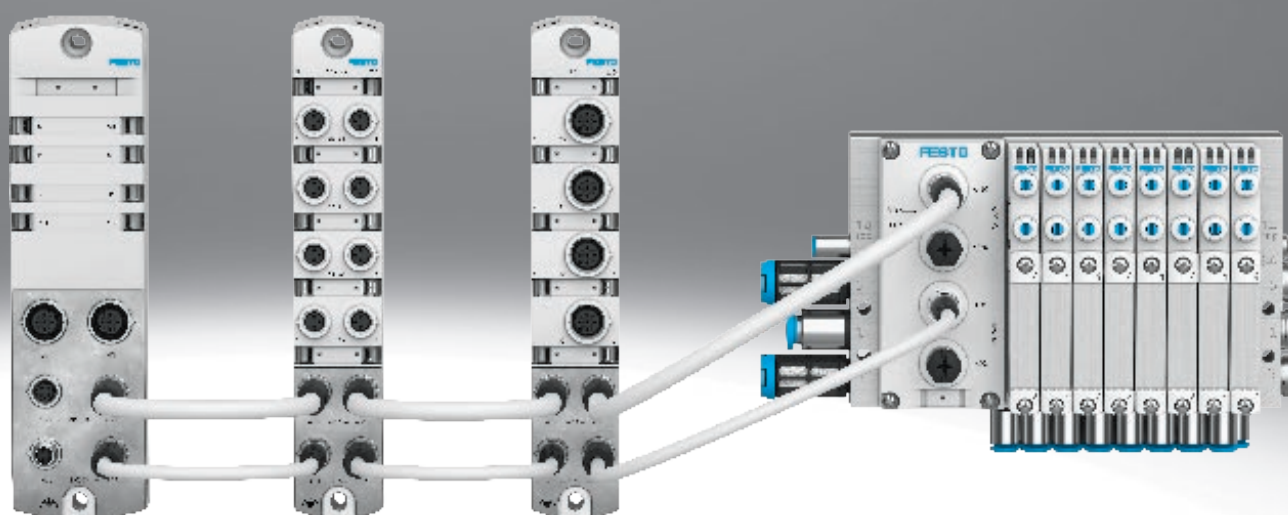
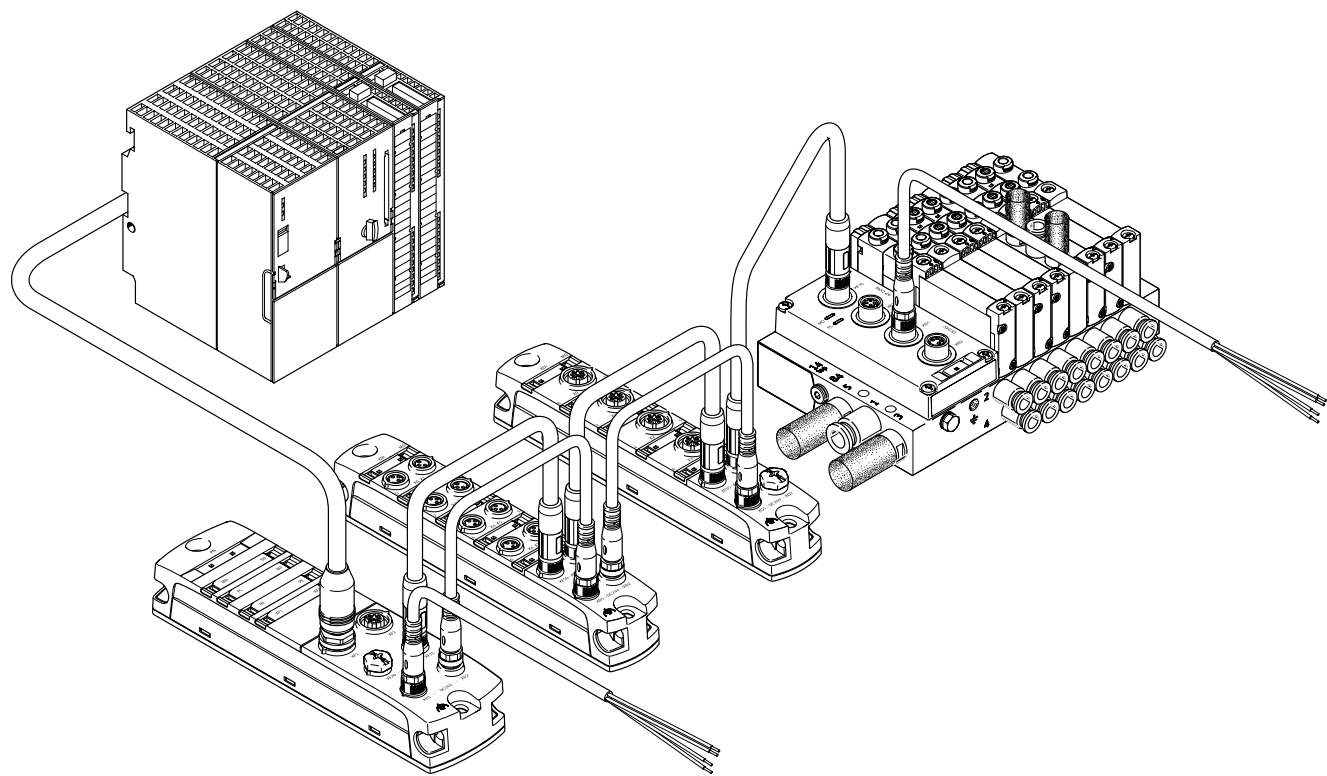


Remote I/O system CPX-AP-I

FESTO



Key features



Key features

CPX-AP-I is a flexible, decentralised, compact and lightweight remote I/O system with a high protection rating IP65/IP67. The performance of the system is future-proof in terms of future demands on the digital factory, and advantageous compared with a slow point-to-point connection.

The simple structure and high degree of scalability ensure the automation system CPX-AP-I is equipped for future applications:

- Extremely easy assembly
- Separate cables for communication and power supply to create voltage zones and for stable data transfer
- Electrical isolation of output channels
- Digital electronic rating plate available

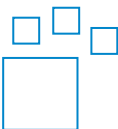
- Easy firmware update
- Easy access to the system for maintenance via Ethernet
- Easy to integrate
- Realtime capability
- Up to 80 individual modules/valve terminals per bus interface
- Easy to adapt to different control systems by exchanging the bus interface
- Direct connection of valve terminals
- A choice of M8 or M12 electrical connections
- Cable length of up to 50 m between the modules

A remote I/O system CPX-AP-I comprises a bus interface and at least one other module. System communication between the modules takes place via connecting cables. The process data is exchanged cyclically.

The following module types are available:

- Bus interface
- IO-Link master
- Input modules
- I/O modules
- Interface to the valve terminal

Ordering data – Product options



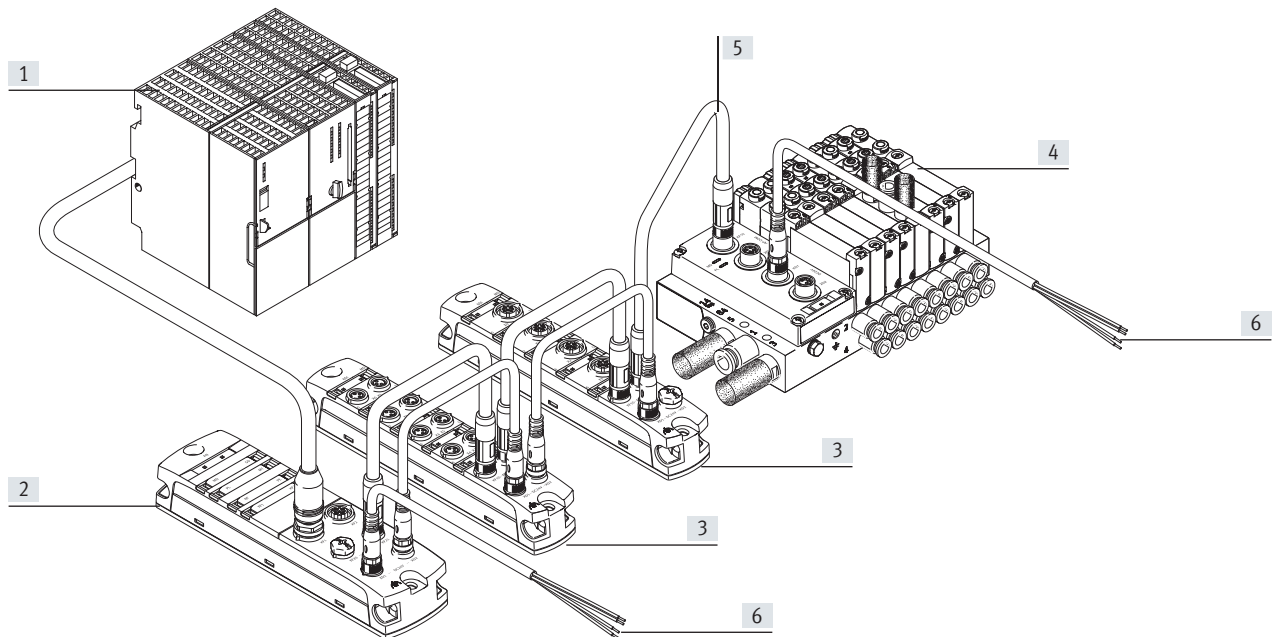
Configurable product
This product and all its product options can be ordered using the configurator.

The configurator can be found at
→ www.festo.com/catalogue/...
Enter the part number or the type.

Part no.	Type
8094920	CPX-AP-I
8000810	VTUX-A-P-APA
8000815	VTUX-A-S-APA
8130719	VTSA-F-FB-AP
8130722	VTSA-F-CB-AP
8130716	VTSA-FB-AP
569926	MPAL-VI

Key features

Overview



- [1] Higher-order controller
- [2] Bus interface for connecting the remote I/O system CPX-AP-I to a higher-order controller via a standard bus protocol such as PROFINET

- [3] Input module, output module or input/output module; allows sensors and actuators to be connected to the remote I/O system CPX-AP-I. Up to 80 modules per bus interface possible

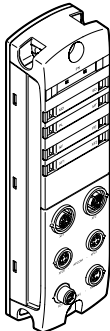
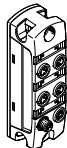
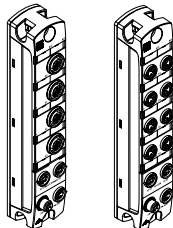
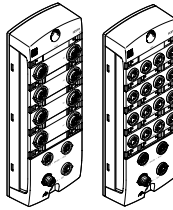
- [4] Valve terminal with electrical interface for CPX-AP-I. Behaves like an output module within the remote I/O system CPX-AP-I
- [5] Connecting cable for communication between the modules and the bus interface. The maximum line length from the bus interface to the module is 50 m

- [6] Connecting cable for supplying power to the components of the remote I/O system CPX-AP-I. Each module can be connected individually or a central supply is transmitted from module to module

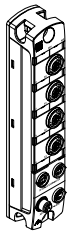
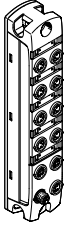
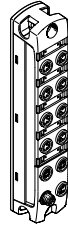
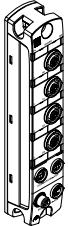
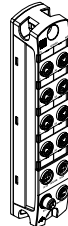
Note

The connecting cables are specially designed for the requirements of the remote I/O system CPX-AP-I. The correct operation of the system cannot be guaranteed if variants other than those specified in the accessories are used.

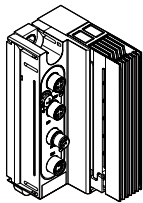
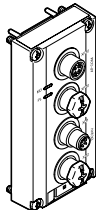
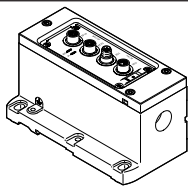
Product range overview

Function	Version	Type		→ Page/ Internet	
Bus interface		PROFINET	CPX-AP-I-PN-M12	• Actuation via PROFINET • Two PROFINET connections • Two connections for system communication • Two connections for power supply and transmission	14
		PROFIBUS	CPX-AP-I-PB-M12	• Actuation via PROFIBUS • Two PROFIBUS connections • Two connections for system communication • Two connections for power supply and transmission	20
		EtherCAT®	CPX-AP-I-EC-M12	• Actuation via EtherCAT® • Two EtherCAT® connections • Two connections for system communication • Two connections for power supply and transmission	26
		EtherNet/IP	CPX-AP-I-EP-M12	• Actuation via EtherNet/IP • Two Ethernet connections • Two connections for system communication • Two connections for power supply and transmission	26
		CC-Link IE Field Basic	CPX-AP-I-CCB-M12	• Control via CC-Link IE Field Basic • Two CC-Link IE Field Basic connectors • Two connections for system communication • Two connections for power supply and transmission	38
IO-Link master		4 IO-Link® connections	CPX-AP-I-4IOL-M12	• LED indicator • Master V 1.1 • Electrical connection M12x1, 5-pin	44
Input module	Digital				
		4 inputs	CPX-AP-I-4DI	• LED indicator • PNP (positive switching) • Characteristic curve of inputs to IEC 61131-2, type 3 • Electrical connection M8x1, 3-pin	50
		8 inputs	CPX-AP-I-8DI	• LED indicator • PNP (positive switching) • Characteristic curve of inputs to IEC 61131-2, type 3 • Electrical connection M8x1, 3-pin • Electrical connection M12x1, 5-pin	56
		16 inputs	CPX-AP-I-16DI CPX-AP-I-16NDI	• LED indicator • PNP (positive switching) • NPN (negative switching) • Characteristic curve of inputs to IEC 61131-2, type 3 • Electrical connection M8x1, 3-pin • Electrical connection M12x1, 5-pin	64

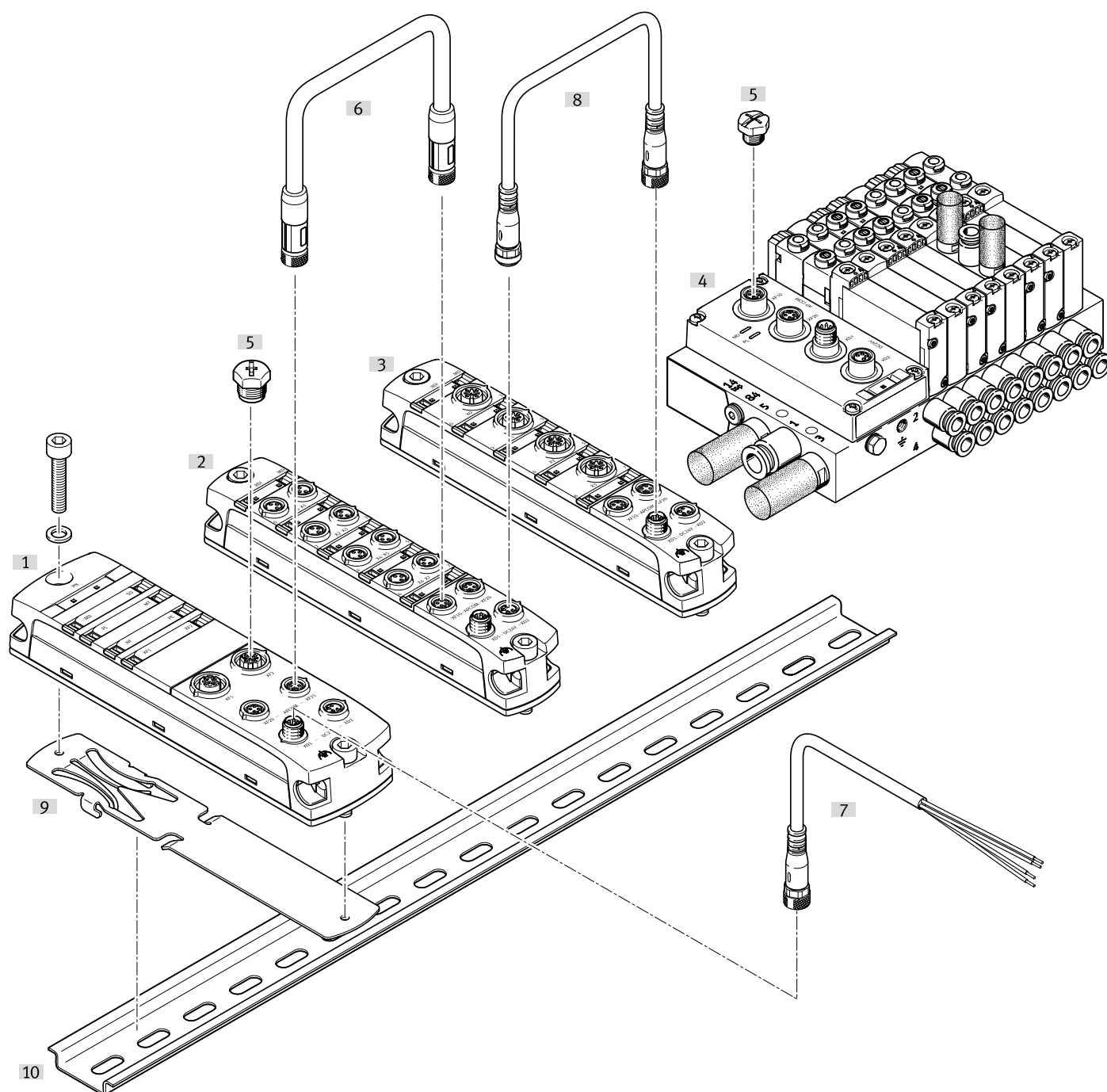
Product range overview

Function	Version	Type	→ Page/ Internet
Input module	Analogue		
	 4 inputs	CPX-AP-I-4AI	• LED indicator • Current, voltage, temperature or resistance measurement • Electrical connection M12x1, 5-pin 72
Output module	Digital		
	  8 outputs	CPX-AP-I-8DO	• LED indicator • PNP (positive switching) • Characteristic curve of outputs to IEC 61131-2, type 0.5 • Electrical connection M8x1, 3-pin • Electrical connection M12x1, 5-pin 78
Input/output module	Digital		
	  • 4 inputs • 4 outputs	CPX-AP-I-4DI4DO	• LED indicator • PNP (positive switching) • Characteristic curve of inputs to IEC 61131-2, type 3 • Characteristic curve of outputs to IEC 61131-2, type 0.5 • Electrical connection M8x1, 3-pin • Electrical connection M12x1, 5-pin 86

Product range overview

Function	Version	Type		→ Page/ Internet
Electrical interface for valve terminal	Valve terminal VTUX			
	 • Maximum 32 valve positions • Up to 32 solenoid coils	VABX-A	• LED indicator • 1 valve size (10 mm) • 2x 3/2-way valves • 5/2-way valves • 5/3-way valve • Modular design • Flow rates of up to 670 l/min	93
	Valve terminal VTUG			
	 • 12 or 24 valve positions • Up to 48 solenoid coils	VAEM-L1-S	• LED indicator • 3 valve sizes (10 mm, 14 mm and 18 mm) • 2x 3/2-way valves • 3/2-way valves • 5/2-way valves • 5/3-way valves • Fixed-grid links • 130 ... 1000 l/min flow rate	99
	Valve terminal MPA-L			
	 • 32 valve positions • Up to 32 solenoid coils	VMPAL-EPL-AP	• LED indicator • 3 valve sizes (10 mm, 14 mm and 20 mm) • 2x 2/2-way valves • 2x 3/2-way valves • 3/2-way valves • 5/2-way valves • 5/3-way valves • Modular design • Flow rates of up to 870 l/min	104
	Valve terminals VTSA			
	 • 12 valve positions • Up to 24 solenoid coils	VABA-S6-1-AP	• LED indicator • 4 valve sizes (18 mm, 26 mm, 42 mm and 52 mm) • 2x 2/2-way valves • 2x 3/2-way valves • 5/2-way valves • 5/3-way valves • Modular design • Flow rates of up to 2900 l/min	vtsa

Peripherals overview



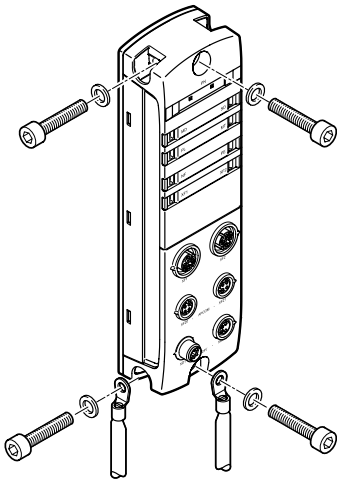
Peripherals overview

		Type	Description	→ Page/Internet
[1]	Bus interface	CPX-AP-I-PN-M12 CPX-AP-I-PB-M12 CPX-AP-I-EC-M12 CPX-AP-I-EP-M12 CPX-AP-I-CCB-M12	Connection of the CPX-AP-I to a higher-order controller	14 20 26 32 38
[2]	Module with M8 connections	CPX-AP-I-4DI-M8-3P CPX-AP-I-8DI-M8-3P CPX-AP-I-16DI-M8-3P CPX-AP-I-16NDI-M8-3P CPX-AP-I-8DO-M8-3P CPX-AP-I-4DI4DO-M8-3P	Digital input, output and input/output modules	50 56 64 64 78 86
[3]	Module with M12 connections	CPX-AP-I-4IOL-M12 CPX-AP-I-8DI-M12-5P CPX-AP-I-16DI-M12-5P CPX-AP-I-4AI-U-I-RTD-M12 CPX-AP-I-8DO-M12-5P CPX-AP-I-4DI4DO-M12-5P	IO-Link master Digital and analogue input, output and input/output modules	44 56 64 72 78 86
[4]	Electrical interface for valve terminal	VABX-A VAEM-L1-S VMPAL-EPL-AP VABA-S6-1-AP	For valve terminal VTUX For valve terminal VTUG For valve terminal MPA-L For valve terminals VTSA	93 99 104 vtsa
[5]	Cover cap	ISK-M8 ISK-M12	For sealing unused electrical connections, connection size M8 and M12	isk
[6]	Connecting cable	NEBC	For connecting the modules for communication	nebc
[7]	Connecting cable	NEBL	For connecting the power supply	nebl
[8]	Connecting cable	NEBL	For power transmission from module to module	nebl
[9]	DIN rail mounting	CAFM	For mounting a module on DIN rails according to EN 60715	cafm
[10]	DIN mounting rail	NRH-35-2000	DIN rail to EN 60715	nrh

Key features – Mounting

Assembly

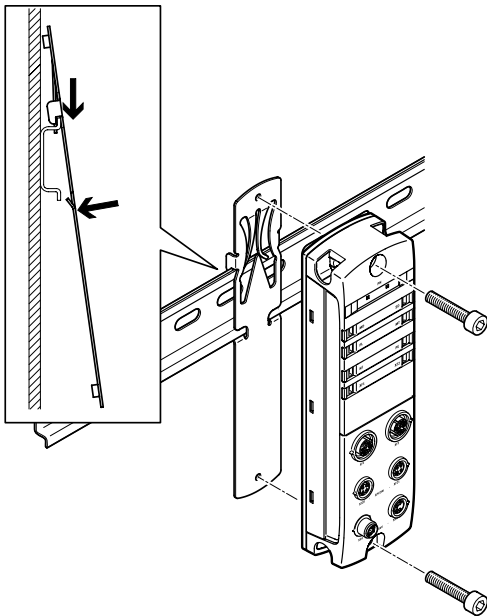
Wall mounting – modules



The modules can be mounted on flat surfaces in almost any position using the mounting holes provided (with screws up to 4 mm in diameter). Two screws with correctly sized washers (not included in the scope of delivery) are needed for secure mounting.

The mounting holes also include the earthing connection for the modules.

DIN rail mounting – Modules

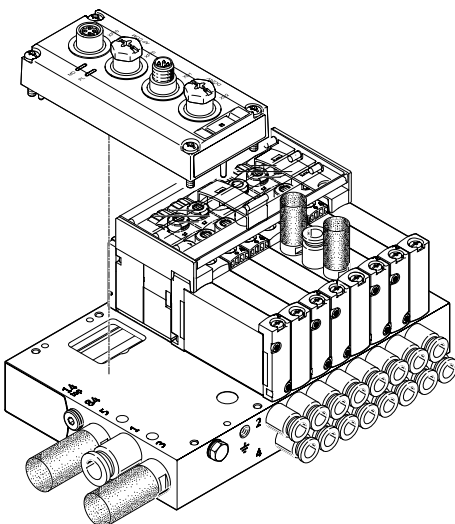


The modules can be mounted on DIN rails according to EN 60715 using the DIN rail mounting CAFM. Two screws with metric thread M4 and correctly sized washers (not included in the scope of delivery) are needed for securing mounting.

To do this, first hook the DIN rail fastening onto the rail, snap it into place and then screw the module onto the DIN rail fastening.

The mounting holes also include the earthing connection for the modules.

Mounting – Electrical interface

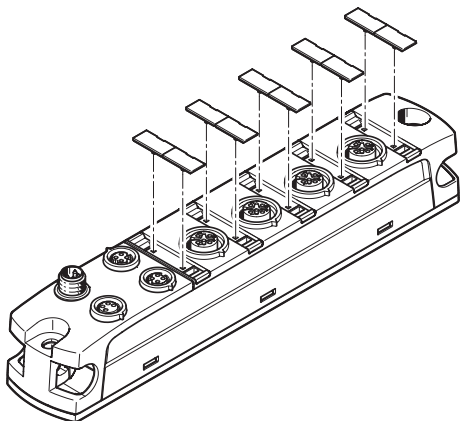


The electrical interfaces are mounted directly on the valve terminal.

The options for wall mounting or DIN rail mounting depend on the mounting options for the valve terminal in question.

Key features – Power supply

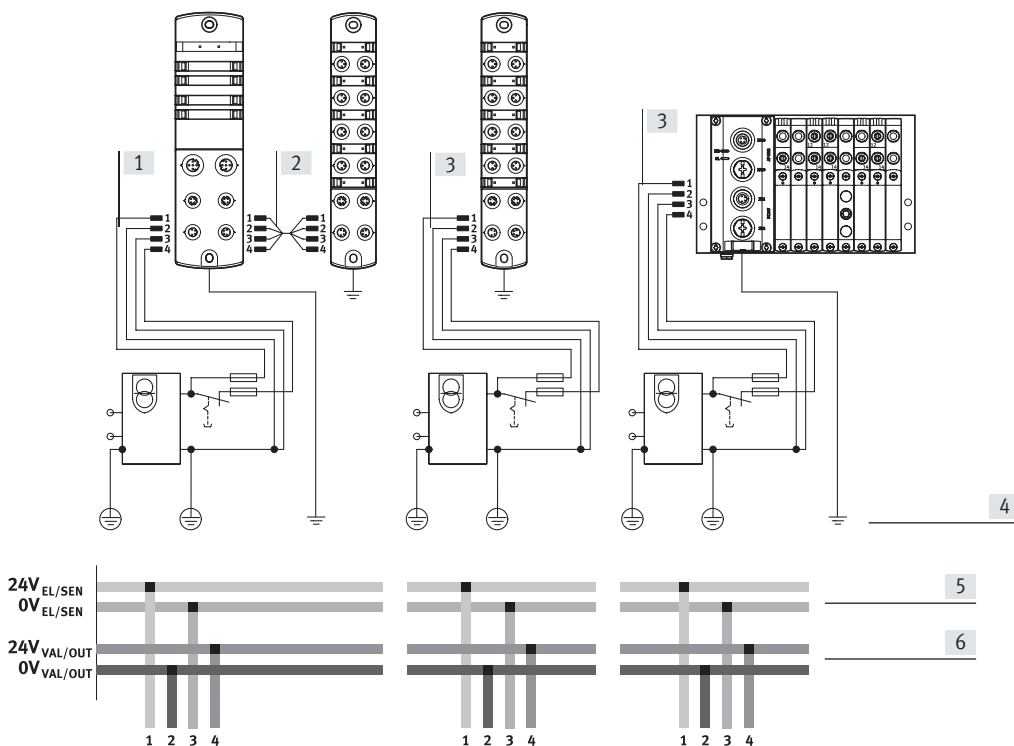
Labelling



All modules are supplied with the same, clip-on inscription labels. The inscription label is made up of two parts and can be divided into two smaller sections if required.

Labelling templates can be downloaded from the Support Portal:
→ Internet: CPX-AP-I
In the “Software” area.

Power supply concept



- [1] Power supply to the module via 4-pin push-in connector M8
- [2] Power transmission from module to module via 4-pin push-in connector M8
- [3] Separate power supply for an individual module
- [4] Earth connection
- [5] Power supply for the internal electronics and sensors
- [6] Power supply for electrical outputs and valves

In principle, the remote I/O system CPX-AP-I has two separate electrical circuits:

- For the module electronics and the power supply for connected sensors
- For connected outputs and valves

At the same time, the remote I/O system allows each individual module to be separately supplied with power, or for the power supply to be transmitted from module to module. This creates electrically isolated, all-pole disconnectable potential groups/voltage segments.

All modules have the same connections for power supply, even when a module does not require all of these itself (e.g. an input module also has connections for outputs and valves).

Key features – Diagnostics

System performance

Diagnostics

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

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

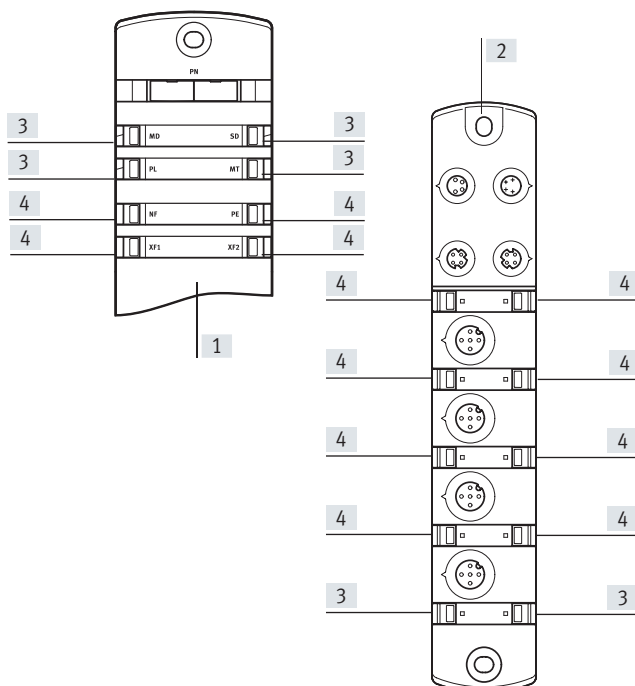
The remote I/O system CPX-AP-I supports on-the-spot diagnostics using LED indicators on each module. This is separate from the connection area and therefore provides an easy and good visual view of status and diagnostic information.

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

- Undervoltage detection
- Short circuit detection

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 bus-specific channels.

Indicator lights



Each module has a row of LEDs for indicating the operating status of the module and of the connected sensors or actuators.

[4] Communication-specific LED indicator (e.g. status of network connection, switching status of sensor)

- [1] LED indicators on the bus interface
- [2] LED indicators on the input module, input/output module
- [3] System-specific LED indicator (e.g. power supply)

Parameterisation

Various parameters are available for reading out information about the modules in the remote I/O system CPX-AP-I and for configuring the modules to the application.

The parameters are typically accessed via the higher-order controller.

Key features – Addressing

Addressing

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

- Maximum system configuration:
- 1 bus interface
 - 80 input, output and/or input/output modules and/or electrical interfaces

The maximum system configuration can be limited in individual cases by exceeding the address space or limitations of the higher-order controller.

Addresses are allocated automatically. The bus interface is assigned the address "1", all other modules are assigned an address in increasing value from left to right, viewed from the bus interface. The modules of the first string (XF20) come first, then the modules of the second string (XF21).

 **Note**

Please refer to the detailed description of the configuration/addressing rules in the technical data for the CPX-AP-I bus interface.

Overview – Address space for CPX-AP-I bus interface			
	Protocol	Max. total Inputs	Outputs
CPX-AP-I-PN-M12	PROFINET	1024 bytes	1024 bytes
CPX-AP-I-PB-M12	PROFIBUS	244 bytes	244 bytes
CPX-AP-I-EC-M12	EtherCAT®	2048 bytes	2048 bytes
CPX-AP-I-EP-M12	EtherNet/IP	1324 bytes	1324 bytes
CPX-AP-I-CCB-M12	CC-Link IE Field Basic	1024 bytes	1024 bytes

 **Note**

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

Key features – Addressing

Overview – Allocated addresses for CPX-AP-I modules		Inputs [bytes]	Outputs [bytes]
CPX-AP-I-4IOL-M12	IO-Link master	12 ... 132	8 ... 128
CPX-AP-I-4DI-M8-3P	Digital input module, 4 inputs	1	–
CPX-AP-I-8DI-M8-3P	Digital input module, 8 inputs	1	–
CPX-AP-I-8DI-M8-3P-A	Digital input module, 8 inputs	1	–
CPX-AP-I-8DI-M12-5P	Digital input module, 8 inputs	1	–
CPX-AP-I-16DI-M8-3P	Digital input module, 16 inputs	2	–
CPX-AP-I-16DI-M8-3P	Digital input module, 16 inputs	2	–
CPX-AP-I-16DI-M12-5P	Digital input module, 16 inputs	2	–
CPX-AP-I-4AI-U-I-RTD-M12	Analogue input module, 4 inputs	8	–
CPX-AP-I-8DO-M8-3P	Digital output module, 8 outputs	–	1
CPX-AP-I-8DO-M12-5P	Digital output module, 8 outputs	–	1
CPX-AP-I-4DI4DO-M8-3P	Digital input/output module, 4 inputs/4 outputs	1	1
CPX-AP-I-4DI4DO-M12-5P	Digital input/output module, 4 inputs/4 outputs	1	1
VABX-A-P-EL-E12-API-SHUH-XL	Pneumatic interface to valve terminal VTUX, parallel communication, maximum 32 solenoid coils	–	4
VABX-A-S-EL-E12-API-SHUH-XL	Pneumatic interface to valve terminal VTUX, serial communication, maximum 128 solenoid coils	–	4
VAEM-L1-S-12-AP	Electrical interface to valve terminal VTUG, 12 valve positions	–	3
VAEM-L1-S-24-AP	Electrical interface to valve terminal VTUG, 24 valve positions	–	6
VMPAL-EPL-AP	Electrical interface to valve terminal MPA-L, 32 valve positions	–	4

Example of CPX-AP-I-PN-M12 (PROFINET)			
	Inputs [bytes]	Outputs [bytes]	Remarks
26x CPX-AP-I-8DI-M8-3P	26	–	- The maximum number of modules is reached with 80 CPX-AP-I modules - The available address space (1024 bytes) is not fully used up - No additional modules can be configured
45x CPX-AP-I-4DI4DO-M12-5P	45	45	
6x VAEM-L1-S-12-AP	–	18	
3x VAEM-L1-S-24-AP	–	18	
Assigned address space	71	81	

Datasheet – PROFINET interface



Interface for operating the remote I/O system CPX-AP-I on PROFINET. Data is transferred on the basis of the Ethernet standard and TCP/IP technology for communication in an industrial environment.

**Bus connection**

Communication with a higher-order controller takes place via PROFINET with real-time protocol (real time RT or isochronous real time IRT).

The bus connection is provided by two equivalent D-coded M12 sockets which meet Ethernet requirements.

The integrated switch supports star and line topology and enables the network to be divided into segments.

General technical data – PROFINET interface

Fieldbus interface, protocol	PROFINET IRT PROFINET RT
Fieldbus interface, function	Incoming/outgoing bus connection
Fieldbus interface, transmission rate	100 Mbps
Fieldbus interface, type	Ethernet
Fieldbus interface, type of connection	2 x socket
Communication interface, protocol	AP
Communication interface, function	System communication XF20 OUT / XF21 OUT
Communication interface, connection type	2 x socket
Communication interface, connection technology	M8x1, D-coded to EN 61076-2-114
Communication interface, number of pins/cores	4
Communication interface, shielding	Yes

General data – PROFINET interface

Configuration support	GSDML file
Max. number of modules	80
Max. address volume for outputs	1,024 bytes
Max. address volume for inputs	1,024 bytes
Diagnostics via LED	Diagnostics per module Network errors Power supply, electronics/sensors Power supply load System diagnostics Maintenance required
Diagnostics via bus	APDD invalid Load switch-off Communication to AP module interrupted Electronics/sensors overvoltage Overvoltage load Undervoltage electronics/sensors Undervoltage load
Diagnostics via internal communication	Module error Output short circuit/overload Short circuit/overload in sensor supply Undervoltage in load supply
Max. cable length	50 m system communication
Reverse polarity protection	Yes

Datasheet – PROFINET interface

Technical data – Electrical – PROFINET interface

Nominal operating voltage DC for electronics/sensors	24 V
Nominal operating voltage DC load	24 V
Permissible voltage fluctuations, electronics/sensors	± 25%
Permissible voltage fluctuations, load	± 25%
Note on the operating voltage	SELV/PELV power supply units required; note voltage drop
Power failure buffering	10 ms
Max. power supply	2 x 4 A (external fuse required)
Intrinsic current consumption at nominal operating voltage, electronics/sensors	Typical 80 mA
Intrinsic current consumption at nominal operating voltage, load	Typical 5 mA
Power supply, function	Incoming electronics/sensors and load
Power supply, connection type	Plug
Power supply, connection technology	M8x1, A-coded to EN 61076-2-104
Power supply, number of pins/cores	4
Power transmission, function	Outgoing electronics/sensors and load
Power transmission, connection type	Socket
Power transmission, connection technology	M8x1, A-coded to EN 61076-2-104
Power transmission, number of pins/cores	4

Technical data – Mechanical – PROFINET interface

Type of mounting	On DIN rail with accessories; with through-hole
Product weight	186 g
Dimensions W x L x H	45 mm x 170 mm x 35 mm

Materials – PROFINET interface

Housing material	PA; PC; nickel-plated die-cast zinc
O-ring material	FPM
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-B2-L
Cleanroom class	Element installed statically, no meaningful evaluation possible according to ISO 14644-1

Operating and environmental conditions – PROFINET interface

Ambient temperature	-20 ... 60 °C
Storage temperature	-40 ... 70 °C
Corrosion resistance class CRC ¹⁾	1 - low corrosion stress
Relative humidity	5 - 95%, non-condensing
CE marking (see declaration of conformity) ²⁾	To EU EMC Directive
UKCA marking (see declaration of conformity) ³⁾	To UK EMC regulations
KC marking	KC EMC
Certification	RCM Mark c UL us - Listed (OL)
Certificate-issuing authority	UL E239998
Degree of protection	IP65; IP67
Note on degree of protection	Unused connections sealed

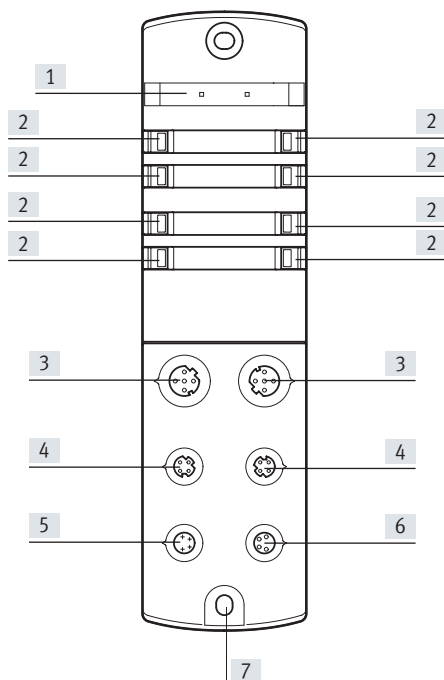
1) More information www.festo.com/x/topic/crc

2) More information www.festo.com/catalogue/... Support/Downloads.

3) More information www.festo.com/catalogue/... Support/Downloads.

Datasheet – PROFINET interface

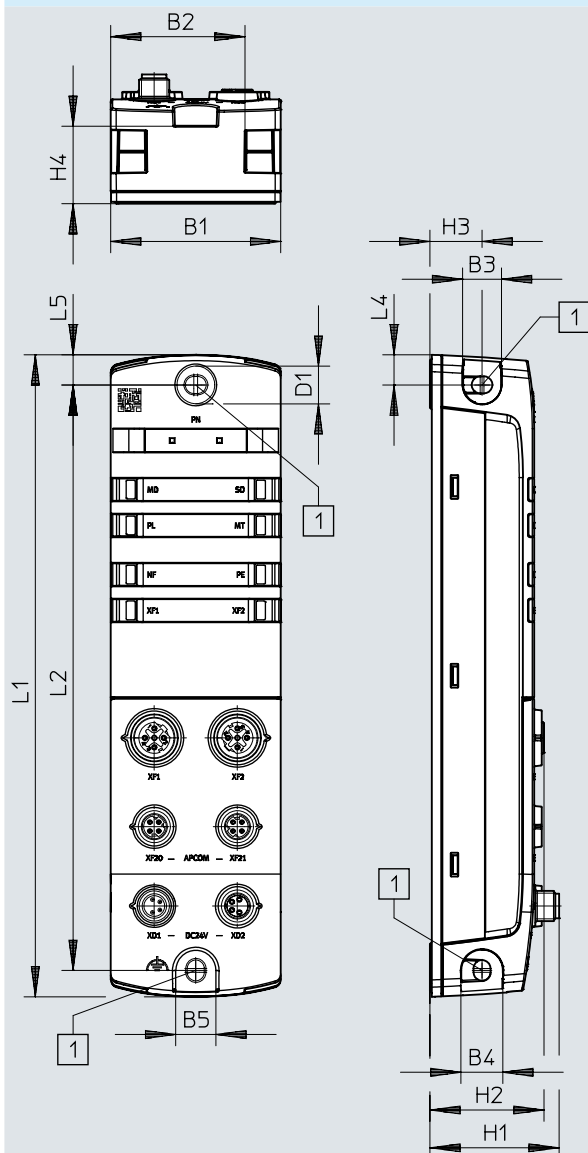
Connection and indicator components



- [1] Space for inscription label
- [2] LED indicators
- [3] Network connections 1 and 2, PROFINET
- [4] Communication interface
- [5] Electrical connection, power supply
- [6] Electrical connection, power transmission
- [7] Earth connection

Datasheet – PROFINET interface

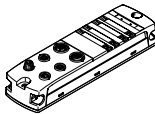
Dimensions

Download CAD data → www.festo.com


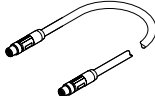
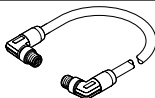
[1] Mounting hole for M4 screws

	B1	B2	B3	B4	B5	D1 Ø	H1	H2	H3	H4	L1	L2	L3	L4	L5
CPX-AP-I-PM-M12	45	35.5	10	11	11	10	34.2	30.2	13.8	20.5	170	155	155	8	8

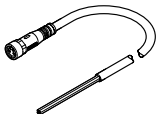
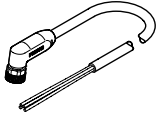
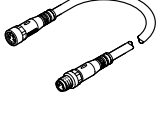
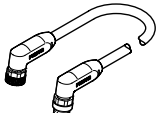
Datasheet – PROFINET interface

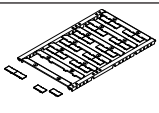
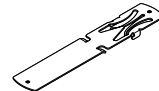
Ordering data				Part no.	Type
	PROFINET interface			8086607	CPX-AP-I-PN-M12

Ordering data – Accessories					
Description				Part no.	Type
Plug connectors for self-assembly					
	For bus connection	Straight plug, M12x1, 4-pin, D-coded		543109	NECU-M-S-D12G4-C2-ET

Connecting cable						
	For communication interface	Straight plug, M8x1, 4-pin, D-coded	Straight plug, M8x1, 4-pin, D-coded	0.3 m	8082902	NEBC-D8G4-ES-0.3-N-S-D8G4-ET
				0.5 m	8065123	NEBC-D8G4-ES-0.5-N-S-D8G4-ET
				1.0 m	8065125	NEBC-D8G4-ES-1-N-S-D8G4-ET
				2.0 m	8065127	NEBC-D8G4-ES-2-N-S-D8G4-ET
				5.0 m	8065129	NEBC-D8G4-ES-5-N-S-D8G4-ET
				7.5 m	8065131	NEBC-D8G4-ES-7.5-N-S-D8G4-ET
				10.0 m	8065133	NEBC-D8G4-ES-10-N-S-D8G4-ET
				15.0 m	8065135	NEBC-D8G4-ES-15-N-S-D8G4-ET
				20.0 m	8146031	NEBC-D8G4-ES-20-N-S-D8G4-ET
				25.0 m	8146032	NEBC-D8G4-ES-25-N-S-D8G4-ET
				30.0 m	8146033	NEBC-D8G4-ES-30-N-S-D8G4-ET
				40.0 m	8146034	NEBC-D8G4-ES-40-N-S-D8G4-ET
	For communication interface	Angled plug, M8x1, 4-pin, D-coded	Angled plug, M8x1, 4-pin, D-coded	50.0 m	8146035	NEBC-D8G4-ES-50-N-S-D8G4-ET
				0.5 m	8065124	NEBC-D8W4-ES-0.5-N-S-D8W4-ET
				1.0 m	8065126	NEBC-D8W4-ES-1-N-S-D8W4-ET
				2.0 m	8065128	NEBC-D8W4-ES-2-N-S-D8W4-ET
				5.0 m	8065130	NEBC-D8W4-ES-5-N-S-D8W4-ET
				7.5 m	8065132	NEBC-D8W4-ES-7.5-N-S-D8W4-ET
				10.0 m	8065134	NEBC-D8W4-ES-10-N-S-D8W4-ET
				15.0 m	8065136	NEBC-D8W4-ES-15-N-S-D8W4-ET
				20.0 m	8146036	NEBC-D8W4-ES-20-N-S-D8W4-ET
				25.0 m	8146037	NEBC-D8W4-ES-25-N-S-D8W4-ET
				30.0 m	8146038	NEBC-D8W4-ES-30-N-S-D8W4-ET
				40.0 m	8146039	NEBC-D8W4-ES-40-N-S-D8W4-ET
50.0 m	8146040	NEBC-D8W4-ES-50-N-S-D8W4-ET				

Datasheet – PROFINET interface

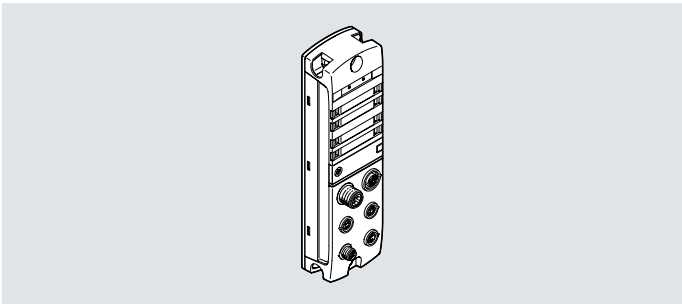
Ordering data – Accessories						
	Description			Part no.	Type	
Connecting cable						
	For power supply	Straight socket, M8 x 1, 4-pin, A-coded	Open cable end, 4-core	5.0 m	8065110	NEBL-M8G4-E-5-N-LE4
				7.5 m	8065113	NEBL-M8G4-E-7.5-N-LE4
				10.0 m	8065117	NEBL-M8G4-E-10-N-LE4
				15.0 m	8065121	NEBL-M8G4-E-15-N-LE4
		Angled socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	7.5 m	8065114	NEBL-M8W4-E-7.5-N-LE4
				10.0 m	8065118	NEBL-M8W4-E-10-N-LE4
				15.0 m	8065122	NEBL-M8W4-E-15-N-LE4
	For power transmission	Straight socket, M8 x 1, 4-pin, A-coded	Straight plug, M8x1, 4-pin, A-coded	0.3 m	8082904	NEBL-M8G4-E-0.3-N-M8G4
				0.5 m	8065102	NEBL-M8G4-E-0.5-N-M8G4
				1.0 m	8065104	NEBL-M8G4-E-1-N-M8G4
				2.0 m	8065106	NEBL-M8G4-E-2-N-M8G4
				5.0 m	8065108	NEBL-M8G4-E-5-N-M8G4
				7.5 m	8065111	NEBL-M8G4-E-7.5-N-M8G4
				10.0 m	8065115	NEBL-M8G4-E-10-N-M8G4
				15.0 m	8065119	NEBL-M8G4-E-15-N-M8G4
	For power transmission	Angled socket, M8x1, 4-pin, A-coded	Angled plug, M8x1, 4-pin, A-coded	0.3 m	8146577	NEBL-M8W4-E-0.3-N-M8W4
				0.5 m	8065103	NEBL-M8W4-E-0.5-N-M8W4
				1.0 m	8065105	NEBL-M8W4-E-1-N-M8W4
				2.0 m	8065107	NEBL-M8W4-E-2-N-M8W4
				5.0 m	8065109	NEBL-M8W4-E-5-N-M8W4
				7.5 m	8065112	NEBL-M8W4-E-7.5-N-M8W4
				10.0 m	8065116	NEBL-M8W4-E-10-N-M8W4
				15.0 m	8065120	NEBL-M8W4-E-15-N-M8W4

Ordering data – Accessories					
	Description	Pack size	Part no.	Type	
Inscription labels					
	For modules CPX-AP-I	Size 6x 12.5 mm, 10 frames with 24 pieces each	240	8087174	ASLR-L-X4-612-P240
Cover cap					
	For sealing unused connections	For connection M8x1	10	177672	ISK-M8
DIN rail mounting					
	For mounting a module on DIN rails according to EN 60715	–	8095158	CAFM-X4-H	

Datasheet – PROFIBUS interface



Interface for operating the remote I/O system CPX-AP-I in a PROFIBUS-DP network. PROFIBUS is designed for fast, time-critical and complex communications tasks and is incorporated into the international standards IEC 61158 and IEC 61784.



Bus connection

The bus connection is provided by two network connections PROFIBUS DP-IN (M12 plug) and PROFIBUS DP-OUT (M12 socket).

The network can be divided and enlarged using additional repeaters.

This makes it possible to structure the network and implement greater network expansions.

General technical data – PROFIBUS interface	
Fieldbus interface, protocol	PROFIBUS DP-V1
Fieldbus interface, function	Incoming bus connection
Fieldbus interface, transmission rate	1.5 Mbit/s; 12 Mbit/s; 187.5 kbit/s; 19.2 kbit/s; 3 Mbit/s; 500 kbit/s; 6 Mbit/s; 9.6 kbit/s; 93.75 kbit/s
Fieldbus interface, type of connection	Plug
Fieldbus interface, number of pins/cores	5
Fieldbus interface, galvanic isolation	Yes
Fieldbus interface 2, protocol	PROFIBUS DP-V1
Fieldbus interface 2, function	Outgoing bus connection
Fieldbus interface 2, transmission rate	1.5 Mbit/s; 12 Mbit/s; 187.5 kbit/s; 19.2 kbit/s; 3 Mbit/s; 500 kbit/s; 6 Mbit/s; 9.6 kbit/s; 93.75 kbit/s
Fieldbus interface 2, type	PROFIBUS
Fieldbus interface 2, type of connection	Socket
Fieldbus interface 2, connection technology	M12x1, B-coded to EN 61076-2-101
Fieldbus interface 2, number of pins/cores	5
Fieldbus interface 2, galvanic isolation	Yes
Note on fieldbus interface	Terminating resistor at socket possible
Communication interface, protocol	AP
Communication interface, function	System communication XF20 OUT / XF21 OUT
Communication interface, connection technology	M8x1, D-coded to EN 61076-2-114
Communication interface, number of pins/cores	4
Communication interface, shielding	Yes

Datasheet – PROFIBUS interface

General data – PROFIBUS interface

Configuration support	GSD file
Max. number of modules	56
Max. address volume for outputs	244 bytes
Max. address volume for inputs	244 bytes
Diagnostics via LED	Buffer error LED (BF) Diagnostics per module Power supply, electronics/sensors Power supply load System diagnostics Maintenance required
Diagnostics via bus	APDD invalid Load switch-off Communication to AP module interrupted Electronics/sensors overvoltage Overvoltage load Undervoltage electronics/sensors Undervoltage load
Diagnostics via internal communication	–
Max. cable length	50 m system communication
Reverse polarity protection	Yes

Technical data – Electrical PROFIBUS interface

Nominal operating voltage DC for electronics/sensors	24 V
Nominal operating voltage DC load	24 V
Permissible voltage fluctuations, electronics/sensors	± 25%
Permissible voltage fluctuations, load	± 25%
Note on the operating voltage	SELV/PELV power supply units required; note voltage drop
Power failure buffering	10 ms
Max. power supply	2 x 4 A (external fuse required)
Intrinsic current consumption at nominal operating voltage, electronics/sensors	Typical 80 mA
Intrinsic current consumption at nominal operating voltage, load	Typical 5 mA
Power supply, function	Incoming electronics/sensors and load
Power supply, connection type	Plug
Power supply, connection technology	M8x1, A-coded to EN 61076-2-104
Power supply, number of pins/cores	4
Power transmission, function	Outgoing electronics/sensors and load
Power transmission, connection type	Socket
Power transmission, connection technology	M8x1, A-coded to EN 61076-2-104
Power transmission, number of pins/cores	4

Technical data – Mechanical – PROFIBUS interface

Type of mounting	On DIN rail with accessories; with through-hole
Dimensions W x L x H	45 mm x 170 mm x 35 mm
Product weight	186 g

Materials PROFIBUS Interface

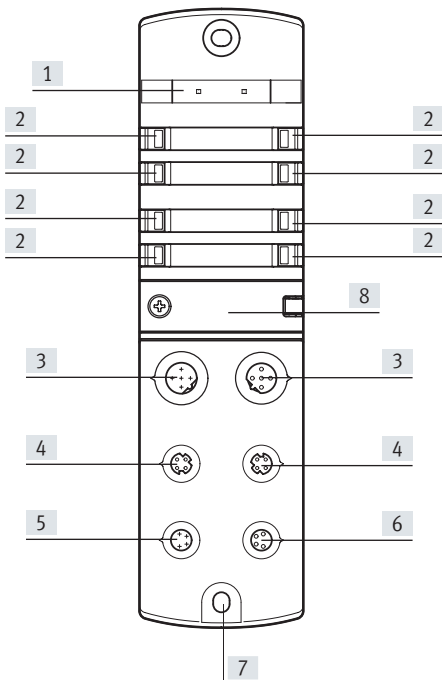
Housing material	PA; PC; nickel-plated die-cast zinc
O-ring material	FPM
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-B2-L
Cleanroom class	Element installed statically, no meaningful evaluation possible according to ISO 14644-1

Datasheet – PROFIBUS interface

Operating and ambient conditions – PROFIBUS interface	
Ambient temperature	-20 ... 60 °C
Storage temperature	-40 ... 70 °C
Corrosion resistance class CRC ¹⁾	1 - low corrosion stress
Relative humidity	5 - 95%, non-condensing
CE marking (see declaration of conformity) ²⁾	To EU EMC Directive
UKCA marking (see declaration of conformity) ³⁾	To UK EMC regulations
KC marking	KC EMC
Certification	RCM Mark c UL us - Listed (OL)
Certificate-issuing authority	UL E239998
Degree of protection	IP65; IP67
Note on degree of protection	Unused connections sealed

1) More information www.festo.com/x/topic/crc
2) More information www.festo.com/catalogue/... Support/Downloads.
3) More information www.festo.com/catalogue/... Support/Downloads.

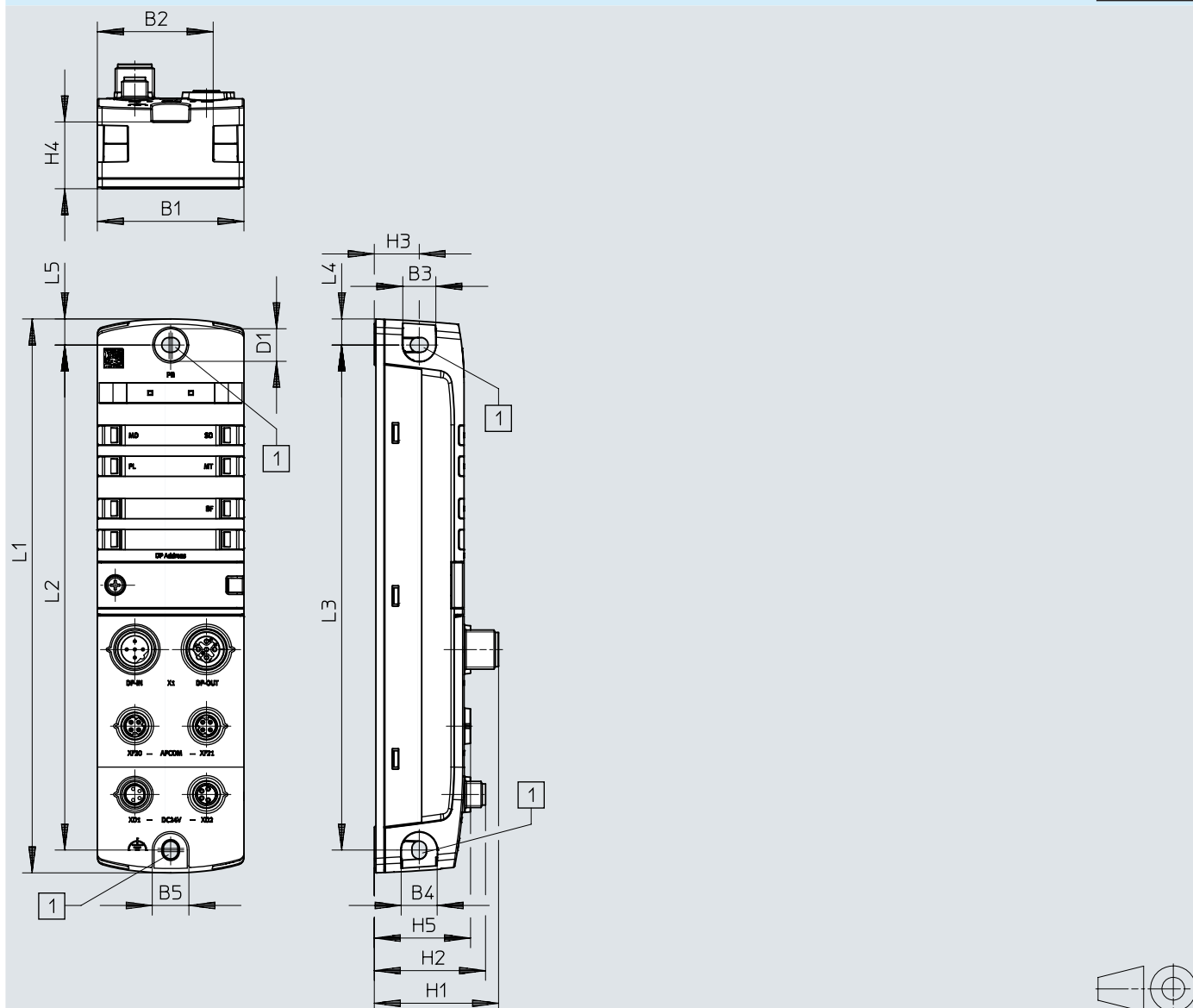
Connection and indicator components



- [1] Space for inscription label
- [2] LED indicators
- [3] Network connections 1 and 2, PROFIBUS
- [4] Communication interface
- [5] Electrical connection, power supply
- [6] Electrical connection, power transmission
- [7] Earth connection
- [8] DIL switch

Datasheet – PROFIBUS interface

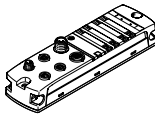
Dimensions

Download CAD data → www.festo.com

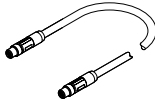
[1] Mounting hole for M4 screws

	B1	B2	B3	B4	B5	D1 Ø	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5
CPX-AP-I-PB-M12	45	35.5	10	11	11	10	38.2	34.2	13.8	20.5	29.6	170	155	155	8	8

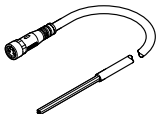
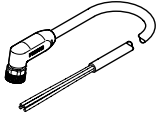
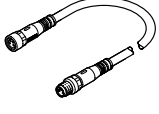
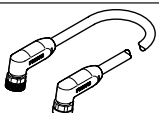
Datasheet – PROFIBUS interface

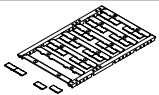
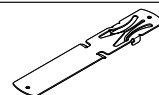
Ordering data				Part no.	Type
	PROFIBUS interface			8086608	CPX-AP-I-PB-M12

Ordering data – Accessories					
Description				Part no.	Type
Plug connectors for self-assembly					
	For bus connection	Straight socket, M12x1, 5-pin, B-coded		1067905	NECU-M-B12G5-C2-PB
		Straight plug, M12x1, 5-pin, B-coded		1066354	NECU-M-S-B12G5-C2-PB

Connecting cable						
	For communication interface	Straight plug, M8x1, 4-pin, D-coded	Straight plug, M8x1, 4-pin, D-coded	0.3 m	8082902	NEBC-D8G4-ES-0.3-N-S-D8G4-ET
				0.5 m	8065123	NEBC-D8G4-ES-0.5-N-S-D8G4-ET
				1.0 m	8065125	NEBC-D8G4-ES-1-N-S-D8G4-ET
				2.0 m	8065127	NEBC-D8G4-ES-2-N-S-D8G4-ET
				5.0 m	8065129	NEBC-D8G4-ES-5-N-S-D8G4-ET
				7.5 m	8065131	NEBC-D8G4-ES-7.5-N-S-D8G4-ET
				10.0 m	8065133	NEBC-D8G4-ES-10-N-S-D8G4-ET
				15.0 m	8065135	NEBC-D8G4-ES-15-N-S-D8G4-ET
				20.0 m	8146031	NEBC-D8G4-ES-20-N-S-D8G4-ET
				25.0 m	8146032	NEBC-D8G4-ES-25-N-S-D8G4-ET
				30.0 m	8146033	NEBC-D8G4-ES-30-N-S-D8G4-ET
				40.0 m	8146034	NEBC-D8G4-ES-40-N-S-D8G4-ET
				50.0 m	8146035	NEBC-D8G4-ES-50-N-S-D8G4-ET
		Angled plug, M8x1, 4-pin, D-coded	Angled plug, M8x1, 4-pin, D-coded	0.5 m	8065124	NEBC-D8W4-ES-0.5-N-S-D8W4-ET
				1.0 m	8065126	NEBC-D8W4-ES-1-N-S-D8W4-ET
				2.0 m	8065128	NEBC-D8W4-ES-2-N-S-D8W4-ET
				5.0 m	8065130	NEBC-D8W4-ES-5-N-S-D8W4-ET
				7.5 m	8065132	NEBC-D8W4-ES-7.5-N-S-D8W4-ET
				10.0 m	8065134	NEBC-D8W4-ES-10-N-S-D8W4-ET
				15.0 m	8065136	NEBC-D8W4-ES-15-N-S-D8W4-ET
				20.0 m	8146036	NEBC-D8W4-ES-20-N-S-D8W4-ET
				25.0 m	8146037	NEBC-D8W4-ES-25-N-S-D8W4-ET
				30.0 m	8146038	NEBC-D8W4-ES-30-N-S-D8W4-ET
				40.0 m	8146039	NEBC-D8W4-ES-40-N-S-D8W4-ET
				50.0 m	8146040	NEBC-D8W4-ES-50-N-S-D8W4-ET

Datasheet – PROFIBUS interface

Ordering data – Accessories						
	Description			Part no.	Type	
Connecting cable						
	For power supply	Straight socket, M8 x 1, 4-pin, A-coded	Open cable end, 4-core	5.0 m	8065110	NEBL-M8G4-E-5-N-LE4
				7.5 m	8065113	NEBL-M8G4-E-7.5-N-LE4
				10.0 m	8065117	NEBL-M8G4-E-10-N-LE4
				15.0 m	8065121	NEBL-M8G4-E-15-N-LE4
		Angled socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	7.5 m	8065114	NEBL-M8W4-E-7.5-N-LE4
				10.0 m	8065118	NEBL-M8W4-E-10-N-LE4
				15.0 m	8065122	NEBL-M8W4-E-15-N-LE4
	For power transmission	Straight socket, M8 x 1, 4-pin, A-coded	Straight plug, M8x1, 4-pin, A-coded	0.3 m	8082904	NEBL-M8G4-E-0.3-N-M8G4
				0.5 m	8065102	NEBL-M8G4-E-0.5-N-M8G4
				1.0 m	8065104	NEBL-M8G4-E-1-N-M8G4
				2.0 m	8065106	NEBL-M8G4-E-2-N-M8G4
				5.0 m	8065108	NEBL-M8G4-E-5-N-M8G4
				7.5 m	8065111	NEBL-M8G4-E-7.5-N-M8G4
				10.0 m	8065115	NEBL-M8G4-E-10-N-M8G4
				15.0 m	8065119	NEBL-M8G4-E-15-N-M8G4
		Angled socket, M8x1, 4-pin, A-coded	Angled plug, M8x1, 4-pin, A-coded	0.3 m	8146577	NEBL-M8W4-E-0.3-N-M8W4
				0.5 m	8065103	NEBL-M8W4-E-0.5-N-M8W4
				1.0 m	8065105	NEBL-M8W4-E-1-N-M8W4
				2.0 m	8065107	NEBL-M8W4-E-2-N-M8W4
				5.0 m	8065109	NEBL-M8W4-E-5-N-M8W4
				7.5 m	8065112	NEBL-M8W4-E-7.5-N-M8W4
				10.0 m	8065116	NEBL-M8W4-E-10-N-M8W4
				15.0 m	8065120	NEBL-M8W4-E-15-N-M8W4

Ordering data – Accessories					
	Description		Pack size	Part no.	Type
Inscription labels					
	For modules CPX-AP-I	Size 6x 12.5 mm, 10 frames with 24 pieces each	240	8087174	ASLR-L-X4-612-P240
Cover cap					
	For sealing unused connections	For connection M8x1	10	177672	ISK-M8
DIN rail mounting					
	For mounting a module on DIN rails according to EN 60715		–	8095158	CAFM-X4-H

Datasheet – EtherCAT® interface



Interface for operating the remote I/O system CPX-AP-I on EtherCAT®. Data is transferred on the basis of the Ethernet standard for communication in an industrial environment.



General technical data – EtherCAT® interface

Fieldbus interface, protocol	EtherCAT®
Fieldbus interface, function	Incoming/outgoing bus connection
Fieldbus interface, transmission rate	100 Mbps
Fieldbus interface, type	Ethernet
Fieldbus interface, type of connection	2 x socket
Fieldbus interface, connection technology	M12x1, D-coded to EN 61076-2-101
Fieldbus interface, number of pins/cores	4
Fieldbus interface, galvanic isolation	Yes
Communication interface, protocol	AP
Communication interface, function	System communication XF20 OUT / XF21 OUT
Communication interface, connection type	2 x socket
Communication interface, connection technology	M8x1, D-coded to EN 61076-2-114
Communication interface, number of pins/cores	4
Communication interface, shielding	Yes

General data – EtherCAT® interface

Configuration support	ESI file
Max. number of modules	80
Max. address volume for outputs	2,048
Max. address volume for inputs	2,048
Diagnostics via LED	Diagnostics per module EtherCAT RUN Power supply, electronics/sensors Power supply load System diagnostics Maintenance required
Diagnostics via bus	APDD invalid Load switch-off Communication to AP module interrupted Electronics/sensors overvoltage Overvoltage load Undervoltage electronics/sensors Undervoltage load
Diagnostics via internal communication	Module error Output short circuit/overload Short circuit/overload in sensor supply Undervoltage in load supply
Max. cable length	50 m system communication
Note on max. cable length	Power supply according to nominal voltage
Reverse polarity protection	Yes

Datasheet – EtherCAT® interface

Technical data – Electrical – EtherCAT® interface

Nominal operating voltage DC for electronics/sensors	24 V
Nominal operating voltage DC load	24 V
Permissible voltage fluctuations, electronics/sensors	± 25%
Permissible voltage fluctuations, load	± 25%
Note on the operating voltage	SELV/PELV power supply units required; note voltage drop
Power failure buffering	10 ms
Max. power supply	2 x 4 A (external fuse required)
Intrinsic current consumption at nominal operating voltage, electronics/sensors	Typical 90 mA
Intrinsic current consumption at nominal operating voltage, load	Typical 5 mA
Power supply, function	Incoming electronics/sensors and load
Power supply, connection type	Plug
Power supply, connection technology	M8x1, A-coded to EN 61076-2-104
Power supply, number of pins/cores	4
Power transmission, function	Outgoing electronics/sensors and load
Power transmission, connection type	Socket
Power transmission, connection technology	M8x1, A-coded to EN 61076-2-104
Power transmission, number of pins/cores	4

Materials – EtherCAT® Interface

Housing material	PA; PC; nickel-plated die-cast zinc
O-ring material	FPM
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-B2-L
Cleanroom class	Element installed statically, no meaningful evaluation possible according to ISO 14644-1

Operating and environmental conditions – EtherCAT® interface

Ambient temperature	-20 ... 60 °C
Storage temperature	-40 ... 70 °C
Corrosion resistance class CRC ¹⁾	1 - low corrosion stress
Relative humidity	5 - 95%, non-condensing
CE marking (see declaration of conformity) ²⁾	To EU EMC Directive
UKCA marking (see declaration of conformity) ³⁾	To UK EMC regulations
KC marking	KC EMC
Certification	RCM Mark c UL us - Listed (OL)
Certificate-issuing authority	UL E239998
Degree of protection	IP65; IP67
Note on degree of protection	Unused connections sealed

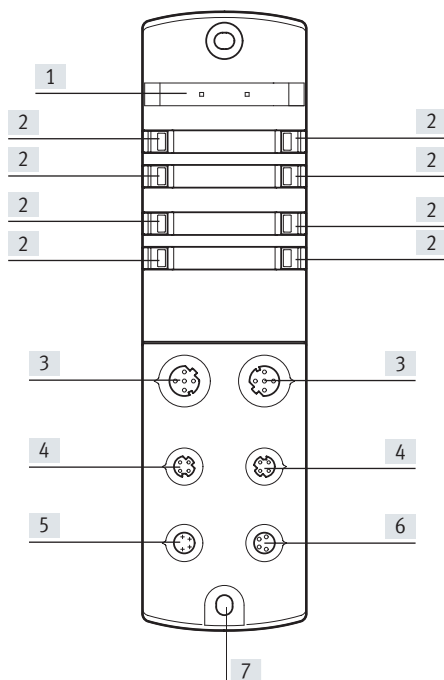
1) More information www.festo.com/x/topic/crc

2) More information www.festo.com/catalogue/... Support/Downloads.

3) More information www.festo.com/catalogue/... Support/Downloads.

Datasheet – EtherCAT® interface

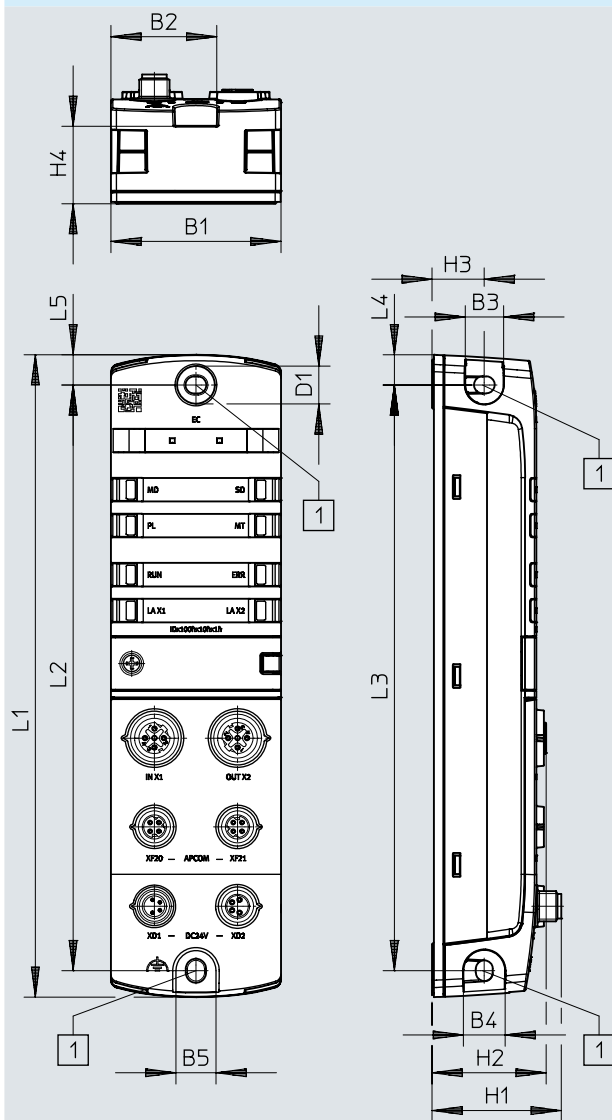
Connection and indicator components



- [1] Space for inscription label
- [2] LED indicators
- [3] Network connections 1 and 2, EtherCAT®
- [4] Communication interface
- [5] Electrical connection, power supply
- [6] Electrical connection, power transmission
- [7] Earth connection

Datasheet – EtherCAT® interface

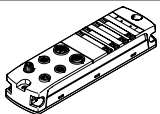
Dimensions

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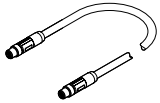
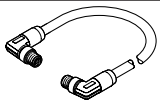
[1] Mounting hole for M4 screws

	B1	B2	B3	B4	B5	D1 Ø	H1	H2	H3	H4	L1	L2	L3	L4	L5
CPX-AP-I-EC-M12	45	35.5	10	11	11	10	34.2	30.2	13.8	20.5	170	155	155	8	8

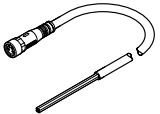
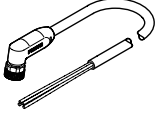
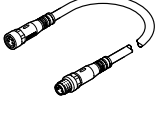
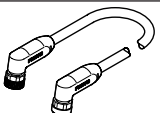
Datasheet – EtherCAT® interface

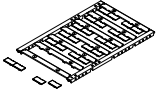
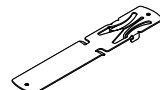
Ordering data		Part no.	Type
	EtherCAT® interface	8086609	CPX-AP-I-EC-M12

Ordering data – Accessories		Part no.	Type
Description			
Plug connectors for self-assembly			
	For bus connection	Straight plug, M12x1, 4-pin, D-coded	543109 NECU-M-S-D12G4-C2-ET

Connecting cable						
	For communication interface	Straight plug, M8x1, 4-pin, D-coded	Straight plug, M8x1, 4-pin, D-coded	0.3 m	8082902	NEBC-D8G4-ES-0.3-N-S-D8G4-ET
				0.5 m	8065123	NEBC-D8G4-ES-0.5-N-S-D8G4-ET
				1.0 m	8065125	NEBC-D8G4-ES-1-N-S-D8G4-ET
				2.0 m	8065127	NEBC-D8G4-ES-2-N-S-D8G4-ET
				5.0 m	8065129	NEBC-D8G4-ES-5-N-S-D8G4-ET
				7.5 m	8065131	NEBC-D8G4-ES-7.5-N-S-D8G4-ET
				10.0 m	8065133	NEBC-D8G4-ES-10-N-S-D8G4-ET
				15.0 m	8065135	NEBC-D8G4-ES-15-N-S-D8G4-ET
				20.0 m	8146031	NEBC-D8G4-ES-20-N-S-D8G4-ET
				25.0 m	8146032	NEBC-D8G4-ES-25-N-S-D8G4-ET
				30.0 m	8146033	NEBC-D8G4-ES-30-N-S-D8G4-ET
				40.0 m	8146034	NEBC-D8G4-ES-40-N-S-D8G4-ET
				50.0 m	8146035	NEBC-D8G4-ES-50-N-S-D8G4-ET
	For communication interface	Angled plug, M8x1, 4-pin, D-coded	Angled plug, M8x1, 4-pin, D-coded	0.5 m	8065124	NEBC-D8W4-ES-0.5-N-S-D8W4-ET
				1.0 m	8065126	NEBC-D8W4-ES-1-N-S-D8W4-ET
				2.0 m	8065128	NEBC-D8W4-ES-2-N-S-D8W4-ET
				5.0 m	8065130	NEBC-D8W4-ES-5-N-S-D8W4-ET
				7.5 m	8065132	NEBC-D8W4-ES-7.5-N-S-D8W4-ET
				10.0 m	8065134	NEBC-D8W4-ES-10-N-S-D8W4-ET
				15.0 m	8065136	NEBC-D8W4-ES-15-N-S-D8W4-ET
				20.0 m	8146036	NEBC-D8W4-ES-20-N-S-D8W4-ET
				25.0 m	8146037	NEBC-D8W4-ES-25-N-S-D8W4-ET
				30.0 m	8146038	NEBC-D8W4-ES-30-N-S-D8W4-ET
				40.0 m	8146039	NEBC-D8W4-ES-40-N-S-D8W4-ET
				50.0 m	8146040	NEBC-D8W4-ES-50-N-S-D8W4-ET

Datasheet – EtherCAT® interface

Ordering data – Accessories						
	Description				Part no.	Type
Connecting cable						
	For power supply	Straight socket, M8 x 1, 4-pin, A-coded	Open cable end, 4-core	5.0 m	8065110	NEBL-M8G4-E-5-N-LE4
				7.5 m	8065113	NEBL-M8G4-E-7.5-N-LE4
				10.0 m	8065117	NEBL-M8G4-E-10-N-LE4
				15.0 m	8065121	NEBL-M8G4-E-15-N-LE4
		Angled socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	7.5 m	8065114	NEBL-M8W4-E-7.5-N-LE4
				10.0 m	8065118	NEBL-M8W4-E-10-N-LE4
				15.0 m	8065122	NEBL-M8W4-E-15-N-LE4
	For power transmission	Straight socket, M8 x 1, 4-pin, A-coded	Straight plug, M8x1, 4-pin, A-coded	0.3 m	8082904	NEBL-M8G4-E-0.3-N-M8G4
				0.5 m	8065102	NEBL-M8G4-E-0.5-N-M8G4
				1.0 m	8065104	NEBL-M8G4-E-1-N-M8G4
				2.0 m	8065106	NEBL-M8G4-E-2-N-M8G4
				5.0 m	8065108	NEBL-M8G4-E-5-N-M8G4
				7.5 m	8065111	NEBL-M8G4-E-7.5-N-M8G4
				10.0 m	8065115	NEBL-M8G4-E-10-N-M8G4
				15.0 m	8065119	NEBL-M8G4-E-15-N-M8G4
		Angled socket, M8x1, 4-pin, A-coded	Angled plug, M8x1, 4-pin, A-coded	0.3 m	8146577	NEBL-M8W4-E-0.3-N-M8W4
				0.5 m	8065103	NEBL-M8W4-E-0.5-N-M8W4
				1.0 m	8065105	NEBL-M8W4-E-1-N-M8W4
				2.0 m	8065107	NEBL-M8W4-E-2-N-M8W4
				5.0 m	8065109	NEBL-M8W4-E-5-N-M8W4
				7.5 m	8065112	NEBL-M8W4-E-7.5-N-M8W4
				10.0 m	8065116	NEBL-M8W4-E-10-N-M8W4
				15.0 m	8065120	NEBL-M8W4-E-15-N-M8W4

Ordering data – Accessories					
	Description		Pack size	Part no.	Type
Inscription labels					
	For modules CPX-AP-I	Size 6x 12.5 mm, 10 frames with 24 pieces each	240	8087174	ASLR-L-X4-612-P240
Cover cap					
	For sealing unused connections	For connection M8x1	10	177672	ISK-M8
DIN rail mounting					
	For mounting a module on DIN rails according to EN 60715		–	8095158	CAFM-X4-H

Datasheet – EtherNet/IP interface

EtherNet/IP™

Interface for operating the remote I/O system CPX-AP-I in an Ethernet network using the protocols EtherNet/IP or Modbus/TCP. Data is transmitted on the basis of Industrial Ethernet.

**General technical data – EtherNet/IP interface**

Fieldbus interface, protocol	EtherNet/IP
Fieldbus interface, function	Incoming/outgoing bus connection
Fieldbus interface, transmission rate	100 Mbps
Fieldbus interface, type	Ethernet
Fieldbus interface, type of connection	2 x socket
Fieldbus interface, connection technology	M12x1, D-coded to EN 61076-2-101
Fieldbus interface, number of pins/cores	4
Fieldbus interface, galvanic isolation	Yes
Communication interface, protocol	AP
Communication interface, function	System communication XF20 OUT / XF21 OUT
Communication interface, connection type	2 x socket
Communication interface, connection technology	M8x1, D-coded to EN 61076-2-114
Communication interface, number of pins/cores	4
Communication interface, shielding	Yes

General data – EtherNet/IP interface

Configuration support	EDS file
Max. number of modules	80
Max. address volume for outputs	1,324
Max. address volume for inputs	1,324
Diagnostics via LED	Diagnostics per module Network status EtherNet/IP Power supply, electronics/sensors Power supply load System diagnostics Maintenance required
Diagnostics via bus	APDD invalid Load switch-off Communication to AP module interrupted Electronics/sensors overvoltage Overvoltage load Undervoltage electronics/sensors Undervoltage load
Diagnostics via internal communication	Module error Output short circuit/overload Short circuit/overload in sensor supply Undervoltage in load supply
Max. cable length	50 m system communication
Note on max. cable length	Power supply according to nominal voltage
Reverse polarity protection	Yes

Datasheet – EtherNet/IP interface

Technical data – Electrical – EtherNet/IP interface

Nominal operating voltage DC for electronics/sensors	24 V
Nominal operating voltage DC load	24 V
Permissible voltage fluctuations, electronics/sensors	± 25%
Permissible voltage fluctuations, load	± 25%
Note on the operating voltage	SELV/PELV power supply units required; note voltage drop
Power failure buffering	10 ms
Max. power supply	2 x 4 A (external fuse required)
Intrinsic current consumption at nominal operating voltage, electronics/sensors	Typical 90 mA
Intrinsic current consumption at nominal operating voltage, load	Typical 5 mA
Power supply, function	Incoming electronics/sensors and load
Power supply, connection type	Plug
Power supply, connection technology	M8x1, A-coded to EN 61076-2-104
Power supply, number of pins/cores	4
Power transmission, function	Outgoing electronics/sensors and load
Power transmission, connection type	Socket
Power transmission, connection technology	M8x1, A-coded to EN 61076-2-104
Power transmission, number of pins/cores	4

Technical data – Mechanical – EtherNet/IP interface

Type of mounting	On DIN rail with accessories; with through-hole
Product weight	194 g
Dimensions W x L x H	45 mm x 170 mm x 35 mm

Materials – EtherNet/IP interface

Housing material	PA; PC; nickel-plated die-cast zinc
O-ring material	FPM
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-B2-L
Cleanroom class	Element installed statically, no meaningful evaluation possible according to ISO 14644-1

Operating and environmental conditions – EtherNet/IP interface

Ambient temperature	-20 ... 60 °C
Storage temperature	-40 ... 70 °C
Corrosion resistance class CRC ¹⁾	1 - low corrosion stress
Relative humidity	5 - 95%, non-condensing
CE marking (see declaration of conformity) ²⁾	To EU EMC Directive
UKCA marking (see declaration of conformity) ³⁾	To UK EMC regulations
KC marking	KC EMC
Certification	RCM Mark c UL us - Listed (OL)
Certificate-issuing authority	UL E239998
Degree of protection	IP65; IP67
Note on degree of protection	Unused connections sealed

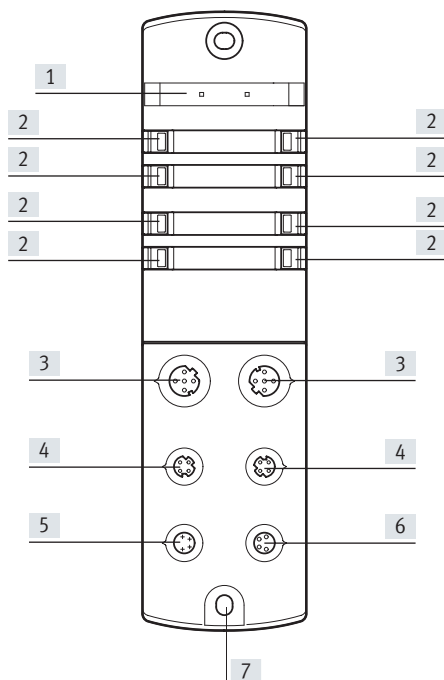
1) More information www.festo.com/x/topic/crc

2) More information www.festo.com/catalogue/... Support/Downloads.

3) More information www.festo.com/catalogue/... Support/Downloads.

Datasheet – EtherNet/IP interface

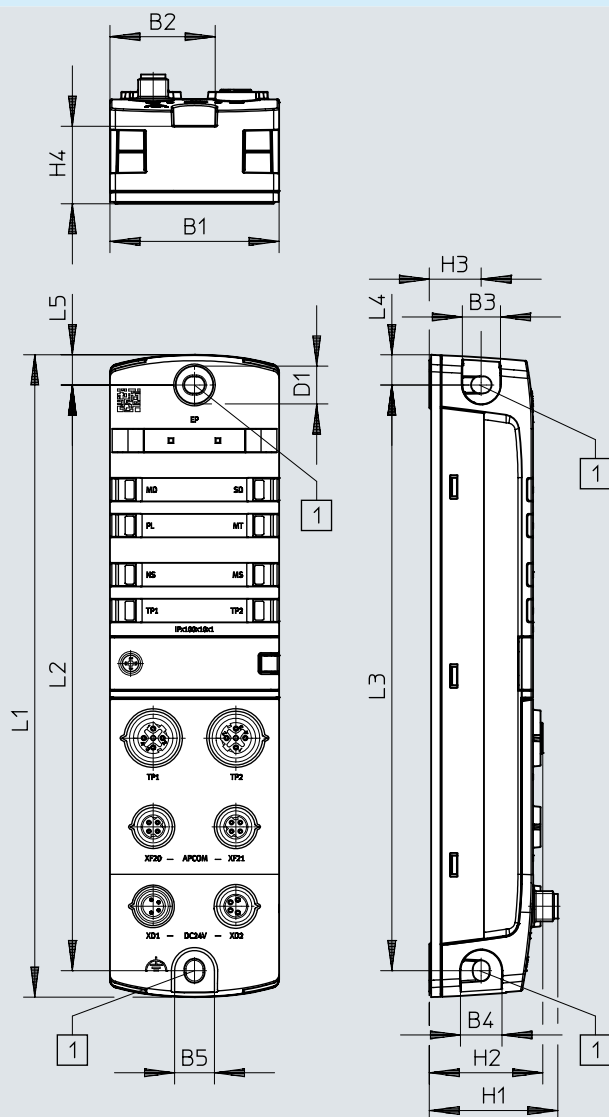
Connection and indicator components



- [1] Space for inscription label
- [2] LED indicators
- [3] Network connections 1 and 2, EtherNet/IP
- [4] Communication interface
- [5] Electrical connection, power supply
- [6] Electrical connection, power transmission
- [7] Earth connection

Datasheet – EtherNet/IP interface

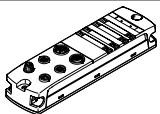
Dimensions

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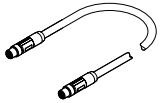
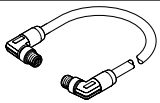
[1] Mounting hole for M4 screws

	B1	B2	B3	B4	B5	D1 Ø	H1	H2	H3	H4	L1	L2	L3	L4	L5
CPX-AP-I-EP-M12	45	35.5	10	11	11	10	34.2	30.2	13.8	20.5	170	155	155	8	8

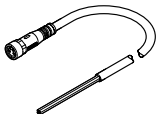
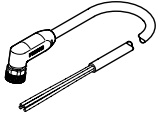
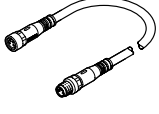
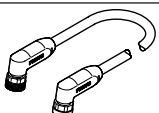
Datasheet – EtherNet/IP interface

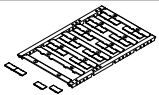
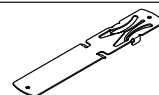
Ordering data		Part no.	Type
	EtherNet/IP interface	8086610	CPX-AP-I-EP-M12

Ordering data – Accessories		Part no.	Type
Description			
Plug connectors for self-assembly			
	For bus connection	Straight plug, M12x1, 4-pin, D-coded	543109 NECU-M-S-D12G4-C2-ET

Connecting cable						
	For communication interface	Straight plug, M8x1, 4-pin, D-coded	Straight plug, M8x1, 4-pin, D-coded	0.3 m	8082902	NEBC-D8G4-ES-0.3-N-S-D8G4-ET
				0.5 m	8065123	NEBC-D8G4-ES-0.5-N-S-D8G4-ET
				1.0 m	8065125	NEBC-D8G4-ES-1-N-S-D8G4-ET
				2.0 m	8065127	NEBC-D8G4-ES-2-N-S-D8G4-ET
				5.0 m	8065129	NEBC-D8G4-ES-5-N-S-D8G4-ET
				7.5 m	8065131	NEBC-D8G4-ES-7.5-N-S-D8G4-ET
				10.0 m	8065133	NEBC-D8G4-ES-10-N-S-D8G4-ET
				15.0 m	8065135	NEBC-D8G4-ES-15-N-S-D8G4-ET
				20.0 m	8146031	NEBC-D8G4-ES-20-N-S-D8G4-ET
				25.0 m	8146032	NEBC-D8G4-ES-25-N-S-D8G4-ET
				30.0 m	8146033	NEBC-D8G4-ES-30-N-S-D8G4-ET
				40.0 m	8146034	NEBC-D8G4-ES-40-N-S-D8G4-ET
				50.0 m	8146035	NEBC-D8G4-ES-50-N-S-D8G4-ET
	For communication interface	Angled plug, M8x1, 4-pin, D-coded	Angled plug, M8x1, 4-pin, D-coded	0.5 m	8065124	NEBC-D8W4-ES-0.5-N-S-D8W4-ET
				1.0 m	8065126	NEBC-D8W4-ES-1-N-S-D8W4-ET
				2.0 m	8065128	NEBC-D8W4-ES-2-N-S-D8W4-ET
				5.0 m	8065130	NEBC-D8W4-ES-5-N-S-D8W4-ET
				7.5 m	8065132	NEBC-D8W4-ES-7.5-N-S-D8W4-ET
				10.0 m	8065134	NEBC-D8W4-ES-10-N-S-D8W4-ET
				15.0 m	8065136	NEBC-D8W4-ES-15-N-S-D8W4-ET
				20.0 m	8146036	NEBC-D8W4-ES-20-N-S-D8W4-ET
				25.0 m	8146037	NEBC-D8W4-ES-25-N-S-D8W4-ET
				30.0 m	8146038	NEBC-D8W4-ES-30-N-S-D8W4-ET
				40.0 m	8146039	NEBC-D8W4-ES-40-N-S-D8W4-ET
				50.0 m	8146040	NEBC-D8W4-ES-50-N-S-D8W4-ET

Datasheet – EtherNet/IP interface

Ordering data – Accessories						
	Description			Part no.	Type	
Connecting cable						
	For power supply	Straight socket, M8 x 1, 4-pin, A-coded	Open cable end, 4-core	5.0 m	8065110	NEBL-M8G4-E-5-N-LE4
				7.5 m	8065113	NEBL-M8G4-E-7.5-N-LE4
				10.0 m	8065117	NEBL-M8G4-E-10-N-LE4
				15.0 m	8065121	NEBL-M8G4-E-15-N-LE4
		Angled socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	7.5 m	8065114	NEBL-M8W4-E-7.5-N-LE4
				10.0 m	8065118	NEBL-M8W4-E-10-N-LE4
				15.0 m	8065122	NEBL-M8W4-E-15-N-LE4
	For power transmission	Straight socket, M8 x 1, 4-pin, A-coded	Straight plug, M8x1, 4-pin, A-coded	0.3 m	8082904	NEBL-M8G4-E-0.3-N-M8G4
				0.5 m	8065102	NEBL-M8G4-E-0.5-N-M8G4
				1.0 m	8065104	NEBL-M8G4-E-1-N-M8G4
				2.0 m	8065106	NEBL-M8G4-E-2-N-M8G4
				5.0 m	8065108	NEBL-M8G4-E-5-N-M8G4
				7.5 m	8065111	NEBL-M8G4-E-7.5-N-M8G4
				10.0 m	8065115	NEBL-M8G4-E-10-N-M8G4
				15.0 m	8065119	NEBL-M8G4-E-15-N-M8G4
		Angled socket, M8x1, 4-pin, A-coded	Angled plug, M8x1, 4-pin, A-coded	0.3 m	8146577	NEBL-M8W4-E-0.3-N-M8W4
				0.5 m	8065103	NEBL-M8W4-E-0.5-N-M8W4
				1.0 m	8065105	NEBL-M8W4-E-1-N-M8W4
				2.0 m	8065107	NEBL-M8W4-E-2-N-M8W4
				5.0 m	8065109	NEBL-M8W4-E-5-N-M8W4
				7.5 m	8065112	NEBL-M8W4-E-7.5-N-M8W4
				10.0 m	8065116	NEBL-M8W4-E-10-N-M8W4
				15.0 m	8065120	NEBL-M8W4-E-15-N-M8W4

Ordering data – Accessories					
	Description		Pack size	Part no.	Type
Inscription labels					
	For modules CPX-AP-I	Size 6x 12.5 mm, 10 frames with 24 pieces each	240	8087174	ASLR-L-X4-612-P240
Cover cap					
	For sealing unused connections	For connection M8x1	10	177672	ISK-M8
DIN rail mounting					
	For mounting a module on DIN rails according to EN 60715		–	8095158	CAFM-X4-H

Datasheet – CC-Link IE Field Basic Interface



Interface for operating the remote I/O system CPX-AP-I in a CC-Link IE Field Basic network using the CC-Link IE Field Basic protocol.
SLMP. Data is transferred on the basis of Industrial Ethernet.



General technical data – CC-Link IE Field Basic Interface

Fieldbus interface, protocol	EtherCAT®
Fieldbus interface, function	Incoming/outgoing bus connection
Fieldbus interface, transmission rate	100 Mbps
Fieldbus interface, type	Ethernet
Fieldbus interface, type of connection	2 x socket
Communication interface, protocol	AP
Communication interface, function	System communication XF20 OUT / XF21 OUT
Communication interface, connection type	2 x socket
Communication interface, connection technology	M8x1, D-coded to EN 61076-2-114
Communication interface, number of pins/cores	4
Communication interface, shielding	Yes

General data – CC-Link IE Field Basic Interface

Configuration support	CSPP file
Max. number of modules	80
Max. address volume for outputs	1,024 bytes
Max. address volume for inputs	1,024 bytes
Diagnostics via LED	CC-Link IE Field Basic RUN Diagnostics per module Power supply, electronics/sensors Power supply load System diagnostics Maintenance required
Diagnostics via bus	APDD invalid Load switch-off Communication to AP module interrupted Electronics/sensors overvoltage Overvoltage load Undervoltage electronics/sensors Undervoltage load
Diagnostics via internal communication	Module error Output short circuit/overload Short circuit/overload in sensor supply Undervoltage in load supply
Max. cable length	50 m system communication
Reverse polarity protection	Yes

Datasheet – CC-Link IE Field Basic Interface

Technical specifications – Electrical – CC-Link IE Field Basic Interface

Nominal operating voltage DC for electronics/sensors	24 V
Nominal operating voltage DC load	24 V
Permissible voltage fluctuations, electronics/sensors	± 25%
Permissible voltage fluctuations, load	± 25%
Note on the operating voltage	SELV/PELV power supply units required; note voltage drop
Power failure buffering	10 ms
Max. power supply	2 x 4 A (external fuse required)
Intrinsic current consumption at nominal operating voltage, electronics/sensors	Typical 90 mA
Intrinsic current consumption at nominal operating voltage, load	Typical 5 mA
Power supply, function	Incoming electronics/sensors and load
Power supply, connection type	Plug
Power supply, connection technology	M8x1, A-coded to EN 61076-2-104
Power supply, number of pins/cores	4
Power transmission, function	Outgoing electronics/sensors and load
Power transmission, connection type	Socket
Power transmission, connection technology	M8x1, A-coded to EN 61076-2-104
Power transmission, number of pins/cores	4

Technical specifications – Mechanical CC-Link IE Field Basic Interface

Type of mounting	On DIN rail with accessories; with through-hole
Product weight	186 g
Dimensions W x L x H	45 mm x 170 mm x 35 mm

Materials CC-Link IE Field Basic Interface

Housing material	PA; PC; nickel-plated die-cast zinc
O-ring material	FPM
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-B2-L
Suitable for cleanrooms, measured according to ISO 14644-14	–

Operating and environmental conditions – CC-Link IE Field Basic Interface

Ambient temperature	-20 ... 60 °C
Storage temperature	-40 ... 70 °C
Corrosion resistance class CRC ¹⁾	1 - low corrosion stress
Relative humidity	5 - 95%, non-condensing
CE marking (see declaration of conformity) ²⁾	To EU EMC Directive, to EU-RoHS Directive
UKCA marking (see declaration of conformity) ³⁾	To UK EMC regulations; to UK RoHS regulations
KC marking	KC EMC
Certification	RCM Mark c UL us - Listed (OL)
Certificate-issuing authority	UL E239998
Degree of protection	IP65; IP67
Note on degree of protection	Unused connections sealed

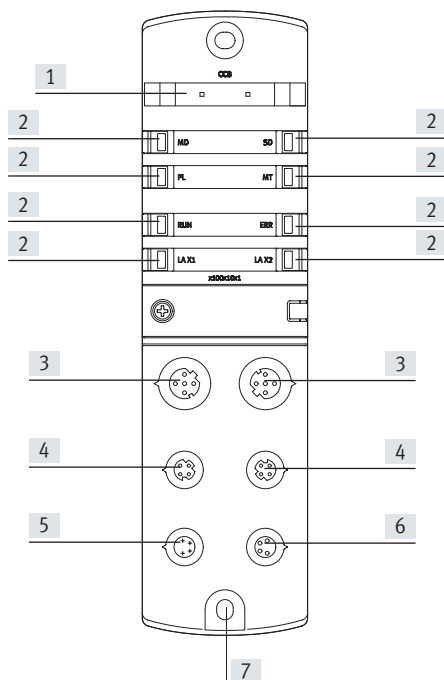
1) More information www.festo.com/x/topic/crc

2) More information www.festo.com/catalogue/... Support/Downloads.

3) More information www.festo.com/catalogue/... Support/Downloads.

Datasheet – CC-Link IE Field Basic Interface

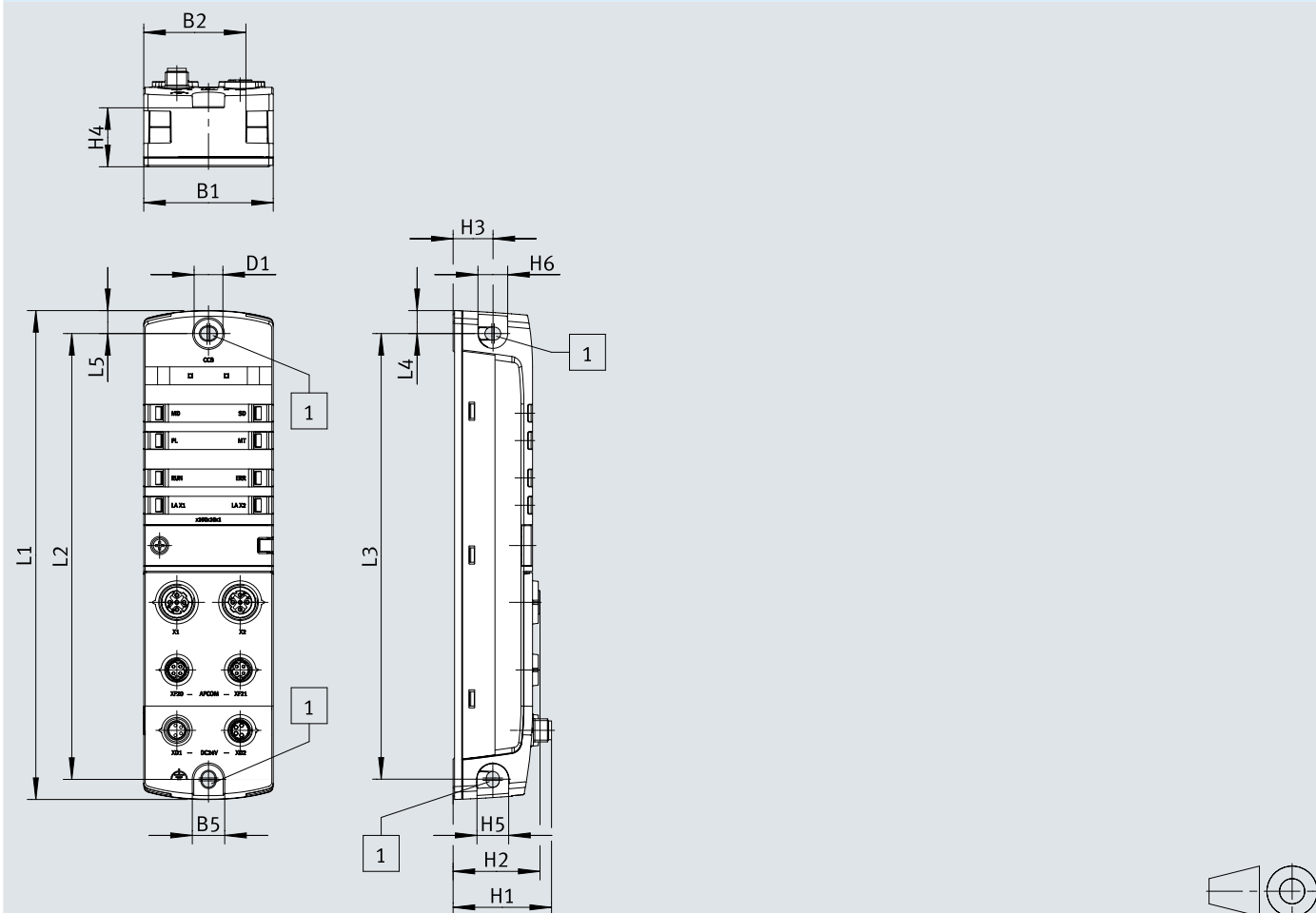
Connection and indicator components



- [1] Space for inscription label
- [2] LED indicators
- [3] Network ports 1 and 2, CC-Link IE Field Basic
- [4] Communication interface
- [5] Electrical connection, power supply
- [6] Electrical connection, power transmission
- [7] Earth connection

Datasheet – CC-Link IE Field Basic Interface

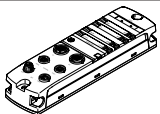
Dimensions

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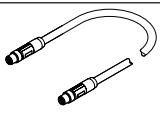
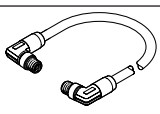
[1] Mounting hole for M4 screws

	B1	B2	B5	D1 Ø	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4	L5
CPX-AP-I-CCB-M12	45	35,5	11	10	34,2	30,2	13,8	20,5	11	10	170	155	155	8	8

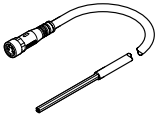
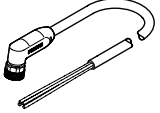
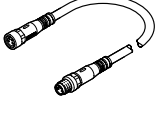
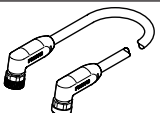
Datasheet – CC-Link IE Field Basic Interface

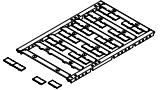
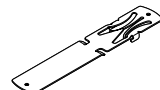
Ordering data		Part no.	Type
	CC-Link IE Field Basic Interface	8232030	CPX-AP-I-CCB-M12

Ordering data – Accessories			
	Description	Part no.	Type
Plug connectors for self-assembly			
	For bus connection	Straight plug, M12x1, 4-pin, D-coded	543109 NECU-M-S-D12G4-C2-ET

Connecting cable						
	For communication interface	Straight plug, M8x1, 4-pin, D-coded	Straight plug, M8x1, 4-pin, D-coded	0.3 m	8082902	NEBC-D8G4-ES-0.3-N-S-D8G4-ET
				0.5 m	8065123	NEBC-D8G4-ES-0.5-N-S-D8G4-ET
				1.0 m	8065125	NEBC-D8G4-ES-1-N-S-D8G4-ET
				2.0 m	8065127	NEBC-D8G4-ES-2-N-S-D8G4-ET
				5.0 m	8065129	NEBC-D8G4-ES-5-N-S-D8G4-ET
				7.5 m	8065131	NEBC-D8G4-ES-7.5-N-S-D8G4-ET
				10.0 m	8065133	NEBC-D8G4-ES-10-N-S-D8G4-ET
				15.0 m	8065135	NEBC-D8G4-ES-15-N-S-D8G4-ET
				20.0 m	8146031	NEBC-D8G4-ES-20-N-S-D8G4-ET
				25.0 m	8146032	NEBC-D8G4-ES-25-N-S-D8G4-ET
				30.0 m	8146033	NEBC-D8G4-ES-30-N-S-D8G4-ET
				40.0 m	8146034	NEBC-D8G4-ES-40-N-S-D8G4-ET
				50.0 m	8146035	NEBC-D8G4-ES-50-N-S-D8G4-ET
	For communication interface	Angled plug, M8x1, 4-pin, D-coded	Angled plug, M8x1, 4-pin, D-coded	0.5 m	8065124	NEBC-D8W4-ES-0.5-N-S-D8W4-ET
				1.0 m	8065126	NEBC-D8W4-ES-1-N-S-D8W4-ET
				2.0 m	8065128	NEBC-D8W4-ES-2-N-S-D8W4-ET
				5.0 m	8065130	NEBC-D8W4-ES-5-N-S-D8W4-ET
				7.5 m	8065132	NEBC-D8W4-ES-7.5-N-S-D8W4-ET
				10.0 m	8065134	NEBC-D8W4-ES-10-N-S-D8W4-ET
				15.0 m	8065136	NEBC-D8W4-ES-15-N-S-D8W4-ET
				20.0 m	8146036	NEBC-D8W4-ES-20-N-S-D8W4-ET
				25.0 m	8146037	NEBC-D8W4-ES-25-N-S-D8W4-ET
				30.0 m	8146038	NEBC-D8W4-ES-30-N-S-D8W4-ET
				40.0 m	8146039	NEBC-D8W4-ES-40-N-S-D8W4-ET
				50.0 m	8146040	NEBC-D8W4-ES-50-N-S-D8W4-ET

Datasheet – CC-Link IE Field Basic Interface

Ordering data – Accessories						
	Description				Part no.	Type
Connecting cable						
	For power supply	Straight socket, M8 x 1, 4-pin, A-coded	Open cable end, 4-core	5.0 m	8065110	NEBL-M8G4-E-5-N-LE4
				7.5 m	8065113	NEBL-M8G4-E-7.5-N-LE4
				10.0 m	8065117	NEBL-M8G4-E-10-N-LE4
				15.0 m	8065121	NEBL-M8G4-E-15-N-LE4
		Angled socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	7.5 m	8065114	NEBL-M8W4-E-7.5-N-LE4
				10.0 m	8065118	NEBL-M8W4-E-10-N-LE4
				15.0 m	8065122	NEBL-M8W4-E-15-N-LE4
	For power transmission	Straight socket, M8 x 1, 4-pin, A-coded	Straight plug, M8x1, 4-pin, A-coded	0.3 m	8082904	NEBL-M8G4-E-0.3-N-M8G4
				0.5 m	8065102	NEBL-M8G4-E-0.5-N-M8G4
				1.0 m	8065104	NEBL-M8G4-E-1-N-M8G4
				2.0 m	8065106	NEBL-M8G4-E-2-N-M8G4
				5.0 m	8065108	NEBL-M8G4-E-5-N-M8G4
				7.5 m	8065111	NEBL-M8G4-E-7.5-N-M8G4
				10.0 m	8065115	NEBL-M8G4-E-10-N-M8G4
				15.0 m	8065119	NEBL-M8G4-E-15-N-M8G4
		Angled socket, M8x1, 4-pin, A-coded	Angled plug, M8x1, 4-pin, A-coded	0.3 m	8146577	NEBL-M8W4-E-0.3-N-M8W4
				0.5 m	8065103	NEBL-M8W4-E-0.5-N-M8W4
				1.0 m	8065105	NEBL-M8W4-E-1-N-M8W4
				2.0 m	8065107	NEBL-M8W4-E-2-N-M8W4
				5.0 m	8065109	NEBL-M8W4-E-5-N-M8W4
				7.5 m	8065112	NEBL-M8W4-E-7.5-N-M8W4
				10.0 m	8065116	NEBL-M8W4-E-10-N-M8W4
				15.0 m	8065120	NEBL-M8W4-E-15-N-M8W4

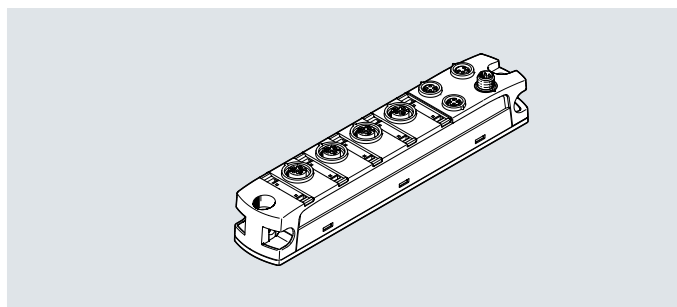
Ordering data – Accessories					
	Description		Pack size	Part no.	Type
Inscription labels					
	For modules CPX-AP-I	Size 6x 12.5 mm, 10 frames with 24 pieces each	240	8087174	ASLR-L-X4-612-P240
Cover cap					
	For sealing unused connections	For connection M8x1	10	177672	ISK-M8
DIN rail mounting					
	For mounting a module on DIN rails according to EN 60715		–	8095158	CAFM-X4-H

Datasheet – IO-Link master

Function

The IO-Link master has 4 IO-Link® connections, which enable any IO-Link® components and Festo components with an I-Port connection to be linked up to the remote I/O system CPX-AP-I.

- IO-Link master
- Connection M12x1, 5-pin
- Status and error indication via LED



Description

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

The IO-Link master provides four external IO-Link® interfaces, at each of which a device can be connected.

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

In the factory settings, each IO-Link® port has an address space with 9 bytes of input data and 8 bytes of output data.

The address space, master port and the connected devices can be parameterised with the help of the IO-Link Device Tool.

DIL switches are available for a range of further settings.

A 30-day trial version of the IO-Link Device Tool can be downloaded from the Support Portal. A licence is required at the end of the test period.

The licence required for continued use can be purchased via the Festo App-World.

General technical data – IO-Link master

Protocol	IO-Link®
IO-Link®, protocol version	Master V 1.1
IO-Link®, communication mode	DI, COM1. COM2. COM3.; configurable with software
IO-Link®, port class	B
IO-Link®, number of ports	4
IO-Link®, process data width OUT	8 - 128 bytes can be parameterised
IO-Link®, process data width IN	12 - 132 bytes can be parameterised
IO-Link®, communication	C/Q LED green
Electrical connection for IO-Link®, connection type	4x socket
Electrical connection for IO-Link®, connection technology	M12x1, A-coded to EN 61076-2-101
Electrical connection for IO-Link®, number of pins/cores	5
Communication interface, protocol	AP
Communication interface, function	System communication XF10 IN / XF20 OUT
Communication interface, connection type	2 x socket
Communication interface, connection technology	M8x1, D-coded to EN 61076-2-114
Communication interface, number of pins/cores	4
Communication interface, shielding	Yes

General data – IO-Link® master

Diagnostics via LED	Diagnostics per channel Diagnostics per module Power supply load Status per channel Status per module
Diagnostics via internal communication	IO-Link® event Short circuit/overload in sensor supply Electronics/sensors overvoltage Overvoltage load Undervoltage electronics/sensors Undervoltage load
Max. cable length	20 m with IO-Link® operation 50 m system communication
Reverse polarity protection	Yes

Datasheet – IO-Link master

Technical data – Electrical – IO-Link® master

Nominal operating voltage DC for electronics/sensors	24 V
Nominal operating voltage DC load	24 V
Permissible voltage fluctuations, electronics/sensors	± 25%
Permissible voltage fluctuations, load	± 25%
Note on the operating voltage	SELV/PELV power supply units required Note voltage drop
Power failure buffering	10 ms
Max. power supply	2 x 4 A (external fuse required)
Intrinsic current consumption at nominal operating voltage, electronics/sensors	Typical 55 mA
Intrinsic current consumption at nominal operating voltage, load	Typical 5 mA
Power supply, function	Incoming electronics/sensors and load
Power supply, connection type	Plug
Power supply, connection technology	M8x1, A-coded to EN 61076-2-104
Power supply, number of pins/cores	4
Power transmission, function	Outgoing electronics/sensors and load
Power transmission, connection type	Socket
Power transmission, connection technology	M8x1, A-coded to EN 61076-2-104
Power transmission, number of pins/cores	4

Technical data – Mechanical – IO-Link master

Type of mounting	On DIN rail with accessories With through-hole
Product weight	126 g
Dimensions W x L x H	30 mm x 170 mm x 35 mm

Materials – IO-Link master

Housing material	PA; PC; nickel-plated die-cast zinc
O-ring material	FPM
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-B2-L
Cleanroom class	Element installed statically, no meaningful evaluation possible according to ISO 14644-1

Operating and environmental conditions – IO-Link master

Ambient temperature	-20 ... 60 °C
Storage temperature	-40 ... 70 °C
Corrosion resistance class CRC ¹⁾	1 - low corrosion stress
Relative humidity	5 - 95%, non-condensing
CE marking (see declaration of conformity) ²⁾	To EU EMC Directive
UKCA marking (see declaration of conformity) ³⁾	To UK EMC regulations
KC marking	KC EMC
Certification	RCM Mark, c UL us - Listed (OL)
Certificate-issuing authority	UL E239998
Degree of protection	IP65; IP67
Note on degree of protection	Unused connections sealed

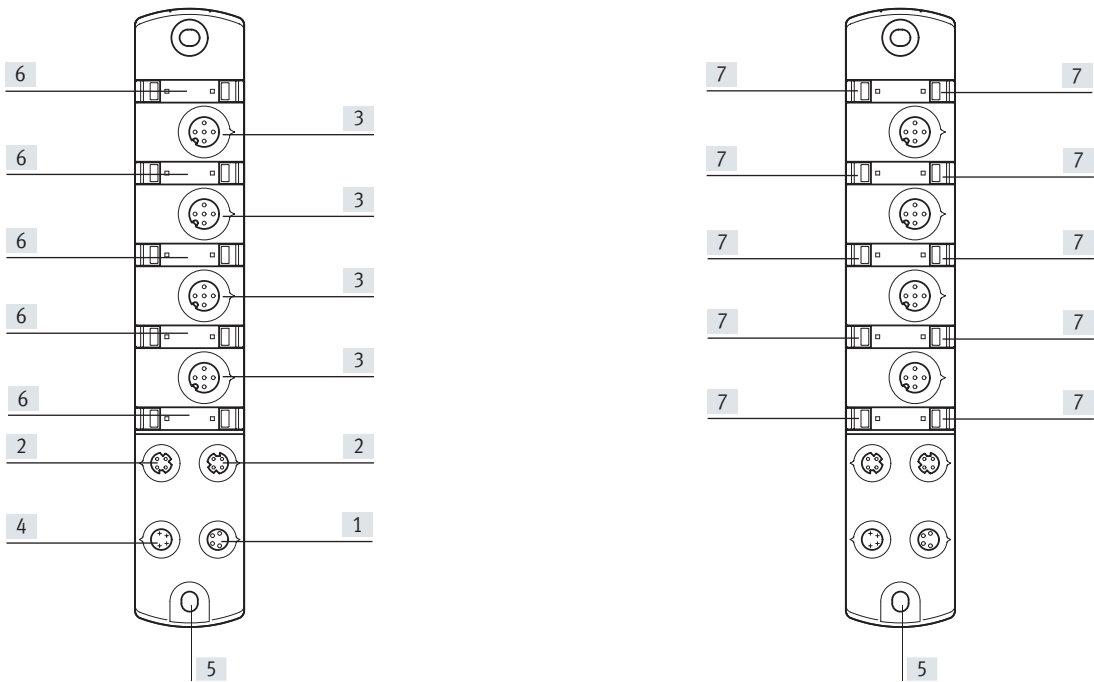
1) More information www.festo.com/x/topic/crc

2) More information www.festo.com/catalogue/... Support/Downloads.

3) More information www.festo.com/catalogue/... Support/Downloads.

Datasheet – IO-Link master

Connection and indicator components

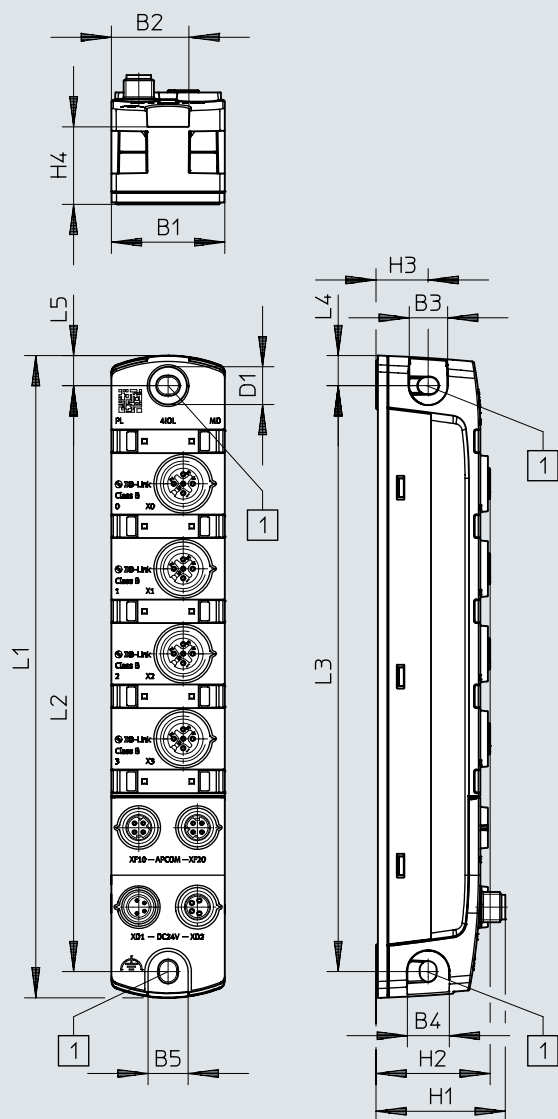


- | | | | |
|---|---|---------------------------------|--------------------|
| [1] Electrical connection, power transmission | [3] Electrical connection, IO-Link® | [5] Earth connection | [7] LED indicators |
| [2] Communication interface | [4] Electrical connection, power supply | [6] Space for inscription label | |

Datasheet – IO-Link master

Dimensions

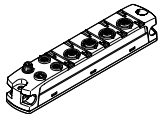
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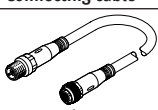
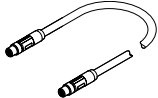
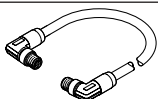
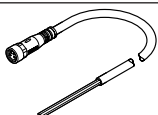
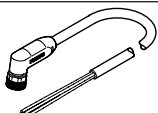
[1] Mounting hole for M4 screws

	B1	B2	B3	B4	B5	D1 Ø	H1	H2	H3	H4	L1	L2	L3	L4	L5
CPX-AP-I-4IOL-M12	30	20.5	10	11	11	10	34.2	30.2	13.8	20.5	170	155	155	8	8

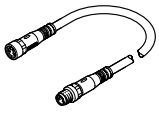
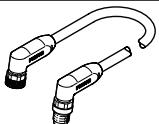
Datasheet – IO-Link master

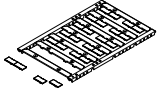
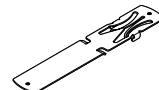
Ordering data				Part no.	Type
	IO-Link master	Electrical connection, IO-Link® 4x sockets, 5-pin, M12x1		8086604	CPX-AP-I-4IOL-M12

Ordering data – Accessories					
Description				Part no.	Type
Plug connectors for self-assembly					
	For IO-Link®	Straight plug, M12x1, 5-pin, A-coded	Screw terminal	8162296	NECB-S-M12G5-C2

Connecting cable										
	For IO-Link®	Straight socket, M12x1, 5-pin, A-coded	Straight plug, M12x1, 5-pin, A-coded	5.0 m	574321	NEBU-M12G5-E-5-Q8N-M12G5				
				7.5 m	574322	NEBU-M12G5-E-7.5-Q8N-M12G5				
	For communication interface	Straight plug, M8x1, 4-pin, D-coded	Straight plug, M8x1, 4-pin, D-coded	0.3 m	8082902	NEBC-D8G4-ES-0.3-N-S-D8G4-ET				
				0.5 m	8065123	NEBC-D8G4-ES-0.5-N-S-D8G4-ET				
				1.0 m	8065125	NEBC-D8G4-ES-1-N-S-D8G4-ET				
				2.0 m	8065127	NEBC-D8G4-ES-2-N-S-D8G4-ET				
				5.0 m	8065129	NEBC-D8G4-ES-5-N-S-D8G4-ET				
				7.5 m	8065131	NEBC-D8G4-ES-7.5-N-S-D8G4-ET				
				10.0 m	8065133	NEBC-D8G4-ES-10-N-S-D8G4-ET				
				15.0 m	8065135	NEBC-D8G4-ES-15-N-S-D8G4-ET				
				20.0 m	8146031	NEBC-D8G4-ES-20-N-S-D8G4-ET				
				25.0 m	8146032	NEBC-D8G4-ES-25-N-S-D8G4-ET				
				30.0 m	8146033	NEBC-D8G4-ES-30-N-S-D8G4-ET				
				40.0 m	8146034	NEBC-D8G4-ES-40-N-S-D8G4-ET				
				50.0 m	8146035	NEBC-D8G4-ES-50-N-S-D8G4-ET				
						Angled plug, M8x1, 4-pin, D-coded	Angled plug, M8x1, 4-pin, D-coded	0.5 m	8065124	NEBC-D8W4-ES-0.5-N-S-D8W4-ET
1.0 m	8065126	NEBC-D8W4-ES-1-N-S-D8W4-ET								
2.0 m	8065128	NEBC-D8W4-ES-2-N-S-D8W4-ET								
5.0 m	8065130	NEBC-D8W4-ES-5-N-S-D8W4-ET								
7.5 m	8065132	NEBC-D8W4-ES-7.5-N-S-D8W4-ET								
10.0 m	8065134	NEBC-D8W4-ES-10-N-S-D8W4-ET								
15.0 m	8065136	NEBC-D8W4-ES-15-N-S-D8W4-ET								
20.0 m	8146036	NEBC-D8W4-ES-20-N-S-D8W4-ET								
25.0 m	8146037	NEBC-D8W4-ES-25-N-S-D8W4-ET								
30.0 m	8146038	NEBC-D8W4-ES-30-N-S-D8W4-ET								
40.0 m	8146039	NEBC-D8W4-ES-40-N-S-D8W4-ET								
50.0 m	8146040	NEBC-D8W4-ES-50-N-S-D8W4-ET								
	For power supply	Straight socket, M8 x 1, 4-pin, A-coded	Open cable end, 4-core					5.0 m	8065110	NEBL-M8G4-E-5-N-LE4
								7.5 m	8065113	NEBL-M8G4-E-7.5-N-LE4
				10.0 m	8065117	NEBL-M8G4-E-10-N-LE4				
				15.0 m	8065121	NEBL-M8G4-E-15-N-LE4				
		Angled socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	7.5 m	8065114	NEBL-M8W4-E-7.5-N-LE4				
				10.0 m	8065118	NEBL-M8W4-E-10-N-LE4				
				15.0 m	8065122	NEBL-M8W4-E-15-N-LE4				

Datasheet – IO-Link master

Ordering data – Accessories						
	Description			Part no.	Type	
Connecting cable						
	For power transmission	Straight socket, M8 x 1, 4-pin, A-coded	Straight plug, M8x1, 4-pin, A-coded	0.3 m	8082904	NEBL-M8G4-E-0.3-N-M8G4
				0.5 m	8065102	NEBL-M8G4-E-0.5-N-M8G4
				1.0 m	8065104	NEBL-M8G4-E-1-N-M8G4
				2.0 m	8065106	NEBL-M8G4-E-2-N-M8G4
				5.0 m	8065108	NEBL-M8G4-E-5-N-M8G4
				7.5 m	8065111	NEBL-M8G4-E-7.5-N-M8G4
				10.0 m	8065115	NEBL-M8G4-E-10-N-M8G4
				15.0 m	8065119	NEBL-M8G4-E-15-N-M8G4
		Angled socket, M8x1, 4-pin, A-coded	Angled plug, M8x1, 4-pin, A-coded	0.3 m	8146577	NEBL-M8W4-E-0.3-N-M8W4
				0.5 m	8065103	NEBL-M8W4-E-0.5-N-M8W4
				1.0 m	8065105	NEBL-M8W4-E-1-N-M8W4
				2.0 m	8065107	NEBL-M8W4-E-2-N-M8W4
				5.0 m	8065109	NEBL-M8W4-E-5-N-M8W4
				7.5 m	8065112	NEBL-M8W4-E-7.5-N-M8W4
				10.0 m	8065116	NEBL-M8W4-E-10-N-M8W4
				15.0 m	8065120	NEBL-M8W4-E-15-N-M8W4

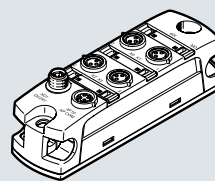
Ordering data – Accessories					
	Description		Pack size	Part no.	Type
Inscription labels					
	For modules CPX-AP-I	Size 6x 12.5 mm, 10 frames with 24 pieces each	240	8087174	ASLR-L-X4-612-P240
Cover cap					
	For sealing unused connections	For connection M8x1	10	165592	ISK-M12
DIN rail mounting					
	For mounting a module on DIN rails according to EN 60715		–	8095158	CAFM-X4-H

Technical data – Digital 4-way input modules

Function

Digital input modules allow electric sensors to be connected according to IEC 61131-2 type 3 (inductive, capacitive) with an operating voltage of 24 V DC.

- Input modules for 24 V DC operating voltage
- Connection M8x1, 3-pin
- Status and error indication via LED



General technical data – Digital 4-way input modules

Number of inputs	4
Electrical connection, input, function	Digital input
Electrical connection, input, connection type	4x socket
Electrical connection, input, connection technology	M8x1, A-coded to EN 61076-2-104
Electrical connection, input, number of pins/cores	3
Switching logic at inputs	PNP (positive switching) 2-wire sensors to IEC 61131-2 3-wire sensors to IEC 61131-2
Characteristic curve of inputs	To IEC 61131-2, type 3
Switching level	Signal 0: ≤ 5 V, signal 1: ≥ 11 V
Fuse protection inputs (short circuit)	Internal electronic fuse per module
Input debounce time	0.1 ms; 3 ms; 10 ms; 20 ms
Communication interface, protocol	AP
Communication interface, function	System communication XF10 IN
Communication interface, connection type	Socket
Communication interface, connection technology	M8x1, D-coded to EN 61076-2-114
Communication interface, number of pins/cores	4
Communication interface, shielding	Yes

General data – Digital 4-way input modules

Electrical isolation of inputs between channel - internal communication	Yes
Diagnostics via LED	Diagnostics per module Status per channel
Diagnostics via internal communication	Short circuit/overload in sensor supply Electronics/sensors overvoltage Electronics/sensors undervoltage
Max. cable length	30 m inputs 50 m system communication
Reverse polarity protection	Yes

Technical data – Electrical – Digital 4-way input modules

Nominal operating voltage DC for electronics/sensors	24 V
Permissible voltage fluctuations, electronics/sensors	$\pm 25\%$
Note on the operating voltage	SELV/PELV power supply units required; note voltage drop
Power failure buffering	10 ms
Max. power supply	2 x 4 A (external fuse required)
Max. total current of inputs per module	0.8 A
Intrinsic current consumption at nominal operating voltage, electronics/sensors	Typical 32 mA
Power supply, function	Incoming electronics/sensors and load
Power supply, connection type	Plug
Power supply, connection technology	M8x1, A-coded to EN 61076-2-104
Power supply, number of pins/cores	4

Technical data – Digital 4-way input modules

Technical data – Mechanical – Digital 4-way input modules

Type of mounting	With through-hole
Product weight	81 g
Dimensions W x L x H	30 mm x 102.5 mm x 35 mm

Materials – Digital 4-way input modules

Housing material	PA; PC; nickel-plated die-cast zinc
Sealing material	NBR
O-ring material	FPM
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-B2-L
Cleanroom class	Element installed statically, no meaningful evaluation possible according to ISO 14644-1

Operating and environmental conditions – Digital 4-way input modules

Ambient temperature	-20 ... 60 °C
Storage temperature	-40 ... 70 °C
Corrosion resistance class CRC ¹⁾	1 - low corrosion stress
Relative humidity	5 - 95%, non-condensing
CE marking (see declaration of conformity) ²⁾	To EU EMC Directive
UKCA marking (see declaration of conformity) ³⁾	To UK EMC regulations
KC marking	KC EMC
Certification	RCM Mark c UL us - Listed (OL)
Certificate-issuing authority	UL E239998
Degree of protection	IP65; IP67
Note on degree of protection	Unused connections sealed

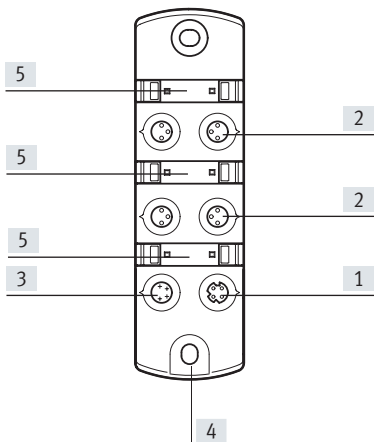
1) More information www.festo.com/x/topic/crc

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3) More information www.festo.com/catalogue/... Support/Downloads.

Technical data – Digital 4-way input modules

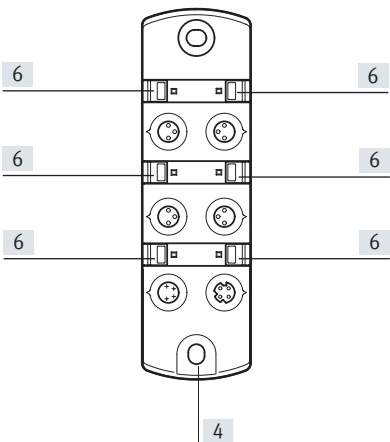
Connection and indicator components



- [1] Communication interface
- [2] Electrical connection, inputs

- [3] Electrical connection, power supply

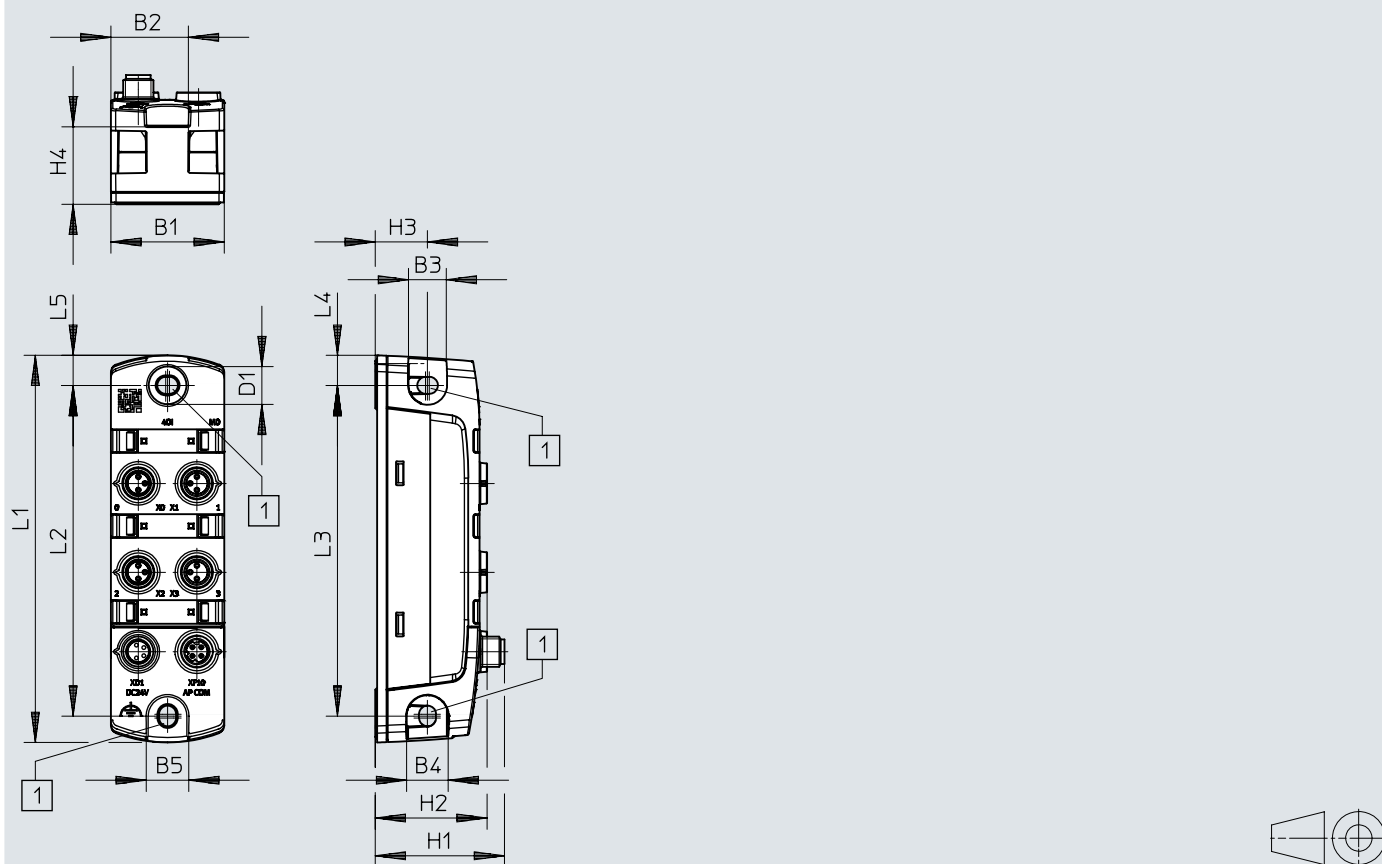
- [4] Earth connection
- [5] Space for inscription label



- [6] LED indicators

Technical data – Digital 4-way input modules

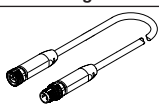
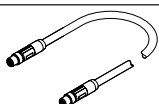
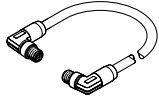
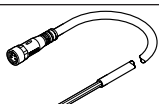
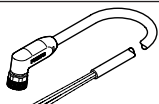
Dimensions

Download CAD data → www.festo.com

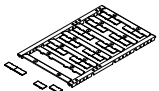
[1] Mounting hole for M4 screws

	B1	B2	B3	B4	B5	D1 Ø	H1	H2	H3	H4	L1	L2	L3	L4	L5
CPX-AP-I-4DI-M8-3P	30	20.5	10	11	11	10	34.2	29.6	13.8	20.5	102.5	87.5	87.5	8	8

Technical data – Digital 4-way input modules

Ordering data				Part no.	Type
	Digital input module	Electrical connection input 4x socket, 3-pin, M8x1		8086605	CPX-AP-I-4DI-M8-3P
Ordering data – Accessories					
Description			Part no.	Type	
Plug connectors for self-assembly					
	For inputs	Straight plug, M8x1, 3-pin, A-coded	Screw terminal	8162298	NECB-S-M8G3-C2
Connecting cable					
	For inputs	Straight plug, M8x1, 3-pin, A-coded	Straight socket, M8x1, 3-pin, A-coded	0.5 m	8078282 NEBA-M8G3-U-0.5-N-M8G3
				1.0 m	8078283 NEBA-M8G3-U-1-N-M8G3
				1.5 m	8078284 NEBA-M8G3-U-1.5-N-M8G3
				2.5 m	8078286 NEBA-M8G3-U-2.5-N-M8G3
				5.0 m	8078287 NEBA-M8G3-U-5-N-M8G3
				10.0 m	8078288 NEBA-M8G3-U-10-N-M8G3
	For communication interface	Straight plug, M8x1, 4-pin, D-coded	Straight plug, M8x1, 4-pin, D-coded	0.3 m	8082902 NEBC-D8G4-ES-0.3-N-S-D8G4-ET
				0.5 m	8065123 NEBC-D8G4-ES-0.5-N-S-D8G4-ET
				1.0 m	8065125 NEBC-D8G4-ES-1-N-S-D8G4-ET
				2.0 m	8065127 NEBC-D8G4-ES-2-N-S-D8G4-ET
				5.0 m	8065129 NEBC-D8G4-ES-5-N-S-D8G4-ET
				7.5 m	8065131 NEBC-D8G4-ES-7.5-N-S-D8G4-ET
				10.0 m	8065133 NEBC-D8G4-ES-10-N-S-D8G4-ET
				15.0 m	8065135 NEBC-D8G4-ES-15-N-S-D8G4-ET
				20.0 m	8146031 NEBC-D8G4-ES-20-N-S-D8G4-ET
				25.0 m	8146032 NEBC-D8G4-ES-25-N-S-D8G4-ET
				30.0 m	8146033 NEBC-D8G4-ES-30-N-S-D8G4-ET
				40.0 m	8146034 NEBC-D8G4-ES-40-N-S-D8G4-ET
				50.0 m	8146035 NEBC-D8G4-ES-50-N-S-D8G4-ET
		Angled plug, M8x1, 4-pin, D-coded	Angled plug, M8x1, 4-pin, D-coded	0.5 m	8065124 NEBC-D8W4-ES-0.5-N-S-D8W4-ET
				1.0 m	8065126 NEBC-D8W4-ES-1-N-S-D8W4-ET
				2.0 m	8065128 NEBC-D8W4-ES-2-N-S-D8W4-ET
				5.0 m	8065130 NEBC-D8W4-ES-5-N-S-D8W4-ET
				7.5 m	8065132 NEBC-D8W4-ES-7.5-N-S-D8W4-ET
				10.0 m	8065134 NEBC-D8W4-ES-10-N-S-D8W4-ET
				15.0 m	8065136 NEBC-D8W4-ES-15-N-S-D8W4-ET
				20.0 m	8146036 NEBC-D8W4-ES-20-N-S-D8W4-ET
				25.0 m	8146037 NEBC-D8W4-ES-25-N-S-D8W4-ET
				30.0 m	8146038 NEBC-D8W4-ES-30-N-S-D8W4-ET
				40.0 m	8146039 NEBC-D8W4-ES-40-N-S-D8W4-ET
				50.0 m	8146040 NEBC-D8W4-ES-50-N-S-D8W4-ET
	For power supply	Straight socket, M8 x 1, 4-pin, A-coded	Open cable end, 4-core	5.0 m	8065110 NEBL-M8G4-E-5-N-LE4
				7.5 m	8065113 NEBL-M8G4-E-7.5-N-LE4
				10.0 m	8065117 NEBL-M8G4-E-10-N-LE4
				15.0 m	8065121 NEBL-M8G4-E-15-N-LE4
		Angled socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	7.5 m	8065114 NEBL-M8W4-E-7.5-N-LE4
				10.0 m	8065118 NEBL-M8W4-E-10-N-LE4
				15.0 m	8065122 NEBL-M8W4-E-15-N-LE4

Technical data – Digital 4-way input modules

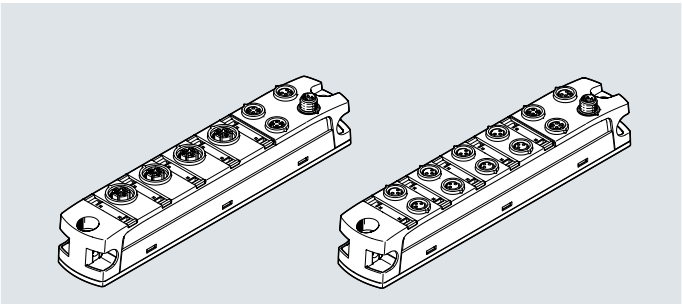
Ordering data – Accessories					
	Description		Pack size	Part no.	Type
Inscription labels					
	For modules CPX-AP-I	Size 6x 12.5 mm, 10 frames with 24 pieces each	240	8087174	ASLR-L-X4-612-P240
Cover cap					
	For sealing unused connections	For connection M8x1	10	177672	ISK-M8
DIN rail mounting					
	For mounting a module on DIN rails according to EN 60715		–	8095158	CAFM-X4-H

Technical data – Digital 8-way input modules

Function

Digital input modules allow electric sensors to be connected according to IEC 61131-2 type 3 (inductive, capacitive) with an operating voltage of 24 V DC.

- Input modules for 24 V DC operating voltage
- Connection M8x1 3-pin or M12x1 5-pin
- Status and error indication via LED



General technical data – Digital 8-way input modules	
Electrical connection, input, connection type	4x socket; 8x socket
Number of inputs	8
Electrical connection, input, function	Digital input
Electrical connection, input, connection technology	M8x1, A-coded to EN 61076-2-104; M12x1 A-coded to EN 61076-2-101
Electrical connection, input, number of pins/cores	3 ... 5
Switching logic at inputs	PNP (positive switching) 2-wire sensors to IEC 61131-2 3-wire sensors to IEC 61131-2
Characteristic curve of inputs	To IEC 61131-2, type 3
Switching level	Signal 0: <= 5 V, signal 1: >= 11 V
Fuse protection inputs (short circuit)	Internal electronic fuse per module
Input debounce time	0.1 ms; 3 ms; 10 ms; 20 ms
Communication interface, protocol	AP
Communication interface, function	System communication XF10 IN / XF20 OUT
Communication interface, connection type	2 x socket
Communication interface, connection technology	M8x1, D-coded to EN 61076-2-114
Communication interface, number of pins/cores	4
Communication interface, shielding	Yes

General data – Digital 8-way input modules	
Electrical isolation of inputs between channel - internal communication	Yes
Diagnostics via LED	Diagnostics per module Status per channel
Diagnostics via internal communication	Short circuit/overload in sensor supply Electronics/sensors overvoltage Electronics/sensors undervoltage
Max. cable length	30 m inputs 50 m system communication
Reverse polarity protection	Yes

Technical data – Digital 8-way input modules

Technical data – Electrical digital 8-way input modules

Nominal operating voltage DC for electronics/sensors	24 V
Permissible voltage fluctuations, electronics/sensors	± 25%
Note on the operating voltage	SELV/PELV power supply units required; note voltage drop
Power failure buffering	10 ms
Max. power supply	2 x 4 A (external fuse required)
Max. total current of inputs per module	1.8 A
Intrinsic current consumption at nominal operating voltage, electronics/sensors	Typical 32 mA
Overvoltage category	II
Pollution degree	2
Power supply, function	Incoming electronics/sensors and load
Power supply, connection type	Plug
Power supply, connection technology	M8x1, A-coded to EN 61076-2-104
Power supply, number of pins/cores	4
Power transmission, function	Outgoing electronics/sensors and load
Power transmission, connection type	Socket
Power transmission, connection technology	M8x1, A-coded to EN 61076-2-104
Power transmission, number of pins/cores	4

Technical data – Mechanical – Digital 8-way input modules

Type of mounting	On DIN rail with accessories; with through-hole
Product weight	126 g
Dimensions W x L x H	30 mm x 170 mm x 35 mm

Materials – 8-way input modules

Housing material	PA; PC; nickel-plated die-cast zinc
O-ring material	FPM
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-B2-L
Cleanroom class	Element installed statically, no meaningful evaluation possible according to ISO 14644-1

Operating and environmental conditions – Digital 8-way input modules

Ambient temperature	-20 ... 60 °C
Storage temperature	-40 ... 70 °C
Corrosion resistance class CRC ¹⁾	1 - low corrosion stress
Relative humidity	5 - 95%, non-condensing
Vibration resistant	Transport application test with severity level 1 to FN 942017-4 and EN 60068-2-6
Shock resistance	Shock test with severity level 1 to FN 942017-5 and EN 60068-2-27
CE marking (see declaration of conformity) ²⁾	To EU EMC Directive To EU RoHS Directive
UKCA marking (see declaration of conformity) ³⁾	To UK EMC regulations To UK RoHS regulations
KC marking	KC EMC
Certification	RCM Mark c UL us - Listed (OL)
Certificate-issuing authority	UL E239998
Degree of protection	IP65; IP67
Note on degree of protection	Unused connections sealed

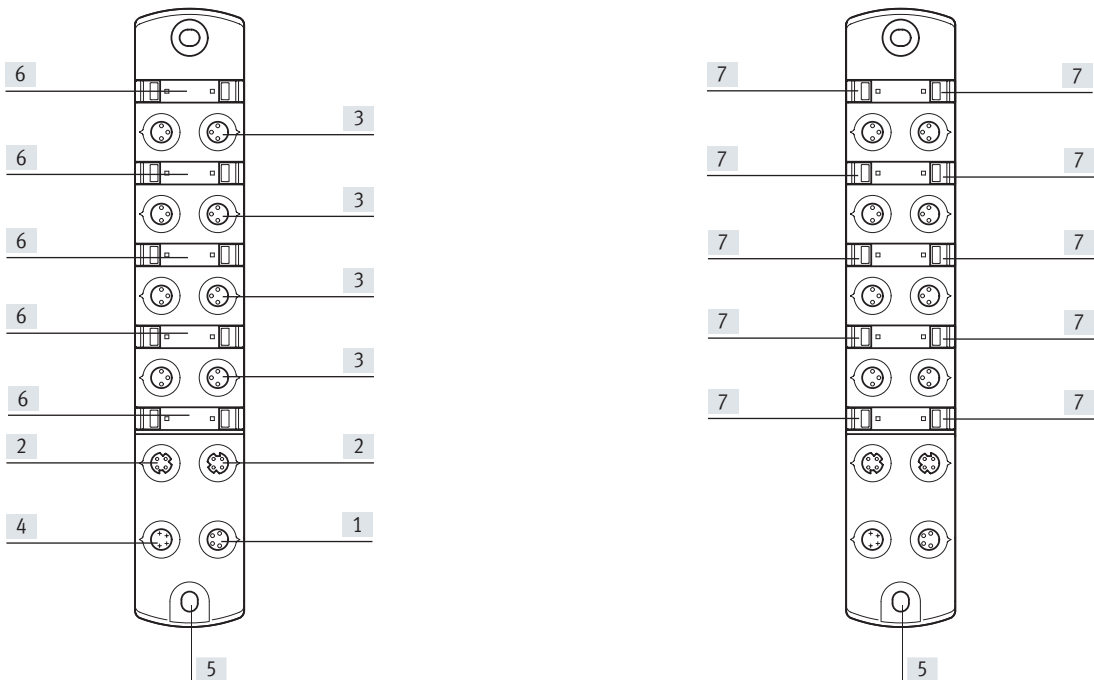
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Technical data – Digital 8-way input modules

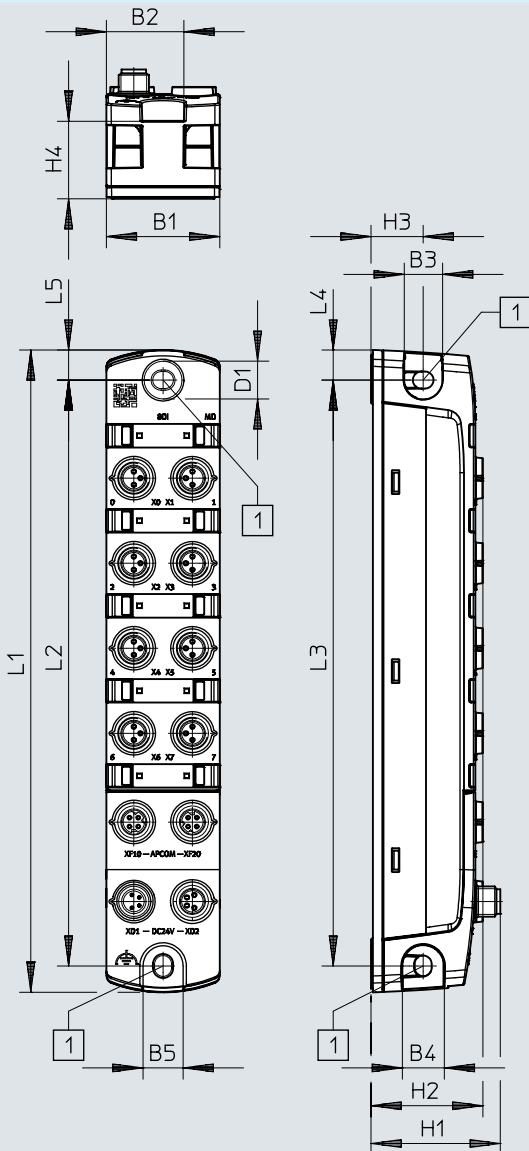
Connection and indicator components



- | | | | |
|---|---|---------------------------------|--------------------|
| [1] Electrical connection, power transmission | [3] Electrical connection, inputs | [5] Earth connection | [7] LED indicators |
| [2] Communication interface | [4] Electrical connection, power supply | [6] Space for inscription label | |

Technical data – Digital 8-way input modules

Dimensions - CPX-AP-I-8DI-M8-3P

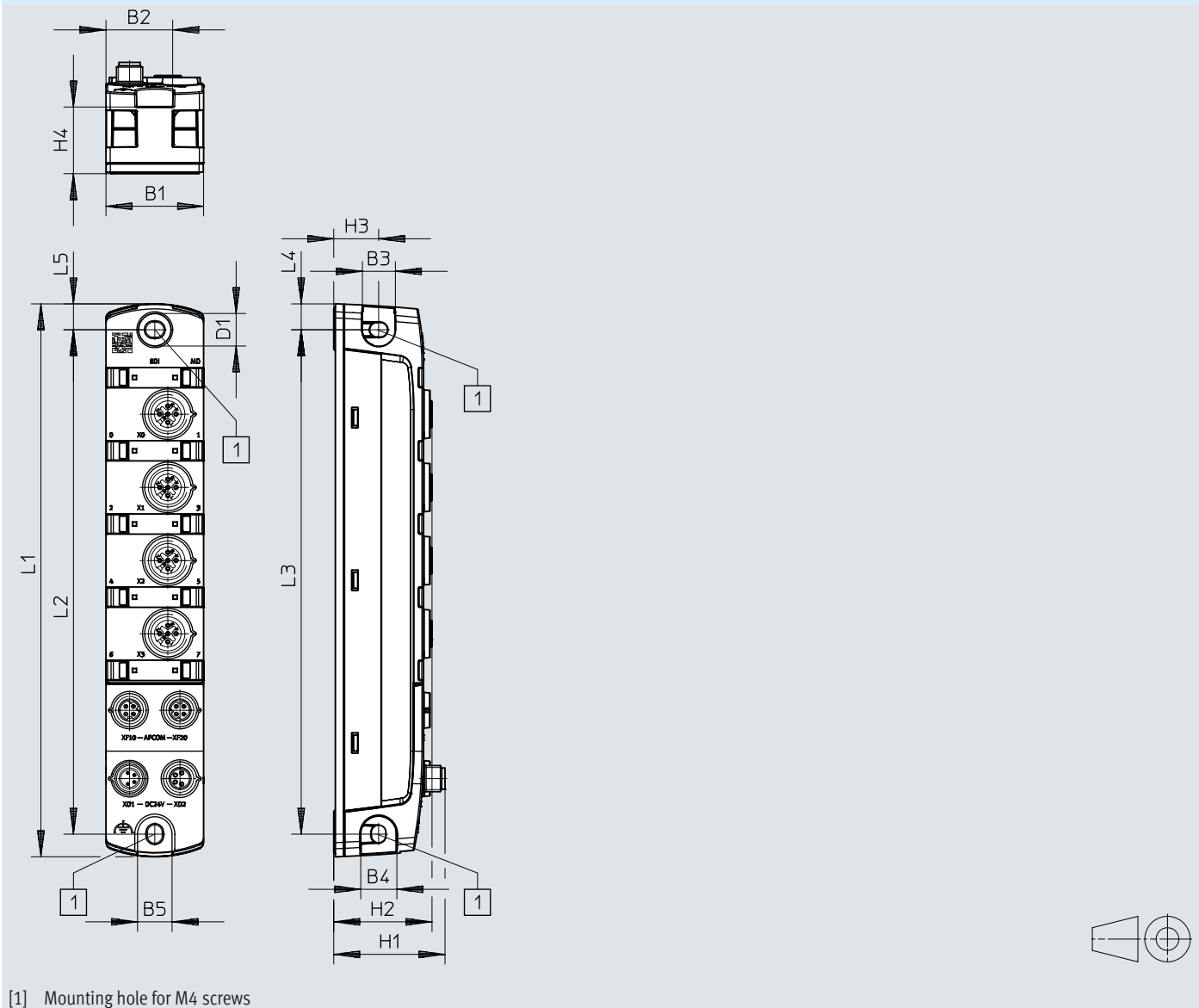
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[1] Mounting hole for M4 screws

	B1	B2	B3	B4	B5	D1 Ø	H1	H2	H3	H4	L1	L2	L3	L4	L5
CPX-AP-I-8DI-M8-3P	30	20.5	10	11	11	10	34.2	29.6	13.8	20.5	170	155	155	8	8

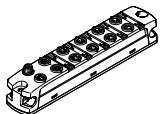
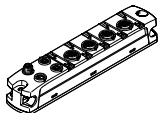
Technical data – Digital 8-way input modules

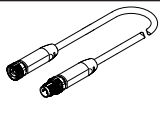
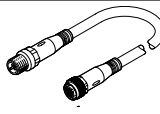
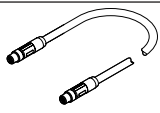
Dimensions - CPX-AP-I-8DI-M12-5P Download CAD data → www.festo.com



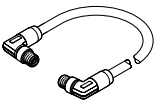
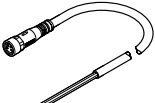
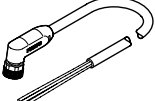
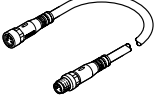
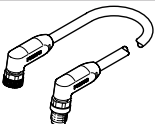
	B1	B2	B3	B4	B5	D1 Ø	H1	H2	H3	H4	L1	L2	L3	L4	L5
CPX-AP-I-8DI-M12-5P	30	20.5	10	11	11	10	34.2	30.2	13.8	20.5	170	155	155	8	8

Technical data – Digital 8-way input modules

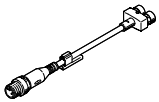
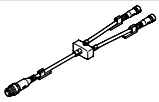
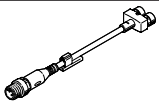
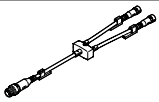
Ordering data		Certification	Part no.	Type
	Digital input module	Electrical connection input 8x socket, 3-pin, M8x1	RCM Mark c UL us - Listed (OL)	8086600 CPX-AP-I-8DI-M8-3P
			RCM Mark	8224142 CPX-AP-I-8DI-M8-3P-A
		Electrical connection input 4x socket, 5-pin, M12x1	RCM Mark c UL us - Listed (OL)	8086602 CPX-AP-I-8DI-M12-5P

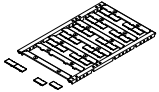
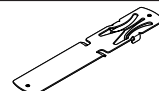
Ordering data – Accessories						
	Description		Part no.	Type		
Plug connectors for self-assembly						
	For inputs	Straight plug, M8x1, 3-pin, A-coded	Screw terminal	8162298	NECB-S-M8G3-C2	
		Straight plug, M12x1, 5-pin, A-coded	Screw terminal	8162296	NECB-S-M12G5-C2	
Connecting cable						
	For inputs	Straight plug, M8x1, 3-pin, A-coded	Straight socket, M8x1, 3-pin, A-coded	0.5 m	8078282	NEBA-M8G3-U-0.5-N-M8G3
				1.0 m	8078283	NEBA-M8G3-U-1-N-M8G3
				1.5 m	8078284	NEBA-M8G3-U-1.5-N-M8G3
				2.5 m	8078286	NEBA-M8G3-U-2.5-N-M8G3
				5.0 m	8078287	NEBA-M8G3-U-5-N-M8G3
				10.0 m	8078288	NEBA-M8G3-U-10-N-M8G3
	For inputs	Straight plug, M12x1, 5-pin, A-coded	Straight socket, M12x1, 3-pin, A-coded	5.0 m	574321	NEBU-M12G5-E-5-Q8N-M12G5
				7.5 m	574322	NEBU-M12G5-E-7.5-Q8N-M12G5
	For communication interface	Straight plug, M8x1, 4-pin, D-coded	Straight plug, M8x1, 4-pin, D-coded	0.3 m	8082902	NEBC-D8G4-ES-0.3-N-S-D8G4-ET
				0.5 m	8065123	NEBC-D8G4-ES-0.5-N-S-D8G4-ET
				1.0 m	8065125	NEBC-D8G4-ES-1-N-S-D8G4-ET
				2.0 m	8065127	NEBC-D8G4-ES-2-N-S-D8G4-ET
				5.0 m	8065129	NEBC-D8G4-ES-5-N-S-D8G4-ET
				7.5 m	8065131	NEBC-D8G4-ES-7.5-N-S-D8G4-ET
				10.0 m	8065133	NEBC-D8G4-ES-10-N-S-D8G4-ET
				15.0 m	8065135	NEBC-D8G4-ES-15-N-S-D8G4-ET
				20.0 m	8146031	NEBC-D8G4-ES-20-N-S-D8G4-ET
				25.0 m	8146032	NEBC-D8G4-ES-25-N-S-D8G4-ET
				30.0 m	8146033	NEBC-D8G4-ES-30-N-S-D8G4-ET
				40.0 m	8146034	NEBC-D8G4-ES-40-N-S-D8G4-ET
				50.0 m	8146035	NEBC-D8G4-ES-50-N-S-D8G4-ET

Technical data – Digital 8-way input modules

Ordering data – Accessories						
	Description			Part no.	Type	
Connecting cable						
	For communication interface	Angled plug, M8x1, 4-pin, D-coded	Angled plug, M8x1, 4-pin, D-coded	0.5 m	8065124	NEBC-D8W4-ES-0.5-N-S-D8W4-ET
				1.0 m	8065126	NEBC-D8W4-ES-1-N-S-D8W4-ET
				2.0 m	8065128	NEBC-D8W4-ES-2-N-S-D8W4-ET
				5.0 m	8065130	NEBC-D8W4-ES-5-N-S-D8W4-ET
				7.5 m	8065132	NEBC-D8W4-ES-7.5-N-S-D8W4-ET
				10.0 m	8065134	NEBC-D8W4-ES-10-N-S-D8W4-ET
				15.0 m	8065136	NEBC-D8W4-ES-15-N-S-D8W4-ET
				20.0 m	8146036	NEBC-D8W4-ES-20-N-S-D8W4-ET
				25.0 m	8146037	NEBC-D8W4-ES-25-N-S-D8W4-ET
				30.0 m	8146038	NEBC-D8W4-ES-30-N-S-D8W4-ET
				40.0 m	8146039	NEBC-D8W4-ES-40-N-S-D8W4-ET
				50.0 m	8146040	NEBC-D8W4-ES-50-N-S-D8W4-ET
	For power supply	Straight socket, M8 x 1, 4-pin, A-coded	Open cable end, 4-core	5.0 m	8065110	NEBL-M8G4-E-5-N-LE4
				7.5 m	8065113	NEBL-M8G4-E-7.5-N-LE4
				10.0 m	8065117	NEBL-M8G4-E-10-N-LE4
				15.0 m	8065121	NEBL-M8G4-E-15-N-LE4
		Angled socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	7.5 m	8065114	NEBL-M8W4-E-7.5-N-LE4
				10.0 m	8065118	NEBL-M8W4-E-10-N-LE4
				15.0 m	8065122	NEBL-M8W4-E-15-N-LE4
		For power transmission	Straight socket, M8 x 1, 4-pin, A-coded	Straight plug, M8x1, 4-pin, A-coded	0.3 m	8082904
	0.5 m				8065102	NEBL-M8G4-E-0.5-N-M8G4
	1.0 m				8065104	NEBL-M8G4-E-1-N-M8G4
	2.0 m				8065106	NEBL-M8G4-E-2-N-M8G4
	5.0 m				8065108	NEBL-M8G4-E-5-N-M8G4
	7.5 m				8065111	NEBL-M8G4-E-7.5-N-M8G4
	10.0 m				8065115	NEBL-M8G4-E-10-N-M8G4
	15.0 m				8065119	NEBL-M8G4-E-15-N-M8G4
	Angled socket, M8x1, 4-pin, A-coded		Angled plug, M8x1, 4-pin, A-coded	0.3 m	8146577	NEBL-M8W4-E-0.3-N-M8W4
				0.5 m	8065103	NEBL-M8W4-E-0.5-N-M8W4
				1.0 m	8065105	NEBL-M8W4-E-1-N-M8W4
				2.0 m	8065107	NEBL-M8W4-E-2-N-M8W4
				5.0 m	8065109	NEBL-M8W4-E-5-N-M8W4
				7.5 m	8065112	NEBL-M8W4-E-7.5-N-M8W4
				10.0 m	8065116	NEBL-M8W4-E-10-N-M8W4
				15.0 m	8065120	NEBL-M8W4-E-15-N-M8W4

Technical data – Digital 8-way input modules

Ordering data – Accessories						
	Description			Part no.	Type	
Distributor						
    	For inputs	Straight plug, M12x1, 4-pin, A-coded	2x straight socket, M8x1, 3-pin, A-coded	–	8005311	NEDY-L2R1-V1-M8G3-N-M12G4
			2x straight socket, M12x1, 5-pin, A-coded	–	8005310	NEDY-L2R1-V1-M12G5-N-M12G4
			2x straight socket, M8x1, 3-pin, A-coded	2.5 m	8005301	NEDY-L2R1-V1-M8G3-U-M12G4-2.5R
				5.0 m	8005302	NEDY-L2R1-V1-M8G3-U-M12G4-5R
				0.3 m	8032309	NEDY-L2R1-V1-M8G3-U-0.3L-M12G4-2.5R
				2.5 m		
				0.3 m	8035484	NEDY-L2R1-V1-M8G3-U-0.3L-M12G4-5R
				5.0 m		
			2x straight socket, M12x1, 5-pin, A-coded	2.5 m	8005305	NEDY-L2R1-V1-M12G5-U-M12G4-2.5R
				5.0 m	8005306	NEDY-L2R1-V1-M12G5-U-M12G4-5R
				0.3 m	8035775	NEDY-L2R1-V1-M12G5-U-0.3L-M12G4-2.5R
				2.5 m		
				0.3 m	8035776	NEDY-L2R1-V1-M12G5-U-0.3L-M12G4-5R
				5.0 m		

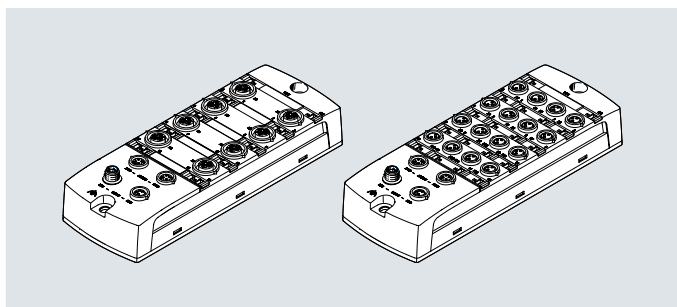
Ordering data – Accessories					
	Description		Pack size	Part no.	Type
Inscription labels					
	For modules CPX-AP-I	Size 6x 12.5 mm, 10 frames with 24 pieces each	240	8087174	ASLR-L-X4-612-P240
Cover cap					
	For sealing unused connections	For connection M8x1	10	177672	ISK-M8
		For connection M12x1	10	165592	ISK-M12
DIN rail mounting					
	For mounting a module on DIN rails according to EN 60715		–	8095158	CAFM-X4-H

Technical data – Digital 16-way input modules

Function

Digital input modules allow electric sensors to be connected according to IEC 61131-2 type 3 (inductive, capacitive) with an operating voltage of 24 V DC.

- Input modules for 24 V DC operating voltage
- Connection M8x1 3-pin or M12x1 5-pin
- Status and error indication via LED



General technical data – Digital 16-way input modules

Electrical connection, input, connection type	16 x socket	8x socket
Number of inputs	16	
Electrical connection, input, function	Digital input	
Electrical connection, input, connection technology	M8x1, A-coded to EN 61076-2-104	M12x1, A-coded to EN 61076-2-101
Electrical connection, input, number of pins/cores	3	5
Switching logic at inputs	NPN (negative switching) PNP (positive switching) 2-wire sensors to IEC 61131-2 3-wire sensors to IEC 61131-2	PNP (positive switching) 2-wire sensors to IEC 61131-2 3-wire sensors to IEC 61131-2
Characteristic curve of inputs	To IEC 61131-2, type 3	
Switching level	Signal 0: ≤ 5 V, signal 1: ≥ 11 V	
Fuse protection inputs (short circuit)	Internal electronic fuse per module	
Input debounce time	0.1 ms; 3 ms; 10 ms; 20 ms	
Communication interface, protocol	AP	
Communication interface, function	System communication XF10 IN / XF20 OUT	
Communication interface, connection type	2 x socket	
Communication interface, connection technology	M8x1, D-coded to EN 61076-2-114	
Communication interface, number of pins/cores	4	
Communication interface, shielding	Yes	

General data – Digital 16-way input modules

Electrical isolation of inputs between channel - internal communication	Yes
Electrical isolation of inputs between channels	No
Diagnostics via LED	Diagnostics per module Status per channel
Diagnostics via internal communication	Short circuit/overload in sensor supply Electronics/sensors overvoltage Electronics/sensors undervoltage
Max. cable length	30 m inputs 50 m system communication
Note on max. cable length	Power supply according to nominal voltage
Reverse polarity protection	Yes

Technical data – Digital 16-way input modules

Technical data – Electrical – Digital 16-way input modules		
Switching logic at inputs	NPN (negative switching), 2-wire sensors to IEC 61131-2, 3-wire sensors to IEC 61131-2	PNP (positive switching), 2-wire sensors to IEC 61131-2, 3-wire sensors to IEC 61131-2
Nominal operating voltage DC for electronics/sensors	24 V	
Permissible voltage fluctuations, electronics/sensors	± 25%	
Note on the operating voltage	SELV/PELV power supply units required; note voltage drop	
Power failure buffering	10 ms	
Max. power supply	2 x 4 A (external fuse required)	
Max. total current of inputs per module	1.8 A	
Intrinsic current consumption at nominal operating voltage, electronics/sensors	Typical 40 mA	Typical 38 mA
Power supply, function	Incoming electronics/sensors and load	
Power supply, connection type	Plug	
Power supply, connection technology	M8x1, A-coded to EN 61076-2-104	
Power supply, number of pins/cores	4	
Power transmission, function	Outgoing electronics/sensors and load	
Power transmission, connection type	Socket	
Power transmission, connection technology	M8x1, A-coded to EN 61076-2-104	
Power transmission, number of pins/cores	4	

Technical data – Mechanical – Digital 16-way input modules	
Type of mounting	On DIN rail with accessories; with through-hole
Product weight	216 g
Dimensions W x L x H	60 mm x 170 mm x 35 mm

Materials – 16-way input modules	
Housing material	PA; PC; nickel-plated die-cast zinc
O-ring material	FPM
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-B2-L
Suitable for cleanrooms, measured according to ISO 14644-14	Element installed statically, no meaningful evaluation possible according to ISO 14644-1

Operating and environmental conditions – Digital 16-way input modules	
Ambient temperature	-20 ... 60 °C
Storage temperature	-40 ... 70 °C
Corrosion resistance class CRC ¹⁾	1 - low corrosion stress
Relative humidity	5 - 95%, non-condensing
CE marking (see declaration of conformity) ²⁾	To EU EMC Directive
UKCA marking (see declaration of conformity) ³⁾	To UK EMC regulations
KC marking	KC EMC
Certification	RCM Mark c UL us - Listed (OL)
Certificate-issuing authority	UL E239998
Degree of protection	IP65; IP67
Note on degree of protection	Unused connections sealed

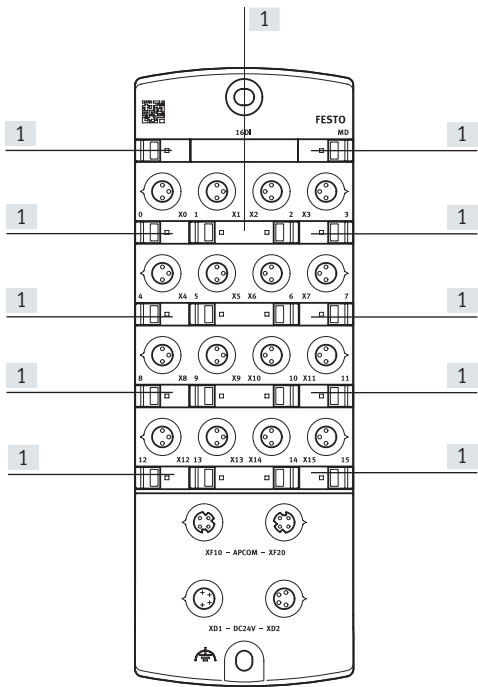
1) More information www.festo.com/x/topic/crc

2) More information www.festo.com/catalogue/... Support/Downloads.

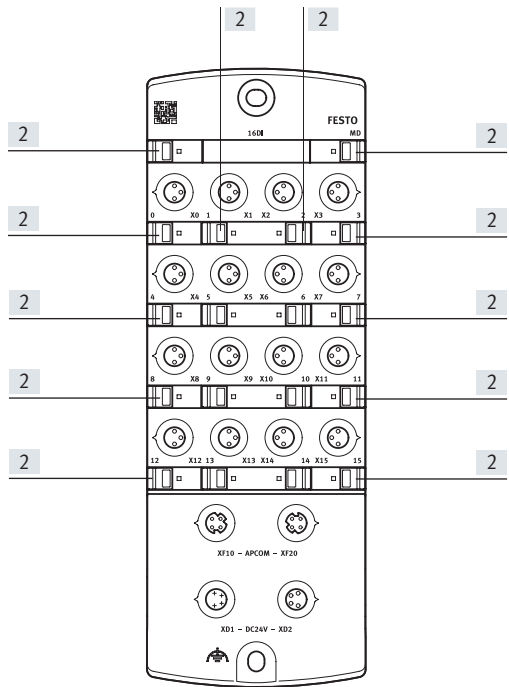
3) More information www.festo.com/catalogue/... Support/Downloads.

Technical data – Digital 16-way input modules

Indicator components

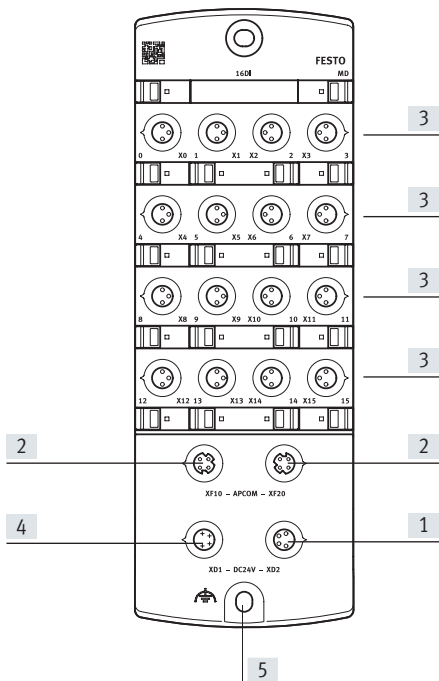


[1] Space for inscription label



[2] LED indicators

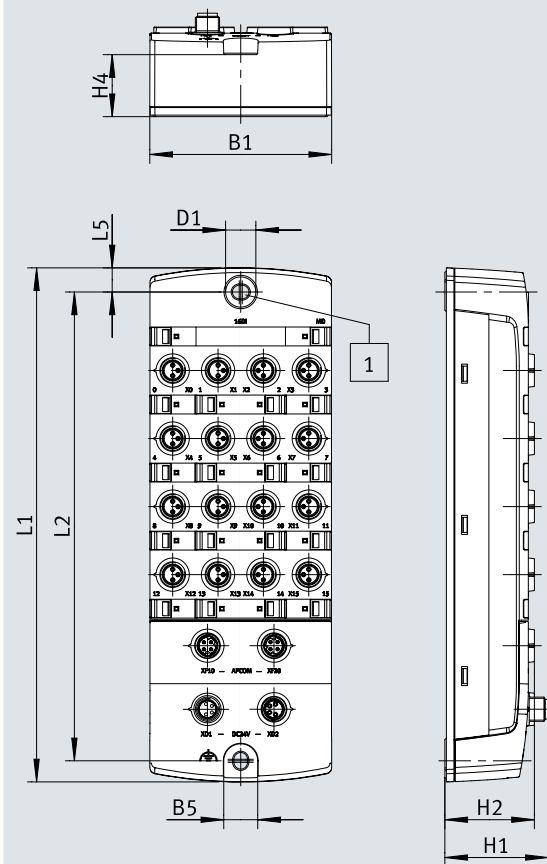
Connecting components



- [1] Electrical connection, power transmission
- [2] Communication interface
- [3] Electrical connection, inputs
- [4] Electrical connection, power supply
- [5] Earth connection

Technical data – Digital 16-way input modules

Dimensions – CPX-AP-I-16DI-M8-3P, CPX-AP-I-16NDI-M8-3P

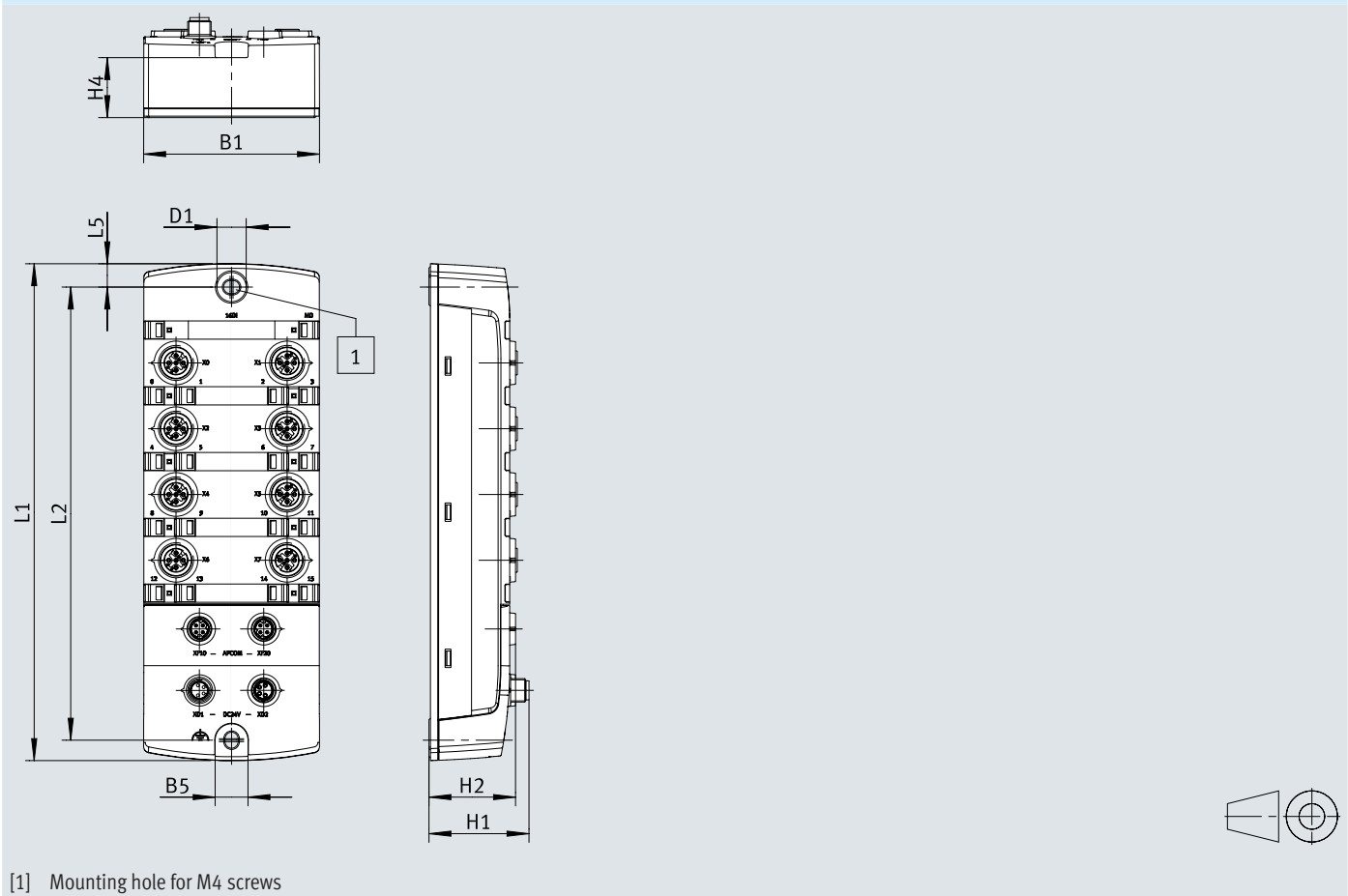
Download CAD data → www.festo.com

[1] Mounting hole for M4 screws

	B1	B5	D1 Ø	H1	H2	H4	L1	L2	L5
CPX-AP-I-16DI-M8-3P	60	11	10	34.2	29.6	20.5	170	155	8
CPX-AP-I-16NDI-M8-3P									

Technical data – Digital 16-way input modules

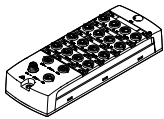
Dimensions - CPX-AP-I-16DI-M12-5P Download CAD data → www.festo.com

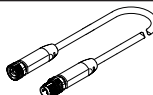
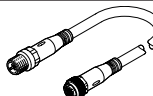
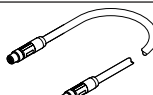


[1] Mounting hole for M4 screws

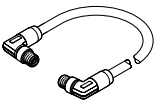
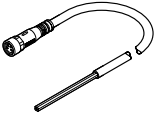
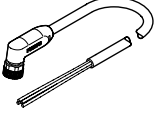
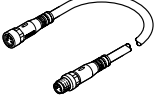
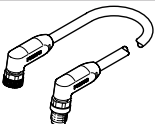
	B1	B5	D1 Ø	H1	H2	H4	L1	L2	L5
CPX-AP-I-16DI-M12-5P	60	11	10	34.2	29.6	20.5	170	155	8

Technical data – Digital 16-way input modules

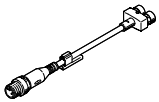
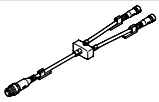
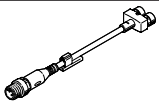
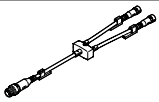
Ordering data		Switching logic at inputs	Part no.	Type
	Digital input module	Electrical connection input 16x socket, 3-pin, M8x1	PNP (positive switching)	8179434 CPX-AP-I-16DI-M8-3P
			NPN (negative switching)	8179440 CPX-AP-I-16NDI-M8-3P
		Electrical connection input 8x socket, 5-pin, M12x1	PNP (positive switching)	8179435 CPX-AP-I-16DI-M12-5P

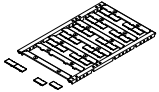
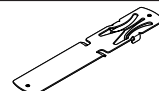
Ordering data – Accessories						
	Description		Part no.	Type		
Plug connectors for self-assembly						
	For inputs	Straight plug, M8x1, 3-pin, A-coded	Screw terminal	8162298	NECB-S-M8G3-C2	
		Straight plug, M12x1, 5-pin, A-coded	Screw terminal	8162296	NECB-S-M12G5-C2	
Connecting cable						
	For inputs	Straight plug, M8x1, 3-pin, A-coded	Straight socket, M8x1, 3-pin, A-coded	0.5 m	8078282	NEBA-M8G3-U-0.5-N-M8G3
				1.0 m	8078283	NEBA-M8G3-U-1-N-M8G3
				1.5 m	8078284	NEBA-M8G3-U-1.5-N-M8G3
				2.5 m	8078286	NEBA-M8G3-U-2.5-N-M8G3
				5.0 m	8078287	NEBA-M8G3-U-5-N-M8G3
				10.0 m	8078288	NEBA-M8G3-U-10-N-M8G3
	For inputs	Straight plug, M12x1, 5-pin, A-coded	Straight socket, M12x1, 3-pin, A-coded	5.0 m	574321	NEBU-M12G5-E-5-Q8N-M12G5
				7.5 m	574322	NEBU-M12G5-E-7.5-Q8N-M12G5
	For communication interface	Straight plug, M8x1, 4-pin, D-coded	Straight plug, M8x1, 4-pin, D-coded	0.3 m	8082902	NEBC-D8G4-ES-0.3-N-S-D8G4-ET
				0.5 m	8065123	NEBC-D8G4-ES-0.5-N-S-D8G4-ET
				1.0 m	8065125	NEBC-D8G4-ES-1-N-S-D8G4-ET
				2.0 m	8065127	NEBC-D8G4-ES-2-N-S-D8G4-ET
				5.0 m	8065129	NEBC-D8G4-ES-5-N-S-D8G4-ET
				7.5 m	8065131	NEBC-D8G4-ES-7.5-N-S-D8G4-ET
				10.0 m	8065133	NEBC-D8G4-ES-10-N-S-D8G4-ET
				15.0 m	8065135	NEBC-D8G4-ES-15-N-S-D8G4-ET
				20.0 m	8146031	NEBC-D8G4-ES-20-N-S-D8G4-ET
				25.0 m	8146032	NEBC-D8G4-ES-25-N-S-D8G4-ET
				30.0 m	8146033	NEBC-D8G4-ES-30-N-S-D8G4-ET
				40.0 m	8146034	NEBC-D8G4-ES-40-N-S-D8G4-ET
				50.0 m	8146035	NEBC-D8G4-ES-50-N-S-D8G4-ET

Technical data – Digital 16-way input modules

Ordering data – Accessories						
Description				Part no.	Type	
Connecting cable						
	For communication interface	Angled plug, M8x1, 4-pin, D-coded	Angled plug, M8x1, 4-pin, D-coded	0.5 m	8065124	NEBC-D8W4-ES-0.5-N-S-D8W4-ET
				1.0 m	8065126	NEBC-D8W4-ES-1-N-S-D8W4-ET
				2.0 m	8065128	NEBC-D8W4-ES-2-N-S-D8W4-ET
				5.0 m	8065130	NEBC-D8W4-ES-5-N-S-D8W4-ET
				7.5 m	8065132	NEBC-D8W4-ES-7.5-N-S-D8W4-ET
				10.0 m	8065134	NEBC-D8W4-ES-10-N-S-D8W4-ET
				15.0 m	8065136	NEBC-D8W4-ES-15-N-S-D8W4-ET
				20.0 m	8146036	NEBC-D8W4-ES-20-N-S-D8W4-ET
				25.0 m	8146037	NEBC-D8W4-ES-25-N-S-D8W4-ET
				30.0 m	8146038	NEBC-D8W4-ES-30-N-S-D8W4-ET
				40.0 m	8146039	NEBC-D8W4-ES-40-N-S-D8W4-ET
				50.0 m	8146040	NEBC-D8W4-ES-50-N-S-D8W4-ET
	For power supply	Straight socket, M8 x 1, 4-pin, A-coded	Open cable end, 4-core	5.0 m	8065110	NEBL-M8G4-E-5-N-LE4
				7.5 m	8065113	NEBL-M8G4-E-7.5-N-LE4
				10.0 m	8065117	NEBL-M8G4-E-10-N-LE4
				15.0 m	8065121	NEBL-M8G4-E-15-N-LE4
		Angled socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	7.5 m	8065114	NEBL-M8W4-E-7.5-N-LE4
				10.0 m	8065118	NEBL-M8W4-E-10-N-LE4
				15.0 m	8065122	NEBL-M8W4-E-15-N-LE4
		For power transmission	Straight socket, M8 x 1, 4-pin, A-coded	Straight plug, M8x1, 4-pin, A-coded	0.3 m	8082904
	0.5 m				8065102	NEBL-M8G4-E-0.5-N-M8G4
	1.0 m				8065104	NEBL-M8G4-E-1-N-M8G4
	2.0 m				8065106	NEBL-M8G4-E-2-N-M8G4
	5.0 m				8065108	NEBL-M8G4-E-5-N-M8G4
	7.5 m				8065111	NEBL-M8G4-E-7.5-N-M8G4
	10.0 m				8065115	NEBL-M8G4-E-10-N-M8G4
	15.0 m				8065119	NEBL-M8G4-E-15-N-M8G4
	Angled socket, M8x1, 4-pin, A-coded		Angled plug, M8x1, 4-pin, A-coded	0.3 m	8146577	NEBL-M8W4-E-0.3-N-M8W4
				0.5 m	8065103	NEBL-M8W4-E-0.5-N-M8W4
				1.0 m	8065105	NEBL-M8W4-E-1-N-M8W4
				2.0 m	8065107	NEBL-M8W4-E-2-N-M8W4
				5.0 m	8065109	NEBL-M8W4-E-5-N-M8W4
				7.5 m	8065112	NEBL-M8W4-E-7.5-N-M8W4
				10.0 m	8065116	NEBL-M8W4-E-10-N-M8W4
				15.0 m	8065120	NEBL-M8W4-E-15-N-M8W4

Technical data – Digital 16-way input modules

Ordering data – Accessories						
	Description			Part no.	Type	
Distributor						
    	For inputs	Straight plug, M12x1, 4-pin, A-coded	2x straight socket, M8x1, 3-pin, A-coded	–	8005311	NEDY-L2R1-V1-M8G3-N-M12G4
			2x straight socket, M12x1, 5-pin, A-coded	–	8005310	NEDY-L2R1-V1-M12G5-N-M12G4
			2x straight socket, M8x1, 3-pin, A-coded	2.5 m	8005301	NEDY-L2R1-V1-M8G3-U-M12G4-2.5R
				5.0 m	8005302	NEDY-L2R1-V1-M8G3-U-M12G4-5R
				0.3 m	8032309	NEDY-L2R1-V1-M8G3-U-0.3L-M12G4-2.5R
				2.5 m		
				0.3 m	8035484	NEDY-L2R1-V1-M8G3-U-0.3L-M12G4-5R
				5.0 m		
			2x straight socket, M12x1, 5-pin, A-coded	2.5 m	8005305	NEDY-L2R1-V1-M12G5-U-M12G4-2.5R
				5.0 m	8005306	NEDY-L2R1-V1-M12G5-U-M12G4-5R
				0.3 m	8035775	NEDY-L2R1-V1-M12G5-U-0.3L-M12G4-2.5R
				2.5 m		
				0.3 m	8035776	NEDY-L2R1-V1-M12G5-U-0.3L-M12G4-5R
				5.0 m		

Ordering data – Accessories					
	Description		Pack size	Part no.	Type
Inscription labels					
	For modules CPX-AP-I	Size 6x 12.5 mm, 10 frames with 24 pieces each	240	8087174	ASLR-L-X4-612-P240
Cover cap					
	For sealing unused connections	For connection M8x1	10	177672	ISK-M8
		For connection M12x1	10	165592	ISK-M12
DIN rail mounting					
	For mounting a module on DIN rails according to EN 60715		–	8095158	CAFM-X4-H

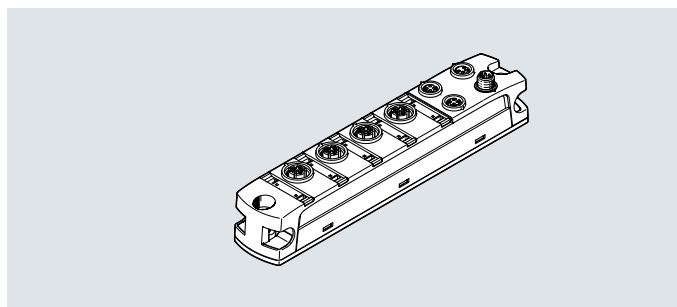
Datasheet – Analogue input modules

Function

Analogue input modules make it possible to detect 4 analogue input signals.

All 4 channels can be set separately to measure current, voltage, temperature or resistance.

- Input modules for 24 V DC operating voltage
- Connection M12x1, 5-pin
- Status and error indication via LED



General technical – Data analogue input modules

Number of inputs	4
Electrical connection, input, function	Analogue input
Electrical connection, input, connection type	4x socket
Electrical connection, input, connection technology	M12x1, A-coded to EN 61076-2-101
Electrical connection, input, note on connection technology	To achieve the technical specifications, the opposite side must be screened and designed with gold contact surfaces.
Electrical connection, input, number of pins/cores	5
Fuse protection inputs (short circuit)	Internal electronic fuse per module
Signal range	-10 - 10 V; -5 - 5 V; 0 - 10 V; 1 - 5 V; 0 - 20 mA; 4 - 20 mA; 0 - 500 Ohm
Data format	15 bit + prefix; linear scaling
Measured variable	Voltage; current; temperature; resistance
Note on the measured variable	Temperature: PT100 and NI100 supported
Repetition accuracy	±0.025% at 25 °C
Operating error limit related to the ambient temperature range	±0.15% for voltage; ±0.15% for current; ±0.9% for temperature; ±0.35% for resistance
Basic error limit at 25 °C	±0.1% for voltage; ±0.1% for current; ±0.4% for temperature; ±0.2% for resistance
Communication interface, protocol	AP
Communication interface, function	System communication XF10 IN / XF20 OUT
Communication interface, connection type	2 x socket
Communication interface, connection technology	M8x1, D-coded to EN 61076-2-114
Communication interface, number of pins/cores	4
Communication interface, shielding	Yes

General data – Analogue input modules

Diagnostics via LED	Diagnostics per module Status per channel
Diagnostics via internal communication	Wire break Module error Short circuit/overload in sensor supply Parameter error Parameterisation error Overload at analogue inputs Upper limit value not observed Underflow/overflow Lower limit value not observed
Max. cable length	30 m inputs 50 m system communication
Reverse polarity protection	Yes

Datasheet – Analogue input modules

Technical data – Electrical – Analogue input modules

Nominal operating voltage DC for electronics/sensors	24 V
Permissible voltage fluctuations, electronics/sensors	± 25%
Note on the operating voltage	SELV/PELV power supply units required; note voltage drop
Power failure buffering	10 ms
Max. power supply	2 x 4 A (external fuse required)
Max. total current of inputs per module	1 A
Intrinsic current consumption at nominal operating voltage, electronics/sensors	Typical 38 mA
Power supply, function	Incoming electronics/sensors and load
Power supply, connection type	Plug
Power supply, connection technology	M8x1, A-coded to EN 61076-2-104
Power supply, number of pins/cores	4
Power transmission, function	Outgoing electronics/sensors and load
Power transmission, connection type	Socket
Power transmission, connection technology	M8x1, A-coded to EN 61076-2-104
Power transmission, number of pins/cores	4

Technical data – Mechanical – Analogue input modules

Type of mounting	On DIN rail with accessories; with through-hole
Product weight	166 g
Dimensions W x L x H	30 mm x 170 mm x 35 mm

Materials – Analogue input modules

Housing material	PA; PC; nickel-plated die-cast zinc
Sealing material	NBR
O-ring material	FPM
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-B2-L
Cleanroom class	Element installed statically, no meaningful evaluation possible according to ISO 14644-1

Operating and ambient conditions – Analogue input modules

Ambient temperature	-20 ... 60 °C
Storage temperature	-40 ... 70 °C
Corrosion resistance class CRC ¹⁾	1 - low corrosion stress
Relative humidity	5 - 95%, non-condensing
CE marking (see declaration of conformity) ²⁾	To EU EMC Directive
UKCA marking (see declaration of conformity) ³⁾	To UK EMC regulations
KC marking	KC EMC
Certification	RCM Mark c UL us - Listed (OL)
Certificate-issuing authority	UL E239998
Degree of protection	IP65; IP67
Note on degree of protection	Unused connections sealed

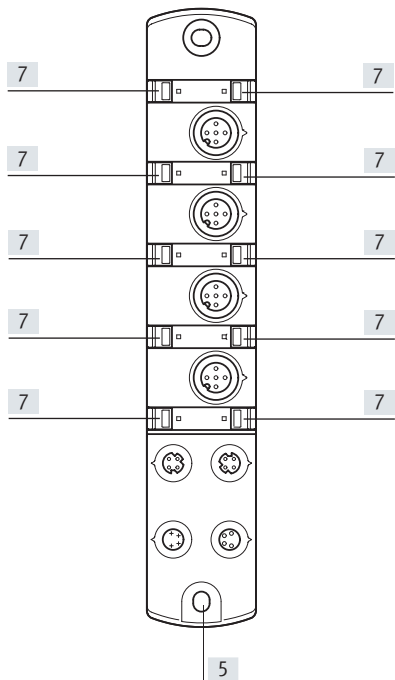
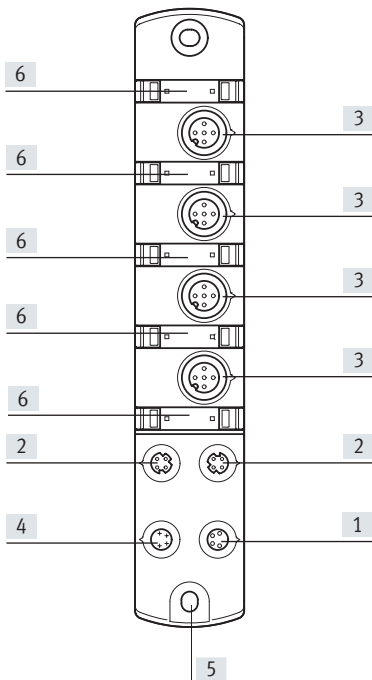
1) More information www.festo.com/x/topic/crc

2) More information www.festo.com/catalogue/... Support/Downloads.

3) More information www.festo.com/catalogue/... Support/Downloads.

Datasheet – Analogue input modules

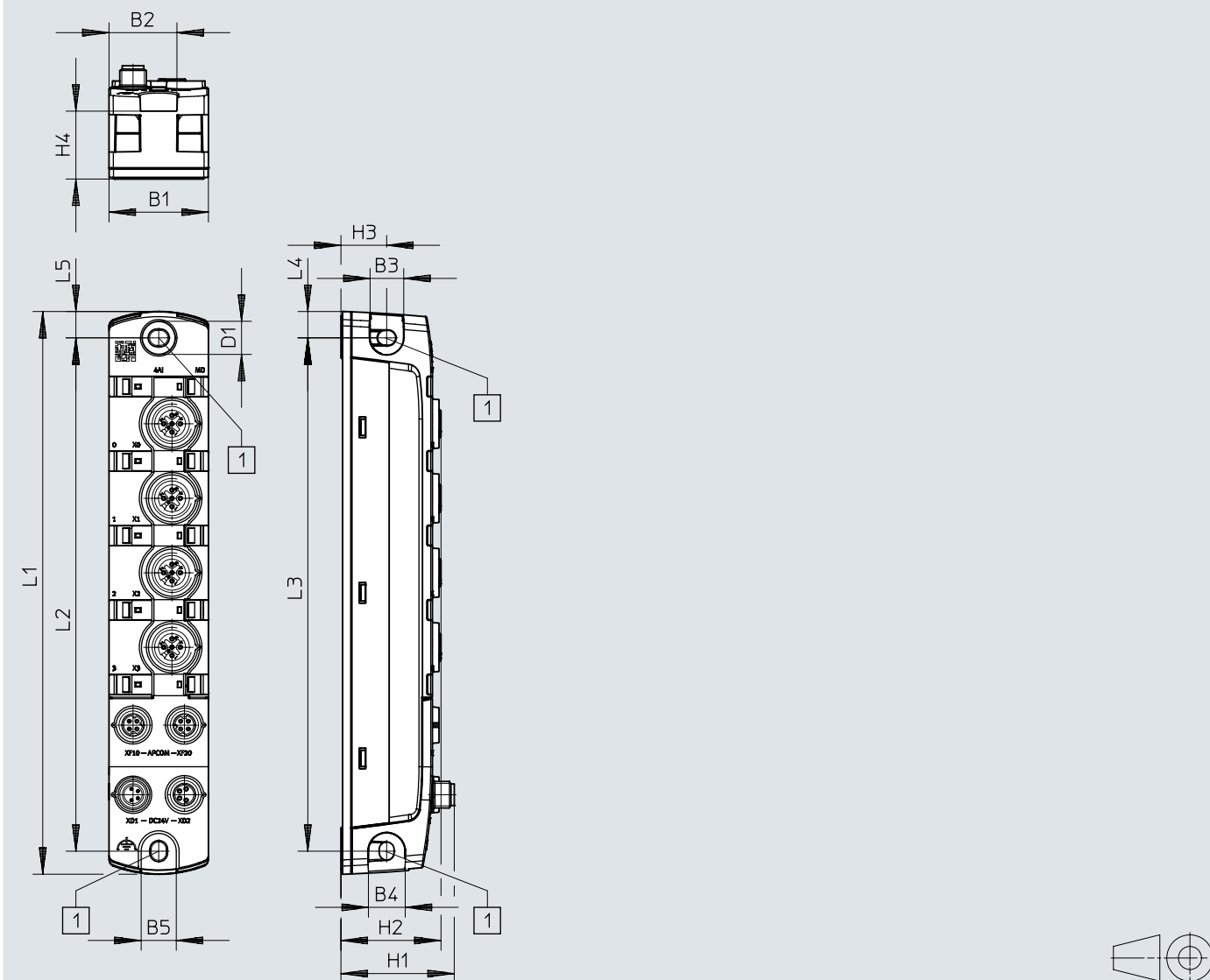
Connection and indicator components



- | | | | |
|---|---|---------------------------------|--------------------|
| [1] Electrical connection, power transmission | [3] Electrical connection, inputs | [5] Earth connection | [7] LED indicators |
| [2] Communication interface | [4] Electrical connection, power supply | [6] Space for inscription label | |

Datasheet – Analogue input modules

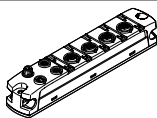
Dimensions

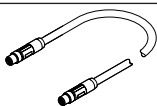
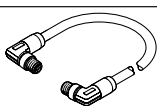
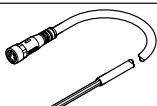
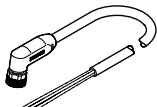
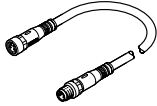
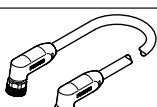
Download CAD data → www.festo.com

[1] Mounting hole for M4 screws

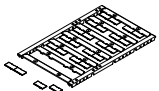
	B1	B2	B3	B4	B5	D1 Ø	H1	H2	H3	H4	L1	L2	L3	L4	L5
CPX-AP-I-4AI-U-I-RTD-M12	30	20.5	10	11	11	10	34.2	30.2	13.8	20.5	170	155	155	8	8

Datasheet – Analogue input modules

Ordering data			Part no.	Type
	Analogue input module	Electrical connection input 4x socket, 5-pin, M12x1	8086606	CPX-AP-I-4AI-U-I-RTD-M12

Ordering data – Accessories						
Description			Part no.	Type		
Connecting cable						
	For communication interface	Straight plug, M8x1, 4-pin, D-coded	Straight plug, M8x1, 4-pin, D-coded	0.3 m	8082902	NEBC-D8G4-ES-0.3-N-S-D8G4-ET
				0.5 m	8065123	NEBC-D8G4-ES-0.5-N-S-D8G4-ET
				1.0 m	8065125	NEBC-D8G4-ES-1-N-S-D8G4-ET
				2.0 m	8065127	NEBC-D8G4-ES-2-N-S-D8G4-ET
				5.0 m	8065129	NEBC-D8G4-ES-5-N-S-D8G4-ET
				7.5 m	8065131	NEBC-D8G4-ES-7.5-N-S-D8G4-ET
				10.0 m	8065133	NEBC-D8G4-ES-10-N-S-D8G4-ET
				15.0 m	8065135	NEBC-D8G4-ES-15-N-S-D8G4-ET
				20.0 m	8146031	NEBC-D8G4-ES-20-N-S-D8G4-ET
				25.0 m	8146032	NEBC-D8G4-ES-25-N-S-D8G4-ET
				30.0 m	8146033	NEBC-D8G4-ES-30-N-S-D8G4-ET
				40.0 m	8146034	NEBC-D8G4-ES-40-N-S-D8G4-ET
				50.0 m	8146035	NEBC-D8G4-ES-50-N-S-D8G4-ET
		Angled plug, M8x1, 4-pin, D-coded	Angled plug, M8x1, 4-pin, D-coded	0.5 m	8065124	NEBC-D8W4-ES-0.5-N-S-D8W4-ET
				1.0 m	8065126	NEBC-D8W4-ES-1-N-S-D8W4-ET
				2.0 m	8065128	NEBC-D8W4-ES-2-N-S-D8W4-ET
				5.0 m	8065130	NEBC-D8W4-ES-5-N-S-D8W4-ET
				7.5 m	8065132	NEBC-D8W4-ES-7.5-N-S-D8W4-ET
				10.0 m	8065134	NEBC-D8W4-ES-10-N-S-D8W4-ET
				15.0 m	8065136	NEBC-D8W4-ES-15-N-S-D8W4-ET
				20.0 m	8146036	NEBC-D8W4-ES-20-N-S-D8W4-ET
				25.0 m	8146037	NEBC-D8W4-ES-25-N-S-D8W4-ET
				30.0 m	8146038	NEBC-D8W4-ES-30-N-S-D8W4-ET
				40.0 m	8146039	NEBC-D8W4-ES-40-N-S-D8W4-ET
				50.0 m	8146040	NEBC-D8W4-ES-50-N-S-D8W4-ET
					For power supply	Straight socket, M8 x 1, 4-pin, A-coded
7.5 m	8065113	NEBL-M8G4-E-7.5-N-LE4				
10.0 m	8065117	NEBL-M8G4-E-10-N-LE4				
15.0 m	8065121	NEBL-M8G4-E-15-N-LE4				
		Angled socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	7.5 m	8065114	NEBL-M8W4-E-7.5-N-LE4
				10.0 m	8065118	NEBL-M8W4-E-10-N-LE4
				15.0 m	8065122	NEBL-M8W4-E-15-N-LE4
	For power transmission	Straight socket, M8 x 1, 4-pin, A-coded	Straight plug, M8x1, 4-pin, A-coded	0.3 m	8082904	NEBL-M8G4-E-0.3-N-M8G4
				0.5 m	8065102	NEBL-M8G4-E-0.5-N-M8G4
				1.0 m	8065104	NEBL-M8G4-E-1-N-M8G4
				2.0 m	8065106	NEBL-M8G4-E-2-N-M8G4
				5.0 m	8065108	NEBL-M8G4-E-5-N-M8G4
				7.5 m	8065111	NEBL-M8G4-E-7.5-N-M8G4
				10.0 m	8065115	NEBL-M8G4-E-10-N-M8G4
				15.0 m	8065119	NEBL-M8G4-E-15-N-M8G4
		Angled socket, M8x1, 4-pin, A-coded	Angled plug, M8x1, 4-pin, A-coded	0.3 m	8146577	NEBL-M8W4-E-0.3-N-M8W4
				0.5 m	8065103	NEBL-M8W4-E-0.5-N-M8W4
				1.0 m	8065105	NEBL-M8W4-E-1-N-M8W4
				2.0 m	8065107	NEBL-M8W4-E-2-N-M8W4
				5.0 m	8065109	NEBL-M8W4-E-5-N-M8W4
				7.5 m	8065112	NEBL-M8W4-E-7.5-N-M8W4
				10.0 m	8065116	NEBL-M8W4-E-10-N-M8W4
				15.0 m	8065120	NEBL-M8W4-E-15-N-M8W4

Datasheet – Analogue input modules

Ordering data – Accessories					
	Description		Pack size	Part no.	Type
Inscription labels					
	For modules CPX-AP-I	Size 6x 12.5 mm, 10 frames with 24 pieces each	240	8087174	ASLR-L-X4-612-P240
Cover cap					
	For sealing unused connections	For connection M8x1	10	177672	ISK-M8
		For connection M12x1	10	165592	ISK-M12
DIN rail mounting					
	For mounting a module on DIN rails according to EN 60715		–	8095158	CAFM-X4-H

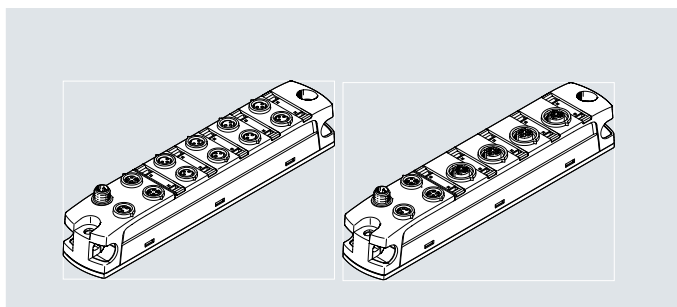
Datasheet– Digital 8-way output modules

Function

Digital output modules make it possible to connect electrical consumers according to IEC 1131-2 type 0.5 (valves, contactors or display components) with an operating voltage of 24 V DC.

Status and error messages can be shown by LED indicators on the module. The module response can be set using parameters.

- Output modules for 24 V DC operating voltage
- Connection M8x1 3-pin or M12x1 5-pin
- Status and error indication via LED



General technical data – Digital 8-way input/output modules

Number of outputs	8
Electrical connection, output, function	Digital output
Electrical connection, output, connection type	4x socket; 8x socket
Electrical connection, output, connection technology	M8x1, A-coded to EN 61076-2-104; M12x1 A-coded to EN 61076-2-101
Electrical connection, output, number of pins/cores	3; 5
Switching logic at outputs	PNP (positive switching)
Characteristic curve of outputs	To IEC 61131-2, type 0.5
Output delay with resistive load	Signal change 0->1: < 200 µs; signal change 1->0: < 200 µs
Fuse protection outputs (short circuit)	Internal electronic fuse per channel
Communication interface, protocol	AP
Communication interface, function	System communication XF10 IN / XF20 OUT
Communication interface, connection type	2 x socket
Communication interface, connection technology	M8x1, D-coded to EN 61076-2-114
Communication interface, number of pins/cores	4
Communication interface, shielding	Yes

General data – Digital 8-way input/output modules

Electrical isolation of outputs between channels	No
Electrical isolation of outputs between channels – internal communication	Yes
Diagnostics via LED	Diagnostics per module Power supply load Status per channel
Diagnostics via internal communication	Load switch-off Short circuit/overload output signal Electronics/sensors overvoltage Overvoltage load Undervoltage electronics/sensors Undervoltage load
Max. cable length	30 m outputs 50 m system communication
Note on max. cable length	Power supply according to nominal voltage
Reverse polarity protection	Yes

Datasheet – Digital 8-way output modules

Technical data – Electrical – Digital 8-way input/output modules

Nominal operating voltage DC for electronics/sensors	24 V
Nominal operating voltage DC load	24 V
Permissible voltage fluctuations, electronics/sensors	± 25%
Permissible voltage fluctuations, load	± 25%
Note on the operating voltage	SELV/PELV power supply units required; note voltage drop
Power failure buffering	10 ms
Max. power supply	2 x 4 A (external fuse required)
Max. power supply per channel	0.5 A
Max. total current outputs per module	4 A
Intrinsic current consumption at nominal operating voltage, electronics/sensors	Typical 35 mA
Intrinsic current consumption at nominal operating voltage, load	Typical 10 mA
Power supply, function	Incoming electronics/sensors and load
Power supply, connection type	Plug
Power supply, connection technology	M8x1, A-coded to EN 61076-2-104
Power supply, number of pins/cores	4
Power transmission, function	Outgoing electronics/sensors and load
Power transmission, connection type	Socket
Power transmission, connection technology	M8x1, A-coded to EN 61076-2-104
Power transmission, number of pins/cores	4

Technical data – Mechanical – Digital 8-way input/output modules

Type of mounting	On DIN rail with accessories; with through-hole
Product weight	127 g
Dimensions W x L x H	30 mm x 170 mm x 35 mm

Materials – Digital 8-way output modules

Housing material	PA; PC; nickel-plated die-cast zinc
O-ring material	FPM
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-B2-L
Cleanroom class	Element installed statically, no meaningful evaluation possible according to ISO 14644-1

Operating and environmental conditions – Digital 8-way output modules

Ambient temperature	-20 ... 60 °C
Storage temperature	-40 ... 70 °C
Corrosion resistance class CRC ¹⁾	1 - low corrosion stress
Relative humidity	5 - 95%, non-condensing
CE marking (see declaration of conformity) ²⁾	To EU EMC Directive
UKCA marking (see declaration of conformity) ³⁾	To UK EMC regulations
KC marking	KC EMC
Certification	RCM Mark c UL us - Listed (OL)
Certificate-issuing authority	UL E239998
Degree of protection	IP65; IP67
Note on degree of protection	Unused connections sealed

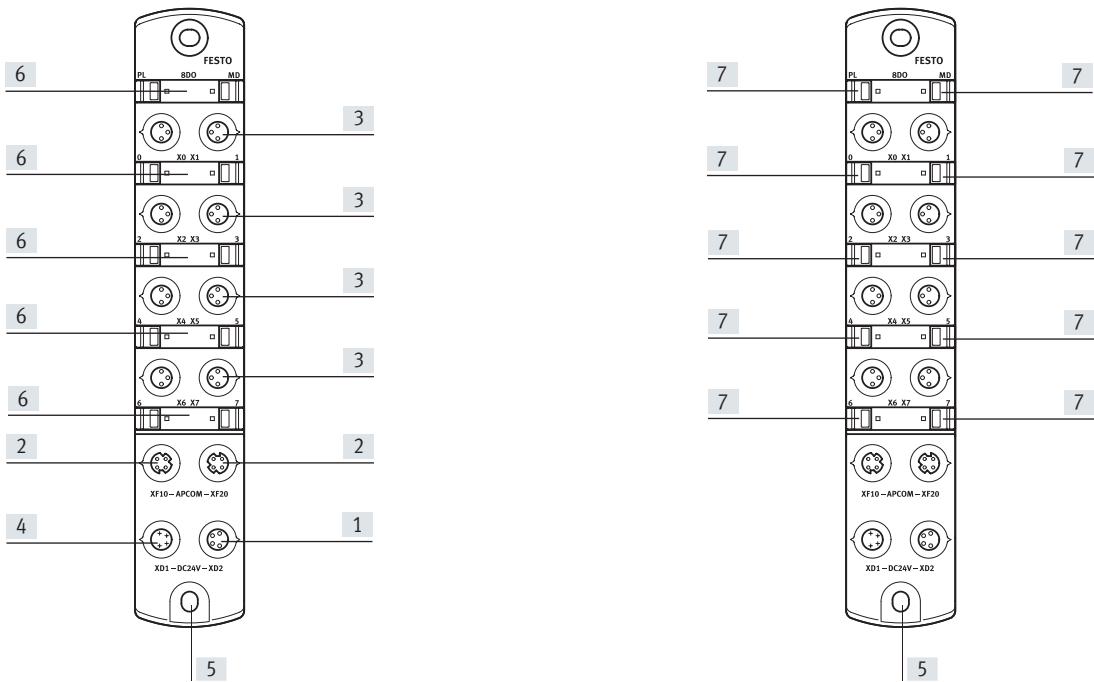
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3) More information www.festo.com/catalogue/... Support/Downloads.

Datasheet – Digital 8-way output modules

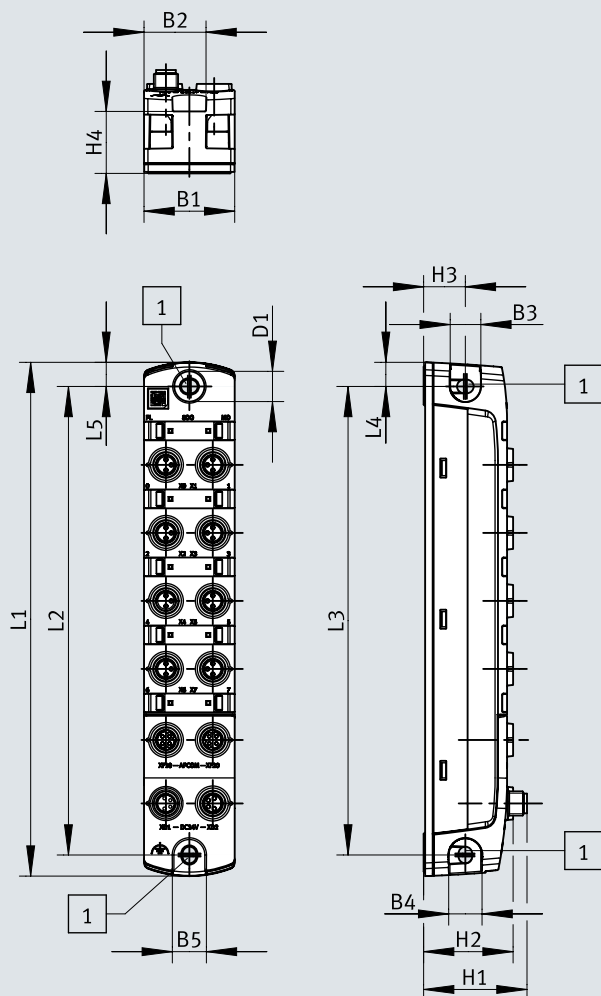
Connection and indicator components



- | | | | |
|---|---|---------------------------------|--------------------|
| [1] Electrical connection, power transmission | [3] Electrical connection, outputs | [5] Earth connection | [7] LED indicators |
| [2] Communication interface | [4] Electrical connection, power supply | [6] Space for inscription label | |

Datasheet – Digital 8-way output modules

Dimensions – CPX-AP-I-8DO-M8-3P

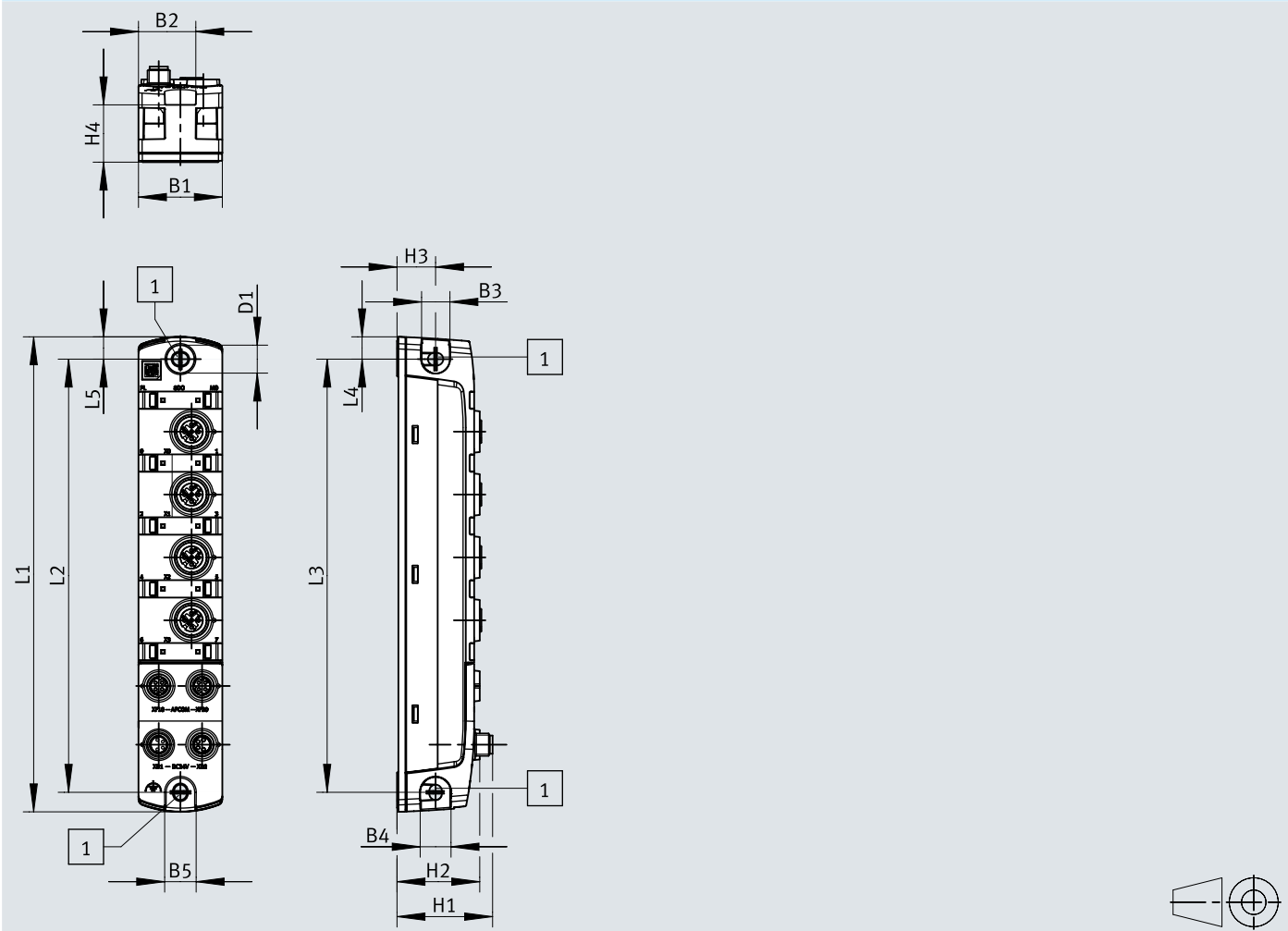
Download CAD data → www.festo.com

[1] Mounting hole for M4 screws

	B1	B2	B3	B4	B5	D1 Ø	H1	H2	H3	H4	L1	L2	L3	L4	L5
CPX-AP-I-8DO-M8-3P	30	20.5	10	11	11	10	34.2	29.6	13.8	20.5	170	155	155	8	8

Datasheet – Digital 8-way output modules

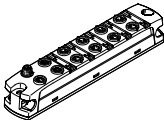
Dimensions – CPX-AP-I-8DO-M12-5P Download CAD data → www.festo.com

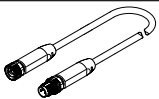
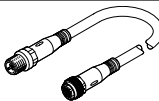
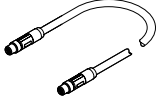


[1] Mounting hole for M4 screws

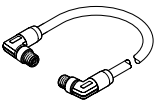
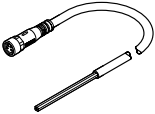
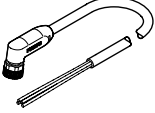
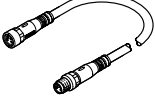
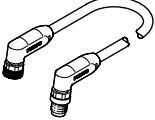
	B1	B2	B3	B4	B5	D1 Ø	H1	H2	H3	H4	L1	L2	L3	L4	L5
CPX-AP-I-8DO-M12-5P	30	20.5	10	11	11	10	34.2	30.2	13.8	20.5	170	155	155	8	8

Datasheet – Digital 8-way output modules

Ordering data			Part no.	Type
	Digital output module	Electrical connection output 8x socket, 3-pin, M8x1	8179438	CPX-AP-I-8DO-M8-3P
		Electrical connection output 4x socket, 5-pin, M12x1	8179439	CPX-AP-I-8DO-M12-5P

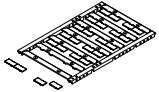
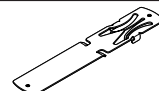
Ordering data – Accessories						
	Description		Part no.	Type		
Plug connectors for self-assembly						
	For outputs	Straight plug, M8x1, 3-pin, A-coded	Screw terminal	8162298	NECB-S-M8G3-C2	
		Straight plug, M12x1, 5-pin, A-coded	Screw terminal	8162296	NECB-S-M12G5-C2	
Connecting cable						
	For outputs	Straight plug, M8x1, 3-pin, A-coded	Straight socket, M8x1, 3-pin, A-coded	0.5 m	8078282	NEBA-M8G3-U-0.5-N-M8G3
				1.0 m	8078283	NEBA-M8G3-U-1-N-M8G3
				1.5 m	8078284	NEBA-M8G3-U-1.5-N-M8G3
				2.5 m	8078286	NEBA-M8G3-U-2.5-N-M8G3
				5.0 m	8078287	NEBA-M8G3-U-5-N-M8G3
				10.0 m	8078288	NEBA-M8G3-U-10-N-M8G3
	For outputs	Straight plug, M12x1, 5-pin, A-coded	Straight socket, M12x1, 3-pin, A-coded	5.0 m	574321	NEBU-M12G5-E-5-Q8N-M12G5
				7.5 m	574322	NEBU-M12G5-E-7.5-Q8N-M12G5
	For communication interface	Straight plug, M8x1, 4-pin, D-coded	Straight plug, M8x1, 4-pin, D-coded	0.3 m	8082902	NEBC-D8G4-ES-0.3-N-S-D8G4-ET
				0.5 m	8065123	NEBC-D8G4-ES-0.5-N-S-D8G4-ET
				1.0 m	8065125	NEBC-D8G4-ES-1-N-S-D8G4-ET
				2.0 m	8065127	NEBC-D8G4-ES-2-N-S-D8G4-ET
				5.0 m	8065129	NEBC-D8G4-ES-5-N-S-D8G4-ET
				7.5 m	8065131	NEBC-D8G4-ES-7.5-N-S-D8G4-ET
				10.0 m	8065133	NEBC-D8G4-ES-10-N-S-D8G4-ET
				15.0 m	8065135	NEBC-D8G4-ES-15-N-S-D8G4-ET
				20.0 m	8146031	NEBC-D8G4-ES-20-N-S-D8G4-ET
				25.0 m	8146032	NEBC-D8G4-ES-25-N-S-D8G4-ET
				30.0 m	8146033	NEBC-D8G4-ES-30-N-S-D8G4-ET
				40.0 m	8146034	NEBC-D8G4-ES-40-N-S-D8G4-ET
				50.0 m	8146035	NEBC-D8G4-ES-50-N-S-D8G4-ET

Datasheet – Digital 8-way output modules

Ordering data – Accessories						
	Description			Part no.	Type	
Connecting cable						
	For communication interface	Angled plug, M8x1, 4-pin, D-coded	Angled plug, M8x1, 4-pin, D-coded	0.5 m	8065124	NEBC-D8W4-ES-0.5-N-S-D8W4-ET
				1.0 m	8065126	NEBC-D8W4-ES-1-N-S-D8W4-ET
				2.0 m	8065128	NEBC-D8W4-ES-2-N-S-D8W4-ET
				5.0 m	8065130	NEBC-D8W4-ES-5-N-S-D8W4-ET
				7.5 m	8065132	NEBC-D8W4-ES-7.5-N-S-D8W4-ET
				10.0 m	8065134	NEBC-D8W4-ES-10-N-S-D8W4-ET
				15.0 m	8065136	NEBC-D8W4-ES-15-N-S-D8W4-ET
				20.0 m	8146036	NEBC-D8W4-ES-20-N-S-D8W4-ET
				25.0 m	8146037	NEBC-D8W4-ES-25-N-S-D8W4-ET
				30.0 m	8146038	NEBC-D8W4-ES-30-N-S-D8W4-ET
				40.0 m	8146039	NEBC-D8W4-ES-40-N-S-D8W4-ET
				50.0 m	8146040	NEBC-D8W4-ES-50-N-S-D8W4-ET
	For power supply	Straight socket, M8 x 1, 4-pin, A-coded	Open cable end, 4-core	5.0 m	8065110	NEBL-M8G4-E-5-N-LE4
7.5 m				8065113	NEBL-M8G4-E-7.5-N-LE4	
10.0 m				8065117	NEBL-M8G4-E-10-N-LE4	
15.0 m				8065121	NEBL-M8G4-E-15-N-LE4	
		Angled socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	7.5 m	8065114	NEBL-M8W4-E-7.5-N-LE4
				10.0 m	8065118	NEBL-M8W4-E-10-N-LE4
				15.0 m	8065122	NEBL-M8W4-E-15-N-LE4
	For power transmission	Straight socket, M8 x 1, 4-pin, A-coded	Straight plug, M8x1, 4-pin, A-coded	0.3 m	8082904	NEBL-M8G4-E-0.3-N-M8G4
				0.5 m	8065102	NEBL-M8G4-E-0.5-N-M8G4
				1.0 m	8065104	NEBL-M8G4-E-1-N-M8G4
				2.0 m	8065106	NEBL-M8G4-E-2-N-M8G4
				5.0 m	8065108	NEBL-M8G4-E-5-N-M8G4
				7.5 m	8065111	NEBL-M8G4-E-7.5-N-M8G4
				10.0 m	8065115	NEBL-M8G4-E-10-N-M8G4
				15.0 m	8065119	NEBL-M8G4-E-15-N-M8G4
		Angled socket, M8x1, 4-pin, A-coded	Angled plug, M8x1, 4-pin, A-coded	0.3 m	8146577	NEBL-M8W4-E-0.3-N-M8W4
				0.5 m	8065103	NEBL-M8W4-E-0.5-N-M8W4
				1.0 m	8065105	NEBL-M8W4-E-1-N-M8W4
				2.0 m	8065107	NEBL-M8W4-E-2-N-M8W4
				5.0 m	8065109	NEBL-M8W4-E-5-N-M8W4
				7.5 m	8065112	NEBL-M8W4-E-7.5-N-M8W4
				10.0 m	8065116	NEBL-M8W4-E-10-N-M8W4
				15.0 m	8065120	NEBL-M8W4-E-15-N-M8W4

Datasheet – Digital 8-way output modules

Ordering data – Accessories						
		Description			Part no.	Type
Distributor						
	For inputs	Straight plug, M12x1, 4-pin, A-coded	2x straight socket, M8x1, 3-pin, A-coded	–	8005311	NEDY-L2R1-V1-M8G3-N-M12G4
			2x straight socket, M12x1, 5-pin, A-coded	–	8005310	NEDY-L2R1-V1-M12G5-N-M12G4
			2x straight socket, M8x1, 3-pin, A-coded	2.5 m	8005301	NEDY-L2R1-V1-M8G3-U-M12G4-2.5R
				5.0 m	8005302	NEDY-L2R1-V1-M8G3-U-M12G4-5R
				0.3 m	8032309	NEDY-L2R1-V1-M8G3-U-0.3L-M12G4-2.5R
				2.5 m		
				0.3 m	8035484	NEDY-L2R1-V1-M8G3-U-0.3L-M12G4-5R
				5.0 m		
			2x straight socket, M12x1, 5-pin, A-coded	2.5 m	8005305	NEDY-L2R1-V1-M12G5-U-M12G4-2.5R
				5.0 m	8005306	NEDY-L2R1-V1-M12G5-U-M12G4-5R
				0.3 m	8035775	NEDY-L2R1-V1-M12G5-U-0.3L-M12G4-2.5R
				2.5 m		
				0.3 m	8035776	NEDY-L2R1-V1-M12G5-U-0.3L-M12G4-5R
				5.0 m		

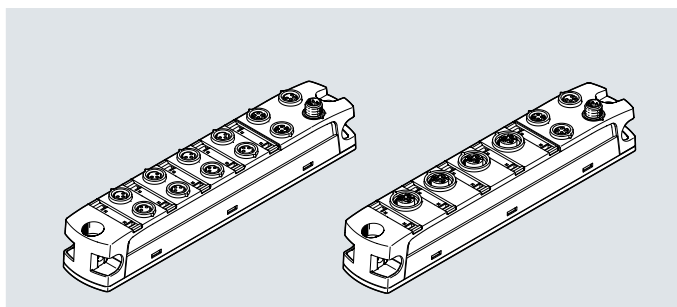
Ordering data – Accessories							
		Description			Pack size	Part no.	Type
Inscription labels							
	For modules CPX-AP-I	Size 6x 12.5 mm, 10 frames with 24 pieces each			240	8087174	ASLR-L-X4-612-P240
Cover cap							
	For sealing unused connections	For connection M8x1		10	177672	ISK-M8	
		For connection M12x1		10	165592	ISK-M12	
DIN rail mounting							
	For mounting a module on DIN rails according to EN 60715			–	8095158	CAFM-X4-H	

Datasheet – Digital input/output modules

Function

Digital input/output modules facilitate the connection of electric sensors to IEC 61131-2 type 3 (inductive, capacitive) and of electrical consumers to IEC 1131-2 type 0.5 with an operating voltage of 24 V DC.

- Input/output modules for 24 V DC operating voltage
- Connection M8x1 3-pin or M12x1 5-pin
- Status and error indication via LED



General technical data – Digital input/output modules

Electrical connection, input, connection type	2x socket; 4x socket
Number of inputs	4
Number of outputs	4
Electrical connection, input, function	Digital input
Electrical connection, input, connection technology	M8x1, A-coded to EN 61076-2-104; M12x1 A-coded to EN 61076-2-101
Electrical connection, input, number of pins/cores	3; 5
Switching logic at inputs	PNP (positive switching) 2-wire sensors to IEC 61131-2 3-wire sensors to IEC 61131-2
Characteristic curve of inputs	To IEC 61131-2, type 3
Switching level	Signal 0: ≤ 5 V; signal 1: ≥ 11 V
Fuse protection inputs (short circuit)	Internal electronic fuse per module
Input debounce time	0.1 ms; 3 ms; 10 ms; 20 ms
Electrical isolation of inputs between channel - internal communication	Yes
Electrical isolation of inputs between channels	No
Electrical connection, output, function	Digital output
Electrical connection, output, connection type	2x socket; 4x socket
Electrical connection, output, connection technology	M8x1, A-coded to EN 61076-2-104; M12x1 A-coded to EN 61076-2-101
Electrical connection, output, number of pins/cores	3; 5
Switching logic at outputs	PNP (positive switching)
Characteristic curve of outputs	To IEC 61131-2, type 0.5
Output delay with resistive load	Signal change 0->1: $< 200 \mu\text{s}$ Signal change 1->0: $< 200 \mu\text{s}$
Fuse protection outputs (short circuit)	Internal electronic fuse per channel
Electrical isolation of outputs between channels – internal communication	Yes
Electrical isolation of outputs between channels	No
Communication interface, protocol	AP
Communication interface, function	System communication XF10 IN / XF20 OUT
Communication interface, connection type	2 x socket
Communication interface, connection technology	M8x1, D-coded to EN 61076-2-114
Communication interface, number of pins/cores	4
Communication interface, shielding	Yes

Datasheet – Digital input/output modules

General data – Digital input/output modules

Diagnostics via LED	Diagnostics per module Power supply load Status per channel
Diagnostics via internal communication	Load switch-off Short circuit/overload output signal Short circuit/overload in sensor supply Electronics/sensors overvoltage Overvoltage load Undervoltage electronics/sensors Undervoltage load
Max. cable length	30 m outputs 30 m inputs 50 m system communication
Note on max. cable length	Power supply according to nominal voltage
Reverse polarity protection	Yes

Technical data – Electrical – Digital input/output modules

Nominal operating voltage DC for electronics/sensors	24 V
Nominal operating voltage DC load	24 V
Permissible voltage fluctuations, electronics/sensors	± 25%
Permissible voltage fluctuations, load	± 25%
Note on the operating voltage	SELV/PELV power supply units required; note voltage drop
Power failure buffering	10 ms
Max. power supply per channel	0.5 A
Max. total current of inputs per module	1.8 A
Max. total current outputs per module	2 A
Intrinsic current consumption at nominal operating voltage, electronics/sensors	Typical 35 mA
Intrinsic current consumption at nominal operating voltage, load	Typical 10 mA
Power supply, function	Incoming electronics/sensors and load
Power supply, connection type	Plug
Power supply, connection technology	M8x1, A-coded to EN 61076-2-104
Power supply, number of pins/cores	4
Power transmission, function	Outgoing electronics/sensors and load
Power transmission, connection type	Socket
Power transmission, connection technology	M8x1, A-coded to EN 61076-2-104
Power transmission, number of pins/cores	4

Technical data – Mechanical – Digital input/output modules

Type of mounting	On DIN rail with accessories; with through-hole
Product weight	129
Dimensions W x L x H	30 mm x 170 mm x 35 mm

Materials – Digital input/output modules

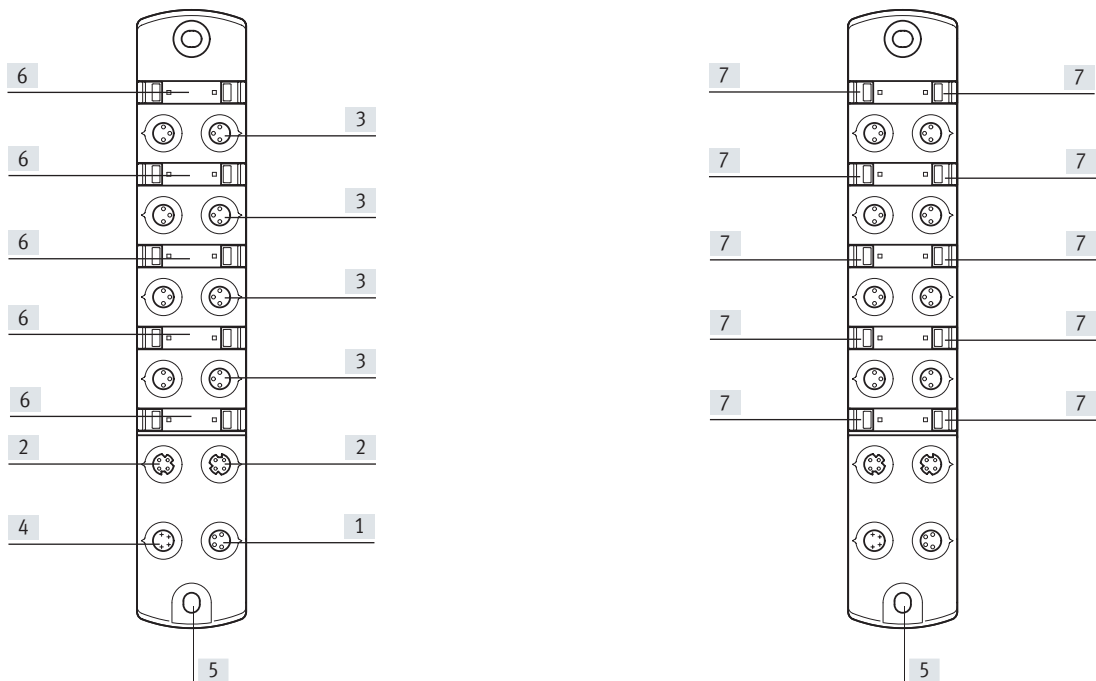
Housing material	PA; PC; nickel-plated die-cast zinc
O-ring material	FPM
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-B2-L
Cleanroom class	Element installed statically, no meaningful evaluation possible according to ISO 14644-1

Datasheet – Digital input/output modules

Operating and environmental conditions – Digital input/output modules	
Ambient temperature	-20 ... 60 °C
Storage temperature	-40 ... 70 °C
Corrosion resistance class CRC ¹⁾	1 - low corrosion stress
Relative humidity	5 - 95%, non-condensing
CE marking (see declaration of conformity) ²⁾	To EU EMC Directive
UKCA marking (see declaration of conformity) ³⁾	To UK EMC regulations
KC marking	KC EMC
Certification	RCM Mark c UL us - Listed (OL)
Certificate-issuing authority	UL E239998
Degree of protection	IP65; IP67
Note on degree of protection	Unused connections sealed

1) More information www.festo.com/x/topic/crc
2) More information www.festo.com/catalogue/... Support/Downloads.
3) More information www.festo.com/catalogue/... Support/Downloads.

Connection and indicator components



- [1] Electrical connection, power transmission

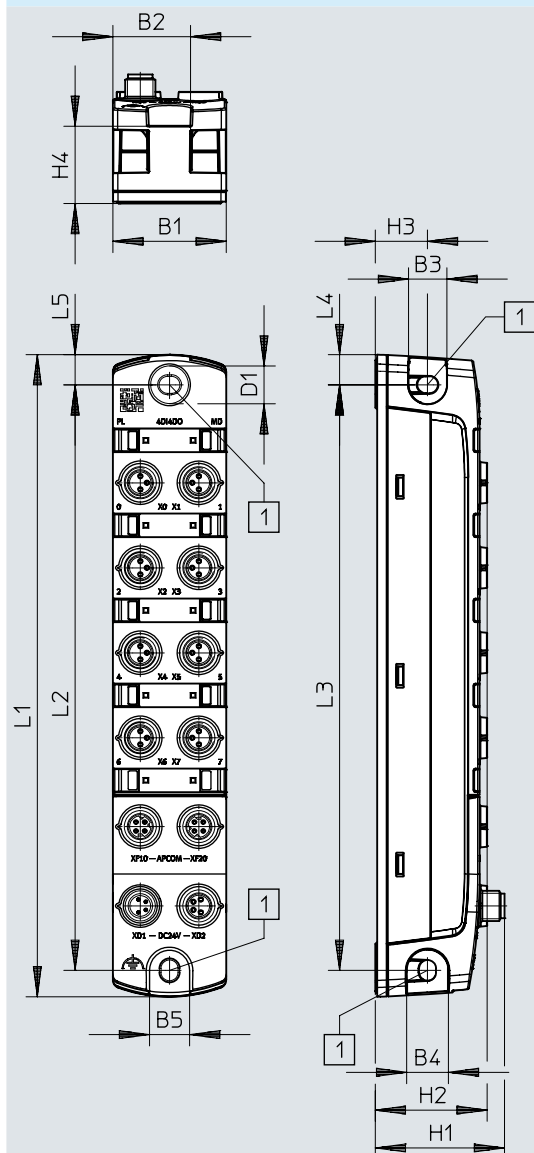
[2] Communication interface
- [3] Electrical connection, inputs/outputs

[4] Electrical connection, power supply
- [5] Earth connection

[6] Space for inscription label
- [7] LED indicators

Datasheet – Digital input/output modules

Dimensions – CPX-AP-I-4DI4DO-M8-3P

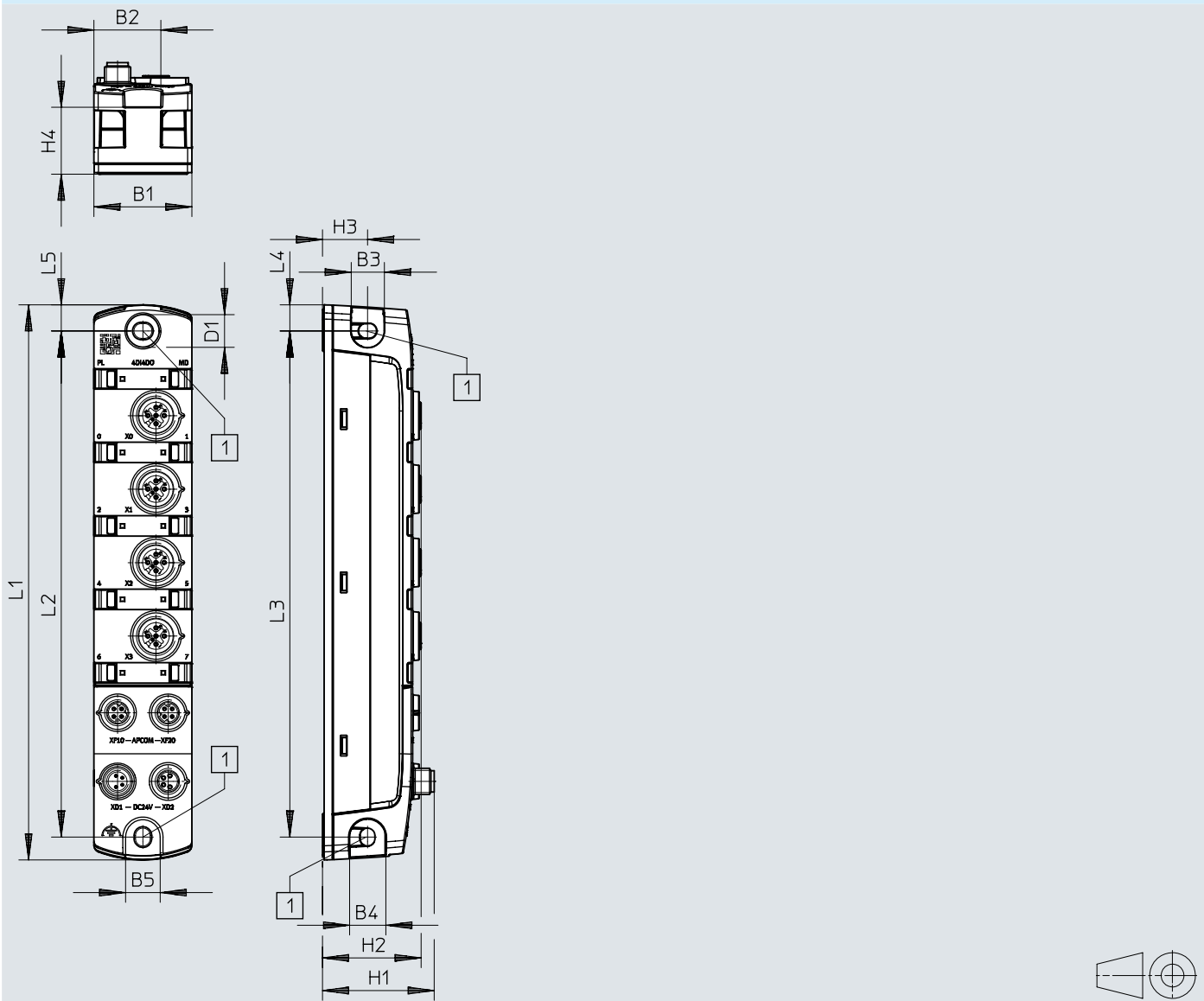
Download CAD data → www.festo.com

[1] Mounting hole for M4 screws

	B1	B2	B3	B4	B5	D1 Ø	H1	H2	H3	H4	L1	L2	L3	L4	L5
CPX-AP-I-4DI4DO-M8-3P	30	20.5	10	11	11	10	34.2	29.6	13.8	20.5	170	155	155	8	8
CPX-AP-I-4DI4DO-M12-5P	30	20.5	10	11	11	10	34.2	30.2	13.8	20.5	170	155	155	8	8

Datasheet – Digital input/output modules

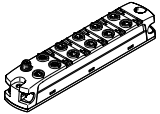
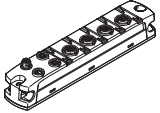
Dimensions – CPX-AP-I-4DI4DO-M12-5P Download CAD data → www.festo.com

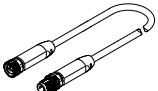
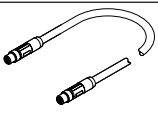
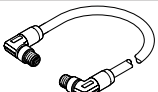


[1] Mounting hole for M4 screws

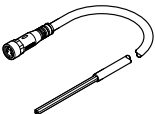
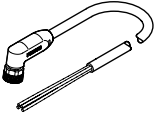
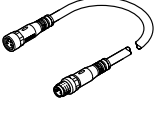
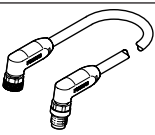
	B1	B2	B3	B4	B5	D1 Ø	H1	H2	H3	H4	L1	L2	L3	L4	L5
CPX-AP-I-4DI4DO-M8-3P	30	20.5	10	11	11	10	34.2	29.6	13.8	20.5	170	155	155	8	8
CPX-AP-I-4DI4DO-M12-5P	30	20.5	10	11	11	10	34.2	30.2	13.8	20.5	170	155	155	8	8

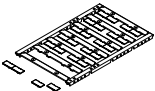
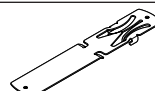
Datasheet – Digital input/output modules

Ordering data			Part no.	Type
	Digital input/output module	- Electrical connection input 4x socket, 3-pin, M8x1 - Electrical connection output 4x socket, 3-pin, M8x1	8086601	CPX-AP-I-4DI4DO-M8-3P
		- Electrical connection input 2x socket, 5-pin, M12x1 - Electrical connection output 2x socket, 5-pin, M12x1	8086603	CPX-AP-I-4DI4DO-M12-5P

Ordering data – Accessories						
Description				Part no.	Type	
Plug connectors for self-assembly						
	For inputs	Straight plug, M8x1, 3-pin, A-coded	Screw terminal	8162298	NECB-S-M8G3-C2	
		Straight plug, M12x1, 5-pin, A-coded	Screw terminal	8162296	NECB-S-M12G5-C2	
Connecting cable						
	For inputs	Straight plug, M8x1, 3-pin, A-coded	Straight socket, M8x1, 3-pin, A-coded	0.5 m	8078282	NEBA-M8G3-U-0.5-N-M8G3
				1.0 m	8078283	NEBA-M8G3-U-1-N-M8G3
				1.5 m	8078284	NEBA-M8G3-U-1.5-N-M8G3
				2.5 m	8078286	NEBA-M8G3-U-2.5-N-M8G3
				5.0 m	8078287	NEBA-M8G3-U-5-N-M8G3
				10.0 m	8078288	NEBA-M8G3-U-10-N-M8G3
	For communication interface	Straight plug, M8x1, 4-pin, D-coded	Straight plug, M8x1, 4-pin, D-coded	0.3 m	8082902	NEBC-D8G4-ES-0.3-N-S-D8G4-ET
				0.5 m	8065123	NEBC-D8G4-ES-0.5-N-S-D8G4-ET
				1.0 m	8065125	NEBC-D8G4-ES-1-N-S-D8G4-ET
				2.0 m	8065127	NEBC-D8G4-ES-2-N-S-D8G4-ET
				5.0 m	8065129	NEBC-D8G4-ES-5-N-S-D8G4-ET
				7.5 m	8065131	NEBC-D8G4-ES-7.5-N-S-D8G4-ET
				10.0 m	8065133	NEBC-D8G4-ES-10-N-S-D8G4-ET
				15.0 m	8065135	NEBC-D8G4-ES-15-N-S-D8G4-ET
				20.0 m	8146031	NEBC-D8G4-ES-20-N-S-D8G4-ET
				25.0 m	8146032	NEBC-D8G4-ES-25-N-S-D8G4-ET
				30.0 m	8146033	NEBC-D8G4-ES-30-N-S-D8G4-ET
				40.0 m	8146034	NEBC-D8G4-ES-40-N-S-D8G4-ET
				50.0 m	8146035	NEBC-D8G4-ES-50-N-S-D8G4-ET
						Angled plug, M8x1, 4-pin, D-coded
1.0 m	8065126	NEBC-D8W4-ES-1-N-S-D8W4-ET				
2.0 m	8065128	NEBC-D8W4-ES-2-N-S-D8W4-ET				
5.0 m	8065130	NEBC-D8W4-ES-5-N-S-D8W4-ET				
7.5 m	8065132	NEBC-D8W4-ES-7.5-N-S-D8W4-ET				
10.0 m	8065134	NEBC-D8W4-ES-10-N-S-D8W4-ET				
15.0 m	8065136	NEBC-D8W4-ES-15-N-S-D8W4-ET				
20.0 m	8146036	NEBC-D8W4-ES-20-N-S-D8W4-ET				
25.0 m	8146037	NEBC-D8W4-ES-25-N-S-D8W4-ET				
30.0 m	8146038	NEBC-D8W4-ES-30-N-S-D8W4-ET				
40.0 m	8146039	NEBC-D8W4-ES-40-N-S-D8W4-ET				
50.0 m	8146040	NEBC-D8W4-ES-50-N-S-D8W4-ET				

Datasheet – Digital input/output modules

Ordering data – Accessories						
	Description				Part no.	Type
Connecting cable						
	For power supply	Straight socket, M8 x 1, 4-pin, A-coded	Open cable end, 4-core	5.0 m	8065110	NEBL-M8G4-E-5-N-LE4
				7.5 m	8065113	NEBL-M8G4-E-7.5-N-LE4
				10.0 m	8065117	NEBL-M8G4-E-10-N-LE4
				15.0 m	8065121	NEBL-M8G4-E-15-N-LE4
		Angled socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	7.5 m	8065114	NEBL-M8W4-E-7.5-N-LE4
				10.0 m	8065118	NEBL-M8W4-E-10-N-LE4
				15.0 m	8065122	NEBL-M8W4-E-15-N-LE4
	For power transmission	Straight socket, M8 x 1, 4-pin, A-coded	Straight plug, M8x1, 4-pin, A-coded	0.3 m	8082904	NEBL-M8G4-E-0.3-N-M8G4
				0.5 m	8065102	NEBL-M8G4-E-0.5-N-M8G4
				1.0 m	8065104	NEBL-M8G4-E-1-N-M8G4
				2.0 m	8065106	NEBL-M8G4-E-2-N-M8G4
				5.0 m	8065108	NEBL-M8G4-E-5-N-M8G4
				7.5 m	8065111	NEBL-M8G4-E-7.5-N-M8G4
				10.0 m	8065115	NEBL-M8G4-E-10-N-M8G4
				15.0 m	8065119	NEBL-M8G4-E-15-N-M8G4
		Angled socket, M8x1, 4-pin, A-coded	Angled plug, M8x1, 4-pin, A-coded	0.3 m	8146577	NEBL-M8W4-E-0.3-N-M8W4
				0.5 m	8065103	NEBL-M8W4-E-0.5-N-M8W4
				1.0 m	8065105	NEBL-M8W4-E-1-N-M8W4
				2.0 m	8065107	NEBL-M8W4-E-2-N-M8W4
				5.0 m	8065109	NEBL-M8W4-E-5-N-M8W4
				7.5 m	8065112	NEBL-M8W4-E-7.5-N-M8W4
				10.0 m	8065116	NEBL-M8W4-E-10-N-M8W4
				15.0 m	8065120	NEBL-M8W4-E-15-N-M8W4

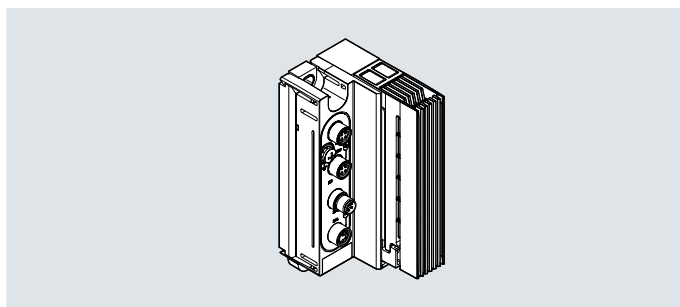
Ordering data – Accessories					
	Description	Pack size	Part no.	Type	
Inscription labels					
	For modules CPX-AP-I	Size 6x 12.5 mm, 10 frames with 24 pieces each	240	8087174	ASLR-L-X4-612-P240
Cover cap					
	For sealing unused connections	For connection M8x1	10	177672	ISK-M8
		For connection M12x1	10	165592	ISK-M12
DIN rail mounting					
	For mounting a module on DIN rails according to EN 60715		–	8095158	CAFM-X4-H

Datasheet – Pneumatic interface plate for valve terminal VTUX

Function

The interface plate enables a valve terminal VTUX to be operated as part of the remote I/O system CPX-AP-I.

- Indication of power supply and module diagnostics via LED indicators
- Up to 32 valve positions with up to 32 solenoid coils
- Short circuit switch-off, short circuit diagnostics and switching cycle counter



General technical data – Pneumatic interface plate for valve terminal VTUX

Compatible with	Valve terminal VTUX-A-P	Valve terminal VTUX-A-S
Valve terminal design	Valve sizes can be mixed	
Size	1 2	
Protocol	AP	
Electrical control	AP interface	
Max. address volume for outputs	4 bytes	
Max. no. of solenoid coils	32	128

Communication interface – Pneumatic interface plate for valve terminal VTUX

Communication interface, function	System communication XF10 IN / XF20 OUT	
Communication interface, connection type	2 x socket	
Communication interface, connection technology	M8x1, D-coded to EN 61076-2-114	
Communication interface, number of pins/cores	4	
Communication interface, shielding	Yes	

General data – Pneumatic interface plate for valve terminal VTUX

Compatible with	Valve terminal VTUX-A-P	Valve terminal VTUX-A-S
Module parameters	Configuration of voltage monitoring load supply PL Response in error state	
Diagnostics via LED	Diagnostics per module Power supply load	Diagnostics per module
Diagnostics via internal communication	Load switch-off Electronics/sensors overvoltage Electronics/sensors undervoltage	Load supply undervoltage PL Logic supply undervoltage PS
Max. cable length	50 m	

Datasheet – Pneumatic interface plate for valve terminal VTUX

Technical data – Electrical – Interface plate for valve terminal VTUX

Nominal operating voltage DC for electronics/sensors	24 V
Permissible voltage fluctuations, electronics/sensors	± 25%
Nominal operating voltage DC load	24 V
Permissible voltage fluctuations, load	± 10%
Undervoltage load/valves (diagnostic message)	≤ 21.1 V
Note on the operating voltage	SELV/PELV power supply units required; note voltage drop
Power failure buffering	10 ms
Max. power supply	2 x 4 A (external fuse required)
Fuse protection (short circuit)	Internal electronic fuse per channel
Inductive protective circuit	Integrated
Overvoltage category	II
Protection against direct and indirect contact	PELV, SELV
Reverse polarity protection	Yes
Intrinsic current consumption at nominal operating voltage, electronics/sensors	Typical 27 mA
Intrinsic current consumption at nominal operating voltage, load	Typical 13 mA
Power consumption at 24 VDC	650 mW
Pollution degree	2
Electrical isolation of outputs between channels – internal communication	Yes
Electrical isolation between the supply voltages electronics/sensors and load/valves	Yes

Electrical connection – Power supply – Interface plate for valve terminal VTUX

Power supply, function	Incoming electronics/sensors and load
Power supply, connection type	Socket
Power supply, connection technology	M8x1, A-coded to EN 61076-2-104
Power supply, number of pins/cores	4

Electrical connection – Voltage transmission – Interface plate for valve terminal VTUX

Power transmission, function	Outgoing electronics/sensors and load
Power transmission, connection type	Socket
Power transmission, connection technology	M8x1, A-coded to EN 61076-2-104
Power transmission, number of pins/cores	4

Technical data – Mechanical – Interface plate for valve terminal VTUX

Compatible with	Valve terminal VTUX-A-P	Valve terminal VTUX-A-S
Type of mounting	With through-hole for M5 screw	
Type of mounting sub-base	With through-hole	
Connection position	On the side	
Cable outlet	Straight	
Pneumatic port 1	For 15 mm cartridge	
Pneumatic port 5	For 15 mm cartridge	
Product weight	144.8 g	150 g
Dimensions W x L x H	45.6 mm x 117.4 mm x 53.9 mm	
Max. tightening torque for wall mounting	6	

Materials – Pneumatic interface plate for valve terminal VTUX

Sub-base material	Reinforced PA
Cover material	Reinforced PA
Film material	Polyester
Sleeve material	High-alloy stainless steel
Clamp material	High-alloy stainless steel
Nut material	High-alloy stainless steel
Sealing material	NBR
Note on materials	RoHs-compliant
LABS (PWIS) conformity	VDMA24364-B1/B2-L

Datasheet – Pneumatic interface plate for valve terminal VTUX

Operating and environmental conditions – Pneumatic interface plate for valve terminal VTUX		
Compatible with	Valve terminal VTUX-A-P	Valve terminal VTUX-A-S
Ambient temperature	-20 ... 50 °C	-5 ... 50 °C
Storage temperature	-20 ... 70 °C	
Corrosion resistance class CRC ¹⁾	2 - Moderate corrosion stress	
Relative humidity	5 - 95%	
Nominal operating altitude	<= 2000 m NHN	
Max. setup altitude	3,500 m	
Vibration resistant	Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6	
Shock resistance	Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27	
CE marking (see declaration of conformity) ²⁾	To EU EMC Directive To EU RoHS Directive	
UKCA marking (see declaration of conformity) ³⁾	To UK EMC regulations To UK RoHS regulations	
KC marking	KC EMC	
Certification	RCM Mark	
Degree of protection	IP65	
Note on degree of protection	Unused connections sealed	

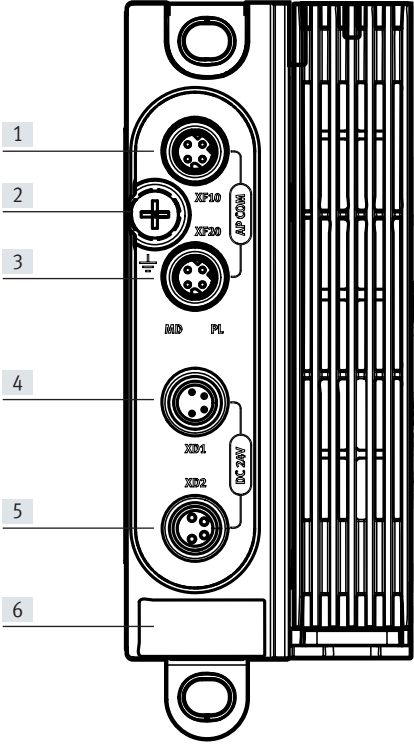
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2) More information www.festo.com/catalogue/... Support/Downloads.

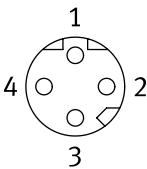
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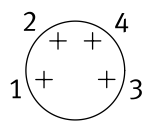
Datasheet – Pneumatic interface plate for valve terminal VTUX

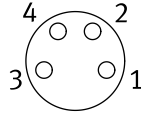
Connection and indicator components



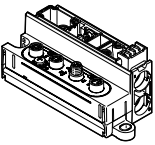
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- [2] Earth connection
- [3] XF20 Communication interface
- [4] XD1 Electrical connection, power supply
- [5] XD2 Electrical connection, power transmission
- [6] Rating plate

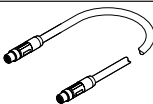
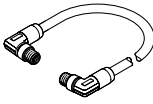
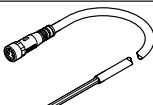
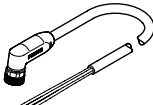
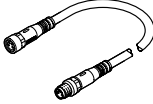
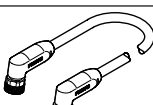
Pin allocation for communication interface 2x socket M8x1, D-coded, 4-pin			
Plug pattern	Pin	Assignment	Description
	1	TX-	Transmitted data-
	2	RX+	Received data+
	3	TX+	Transmitted data+
	4	RX-	Received data-

Pin allocation for power supply M8x1, A-coded, 4-pin			
Plug pattern	Pin	Assignment	Description
	1	24 V	Operating voltage 24 V electronics and sensors
	2	0 V	Operating voltage 0 V load voltage supply
	3	0 V	Operating voltage 0 V electronics and sensors
	4	24 V	Operating voltage 24 V load voltage supply

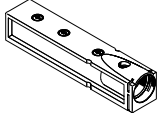
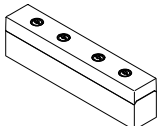
Pin allocation for power transmission, socket M8x1, A-coded, 4-pin			
Plug pattern	Pin	Assignment	Description
	1	24 V	Operating voltage 24 V electronics and sensors
	2	0 V	Operating voltage 0 V load voltage supply
	3	0 V	Operating voltage 0 V electronics and sensors
	4	24 V	Operating voltage 24 V load voltage supply

Datasheet – Pneumatic interface plate for valve terminal VTUX

Ordering data				Part no.	Type
	Pneumatic interface plate for valve terminal VTUX	Parallel communication	Maximum 32 valve coils	8189592	VABX-A-P-EL-E12-API-SHUH-XL
		Serial communication	Maximum 128 valve coils	8189593	VABX-A-S-EL-E12-API-SHUH-XL

Ordering data – Accessories						
Description		Part no.		Type		
Connecting cable						
	For communication interface	Straight plug, M8x1, 4-pin, D-coded	Straight plug, M8x1, 4-pin, D-coded	0.3 m	8082902	NEBC-D8G4-ES-0.3-N-S-D8G4-ET
				0.5 m	8065123	NEBC-D8G4-ES-0.5-N-S-D8G4-ET
				1.0 m	8065125	NEBC-D8G4-ES-1-N-S-D8G4-ET
				2.0 m	8065127	NEBC-D8G4-ES-2-N-S-D8G4-ET
				5.0 m	8065129	NEBC-D8G4-ES-5-N-S-D8G4-ET
				7.5 m	8065131	NEBC-D8G4-ES-7.5-N-S-D8G4-ET
				10.0 m	8065133	NEBC-D8G4-ES-10-N-S-D8G4-ET
				15.0 m	8065135	NEBC-D8G4-ES-15-N-S-D8G4-ET
				20.0 m	8146031	NEBC-D8G4-ES-20-N-S-D8G4-ET
				25.0 m	8146032	NEBC-D8G4-ES-25-N-S-D8G4-ET
				30.0 m	8146033	NEBC-D8G4-ES-30-N-S-D8G4-ET
				40.0 m	8146034	NEBC-D8G4-ES-40-N-S-D8G4-ET
				50.0 m	8146035	NEBC-D8G4-ES-50-N-S-D8G4-ET
		Angled plug, M8x1, 4-pin, D-coded	Angled plug, M8x1, 4-pin, D-coded	0.5 m	8065124	NEBC-D8W4-ES-0.5-N-S-D8W4-ET
				1.0 m	8065126	NEBC-D8W4-ES-1-N-S-D8W4-ET
				2.0 m	8065128	NEBC-D8W4-ES-2-N-S-D8W4-ET
				5.0 m	8065130	NEBC-D8W4-ES-5-N-S-D8W4-ET
				7.5 m	8065132	NEBC-D8W4-ES-7.5-N-S-D8W4-ET
				10.0 m	8065134	NEBC-D8W4-ES-10-N-S-D8W4-ET
				15.0 m	8065136	NEBC-D8W4-ES-15-N-S-D8W4-ET
				20.0 m	8146036	NEBC-D8W4-ES-20-N-S-D8W4-ET
				25.0 m	8146037	NEBC-D8W4-ES-25-N-S-D8W4-ET
				30.0 m	8146038	NEBC-D8W4-ES-30-N-S-D8W4-ET
				40.0 m	8146039	NEBC-D8W4-ES-40-N-S-D8W4-ET
				50.0 m	8146040	NEBC-D8W4-ES-50-N-S-D8W4-ET
					For power supply	Straight socket, M8 x 1, 4-pin, A-coded
7.5 m	8065113	NEBL-M8G4-E-7.5-N-LE4				
10.0 m	8065117	NEBL-M8G4-E-10-N-LE4				
15.0 m	8065121	NEBL-M8G4-E-15-N-LE4				
		Angled socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	7.5 m	8065114	NEBL-M8W4-E-7.5-N-LE4
				10.0 m	8065118	NEBL-M8W4-E-10-N-LE4
				15.0 m	8065122	NEBL-M8W4-E-15-N-LE4
	For power transmission	Straight socket, M8 x 1, 4-pin, A-coded	Straight plug, M8x1, 4-pin, A-coded	0.3 m	8082904	NEBL-M8G4-E-0.3-N-M8G4
				0.5 m	8065102	NEBL-M8G4-E-0.5-N-M8G4
				1.0 m	8065104	NEBL-M8G4-E-1-N-M8G4
				2.0 m	8065106	NEBL-M8G4-E-2-N-M8G4
				5.0 m	8065108	NEBL-M8G4-E-5-N-M8G4
				7.5 m	8065111	NEBL-M8G4-E-7.5-N-M8G4
				10.0 m	8065115	NEBL-M8G4-E-10-N-M8G4
				15.0 m	8065119	NEBL-M8G4-E-15-N-M8G4
		Angled socket, M8x1, 4-pin, A-coded	Angled plug, M8x1, 4-pin, A-coded	0.3 m	8146577	NEBL-M8W4-E-0.3-N-M8W4
				0.5 m	8065103	NEBL-M8W4-E-0.5-N-M8W4
				1.0 m	8065105	NEBL-M8W4-E-1-N-M8W4
				2.0 m	8065107	NEBL-M8W4-E-2-N-M8W4
				5.0 m	8065109	NEBL-M8W4-E-5-N-M8W4
				7.5 m	8065112	NEBL-M8W4-E-7.5-N-M8W4
				10.0 m	8065116	NEBL-M8W4-E-10-N-M8W4
				15.0 m	8065120	NEBL-M8W4-E-15-N-M8W4

Datasheet – Pneumatic interface plate for valve terminal VTUX

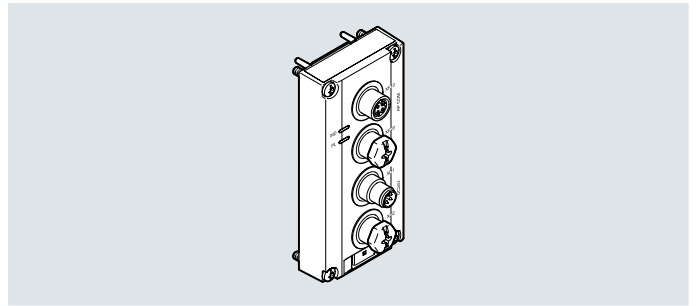
Ordering data – Accessories					
	Description		Pack size	Part no.	Type
Cover cap					
	For sealing unused connections	For connection M8x1	10	177672	ISK-M8
Plate					
	Position function 1-64: UD	Plate for ducted exhaust air, without cartridge, for mounting on interface plate for VTUX		8191794	VABF-XA-12-M2-QX
	Position function 1-64: US	Exhaust plate for mounting on interface plate for VTUX		8191741	VABF-XA-12-M1-C

Datasheet – Electrical interface for valve terminal VTUG

Function

With the electrical interface, a valve terminal VTUG can be operated as part of the remote I/O system CPX-AP-I.

- Indication of status and error messages via LED indicators
- Up to 24 valve positions with up to 48 solenoid coils
- Separate load voltage supply for the connected valves; can be disconnected separately
- Short-circuit switch-off



General technical data – Electrical interface for valve terminal VTUG

Max. number of valve positions	12 24
Max. no. of solenoid coils	24 48

Communication interface – Electrical interface for valve terminal VTUG

Communication interface, protocol	AP-COM
Communication interface, function	System communication XF10 IN / XF20 OUT
Communication interface, connection type	2 x socket
Communication interface, connection technology	M8x1, D-coded to EN 61076-2-114
Communication interface, number of pins/cores	4
Communication interface, shielding	Yes

General data – Electrical interface for valve terminal VTUG

Module parameters	Configuration of voltage monitoring load supply PL Response in error state
Diagnostics via LED	Diagnostics per module Power supply load
Diagnostics via internal communication	Load switch-off Electronics/sensors overvoltage Overvoltage load Undervoltage electronics/sensors Undervoltage load
Max. cable length	50 m system communication

Technical data – Electrical – Electrical interface for valve terminal VTUG

Max. no. of solenoid coils	24	48
Nominal operating voltage DC for electronics/sensors	24 V	
Permissible voltage fluctuations, electronics/sensors	± 25%	
Nominal operating voltage DC load	24 V	
Permissible voltage fluctuations, load	± 10%	
Note on the operating voltage	SELV/PELV power supply units required; note voltage drop	
Power failure buffering	10 ms	
Power failure buffering of load	3 ms	
Max. power supply	2 x 4 A (external fuse required)	
Fuse protection (short circuit)	Internal electronic fuse per channel	
Protection against direct and indirect contact	PELV, SELV	
Reverse polarity protection	Yes	
Intrinsic current consumption at nominal operating voltage, electronics/sensors	Typical 34 mA	
Intrinsic current consumption at nominal operating voltage, load	Typical 16 mA	Typical 22 mA

Datasheet – Electrical interface for valve terminal VTUG

Electrical connection – Power supply – Electrical interface for valve terminal VTUG

Power supply, function	Incoming electronics/sensors and load
Power supply, connection type	Plug
Power supply, connection technology	M8x1, A-coded to EN 61076-2-104
Power supply, number of pins/cores	4

Electrical connection – Power transmission – Electrical interface for valve terminal VTUG

Power transmission, function	Outgoing electronics/sensors and load
Power transmission, connection type	Socket
Power transmission, connection technology	M8x1, A-coded to EN 61076-2-104
Power transmission, number of pins/cores	4

Technical data – Mechanical – Electrical interface for valve terminal VTUG

Type of mounting	Screw-clamped
Connection position	On top
Product weight	76 g
Dimensions W x L x H	42 mm x 91 mm x 30 mm

Materials – Electrical interface for valve terminal VTUG

Housing material	Reinforced PA
Threaded sleeve material	Nickel-plated brass
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-B1/B2-L

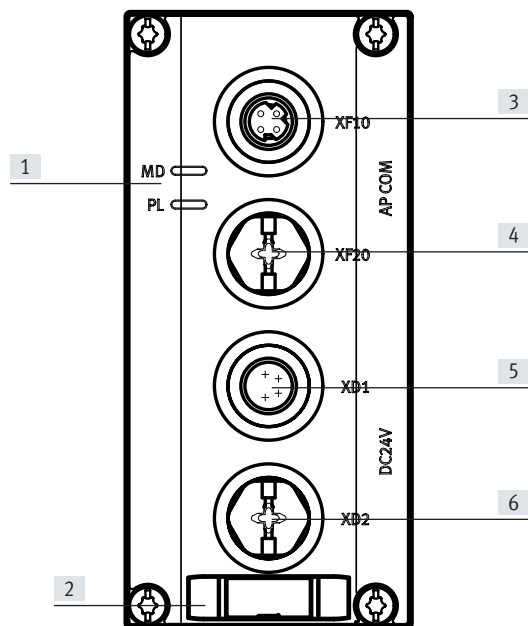
Operating and environmental conditions – Electrical interface for valve terminal VTUG

Ambient temperature	-5 ... 60 °C
Storage temperature	-20 ... 60 °C
Corrosion resistance class CRC ¹⁾	2 - Moderate corrosion stress
Relative humidity	5 - 95%, non-condensing
Nominal operating altitude	<= 2000 m NHN
CE marking (see declaration of conformity) ²⁾	To EU EMC Directive
UKCA marking (see declaration of conformity) ³⁾	To UK EMC regulations
KC marking	KC EMC
Certification	RCM Mark c UL us – Recognized (OL)
Degree of protection	IP65; IP67
Note on degree of protection	In assembled state, unused connections closed

1) More information www.festo.com/x/topic/crc2) More information www.festo.com/catalogue/... Support/Downloads.3) More information www.festo.com/catalogue/... Support/Downloads.

Datasheet – Electrical interface for valve terminal VTUG

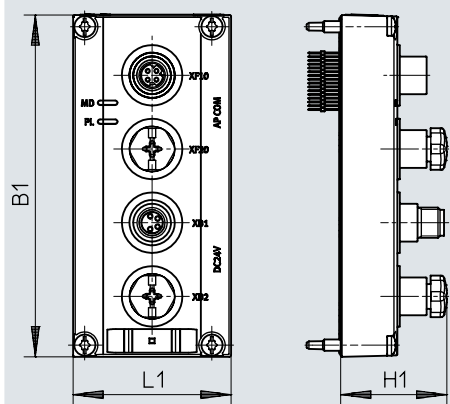
Connection and indicator components



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- [2] Space for inscription label
- [3] Communication interface
- [4] Communication interface 2
- [5] Electrical connection, power supply
- [6] Electrical connection, power transmission

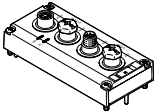
Dimensions

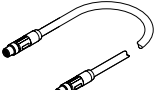
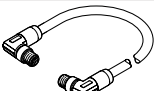
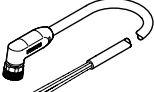
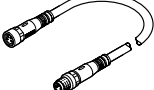
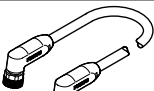
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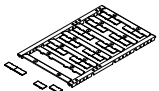
	B1	H1	L1
VAEM-L1-S-12-AP	90.5	28.1	41.8
VAEM-L1-S-24-AP	90.5	28.1	41.8

Datasheet – Electrical interface for valve terminal VTUG

Ordering data				Part no.	Type
	Electrical interface for valve terminal VTUG		12 valve positions	8081922	VAEM-L1-S-12-AP
			24 valve positions	8081923	VAEM-L1-S-24-AP

Ordering data – Accessories						
Description				Part no.	Type	
Connecting cable						
	For communication interface	Straight plug, M8x1, 4-pin, D-coded	Straight plug, M8x1, 4-pin, D-coded	0.3 m	8082902	NEBC-D8G4-ES-0.3-N-S-D8G4-ET
				0.5 m	8065123	NEBC-D8G4-ES-0.5-N-S-D8G4-ET
				1.0 m	8065125	NEBC-D8G4-ES-1-N-S-D8G4-ET
				2.0 m	8065127	NEBC-D8G4-ES-2-N-S-D8G4-ET
				5.0 m	8065129	NEBC-D8G4-ES-5-N-S-D8G4-ET
				7.5 m	8065131	NEBC-D8G4-ES-7.5-N-S-D8G4-ET
				10.0 m	8065133	NEBC-D8G4-ES-10-N-S-D8G4-ET
				15.0 m	8065135	NEBC-D8G4-ES-15-N-S-D8G4-ET
				20.0 m	8146031	NEBC-D8G4-ES-20-N-S-D8G4-ET
				25.0 m	8146032	NEBC-D8G4-ES-25-N-S-D8G4-ET
				30.0 m	8146033	NEBC-D8G4-ES-30-N-S-D8G4-ET
				40.0 m	8146034	NEBC-D8G4-ES-40-N-S-D8G4-ET
				50.0 m	8146035	NEBC-D8G4-ES-50-N-S-D8G4-ET
		Angled plug, M8x1, 4-pin, D-coded	Angled plug, M8x1, 4-pin, D-coded	0.5 m	8065124	NEBC-D8W4-ES-0.5-N-S-D8W4-ET
				1.0 m	8065126	NEBC-D8W4-ES-1-N-S-D8W4-ET
				2.0 m	8065128	NEBC-D8W4-ES-2-N-S-D8W4-ET
				5.0 m	8065130	NEBC-D8W4-ES-5-N-S-D8W4-ET
				7.5 m	8065132	NEBC-D8W4-ES-7.5-N-S-D8W4-ET
				10.0 m	8065134	NEBC-D8W4-ES-10-N-S-D8W4-ET
				15.0 m	8065136	NEBC-D8W4-ES-15-N-S-D8W4-ET
				20.0 m	8146036	NEBC-D8W4-ES-20-N-S-D8W4-ET
				25.0 m	8146037	NEBC-D8W4-ES-25-N-S-D8W4-ET
				30.0 m	8146038	NEBC-D8W4-ES-30-N-S-D8W4-ET
				40.0 m	8146039	NEBC-D8W4-ES-40-N-S-D8W4-ET
				50.0 m	8146040	NEBC-D8W4-ES-50-N-S-D8W4-ET
					For power supply	Straight socket, M8 x 1, 4-pin, A-coded
7.5 m	8065113	NEBL-M8G4-E-7.5-N-LE4				
10.0 m	8065117	NEBL-M8G4-E-10-N-LE4				
15.0 m	8065121	NEBL-M8G4-E-15-N-LE4				
		Angled socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	7.5 m	8065114	NEBL-M8W4-E-7.5-N-LE4
				10.0 m	8065118	NEBL-M8W4-E-10-N-LE4
				15.0 m	8065122	NEBL-M8W4-E-15-N-LE4
	For power transmission	Straight socket, M8 x 1, 4-pin, A-coded	Straight plug, M8x1, 4-pin, A-coded	0.3 m	8082904	NEBL-M8G4-E-0.3-N-M8G4
				0.5 m	8065102	NEBL-M8G4-E-0.5-N-M8G4
				1.0 m	8065104	NEBL-M8G4-E-1-N-M8G4
				2.0 m	8065106	NEBL-M8G4-E-2-N-M8G4
				5.0 m	8065108	NEBL-M8G4-E-5-N-M8G4
				7.5 m	8065111	NEBL-M8G4-E-7.5-N-M8G4
				10.0 m	8065115	NEBL-M8G4-E-10-N-M8G4
				15.0 m	8065119	NEBL-M8G4-E-15-N-M8G4
		Angled socket, M8x1, 4-pin, A-coded	Angled plug, M8x1, 4-pin, A-coded	0.3 m	8146577	NEBL-M8W4-E-0.3-N-M8W4
				0.5 m	8065103	NEBL-M8W4-E-0.5-N-M8W4
				1.0 m	8065105	NEBL-M8W4-E-1-N-M8W4
				2.0 m	8065107	NEBL-M8W4-E-2-N-M8W4
				5.0 m	8065109	NEBL-M8W4-E-5-N-M8W4
				7.5 m	8065112	NEBL-M8W4-E-7.5-N-M8W4
				10.0 m	8065116	NEBL-M8W4-E-10-N-M8W4
				15.0 m	8065120	NEBL-M8W4-E-15-N-M8W4

Datasheet – Electrical interface for valve terminal VTUG

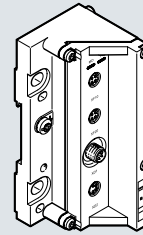
Ordering data – Accessories					
	Description		Pack size	Part no.	Type
Inscription labels					
	For modules CPX-AP-I	Size 6x 12.5 mm, 10 frames with 24 pieces each	240	8087174	ASLR-L-X4-612-P240
Cover cap					
	For sealing unused connections	For connection M8x1	10	177672	ISK-M8

Datasheet – Electrical interface for valve terminal MPA-L

Function

With the electrical interface, a valve terminal MPA-L can be operated as part of the remote I/O system CPX-AP-I.

- Indication of status and error messages via LED indicators
- Up to 32 valve positions with up to 32 solenoid coils
- Separate load voltage supply for the connected valves; can be disconnected separately
- Short-circuit switch-off, short-circuit diagnostics and switching cycle counter

**General technical data – End plate for valve terminal MPA-L**

Valve terminal design	Valve sizes can be mixed
Max. number of valve positions	32
Max. no. of solenoid coils	32

Communication interface – End plate for valve terminal MPA-L

Communication interface, protocol	AP-COM
Communication interface, function	System communication XF10 IN / XF20 OUT
Communication interface, connection type	2 x socket
Communication interface, connection technology	M8x1, D-coded to EN 61076-2-114
Communication interface, number of pins/cores	4
Communication interface, shielding	Yes

General data – End plate for valve terminal MPA-L

Diagnostics via LED	Diagnostics per module Power supply load
Diagnostics via internal communication	Electronics/sensors overvoltage Electronics/sensors undervoltage
Max. cable length	50 m system communication

Technical data – Electrical – End plate for valve terminal MPA-L

Nominal operating voltage DC for electronics/sensors	24 V
Permissible voltage fluctuations, electronics/sensors	± 25%
Nominal operating voltage DC load	24 V
Permissible voltage fluctuations, load	± 10%
Power failure buffering	10 ms
Max. power supply	2 x 4 A (external fuse required)
Fuse protection (short circuit)	Internal electronic fuse per channel
Protection against direct and indirect contact	PELV, SELV
Reverse polarity protection	Yes
Intrinsic current consumption at nominal operating voltage, electronics/sensors	Typical 30 mA
Intrinsic current consumption at nominal operating voltage, load	Typical 15 mA
Electrical isolation of outputs between channel - internal communication	Yes

Electrical connection – Power supply – End plate for valve terminal MPA-L

Power supply, function	Incoming electronics/sensors and load
Power supply, connection type	Plug
Power supply, connection technology	M8x1, A-coded to EN 61076-2-104
Power supply, number of pins/cores	4

Electrical connection – Voltage transmission – End plate for valve terminal MPA-L

Power transmission, function	Outgoing electronics/sensors and load
Power transmission, connection type	Socket
Power transmission, connection technology	M8x1, A-coded to EN 61076-2-104
Power transmission, number of pins/cores	4

Datasheet – Electrical interface for valve terminal MPA-L

Technical data – Mechanical – End plate for valve terminal MPA-L

Type of mounting	Tie rods
Connection position	On top
Product weight	194 g
Dimensions W x L x H	43.1 mm x 107.5 mm x 50.2 mm

Materials – End plate for valve terminal MPA-L

Housing material	Painted die cast aluminium Reinforced PA
Threaded sleeve material	Nickel-plated brass
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-B1/B2-L

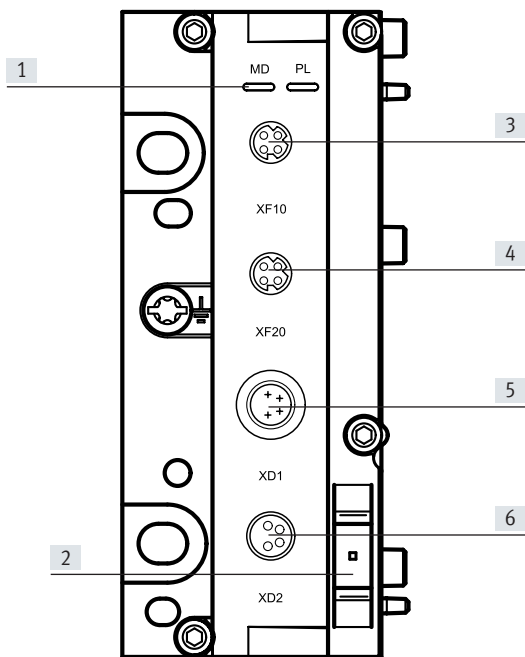
Operating and environmental conditions – End plate for valve terminal MPA-L

Ambient temperature	-5 ... 50 °C
Storage temperature	-40 ... 70 °C
Corrosion resistance class CRC ¹⁾	3 - High corrosion stress
Relative humidity	5 - 95%, non-condensing
Nominal operating altitude	<= 2000 m NHN
CE marking (see declaration of conformity) ²⁾	To EU EMC Directive To EU RoHS Directive
UKCA marking (see declaration of conformity) ³⁾	To UK EMC regulations To UK RoHS regulations
KC marking	KC EMC
Certification	RCM Mark
Degree of protection	IP65; IP67
Note on degree of protection	In assembled state, unused connections closed

1) More information www.festo.com/x/topic/crc2) More information www.festo.com/catalogue/... Support/Downloads.3) More information www.festo.com/catalogue/... Support/Downloads.

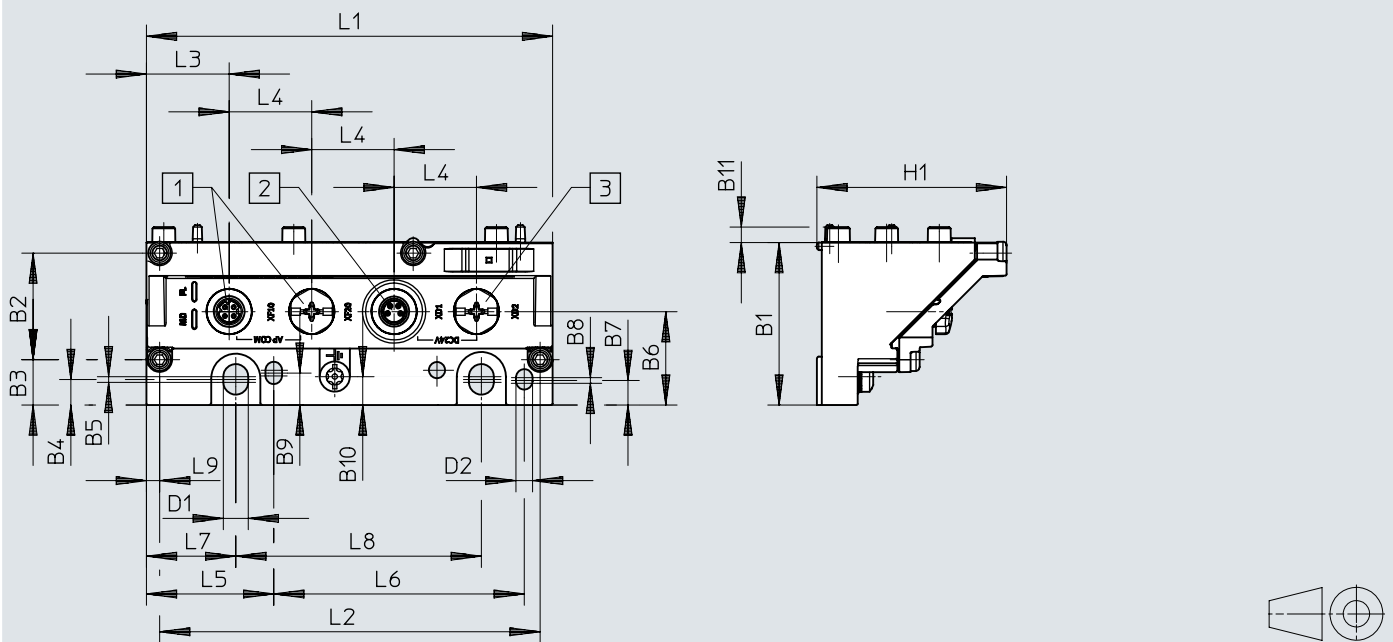
Datasheet – Electrical interface for valve terminal MPA-L

Connection and indicator components



- [1] LED indicators
- [2] Space for inscription label
- [3] Communication interface
- [4] Communication interface 2
- [5] Electrical connection, power supply
- [6] Electrical connection, power transmission

Dimensions Download CAD data → www.festo.com

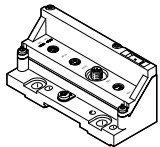


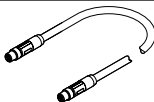
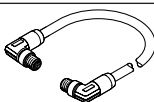
- [1] Socket M8x1, D-coded [2] Plug M8x1, A-coded [3] Socket M8x1, A-coded

	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	D1	D2	H1
VMPAL-EPL-AP	43	28.2	12	6.8	1.5	24.7	6.5	1.5	8.5	7.5	4.1	6.6	4.4	50.2

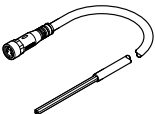
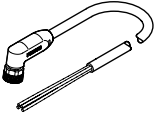
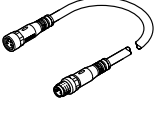
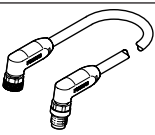
	L1	L2	L3	L4	L5	L6	L7	L8	L9
VMPAL-EPL-AP	107.5	100.7	21.9	21.8	33.7	66.3	23.7	65	3.5

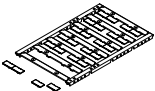
Datasheet – Electrical interface for valve terminal MPA-L

Ordering data			Part no.	Type
	Electrical interface for valve terminal MPA-L	32 valve positions	8087171	VMPAL-EPL-AP

Ordering data – Accessories						
Description			Part no.	Type		
Connecting cable						
	For communication interface	Straight plug, M8x1, 4-pin, D-coded	Straight plug, M8x1, 4-pin, D-coded	0.3 m	8082902	NEBC-D8G4-ES-0.3-N-S-D8G4-ET
				0.5 m	8065123	NEBC-D8G4-ES-0.5-N-S-D8G4-ET
				1.0 m	8065125	NEBC-D8G4-ES-1-N-S-D8G4-ET
				2.0 m	8065127	NEBC-D8G4-ES-2-N-S-D8G4-ET
				5.0 m	8065129	NEBC-D8G4-ES-5-N-S-D8G4-ET
				7.5 m	8065131	NEBC-D8G4-ES-7.5-N-S-D8G4-ET
				10.0 m	8065133	NEBC-D8G4-ES-10-N-S-D8G4-ET
				15.0 m	8065135	NEBC-D8G4-ES-15-N-S-D8G4-ET
				20.0 m	8146031	NEBC-D8G4-ES-20-N-S-D8G4-ET
				25.0 m	8146032	NEBC-D8G4-ES-25-N-S-D8G4-ET
				30.0 m	8146033	NEBC-D8G4-ES-30-N-S-D8G4-ET
				40.0 m	8146034	NEBC-D8G4-ES-40-N-S-D8G4-ET
				50.0 m	8146035	NEBC-D8G4-ES-50-N-S-D8G4-ET
		Angled plug, M8x1, 4-pin, D-coded	Angled plug, M8x1, 4-pin, D-coded	0.5 m	8065124	NEBC-D8W4-ES-0.5-N-S-D8W4-ET
				1.0 m	8065126	NEBC-D8W4-ES-1-N-S-D8W4-ET
				2.0 m	8065128	NEBC-D8W4-ES-2-N-S-D8W4-ET
				5.0 m	8065130	NEBC-D8W4-ES-5-N-S-D8W4-ET
				7.5 m	8065132	NEBC-D8W4-ES-7.5-N-S-D8W4-ET
				10.0 m	8065134	NEBC-D8W4-ES-10-N-S-D8W4-ET
				15.0 m	8065136	NEBC-D8W4-ES-15-N-S-D8W4-ET
				20.0 m	8146036	NEBC-D8W4-ES-20-N-S-D8W4-ET
				25.0 m	8146037	NEBC-D8W4-ES-25-N-S-D8W4-ET
				30.0 m	8146038	NEBC-D8W4-ES-30-N-S-D8W4-ET
				40.0 m	8146039	NEBC-D8W4-ES-40-N-S-D8W4-ET
				50.0 m	8146040	NEBC-D8W4-ES-50-N-S-D8W4-ET

Datasheet – Electrical interface for valve terminal MPA-L

Ordering data – Accessories						
	Description			Part no.	Type	
Connecting cable						
	For power supply	Straight socket, M8 x 1, 4-pin, A-coded	Open cable end, 4-core	5.0 m	8065110	NEBL-M8G4-E-5-N-LE4
				7.5 m	8065113	NEBL-M8G4-E-7.5-N-LE4
				10.0 m	8065117	NEBL-M8G4-E-10-N-LE4
				15.0 m	8065121	NEBL-M8G4-E-15-N-LE4
		Angled socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	7.5 m	8065114	NEBL-M8W4-E-7.5-N-LE4
				10.0 m	8065118	NEBL-M8W4-E-10-N-LE4
				15.0 m	8065122	NEBL-M8W4-E-15-N-LE4
	For power transmission	Straight socket, M8 x 1, 4-pin, A-coded	Straight plug, M8x1, 4-pin, A-coded	0.3 m	8082904	NEBL-M8G4-E-0.3-N-M8G4
				0.5 m	8065102	NEBL-M8G4-E-0.5-N-M8G4
				1.0 m	8065104	NEBL-M8G4-E-1-N-M8G4
				2.0 m	8065106	NEBL-M8G4-E-2-N-M8G4
				5.0 m	8065108	NEBL-M8G4-E-5-N-M8G4
				7.5 m	8065111	NEBL-M8G4-E-7.5-N-M8G4
				10.0 m	8065115	NEBL-M8G4-E-10-N-M8G4
				15.0 m	8065119	NEBL-M8G4-E-15-N-M8G4
		Angled socket, M8x1, 4-pin, A-coded	Angled plug, M8x1, 4-pin, A-coded	0.3 m	8146577	NEBL-M8W4-E-0.3-N-M8W4
				0.5 m	8065103	NEBL-M8W4-E-0.5-N-M8W4
				1.0 m	8065105	NEBL-M8W4-E-1-N-M8W4
				2.0 m	8065107	NEBL-M8W4-E-2-N-M8W4
				5.0 m	8065109	NEBL-M8W4-E-5-N-M8W4
				7.5 m	8065112	NEBL-M8W4-E-7.5-N-M8W4
				10.0 m	8065116	NEBL-M8W4-E-10-N-M8W4
				15.0 m	8065120	NEBL-M8W4-E-15-N-M8W4

Ordering data – Accessories					
	Description	Pack size	Part no.	Type	
Inscription labels					
	For modules CPX-AP-I	Size 6x 12.5 mm, 10 frames with 24 pieces each	240	8087174	ASLR-L-X4-612-P240
Cover cap					
	For sealing unused connections	For connection M8x1	10	177672	ISK-M8