX-M-4-M12x2-5POL	549367	■

Terminal CPX

Technical data – Analogue module for thermocoupler

Pin allocation		
Connection block inputs		CPX-4AE-TC
CPX-AB-4-M12x2-5POL, CPX-AB-4-M12x2-5POL-R ¹⁾ , CPX-AB-4-M12x2-5P-R-M3 ¹⁾ and CPX-M-4-M12x2-5POL		
	<p>X1.1: Input I0+ X1.2: Input U0+ X1.3: Input I0– X1.4: Input U0– X1.5: FE²⁾</p> <p>X2.1: Input I1+ X2.2: Input U1+ X2.3: Input I1– X2.4: Input U1– X2.5: FE²⁾</p>	<p>X3.1: Input I2+ X3.2: Input U2+ X3.3: Input I2– X3.4: Input U2– X3.5: FE²⁾</p> <p>X4.1: Input I3+ X4.2: Input U3+ X4.3: Input I3– X4.4: Input U3– X4.5: FE²⁾</p>
CPX-AB-8-KL-4POL		
	<p>X1.0: Input I0+ X1.1: Input I0– X1.2: Input U0+ X1.3: FE</p> <p>X2.0: n.c. X2.1: n.c. X2.2: Input U0+ X2.3: FE</p> <p>X3.0: Input I1+ X3.1: Input I1– X3.2: Input U1– X3.3: FE</p> <p>X4.0: n.c. X4.1: n.c. X4.2: Input U1+ X4.3: FE</p>	<p>X5.0: Input I2+ X5.1: Input I2– X5.2: Input U2– X5.3: FE</p> <p>X6.0: n.c. X6.1: n.c. X6.2: Input U12+ X6.3: FE</p> <p>X7.0: Input I3+ X7.1: Input I3– X7.2: Input U3– X7.3: FE</p> <p>X8.0: n.c. X8.1: n.c. X8.2: Input U3+ X8.3: FE</p>

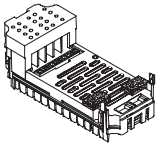
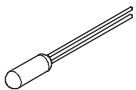
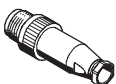
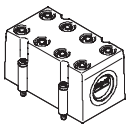
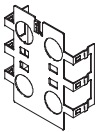

1) Speedcon quick lock, screening additionally on metal thread

2) FE/screening additionally on metal thread

Terminal CPX

Accessories – Analogue module for thermocoupler

FESTO

Ordering data			
Designation		Part No.	Type
Input module, analogue			
	4 analogue temperature inputs, with 2-wire connection for a PT1000 sensor for cold junction compensation	553594	CPX-4AE-TC
Cold junction compensation			
	PT1000 temperature sensor for cold junction compensation	553596	CPX-W-PT1000
Plug			
	M12 plug, 5-pin	175487	SEA-M12-5GS-PG7
Cover			
	Cover for CPX-AB-8-KL-4POL (IP65/67) – 8 cable through-feeds M9 – 1 cable through-feed for multi-pin plug	538219	AK-8KL
	Fittings kit	538220	VG-K-M9
Screening plate			
	Screening plate for M12 connections	526184	CPX-AB-S-4-M12
User manual			
	User manual	German	526415 P.BE-CPX-AX-DE
		English	526416 P.BE-CPX-AX-EN
		Spanish	526417 P.BE-CPX-AX-ES
		French	526418 P.BE-CPX-AX-FR
		Italian	526419 P.BE-CPX-AX-IT
		Swedish	526420 P.BE-CPX-AX-SV

Terminal CPX

Technical data – Analogue module for outputs

FESTO

Function

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

Applications

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



General technical data				
Type		CPX-2AA-U-I		
		Voltage output	Current output	
No. of analogue outputs		2		
Max. actuator supply per module	[A]	2.8		
Fuse protection		Internal electronic fuse for actuator supply		
Current consumption from 24 V sensor supply (at full load)	[mA]	Max. 150		
Current consumption from 24 V actuator supply (at full load)	[A]	4 ... 10		
Supply voltage of actuators	[V DC]	24 ±25%		
Signal range (parameterisable for each channel by means of DIL switch or software)		0 ... 10 V DC	0 ... 20 mA 4 ... 2 mA	
Resolution	[bit]	12		
No. of units		4,096		
Absolute accuracy	[%]	±0.6		
Linearity errors (no software scaling)	[%]	±0.1		
Repetition accuracy (at 25 °C)		0.05		
Encoder selection	Load resistance for ohmic load	[kΩ]	Min. 1	Max. 0.5
	Load resistance for capacitive load	[μF]	Max. 1	–
	Load resistance for inductive load	[mH]	–	Max. 1
	Short circuit protection analogue output		Yes	–
	Short circuit current analogue output	[mA]	Approx. 20	–
	Open circuit voltage	[V DC]	–	18
	Destruction limit against externally applied voltage	[V DC]	15	
	Actuator connection		2 wires	
Cycle time (module)	[ms]	≤ 4		

Terminal CPX

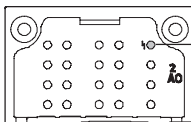
Technical data – Analogue module for outputs

FESTO

General technical data				
Type			CPX-2AA-U-I	
			Voltage output	Current output
Response time	For ohmic load	[ms]	0.1	0.1
	For capacitive load	[ms]	0.7	–
	For inductive load	[ms]	–	0.5
Data format			15 bits + prefix, linear scaling 12 bits right-justified, type 03 compatible 12 bits left-justified, S7 compatible 12 bits left-justified, S5 compatible	
Cable length			[m]	Max. 30 (screened)
LED displays	Group diagnostics		1	
	Channel diagnostics		Yes, by means of flashing frequency of group diagnostics	
Diagnostics			<ul style="list-style-type: none">• Short circuit/overload, actuator supply• Parameterisation error• Value falling below nominal range/full-scale value• Value exceeding nominal range/full-scale value• Wire break	
Parameterisation			<ul style="list-style-type: none">• Short circuit monitoring, actuator supply• Short circuit monitoring, analogue output• Behaviour after short circuit, actuator supply• Data format• Lower limit value/full-scale value• Upper limit value/full-scale value• Monitoring of value falling below nominal range/full-scale value• Monitoring of value exceeding nominal range/full-scale value• Wire break monitoring• Signal range	
Protection class to EN 60529			Depending on connection block	
Temperature range	Operation		[°C]	–5 ... +50
	Storage/transport		[°C]	–20 ... +70
Materials			Polymer	
Grid dimension			[mm]	50
Dimensions (incl. interlinking block and connection block) W x L x H			[mm]	50 x 107 x 50
Weight			[g]	38

Connection and display components

CPX-2AA-U-I



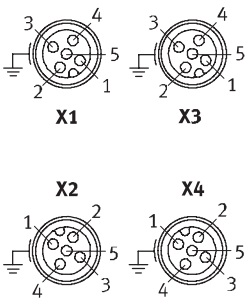
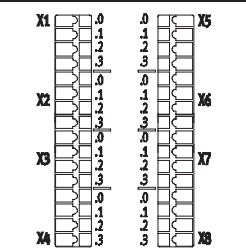
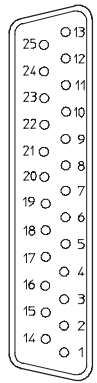
1 Error LED (red, module error)

Connection block/analogue module combinations			
Connection blocks	Part No.	Analogue module	
		CPX-2AA-U-I	
CPX-AB-4-M12X2-5POL	195704		■
CPX-AB-4-M12X2-5POL-R	541254		■
CPX-AB-8-KL-4POL	195708		■
CPX-AB-1-SUB-BU-25POL	525676		■
CPX-AB-4-M12x2-5P-R-M3	546997		■
CPX-M-4-M12x2-5POL	549367		■

Terminal CPX

Technical data – Analogue module for outputs

FESTO

Pin allocation		
Connection block outputs		CPX-2AA-U-I
CPX-AB-4-M12X2-5POL, CPX-AB-4-M12X2-5POL-R ¹⁾ , CPX-AB-4-M12x2-5P-R-M3 ¹⁾ , CPX-M-4-M12x2-5POL		
	<p>X1.1: 24 V_{OUT} X1.2: Output U0+ X1.3: 0 V_{OUT} X1.4: Output GND X1.5: FE²⁾</p> <p>X2.1: 24 V_{OUT} X2.2: Output I0+ X2.3: 0 V_{OUT} X2.4: Output GND X2.5: FE²⁾</p>	<p>X3.1: 24 V_{OUT} X3.2: Output U1+ X3.3: 0 V_{OUT} X3.4: Output GND X3.5: FE²⁾</p> <p>X4.1: 24 V_{OUT} X4.2: Output I1+ X4.3: 0 V_{OUT} X4.4: Output GND X4.5: FE²⁾</p>
CPX-AB-8-KL-4POL		
	<p>X1.0: 24 V_{OUT} X1.1: 0 V_{OUT} X1.2: Output GND X1.3: FE</p> <p>X2.0: n.c. X2.1: n.c. X2.2: Output U0+ X2.3: FE</p> <p>X3.0: 24 V_{OUT} X3.1: 0 V_{OUT} X3.2: Output GND X3.3: FE</p> <p>X4.0: n.c. X4.1: n.c. X4.2: Output I0+ X4.3: FE</p>	<p>X5.0: 24 V_{OUT} X5.1: 0 V_{OUT} X5.2: Output GND X5.3: FE</p> <p>X6.0: n.c. X6.1: n.c. X6.2: Output U1+ X6.3: FE</p> <p>X7.0: 24 V_{OUT} X7.1: 0 V_{OUT} X7.2: Output GND X7.3: FE</p> <p>X8.0: n.c. X8.1: n.c. X8.2: Output I1+ X8.3: FE</p>
CPX-AB-1-SUB-BU-25POL		
	<p>1: Output GND 2: Output U0+ 3: Output GND 4: Output I0+ 5: n.c. 6: n.c. 7: n.c. 8: n.c. 9: 24 V_{OUT} 10: 24 V_{OUT} 11: 0 V_{OUT} 12: 0 V_{OUT} 13: Screening³⁾</p>	<p>14: Output GND 15: Output U1+ 16: Output GND 17: Output I1+ 18: 24 V_{OUT} 19: n.c. 20: 24 V_{OUT} 21: n.c. 22: 0 V_{OUT} 23: 0 V_{OUT} 24: 0 V_{OUT} 25: FE Socket: FE</p>

1) Speedcon quick lock, screening additionally on metal thread

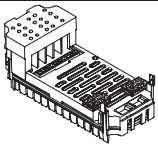

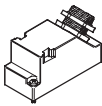
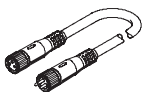
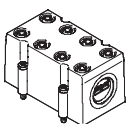
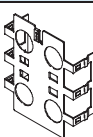
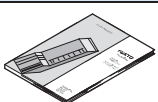
2) FE/screening additionally on metal thread

3) Connect screening to functional earth FE

Terminal CPX

Accessories – Analogue module for outputs

FESTO

Ordering data				
Designation			Part No.	Type
Output module, analogue				
	2 analogue current or voltage outputs		526170	CPX-2AA-U-I
Plug				
	M12 plug, 5-pin		175487	SEA-M12-5GS-PG7
	Sub-D plug, 25-pin		527522	SD-SUB-D-ST25
Connecting cable				
	Modular system for connecting cables		–	NEBU-... → Internet: nebu
Cover				
	Cover for CPX-AB-8-KL-4POL (IP65/67) – 8 cable through-feeds M9 – 1 cable through-feed for multi-pin plug		538219	AK-8KL
	Fittings kit		538220	VG-K-M9
Screening plate				
	Screening plate for M12 connections		526184	CPX-AB-S-4-M12
User manual				
	User manual	German	526415	P.BE-CPX-AX-DE
		English	526416	P.BE-CPX-AX-EN
		Spanish	526417	P.BE-CPX-AX-ES
		French	526418	P.BE-CPX-AX-FR
		Italian	526419	P.BE-CPX-AX-IT
		Swedish	526420	P.BE-CPX-AX-SV

Terminal CPX

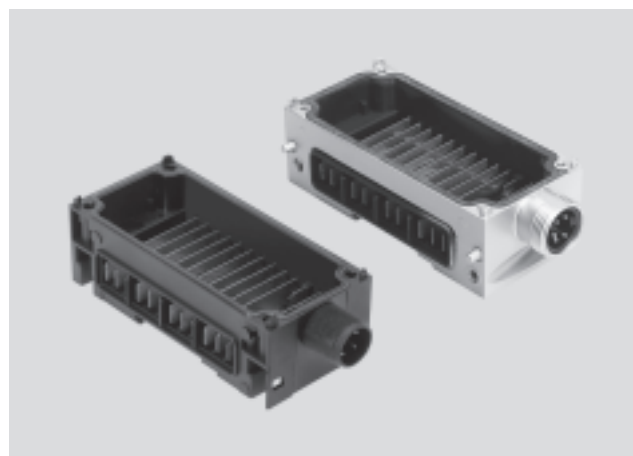
Technical data – Interlinking block with system supply

Function

Interlinking blocks ensure the electrical supply of all other CPX modules. They have contact rails, from which the other CPX components on the interlinking modules are supplied with current. Internal division of the power supply makes it possible to switch off specific areas of the sensors and actuators individually.

Applications

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



General technical data – Plastic interlinking blocks				
Type		CPX-GE-EV-S	CPX-GE-EV-S-7/8-4POL	CPX-GE-EV-S-7/8-5POL
Electrical connection		M18	7/8", 4-pin	7/8", 5-pin
Nominal operating voltage	[V DC]	24		
Current supply	Sensors and electronics	[A]	Max. 16	Max. 10
	Valves and outputs	[A]	Max. 16	Max. 10
Protection class to EN 60529		Depending on connection block		
Ambient temperature	[°C]	–5 ... +50		
Corrosion resistance class CRC ¹⁾		2		
Material declaration		RoHS-compliant		
Materials		Reinforced polyamide		
Grid dimension	[mm]	50		
Dimensions W x L x H	[mm]	50 x 107 x 35		
Weight	[g]	125		

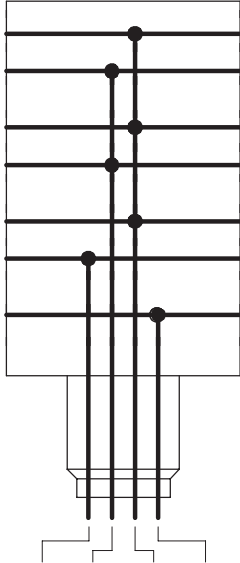
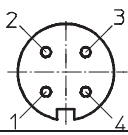
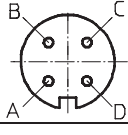
1) Corrosion resistance class 2 according to Festo standard 940 070
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

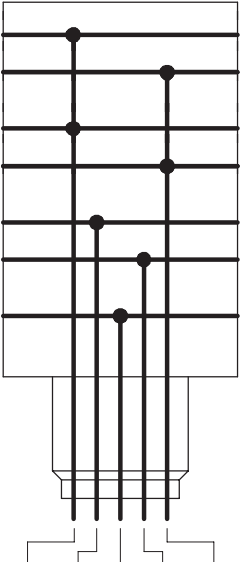
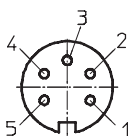
General technical data – Metal interlinking blocks				
Type		CPX-M-GE-EV-S-7/8-5POL		CPX-M-GE-EV-S-PP-5POL
Electrical connection		7/8", 5-pin		AIDA push-pull, 5-pin
Nominal operating voltage		[V DC]	24	
Current supply	Sensors and electronics	[A]	Max. 8	Max. 16
	Valves and outputs	[A]	Max. 8	Max. 16
Protection class to EN 60529		Depending on connection block		
Ambient temperature		[°C]	–5 ... +50	
Material declaration		–		RoHS-compliant
Materials		Die-cast aluminium		
Grid dimension		[mm]	50	
Dimensions W x L x H		[mm]	50 x 107 x 35	
Weight		[g]	187	245

Terminal CPX

Technical data – Interlinking block with system supply

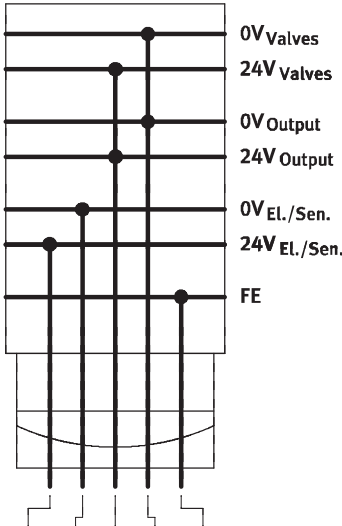
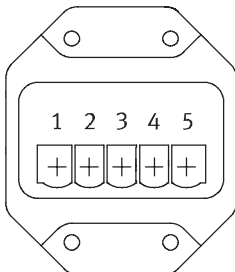
FESTO

Pin allocation																		
Circuitry		Pin	Allocation															
 <table border="1"><tr><td>M18</td><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td>7/8"</td><td>A</td><td>B</td><td>D</td><td>C</td></tr><tr><td></td><td>24V</td><td>24V</td><td>0V</td><td>FE</td></tr></table>	M18	1	2	3	4	7/8"	A	B	D	C		24V	24V	0V	FE	0V Valves		
	M18	1	2	3	4													
	7/8"	A	B	D	C													
		24V	24V	0V	FE													
	24V Valves																	
	0V Output																	
	24V Output																	
	0V EL./Sen.																	
	24V EL./Sen.																	
	FE																	
M18 – 4-pin																		
		1	24 V DC supply voltage for electronics and sensors															
		2	24 V DC load voltage supply for valves and outputs															
		3	0 V															
		4	FE															
7/8" – 4-pin																		
		A	24 V DC supply voltage for electronics and sensors															
		B	24 V DC load voltage supply for valves and outputs															
		C	FE															
		D	0V															

Pin allocation		Pin	Allocation												
Circuitry															
	7/8" – 5-pin	1	0 V valves and outputs												
		2	0 V electronics and sensors												
		3	FE												
		4	24 V DC supply voltage for electronics and sensors												
		5	24 V DC load voltage supply for valves and outputs												
<table><tr><td>7/8"</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td></td><td>0V</td><td>0V</td><td>FE</td><td>24V</td><td>24V</td></tr></table>	7/8"	1	2	3	4	5		0V	0V	FE	24V	24V			
7/8"	1	2	3	4	5										
	0V	0V	FE	24V	24V										

Terminal CPX

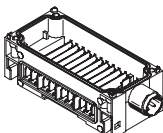
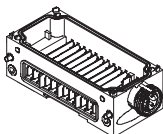
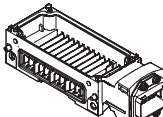
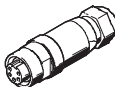
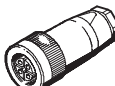
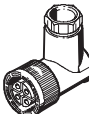
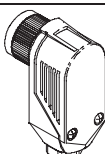
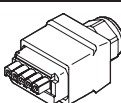

Technical data – Interlinking block with system supply

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

Terminal CPX

Accessories – Interlinking block with system supply

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Ordering data				
Designation			Part No.	Type
Interlinking block with system supply				
	Connection M18, 4-pin, plastic interlinking block		195746	CPX-GE-EV-S
	Connection 7/8", 4-pin, plastic interlinking block		541248	CPX-GE-EV-S-7/8-4POL
	Connection 7/8", 5-pin, plastic interlinking block		541244	CPX-GE-EV-S-7/8-5POL
	Connection 7/8", 5-pin, metal interlinking block		550208	CPX-M-GE-EV-S-7/8-5POL
	Connection push-pull plug (AIDA), 5-pin, metal interlinking block		563057	CPX-M-GE-EV-S-PP-5POL
7/8" connection sockets				
	Power supply socket	5-pin	543107	NECU-G78G5-C2
		4-pin	543108	NECU-G78G4-C2
M18 connection sockets				
	Straight socket, screw terminal	4-pin, PG9	18493	NTSD-GD-9
		4-pin, PG13.5	18526	NTSD-GD-13,5
	Angled socket, screw terminal	4-pin, PG9	18527	NTSD-WD-9
	Angled socket, screw terminal	4-pin, PG11	533119	NTSD-WD-11
Connection socket AIDA push-pull				
	Socket, spring-loaded terminal	5-pin	563059	NECU-M-PPG5-C1
Mounting accessories				
	Screws for mounting the bus node/connection block on a plastic interlinking block	Bus node/metal connection block	550218	CPX-DPT-30X32-S-4X
	Screws for mounting the bus node/connection block on a metal interlinking block	Bus node/plastic connection block	550219	CPX-M-M3x22-4x
		Bus node/metal connection block	550216	CPX-M-M3x22-S-4x

Terminal CPX

Technical data – Interlinking block

FESTO

Function

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

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

Applications

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



General technical data			
Type		CPX-GE-EV	CPX-M-GE-EV
Electrical connection		–	–
Nominal operating voltage	[V DC]	24	24
Acceptable current load (per contact/contact rail)	[A]	16	8
Protection class to EN 60529		Depending on connection block	
Ambient temperature	[°C]	–5 ... +50	
Corrosion resistance class CRC ¹⁾		2	–
Material declaration		RoHS-compliant	
Materials		Polymer	Aluminium
Grid dimension	[mm]	50	
Dimensions W x L x H	[mm]	50 x 107 x 35	
Weight	[g]	100	162

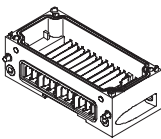

- 1) Corrosion resistance class 2 according to Festo standard 940 070
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

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

Terminal CPX

Accessories – Interlinking block

FESTO

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

Terminal CPX

Technical data – Interlinking block with additional power supply for outputs

Function

Interlinking blocks ensure the electrical supply of all other CPX modules. They have contact rails, from which the other CPX components on the interlinking modules are supplied with current. Internal division of the power supply makes it possible to switch off specific areas of the sensors and actuators individually.

Applications

- 24 V DC supply voltage for outputs



General technical data – Plastic interlinking blocks				
Type		CPX-GE-EV-Z	CPX-GE-EV-Z-7/8-4POL	CPX-GE-EV-Z-7/8-5POL
Electrical connection		M18	7/8", 4-pin	7/8", 5-pin
Nominal operating voltage	[V DC]	24		
Current supply	Outputs	[A]	Max. 16	Max. 10
Protection class to EN 60529		Depending on connection block		
Ambient temperature	[°C]	–5 ... +50		
Corrosion resistance class CRC ¹⁾		2		
Material declaration		RoHS-compliant		
Materials		Polymer		
Grid dimension	[mm]	50		
Dimensions W x L x H	[mm]	50 x 107 x 35		
Weight	[g]	125		

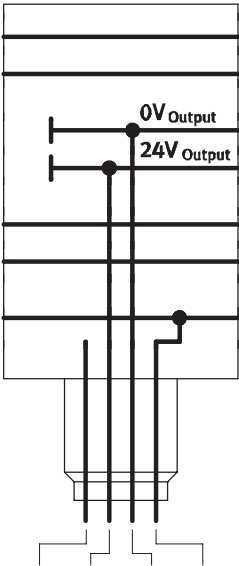
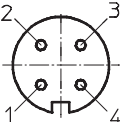
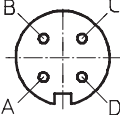
- 1) Corrosion resistance class 2 according to Festo standard 940 070
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

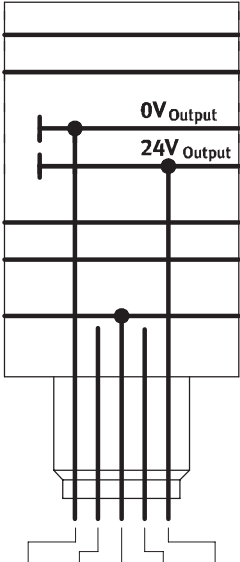
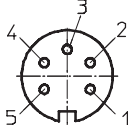
General technical data – Metal interlinking blocks				
Type		CPX-M-GE-EV-Z-7/8-5POL		CPX-M-GE-EV-Z-PP-5POL
Electrical connection		7/8", 5-pin		AIDA push-pull, 5-pin
Nominal operating voltage		[V DC]	24	
Current supply	Outputs	[A]	Max. 8	Max. 16
Protection class to EN 60529		Depending on connection block		
Ambient temperature		[°C]	–5 ... +50	
Material declaration		–		RoHS-compliant
Materials		Die-cast aluminium		
Grid dimension		[mm]	50	
Dimensions W x L x H		[mm]	50 x 107 x 35	
Weight		[g]	187	245

Terminal CPX

FESTO

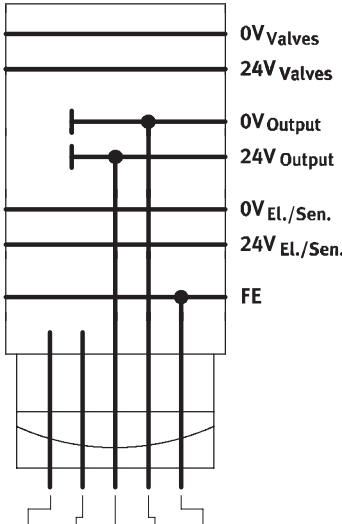
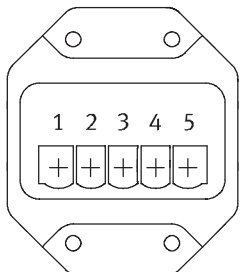
Technical data – Interlinking block with additional power supply for outputs

Pin allocation																										
Circuitry		Pin	Allocation																							
 <table border="1"><tr><td>M18</td><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td>7/8"</td><td>A</td><td>B</td><td>D</td><td>C</td></tr><tr><td></td><td>n.c.</td><td>24V</td><td>0V</td><td>FE</td></tr></table>	M18	1	2	3	4	7/8"	A	B	D	C		n.c.	24V	0V	FE	0V Valves 24V Valves 0V Output 24V Output 0V El./Sen. 24V El./Sen. FE	M18 – 4-pin  <table border="1"><tr><td>1</td><td>n.c.</td></tr><tr><td>2</td><td>24 V DC load voltage supply for outputs</td></tr><tr><td>3</td><td>0 V</td></tr><tr><td>4</td><td>FE</td></tr></table>		1	n.c.	2	24 V DC load voltage supply for outputs	3	0 V	4	FE
	M18	1	2	3	4																					
	7/8"	A	B	D	C																					
		n.c.	24V	0V	FE																					
	1	n.c.																								
	2	24 V DC load voltage supply for outputs																								
	3	0 V																								
	4	FE																								
		7/8" – 4-pin  <table border="1"><tr><td>A</td><td>n.c.</td></tr><tr><td>B</td><td>24 V DC load voltage supply for outputs</td></tr><tr><td>C</td><td>FE</td></tr><tr><td>D</td><td>0V</td></tr></table>	A	n.c.	B	24 V DC load voltage supply for outputs	C	FE	D	0V																
	A	n.c.																								
B	24 V DC load voltage supply for outputs																									
C	FE																									
D	0V																									

Pin allocation																								
Circuitry		Pin	Allocation																					
 <p>0V Valves 24V Valves 0V Output 24V Output 0V EL./Sen. 24V EL./Sen. FE</p> <table><tr><td>7/8"</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td></td><td>0V</td><td>n.c.</td><td>FE</td><td>n.c.</td><td>24V</td></tr></table>	7/8"	1	2	3	4	5		0V	n.c.	FE	n.c.	24V	<p>7/8" – 5-pin</p> 	<table><tr><td>1</td><td>0 V outputs</td></tr><tr><td>2</td><td>n.c.</td></tr><tr><td>3</td><td>FE</td></tr><tr><td>4</td><td>n.c.</td></tr><tr><td>5</td><td>24 V DC load voltage supply for outputs</td></tr></table>	1	0 V outputs	2	n.c.	3	FE	4	n.c.	5	24 V DC load voltage supply for outputs
7/8"	1	2	3	4	5																			
	0V	n.c.	FE	n.c.	24V																			
1	0 V outputs																							
2	n.c.																							
3	FE																							
4	n.c.																							
5	24 V DC load voltage supply for outputs																							

Terminal CPX

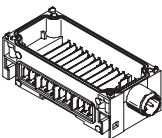
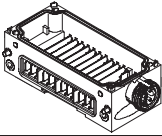
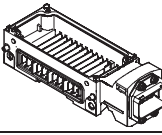
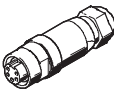
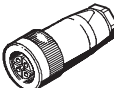

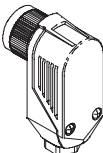
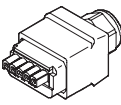

Technical data – Interlinking block with additional power supply for outputs

Pin allocation																
Circuitry			Pin	Allocation												
 <table><tr><th>PP</th><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th></tr><tr><td></td><td>n.c.</td><td>n.c.</td><td>24V</td><td>0V</td><td>FE</td></tr></table>			PP	1	2	3	4	5		n.c.	n.c.	24V	0V	FE	Push-pull plug – 5-pin (AIDA)	
			PP	1	2	3	4	5								
				n.c.	n.c.	24V	0V	FE								
				1	n.c.											
				2	n.c.											
	3	24 V DC load voltage supply for outputs														
	4	0 V outputs														
	5	FE														

Terminal CPX

Accessories – Interlinking block with additional power supply for outputs

FESTO

Ordering data				
Designation			Part No.	Type
Interlinking block with additional power supply for outputs				
	Connection M18, 4-pin, plastic interlinking block		195744	CPX-GE-EV-Z
	Connection 7/8", 4-pin, plastic interlinking block		541250	CPX-GE-EV-Z-7/8-4POL
	Connection 7/8", 5-pin, plastic interlinking block		541246	CPX-GE-EV-Z-7/8-5POL
	Connection 7/8", 5-pin, metal interlinking block		550210	CPX-M-GE-EV-Z-7/8-5POL
	Connection push-pull plug (AIDA), 5-pin, metal interlinking block		563058	CPX-M-GE-EV-Z-PP-5POL
7/8" connection sockets				
	Power supply socket	5-pin	543107	NECU-G78G5-C2
		4-pin	543108	NECU-G78G4-C2
M18 connection sockets				
	Straight socket, screw terminal	4-pin, PG9	18493	NTSD-GD-9
		4-pin, PG13.5	18526	NTSD-GD-13,5
	Angled socket, screw terminal	4-pin, PG9	18527	NTSD-WD-9
	Angled socket, screw terminal	4-pin, PG11	533119	NTSD-WD-11
Connection socket AIDA push-pull				
	Socket, spring-loaded terminal	5-pin	563059	NECU-M-PPG5-C1
Mounting accessories				
	Screws for mounting the bus node/connection block on a plastic interlinking block	Bus node/metal connection block	550218	CPX-DPT-30X32-S-4X
	Screws for mounting the bus node/connection block on a metal interlinking block	Bus node/plastic connection block	550219	CPX-M-M3x22-4x
		Bus node/metal connection block	550216	CPX-M-M3x22-S-4x

Terminal CPX

Technical data – Interlinking block with additional power supply for valves

FESTO

Function

Interlinking blocks ensure the electrical supply of all other CPX modules. They have contact rails, from which the other CPX components on the interlinking modules are supplied with current. Internal division of the power supply makes it possible to switch off specific areas of the sensors and actuators individually.

Applications

- 24 V DC supply voltage for valves



General technical data			
Type		CPX-GE-EV-V	CPX-GE-EV-V-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	10
Protection class to EN 60529		Depending on connection block	
Ambient temperature	[°C]	-5 ... +50	
Corrosion resistance class CRC ¹⁾		2	
Material declaration		RoHS-compliant	
Materials		Polymer	
Grid dimension	[mm]	50	
Dimensions W x L x H	[mm]	50 x 107 x 35	
Weight	[g]	125	

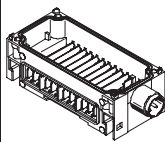
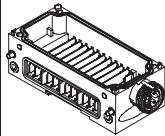
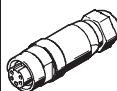
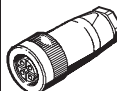

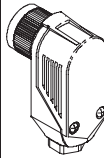
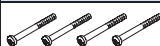
- 1) Corrosion resistance class 2 according to Festo standard 940 070
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Pin allocation			
Circuitry		Pin	Allocation
	M18 – 4-pin		
		1	n.c.
		2	24 V DC load voltage supply for valves
		3	0 V
		4	FE
	7/8" – 4-pin		
		A	n.c.
		B	24 V DC load voltage supply for valves
		C	FE
		D	0V

Terminal CPX

FESTO

Accessories – Interlinking block with additional power supply for valves

Ordering data				
Designation			Part No.	Type
Interlinking block with additional power supply for valves				
	Connection M18, 4-pin, plastic interlinking block		533577	CPX-GE-EV-V
	Connection 7/8", 4-pin, plastic interlinking block		541252	CPX-GE-EV-V-7/8-4POL
7/8" connection sockets				
	Power supply socket	5-pin	543107	NECU-G78G5-C2
		4-pin	543108	NECU-G78G4-C2
M18 connection sockets				
	Straight socket, screw terminal	4-pin, PG9	18493	NTSD-GD-9
		4-pin, PG13.5	18526	NTSD-GD-13,5
	Angled socket, screw terminal	4-pin, PG9	18527	NTSD-WD-9
	Angled socket, screw terminal	4-pin, PG11	533119	NTSD-WD-11
Mounting accessories				
	Screws for mounting the bus node/connection block on a plastic interlinking block	Bus node/metal connection block	550218	CPX-DPT-30X32-S-4X

Terminal CPX

Technical data – Pneumatic interface MPA

FESTO

Function

The pneumatic interface MPA establishes the electromechanical connection between the CPX terminal and the valve terminal MPA. The signals from the bus node are forwarded to the control electronics in the electrical modules of the valve terminal MPA 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
- Max. 128 solenoid coils
- Features of the electronics module of the valve terminal MPA can be parameterised, for example status of the solenoid coils in the event of fieldbus communication being interrupted (fail-safe), individual channel diagnostics can be activated, condition monitoring can be activated individually for each valve
- The pneumatic interface receives the voltage for the electronics and the supply voltage for the valves from the left-hand interlinking block and feeds them through to the electronics modules of the valve terminal MPA
- Electronics modules of the valve terminal MPA:
 - Undervoltage of valves
 - Short circuit of valves
 - Open load of valves
 - Counter preset reached in condition monitoring



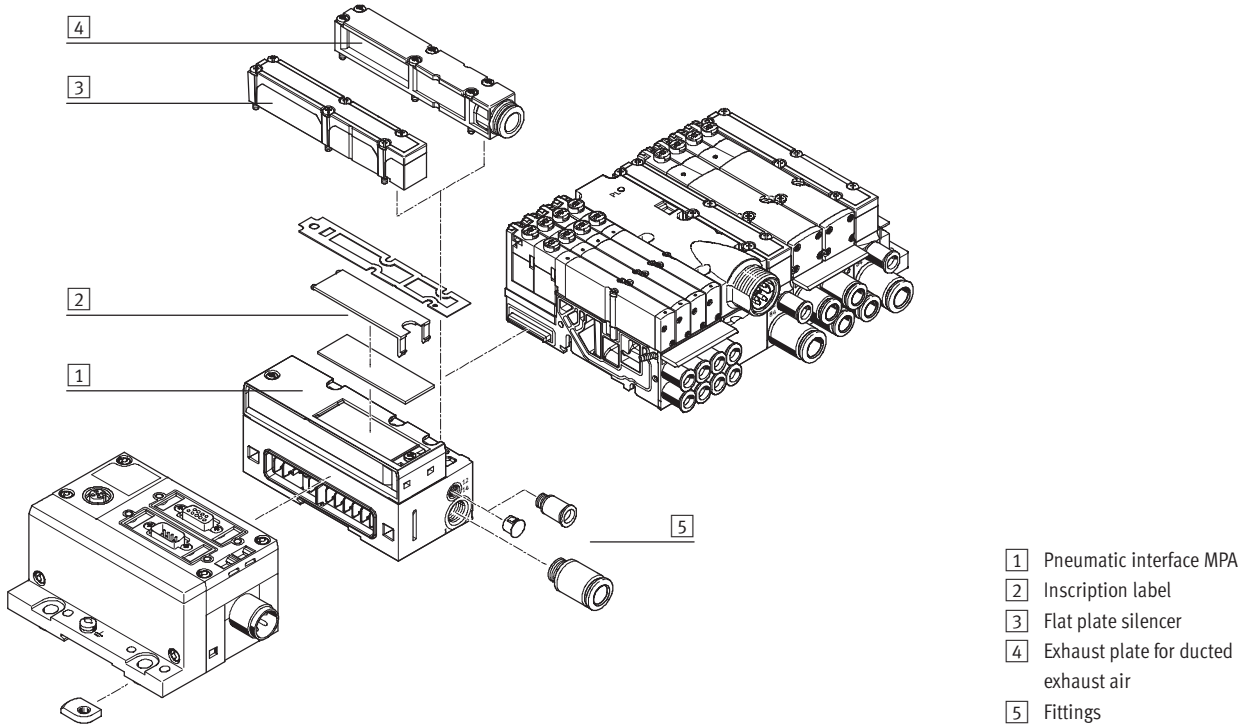
General technical data			
Type		VMPA-FB-EPL-G	VMPA-FB-EPL-E
No. of solenoid coils		128	
Pilot air supply		Internal	External
Pilot air connection 12/14		–	M7
Pneumatic connection 1		G $\frac{1}{4}$	G $\frac{1}{4}$
Operating pressure	[bar]	3 ... 8	–0.9 ... 10
Pilot pressure	[bar]	3 ... 8	3 ... 8
Nominal operating voltage	[V DC]	24	
Protection class to EN 60529		IP65	
Ambient temperature	[°C]	–5 ... +50	
Materials	Cover	Polyamide	
	Housing	Die-cast aluminium	
Weight	[g]	Approx. 320	

Terminal CPX

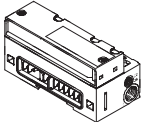
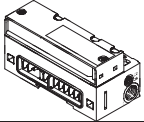
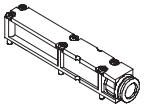
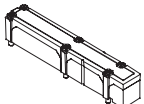
Accessories – Pneumatic interface MPA

FESTO

Overview – Pneumatic interface MPA



Ordering data

Designation	Part No.	Type
Pneumatic interface for CPX plastic interlinking module		
	Ducted exhaust air, internal pilot air	533370 VMPA-FB-EPL-G
	Ducted exhaust air, external pilot air	533369 VMPA-FB-EPL-E
	Flat plate silencer, internal pilot air	533372 VMPA-FB-EPL-GU
	Flat plate silencer, external pilot air	533371 VMPA-FB-EPL-EU
Pneumatic interface for CPX metal interlinking module		
	Ducted exhaust air, internal pilot air	552286 VMPA-FB-EPLM-G
	Ducted exhaust air, external pilot air	552285 VMPA-FB-EPLM-E
	Flat plate silencer, internal pilot air	552288 VMPA-FB-EPLM-GU
	Flat plate silencer, external pilot air	552287 VMPA-FB-EPLM-EU
Exhaust plate		
	For ducted exhaust air, with 10 mm push-in connector	533375 VMPA-AP
	For ducted exhaust air, with QS-3/8 connector	541629 VMPA-AP-3/8
	Flat plate silencer	533374 VMPA-APU

Terminal CPX

Technical data – Pneumatic interface MPA-F

FESTO

Function

The pneumatic interface MPA-F establishes the electromechanical connection between the CPX terminal and the valve terminal MPA-F. The signals from the bus node are forwarded to the control electronics in the electrical modules of the valve terminal MPA-F via the integrated CPX bus. The bus signal for activation of the solenoid coils is converted in the electronics module for max. 8 coils. From a technical point of view, the individual MPA-F pneumatic modules each represent a separate electrical module with digital outputs. Valves, which are galvanically isolated, can be supplied with power via the interlinking block CPX-GE-EV-V.

Applications

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



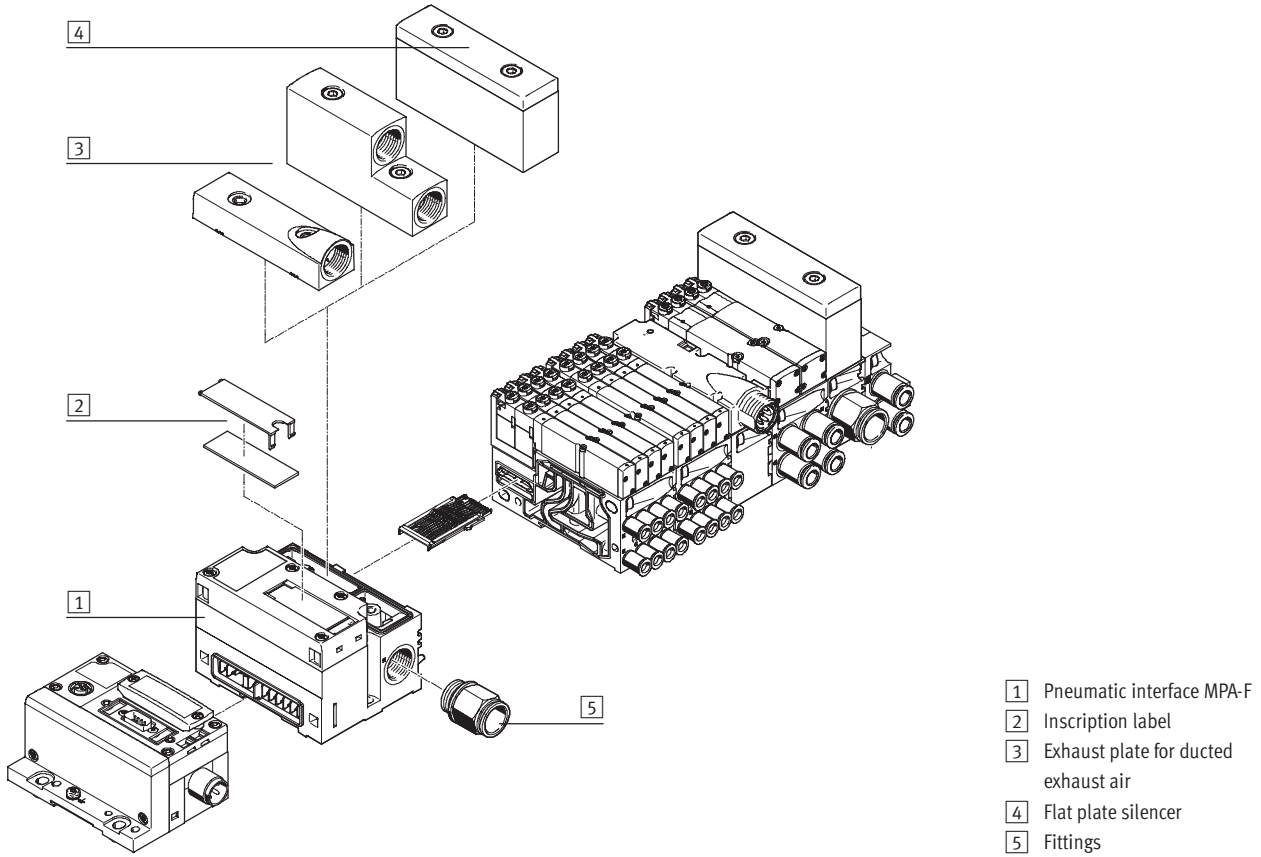
General technical data		
Type	VMPAF-FB-EPL	VMPAF-FB-EPL-PS
Version	–	With integrated pressure sensor for channel 1
No. of solenoid coils	128	
Pneumatic connection 1	G1/2	
Operating pressure [bar]	–0.9 ... 10	0 ... 10
Accuracy FS [%]	–	2.5
Nominal operating voltage [V DC]	24	
Protection class to EN 60529	IP65	
Ambient temperature [°C]	–5 ... +50	
CE mark (see declaration of conformity)	To EU EMC Directive	
Note on materials	RoHS-compliant	
Weight [g]	690	

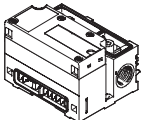
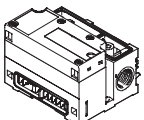



Terminal CPX

Accessories – Pneumatic interface MPA-F

FESTO

Overview – Pneumatic interface MPA-F



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

Terminal CPX

Technical data – Pneumatic interface VTSA/VTSA-F

FESTO

Function

The pneumatic interface VTSA establishes the electromechanical connection between the CPX terminal and the valve terminal type 44 VTSA/type 45 VTSA-F. A complete pneumatic control loop system (FB-valve-drive-sensor-FB) can therefore be connected to the fieldbus using the input modules of the CPX terminal.

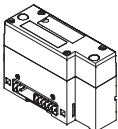
Different circuits for valves and electrical outputs are implemented using an additional power supply. The integrated valve diagnostic functions enable the causes of errors to be found quickly, therefore increasing system availability.

Applications

- 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
- 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			
Type		VABA-S6-1-X1	VABA-S6-1-X2
Connection for CPX interlinking blocks made of		Plastic	Metal
No. of solenoid coils		32	
Electrical actuation		Fieldbus	
Electrical connection		Via CPX	
Nominal operating voltage		[V DC]	24
Permissible voltage fluctuations		[%]	10
Protection class to EN 60529		IP65	
Ambient temperature		[°C]	−5 ... +50
Mounting position		Any	
Materials	Housing	Die-cast aluminium	
	Cover	Polyamide	
Weight		[g]	485

Ordering data			
Designation		Part No.	Type
	For plastic interlinking block	543416	VABA-S6-1-X1
	For metal interlinking block	550663	VABA-S6-1-X2

Terminal CPX

Technical data – Pneumatic interface MIDI/MAXI

FESTO

Function

The pneumatic interface MIDI/MAXI connects the valve terminal MIDI/MAXI to the supported fieldbus protocols of the CPX terminal. A complete pneumatic control loop system (FB-valve-drive-sensor-FB) can therefore be connected to the fieldbus using the input modules of the CPX terminal. Different circuits for valves and electrical outputs are implemented using an additional power supply. The integrated valve diagnostic functions enable the causes of errors to be found quickly, therefore increasing system availability.

Applications

- Interface to valve terminals MIDI/MAXI
- Max. 26 solenoid coils
- Address space allocation (configuration) of valve terminals can be set using integrated DIL switches
- Pneumatic interface features can be parameterised, for example status of the solenoid coils in the event of fieldbus communication being interrupted (fail-safe)
- The pneumatic interface receives the voltage for the electronics and the supply voltage for the valves from the left-hand interlinking block



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

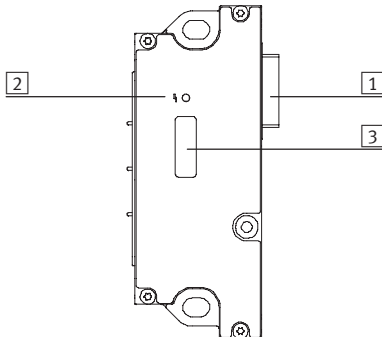
Terminal CPX

Accessories – Pneumatic interface MIDI/MAXI

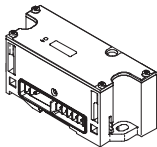
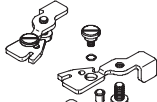
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Connection and display components

CPX-GP-03-4,0



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

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

Terminal CPX

Technical data – Pneumatic interface CPA

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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 CPA10 and 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 module 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			<ul style="list-style-type: none"> • Load voltage of valves • Short circuit, solenoid coils (channel-oriented) • Wire break, solenoid coils (channel-oriented quiescent current detection for solenoid coils)
Parameterisation			<ul style="list-style-type: none"> • 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			Polymer
Grid dimension		[mm]	50
Dimensions W x L x H		[mm]	50 x 110 x 58
Weight		[g]	150

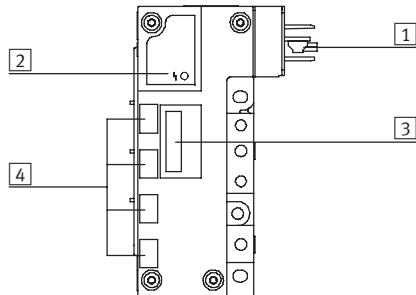
Terminal CPX

Accessories – Pneumatic interface CPA

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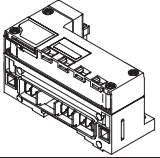

Connection and display components

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.	Type
Pneumatic interface CPA		
 For CPA in 10 mm width	195710	CPX-GP-CPA-10
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

Terminal CPX

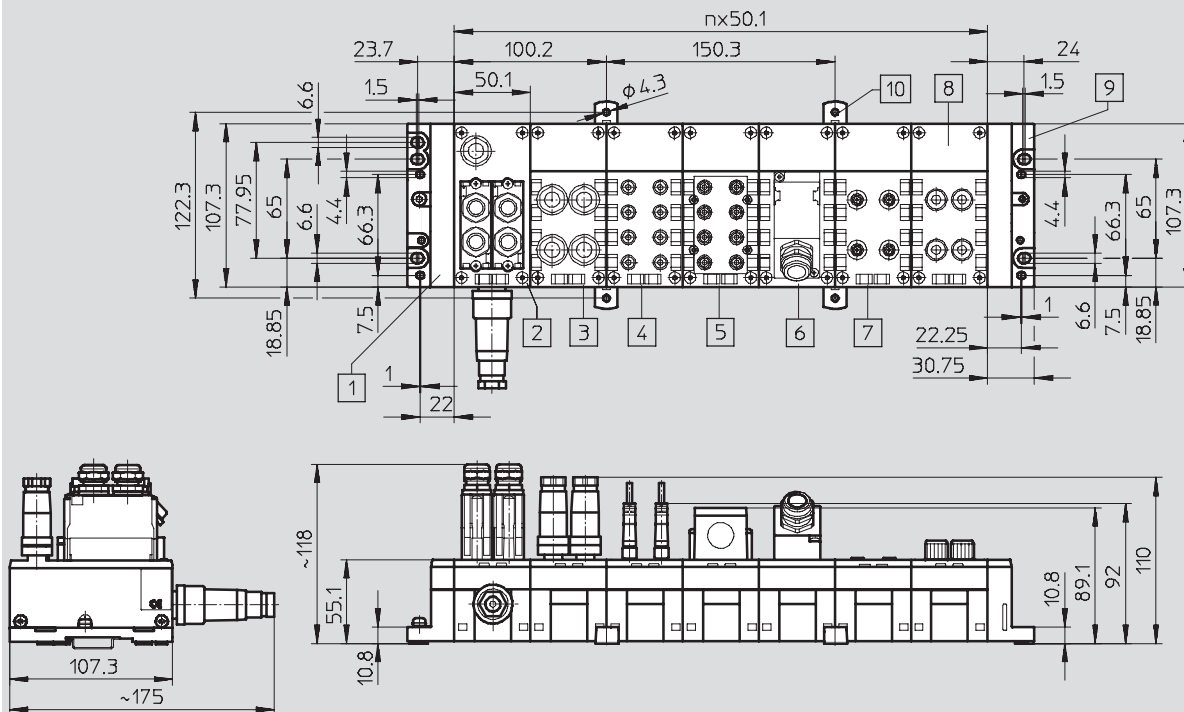
Technical data

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Dimensions – Plastic interlinking module

Download CAD Data → www.festo.com/us/cad

With bus nodes and connection blocks



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

Terminal CPX

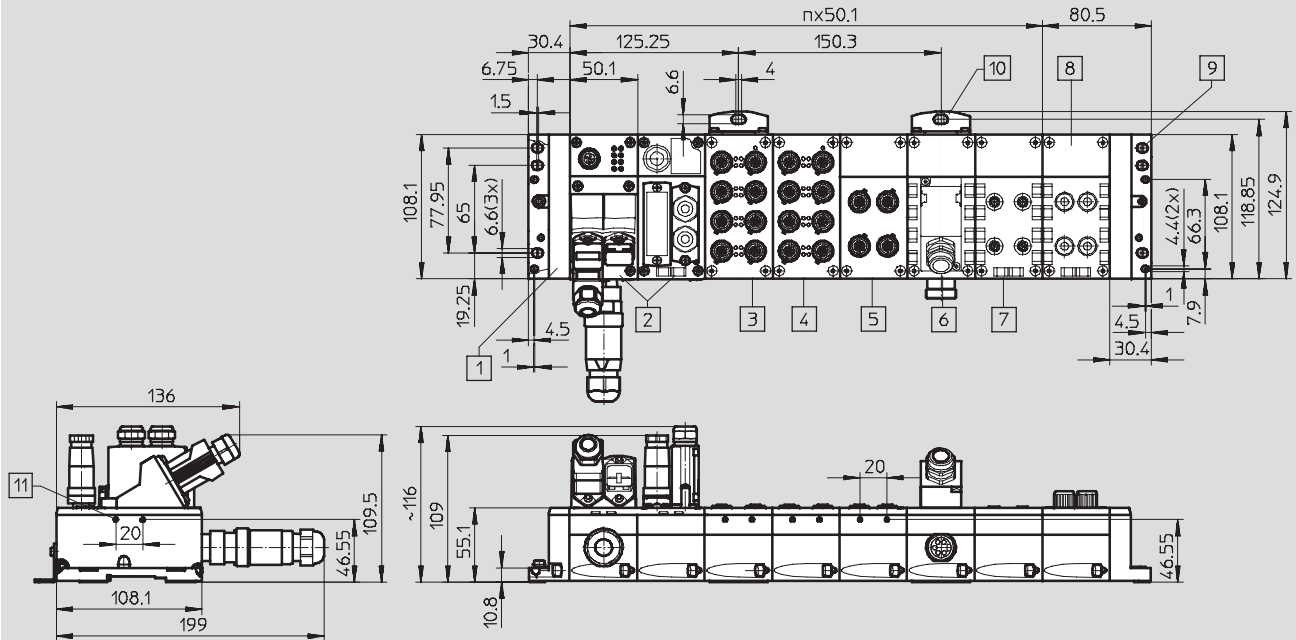
Technical data

FESTO

Dimensions – Metal interlinking block

Download CAD Data → www.festo.com/us/cad

With bus nodes and connection blocks



- | | | | |
|--|---|--|--|
| 1 Left-hand end plate | 6 Connection block
CPX-AB-1-SUB-BU-25POL | 9 Right-hand end plate | n Number of bus nodes and
connection blocks for CPX |
| 2 Bus nodes | 7 Connection block
CPX-AB-4-M12-8POL | 10 Mounting bracket for wall
mounting | |
| 3 Connection block
CPX-M-8-M12x2-5POL | 8 Connection block
CPX-AB-4-HAR-4POL | 11 Hole for self-tapping screw
M2.5 | |
| 4 Connection block
CPX-M-8-M12x2-5POL | | | |
| 5 Connection block
CPX-M-4-M12x2-5POL | | | |

Terminal CPX

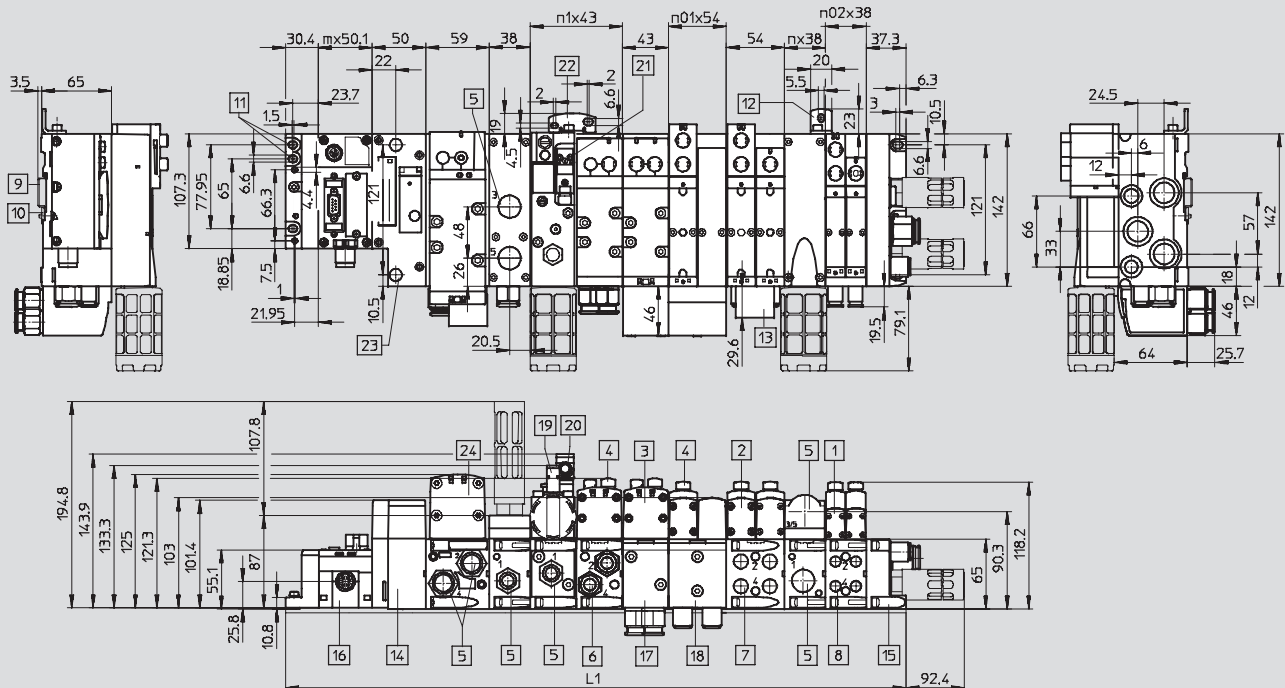
Technical data

FESTO

Dimensions

Download CAD Data → www.festo.com/us/cad

With bus nodes and valve terminal type 44 VTSA



- | | | | |
|-----------------------------|--|---|--|
| 1 Solenoid valve 18 mm | 11 Mounting hole | 19 Proximity sensor M12x1 | n02 Number of manifold sub-bases 38 mm |
| 2 Solenoid valve 26 mm | 12 Additional mounting bracket | 20 Plug socket M12x1 | n01 Number of manifold sub-bases 54 mm |
| 3 Solenoid valve 42 mm | 13 Inscription label holder | 21 Electrical connection to EN 175301-803 type C | n1 Number of manifold sub-bases 43 mm |
| 4 Cover cap/manual override | 14 Pneumatic interface CPX | 22 Additional mounting bracket | n2 Number of manifold sub-bases 59 mm |
| 5 Threaded connection G1/2 | 15 End plate | 23 Drilled hole for additional mounting, diameter 6,4, 2x | nzwp Number of supply plates (only with end plate with pilot air selector) |
| 6 Threaded connection G3/8 | 16 CPX module/fieldbus node | 24 Solenoid valve 52 mm | m Number of CPX modules |
| 7 Threaded connection G1/4 | 17 90° connection plate, width 43 mm, G3/8 | | |
| 8 Threaded connection G1/8 | 18 90° connection plate, width 54 mm, G1/4 | | |
| 9 H-rail | | | |
| 10 H-rail mounting | | | |

Width	L1
18 mm	$30.4 + m \times 50.1 + 50 + n02 \times 38 + nzwp \times 38 + 37.3$
26 mm	$30.4 + m \times 50.1 + 50 + n01 \times 54 + nzwp \times 38 + 37.3$
42 mm	$30.4 + m \times 50.1 + 50 + n1 \times 43 + nzwp \times 38 + 37.3$
52 mm	$30.4 + m \times 50.1 + 50 + n2 \times 59 + nzwp \times 38 + 37.3$
Mixture of 18 mm, 26 mm, 42 mm and 52 mm	$30.4 + m \times 50.1 + 50 + n02 \times 38 + n01 \times 54 + n1 \times 43 + n2 \times 59 + nzwp \times 38 + 37.3$

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

Terminal CPX

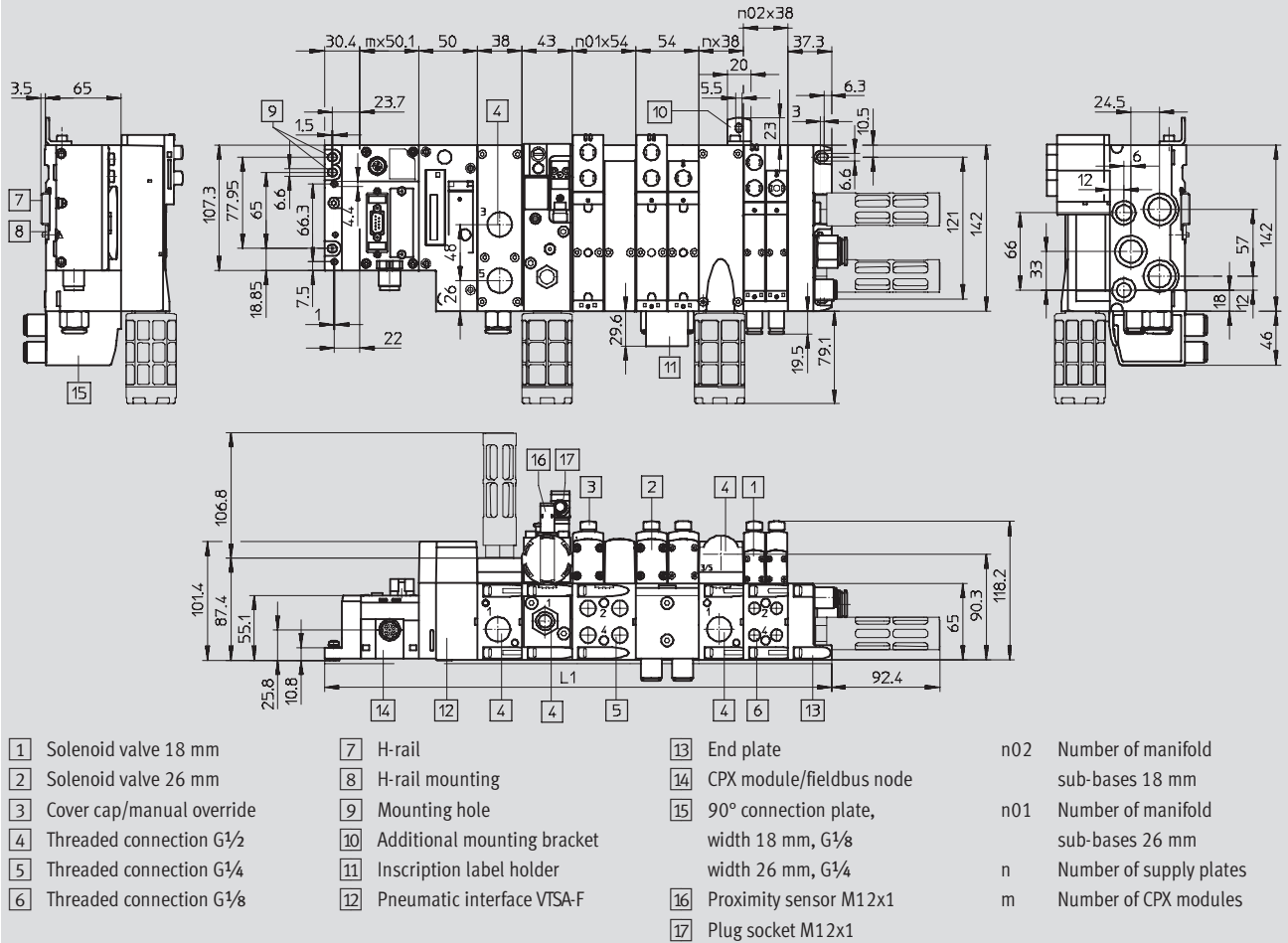
Technical data

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Dimensions

Download CAD Data → www.festo.com/us/cad

With bus nodes and valve terminal type 45 VTSA-F



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

Terminal CPX

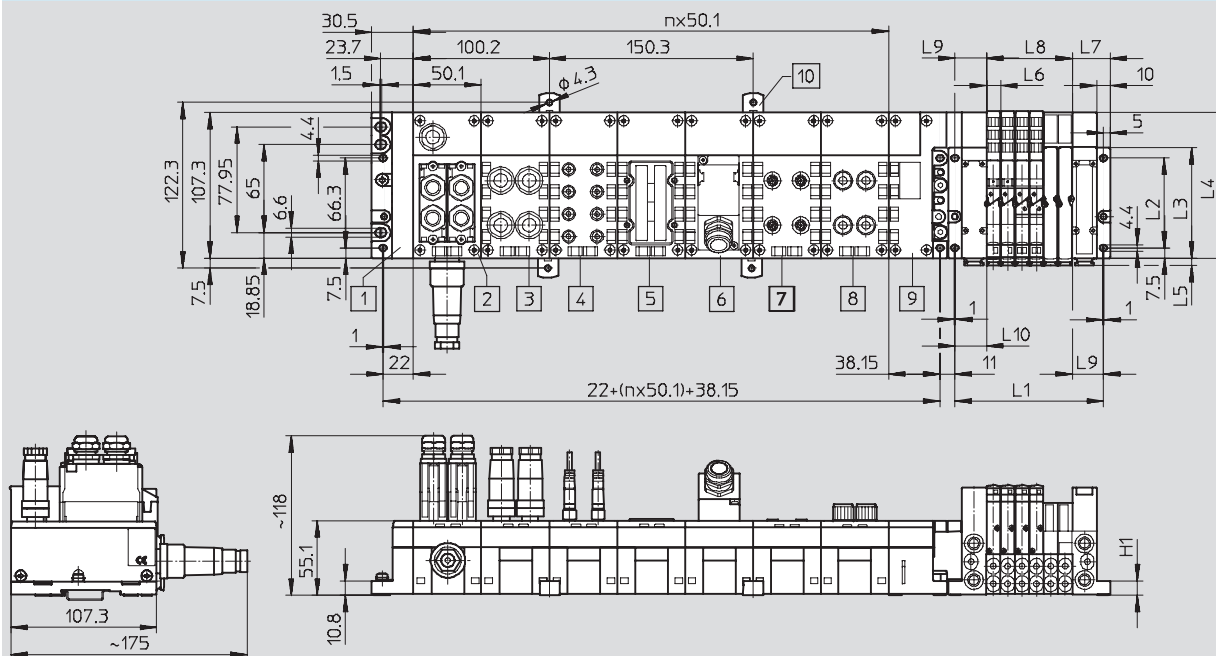
Technical data

FESTO

Dimensions

Download CAD Data → www.festo.com/us/cad

With bus nodes, connection blocks and valve terminal CPA



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

Type	L1 ¹⁾	L2 ±0.1	L3	L4	L5	L6	L7	L8 ¹⁾	L9 ±0.1	H1
CPA10	46 + (m x 10.6)	66.3	81.3	108.3	5.5	10.6	28	m x 10.6	23	10.8
CPA14	51 + (m x 14.6)	76.1	91.1	118.1	6.5	14.6	31	m x 14.6	26	13

1) m = Number of valves

Terminal CPX

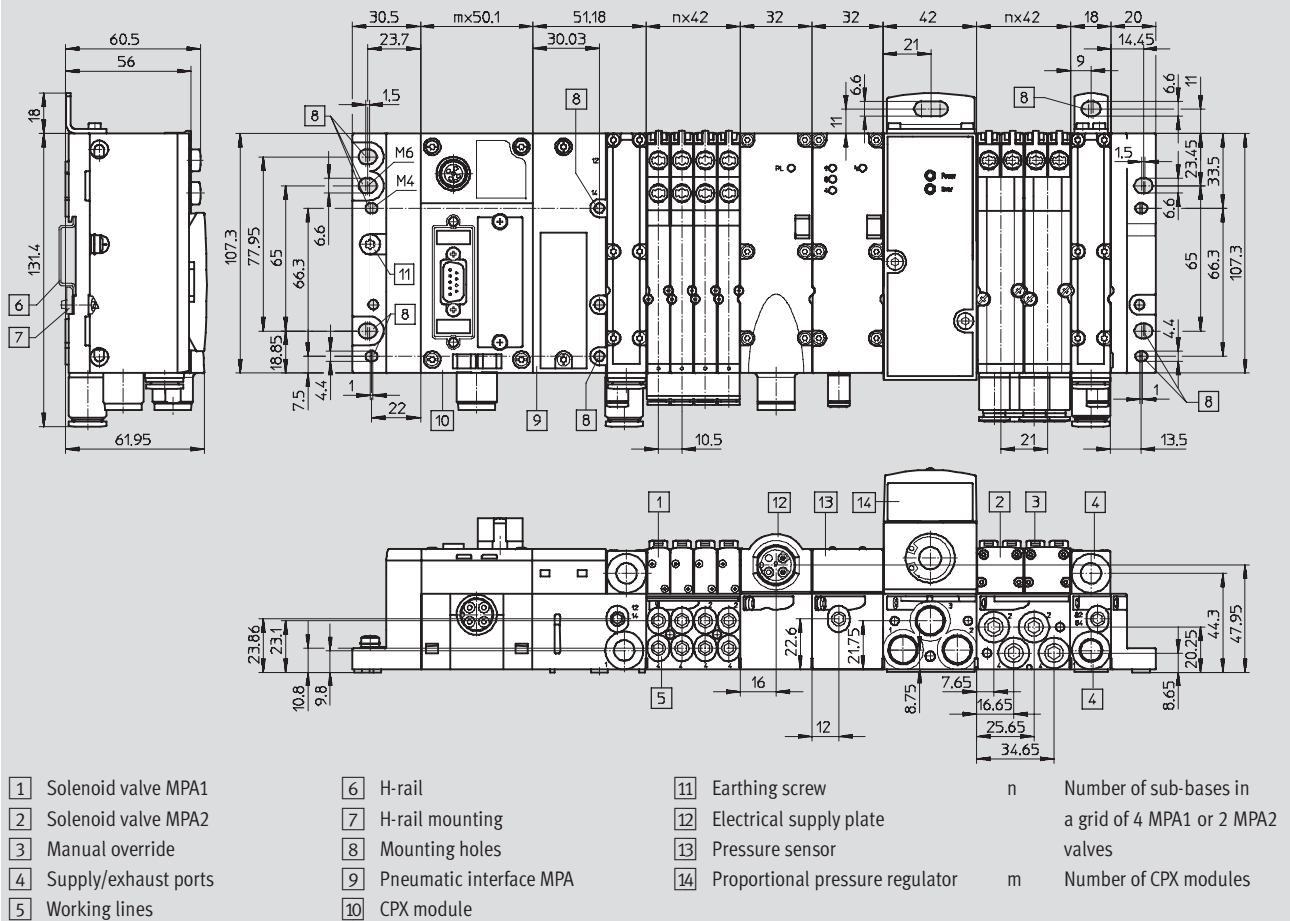
Technical data

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Dimensions

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With bus nodes and valve terminal MPA



Terminal CPX

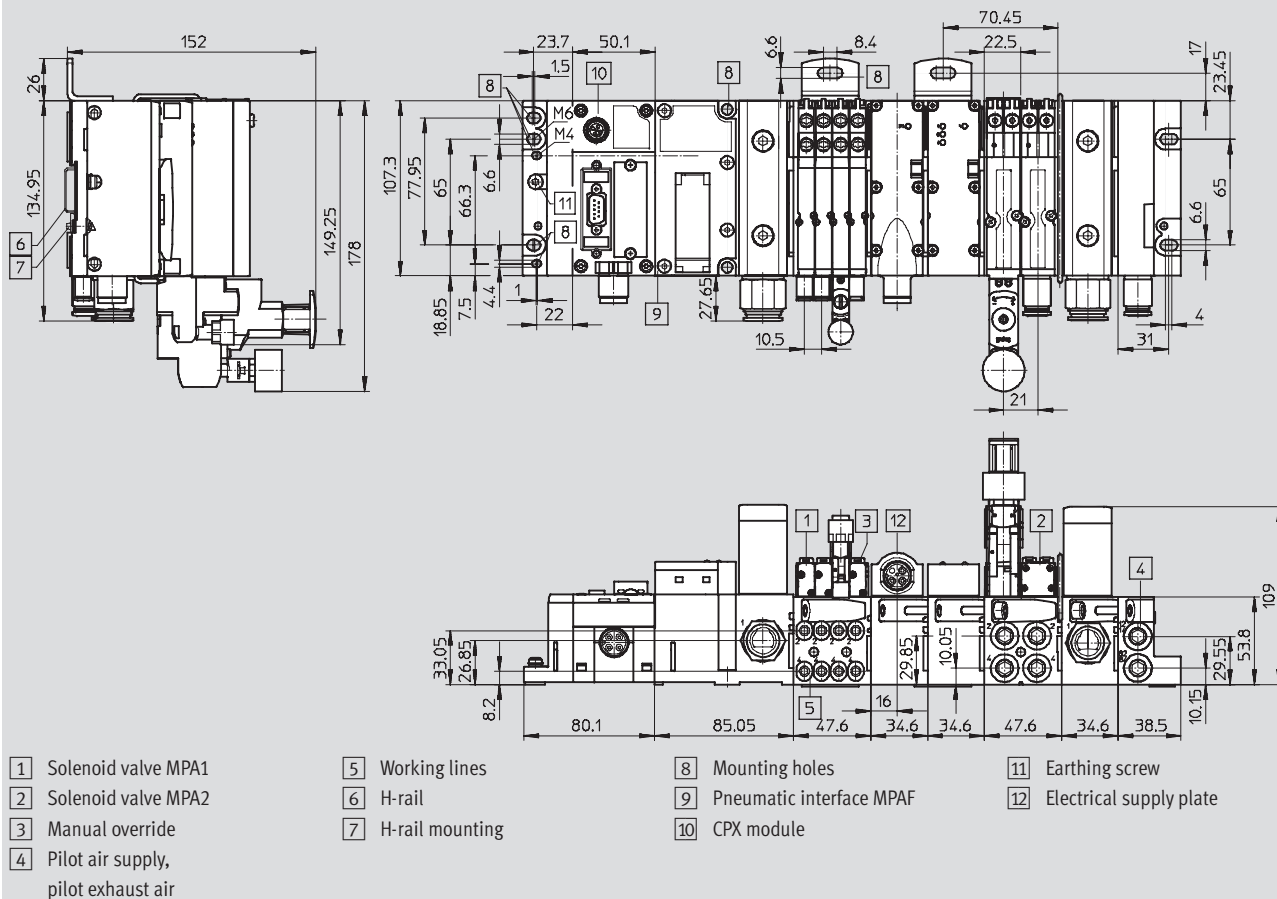
Technical data

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Dimensions

Download CAD Data → www.festo.com/us/cad

With bus nodes and valve terminal MPA-F



Terminal CPX

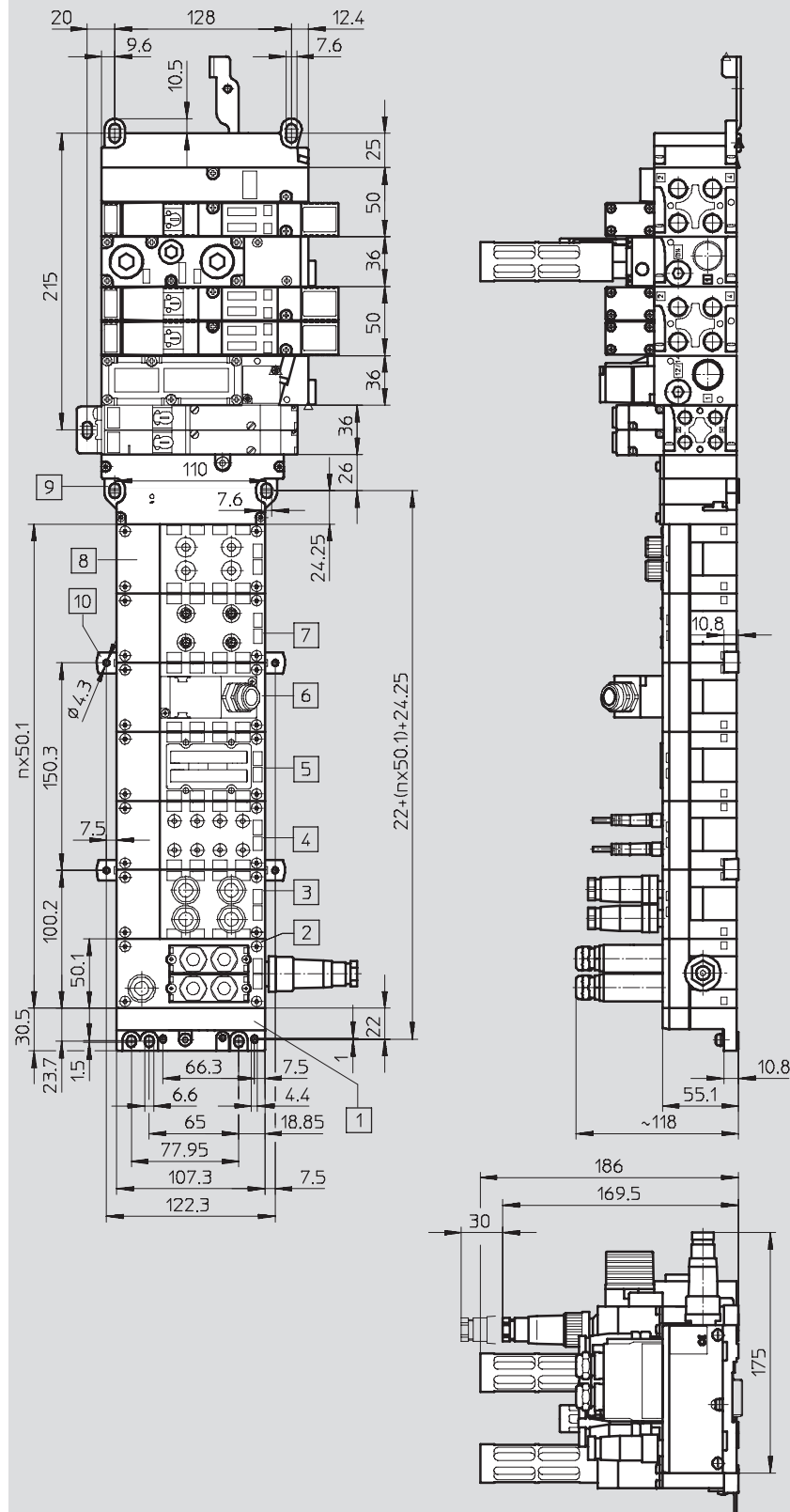
Technical data

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Dimensions

Download CAD Data → www.festo.com/us/cad

With bus nodes, connection blocks and valve terminal MIDI/MAXI

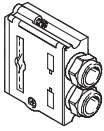



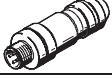
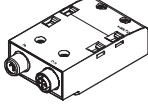
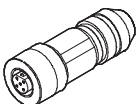
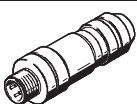



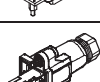
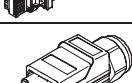
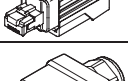
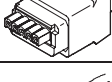


- | | | |
|---|--|--|
| 1 Left-hand end plate | 10 Mounting clip for wall mounting (required every 2 ... 3 connection blocks) | n Number of bus nodes and connection blocks for CPX |
| 2 Bus nodes | 6 Connection block CPX-AB-1-SUB-BU-2.5POL | |
| 3 Connection block CPX-AB-4-M12-8POL | 7 Connection block CPX-AB-4-HAR-4POL | |
| 4 Connection block CPX-AB-8-M8-3POL | 8 Connection block CPX-AB-4-M12x2-5POL | |
| 5 Connection block CPX-AB-8-KL-4POL | 9 Pneumatic interface MIDI/MAXI | |

Terminal CPX

Accessories

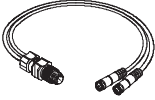

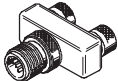
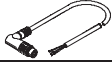
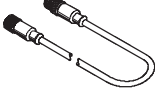

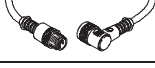


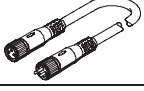
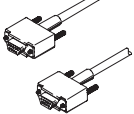
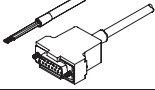
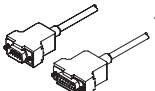
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Ordering data – Accessories				
Designation			Part No.	Type
Plug connectors and accessories				
	Sub-D plug for INTERBUS	Incoming	532218	FBS-SUB-9-BU-IB-B
		Outgoing	532217	FBS-SUB-9-GS-IB-B
	Sub-D plug for DeviceNet/CANopen		532219	FBS-SUB-9-BU-2x5POL-B
	Sub-D plug for Profibus DP		532216	FBS-SUB-9-GS-DP-B
	Sub-D plug for CC-Link		532220	FBS-SUB-9-GS-2x4POL-B
	Sub-D plug		534497	FBS-SUB-9-GS-1x9POL-B
	Bus connection M12 adapter (B-coded) for Profibus DP		533118	FBA-2-M12-5POL-RK
	Micro Style bus connection, 2xM12 for DeviceNet/CANopen		525632	FBA-2-M12-5POL
	Socket for Micro Style connection, M12		18324	FBSD-GD-9-5POL
	Plug for Micro Style connection, M12		175380	FBS-M12-5GS-PG9
	M12x1 bus connection, 4-pin (D-coded) for Ethernet		543109	NECU-M-S-D12G4-C2-ET
	Connection block M12 adapter (B-coded) for Profibus DP		541519	CPX-AB-2-M12-RK-DP
	Connection block M12 adapter (B-coded) for INTERBUS		534505	CPX-AB-2-M12-RK-IB
	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
	Open Style bus connection for 5-pin terminal strip for DeviceNet/CANopen		525634	FBA-1-SL-5POL
	Terminal strip for Open Style connection, 5-pin		525635	FBSD-KL-2x5POL
	Screw terminal bus connection for CC-Link		197962	FBA-1-KL-5POL
	RJ45/plug		534494	FBS-RJ45-8-GS
	RJ45 plug, 8-pin, push-pull		552000	FBS-RJ45-PP-GS
	Socket/spring-loaded terminal, 5-pin, AIDA push-pull		563059	NECU-M-PPG5-C1
	Plug for CAN bus interface, Sub-D, 9-pin, without terminating resistor		533783	FBS-SUB-9-WS-CO-K

Terminal CPX

Accessories


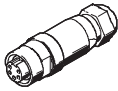
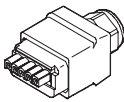
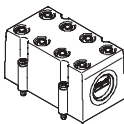
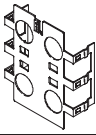
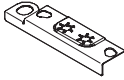
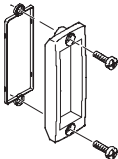
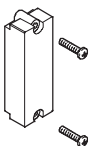
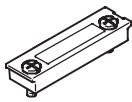

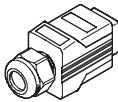

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Ordering data – Accessories				
Designation			Part No.	Type
Connecting cables				
	DUO cable M12-2xM8, 4-pin/2x3-pin	2x straight socket	18685	KM12-DUO-M8-GDGD
		2x straight/angled socket	18688	KM12-DUO-M8-GDWD
		2x angled socket	18687	KM12-DUO-M8-WDWD
	Push-in T-connector	2x socket M8, 3-pin 1x plug M8, 4-pin	544391	NEDU-M8D3-M8T4
	Push-in T-connector	2x socket M12, 5-pin 1x plug M12, 4-pin	541596	NEDU-M12D5-M12T4
		2x socket M8, 3-pin 1x plug M12, 4-pin	541597	NEDU-M8D3-M12T4
	Connecting cable M9, 5-pin, angled plug-open cable end 3-pin	2 m	563711	NEBC-M9W5-K-2-N-LE3
		5 m	563712	NEBC-M9W5-K-5-N-LE3
	Connecting cable M8-M8, straight 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, 5-pin, straight plug-straight socket	1.5 m	529044	KV-M12-M12-1,5
		3.5 m	530901	KV-M12-M12-3,5
	Connecting cable M12-M12, 4-pin, straight plug-straight socket	2.5 m	18684	KM12-M12-GSGD-2,5
		5.0 m	18686	KM12-M12-GSGD-5
	Connecting cable M12-M12, 8-pin, straight plug-straight socket	2.0 m	525617	KM12-8GD8GS-2-PU
	Connecting cable M12-M12, 4-pin, straight plug-angled socket	1.0 m	185499	KM12-M12-GSWD-1-4
	Connecting cable M9, angled plug-angled socket	0.25 m	540327	KVI-CP-3-WS-WD-0,25
		0.5 m	540328	KVI-CP-3-WS-WD-0,5
		2 m	540329	KVI-CP-3-WS-WD-2
		5 m	540330	KVI-CP-3-WS-WD-5
		8 m	540331	KVI-CP-3-WS-WD-8
	Connecting cable M9, straight plug-straight socket	2 m	540332	KVI-CP-3-GS-GD-2
		5 m	540333	KVI-CP-3-GS-GD-5
		8 m	540334	KVI-CP-3-GS-GD-8
	Modular system for connecting cables		–	NEBU-... → Internet: nebu
	Programming cable		151915	KDI-PPA-3-BU9
	Connecting cable FED		539642	FEC-KBG7
	Connecting cable FED		539643	FEC-KBG8

Terminal CPX

Accessories



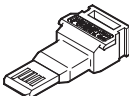
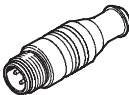
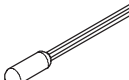
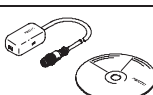
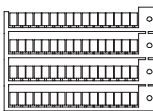
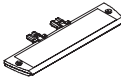

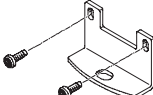

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Ordering data – Accessories				
Designation			Part No.	Type
Plug connectors and accessories – Power supply				
	Plug socket for mains connection M18, straight	For 1.5 mm ²	18493	NTSD-GD-9
		For 2.5 mm ²	18526	NTSD-GD-13.5
	Plug socket for mains connection M18, angled	For 1.5 mm ²	18527	NTSD-WD-9
		For 2.5 mm ²	533119	NTSD-WD-11
	Power supply socket	7/8" connection, 5-pin	543107	NECU-G78G5-C2
		7/8" connection, 4-pin	543108	NECU-G78G4-C2
	Connection socket AIDA push-pull, spring-loaded terminal	5-pin	563059	NECU-M-PPG5-C1
Covers and attachments				
	Cover for CPX-AB-8-KL-4POL (IP65/67) – 8 cable through-feeds M9 – 1 cable through-feed for multi-pin plug		538219	AK-8KL
	Fittings kit		538220	VG-K-M9
	Screening plate for M12 connections		526184	CPX-AB-S-4-M12
	Earthing component (5 pieces), for right-hand/left-hand plastic end plate		538892	CPX-EPFE-EV
	Inspection cover, transparent		533334	AK-SUB-9/15-B
	Inspection cover, for use in Atex environments as per certification (→ 47)		557010	AK-SUB-9/15
	Transparent cover for DIL switch and memory card		548757	CPX-AK-P
	Cover for DIL switch and memory card		548754	CPX-M-AK-M
	Cover for RJ45 connection		534496	AK-Rj45
	Cover for RJ45 push-pull connection		548753	CPX-M-AK-C
	Cover cap for sealing unused sockets (10 pieces)	For M8 connections	177672	ISK-M8
		M9	356684	FLANSCHDOSE SER.712
		For M12 connections	165592	ISK-M12

Terminal CPX

Accessories

FESTO

Ordering data – Accessories				
Designation			Part No.	Type
Screws				
	Screws for mounting the bus node/connection block on a plastic interlinking block	Bus node/metal connection block	550218	CPX-DPT-30X32-S-4X
	Screws for mounting the bus node/connection block on a metal interlinking block	Bus node/plastic connection block	550219	CPX-M-M3x22-4x
		Bus node/metal connection block	550216	CPX-M-M3x22-S-4x
	Screws for attaching an inscription label holder to the fieldbus node FB33, FB34 (12 pieces)		550222	CPX-M-M2,5X6-12X
Functional modules				
	Memory card for PROFINET fieldbus node		549526	CPX-SK
	Terminating resistor, M12, B-coded for Profibus		1072128	CACR-S-B12G5-220-PB
	PT1000 temperature sensor for cold junction compensation		553596	CPX-W-PT1000
	Adapter from 5-pin M12 to mini USB socket and controller software		547432	NEFC-M12G5-0.3-U1G5
Inscription labels				
	Inscription labels 6x10, 64 pieces, in frames		18576	IBS-6x10
	Inscription label holder for connection block		536593	CPX-ST-1
Mounting				
	Attachment for wall mounting (for long valve terminals, 10 pieces), design for plastic manifold sub-bases		529040	CPX-BG-RW-10x
	Attachment for wall mounting (for long valve terminals, 2 mounting brackets and 4 screws), design for metal manifold sub-bases		550217	CPX-M-BG-RW-2x
Software				
	CPX remote diagnostics and process visualisation		545413	CPX-WEB-MONITOR
	Programming software	German	537927	FST4.1DE
		English	537928	FST4.1GB
	ePlan macro library		537041	GSWC-TE-EP-LA

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Festo North America

Festo Regional Contact Center

5300 Explorer Drive
Mississauga, Ontario L4W 5G4
Canada

USA Customers:

For ordering assistance,

Call: 1.800.99.FESTO (1.800.993.3786)

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Fax: 1.800.96.FESTO (1.800.963.3786)

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Canadian Customers:

Call: 1.877.GO.FESTO (1.877.463.3786)

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Email: festo.canada@ca.festo.com

USA Headquarters

Festo Corporation
395 Moreland Road
P.O. Box 18023
Hauppauge, NY 11788, USA
www.festo.com/us

USA Sales Offices

Appleton

North 922 Tower View Drive, Suite N
Greenville, WI 54942, USA

Boston

120 Presidential Way, Suite 330
Woburn, MA 01801, USA

Chicago

1441 East Business Center Drive
Mt. Prospect, IL 60056, USA

Dallas

1825 Lakeway Drive, Suite 600
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Detroit – Automotive Engineering Center

2601 Cambridge Court, Suite 320
Auburn Hills, MI 48326, USA

New York

395 Moreland Road
Hauppauge, NY 11788, USA

Silicon Valley

4935 Southfront Road, Suite F
Livermore, CA 94550, USA

United States



USA Headquarters, East: Festo Corp., 395 Moreland Road, Hauppauge, NY 11788

Phone: 1.631.435.0800; Fax: 1.631.435.8026;

Email: info@festo-usa.com

www.festo.com/us

Canada



Headquarters: Festo Inc., 5300 Explorer Drive, Mississauga, Ontario L4W 5G4

Phone: 1.905.624.9000; Fax: 1.905.624.9001;

Email: festo.canada@ca.festo.com

www.festo.ca

Mexico



Headquarters: Festo Pneumatic, S.A., Av. Ceylán 3, Col. Tequesquahuac,
54020 Tlalneapantla, Edo. de México

Phone: 011 52 [55] 53 21 66 00; Fax: 011 52 [55] 53 21 66 65;

Email: festo.mexico@mx.festo.com

www.festo.com/mx

Central USA

Festo Corporation
1441 East Business
Center Drive
Mt. Prospect, IL 60056, USA
Phone: 1.847.759.2600
Fax: 1.847.768.9480



Western USA

Festo Corporation
4935 Southfront Road,
Suite F
Livermore, CA 94550, USA
Phone: 1.925.371.1099
Fax: 1.925.245.1286



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