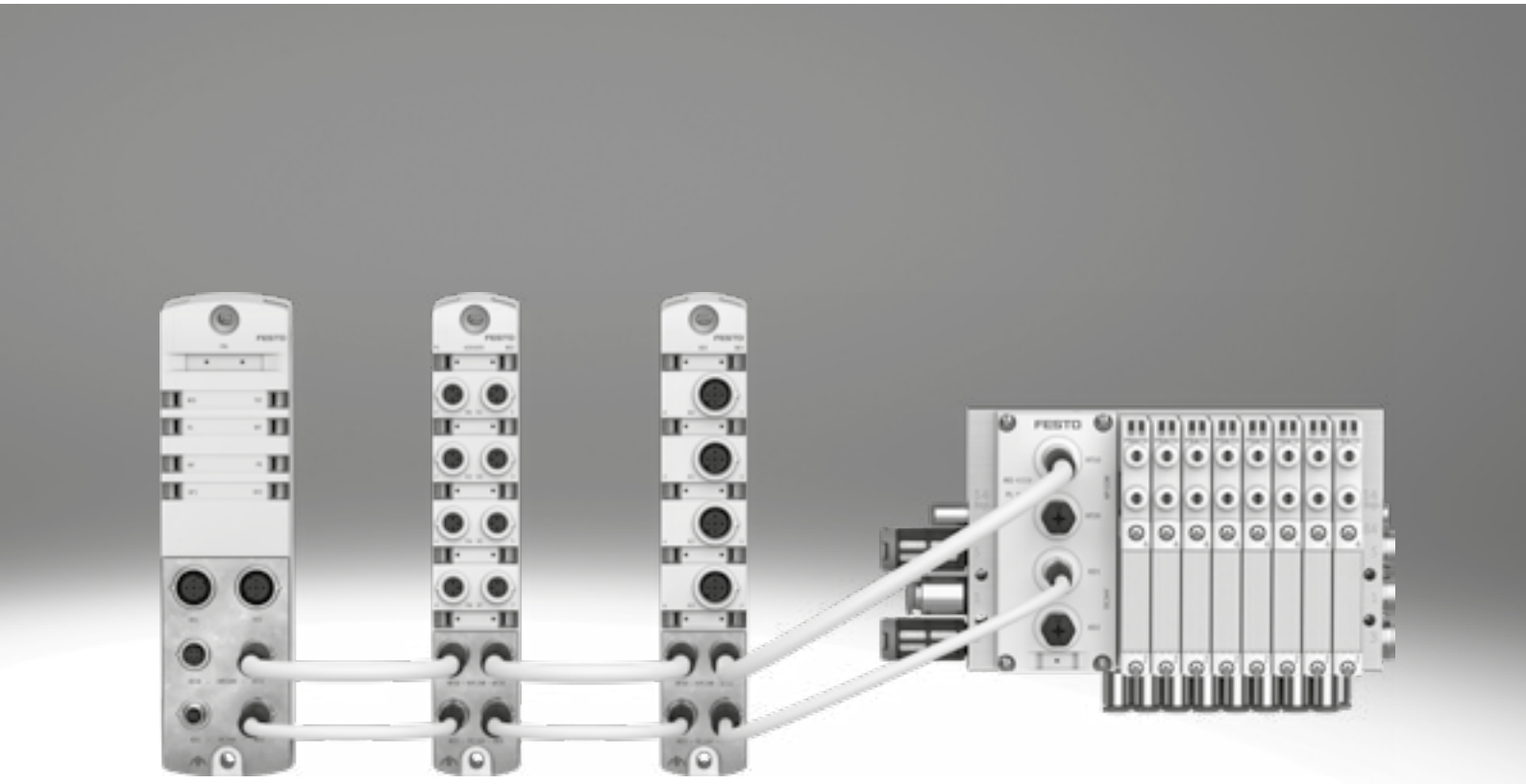
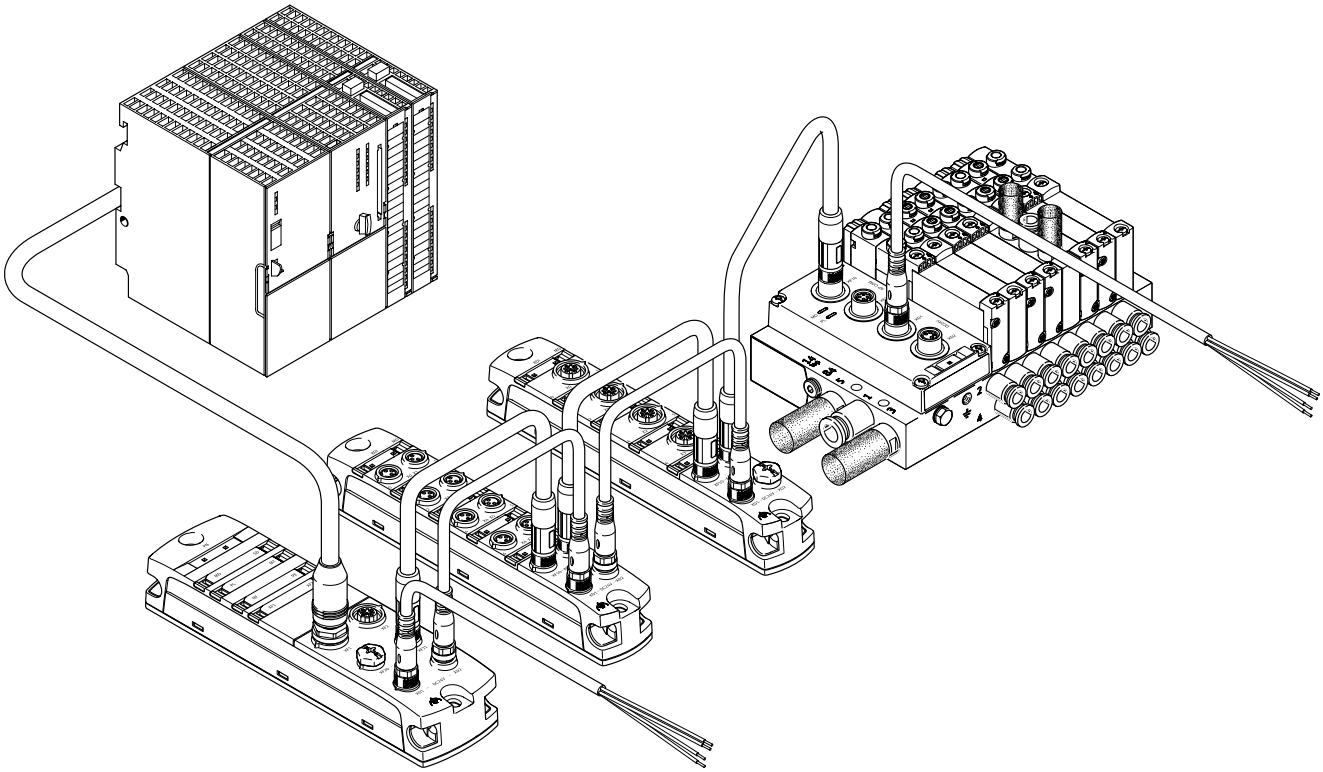
Automation system CPX-AP-I



NEW

Key features



Key features

CPX-AP-I is a flexible, decentralised, compact and lightweight automation system with high degree of protection IP65/IP67.
The performance of the system is future-proof in terms of the forthcoming 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:

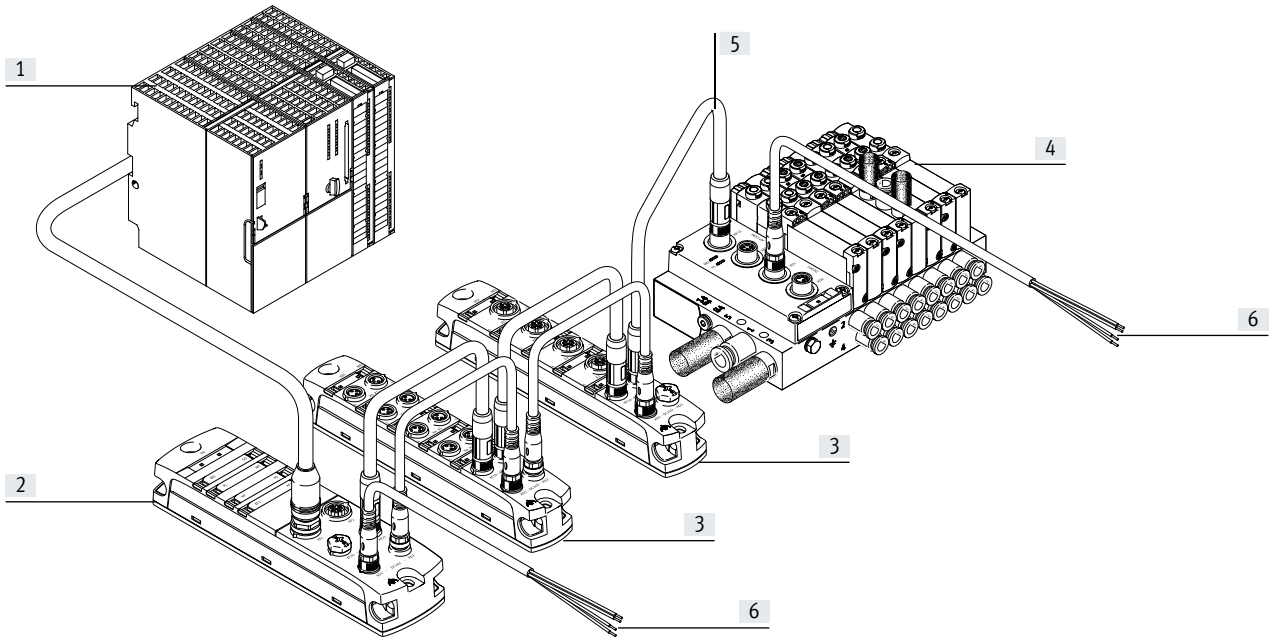
- Extremely easy to assemble
- Separate cables for communication and power supply to form voltage zones and for stable data transfer
- Electrical isolation of output channels
- Digital electronic rating plate available
- Easy to update firmware
- Simple maintenance access to the system via Ethernet
- 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
- Choice of M8 or M12 electrical connections
- Cable length up to 50 m cable length between the modules

An automation system CPX-AP-I consists of 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
- Input/output modules
- Interface to the valve terminal

Key features

Overview



[1] Higher-order controller

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

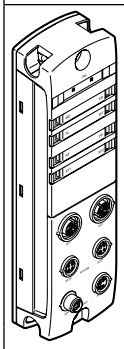
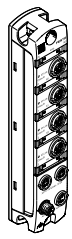
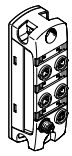
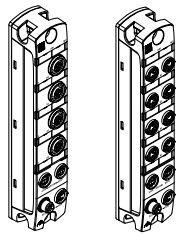
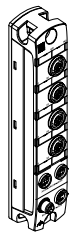
[3] Input module, output module or input/output module; allows sensors and actuators to be connected to the automation system CPX-AP-I. Up to 80 modules per bus interface possible

[4] Valve terminal with electrical interface for CPX-AP-I. Behaves like an output module within the automation system CPX-AP-I

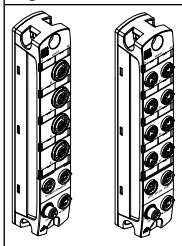
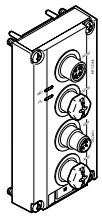
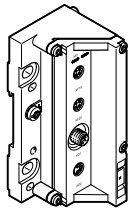
[5] Connecting cable for communication between the modules and the bus interface. The maximum line length from the bus interface to the module is 50 m

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

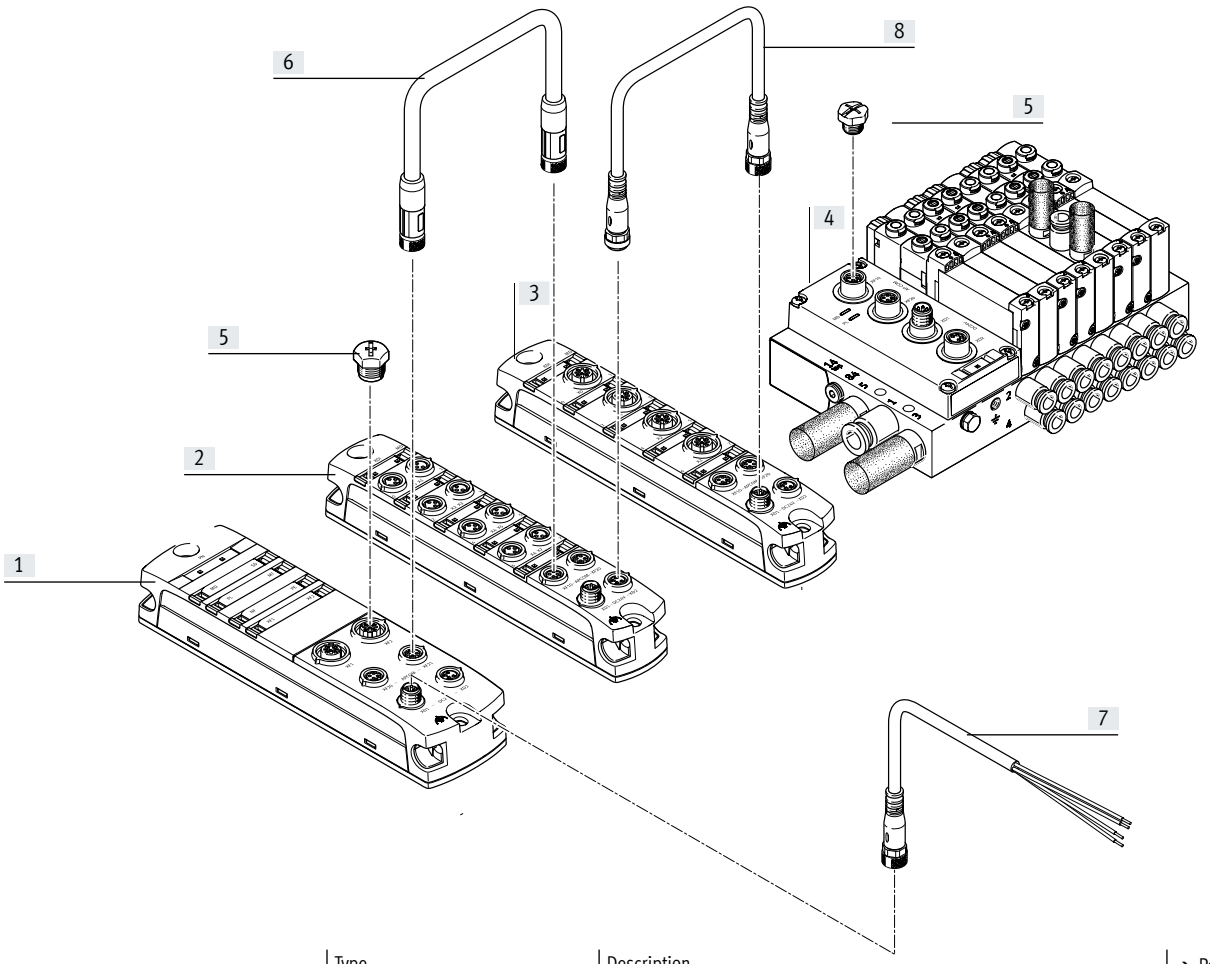
Product range overview

Function	Design		Type		→ Page
Bus interface	**Interface**				
		PROFINET	CPX-AP-I-PN-M12	• Control via PROFINET • Two PROFINET connections • Two connections for system communication • Two connections for power supply and transmission	11
		PROFIBUS	CPX-AP-I-PB-M12	• Activation via PROFIBUS • Two PROFIBUS connections • Two connections for system communication • Two connections for power supply and transmission	16
		EtherCAT	CPX-AP-I-EC-M12	• Control via EtherCAT • Two EtherCAT connections • Two connections for system communication • Two connections for power supply and transmission	21
		EtherNet/IP	CPX-AP-I-EP-M12	• Control via EtherNet/IP • Two Ethernet connections • Two connections for system communication • Two connections for power supply and transmission	21
IO-Link master		4 IO-Link connections	CPX-AP-I-4IOL-M12	• LED display • Master V 1.1 • Electrical connection M12x1, 5-pin	31
Input module	**Digital**				
		4 inputs	CPX-AP-I-4DI	• LED display • PNP (positive switching) • Characteristic curve of inputs according to IEC 61131-2, type 3 • Electrical connection M8x1, 3-pin	37
		8 inputs	CPX-AP-I-8DI	• LED display • PNP (positive switching) • Characteristic curve of inputs according to IEC 61131-2, type 3 • Electrical connection M8x1, 3-pin • Electrical connection M12x1, 5-pin	42
	Analogue				
		4 inputs	CPX-AP-I-4AI	• LED display • Current, voltage, temperature or resistance measurement • Electrical connection M12x1, 5-pin	48

Product range overview

Function	Design		Type		→ Page
Input/output module	**Digital**				
		• 4 inputs • 4 outputs	CPX-AP-I-4DI4DO	• LED display • PNP (positive switching) • Characteristic curve of inputs according to IEC 61131-2, type 3 • Characteristic curve outputs to IEC 61131-2, type 0.5 • Electrical connection M8x1, 3-pin • Electrical connection M12x1, 5-pin	53
Electrical interface for valve terminal	**Valve terminal VTUG**				
		• 12 or 24 valve positions • Up to 48 solenoid coils	VAEM-L1-S	• LED display • 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 linkage • 130 … 1000 l/min flow rate	59
	Valve terminal MPA-L				
		• 32 valve positions • Up to 32 solenoid coils	VMPAL-EPL-AP	• LED display • 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	64

Peripherals overview



		Type	Description	→ Page/Internet
[1]	Bus interface	CPX-AP-I-PN-M12	Connection of the CPX-AP-I to a higher-order controller	11
		CPX-AP-I-PB-M12		16
		CPX-AP-I-EC-M12		21
		CPX-AP-I-EP-M12		26
[2]	Module with M8 connections	CPX-AP-I-4DI-M8-3P	Digital input and input/output modules	37
		CPX-AP-I-8DI-M8-3P		42
		CPX-AP-I-4DI4DO-M8-3P		53
[3]	Module with M12 connections	CPX-AP-I-4IOL-M12	IO-Link master	31
		CPX-AP-I-8DI-M12-5P	Digital and analogue input and input/output modules	42
		CPX-AP-I-4AI-U-I-RTD-M12		48
		CPX-AP-I-4DI4DO-M12-5P		53
[4]	Electrical interface for valve terminal	VAEM-L1-S	For valve terminal VTUG	59
		VMPAL-EPL-AP	For valve terminal MPA-L	64
[5]	Cover cap	ISK-M8	For sealing unused electrical connections, connection size M8 and M12	isk
		ISK-M12		
[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

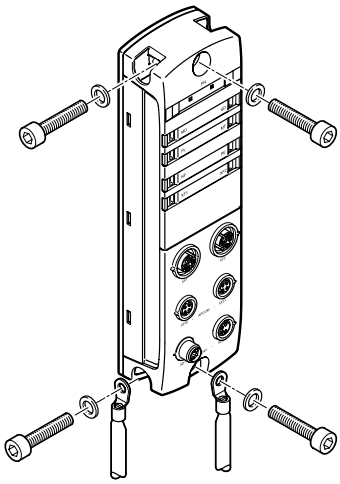
Note

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

Key features – Assembly

Assembly

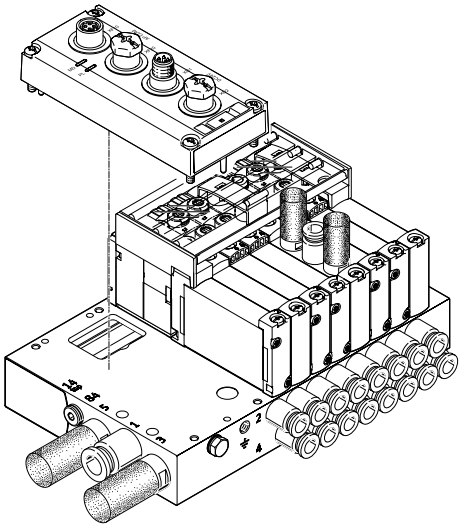
Assembly – Modules



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). Secure mounting requires two screws with correctly sized washers (not included in the scope of delivery).

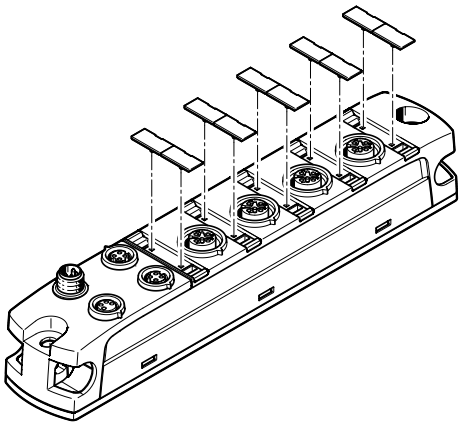
The mounting holes likewise include the earthing connection for the modules.

Assembly – Electrical interface



The electrical interfaces are mounted directly on the associated valve terminal. Options for wall mounting or H-rail mounting depend on the mounting options for the valve terminal in question.

Labels

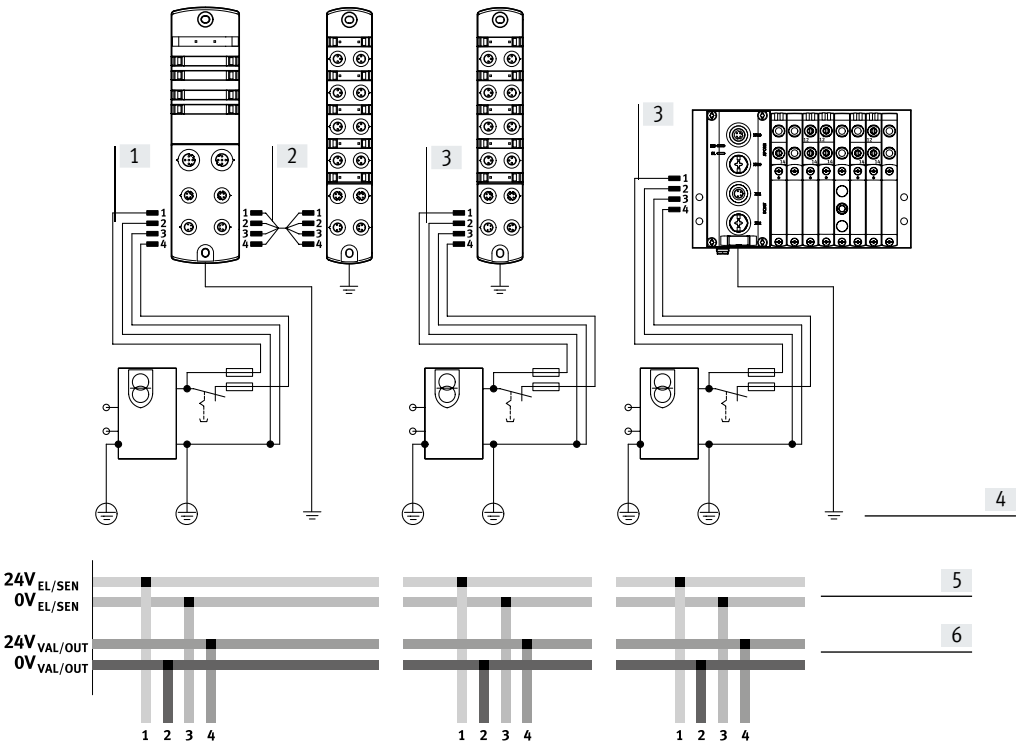


All modules are supplied with the same, clip-on inscription labels.
The inscription label is made up of two parts and can be divided into two smaller units if required.
Labelling templates can be downloaded from the Support Portal:
➔ Internet: CPX-AP-I
In the “Software” area.

NEW

Key features – Power supply

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] Earthing connection
[5] Power supply for the internal electronics and sensors
[6] Power supply for electrical outputs and valves

In principle, the automation 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 automation 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-pin 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

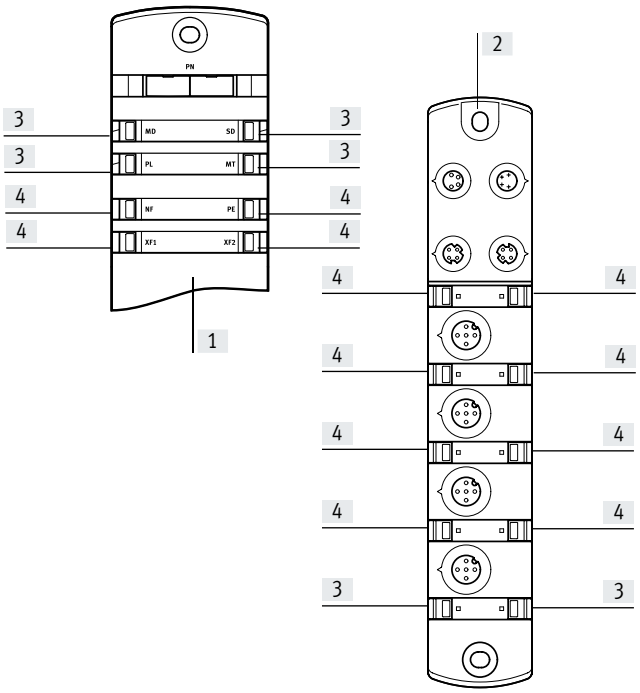
Detailed diagnostic functions are needed in order to quickly locate the causes of errors in the electrical installation and therefore reduce downtimes in production plants.
A basic distinction is made between on-the-spot diagnostics using LEDs and diagnostics using a bus interface.

The automation 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 good visual access to status and diagnostic information.

Module and channel-specific diagnostics are supported, for example
- Undervoltage identification
- 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.

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

Parameterisation

Various parameters are available for reading out information about the modules of the automation system CPX-AP-I and adapting the modules to the application situation.

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 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 allocated 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

Note

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

Overview – Allocated addresses for CPX-AP-I modules

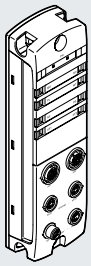
		Inputs [bytes]	Outputs [bytes]
CPX-AP-I-4IOL-M12	IO-Link master	12 ... 132	8 ... 128
CPX-AP-I-4DI-M8-3P	Digital input module, 4 inputs	1	–
CPX-AP-I-8DI-M8-3P	Digital input module, 8 inputs	1	–
CPX-AP-I-8DI-M12-5P	Digital input module, 8 inputs	1	–
CPX-AP-I-4AI-U-I-RTD-M12	Analogue input module, 4 inputs	8	–
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
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]	Comments
26x CPX-AP-I-8DI-M8-3P	26	–	• The maximum number of modules is 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	
Allocated address space	71	81	

Data sheet – PROFINET interface

Interface for operating the automation 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 via 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		
Fieldbus interface		
Protocol		PROFINET IRT
		PROFINET RT
Function		Bus connection incoming/outgoing
Transmission rate	[Mbps]	100
Type		Ethernet
Connection type		2 x socket
Connection technology		M12x1, D-coded to EN 61076-2-101
Number of pins/wires		4
Galvanic isolation		Yes
Max. address capacity outputs	[byte]	1024
Max. address capacity inputs	[byte]	1024
Communication interface		
Protocol		AP-COM
Function		System communication XF10 IN / XF20 OUT
Connection type		2 x socket
Connection technology		M8x1, D-coded to EN 61076-2-114
Number of pins/wires		4
Shielding		Yes

Data sheet – PROFINET interface

General data		
Configuration support		GSDML file
Maximum number of modules		80
Diagnostics via LED		Network error
		Diagnostics per module
		Power supply, electronics/sensors
		Power supply, load
		System diagnostics
		Maintenance required
Diagnostics via bus		Load overvoltage
		Load undervoltage
		Load switch-off
		Electronics/sensors overvoltage
		Electronics/sensors undervoltage
		Logic supply undervoltage
		APDD invalid
		Communication to AP module interrupted
Diagnostics per internal communication		Module error
		Short circuit/overload in sensor supply
		Short circuit/overload at output
		Undervoltage in load supply
Maximum cable length	[m]	50 system communication
Information on maximum cable length		Power supply according to nominal voltage
Reverse polarity protection		Yes

Technical data – Electrical components		
Nominal operating voltage, electronics/sensors	[V DC]	24
Nominal operating voltage, load	[V DC]	24
Permissible voltage fluctuations, electronics/sensors	[%]	±25
Permissible voltage fluctuations, load	[%]	±25
Note regarding operating voltage		SELV/PELV power supply units required
		Note voltage drop
Power failure buffering	[ms]	10
Max. power supply	[A]	2x 4
		External fuse required
Intrinsic current consumption at nominal operating voltage, electronics/sensors	[mA]	Typically 80
Intrinsic current consumption at nominal operating voltage, load	[mA]	Typically 5
Electrical connection, power supply		
Function		Incoming electronics/sensors and load
Connection type		Plug
Connection technology		M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4
Electrical connection, power transmission		
Function		Outgoing electronics/sensors and load
Connection type		Socket
Connection technology		M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4

Technical data – Mechanical components		
Type of mounting		Via through-hole
Product weight	[g]	186
Dimensions W x L x H	[mm]	45 x 170 x 35
Tightening torque	[Nm]	1.2

Materials		
Housing		PA
		PC
		Nickel-plated, die-cast zinc
Note on materials		RoHS-compliant

Data sheet – PROFINET interface

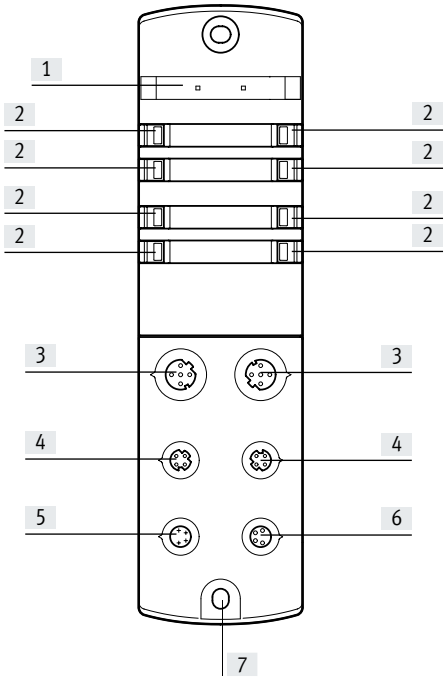
Operating and environmental conditions		
Ambient temperature	[°C]	–20 … +50
Storage temperature	[°C]	–40 … +70
Corrosion resistance class CRC[1)]		1
Relative humidity	[%]	5 … 95
		Non-condensing
CE marking (see declaration of conformity)[3)]		To EU EMC Directive[2)]
KC mark		KC EMC
Certification		RCM compliance mark
Degree of protection		IP65
		IP67
Note on degree of protection		Unused connections sealed

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry indoor application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

3) Additional information: www.festo.com/sp ➔ Certificates.

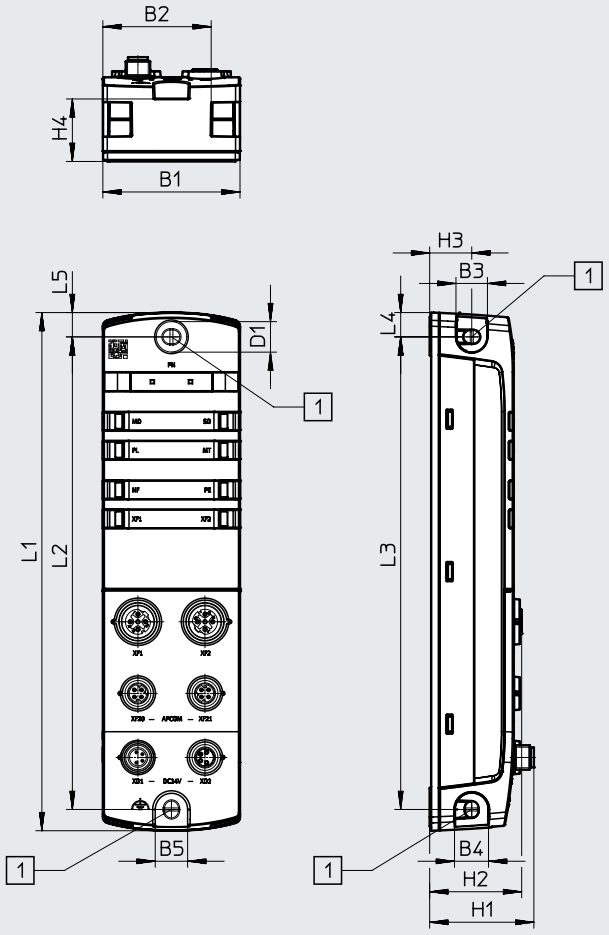
Connections and indicators



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

Data sheet – PROFINET interface

Dimensions Download CAD data ➔ www.festo.com

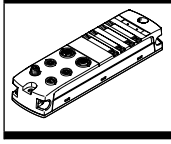


[1] Mounting hole for M4 screws

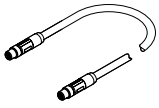
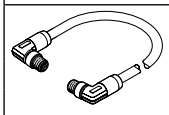
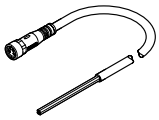
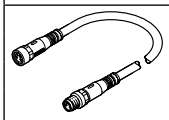
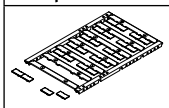
	B1	B2	B3	B4	B5	D1 ø	H1	H2	H3	H4	L1	L2	L3	L4	L5
CPX-AP-I-PN-M12	45	35.5	10	11	11	10	34.2	30.2	13.8	20.5	170	155	155	8	8

Data sheet – PROFINET interface

Ordering data

		Part no.	Type
	PROFINET Interface	**8086607**	**CPX-AP-I-PN-M12**

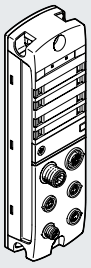
Ordering data – Accessories

	Description				Part no.	Type	PU[1]
Plugs for self-assembly							
	For bus connection	Straight plug, M12x1, 4-pin, D-coded			**543109**	**NECU-M-S-D12G4-C2-ET**	1
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**	1
				0.5 m	**8065123**	**NEBC-D8G4-ES-0.5-N-S-D8G4-ET**	1
				1.0 m	**8065125**	**NEBC-D8G4-ES-1-N-S-D8G4-ET**	1
				2.0 m	**8065127**	**NEBC-D8G4-ES-2-N-S-D8G4-ET**	1
				5.0 m	**8065129**	**NEBC-D8G4-ES-5-N-S-D8G4-ET**	1
				7.5 m	**8065131**	**NEBC-D8G4-ES-7.5-N-S-D8G4-ET**	1
				10.0 m	**8065133**	**NEBC-D8G4-ES-10-N-S-D8G4-ET**	1
				15.0 m	**8065135**	**NEBC-D8G4-ES-15-N-S-D8G4-ET**	1
		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
				1.0 m	**8065126**	**NEBC-D8W4-ES-1-N-S-D8W4-ET**	1
				2.0 m	**8065128**	**NEBC-D8W4-ES-2-N-S-D8W4-ET**	1
				5.0 m	**8065130**	**NEBC-D8W4-ES-5-N-S-D8W4-ET**	1
				7.5 m	**8065132**	**NEBC-D8W4-ES-7.5-N-S-D8W4-ET**	1
				10.0 m	**8065134**	**NEBC-D8W4-ES-10-N-S-D8W4-ET**	1
				15.0 m	**8065136**	**NEBC-D8W4-ES-15-N-S-D8W4-ET**	1
	For power supply	Straight socket, M8 x 1, 4-pin, A-coded	Open cable end, 4-wire	5.0 m	**8065110**	**NEBL-M8G4-E-5-N-LE4**	1
				7.5 m	**8065113**	**NEBL-M8G4-E-7.5-N-LE4**	1
				10.0 m	**8065117**	**NEBL-M8G4-E-10-N-LE4**	1
				15.0 m	**8065121**	**NEBL-M8G4-E-15-N-LE4**	1
	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**	1
				0.5 m	**8065102**	**NEBL-M8G4-E-0.5-N-M8G4**	1
				1.0 m	**8065104**	**NEBL-M8G4-E-1-N-M8G4**	1
				2.0 m	**8065106**	**NEBL-M8G4-E-2-N-M8G4**	1
				5.0 m	**8065108**	**NEBL-M8G4-E-5-N-M8G4**	1
				7.5 m	**8065111**	**NEBL-M8G4-E-7.5-N-M8G4**	1
				10.0 m	**8065115**	**NEBL-M8G4-E-10-N-M8G4**	1
				15.0 m	**8065119**	**NEBL-M8G4-E-15-N-M8G4**	1
Inscription label							
	For modules CPX-AP-I	Size 6x 12.5 mm, 10 frames with 24 pieces each			**8087174**	**ASLR-L-X4-612-P240**	240
Cover cap							
	For sealing unused connections		For connection M8x1		**177672**	**ISK-M8**	10

1) Packaging unit.

Data sheet – PROFIBUS interface

Interface for operating the automation 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 extend it further.

General technical data

Fieldbus interface						
Protocol		PROFIBUS DP-V1				
Function		Incoming bus connection				
Transmission rate	[kbps]	9.6	19.2	93.75	187.5	500
	[Mbps]	1.5	3	6	12	
Type		PROFIBUS				
Connection type		Plug				
Connection technology		M12x1, B-coded as per EN 61076-2-101				
Number of pins/wires		5				
Galvanic isolation		Yes				
Fieldbus interface 2						
Protocol		PROFIBUS DP-V1				
Function		Bus connection outgoing				
Transmission rate	[kbps]	9.6	19.2	93.75	187.5	500
	[Mbps]	1.5	3	6	12	
Type		PROFIBUS				
Connection type		Socket				
Connection technology		M12x1, B-coded as per EN 61076-2-101				
Number of pins/wires		5				
Galvanic isolation		Yes				
Note on fieldbus interface		Terminating resistor at socket possible				
Communication interface						
Protocol		AP-COM				
Function		System communication XF10 IN / XF20 OUT				
Connection type		2 x socket				
Connection technology		M8x1, D-coded to EN 61076-2-114				
Number of pins/wires		4				
Shielding		Yes				

Data sheet – PROFIBUS interface

General data		
Configuration support		GSD file
Maximum number of modules		56
Max. address capacity outputs	[byte]	244
Max. address capacity inputs	[byte]	244
Diagnostics via LED		Buffer error LED (BF)
		Diagnostics per module
		Power supply, electronics/sensors
		Power supply, load
		System diagnostics
		Maintenance required
Diagnostics via bus		Load switch-off
		Load overvoltage
		Load undervoltage
		Electronics/sensors overvoltage
		Electronics/sensors undervoltage
		APDD invalid
		Communication to AP module interrupted
Maximum cable length	[m]	50 system communication
Reverse polarity protection		Yes

Technical data – Electrical components		
Nominal operating voltage, electronics/sensors	[V DC]	24
Nominal operating voltage, load	[V DC]	24
Permissible voltage fluctuations, electronics/sensors	[%]	±25
Permissible voltage fluctuations, load	[%]	±25
Note regarding operating voltage		SELV/PELV power supply units required
		Note voltage drop
Power failure buffering	[ms]	10
Max. power supply	[A]	2x 4
		External fuse required
Intrinsic current consumption at nominal operating voltage, electronics/sensors	[mA]	Typically 80
Intrinsic current consumption at nominal operating voltage, load	[mA]	Typically 5
Electrical connection, power supply		
Function		Incoming electronics/sensors and load
Connection type		Plug
Connection technology		M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4
Electrical connection, power transmission		
Function		Outgoing electronics/sensors and load
Connection type		Socket
Connection technology		M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4

Technical data – Mechanical components		
Type of mounting		Via through-hole
Product weight	[g]	186
Dimensions W x L x H	[mm]	45 x 170 x 35

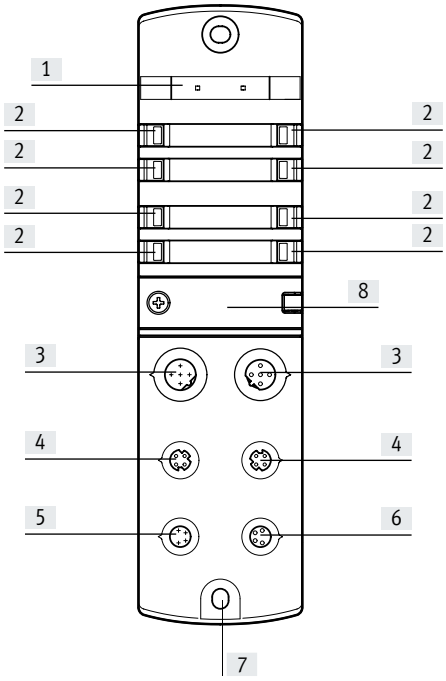
Materials	
Housing	PA
	PC
	Nickel-plated, die-cast zinc
Note on materials	RoHS-compliant

Data sheet – PROFIBUS interface

Operating and environmental conditions		
Ambient temperature	[°C]	–20 … +50
Storage temperature	[°C]	–40 … +70
Corrosion resistance class CRC[1]		1
Relative humidity	[%]	5 … 95
		Non-condensing
CE marking (see declaration of conformity)[3]		To EU EMC Directive[2]
KC mark		KC EMC
Certification		RCM compliance mark
Degree of protection		IP65
		IP67
Note on degree of protection		Unused connections sealed

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry indoor application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).
2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.
3) Additional information: www.festo.com/sp ➔ Certificates.

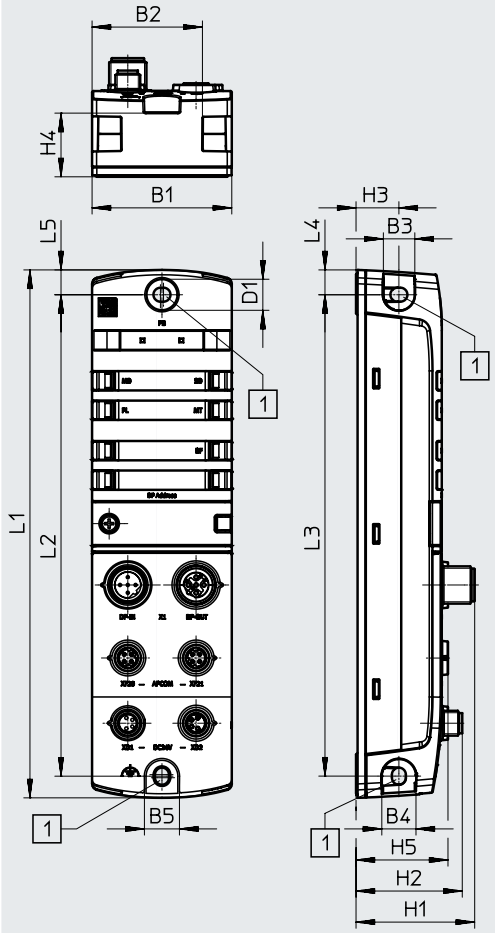
Connections and indicators



[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] Earthing connection
[8] DIL switch

Data sheet – PROFIBUS interface

Dimensions Download CAD data ➔ www.festo.com

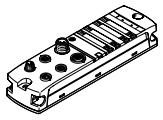


[1] Mounting hole for M4 screws

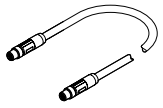
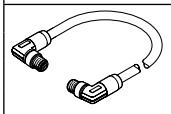
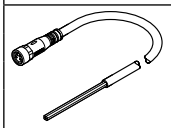
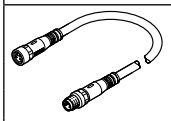
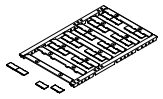
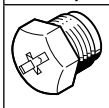
	B1	B2	B3	B4	B5	D1 ⌀	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5
CPX-AP-I-PB-M12	45	35.5	10	11	11	10	38.2	34.2	13.8	20.5	29.6	170	155	155	8	8

Data sheet – PROFIBUS interface

Ordering data

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

Ordering data – Accessories

	Description				Part no.	Type	PU[1]
Plugs for self-assembly							
	For bus connection	Straight socket, M12x1, 5-pin, B-coded			**1067905**	**NECU-M-B12G5-C2-PB**	1
		Straight plug, M12x1, 5-pin, B-coded			**1066354**	**NECU-M-S-B12G5-C2-PB**	1
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**	1
				0.5 m	**8065123**	**NEBC-D8G4-ES-0.5-N-S-D8G4-ET**	1
				1.0 m	**8065125**	**NEBC-D8G4-ES-1-N-S-D8G4-ET**	1
				2.0 m	**8065127**	**NEBC-D8G4-ES-2-N-S-D8G4-ET**	1
				5.0 m	**8065129**	**NEBC-D8G4-ES-5-N-S-D8G4-ET**	1
				7.5 m	**8065131**	**NEBC-D8G4-ES-7.5-N-S-D8G4-ET**	1
				10.0 m	**8065133**	**NEBC-D8G4-ES-10-N-S-D8G4-ET**	1
				15.0 m	**8065135**	**NEBC-D8G4-ES-15-N-S-D8G4-ET**	1
		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
				1.0 m	**8065126**	**NEBC-D8W4-ES-1-N-S-D8W4-ET**	1
				2.0 m	**8065128**	**NEBC-D8W4-ES-2-N-S-D8W4-ET**	1
				5.0 m	**8065130**	**NEBC-D8W4-ES-5-N-S-D8W4-ET**	1
				7.5 m	**8065132**	**NEBC-D8W4-ES-7.5-N-S-D8W4-ET**	1
				10.0 m	**8065134**	**NEBC-D8W4-ES-10-N-S-D8W4-ET**	1
				15.0 m	**8065136**	**NEBC-D8W4-ES-15-N-S-D8W4-ET**	1
	For power supply	Straight socket, M8 x 1, 4-pin, A-coded	Open cable end, 4-wire	5.0 m	**8065110**	**NEBL-M8G4-E-5-N-LE4**	1
				7.5 m	**8065113**	**NEBL-M8G4-E-7.5-N-LE4**	1
				10.0 m	**8065117**	**NEBL-M8G4-E-10-N-LE4**	1
				15.0 m	**8065121**	**NEBL-M8G4-E-15-N-LE4**	1
	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**	1
				0.5 m	**8065102**	**NEBL-M8G4-E-0.5-N-M8G4**	1
				1.0 m	**8065104**	**NEBL-M8G4-E-1-N-M8G4**	1
				2.0 m	**8065106**	**NEBL-M8G4-E-2-N-M8G4**	1
				5.0 m	**8065108**	**NEBL-M8G4-E-5-N-M8G4**	1
				7.5 m	**8065111**	**NEBL-M8G4-E-7.5-N-M8G4**	1
				10.0 m	**8065115**	**NEBL-M8G4-E-10-N-M8G4**	1
				15.0 m	**8065119**	**NEBL-M8G4-E-15-N-M8G4**	1
Inscription label							
	For modules CPX-AP-I	Size 6x 12.5 mm, 10 frames with 24 pieces each			**8087174**	**ASLR-L-X4-612-P240**	240
Cover cap							
	For sealing unused connections		For connection M8x1		**177672**	**ISK-M8**	10

1) Packaging unit.

Data sheet – EtherCAT interface

Interface for operating the automation 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		
Fieldbus interface		
Protocol		EtherCAT
Function		Bus connection incoming/outgoing
Transmission rate	[Mbps]	100
Type		Ethernet
Connection type		2 x socket
Connection technology		M12x1, D-coded to EN 61076-2-101
Number of pins/wires		4
Galvanic isolation		Yes
Max. address capacity outputs	[byte]	2048
Max. address capacity inputs	[byte]	2048
Communication interface		
Protocol		AP-COM
Function		System communication XF10 IN / XF20 OUT
Connection type		2 x socket
Connection technology		M8x1, D-coded to EN 61076-2-114
Number of pins/wires		4
Shielding		Yes

Data sheet – EtherCAT interface

General data		
Configuration support		ESI file
Maximum number of modules		80
Diagnostics via LED		Diagnostics per module
		EtherCAT RUN
		Power supply, electronics/sensors
		Power supply, load
		System diagnostics
		Maintenance required
Diagnostics via bus		Load switch-off
		Load overvoltage
		Load undervoltage
		Electronics/sensors overvoltage
		Electronics/sensors undervoltage
		APDD invalid
		Communication to AP module interrupted
Diagnostics per internal communication		Module error
		Short circuit/overload in sensor supply
		Short circuit/overload at output
		Undervoltage in load supply
Maximum cable length	[m]	50 system communication
Information on maximum cable length		Power supply according to nominal voltage
Reverse polarity protection		Yes

Technical data – Electrical components		
Nominal operating voltage, electronics/sensors	[V DC]	24
Nominal operating voltage, load	[V DC]	24
Permissible voltage fluctuations, electronics/sensors	[%]	±25
Permissible voltage fluctuations, load	[%]	±25
Note regarding operating voltage		SELV/PELV power supply units required
		Note voltage drop
Power failure buffering	[ms]	10
Max. power supply	[A]	2x 4
		External fuse required
Intrinsic current consumption at nominal operating voltage, electronics/sensors	[mA]	Typically 90
Intrinsic current consumption at nominal operating voltage, load	[mA]	Typically 5
Electrical connection, power supply		
Function		Incoming electronics/sensors and load
Connection type		Plug
Connection technology		M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4
Electrical connection, power transmission		
Function		Outgoing electronics/sensors and load
Connection type		Socket
Connection technology		M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4

Technical data – Mechanical components		
Type of mounting		Via through-hole
Product weight	[g]	186
Dimensions W x L x H	[mm]	45 x 170 x 35
Tightening torque	[Nm]	1.2

Materials		
Housing		PA
		PC
		Nickel-plated, die-cast zinc
Note on materials		RoHS-compliant

Data sheet – EtherCAT interface

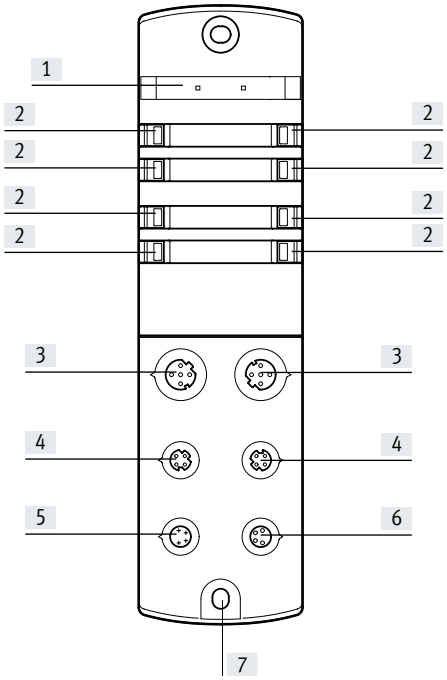
Operating and environmental conditions		
Ambient temperature	[°C]	–20 … +50
Storage temperature	[°C]	–40 … +70
Corrosion resistance class CRC[1)]		1
Relative humidity	[%]	5 … 95
		Non-condensing
CE marking (see declaration of conformity)[3)]		To EU EMC Directive[2)]
KC mark		KC EMC
Certification		RCM compliance mark
Degree of protection		IP65
		IP67
Note on degree of protection		Unused connections sealed

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry indoor application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

3) Additional information: www.festo.com/sp ➔ Certificates.

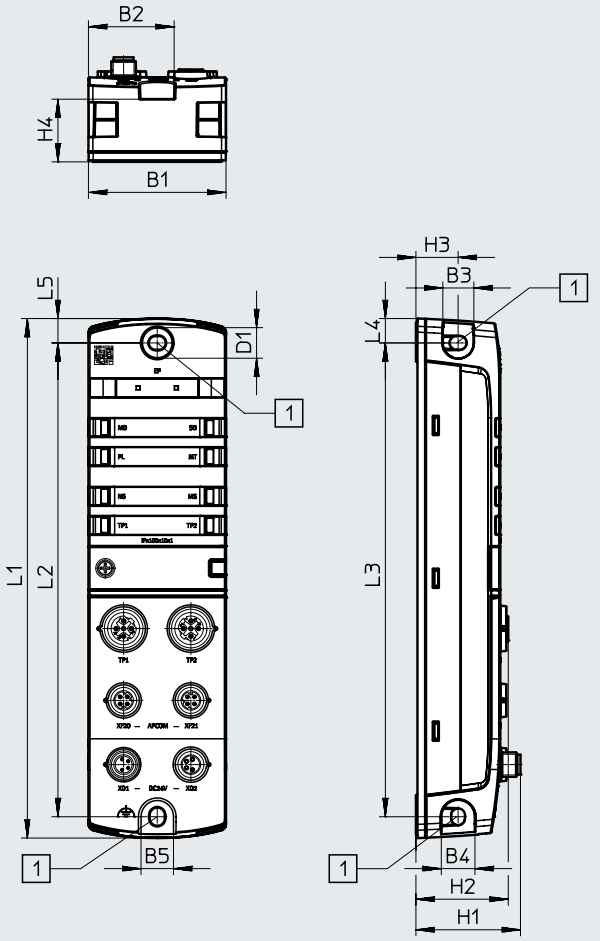
Connections and indicators



[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] Earthing connection

Data sheet – EtherCAT interface

Dimensions Download CAD data ➔ www.festo.com

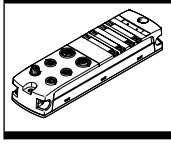


[1] Mounting hole for M4 screws

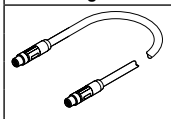
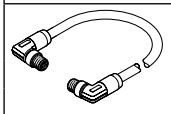
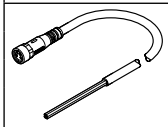
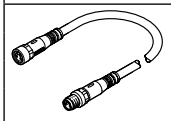
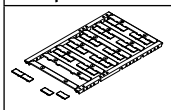
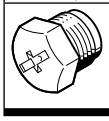
	B1	B2	B3	B4	B5	D1 ø	H1	H2	H3	H4	L1	L2	L3	L4	L5
CPX-AP-I-EC-M12	45	35.5	10	11	11	10	34.2	30.2	13.8	20.5	170	155	155	8	8

Data sheet – EtherCAT interface

Ordering data

		Part no.	Type
	EtherCAT interface	**8086609**	**CPX-AP-I-EC-M12**

Ordering data – Accessories

	Description				Part no.	Type	PU[1]
Plugs for self-assembly							
	For bus connection	Straight plug, M12x1, 4-pin, D-coded			**543109**	**NECU-M-S-D12G4-C2-ET**	1
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**	1
				0.5 m	**8065123**	**NEBC-D8G4-ES-0.5-N-S-D8G4-ET**	1
				1.0 m	**8065125**	**NEBC-D8G4-ES-1-N-S-D8G4-ET**	1
				2.0 m	**8065127**	**NEBC-D8G4-ES-2-N-S-D8G4-ET**	1
				5.0 m	**8065129**	**NEBC-D8G4-ES-5-N-S-D8G4-ET**	1
				7.5 m	**8065131**	**NEBC-D8G4-ES-7.5-N-S-D8G4-ET**	1
				10.0 m	**8065133**	**NEBC-D8G4-ES-10-N-S-D8G4-ET**	1
				15.0 m	**8065135**	**NEBC-D8G4-ES-15-N-S-D8G4-ET**	1
		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
				1.0 m	**8065126**	**NEBC-D8W4-ES-1-N-S-D8W4-ET**	1
				2.0 m	**8065128**	**NEBC-D8W4-ES-2-N-S-D8W4-ET**	1
				5.0 m	**8065130**	**NEBC-D8W4-ES-5-N-S-D8W4-ET**	1
				7.5 m	**8065132**	**NEBC-D8W4-ES-7.5-N-S-D8W4-ET**	1
				10.0 m	**8065134**	**NEBC-D8W4-ES-10-N-S-D8W4-ET**	1
				15.0 m	**8065136**	**NEBC-D8W4-ES-15-N-S-D8W4-ET**	1
	For power supply	Straight socket, M8 x 1, 4-pin, A-coded	Open cable end, 4-wire	5.0 m	**8065110**	**NEBL-M8G4-E-5-N-LE4**	1
				7.5 m	**8065113**	**NEBL-M8G4-E-7.5-N-LE4**	1
				10.0 m	**8065117**	**NEBL-M8G4-E-10-N-LE4**	1
				15.0 m	**8065121**	**NEBL-M8G4-E-15-N-LE4**	1
	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**	1
				0.5 m	**8065102**	**NEBL-M8G4-E-0.5-N-M8G4**	1
				1.0 m	**8065104**	**NEBL-M8G4-E-1-N-M8G4**	1
				2.0 m	**8065106**	**NEBL-M8G4-E-2-N-M8G4**	1
				5.0 m	**8065108**	**NEBL-M8G4-E-5-N-M8G4**	1
				7.5 m	**8065111**	**NEBL-M8G4-E-7.5-N-M8G4**	1
				10.0 m	**8065115**	**NEBL-M8G4-E-10-N-M8G4**	1
				15.0 m	**8065119**	**NEBL-M8G4-E-15-N-M8G4**	1
Inscription label							
	For modules CPX-AP-I	Size 6x 12.5 mm, 10 frames with 24 pieces each			**8087174**	**ASLR-L-X4-612-P240**	240
Cover cap							
	For sealing unused connections		For connection M8x1		**177672**	**ISK-M8**	10

1) Packaging unit.

NEW

Data sheet – EtherNet/IP interface

EtherNet/IP™

Interface for operating the automation 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		
Fieldbus interface		
Protocol		EtherNet/IP
Function		Bus connection incoming/outgoing
Transmission rate	[Mbps]	100
Type		Ethernet
Connection type		2 x socket
Connection technology		M12x1, D-coded to EN 61076-2-101
Number of pins/wires		4
Galvanic isolation		Yes
Max. address capacity outputs	[byte]	1324
Max. address capacity inputs	[byte]	1324
Communication interface		
Protocol		AP-COM
Function		System communication XF10 IN / XF20 OUT
Connection type		2 x socket
Connection technology		M8x1, D-coded to EN 61076-2-114
Number of pins/wires		4
Shielding		Yes

Data sheet – EtherNet/IP interface

General data		
Configuration support		EDS file
Maximum number of modules		80
Diagnostics via LED		Diagnostics per module
		Network status EtherNet/IP
		Power supply, electronics/sensors
		Power supply, load
		System diagnostics
		Maintenance required
Diagnostics via bus		Load switch-off
		Load overvoltage
		Load undervoltage
		Electronics/sensors overvoltage
		Electronics/sensors undervoltage
		APDD invalid
		Communication to AP module interrupted
Diagnostics per internal communication		Module error
		Short circuit/overload at output
		Short circuit/overload in sensor supply
		Undervoltage in load supply
Maximum cable length	[m]	50 system communication
Information on maximum cable length		Power supply according to nominal voltage
Reverse polarity protection		Yes

Technical data – Electrical components		
Nominal operating voltage, electronics/sensors	[V DC]	24
Nominal operating voltage, load	[V DC]	24
Permissible voltage fluctuations, electronics/sensors	[%]	±25
Permissible voltage fluctuations, load	[%]	±25
Note regarding operating voltage		SELV/PELV power supply units required
		Note voltage drop
Power failure buffering	[ms]	10
Max. power supply	[A]	2x 4
		External fuse required
Intrinsic current consumption at nominal operating voltage, electronics/sensors	[mA]	Typically 90
Intrinsic current consumption at nominal operating voltage, load	[mA]	Typically 5
Electrical connection, power supply		
Function		Incoming electronics/sensors and load
Connection type		Plug
Connection technology		M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4
Electrical connection, power transmission		
Function		Outgoing electronics/sensors and load
Connection type		Socket
Connection technology		M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4

Technical data – Mechanical components		
Type of mounting		Via through-hole
Product weight	[g]	194
Dimensions W x L x H	[mm]	45 x 170 x 35
Tightening torque	[Nm]	1.2

Materials		
Housing		PA
		PC
		Nickel-plated, die-cast zinc
Note on materials		RoHS-compliant

Data sheet – EtherNet/IP interface

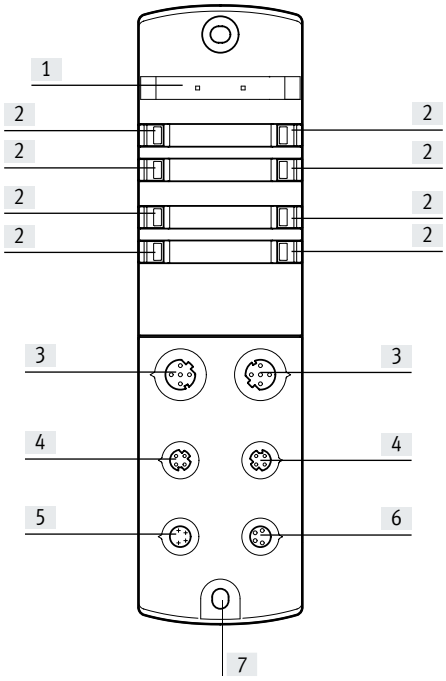
Operating and environmental conditions		
Ambient temperature	[°C]	–20 … +50
Storage temperature	[°C]	–40 … +70
Corrosion resistance class CRC[1)]		1
Relative humidity	[%]	5 … 95
		Non-condensing
CE marking (see declaration of conformity)[3)]		To EU EMC Directive[2)]
KC mark		KC EMC
Certification		RCM compliance mark
Degree of protection		IP65
		IP67
Note on degree of protection		Unused connections sealed

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry indoor application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

3) Additional information: www.festo.com/sp ➔ Certificates.

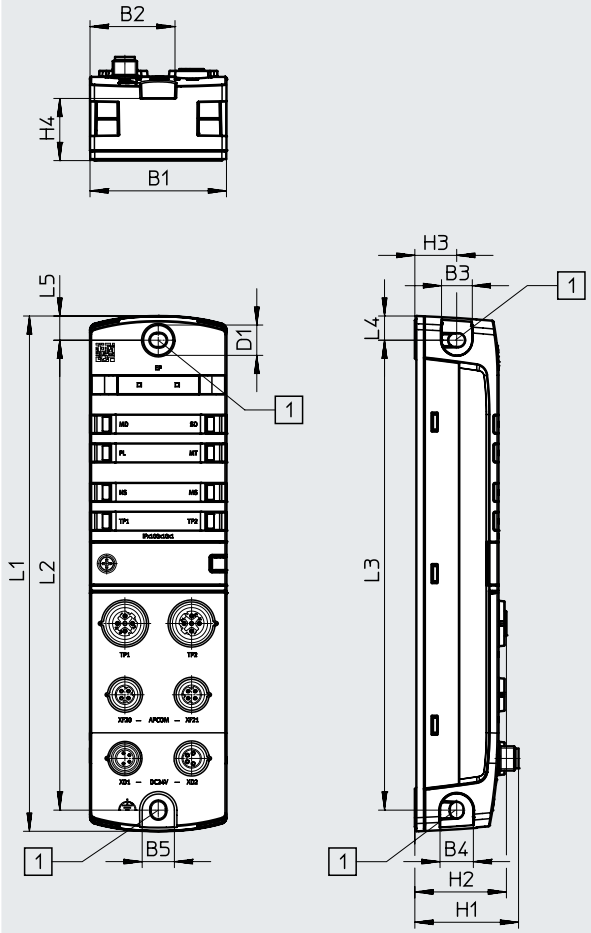
Connections and indicators



[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] Earthing connection

Data sheet – EtherNet/IP interface

Dimensions Download CAD data ➔ www.festo.com

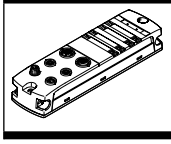


[1] Mounting hole for M4 screws

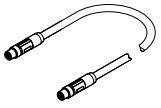
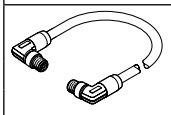
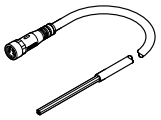
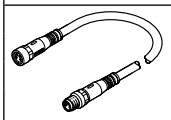
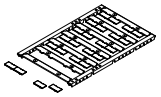
	B1	B2	B3	B4	B5	D1 ⌀	H1	H2	H3	H4	L1	L2	L3	L4	L5
CPX-AP-I-EP-M12	45	35.5	10	11	11	10	34.2	30.2	13.8	20.5	170	155	155	8	8

Data sheet – EtherNet/IP interface

Ordering data

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

Ordering data – Accessories

	Description				Part no.	Type	PU[1]
Plugs for self-assembly							
	For bus connection	Straight plug, M12x1, 4-pin, D-coded			**543109**	**NECU-M-S-D12G4-C2-ET**	1
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**	1
				0.5 m	**8065123**	**NEBC-D8G4-ES-0.5-N-S-D8G4-ET**	1
				1.0 m	**8065125**	**NEBC-D8G4-ES-1-N-S-D8G4-ET**	1
				2.0 m	**8065127**	**NEBC-D8G4-ES-2-N-S-D8G4-ET**	1
				5.0 m	**8065129**	**NEBC-D8G4-ES-5-N-S-D8G4-ET**	1
				7.5 m	**8065131**	**NEBC-D8G4-ES-7.5-N-S-D8G4-ET**	1
				10.0 m	**8065133**	**NEBC-D8G4-ES-10-N-S-D8G4-ET**	1
				15.0 m	**8065135**	**NEBC-D8G4-ES-15-N-S-D8G4-ET**	1
		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
				1.0 m	**8065126**	**NEBC-D8W4-ES-1-N-S-D8W4-ET**	1
				2.0 m	**8065128**	**NEBC-D8W4-ES-2-N-S-D8W4-ET**	1
				5.0 m	**8065130**	**NEBC-D8W4-ES-5-N-S-D8W4-ET**	1
				7.5 m	**8065132**	**NEBC-D8W4-ES-7.5-N-S-D8W4-ET**	1
				10.0 m	**8065134**	**NEBC-D8W4-ES-10-N-S-D8W4-ET**	1
				15.0 m	**8065136**	**NEBC-D8W4-ES-15-N-S-D8W4-ET**	1
	For power supply	Straight socket, M8 x 1, 4-pin, A-coded	Open cable end, 4-wire	5.0 m	**8065110**	**NEBL-M8G4-E-5-N-LE4**	1
				7.5 m	**8065113**	**NEBL-M8G4-E-7.5-N-LE4**	1
				10.0 m	**8065117**	**NEBL-M8G4-E-10-N-LE4**	1
				15.0 m	**8065121**	**NEBL-M8G4-E-15-N-LE4**	1
	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**	1
				0.5 m	**8065102**	**NEBL-M8G4-E-0.5-N-M8G4**	1
				1.0 m	**8065104**	**NEBL-M8G4-E-1-N-M8G4**	1
				2.0 m	**8065106**	**NEBL-M8G4-E-2-N-M8G4**	1
				5.0 m	**8065108**	**NEBL-M8G4-E-5-N-M8G4**	1
				7.5 m	**8065111**	**NEBL-M8G4-E-7.5-N-M8G4**	1
				10.0 m	**8065115**	**NEBL-M8G4-E-10-N-M8G4**	1
				15.0 m	**8065119**	**NEBL-M8G4-E-15-N-M8G4**	1
Inscription label							
	For modules CPX-AP-I	Size 6x 12.5 mm, 10 frames with 24 pieces each			**8087174**	**ASLR-L-X4-612-P240**	240
Cover cap							
	For sealing unused connections		For connection M8x1		**177672**	**ISK-M8**	10

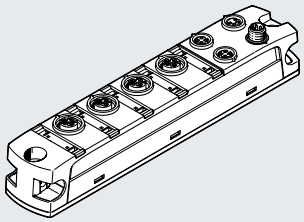
1) Packaging unit.

Data sheet – 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 automation 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.

Address space, master port and the connected devices can be parameterised with the aid of 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 necessary licence for continued use can be purchased via the Festo AppWorld.

General technical data	
Protocol	IO-Link
IO-Link	
Protocol version	Master V 1.1
Communication mode	Configurable via software
Communication mode	SIO, COM1 (4.8 kBd), COM2 (38.4 kBd), COM3 (230.4 kBd)
Port class	B
Number of ports	4
Process data width OUT	Can be parameterised, 8 ... 128 bytes
Process data width IN	Can be parameterised, 12 ... 132 bytes
Minimum cycle time	Depending on minimum supported cycle time of connected IO-Link device
Communication	C/Q green LED
Electrical connection, IO-Link	
Connection type	4 x socket
Connection technology	M12x1, A-coded to EN 61076-2-101
Number of pins/wires	5
Communication interface	
Protocol	AP-COM
Function	System communication XF10 IN / XF20 OUT
Connection type	2 x socket
Connection technology	M8x1, D-coded to EN 61076-2-114
Number of pins/wires	4
Shielding	Yes

Data sheet – IO-Link master

General data		
Diagnostics via LED		Diagnostics per channel
		Diagnostics per module
		Power supply, load
		Status per channel
		Status per module
Diagnostics per internal communication		IO-Link event
		Short circuit/overload in sensor supply
		Electronics/sensors overvoltage
		Load overvoltage
		Electronics/sensors undervoltage
		Load undervoltage
Maximum cable length	[m]	20 for IO-Link operation
	[m]	50 system communication
Reverse polarity protection		Yes

Technical data – Electrical components		
Nominal operating voltage, electronics/sensors	[V DC]	24
Permissible voltage fluctuations, electronics/sensors	[%]	±25
Nominal operating voltage, load	[V DC]	24
Permissible voltage fluctuations, load	[%]	±25
Note regarding operating voltage		Note voltage drop
		SELV/PELV power supply units required
Power failure buffering	[ms]	10
Max. power supply	[A]	2x 4
		External fuse required
Intrinsic current consumption at nominal operating voltage, electronics/sensors	[mA]	Typically 55
Intrinsic current consumption at nominal operating voltage, load	[mA]	Typically 5
Electrical connection, power supply		
Function		Incoming electronics/sensors and load
Connection type		Plug
Connection technology		M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4
Electrical connection, power transmission		
Function		Outgoing electronics/sensors and load
Connection type		Socket
Connection technology		M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4

Technical data – Mechanical components		
Type of mounting		Via through-hole
Product weight	[g]	126
Dimensions W x L x H	[mm]	30 x 170 x 35

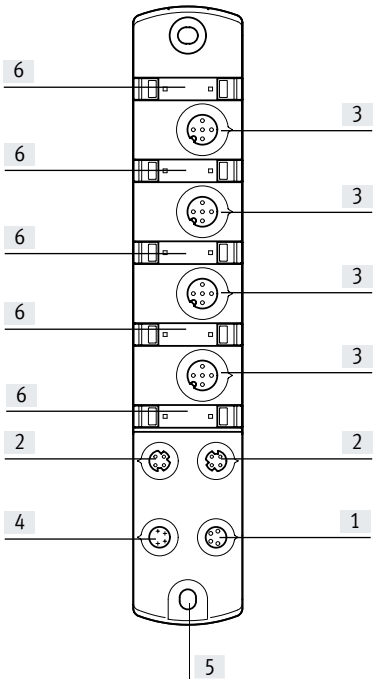
Materials	
Housing	PA
	PC
	Nickel-plated, die-cast zinc
Note on materials	RoHS-compliant

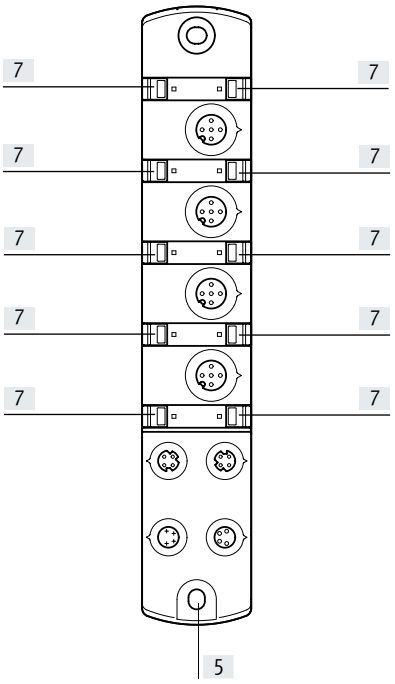
Data sheet – IO-Link master

Operating and environmental conditions		
Ambient temperature	[°C]	–20 … +50
Storage temperature	[°C]	–40 … +70
Corrosion resistance class CRC[1]		1
Relative humidity	[%]	5 … 95
		Non-condensing
CE marking (see declaration of conformity)[3]		To EU EMC Directive[2]
KC mark		KC EMC
Certification		RCM compliance mark
Degree of protection		IP65
		IP67
Note on degree of protection		Unused connections sealed

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry indoor application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).
2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.
3) Additional information: www.festo.com/sp ➔ Certificates.

Connections and indicators

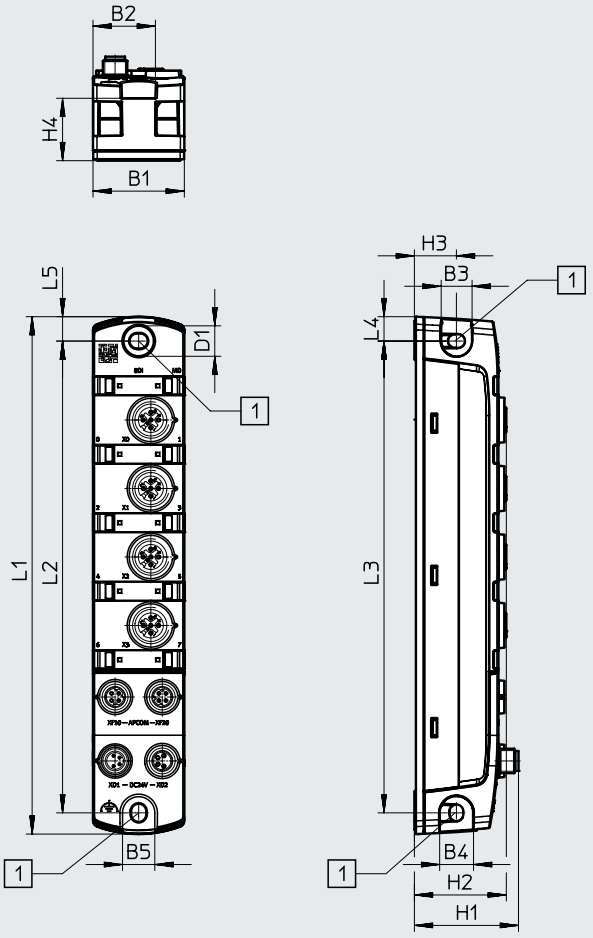




[1] Electrical connection, power transmission
[2] Communication interface
[3] Electrical connection, inputs
[4] Electrical connection, power supply
[5] Earthing connection
[6] Space for inscription label
[7] LED indicators

Data sheet – IO-Link master

Dimensions Download CAD data ➔ www.festo.com

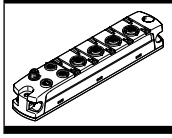


[1] Mounting hole for M4 screws

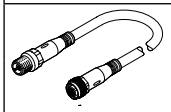
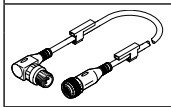
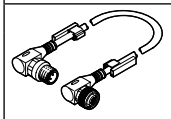
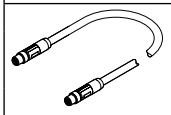
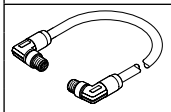
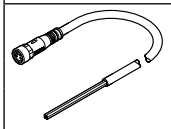
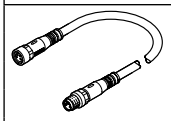
	B1	B2	B3	B4	B5	D1 ⌀	H1	H2	H3	H4	L1	L2	L3	L4	L5
CPX-AP-I-4IOL-M12	30	20.5	10	11	11	10	34.2	30.2	13.8	20.5	170	155	155	8	8

Data sheet – IO-Link master

Ordering data

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

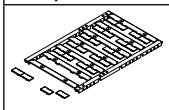
Ordering data – Accessories

	Description				Part no.	Type	PU[1]
Plugs for self-assembly							
	For IO-Link	Straight plug, M12x1, 5-pin, A-coded	Screw terminal		**175487**	**SEA-M12-5GS-PG7**	1
Connecting cable							
	For IO-Link	Straight socket, M12x1, 5-pin, A-coded	Straight plug, M12x1, 5-pin, A-coded	0.5 m	**8000208**	**NEBU-M12G5-K-0.5-M12G4**	1
				5.0 m	**574321**	**NEBU-M12G5-E-5-Q8N-M12G5**	1
				7.5 m	**574322**	**NEBU-M12G5-E-7.5-Q8N-M12G5**	1
			Angled plug, M12x1, 5-pin, A-coded	0.5 m	**8003617**	**NEBU-M12G5-K-0.5-M12W5**	1
				2.0 m	**8003618**	**NEBU-M12G5-K-2-M12W5**	1
		Angled socket, M12x1, 5-pin, A-coded	Angled plug, M12x1, 5-pin, A-coded	0.5 m	**570733**	**NEBU-M12W5-K-0.5-M12W5**	1
				2.0 m	**570734**	**NEBU-M12W5-K-2-M12W5**	1
	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**	1
				0.5 m	**8065123**	**NEBC-D8G4-ES-0.5-N-S-D8G4-ET**	1
				1.0 m	**8065125**	**NEBC-D8G4-ES-1-N-S-D8G4-ET**	1
				2.0 m	**8065127**	**NEBC-D8G4-ES-2-N-S-D8G4-ET**	1
				5.0 m	**8065129**	**NEBC-D8G4-ES-5-N-S-D8G4-ET**	1
				7.5 m	**8065131**	**NEBC-D8G4-ES-7.5-N-S-D8G4-ET**	1
				10.0 m	**8065133**	**NEBC-D8G4-ES-10-N-S-D8G4-ET**	1
				15.0 m	**8065135**	**NEBC-D8G4-ES-15-N-S-D8G4-ET**	1
		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
				1.0 m	**8065126**	**NEBC-D8W4-ES-1-N-S-D8W4-ET**	1
				2.0 m	**8065128**	**NEBC-D8W4-ES-2-N-S-D8W4-ET**	1
				5.0 m	**8065130**	**NEBC-D8W4-ES-5-N-S-D8W4-ET**	1
				7.5 m	**8065132**	**NEBC-D8W4-ES-7.5-N-S-D8W4-ET**	1
				10.0 m	**8065134**	**NEBC-D8W4-ES-10-N-S-D8W4-ET**	1
				15.0 m	**8065136**	**NEBC-D8W4-ES-15-N-S-D8W4-ET**	1
	For power supply	Straight socket, M8 x 1, 4-pin, A-coded	Open cable end, 4-wire	5.0 m	**8065110**	**NEBL-M8G4-E-5-N-LE4**	1
				7.5 m	**8065113**	**NEBL-M8G4-E-7.5-N-LE4**	1
				10.0 m	**8065117**	**NEBL-M8G4-E-10-N-LE4**	1
				15.0 m	**8065121**	**NEBL-M8G4-E-15-N-LE4**	1
	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**	1
				0.5 m	**8065102**	**NEBL-M8G4-E-0.5-N-M8G4**	1
				1.0 m	**8065104**	**NEBL-M8G4-E-1-N-M8G4**	1
				2.0 m	**8065106**	**NEBL-M8G4-E-2-N-M8G4**	1
				5.0 m	**8065108**	**NEBL-M8G4-E-5-N-M8G4**	1
				7.5 m	**8065111**	**NEBL-M8G4-E-7.5-N-M8G4**	1
				10.0 m	**8065115**	**NEBL-M8G4-E-10-N-M8G4**	1
				15.0 m	**8065119**	**NEBL-M8G4-E-15-N-M8G4**	1

1) Packaging unit.

Data sheet – IO-Link master

Ordering data – Accessories

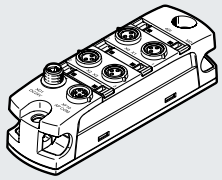
	Description		Part no.	Type	PU[1]
Inscription label					
	For modules CPX-AP-I	Size 6x 12.5 mm, 10 frames with 24 pieces each	**8087174**	**ASLR-L-X4-612-P240**	240
Cover cap					
	For sealing unused connections	For connection M12x1	**165592**	**ISK-M12**	10

1) Packaging unit.

Data sheet – Digital 4-way input modules

Function
Digital input modules facilitate the connection of electric sensors 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		
Type		CPX-AP-I-8DI-M8-3P
Number of inputs		4
Electrical connection, input		
Function		Digital input
Connection type		4 x socket
Connection technology		M8x1, A-coded to EN 61076-2-104
Number of pins/wires		3
Switching logic of 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	[V]	Signal 0: ≤5
	[V]	Signal 1: ≥11
Fuse protection inputs (short circuit)		Internal electronic fuse per module
Input debounce time	[ms]	0.1
	[ms]	3
	[ms]	10
	[ms]	20
Communication interface		
Protocol		AP-COM
Function		System communication XF10 IN
Connection type		Socket
Connection technology		M8x1, D-coded to EN 61076-2-114
Number of pins/wires		4
Shielding		Yes

General data		
Electrical isolation between channel and internal communication		Yes
Electrical isolation between channels		No
Diagnostics via LED		Diagnostics per module
		Status per channel
Diagnostics per internal communication		Short circuit/overload in sensor supply
		Electronics/sensors overvoltage
		Electronics/sensors undervoltage
Maximum cable length	[m]	30 inputs
	[m]	50 system communication
Reverse polarity protection		Yes

Data sheet – Digital 4-way input modules

Technical data – Electrical components		
Nominal operating voltage, electronics/sensors	[V DC]	24
Permissible voltage fluctuations, electronics/sensors	[%]	±25
Note regarding operating voltage		Note voltage drop
		SELV/PELV power supply units required
Power failure buffering	[ms]	10
Max. power supply	[A]	2x 4
		External fuse required
Max. total current of inputs per module	[A]	0.8
Intrinsic current consumption at nominal operating voltage, electronics/sensors	[mA]	Typically 32
Electrical connection, power supply		
Function		Incoming electronics/sensors and load
Connection type		Plug
Connection technology		M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4

Technical data – Mechanical components		
Type of mounting		Via through-hole
Product weight	[g]	81
Dimensions W x L x H	[mm]	30 x 102.5 x 35

Materials		
Housing		PA
		PC
		Nickel-plated, die-cast zinc
Note on materials		RoHS-compliant

Operating and environmental conditions		
Ambient temperature	[°C]	–20 … +50
Storage temperature	[°C]	–40 … +70
Corrosion resistance class CRC[1)]		1
Relative humidity	[%]	5 … 95
		Non-condensing
CE marking (see declaration of conformity)[3)]		To EU EMC Directive[2)]
KC mark		KC EMC
Certification		RCM compliance mark
Degree of protection		IP65
		IP67
Note on degree of protection		Unused connections sealed

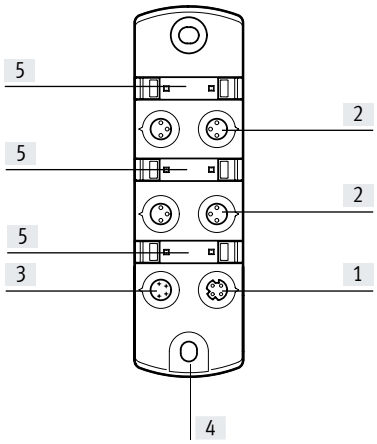
1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry indoor application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

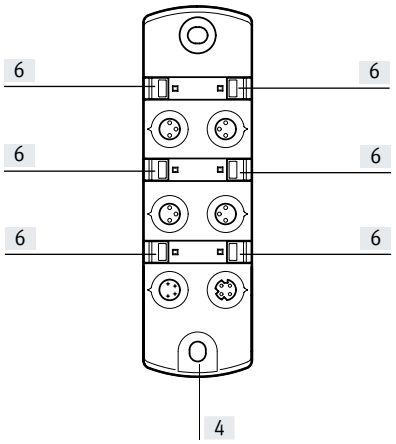
2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

3) Additional information: www.festo.com/sp ➔ Certificates.

Data sheet – Digital 4-way input modules

Connections and indicators

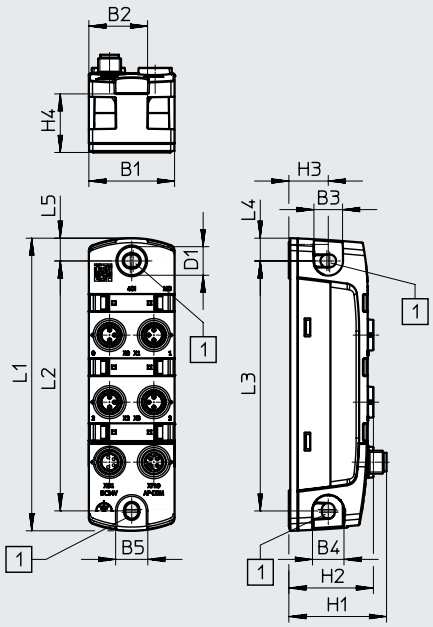




[1] Communication interface
[2] Electrical connection, inputs
[3] Electrical connection, power supply
[4] Earthing connection
[5] Space for inscription label
[6] LED indicators

Data sheet – Digital 4-way input modules

Dimensions Download CAD data ➔ www.festo.com

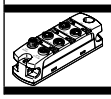


[1] Mounting hole for M4 screws

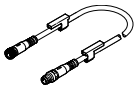
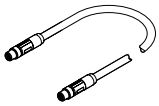
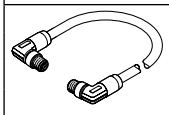
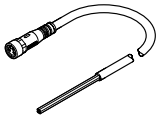
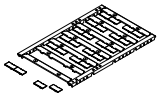
	B1	B2	B3	B4	B5	D1 ⌀	H1	H2	H3	H4	L1	L2	L3	L4	L5
CPX-AP-I-4DI-M8-3P	30	20.5	10	11	11	10	34.2	29.6	13.8	20.5	102.5	87.5	87.5	8	8

Data sheet – 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	PU[1]
Plugs for self-assembly							
	For inputs	Straight plug, M8x1, 3-pin, A-coded	Screw terminal		**192009**	**SEA-3GS-M8-S**	1
			Solder connection		**18696**	**SEA-GS-M8**	1
Connecting cable							
	For inputs	Straight plug, M8x1, 3-pin, A-coded	Straight socket, M8 x 1, 3-pin, A-coded	0.5 m	**541346**	**NEBU-M8G3-K-0.5-M8G3**	1
				1.0 m	**541347**	**NEBU-M8G3-K-1-M8G3**	1
				1.5 m	**8003133**	**NEBU-M8G3-K-1.5-M8G3**	1
				2.0 m	**8003131**	**NEBU-M8G3-K-2-M8G3**	1
				2.5 m	**541348**	**NEBU-M8G3-K-2.5-M8G3**	1
				3.0 m	**8003132**	**NEBU-M8G3-K-3-M8G3**	1
				3.5 m	**559364**	**NEBU-M8G3-E-3.5-M8G3**	1
				5.0 m	**541349**	**NEBU-M8G3-K-5-M8G3**	1
				10.0 m	**569844**	**NEBU-M8G3-K-10-M8G3**	1
	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**	1
				0.5 m	**8065123**	**NEBC-D8G4-ES-0.5-N-S-D8G4-ET**	1
				1.0 m	**8065125**	**NEBC-D8G4-ES-1-N-S-D8G4-ET**	1
				2.0 m	**8065127**	**NEBC-D8G4-ES-2-N-S-D8G4-ET**	1
				5.0 m	**8065129**	**NEBC-D8G4-ES-5-N-S-D8G4-ET**	1
				7.5 m	**8065131**	**NEBC-D8G4-ES-7.5-N-S-D8G4-ET**	1
				10.0 m	**8065133**	**NEBC-D8G4-ES-10-N-S-D8G4-ET**	1
				15.0 m	**8065135**	**NEBC-D8G4-ES-15-N-S-D8G4-ET**	1
		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
				1.0 m	**8065126**	**NEBC-D8W4-ES-1-N-S-D8W4-ET**	1
				2.0 m	**8065128**	**NEBC-D8W4-ES-2-N-S-D8W4-ET**	1
				5.0 m	**8065130**	**NEBC-D8W4-ES-5-N-S-D8W4-ET**	1
				7.5 m	**8065132**	**NEBC-D8W4-ES-7.5-N-S-D8W4-ET**	1
				10.0 m	**8065134**	**NEBC-D8W4-ES-10-N-S-D8W4-ET**	1
				15.0 m	**8065136**	**NEBC-D8W4-ES-15-N-S-D8W4-ET**	1
	For power supply	Straight socket, M8 x 1, 4-pin, A-coded	Open cable end, 4-wire	5.0 m	**8065110**	**NEBL-M8G4-E-5-N-LE4**	1
				7.5 m	**8065113**	**NEBL-M8G4-E-7.5-N-LE4**	1
				10.0 m	**8065117**	**NEBL-M8G4-E-10-N-LE4**	1
				15.0 m	**8065121**	**NEBL-M8G4-E-15-N-LE4**	1
Inscription label							
	For modules CPX-AP-I	Size 6x 12.5 mm, 10 frames with 24 pieces each			**8087174**	**ASLR-L-X4-612-P240**	240
Cover cap							
	For sealing unused connections		For connection M8x1		**177672**	**ISK-M8**	10

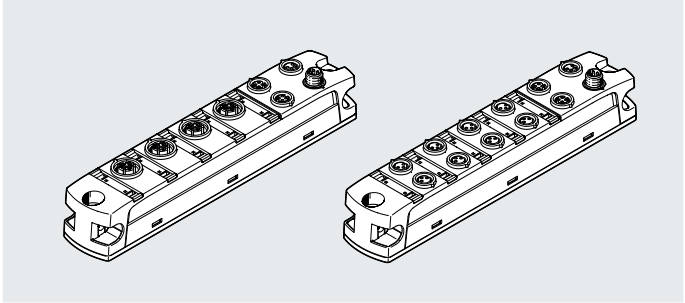
1) Packaging unit.

NEW

Data sheet – Digital 8-way input modules

Function
Digital input modules facilitate the connection of electric sensors 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			
Type		CPX-AP-I-8DI-M8-3P	CPX-AP-I-8DI-M12-5P
Number of inputs		8	
Electrical connection, input			
Function		Digital input	
Connection type		8 x socket	4 x socket
Connection technology		M8x1, A-coded to EN 61076-2-104	M12x1, A-coded to EN 61076-2-101
Number of pins/wires		3	5
Switching logic of 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	[V]	Signal 0: ≤5	
	[V]	Signal 1: ≥11	
Fuse protection inputs (short circuit)		Internal electronic fuse per module	
Input debounce time	[ms]	0.1	
	[ms]	3	
	[ms]	10	
	[ms]	20	
Communication interface			
Protocol		AP-COM	
Function		System communication XF10 IN / XF20 OUT	
Connection type		2 x socket	
Connection technology		M8x1, D-coded to EN 61076-2-114	
Number of pins/wires		4	
Shielding		Yes	

General data		
Electrical isolation between channel and internal communication		Yes
Electrical isolation between channels		No
Diagnostics via LED		Diagnostics per module
		Status per channel
Diagnostics per internal communication		Short circuit/overload in sensor supply
		Electronics/sensors overvoltage
		Electronics/sensors undervoltage
Maximum cable length	[m]	30 inputs
	[m]	50 system communication
Information on maximum cable length		Power supply according to nominal voltage
Reverse polarity protection		Yes

Data sheet – Digital 8-way input modules

Technical data – Electrical components		
Nominal operating voltage, electronics/sensors	[V DC]	24
Permissible voltage fluctuations, electronics/sensors	[%]	±25
Note regarding operating voltage		Note voltage drop
		SELV/PELV power supply units required
Power failure buffering	[ms]	10
Max. power supply	[A]	2x 4
		External fuse required
Max. total current of inputs per module	[A]	1.8
Intrinsic current consumption at nominal operating voltage, electronics/sensors	[mA]	Typically 32
Electrical connection, power supply		
Function		Incoming electronics/sensors and load
Connection type		Plug
Connection technology		M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4
Electrical connection, power transmission		
Function		Outgoing electronics/sensors and load
Connection type		Socket
Connection technology		M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4

Technical data – Mechanical components		
Type of mounting		Via through-hole
Product weight	[g]	126
Dimensions W x L x H	[mm]	30 x 170 x 35
Tightening torque	[Nm]	1.2

Materials	
Housing	PA
	PC
	Nickel-plated, die-cast zinc
Note on materials	RoHS-compliant

Operating and environmental conditions		
Ambient temperature	[°C]	–20 … +50
Storage temperature	[°C]	–40 … +70
Corrosion resistance class CRC[1)]		1
Relative humidity	[%]	5 … 95
		Non-condensing
CE marking (see declaration of conformity)[3)]		To EU EMC Directive[2)]
KC mark		KC EMC
Certification		RCM compliance mark
Degree of protection		IP65
		IP67
Note on degree of protection		Unused connections sealed

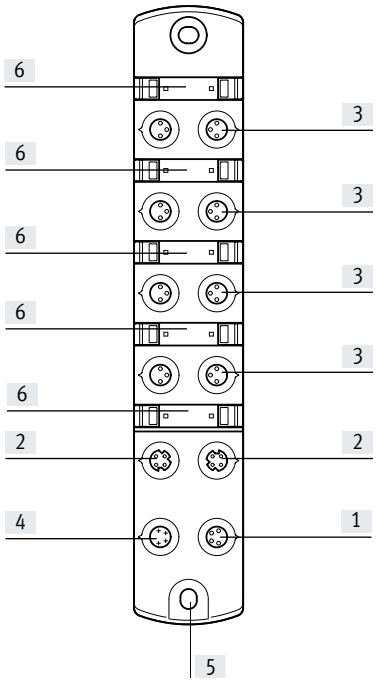
1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry indoor application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

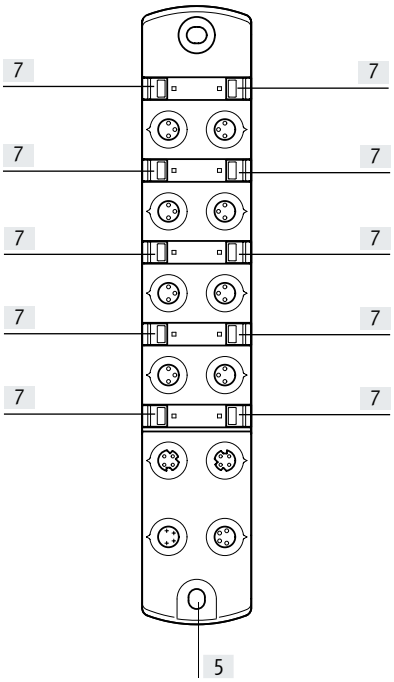
2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp → Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

3) Additional information: www.festo.com/sp → Certificates.

Data sheet – Digital 8-way input modules

Connections and indicators



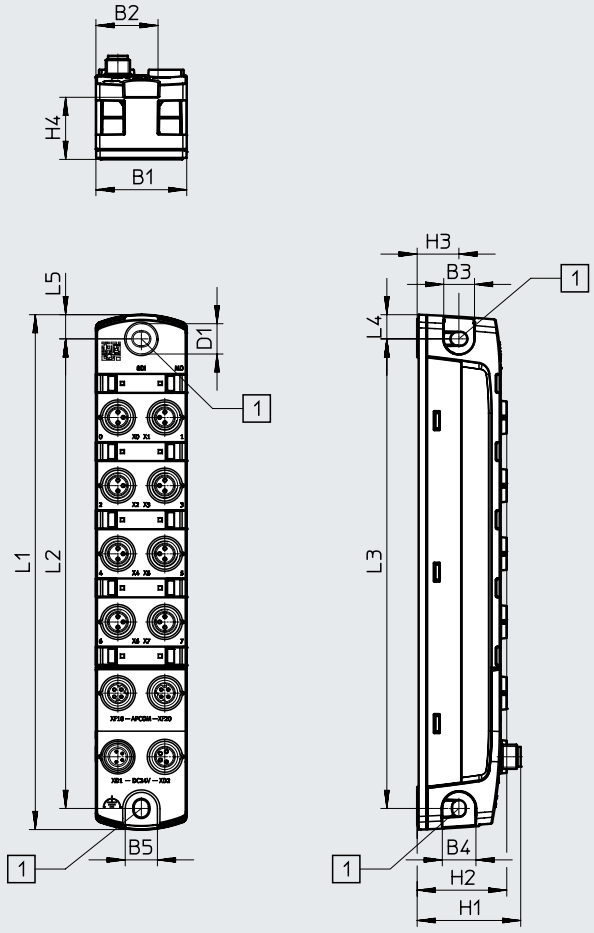


[1] Electrical connection, power transmission
[2] Communication interface
[3] Electrical connection, inputs
[4] Electrical connection, power supply
[5] Earthing connection
[6] Space for inscription label
[7] LED indicators

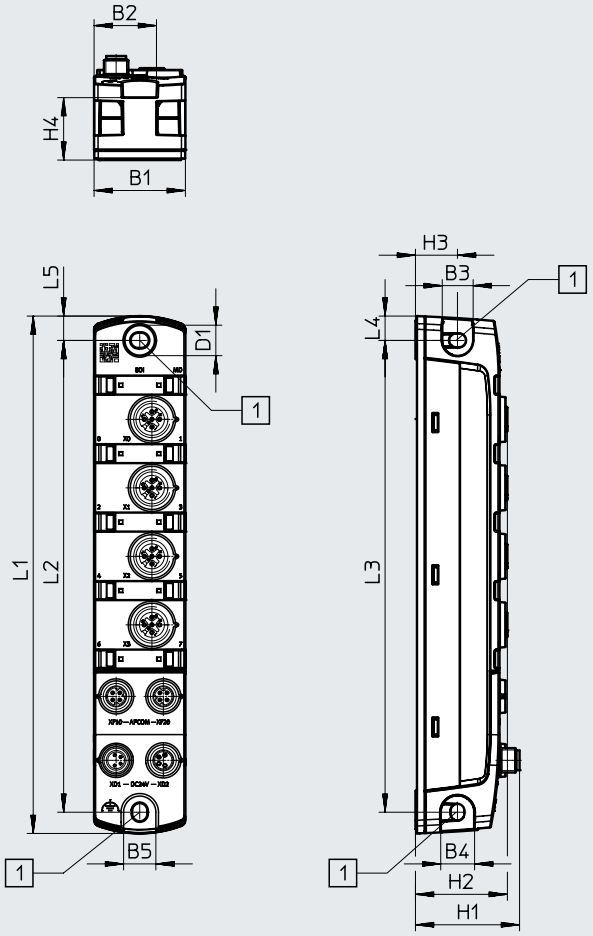
Data sheet – Digital 8-way input modules

Dimensions Download CAD data ➔ www.festo.com

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



CPX-AP-I-8DI-M12-5P

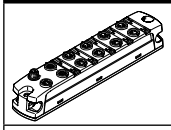
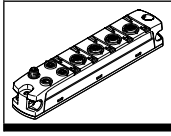


[1] Mounting hole for M4 screws

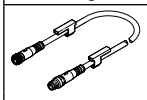
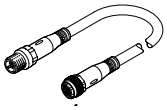
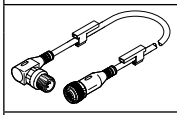
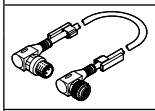
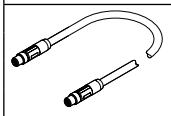
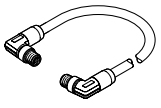
	B1	B2	B3	B4	B5	D1 ⌀	H1	H2	H3	H4	L1	L2	L3	L4	L5
CPX-AP-I-8DI-M8-3P	30	20.5	10	11	11	10	34.2	29.6	13.8	20.5	170	155	155	8	8
CPX-AP-I-8DI-M12-5P	30	20.5	10	11	11	10	34.2	30.2	13.8	20.5	170	155	155	8	8

Data sheet – Digital 8-way input modules

Ordering data

			Part no.	Type
	Digital input module	Electrical connection input 8x socket, 3-pin, M8x1	**8086600**	**CPX-AP-I-8DI-M8-3P**
		Electrical connection input 4x socket, 5-pin, M12x1	**8086602**	**CPX-AP-I-8DI-M12-5P**

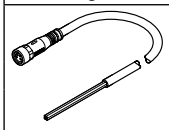
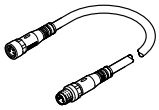
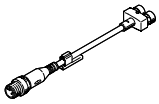
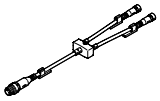
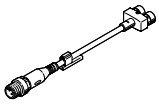
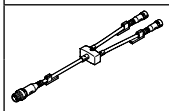
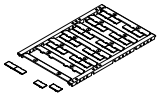
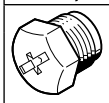
Ordering data – Accessories

	Description				Part no.	Type	PU[1]
Plugs for self-assembly							
	For inputs	Straight plug, M8x1, 3-pin, A-coded	Screw terminal		**192009**	**SEA-3GS-M8-S**	1
			Solder connection		**18696**	**SEA-GS-M8**	1
		Straight plug, M12x1, 5-pin, A-coded	Screw terminal		**175487**	**SEA-M12-5GS-PG7**	1
Connecting cable							
	For inputs	Straight plug, M8x1, 3-pin, A-coded	Straight socket, M8 x 1, 3-pin, A-coded	0.5 m	**541346**	**NEBU-M8G3-K-0.5-M8G3**	1
				1.0 m	**541347**	**NEBU-M8G3-K-1-M8G3**	1
				1.5 m	**8003133**	**NEBU-M8G3-K-1.5-M8G3**	1
				2.0 m	**8003131**	**NEBU-M8G3-K-2-M8G3**	1
				2.5 m	**541348**	**NEBU-M8G3-K-2.5-M8G3**	1
				3.0 m	**8003132**	**NEBU-M8G3-K-3-M8G3**	1
				3.5 m	**559364**	**NEBU-M8G3-E-3.5-M8G3**	1
				5.0 m	**541349**	**NEBU-M8G3-K-5-M8G3**	1
				10.0 m	**569844**	**NEBU-M8G3-K-10-M8G3**	1
		Straight plug, M12x1, 5-pin, A-coded	Straight socket, M12 x 1, 3-pin, A-coded	0.5 m	**8000208**	**NEBU-M12G5-K-0.5-M12G4**	1
				5.0 m	**574321**	**NEBU-M12G5-E-5-Q8N-M12G5**	1
				7.5 m	**574322**	**NEBU-M12G5-E-7.5-Q8N-M12G5**	1
		Angled plug, M12x1, 5-pin, A-coded	Straight socket, M12 x 1, 3-pin, A-coded	0.5 m	**8003617**	**NEBU-M12G5-K-0.5-M12W5**	1
				2.0 m	**8003618**	**NEBU-M12G5-K-2-M12W5**	1
			Angled socket, M12x1, 3-pin, A-coded	0.5 m	**570733**	**NEBU-M12W5-K-0.5-M12W5**	1
				2.0 m	**570734**	**NEBU-M12W5-K-2-M12W5**	1
	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**	1
				0.5 m	**8065123**	**NEBC-D8G4-ES-0.5-N-S-D8G4-ET**	1
				1.0 m	**8065125**	**NEBC-D8G4-ES-1-N-S-D8G4-ET**	1
				2.0 m	**8065127**	**NEBC-D8G4-ES-2-N-S-D8G4-ET**	1
				5.0 m	**8065129**	**NEBC-D8G4-ES-5-N-S-D8G4-ET**	1
				7.5 m	**8065131**	**NEBC-D8G4-ES-7.5-N-S-D8G4-ET**	1
				10.0 m	**8065133**	**NEBC-D8G4-ES-10-N-S-D8G4-ET**	1
				15.0 m	**8065135**	**NEBC-D8G4-ES-15-N-S-D8G4-ET**	1
		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
				1.0 m	**8065126**	**NEBC-D8W4-ES-1-N-S-D8W4-ET**	1
				2.0 m	**8065128**	**NEBC-D8W4-ES-2-N-S-D8W4-ET**	1
				5.0 m	**8065130**	**NEBC-D8W4-ES-5-N-S-D8W4-ET**	1
				7.5 m	**8065132**	**NEBC-D8W4-ES-7.5-N-S-D8W4-ET**	1
				10.0 m	**8065134**	**NEBC-D8W4-ES-10-N-S-D8W4-ET**	1
				15.0 m	**8065136**	**NEBC-D8W4-ES-15-N-S-D8W4-ET**	1

1) Packaging unit.

Data sheet – Digital 8-way input modules

Ordering data – Accessories

	Description				Part no.	Type	PU[1]
Connecting cable							
	For power supply	Straight socket, M8 x 1, 4-pin, A-coded	Open cable end, 4-wire	5.0 m	**8065110**	**NEBL-M8G4-E-5-N-LE4**	1
				7.5 m	**8065113**	**NEBL-M8G4-E-7.5-N-LE4**	1
				10.0 m	**8065117**	**NEBL-M8G4-E-10-N-LE4**	1
				15.0 m	**8065121**	**NEBL-M8G4-E-15-N-LE4**	1
	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**	1
				0.5 m	**8065102**	**NEBL-M8G4-E-0.5-N-M8G4**	1
				1.0 m	**8065104**	**NEBL-M8G4-E-1-N-M8G4**	1
				2.0 m	**8065106**	**NEBL-M8G4-E-2-N-M8G4**	1
				5.0 m	**8065108**	**NEBL-M8G4-E-5-N-M8G4**	1
				7.5 m	**8065111**	**NEBL-M8G4-E-7.5-N-M8G4**	1
				10.0 m	**8065115**	**NEBL-M8G4-E-10-N-M8G4**	1
				15.0 m	**8065119**	**NEBL-M8G4-E-15-N-M8G4**	1
Distributors							
	For inputs	Straight plug, M12x1, 4-pin, A-coded	2x straight socket, M8x1, 3-pin, A-coded	–	**8005311**	**NEDY-L2R1-V1-M8G3-N-M12G4**	1
			2x straight socket, M12x1, 5-pin, A-coded	–	**8005310**	**NEDY-L2R1-V1-M12G5-N-M12G4**	1
			2x straight socket, M8x1, 3-pin, A-coded	2.5 m	**8005301**	**NEDY-L2R1-V1-M8G3-U-M12G4-2.5R**	1
				5.0 m	**8005302**	**NEDY-L2R1-V1-M8G3-U-M12G4-5R**	1
				0.3 m 2.5 m	**8032309**	**NEDY-L2R1-V1-M12G5-U-0.3L-M8G4-2.5R**	1
				0.3 m 5.0 m	**8035484**	**NEDY-L2R1-V1-M12G5-U-0.3L-M8G4-5R**	1
			2x straight socket, M12x1, 5-pin, A-coded	2.5 m	**8005305**	**NEDY-L2R1-V1-M12G5-U-M12G4-2.5R**	1
				5.0 m	**8005306**	**NEDY-L2R1-V1-M12G5-U-M12G4-5R**	1
				0.3 m 2.5 m	**8035775**	**NEDY-L2R1-V1-M12G5-U-0.3L-M12G4-2.5R**	1
				0.3 m 5.0 m	**8035776**	**NEDY-L2R1-V1-M12G5-U-0.3L-M12G4-5R**	1
Inscription label							
	For modules CPX-AP-I	Size 6x 12.5 mm, 10 frames with 24 pieces each			**8087174**	**ASLR-L-X4-612-P240**	240
Cover cap							
	For sealing unused connections		For connection M8x1		**177672**	**ISK-M8**	10
			For connection M12x1		**165592**	**ISK-M12**	10

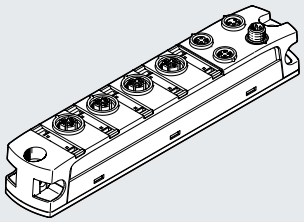
1) Packaging unit.

Data sheet – 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		
Number of inputs		4
Electrical connection, input		
Function		Analogue input
Connection type		4 x socket
Connection technology		M12x1, A-coded to EN 61076-2-101
Note on connection technology		To achieve the technical specifications, the opposite side must be shielded and designed with gold contact surfaces.
Number of pins/wires		5
Fuse protection inputs (short circuit)		Internal electronic fuse per module
Signal range	[V]	1 ... 5
	[V]	−5 ... 5
	[V]	0 ... 10
	[V]	−10 ... 10
	[mA]	0 ... 20
	[mA]	4 ... 20
	[ohm]	0 ... 500
Data format		15 bits + prefix
		Linear scaling
Measured variable		Voltage
		Current
		Resistance
		Temperature
Repetition accuracy	[%]	±0.025 at 25°C
Operating error limit related to the ambient temperature range	[%]	±0.15 for voltage
	[%]	±0.15 for current
	[%]	±0.35 for resistance
	[%]	±0.9 for temperature
Basic error limit at 25°C	[%]	±0.1 for voltage
	[%]	±0.1 for current
	[%]	±0.2 for resistance
	[%]	±0.4 for temperature
Communication interface		
Protocol		AP-COM
Function		System communication XF10 IN / XF20 OUT
Connection type		2 x socket
Connection technology		M8x1, D-coded to EN 61076-2-114
Number of pins/wires		4
Shielding		Yes

Data sheet – Analogue input modules

General data		
Electrical isolation between channel and internal communication		Yes
Electrical isolation between channels		No
Diagnostics via LED		Diagnostics per module
		Status per channel
Diagnostics per internal communication		Short circuit/overload in sensor supply
		Wire break
		Module error
		Parameter error
		Parameterisation error
		Overload at analogue inputs
		Upper limit value not observed
		Underflow/overflow
		Lower limit value not observed
Maximum cable length	[m]	30 inputs
	[m]	50 system communication
Reverse polarity protection		Yes

Technical data – Electrical components		
Nominal operating voltage, electronics/sensors	[V DC]	24
Permissible voltage fluctuations, electronics/sensors	[%]	±25
Note regarding operating voltage		Note voltage drop
		SELV/PELV power supply units required
Power failure buffering	[ms]	10
Max. power supply	[A]	2x 4
		External fuse required
Max. total current of inputs per module	[A]	1
Intrinsic current consumption at nominal operating voltage, electronics/sensors	[mA]	Typically 38
Electrical connection, power supply		
Function		Incoming electronics/sensors and load
Connection type		Plug
Connection technology		M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4
Electrical connection, power transmission		
Function		Outgoing electronics/sensors and load
Connection type		Socket
Connection technology		M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4

Technical data – Mechanical components		
Type of mounting		Via through-hole
Product weight	[g]	166
Dimensions W x L x H	[mm]	30 x 170 x 35

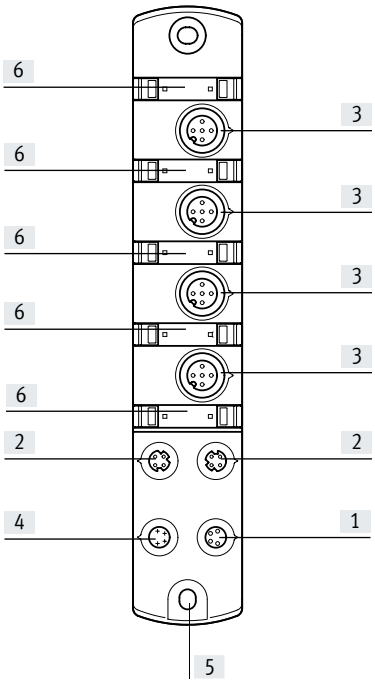
Materials	
Housing	PA
	PC
	Nickel-plated, die-cast zinc
Note on materials	RoHS-compliant

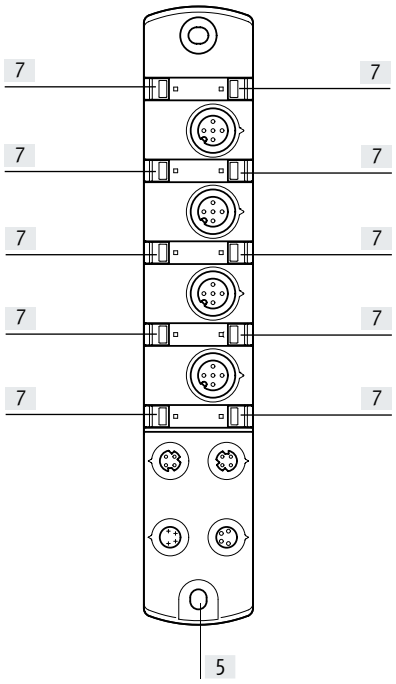
Data sheet – Analogue input modules

Operating and environmental conditions		
Ambient temperature	[°C]	–20 … +50
Storage temperature	[°C]	–40 … +70
Corrosion resistance class CRC[1)]		1
Relative humidity	[%]	5 … 95
		Non-condensing
CE marking (see declaration of conformity)[3)]		To EU EMC Directive[2)]
KC mark		KC EMC
Certification		RCM compliance mark
Degree of protection		IP65
		IP67
Note on degree of protection		Unused connections sealed

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry indoor application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).
2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.
3) Additional information: www.festo.com/sp ➔ Certificates.

Connections and indicators

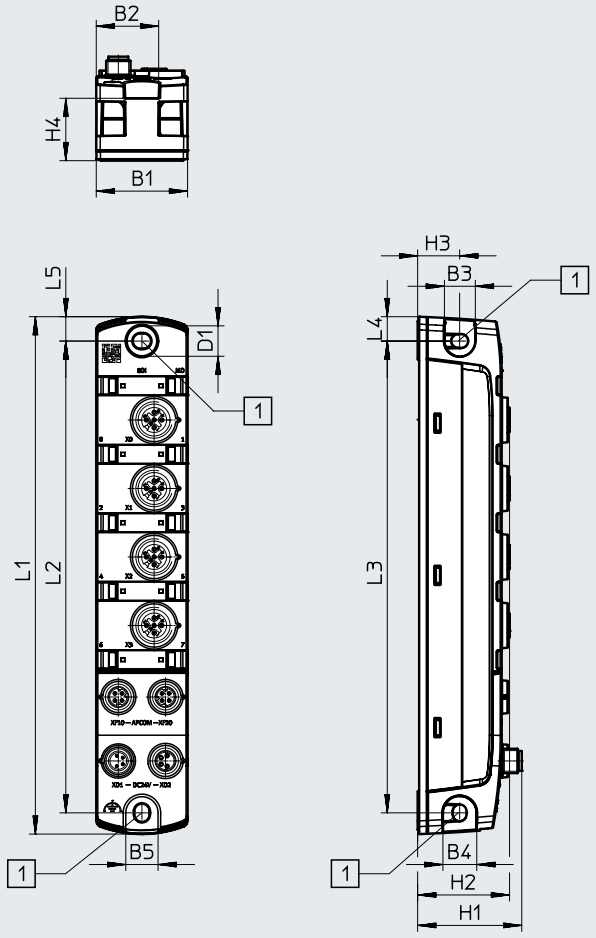




[1] Electrical connection, power transmission
[2] Communication interface
[3] Electrical connection, inputs
[4] Electrical connection, power supply
[5] Earthing connection
[6] Space for inscription label
[7] LED indicators

Data sheet – Analogue input modules

Dimensions Download CAD data ➔ www.festo.com

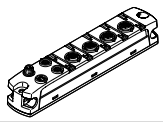


[1] Mounting hole for M4 screws

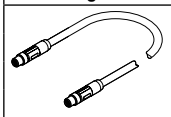
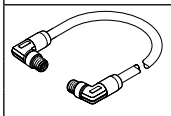
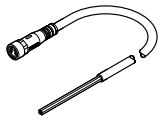
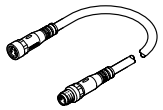
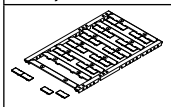
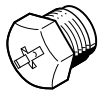
	B1	B2	B3	B4	B5	D1 ⌀	H1	H2	H3	H4	L1	L2	L3	L4	L5
CPX-AP-I-4AI-U-I-RTD-M12	30	20.5	10	11	11	10	34.2	30.2	13.8	20.5	170	155	155	8	8

Data sheet – 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

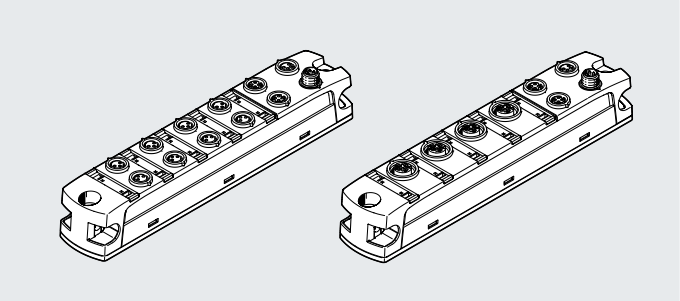
	Description				Part no.	Type	PU[1]
Connecting cable							
	For communication interface	Straight plug, M8x1, 4-pin, D-coded	Straight plug, M8x1, 4-pin, D-coded	0.3 m	**8082902**	**NEBC-D8G4-ES-0.3-N-S-D8G4-ET**	1
				0.5 m	**8065123**	**NEBC-D8G4-ES-0.5-N-S-D8G4-ET**	1
				1.0 m	**8065125**	**NEBC-D8G4-ES-1-N-S-D8G4-ET**	1
				2.0 m	**8065127**	**NEBC-D8G4-ES-2-N-S-D8G4-ET**	1
				5.0 m	**8065129**	**NEBC-D8G4-ES-5-N-S-D8G4-ET**	1
				7.5 m	**8065131**	**NEBC-D8G4-ES-7.5-N-S-D8G4-ET**	1
				10.0 m	**8065133**	**NEBC-D8G4-ES-10-N-S-D8G4-ET**	1
				15.0 m	**8065135**	**NEBC-D8G4-ES-15-N-S-D8G4-ET**	1
		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
				1.0 m	**8065126**	**NEBC-D8W4-ES-1-N-S-D8W4-ET**	1
				2.0 m	**8065128**	**NEBC-D8W4-ES-2-N-S-D8W4-ET**	1
				5.0 m	**8065130**	**NEBC-D8W4-ES-5-N-S-D8W4-ET**	1
				7.5 m	**8065132**	**NEBC-D8W4-ES-7.5-N-S-D8W4-ET**	1
				10.0 m	**8065134**	**NEBC-D8W4-ES-10-N-S-D8W4-ET**	1
				15.0 m	**8065136**	**NEBC-D8W4-ES-15-N-S-D8W4-ET**	1
	For power supply	Straight socket, M8 x 1, 4-pin, A-coded	Open cable end, 4-wire	5.0 m	**8065110**	**NEBL-M8G4-E-5-N-LE4**	1
				7.5 m	**8065113**	**NEBL-M8G4-E-7.5-N-LE4**	1
				10.0 m	**8065117**	**NEBL-M8G4-E-10-N-LE4**	1
				15.0 m	**8065121**	**NEBL-M8G4-E-15-N-LE4**	1
	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**	1
				0.5 m	**8065102**	**NEBL-M8G4-E-0.5-N-M8G4**	1
				1.0 m	**8065104**	**NEBL-M8G4-E-1-N-M8G4**	1
				2.0 m	**8065106**	**NEBL-M8G4-E-2-N-M8G4**	1
				5.0 m	**8065108**	**NEBL-M8G4-E-5-N-M8G4**	1
				7.5 m	**8065111**	**NEBL-M8G4-E-7.5-N-M8G4**	1
				10.0 m	**8065115**	**NEBL-M8G4-E-10-N-M8G4**	1
				15.0 m	**8065119**	**NEBL-M8G4-E-15-N-M8G4**	1
Inscription label							
	For modules CPX-AP-I	Size 6x 12.5 mm, 10 frames with 24 pieces each			**8087174**	**ASLR-L-X4-612-P240**	240
Cover cap							
	For sealing unused connections		For connection M8x1		**177672**	**ISK-M8**	10
			For connection M12x1		**165592**	**ISK-M12**	10

1) Packaging unit.

Data sheet – 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			
Type		CPX-AP-I-4DI4DO-M8-3P	CPX-AP-I-4DI4DO-M12-5P
Number of inputs		4	
Number of outputs		4	
Electrical connection, input			
Function		Digital input	
Connection type		4 x socket	2 x socket
Connection technology		M8x1, A-coded to EN 61076-2-104	M12x1, A-coded to EN 61076-2-101
Number of pins/wires		3	5
Switching logic of 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	[V]	Signal 0: ≤5	
	[V]	Signal 1: ≥11	
Fuse protection inputs (short circuit)		Internal electronic fuse per module	
Input debounce time	[ms]	0.1	
	[ms]	3	
	[ms]	10	
	[ms]	20	
Electrical isolation of inputs between channel and internal communication		Yes	
Electrical isolation of inputs between channels		No	
Electrical connection, output			
Function		Digital output	
Connection type		4 x socket	2 x socket
Connection technology		M8x1, A-coded to EN 61076-2-104	M12x1, A-coded to EN 61076-2-101
Number of pins/wires		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	[µs]	Signal change from 0 to 1: <200	
	[µs]	Signal change from 1 to 0: <200	
Fuse protection outputs (short circuit)		Internal electronic fuse per channel	
Electrical isolation of outputs between channel - internal communication		Yes	
Electrical isolation of outputs between channels		No	
Communication interface			
Protocol		AP-COM	
Function		System communication XF10 IN / XF20 OUT	
Connection type		2 x socket	
Connection technology		M8x1, D-coded to EN 61076-2-114	
Number of pins/wires		4	
Shielding		Yes	

Data sheet – Digital input/output modules

General data		
Diagnostics via LED		Diagnostics per module
		Status per channel
		Power supply, load
Diagnostics per internal communication		Load overvoltage
		Load undervoltage
		Load switch-off
		Short-circuit/overload output signal
		Electronics/sensors overvoltage
		Electronics/sensors undervoltage
		Short circuit/overload in sensor supply
Maximum cable length	[m]	30 outputs
	[m]	30 inputs
	[m]	50 system communication
Information on maximum cable length		Power supply according to nominal voltage
Reverse polarity protection		Yes

Technical data – Electrical components		
Nominal operating voltage, electronics/sensors	[V DC]	24
Nominal operating voltage, load	[V DC]	24
Permissible voltage fluctuations, electronics/sensors	[%]	±25
Permissible voltage fluctuations, load	[%]	±25
Note regarding operating voltage		Note voltage drop
		SELV/PELV power supply units required
Power failure buffering	[ms]	10
Max. power supply	[A]	2x 4
		External fuse required
Max. power supply per channel	[A]	0.5
Max. total current of inputs per module	[A]	1.8
Max. total current of outputs per module	[A]	2
Intrinsic current consumption at nominal operating voltage, electronics/sensors	[mA]	Typically 35
Intrinsic current consumption at nominal operating voltage, load	[mA]	Typically 10
Electrical connection, power supply		
Function		Incoming electronics/sensors and load
Connection type		Plug
Connection technology		M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4
Electrical connection, power transmission		
Function		Outgoing electronics/sensors and load
Connection type		Socket
Connection technology		M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4

Technical data – Mechanical components		
Type of mounting		Via through-hole
Product weight	[g]	129
Dimensions W x L x H	[mm]	30 x 170 x 35
Tightening torque	[Nm]	1.2

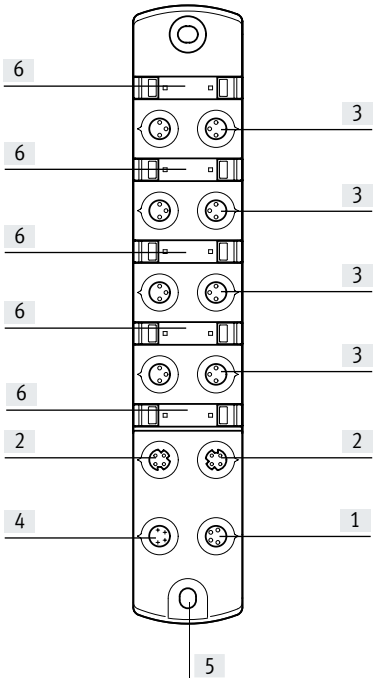
Materials		
Housing		PA
		PC
		Nickel-plated, die-cast zinc
Note on materials		RoHS-compliant

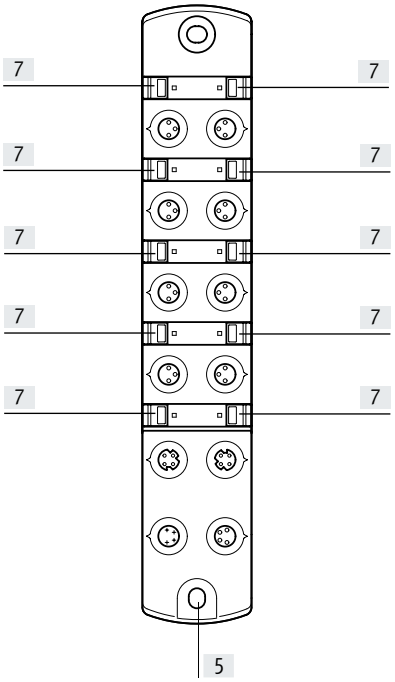
Data sheet – Digital input/output modules

Operating and environmental conditions		
Ambient temperature	[°C]	–20 ... +50
Storage temperature	[°C]	–40 ... +70
Corrosion resistance class CRC[1]		1
Relative humidity	[%]	5 ... 95
		Non-condensing
CE marking (see declaration of conformity)[3]		To EU EMC Directive[2]
KC mark		KC EMC
Certification		RCM compliance mark
Degree of protection		IP65
		IP67
Note on degree of protection		Unused connections sealed

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry indoor application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).
2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.
3) Additional information: www.festo.com/sp ➔ Certificates.

Connections and indicators



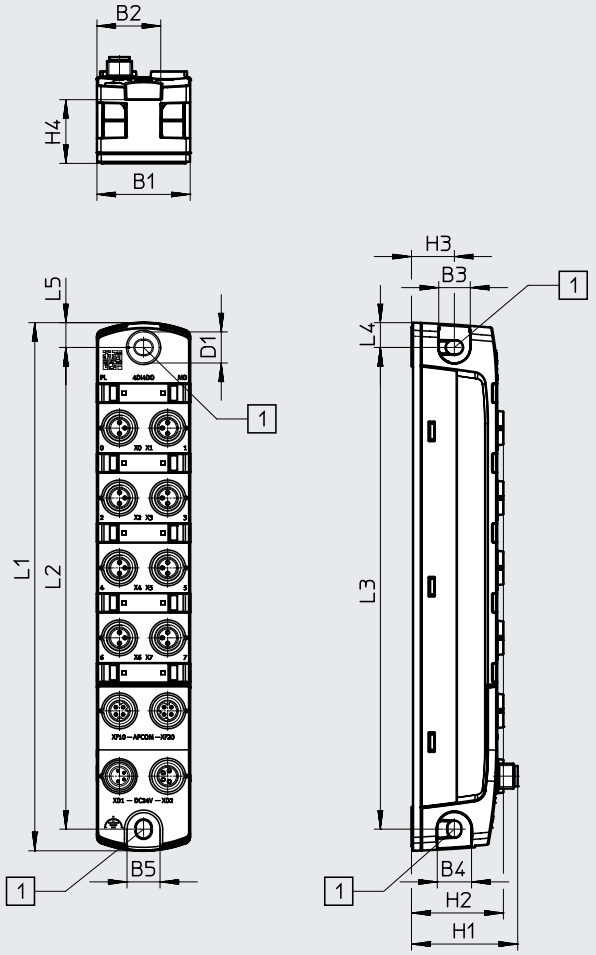


[1] Electrical connection, power transmission
[2] Communication interface
[3] Electrical connection, inputs/outputs
[4] Electrical connection, power supply
[5] Earthing connection
[6] Space for inscription label
[7] LED indicators

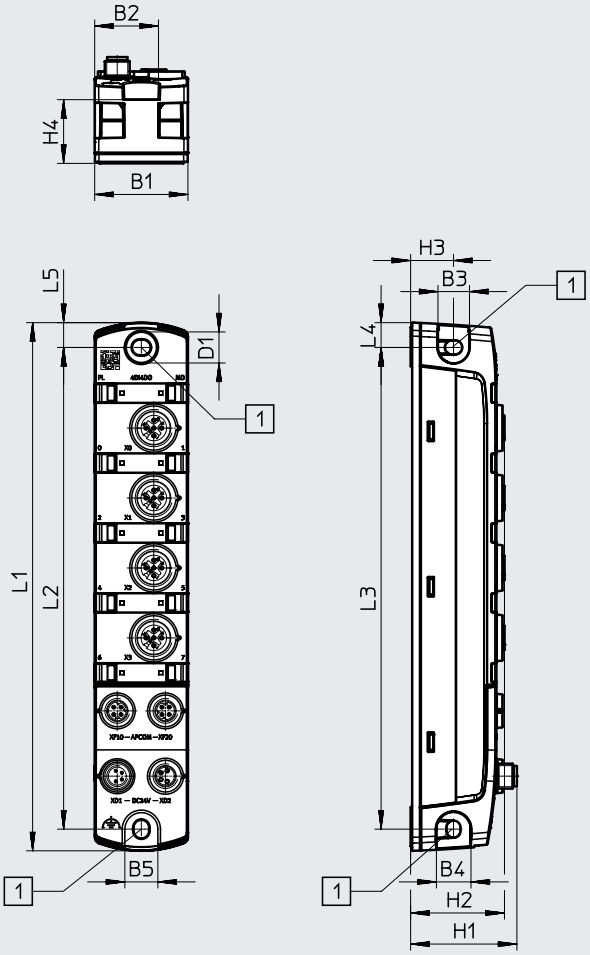
Data sheet – Digital input/output modules

Dimensions Download CAD data ➔ www.festo.com

CPX-AP-I-4DI4DO-M8-3P



CPX-AP-I-4DI4DO-M12-5P

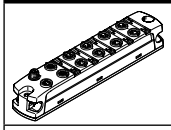
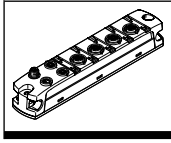


[1] Mounting hole for M4 screws

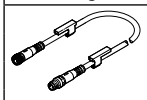
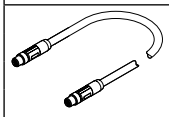
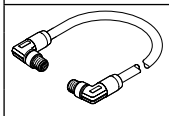
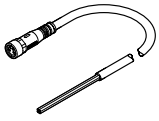
	B1	B2	B3	B4	B5	D1 ⌀	H1	H2	H3	H4	L1	L2	L3	L4	L5
CPX-AP-I-4DI4DO-M8-3P	30	20.5	10	11	11	10	34.2	29.6	13.8	20.5	170	155	155	8	8
CPX-AP-I-4DI4DO-M12-5P	30	20.5	10	11	11	10	34.2	30.2	13.8	20.5	170	155	155	8	8

Data sheet – 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**

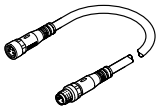
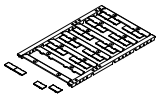
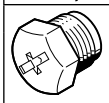
Ordering data – Accessories

	Description				Part no.	Type	PU[1]
Plugs for self-assembly							
	For inputs	Straight plug, M8x1, 3-pin, A-coded	Screw terminal		**192009**	**SEA-3GS-M8-S**	1
			Solder connection		**18696**	**SEA-GS-M8**	1
		Straight plug, M12x1, 5-pin, A-coded	Screw terminal		**175487**	**SEA-M12-5GS-PG7**	1
Distributors							
	For inputs	Straight plug, M8x1, 4-pin, A-coded	2x straight socket, M8x1, 3-pin, A-coded		**8005312**	**NEDY-L2R1-V1-M8G3-N-M8G4**	1
Connecting cable							
	For inputs	Straight plug, M8x1, 3-pin, A-coded	Straight socket, M8 x 1, 3-pin, A-coded	0.5 m	**541346**	**NEBU-M8G3-K-0.5-M8G3**	1
				1.0 m	**541347**	**NEBU-M8G3-K-1-M8G3**	1
				1.5 m	**8003133**	**NEBU-M8G3-K-1.5-M8G3**	1
				2.0 m	**8003131**	**NEBU-M8G3-K-2-M8G3**	1
				2.5 m	**541348**	**NEBU-M8G3-K-2.5-M8G3**	1
				3.0 m	**8003132**	**NEBU-M8G3-K-3-M8G3**	1
				3.5 m	**559364**	**NEBU-M8G3-E-3.5-M8G3**	1
				5.0 m	**541349**	**NEBU-M8G3-K-5-M8G3**	1
				10.0 m	**569844**	**NEBU-M8G3-K-10-M8G3**	1
	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**	1
				0.5 m	**8065123**	**NEBC-D8G4-ES-0.5-N-S-D8G4-ET**	1
				1.0 m	**8065125**	**NEBC-D8G4-ES-1-N-S-D8G4-ET**	1
				2.0 m	**8065127**	**NEBC-D8G4-ES-2-N-S-D8G4-ET**	1
				5.0 m	**8065129**	**NEBC-D8G4-ES-5-N-S-D8G4-ET**	1
				7.5 m	**8065131**	**NEBC-D8G4-ES-7.5-N-S-D8G4-ET**	1
				10.0 m	**8065133**	**NEBC-D8G4-ES-10-N-S-D8G4-ET**	1
				15.0 m	**8065135**	**NEBC-D8G4-ES-15-N-S-D8G4-ET**	1
		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
				1.0 m	**8065126**	**NEBC-D8W4-ES-1-N-S-D8W4-ET**	1
				2.0 m	**8065128**	**NEBC-D8W4-ES-2-N-S-D8W4-ET**	1
				5.0 m	**8065130**	**NEBC-D8W4-ES-5-N-S-D8W4-ET**	1
				7.5 m	**8065132**	**NEBC-D8W4-ES-7.5-N-S-D8W4-ET**	1
				10.0 m	**8065134**	**NEBC-D8W4-ES-10-N-S-D8W4-ET**	1
				15.0 m	**8065136**	**NEBC-D8W4-ES-15-N-S-D8W4-ET**	1
	For power supply	Straight socket, M8 x 1, 4-pin, A-coded	Open cable end, 4-wire	5.0 m	**8065110**	**NEBL-M8G4-E-5-N-LE4**	1
				7.5 m	**8065113**	**NEBL-M8G4-E-7.5-N-LE4**	1
				10.0 m	**8065117**	**NEBL-M8G4-E-10-N-LE4**	1
				15.0 m	**8065121**	**NEBL-M8G4-E-15-N-LE4**	1

1) Packaging unit.

Data sheet – Digital input/output modules

Ordering data – Accessories

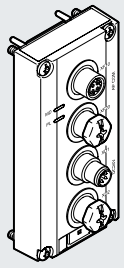
	Description				Part no.	Type	PU[1]
Connecting cable							
	For power transmission	Straight socket, M8 x 1, 4-pin, A-coded	Straight plug, M8x1, 4-pin, A-coded	0.3 m	**8082904**	**NEBL-M8G4-E-0.3-N-M8G4**	1
				0.5 m	**8065102**	**NEBL-M8G4-E-0.5-N-M8G4**	1
				1.0 m	**8065104**	**NEBL-M8G4-E-1-N-M8G4**	1
				2.0 m	**8065106**	**NEBL-M8G4-E-2-N-M8G4**	1
				5.0 m	**8065108**	**NEBL-M8G4-E-5-N-M8G4**	1
				7.5 m	**8065111**	**NEBL-M8G4-E-7.5-N-M8G4**	1
				10.0 m	**8065115**	**NEBL-M8G4-E-10-N-M8G4**	1
				15.0 m	**8065119**	**NEBL-M8G4-E-15-N-M8G4**	1
Inscription label							
	For modules CPX-AP-I	Size 6x 12.5 mm, 10 frames with 24 pieces each			**8087174**	**ASLR-L-X4-612-P240**	240
Cover cap							
	For sealing unused connections		For connection M8x1		**177672**	**ISK-M8**	10
			For connection M12x1		**165592**	**ISK-M12**	10

1) Packaging unit.

Data sheet – Electrical interface for valve terminal VTUG

Function
The electrical interface facilitates a valve terminal VTUG to be operated as a component of the automation 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 disconnection



General technical data		
Type	VAEM-L1-S-12-AP	VAEM-L1-S-24-AP
Maximum number of valve positions	12	24
Maximum number of solenoid coils	24	48
Communication interface		
Protocol	AP-COM	
Function	System communication XF10 IN / XF20 OUT	
Connection type	2 x socket	
Connection technology	M8x1, D-coded to EN 61076-2-114	
Number of pins/wires	4	
Shielding	Yes	

General data		
Module parameters		Configuration of voltage monitoring load supply PL
		Response in error state
Diagnostics via LED		Diagnostics per module
		Power supply, load
Diagnostics per internal communication		Electronics/sensors overvoltage
		Electronics/sensors undervoltage
		Load overvoltage
		Load undervoltage
		Load switch-off
Maximum cable length	[m]	50 system communication

Data sheet – Electrical interface for valve terminal VTUG

Technical data – Electrical components			
Type		VAEM-L1-S-12-AP	VAEM-L1-S-24-AP
Nominal operating voltage, electronics/sensors	[V DC]	24	24
Permissible voltage fluctuations, electronics/sensors	[%]	±25	±25
Nominal operating voltage, load	[V DC]	24	24
Permissible voltage fluctuations, load	[%]	±10	±10
Note regarding operating voltage		SELV/PELV power supply units required	SELV/PELV power supply units required
		Note voltage drop	Note voltage drop
Power failure buffering	[ms]	10	10
Mains buffering of load	[ms]	3	3
Maximum power supply		2 x 4 A (external fuse required)	2 x 4 A (external fuse required)
Fuse protection (short circuit)		Internal electronic fuse per channel	Internal electronic fuse per channel
Protection against direct and indirect contact		PELV	PELV
		SELV	SELV
Reverse polarity protection		Yes	Yes
Intrinsic current consumption at nominal operating voltage, electronics/sensors	[mA]	Typically 34	Typically 34
Intrinsic current consumption at nominal operating voltage, load	[mA]	Typically 16	Typically 22
Electrical connection, power supply			
Function		Incoming electronics/sensors and load	Incoming electronics/sensors and load
Connection type		Plug	Plug
Connection technology		M8x1, A-coded to EN 61076-2-104	M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4	4
Electrical connection, power transmission			
Function		Outgoing electronics/sensors and load	Outgoing electronics/sensors and load
Connection type		Socket	Socket
Connection technology		M8x1, A-coded to EN 61076-2-104	M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4	4

Data sheet – Electrical interface for valve terminal VTUG

Technical data – Mechanical components		
Type of mounting		Screwed on
Connection position		Top
Product weight	[g]	76
Dimensions W x L x H	[mm]	42 x 91 x 30

Materials	
Housing	Reinforced PA
Threaded sleeve	Nickel-plated brass
Note on materials	RoHS-compliant

Operating and environmental conditions		
Ambient temperature	[°C]	–5 ... +50
Storage temperature	[°C]	–20 ... +60
Corrosion resistance class CRC[1)]		2
Relative humidity	[%]	5 ... 95
		Non-condensing
Nominal altitude of use		≤ 2000 m above sea level
CE marking (see declaration of conformity)[3)]		To EU EMC Directive[2)]
KC mark		KC EMC
Degree of protection		IP65
		IP67
Note on degree of protection		When mounted
		Unused connections sealed

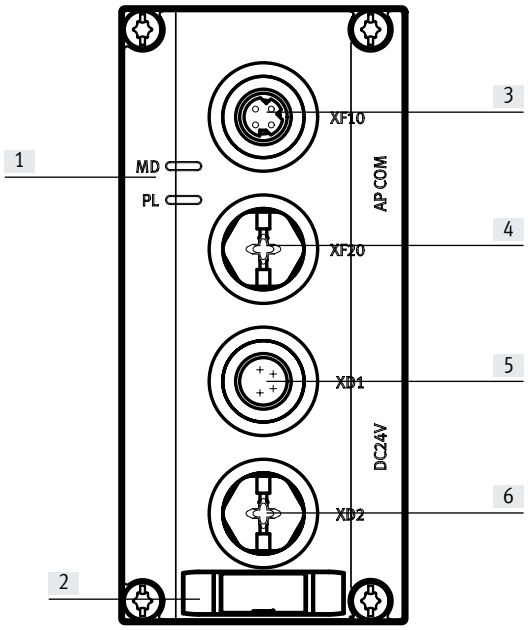
1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp → Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

3) Additional information: www.festo.com/sp → Certificates.

Data sheet – Electrical interface for valve terminal VTUG

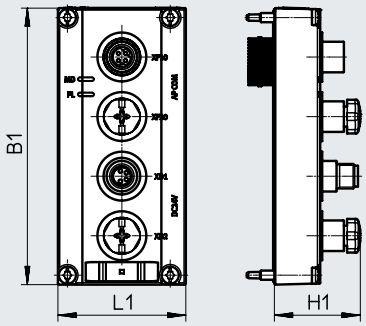
Connections and indicators



[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

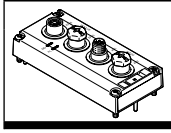
Download CAD data ➔ www.festo.com



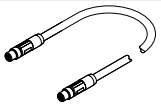
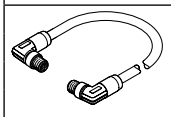
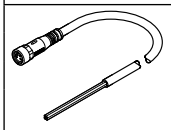
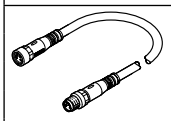
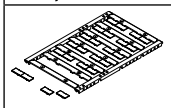
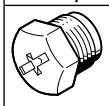
	B1	H1	L1
VAEM-L1-S-12-AP	90.5	28.1	41.8
VAEM-L1-S-24-AP	90.5	28.1	41.8

Data sheet – 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	PU[1]
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**	1
				0.5 m	**8065123**	**NEBC-D8G4-ES-0.5-N-S-D8G4-ET**	1
				1.0 m	**8065125**	**NEBC-D8G4-ES-1-N-S-D8G4-ET**	1
				2.0 m	**8065127**	**NEBC-D8G4-ES-2-N-S-D8G4-ET**	1
				5.0 m	**8065129**	**NEBC-D8G4-ES-5-N-S-D8G4-ET**	1
				7.5 m	**8065131**	**NEBC-D8G4-ES-7.5-N-S-D8G4-ET**	1
				10.0 m	**8065133**	**NEBC-D8G4-ES-10-N-S-D8G4-ET**	1
				15.0 m	**8065135**	**NEBC-D8G4-ES-15-N-S-D8G4-ET**	1
		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
				1.0 m	**8065126**	**NEBC-D8W4-ES-1-N-S-D8W4-ET**	1
				2.0 m	**8065128**	**NEBC-D8W4-ES-2-N-S-D8W4-ET**	1
				5.0 m	**8065130**	**NEBC-D8W4-ES-5-N-S-D8W4-ET**	1
				7.5 m	**8065132**	**NEBC-D8W4-ES-7.5-N-S-D8W4-ET**	1
				10.0 m	**8065134**	**NEBC-D8W4-ES-10-N-S-D8W4-ET**	1
				15.0 m	**8065136**	**NEBC-D8W4-ES-15-N-S-D8W4-ET**	1
	For power supply	Straight socket, M8 x 1, 4-pin, A-coded	Open cable end, 4-wire	5.0 m	**8065110**	**NEBL-M8G4-E-5-N-LE4**	1
				7.5 m	**8065113**	**NEBL-M8G4-E-7.5-N-LE4**	1
				10.0 m	**8065117**	**NEBL-M8G4-E-10-N-LE4**	1
				15.0 m	**8065121**	**NEBL-M8G4-E-15-N-LE4**	1
	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**	1
				0.5 m	**8065102**	**NEBL-M8G4-E-0.5-N-M8G4**	1
				1.0 m	**8065104**	**NEBL-M8G4-E-1-N-M8G4**	1
				2.0 m	**8065106**	**NEBL-M8G4-E-2-N-M8G4**	1
				5.0 m	**8065108**	**NEBL-M8G4-E-5-N-M8G4**	1
				7.5 m	**8065111**	**NEBL-M8G4-E-7.5-N-M8G4**	1
				10.0 m	**8065115**	**NEBL-M8G4-E-10-N-M8G4**	1
				15.0 m	**8065119**	**NEBL-M8G4-E-15-N-M8G4**	1
Inscription label							
	For modules CPX-AP-I	Size 6x 12.5 mm, 10 frames with 24 pieces each			**8087174**	**ASLR-L-X4-612-P240**	240
Cover cap							
	For sealing unused connections		For connection M8x1		**177672**	**ISK-M8**	10

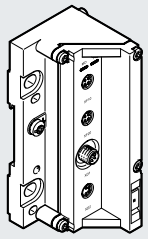
1) Packaging unit.

NEW

Data sheet – Electrical interface for valve terminal MPA-L

Function
The electrical interface facilitates a valve terminal MPA-L to be operated as a component of the automation 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 disconnection, short-circuit diagnostics and switching cycle counter



General technical data	
Maximum number of valve positions	32
Maximum number of solenoid coils	32
Communication interface	
Protocol	AP-COM
Function	System communication XF10 IN / XF20 OUT
Connection type	2 x socket
Connection technology	M8x1, D-coded to EN 61076-2-114
Number of pins/wires	4
Shielding	Yes

General data		
Diagnostics via LED		Diagnostics per module
		Power supply, load
Diagnostics per internal communication		Electronics/sensors overvoltage
		Electronics/sensors undervoltage
Electrical isolation of outputs between channel - internal communication		Yes
Maximum cable length	[m]	50 system communication

Data sheet – Electrical interface for valve terminal MPA-L

Technical data – Electrical components		
Type		VAEM-L1-S-12-AP
Nominal operating voltage, electronics/sensors	[V DC]	24
Permissible voltage fluctuations, electronics/sensors	[%]	±25
Nominal operating voltage, load	[V DC]	24
Permissible voltage fluctuations, load	[%]	±10
Power failure buffering	[ms]	10
Mains buffering of load	[ms]	3
Maximum 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	[mA]	Typically 30
Intrinsic current consumption at nominal operating voltage, load	[mA]	Typically 15
Electrical connection, power supply		
Function		Incoming electronics/sensors and load
Connection type		Plug
Connection technology		M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4
Electrical connection, power transmission		
Function		Outgoing electronics/sensors and load
Connection type		Socket
Connection technology		M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4

Technical data – Mechanical components		
Valve terminal design		Valve sizes can be mixed
Type of mounting		Tie rod
Connection position		Top
Product weight	[g]	194
Dimensions W x L x H	[mm]	43.1 x 107.5 x 50.2

Materials	
Housing	Painted die-cast aluminium
	Reinforced PA
Threaded sleeve	Nickel-plated brass
Note on materials	RoHS-compliant

Operating and environmental conditions		
Ambient temperature	[°C]	–5 ... +50
Storage temperature	[°C]	–40 ... +70
Corrosion resistance class CRC[1)]		3
Relative humidity	[%]	5 ... 95
		Non-condensing
Nominal altitude of use		≤ 2000 m above sea level
CE marking (see declaration of conformity)[3)]		To EU EMC Directive[2)]
KC mark		KC EMC
Certification		RCM compliance mark
Degree of protection		IP65
		IP67
Note on degree of protection		When mounted
		Unused connections sealed

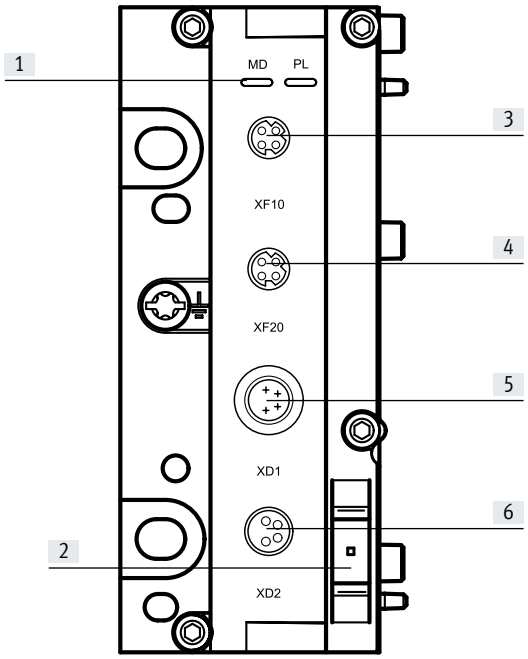
1) Corrosion resistance class CRC 3 to Festo standard FN 940070
High corrosion stress. Outdoor exposure under moderate corrosive conditions. Externally visible parts with primarily functional surface requirements which are in direct contact with a normal industrial environment.

2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp → Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

3) Additional information: www.festo.com/sp → Certificates.

Data sheet – Electrical interface for valve terminal MPA-L

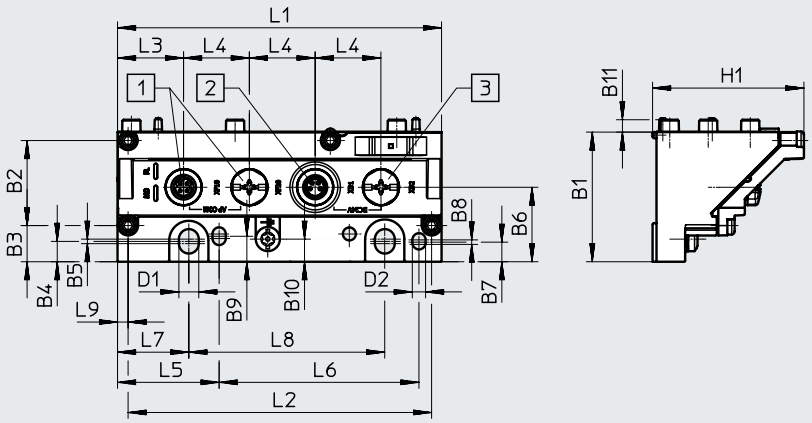
Connections and indicators



[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

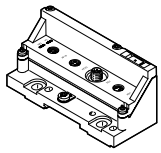


[1] Socket M8x1, D-coded
[2] Plug M8x1, A-coded
[3] Socket M8x1, A-coded

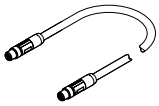
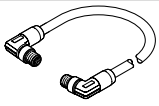
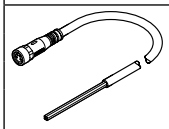
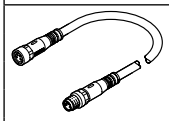
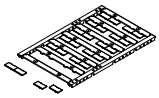
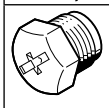
	B1	H1	L1
VMPAL-EPL-AP	90.5	28.1	41.8

Data sheet – 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	PU[1]
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**	1
				0.5 m	**8065123**	**NEBC-D8G4-ES-0.5-N-S-D8G4-ET**	1
				1.0 m	**8065125**	**NEBC-D8G4-ES-1-N-S-D8G4-ET**	1
				2.0 m	**8065127**	**NEBC-D8G4-ES-2-N-S-D8G4-ET**	1
				5.0 m	**8065129**	**NEBC-D8G4-ES-5-N-S-D8G4-ET**	1
				7.5 m	**8065131**	**NEBC-D8G4-ES-7.5-N-S-D8G4-ET**	1
				10.0 m	**8065133**	**NEBC-D8G4-ES-10-N-S-D8G4-ET**	1
				15.0 m	**8065135**	**NEBC-D8G4-ES-15-N-S-D8G4-ET**	1
		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
				1.0 m	**8065126**	**NEBC-D8W4-ES-1-N-S-D8W4-ET**	1
				2.0 m	**8065128**	**NEBC-D8W4-ES-2-N-S-D8W4-ET**	1
				5.0 m	**8065130**	**NEBC-D8W4-ES-5-N-S-D8W4-ET**	1
				7.5 m	**8065132**	**NEBC-D8W4-ES-7.5-N-S-D8W4-ET**	1
				10.0 m	**8065134**	**NEBC-D8W4-ES-10-N-S-D8W4-ET**	1
				15.0 m	**8065136**	**NEBC-D8W4-ES-15-N-S-D8W4-ET**	1
	For power supply	Straight socket, M8 x 1, 4-pin, A-coded	Open cable end, 4-wire	5.0 m	**8065110**	**NEBL-M8G4-E-5-N-LE4**	1
				7.5 m	**8065113**	**NEBL-M8G4-E-7.5-N-LE4**	1
				10.0 m	**8065117**	**NEBL-M8G4-E-10-N-LE4**	1
				15.0 m	**8065121**	**NEBL-M8G4-E-15-N-LE4**	1
	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**	1
				0.5 m	**8065102**	**NEBL-M8G4-E-0.5-N-M8G4**	1
				1.0 m	**8065104**	**NEBL-M8G4-E-1-N-M8G4**	1
				2.0 m	**8065106**	**NEBL-M8G4-E-2-N-M8G4**	1
				5.0 m	**8065108**	**NEBL-M8G4-E-5-N-M8G4**	1
				7.5 m	**8065111**	**NEBL-M8G4-E-7.5-N-M8G4**	1
				10.0 m	**8065115**	**NEBL-M8G4-E-10-N-M8G4**	1
				15.0 m	**8065119**	**NEBL-M8G4-E-15-N-M8G4**	1
Inscription label							
	For modules CPX-AP-I	Size 6x 12.5 mm, 10 frames with 24 pieces each			**8087174**	**ASLR-L-X4-612-P240**	240
Cover cap							
	For sealing unused connections		For connection M8x1		**177672**	**ISK-M8**	10

1) Packaging unit.