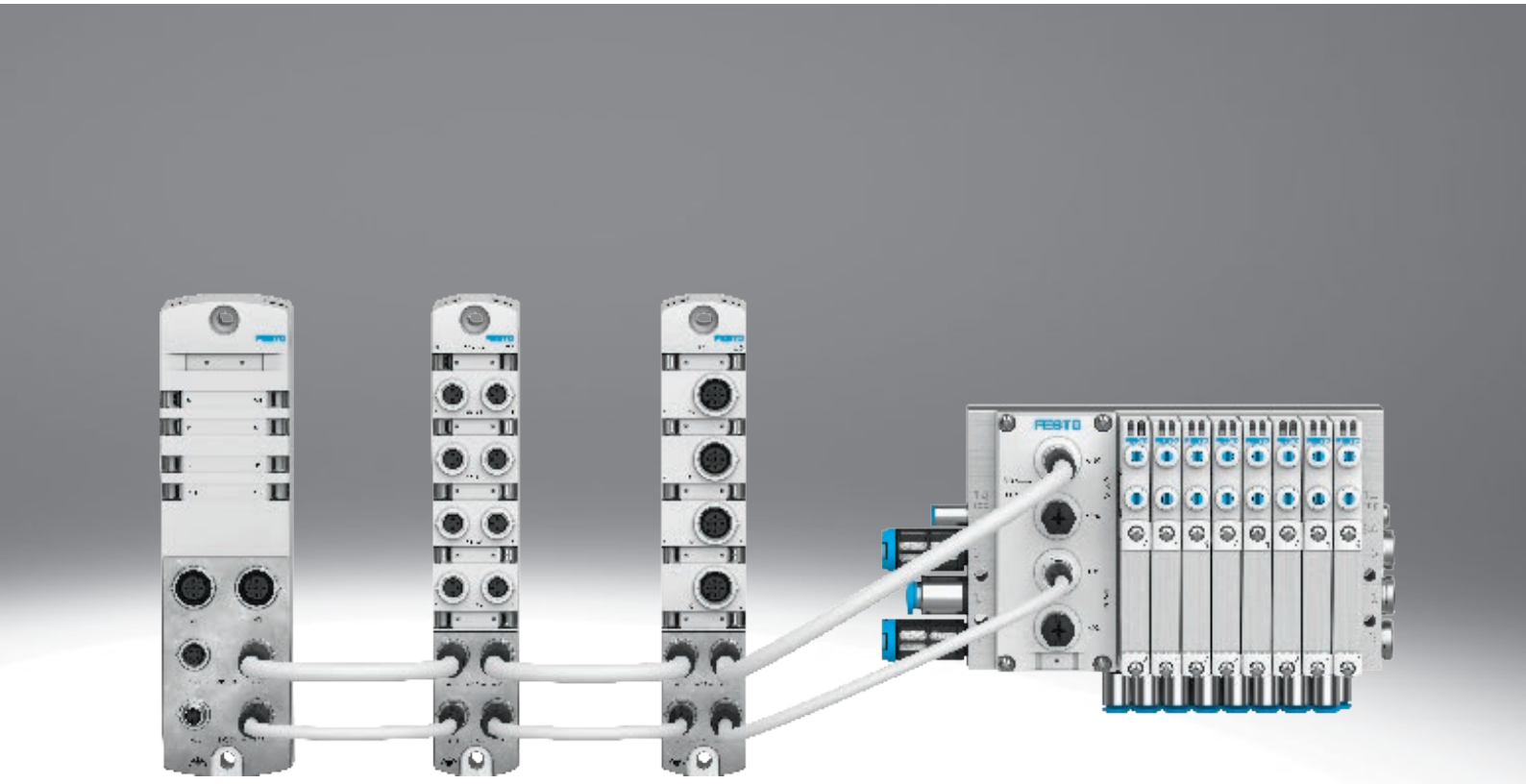
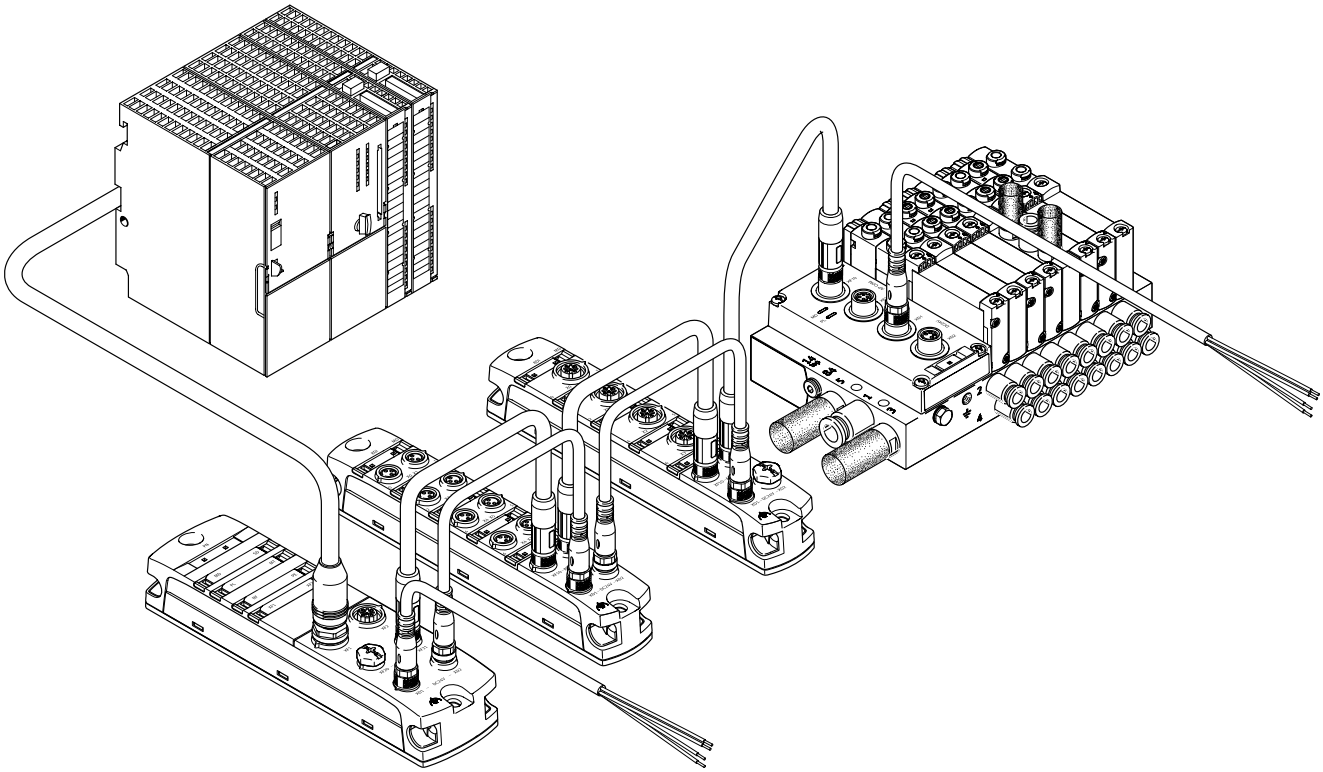
Remote I/O system CPX-AP-I



Key features



Key features

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

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

- Extremely easy assembly
- Separate cables for communication and power supply to create voltage zones and for stable data transfer
- Electrical isolation of output channels
- Digital electronic rating plate available
- Easy firmware update
- Easy access to the system for maintenance via Ethernet
- Easy to integrate
- Real-time capability
- Up to 80 individual modules/valve terminals per bus interface
- Easy to adapt to different control systems by exchanging the bus interface
- Direct connection of valve terminals
- A choice of M8 or M12 electrical connections
- Cable length of up to 50 m between the modules

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

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

Ordering data – Product options

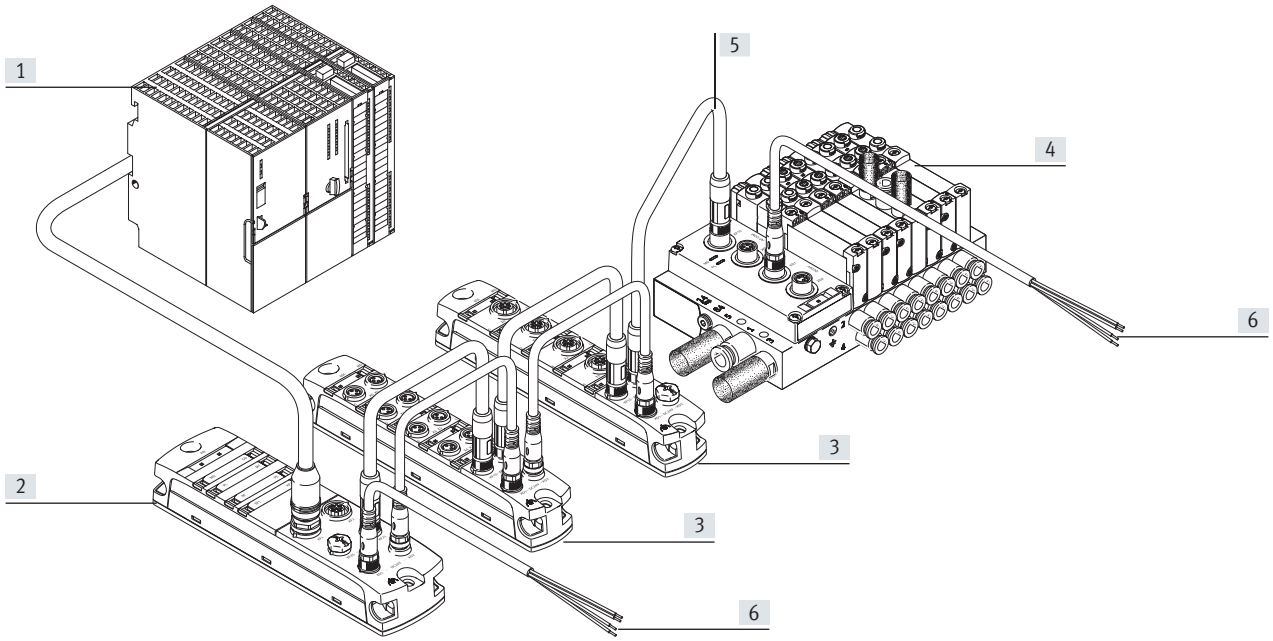
Configurable product
This product and all its product options can be ordered using the configurator.

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

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

Key features

Overview



[1] Higher-order controller

[2] Bus interface for connecting the 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 sensors and actuators of the remote I/O system CPX-AP-I. Up to 80 modules per bus interface possible

[4] Valve terminal with electrical interface for CPX-AP-I. Can be used as an output module within the remote I/O system CPX-AP-I

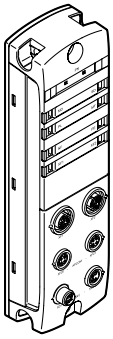
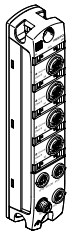
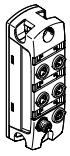
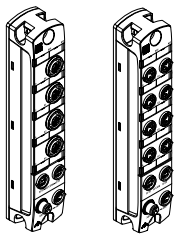
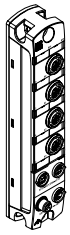
[5] Connection cable for communication between the modules and the bus interface. The maximum cable length from the bus interface to the Module is 50 m

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

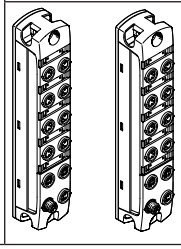
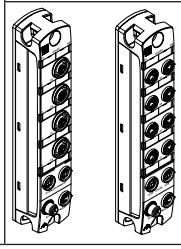
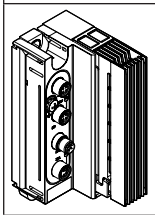
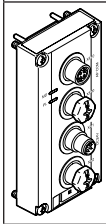
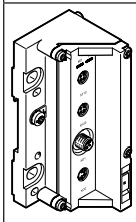
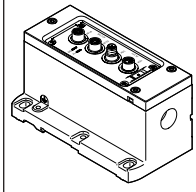
Note

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

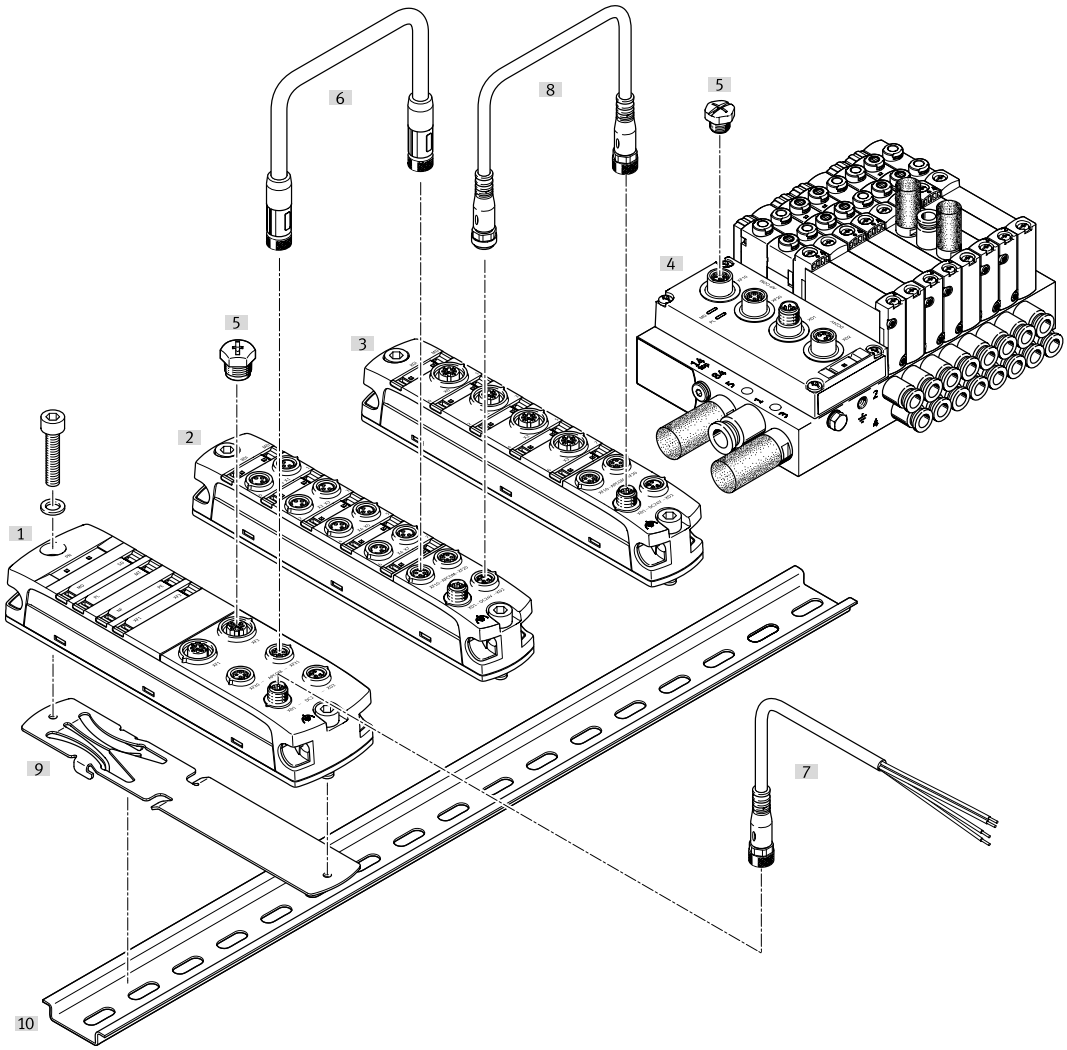
Product range overview

Function	Version		Type		→ Page/ Internet
Bus interface	**Interface**				
		PROFINET	CPX-AP-I-PN-M12	• Actuation via PROFINET • Two PROFINET connections • Two connections for system communication • Two connections for power supply and forwarding	11
		PROFIBUS	CPX-AP-I-PB-M12	• Control via PROFIBUS • Two PROFIBUS connections • Two connections for system communication • Two connections for power supply and forwarding	17
		EtherCAT®	CPX-AP-I-EC-M12	• Actuation via EtherCAT® • Two EtherCAT® connections • Two connections for system communication • Two connections for power supply and forwarding	23
		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 forwarding	23
IO-Link Master		4 IO-Link® connections	CPX-AP-I-4IOL-M12	• LED indicator • Master V 1.1 • Electrical connection M12x1 5-pin	35
Input module	**Digital**				
		4 inputs	CPX-AP-I-4DI	• LED indicator • PNP (positive switching) • Characteristic curve of inputs to IEC 61131-2, type 3 • Electrical connection M8x1, 3-pin	41
		8 inputs	CPX-AP-I-8DI	• LED indicator • PNP (positive switching) • Characteristic curve of inputs to IEC 61131-2, type 3 • Electrical connection M8x1, 3-pin • Electrical connection M12x1 5-pin	47
	Analogue				
		4 inputs	CPX-AP-I-4AI	• LED indicator • Current, voltage, temperature or resistance measurement • Electrical connection M12x1 5-pin	55

Product range overview

Function	Version		Type		→ Page/ Internet
Output module	**Digital**				
		8 outputs	CPX-AP-I-8DO	• LED indicator • PNP (positive switching) • Characteristic curve of outputs to IEC 61131-2, type 0.5 • Electrical connection M8x1, 3-pin • Electrical connection M12x1 5-pin	61
Input/output module	**Digital**				
		• 4 inputs • 4 outputs	CPX-AP-I-4DI4DO	• LED indicator • PNP (positive switching) • Characteristic curve of inputs to IEC 61131-2, type 3 • Characteristic curve of outputs to IEC 61131-2, type 0.5 • Electrical connection M8x1, 3-pin • Electrical connection M12x1 5-pin	69
Electrical interface for valve terminal	**Valve terminal VTUX**				
		• Maximum 32 valve positions • Up to 32 valve coils	VABX-A	• LED indicator • 1 valve size (10 mm) • 2x 3/2-way valves • 5/2-way valves • 5/3-way valve • Modular design • Flow rates of up to 670 l/min	76
	Valve terminal VTUG				
		• 12 or 24 valve positions • Up to 48 valve coils	VAEM-L1-S	• LED indicator • 3 valve sizes (10 mm, 14 mm and 18 mm) • 2x 3/2-way valves • 3/2-way valves • 5/2-way valves • 5/3-way valves • Interlinking in fixed grid • Flow rate 130 ... 1000 l/min	82
	Valve terminal MPA-L				
		• 32 valve positions • Up to 32 valve coils	VMPAL-EPL-AP	• LED indicator • 3 valve sizes (10 mm, 14 mm and 20 mm) • 2x 2/2-way valves • 2x 3/2-way valves • 3/2-way valves • 5/2-way valves • 5/3-way valves • Modular design • Flow rate up to 870 l/min	87
	Valve terminals VTSA				
		• 12 valve positions • Up to 24 valve coils	VABA-S6-1-AP	• LED indicator • 4 valve sizes (18 mm, 26 mm, 42 mm and 52 mm) • 2x 2/2-way valves • 2x 3/2-way valves • 5/2-way valves • 5/3-way valves • Modular design • Flow rate up to 2900 l/min	vtsa

Peripherals overview

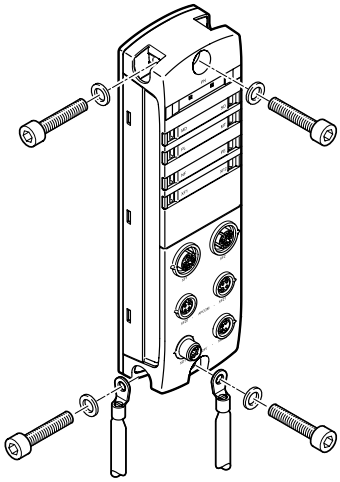


		Type	Description	→ Page/Internet
[1]	Bus interface	CPX-AP-I-PN-M12 CPX-AP-I-PB-M12 CPX-AP-I-EC-M12 CPX-AP-I-EP-M12	Connecting the CPX-AP-I to a higher-level controller	11 17 23 29
[2]	Module with M8 connections	CPX-AP-I-4DI-M8-3P CPX-AP-I-8DI-M8-3P CPX-AP-I-8DO-M8-3P CPX-AP-I-4DI4DO-M8-3P	Digital input, output and input/output modules	41 47 61 69
[3]	Module with M12 connections	CPX-AP-I-4IOL-M12	IO-Link Master	35
		CPX-AP-I-8DI-M12-5P CPX-AP-I-4AI-U-I-RTD-M12 CPX-AP-I-8DO-M12-5P CPX-AP-I-4DI4DO-M12-5P	Digital and analogue input, output and input/output modules	47 55 61 69
[4]	Electrical interface for valve terminal	VABX-A	For valve terminal VTUX	76
		VAEM-L1-S	For valve terminal VTUG	82
		VMPAL-EPL-AP	For valve terminal MPA-L	87
		VABA-S6-1-AP	For valve terminals VTSA	vtsa
[5]	Cover cap	ISK-M8 ISK-M12	For capping unused electrical connections, connection size M8and M12	isk
[6]	Connecting cable	NEBC	For connecting the modules for communication	nebc
[7]	Connecting cable	NEBL	For connecting the power supply	fog
[8]	Connecting cable	NEBL	For power transmission from module to module	fog
[9]	DIN rail attachment	CAFM	For mounting a module on DIN rails to EN 60715	cafm
[10]	DIN mounting rail	NRH-35-2000	DIN rail to EN 60715	nrh

Key features – Mounting

Assembly

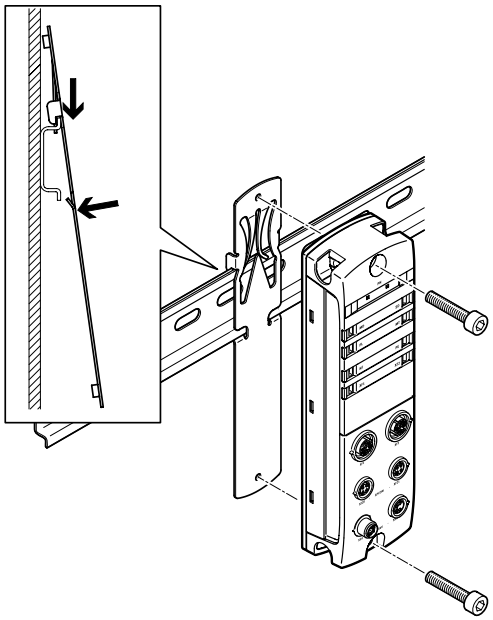
Wall mounting – modules



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

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

DIN rail mounting – Modules

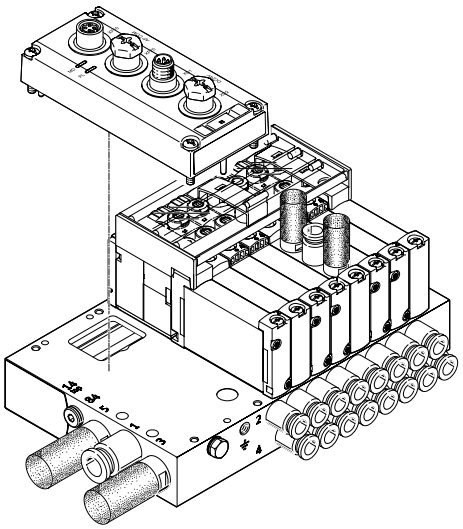


The modules can be mounted on DIN rails according to EN 60715 using the DIN rail mounting CAFM. Two screws with metric thread M4 and correctly sized washers (not included in the scope of delivery) are needed for securing mounting.

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

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

Mounting – Electrical interface

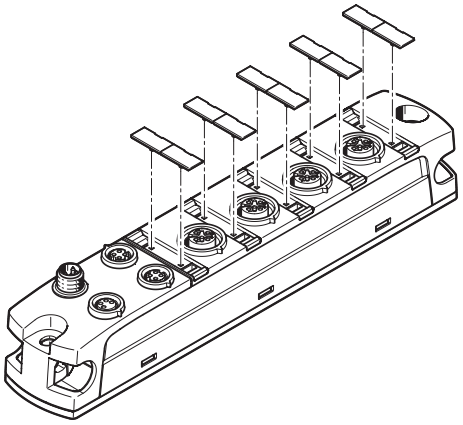


The electrical interfaces are mounted directly on the valve terminal.

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

Key features – Power supply

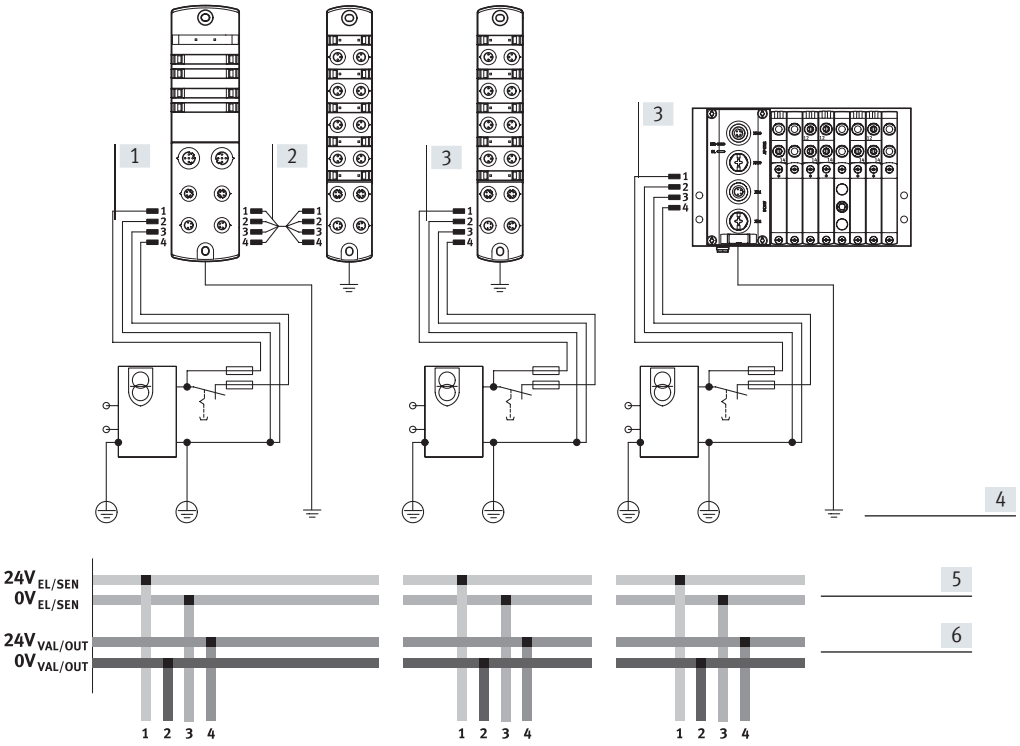
Labelling



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

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

Power supply concept



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

In principle, the remote I/O system CPX-AP-I has two separate electrical circuits:
- For the module electronics and the power supply for connected sensors
- For connected outputs or valves

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

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

Key features – Diagnostics

System performance

Diagnostics

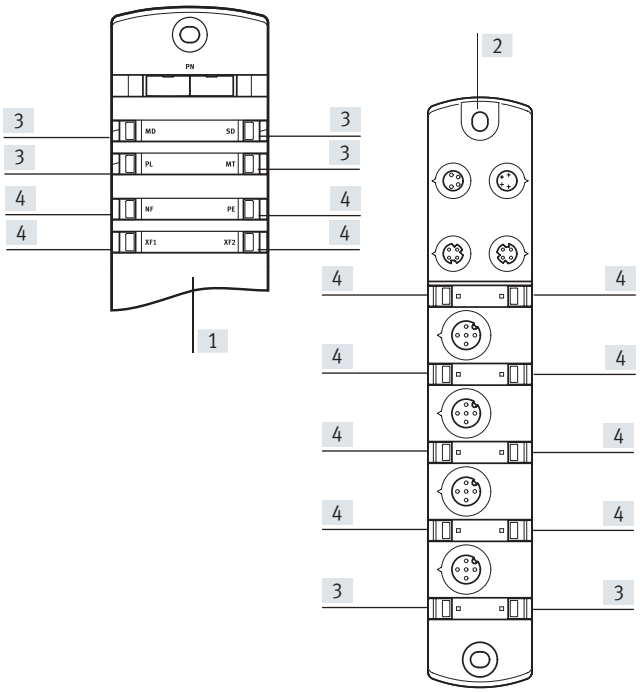
Detailed diagnostic functions are needed in order to quickly locate the causes of errors in the electrical installation and therefore reduce downtimes in the production plant.
A basic distinction is made between on-the-spot diagnostics using LEDs and diagnostics using a bus interface.

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

Module- and channel-specific diagnostics are supported, e. g.
- Undervoltage detection
- Short-circuit detection

The diagnostic messages can be read out via the bus interface in the higher-order controller and visualised for the central recording and evaluation of error causes. This is done using the individual bus-specific channels.

Indicator lights



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

[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 the network connection, switching status of the sensor)

Parameterisation

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

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

Key features – Addressing

Addressing

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

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

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

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

Note

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

Overview – Address space CPX-AP-I bus interface

	Protocol	Max. total	
		Inputs	Outlets
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

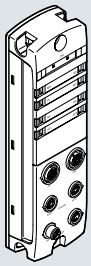
		Inputs [bytes]	Outputs [byte]
CPX-AP-I-4IOL-M12	IO-Link Master	12 ... 132	8 ... 128
CPX-AP-I-4DI-M8-3P	Digital input module, 4 inputs	1	-
CPX-AP-I-8DI-M8-3P	Digital input module, 8 inputs	1	-
CPX-AP-I-8DI-M12-5P	Digital input module, 8 inputs	1	-
CPX-AP-I-4AI-U-I-RTD-M12	Analogue input module, 4 inputs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

Example CPX-AP-I-PN-M12 (PROFINET)

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

Datasheet – PROFINET interface

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



Bus connection

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

The bus connection is provided 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 – PROFINET interface

Fieldbus interface, protocol	PROFINET IRT PROFINET RT
Fieldbus interface, function	Bus connection incoming/continuing
Fieldbus interface, transmission rate	100 Mbit/s
Fieldbus interface, type	Ethernet
Fieldbus interface, type of connection	2x socket
Communication interface, protocol	AP
Communication interface, function	System communication XF20 OUT / XF21 OUT
Communication interface, connection type	2x socket
Communication interface, connection technology	M8x1, D-coded to EN 61076-2-114
Communication interface, number of pins/cores	4
Communication interface, screened	Yes

General data – PROFINET interface

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

Datasheet – PROFINET interface

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

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

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

Operating and environmental conditions – PROFINET interface	
Ambient temperature	-20 ... 50 °C
Storage temperature	-40 ... 70 °C
Corrosion resistance class CRC [1]	1 - Low corrosion stress
Relative humidity	5 - 95%, non-condensing
CE marking (see declaration of conformity) [2]	To EU EMC Directive
UKCA mark (see declaration of conformity) [3]	To UK EMC regulations
KC marking	KC-EMV
Certification	RCM c UL us - Listed (Oil)
Certificate issuing authority	UL E239998
Degree of protection	IP65; IP67
Note on degree of protection	Unused connections sealed

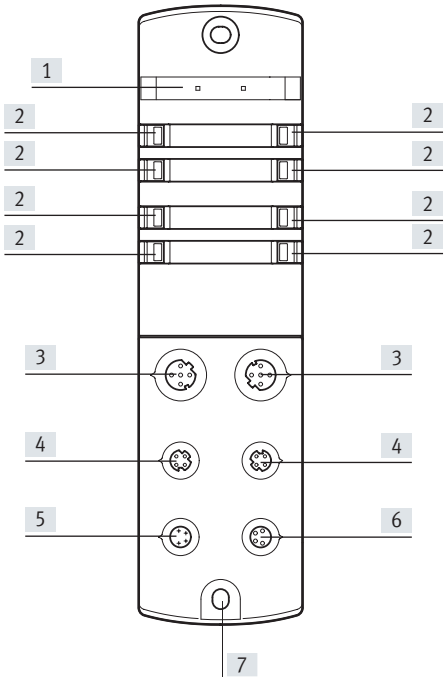
1) More information www.festo.com/x/topic/crc

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

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

Datasheet – PROFINET interface

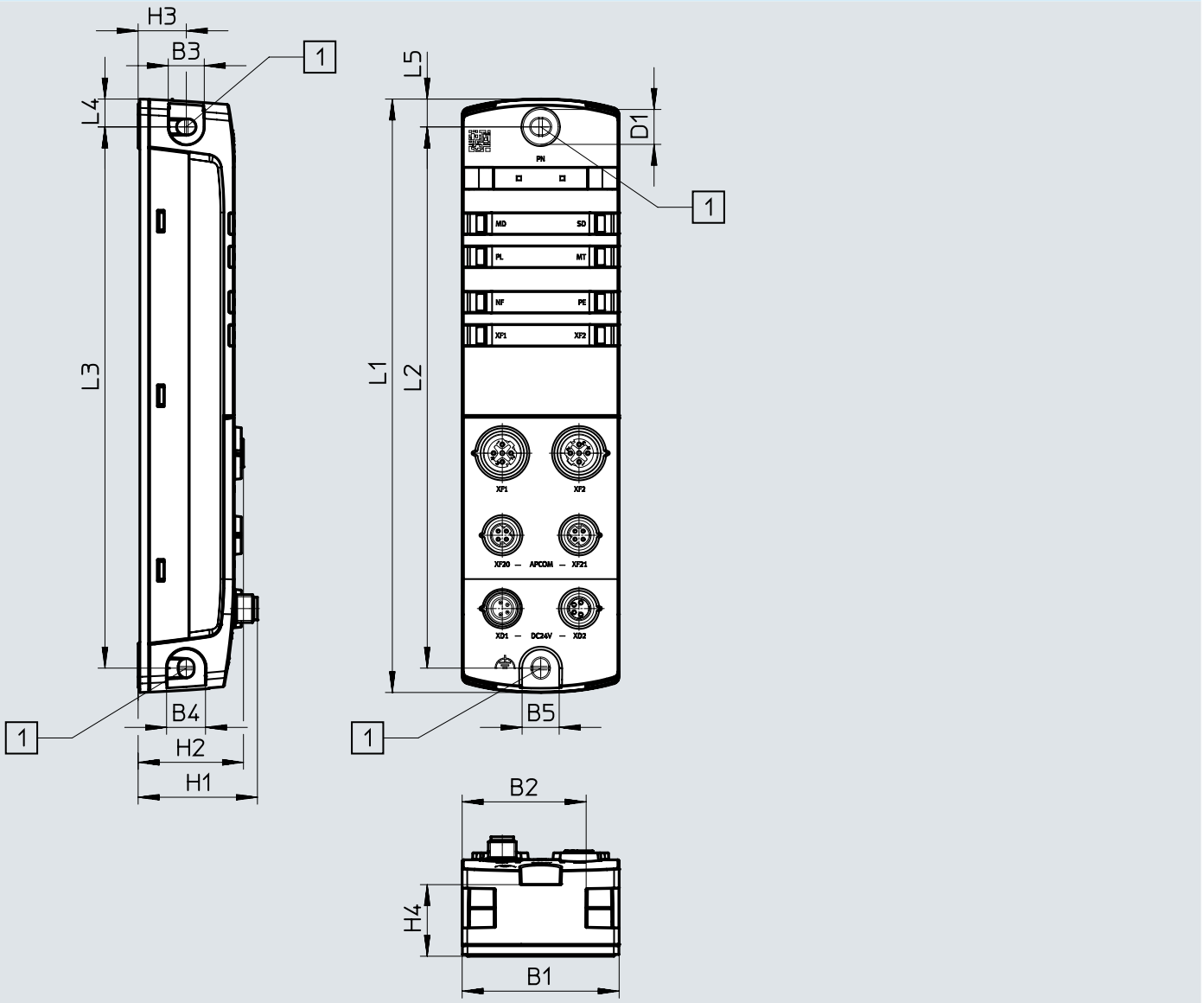
Connection and display components



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

Datasheet – PROFINET interface

Dimensions Download CAD data➔ www.festo.com

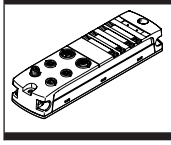


[1] Mounting hole for M4 screws

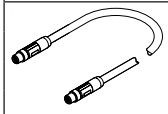
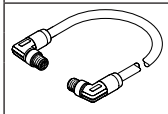
	B1	B2	B3	B4	B5	D1 ø	H1	H2	H3	H4	L1	L2	L3	L4	L5
CPX-AP-I-PN-M12	45	35.5	10	11	11	10	34.2	30.2	13.8	20.5	170	155	155	8	8

Datasheet – PROFINET interface

Ordering data

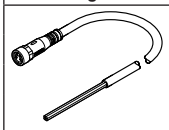
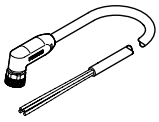
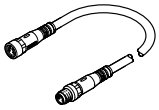
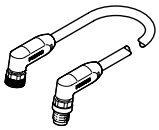
		Part no.	Type
	PROFINET interface	**8086607**	**CPX-AP-I-PN-M12**

Ordering data – Accessories

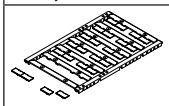
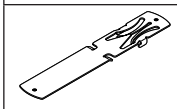
	Description				Part no.	Type
Plug connectors for self-assembly						
	For bus connection	Straight plug, M12x1, 4-pin, D-coded			**543109**	**NECU-M-S-D12G4-C2-ET**
Connecting cable						
	For communication interface	Straight plug, M8x1, 4-pin, D-coded	Straight plug, M8x1, 4-pin, D-coded	0.3 m	**8082902**	**NEBC-D8G4-ES-0.3-N-S-D8G4-ET**
				0.5 m	**8065123**	**NEBC-D8G4-ES-0.5-N-S-D8G4-ET**
				1.0 m	**8065125**	**NEBC-D8G4-ES-1-N-S-D8G4-ET**
				2.0 m	**8065127**	**NEBC-D8G4-ES-2-N-S-D8G4-ET**
				5.0 m	**8065129**	**NEBC-D8G4-ES-5-N-S-D8G4-ET**
				7.5 m	**8065131**	**NEBC-D8G4-ES-7.5-N-S-D8G4-ET**
				10.0 m	**8065133**	**NEBC-D8G4-ES-10-N-S-D8G4-ET**
				15.0 m	**8065135**	**NEBC-D8G4-ES-15-N-S-D8G4-ET**
				20.0 m	**8146031**	**NEBC-D8G4-ES-20-N-S-D8G4-ET**
				25.0 m	**8146032**	**NEBC-D8G4-ES-25-N-S-D8G4-ET**
				30.0 m	**8146033**	**NEBC-D8G4-ES-30-N-S-D8G4-ET**
				40.0 m	**8146034**	**NEBC-D8G4-ES-40-N-S-D8G4-ET**
				50.0 m	**8146035**	**NEBC-D8G4-ES-50-N-S-D8G4-ET**
	For communication interface	Angled plug, M8x1, 4-pin, D-coded	Angled plug, M8x1, 4-pin, D-coded	0.5 m	**8065124**	**NEBC-D8W4-ES-0.5-N-S-D8W4-ET**
				1.0 m	**8065126**	**NEBC-D8W4-ES-1-N-S-D8W4-ET**
				2.0 m	**8065128**	**NEBC-D8W4-ES-2-N-S-D8W4-ET**
				5.0 m	**8065130**	**NEBC-D8W4-ES-5-N-S-D8W4-ET**
				7.5 m	**8065132**	**NEBC-D8W4-ES-7.5-N-S-D8W4-ET**
				10.0 m	**8065134**	**NEBC-D8W4-ES-10-N-S-D8W4-ET**
				15.0 m	**8065136**	**NEBC-D8W4-ES-15-N-S-D8W4-ET**
				20.0 m	**8146036**	**NEBC-D8W4-ES-20-N-S-D8W4-ET**
				25.0 m	**8146037**	**NEBC-D8W4-ES-25-N-S-D8W4-ET**
				30.0 m	**8146038**	**NEBC-D8W4-ES-30-N-S-D8W4-ET**
				40.0 m	**8146039**	**NEBC-D8W4-ES-40-N-S-D8W4-ET**
				50.0 m	**8146040**	**NEBC-D8W4-ES-50-N-S-D8W4-ET**

Datasheet – PROFINET interface

Ordering data – Accessories

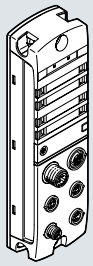
	Description				Part no.	Type
Connecting cable						
	For power supply	Straight socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	5.0 m	**8065110**	**NEBL-M8G4-E-5-N-LE4**
				7.5 m	**8065113**	**NEBL-M8G4-E-7,5-N-LE4**
				10.0 m	**8065117**	**NEBL-M8G4-E-10-N-LE4**
				15.0 m	**8065121**	**NEBL-M8G4-E-15-N-LE4**
		Angled socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	7.5 m	**8065114**	**NEBL-M8W4-E-7.5-N-LE4**
				10.0 m	**8065118**	**NEBL-M8W4-E-10-N-LE4**
				15.0 m	**8065122**	**NEBL-M8W4-E-15-N-LE4**
	For power transmission	Straight socket, M8x1, 4-pin, A-coded	Straight plug, M8x1, 4-pin, A-coded	0.3 m	**8082904**	**NEBL-M8G4-E-0.3-N-M8G4**
				0.5 m	**8065102**	**NEBL-M8G4-E-0.5-N-M8G4**
				1.0 m	**8065104**	**NEBL-M8G4-E-1-N-M8G4**
				2.0 m	**8065106**	**NEBL-M8G4-E-2-N-M8G4**
				5.0 m	**8065108**	**NEBL-M8G4-E-5-N-M8G4**
				7.5 m	**8065111**	**NEBL-M8G4-E-7.5-N-M8G4**
				10.0 m	**8065115**	**NEBL-M8G4-E-10-N-M8G4**
				15.0 m	**8065119**	**NEBL-M8G4-E-15-N-M8G4**
	For power transmission	Angled socket, M8x1, 4-pin, A-coded	Angled plug, M8x1, 4-pin, A-coded	0.3 m	**8146577**	**NEBL-M8W4-E-0.3-N-M8W4**
				0.5 m	**8065103**	**NEBL-M8W4-E-0.5-N-M8W4**
				1.0 m	**8065105**	**NEBL-M8W4-E-1-N-M8W4**
				2.0 m	**8065107**	**NEBL-M8W4-E-2-N-M8W4**
				5.0 m	**8065109**	**NEBL-M8W4-E-5-N-M8W4**
				7.5 m	**8065112**	**NEBL-M8W4-E-7.5-N-M8W4**
				10.0 m	**8065116**	**NEBL-M8W4-E-10-N-M8W4**
				15.0 m	**8065120**	**NEBL-M8W4-E-15-N-M8W4**

Ordering data – Accessories

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

Datasheet – PROFIBUS interface

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



Bus connection

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

The network can be divided and enlarged using additional repeaters.

This makes it possible to structure and expand the network.

General technical data – PROFIBUS interface

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

Datasheet – PROFIBUS interface

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

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

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

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

Datasheet – PROFIBUS interface

Operating and environmental conditions – PROFIBUS interface

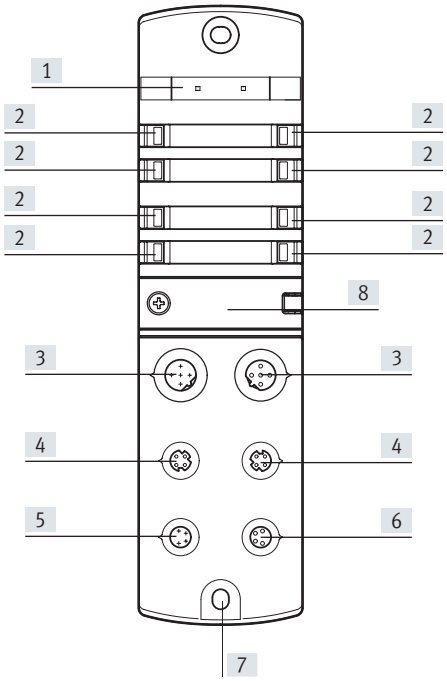
Ambient temperature	-20 ... 50 °C
Storage temperature	-40 ... 70 °C
Corrosion resistance class CRC [1]	1 - Low corrosion stress
Relative humidity	5 - 95%, non-condensing
CE marking (see declaration of conformity) [2]	To EU EMC Directive
UKCA mark (see declaration of conformity) [3]	To UK EMC regulations
KC marking	KC-EMV
Certification	RCM c UL us - Listed (Oil)
Certificate issuing authority	UL E239998
Degree of protection	IP65; IP67
Note on degree of protection	Unused connections sealed

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

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

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

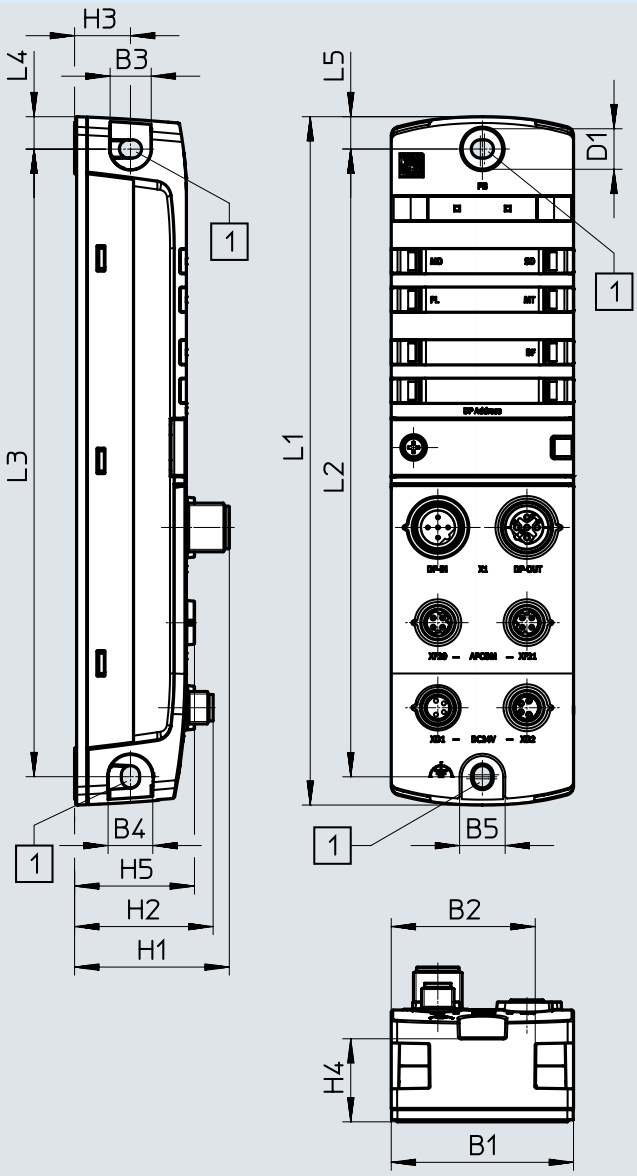
Connection and display components



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

Datasheet – PROFIBUS interface

Dimensions Download CAD data➔ www.festo.com

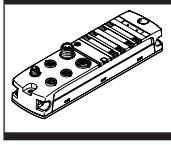


[1] Mounting hole for M4 screws

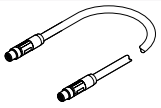
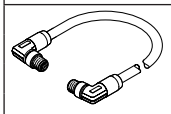
	B1	B2	B3	B4	B5	D1 ø	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5
CPX-AP-I-PB-M12	45	35.5	10	11	11	10	38.2	34.2	13.8	20.5	29.6	170	155	155	8	8

Datasheet – PROFIBUS interface

Ordering data

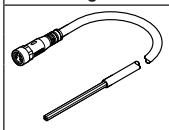
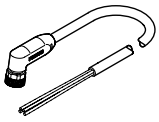
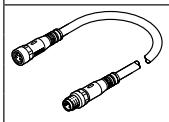
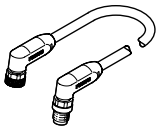
		Part no.	Type
	PROFIBUS interface	**8086608**	**CPX-AP-I-PB-M12**

Ordering data – Accessories

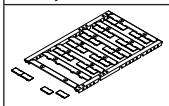
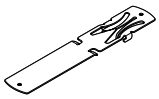
	Description				Part no.	Type
Plug connectors for self-assembly						
	For bus connection	Straight socket, M12x1, 5-pin, B-coded			**1067905**	**NECU-M-B12G5-C2-PB**
		Straight plug, M12x1, 5-pin, B-coded			**1066354**	**NECU-M-S-B12G5-C2-PB**
Connecting cable						
	For communication interface	Straight plug, M8x1, 4-pin, D-coded	Straight plug, M8x1, 4-pin, D-coded	0.3 m	**8082902**	**NEBC-D8G4-ES-0.3-N-S-D8G4-ET**
				0.5 m	**8065123**	**NEBC-D8G4-ES-0.5-N-S-D8G4-ET**
				1.0 m	**8065125**	**NEBC-D8G4-ES-1-N-S-D8G4-ET**
				2.0 m	**8065127**	**NEBC-D8G4-ES-2-N-S-D8G4-ET**
				5.0 m	**8065129**	**NEBC-D8G4-ES-5-N-S-D8G4-ET**
				7.5 m	**8065131**	**NEBC-D8G4-ES-7.5-N-S-D8G4-ET**
				10.0 m	**8065133**	**NEBC-D8G4-ES-10-N-S-D8G4-ET**
				15.0 m	**8065135**	**NEBC-D8G4-ES-15-N-S-D8G4-ET**
				20.0 m	**8146031**	**NEBC-D8G4-ES-20-N-S-D8G4-ET**
				25.0 m	**8146032**	**NEBC-D8G4-ES-25-N-S-D8G4-ET**
				30.0 m	**8146033**	**NEBC-D8G4-ES-30-N-S-D8G4-ET**
				40.0 m	**8146034**	**NEBC-D8G4-ES-40-N-S-D8G4-ET**
				50.0 m	**8146035**	**NEBC-D8G4-ES-50-N-S-D8G4-ET**
		Angled plug, M8x1, 4-pin, D-coded	Angled plug, M8x1, 4-pin, D-coded	0.5 m	**8065124**	**NEBC-D8W4-ES-0.5-N-S-D8W4-ET**
				1.0 m	**8065126**	**NEBC-D8W4-ES-1-N-S-D8W4-ET**
				2.0 m	**8065128**	**NEBC-D8W4-ES-2-N-S-D8W4-ET**
				5.0 m	**8065130**	**NEBC-D8W4-ES-5-N-S-D8W4-ET**
				7.5 m	**8065132**	**NEBC-D8W4-ES-7.5-N-S-D8W4-ET**
				10.0 m	**8065134**	**NEBC-D8W4-ES-10-N-S-D8W4-ET**
				15.0 m	**8065136**	**NEBC-D8W4-ES-15-N-S-D8W4-ET**
				20.0 m	**8146036**	**NEBC-D8W4-ES-20-N-S-D8W4-ET**
				25.0 m	**8146037**	**NEBC-D8W4-ES-25-N-S-D8W4-ET**
				30.0 m	**8146038**	**NEBC-D8W4-ES-30-N-S-D8W4-ET**
				40.0 m	**8146039**	**NEBC-D8W4-ES-40-N-S-D8W4-ET**
				50.0 m	**8146040**	**NEBC-D8W4-ES-50-N-S-D8W4-ET**

Datasheet – PROFIBUS interface

Ordering data – Accessories

	Description				Part no.	Type
Connecting cable						
	For power supply	Straight socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	5.0 m	**8065110**	**NEBL-M8G4-E-5-N-LE4**
				7.5 m	**8065113**	**NEBL-M8G4-E-7,5-N-LE4**
				10.0 m	**8065117**	**NEBL-M8G4-E-10-N-LE4**
				15.0 m	**8065121**	**NEBL-M8G4-E-15-N-LE4**
		Angled socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	7.5 m	**8065114**	**NEBL-M8W4-E-7.5-N-LE4**
				10.0 m	**8065118**	**NEBL-M8W4-E-10-N-LE4**
				15.0 m	**8065122**	**NEBL-M8W4-E-15-N-LE4**
	For power transmission	Straight socket, M8x1, 4-pin, A-coded	Straight plug, M8x1, 4-pin, A-coded	0.3 m	**8082904**	**NEBL-M8G4-E-0.3-N-M8G4**
				0.5 m	**8065102**	**NEBL-M8G4-E-0.5-N-M8G4**
				1.0 m	**8065104**	**NEBL-M8G4-E-1-N-M8G4**
				2.0 m	**8065106**	**NEBL-M8G4-E-2-N-M8G4**
				5.0 m	**8065108**	**NEBL-M8G4-E-5-N-M8G4**
				7.5 m	**8065111**	**NEBL-M8G4-E-7.5-N-M8G4**
				10.0 m	**8065115**	**NEBL-M8G4-E-10-N-M8G4**
				15.0 m	**8065119**	**NEBL-M8G4-E-15-N-M8G4**
		Angled socket, M8x1, 4-pin, A-coded	Angled plug, M8x1, 4-pin, A-coded	0.3 m	**8146577**	**NEBL-M8W4-E-0.3-N-M8W4**
				0.5 m	**8065103**	**NEBL-M8W4-E-0.5-N-M8W4**
				1.0 m	**8065105**	**NEBL-M8W4-E-1-N-M8W4**
				2.0 m	**8065107**	**NEBL-M8W4-E-2-N-M8W4**
				5.0 m	**8065109**	**NEBL-M8W4-E-5-N-M8W4**
				7.5 m	**8065112**	**NEBL-M8W4-E-7.5-N-M8W4**
				10.0 m	**8065116**	**NEBL-M8W4-E-10-N-M8W4**
				15.0 m	**8065120**	**NEBL-M8W4-E-15-N-M8W4**

Ordering data – Accessories

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

Datasheet – EtherCAT® interface

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

General technical data – EtherCAT® interface	
Fieldbus interface, protocol	EtherCAT®
Fieldbus interface, function	Bus connection incoming/continuing
Fieldbus interface, transmission rate	100 Mbit/s
Fieldbus interface, type	Ethernet
Fieldbus interface, type of connection	2x socket
Fieldbus interface, connection technology	M12x1, D-coded to EN 61076-2-101
Fieldbus interface, number of pins/cores	4
Fieldbus interface, galvanic isolation	Yes
Communication interface, protocol	AP
Communication interface, function	System communication XF20 OUT / XF21 OUT
Communication interface, connection type	2x socket
Communication interface, connection technology	M8x1, D-coded to EN 61076-2-114
Communication interface, number of pins/cores	4
Communication interface, screened	Yes

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

Datasheet – EtherCAT® interface

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

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

Operating and environmental conditions – EtherCAT® interface	
Ambient temperature	-20 ... 50 °C
Storage temperature	-40 ... 70 °C
Corrosion resistance class CRC [1]	1 - Low corrosion stress
Relative humidity	5 - 95%, non-condensing
CE marking (see declaration of conformity) [2]	To EU EMC Directive
UKCA mark (see declaration of conformity) [3]	To UK EMC regulations
KC marking	KC-EMV
Certification	RCM c UL us - Listed (Oil)
Certificate issuing authority	UL E239998
Degree of protection	IP65; IP67
Note on degree of protection	Unused connections sealed

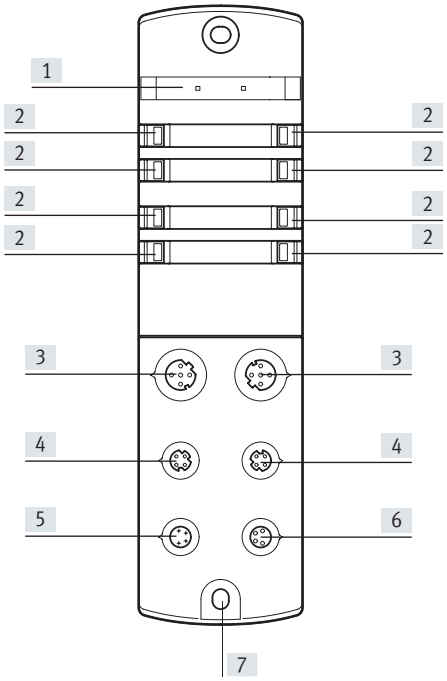
1) More information www.festo.com/x/topic/crc

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

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

Datasheet – EtherCAT® interface

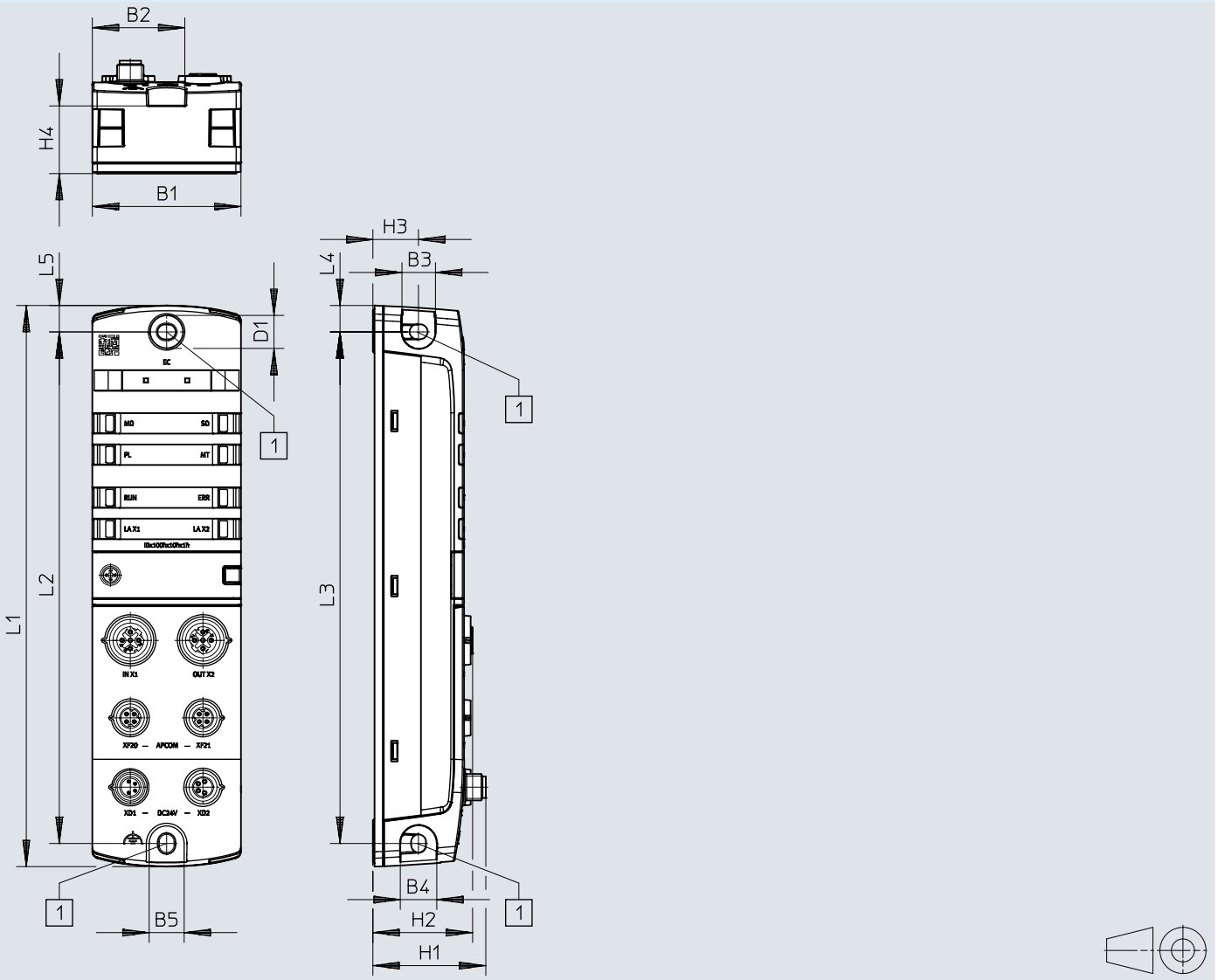
Connection and display components



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

Datasheet – EtherCAT® interface

Dimensions Download CAD data➔ www.festo.com

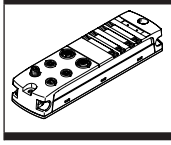


[1] Mounting hole for M4 screws

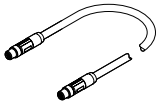
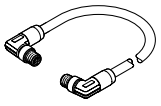
	B1	B2	B3	B4	B5	D1 ø	H1	H2	H3	H4	L1	L2	L3	L4	L5
CPX-AP-I-EC-M12	45	35.5	10	11	11	10	34.2	30.2	13.8	20.5	170	155	155	8	8

Datasheet – EtherCAT® interface

Ordering data

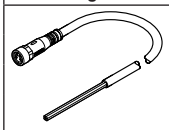
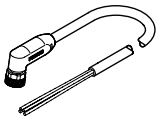
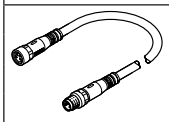
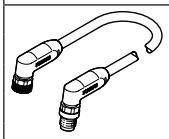
		Part no.	Type
	EtherCAT interface	**8086609**	**CPX-AP-I-EC-M12**

Ordering data – Accessories

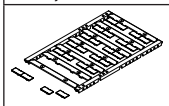
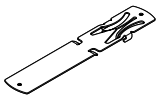
	Description				Part no.	Type
Plug connectors for self-assembly						
	For bus connection	Straight plug, M12x1, 4-pin, D-coded			**543109**	**NECU-M-S-D12G4-C2-ET**
Connecting cable						
	For communication interface	Straight plug, M8x1, 4-pin, D-coded	Straight plug, M8x1, 4-pin, D-coded	0.3 m	**8082902**	**NEBC-D8G4-ES-0.3-N-S-D8G4-ET**
				0.5 m	**8065123**	**NEBC-D8G4-ES-0.5-N-S-D8G4-ET**
				1.0 m	**8065125**	**NEBC-D8G4-ES-1-N-S-D8G4-ET**
				2.0 m	**8065127**	**NEBC-D8G4-ES-2-N-S-D8G4-ET**
				5.0 m	**8065129**	**NEBC-D8G4-ES-5-N-S-D8G4-ET**
				7.5 m	**8065131**	**NEBC-D8G4-ES-7.5-N-S-D8G4-ET**
				10.0 m	**8065133**	**NEBC-D8G4-ES-10-N-S-D8G4-ET**
				15.0 m	**8065135**	**NEBC-D8G4-ES-15-N-S-D8G4-ET**
				20.0 m	**8146031**	**NEBC-D8G4-ES-20-N-S-D8G4-ET**
				25.0 m	**8146032**	**NEBC-D8G4-ES-25-N-S-D8G4-ET**
				30.0 m	**8146033**	**NEBC-D8G4-ES-30-N-S-D8G4-ET**
				40.0 m	**8146034**	**NEBC-D8G4-ES-40-N-S-D8G4-ET**
				50.0 m	**8146035**	**NEBC-D8G4-ES-50-N-S-D8G4-ET**
		Angled plug, M8x1, 4-pin, D-coded	Angled plug, M8x1, 4-pin, D-coded	0.5 m	**8065124**	**NEBC-D8W4-ES-0.5-N-S-D8W4-ET**
				1.0 m	**8065126**	**NEBC-D8W4-ES-1-N-S-D8W4-ET**
				2.0 m	**8065128**	**NEBC-D8W4-ES-2-N-S-D8W4-ET**
				5.0 m	**8065130**	**NEBC-D8W4-ES-5-N-S-D8W4-ET**
				7.5 m	**8065132**	**NEBC-D8W4-ES-7.5-N-S-D8W4-ET**
				10.0 m	**8065134**	**NEBC-D8W4-ES-10-N-S-D8W4-ET**
				15.0 m	**8065136**	**NEBC-D8W4-ES-15-N-S-D8W4-ET**
				20.0 m	**8146036**	**NEBC-D8W4-ES-20-N-S-D8W4-ET**
				25.0 m	**8146037**	**NEBC-D8W4-ES-25-N-S-D8W4-ET**
				30.0 m	**8146038**	**NEBC-D8W4-ES-30-N-S-D8W4-ET**
				40.0 m	**8146039**	**NEBC-D8W4-ES-40-N-S-D8W4-ET**
				50.0 m	**8146040**	**NEBC-D8W4-ES-50-N-S-D8W4-ET**

Datasheet – EtherCAT® interface

Ordering data – Accessories

	Description				Part no.	Type
Connecting cable						
	For power supply	Straight socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	5.0 m	**8065110**	**NEBL-M8G4-E-5-N-LE4**
				7.5 m	**8065113**	**NEBL-M8G4-E-7,5-N-LE4**
				10.0 m	**8065117**	**NEBL-M8G4-E-10-N-LE4**
				15.0 m	**8065121**	**NEBL-M8G4-E-15-N-LE4**
		Angled socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	7.5 m	**8065114**	**NEBL-M8W4-E-7.5-N-LE4**
				10.0 m	**8065118**	**NEBL-M8W4-E-10-N-LE4**
				15.0 m	**8065122**	**NEBL-M8W4-E-15-N-LE4**
	For power transmission	Straight socket, M8x1, 4-pin, A-coded	Straight plug, M8x1, 4-pin, A-coded	0.3 m	**8082904**	**NEBL-M8G4-E-0.3-N-M8G4**
				0.5 m	**8065102**	**NEBL-M8G4-E-0.5-N-M8G4**
				1.0 m	**8065104**	**NEBL-M8G4-E-1-N-M8G4**
				2.0 m	**8065106**	**NEBL-M8G4-E-2-N-M8G4**
				5.0 m	**8065108**	**NEBL-M8G4-E-5-N-M8G4**
				7.5 m	**8065111**	**NEBL-M8G4-E-7.5-N-M8G4**
				10.0 m	**8065115**	**NEBL-M8G4-E-10-N-M8G4**
				15.0 m	**8065119**	**NEBL-M8G4-E-15-N-M8G4**
		Angled socket, M8x1, 4-pin, A-coded	Angled plug, M8x1, 4-pin, A-coded	0.3 m	**8146577**	**NEBL-M8W4-E-0.3-N-M8W4**
				0.5 m	**8065103**	**NEBL-M8W4-E-0.5-N-M8W4**
				1.0 m	**8065105**	**NEBL-M8W4-E-1-N-M8W4**
				2.0 m	**8065107**	**NEBL-M8W4-E-2-N-M8W4**
				5.0 m	**8065109**	**NEBL-M8W4-E-5-N-M8W4**
				7.5 m	**8065112**	**NEBL-M8W4-E-7.5-N-M8W4**
				10.0 m	**8065116**	**NEBL-M8W4-E-10-N-M8W4**
				15.0 m	**8065120**	**NEBL-M8W4-E-15-N-M8W4**

Ordering data – Accessories

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

Datasheet – EtherNet/IP interface

EtherNet/IP™

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

General technical data – EtherNet/IP interface	
Fieldbus interface, protocol	EtherNet/IP
Fieldbus interface, function	Bus connection incoming/continuing
Fieldbus interface, transmission rate	100 Mbit/s
Fieldbus interface, type	Ethernet
Fieldbus interface, type of connection	2x socket
Fieldbus interface, connection technology	M12x1, D-coded to EN 61076-2-101
Fieldbus interface, number of pins/cores	4
Fieldbus interface, galvanic isolation	Yes
Communication interface, protocol	AP
Communication interface, function	System communication XF20 OUT / XF21 OUT
Communication interface, connection type	2x socket
Communication interface, connection technology	M8x1, D-coded to EN 61076-2-114
Communication interface, number of pins/cores	4
Communication interface, screened	Yes

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

Datasheet – EtherNet/IP interface

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

Technical data – Mechanics – EtherNet/IP interface	
Type of mounting	On DIN rail with accessories; with through-hole
Product weight	194 g
Dimensions W x L x H	45 mm x 170 mm x 35 mm

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

Operating and environmental – EtherNet/IP interface	
Ambient temperature	-20 ... 50 °C
Storage temperature	-40 ... 70 °C
Corrosion resistance class CRC [1]	1 - Low corrosion stress
Relative humidity	5 - 95%, non-condensing
CE marking (see declaration of conformity) [2]	To EU EMC Directive
UKCA mark (see declaration of conformity) [3]	To UK EMC regulations
KC marking	KC-EMV
Certification	RCM c UL us - Listed (Oil)
Certificate issuing authority	UL E239998
Degree of protection	IP65; IP67
Note on degree of protection	Unused connections sealed

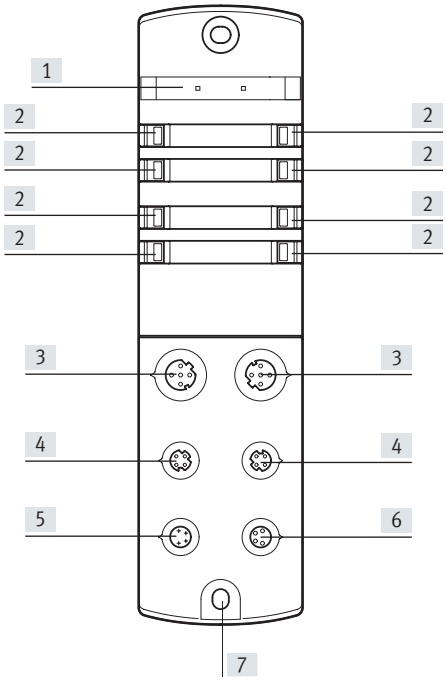
1) More information www.festo.com/x/topic/crc

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

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

Datasheet – EtherNet/IP interface

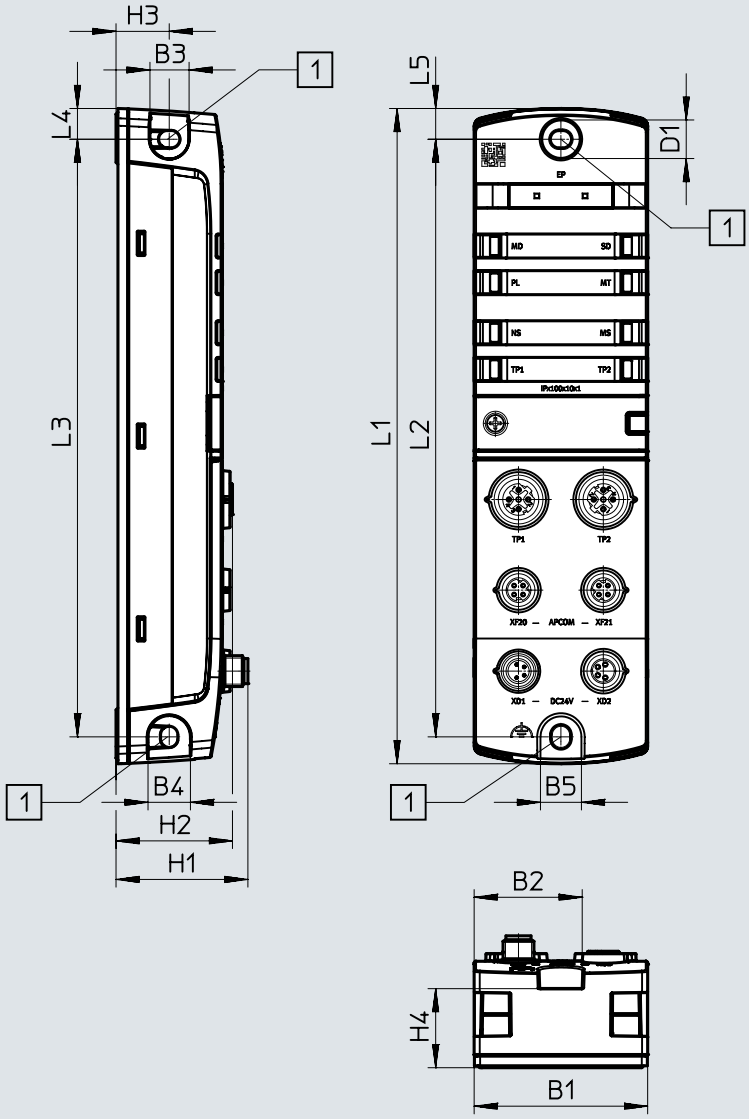
Connection and display components



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

Datasheet – EtherNet/IP interface

Dimensions Download CAD data➔ www.festo.com

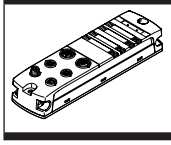


[1] Mounting hole for M4 screws

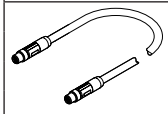
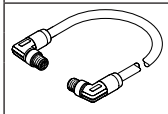
	B1	B2	B3	B4	B5	D1 ø	H1	H2	H3	H4	L1	L2	L3	L4	L5
CPX-AP-I-EP-M12	45	35.5	10	11	11	10	34.2	30.2	13.8	20.5	170	155	155	8	8

Datasheet – EtherNet/IP interface

Ordering data

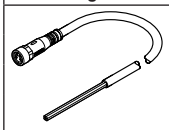
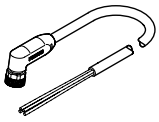
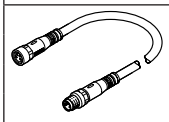
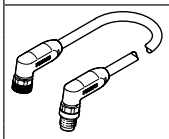
		Part no.	Type
	EtherNet/IP interface	**8086610**	**CPX-AP-I-EP-M12**

Ordering data – Accessories

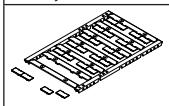
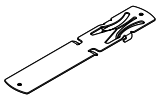
	Description				Part no.	Type
Plug connectors for self-assembly						
	For bus connection	Straight plug, M12x1, 4-pin, D-coded			**543109**	**NECU-M-S-D12G4-C2-ET**
Connecting cable						
	For communication interface	Straight plug, M8x1, 4-pin, D-coded	Straight plug, M8x1, 4-pin, D-coded	0.3 m	**8082902**	**NEBC-D8G4-ES-0.3-N-S-D8G4-ET**
				0.5 m	**8065123**	**NEBC-D8G4-ES-0.5-N-S-D8G4-ET**
				1.0 m	**8065125**	**NEBC-D8G4-ES-1-N-S-D8G4-ET**
				2.0 m	**8065127**	**NEBC-D8G4-ES-2-N-S-D8G4-ET**
				5.0 m	**8065129**	**NEBC-D8G4-ES-5-N-S-D8G4-ET**
				7.5 m	**8065131**	**NEBC-D8G4-ES-7.5-N-S-D8G4-ET**
				10.0 m	**8065133**	**NEBC-D8G4-ES-10-N-S-D8G4-ET**
				15.0 m	**8065135**	**NEBC-D8G4-ES-15-N-S-D8G4-ET**
				20.0 m	**8146031**	**NEBC-D8G4-ES-20-N-S-D8G4-ET**
				25.0 m	**8146032**	**NEBC-D8G4-ES-25-N-S-D8G4-ET**
				30.0 m	**8146033**	**NEBC-D8G4-ES-30-N-S-D8G4-ET**
				40.0 m	**8146034**	**NEBC-D8G4-ES-40-N-S-D8G4-ET**
				50.0 m	**8146035**	**NEBC-D8G4-ES-50-N-S-D8G4-ET**
		Angled plug, M8x1, 4-pin, D-coded	Angled plug, M8x1, 4-pin, D-coded	0.5 m	**8065124**	**NEBC-D8W4-ES-0.5-N-S-D8W4-ET**
				1.0 m	**8065126**	**NEBC-D8W4-ES-1-N-S-D8W4-ET**
				2.0 m	**8065128**	**NEBC-D8W4-ES-2-N-S-D8W4-ET**
				5.0 m	**8065130**	**NEBC-D8W4-ES-5-N-S-D8W4-ET**
				7.5 m	**8065132**	**NEBC-D8W4-ES-7.5-N-S-D8W4-ET**
				10.0 m	**8065134**	**NEBC-D8W4-ES-10-N-S-D8W4-ET**
				15.0 m	**8065136**	**NEBC-D8W4-ES-15-N-S-D8W4-ET**
				20.0 m	**8146036**	**NEBC-D8W4-ES-20-N-S-D8W4-ET**
				25.0 m	**8146037**	**NEBC-D8W4-ES-25-N-S-D8W4-ET**
				30.0 m	**8146038**	**NEBC-D8W4-ES-30-N-S-D8W4-ET**
				40.0 m	**8146039**	**NEBC-D8W4-ES-40-N-S-D8W4-ET**
				50.0 m	**8146040**	**NEBC-D8W4-ES-50-N-S-D8W4-ET**

Datasheet – EtherNet/IP interface

Ordering data – Accessories

	Description				Part no.	Type
Connecting cable						
	For power supply	Straight socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	5.0 m	**8065110**	**NEBL-M8G4-E-5-N-LE4**
				7.5 m	**8065113**	**NEBL-M8G4-E-7,5-N-LE4**
				10.0 m	**8065117**	**NEBL-M8G4-E-10-N-LE4**
				15.0 m	**8065121**	**NEBL-M8G4-E-15-N-LE4**
		Angled socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	7.5 m	**8065114**	**NEBL-M8W4-E-7.5-N-LE4**
				10.0 m	**8065118**	**NEBL-M8W4-E-10-N-LE4**
				15.0 m	**8065122**	**NEBL-M8W4-E-15-N-LE4**
	For power transmission	Straight socket, M8x1, 4-pin, A-coded	Straight plug, M8x1, 4-pin, A-coded	0.3 m	**8082904**	**NEBL-M8G4-E-0.3-N-M8G4**
				0.5 m	**8065102**	**NEBL-M8G4-E-0.5-N-M8G4**
				1.0 m	**8065104**	**NEBL-M8G4-E-1-N-M8G4**
				2.0 m	**8065106**	**NEBL-M8G4-E-2-N-M8G4**
				5.0 m	**8065108**	**NEBL-M8G4-E-5-N-M8G4**
				7.5 m	**8065111**	**NEBL-M8G4-E-7.5-N-M8G4**
				10.0 m	**8065115**	**NEBL-M8G4-E-10-N-M8G4**
				15.0 m	**8065119**	**NEBL-M8G4-E-15-N-M8G4**
		Angled socket, M8x1, 4-pin, A-coded	Angled plug, M8x1, 4-pin, A-coded	0.3 m	**8146577**	**NEBL-M8W4-E-0.3-N-M8W4**
				0.5 m	**8065103**	**NEBL-M8W4-E-0.5-N-M8W4**
				1.0 m	**8065105**	**NEBL-M8W4-E-1-N-M8W4**
				2.0 m	**8065107**	**NEBL-M8W4-E-2-N-M8W4**
				5.0 m	**8065109**	**NEBL-M8W4-E-5-N-M8W4**
				7.5 m	**8065112**	**NEBL-M8W4-E-7.5-N-M8W4**
				10.0 m	**8065116**	**NEBL-M8W4-E-10-N-M8W4**
				15.0 m	**8065120**	**NEBL-M8W4-E-15-N-M8W4**

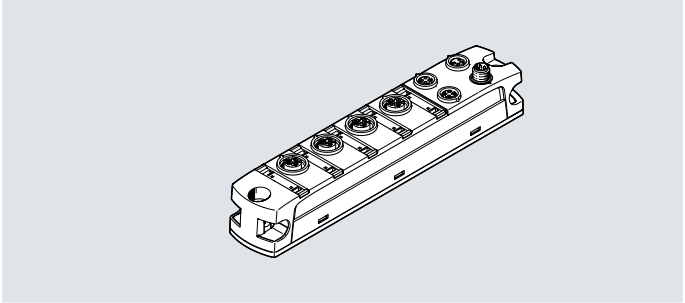
Ordering data – Accessories

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

Datasheet – IO-Link master

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

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



Description

The IO-Link® communication system is used to exchange serial data from decentralised function modules (devices) at 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 setting, each IO-Link port has an address space of 9 bytes of input data and 8 bytes of output data.

The address space, master port and the connected devices can be parameterised with the help of the IO-Link Device Tool.
DIL switches are available for a range of further settings.

A 30-day trial version of the IO-Link Device Tool can be downloaded from the Support Portal. A licence is required at the end of the test period.
The licence required for continued use can be purchased via the Festo App-World.

General technical data – IO-Link master

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

General data – IO-Link® master

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

Datasheet – IO-Link master

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

Technical data – Mechanics – IO-Link master	
Type of mounting	On DIN rail with accessories With through-hole
Product weight	126 g
Dimensions W x L x H	30 mm x 170 mm x 35 mm

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

Operating and environmental conditions – IO-Link master	
Ambient temperature	-20°C, 50°C
Storage temperature	-40°C, 70°C
Corrosion resistance class CRC [1]	1 - Low corrosion stress
Relative humidity	5 - 95%, non-condensing
CE marking (see declaration of conformity) [2]	To EU EMC Directive
UKCA mark (see declaration of conformity) [3]	To UK EMC regulations
KC marking	KC-EMV
Certification	RCM, c UL us - Listed (OL)
Certificate issuing authority	UL E239998
Degree of protection	IP65; IP67
Note on degree of protection	Unused connections sealed

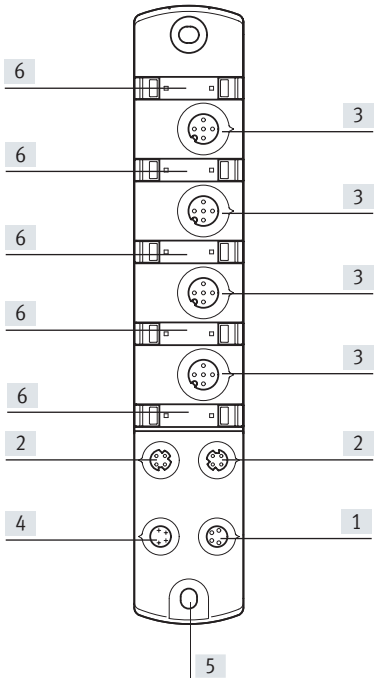
1) More information www.festo.com/x/topic/crc

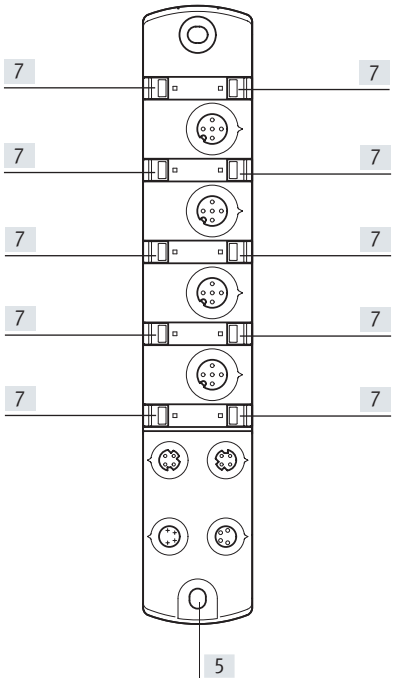
2) More information www.festo.com/catalogue/... Support/Downloads.

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

Datasheet – IO-Link master

Connection and display components

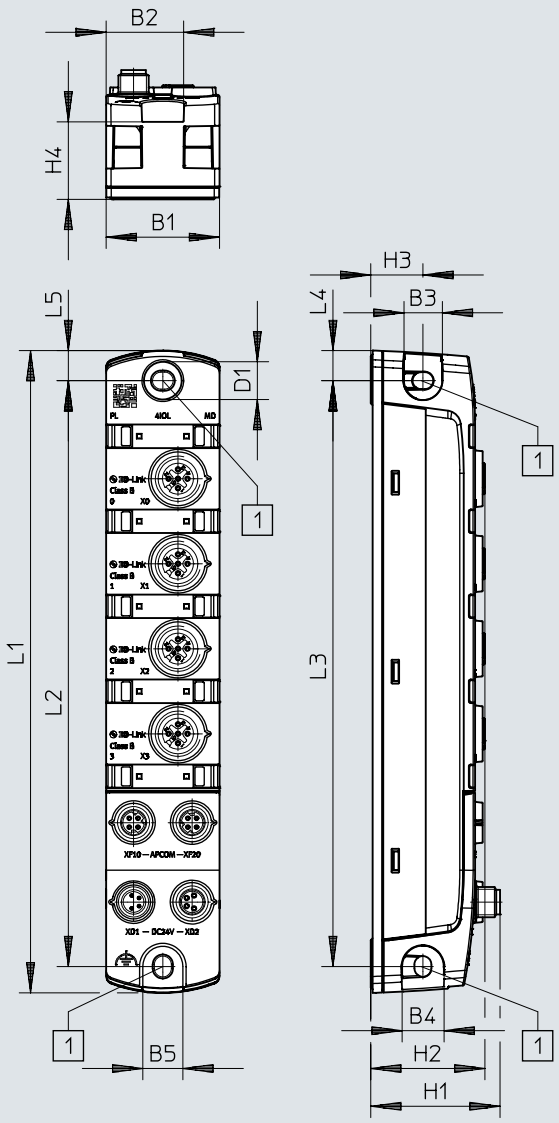


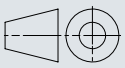


[1] Electrical connection, power transmission
[2] Communication interface
[3] Electrical connection, IO-Link®
[4] Electrical connection, power supply
[5] Earth connection
[6] Space for inscription label
[7] LED indicators

Datasheet – IO-Link master

Dimensions Download CAD data➔ www.festo.com



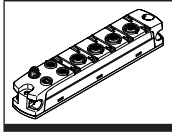


[1] Mounting hole for M4 screws

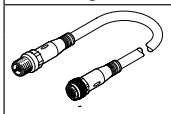
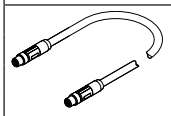
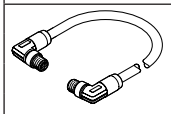
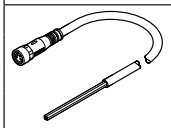
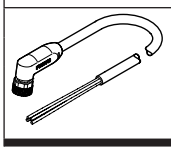
	B1	B2	B3	B4	B5	D1 ø	H1	H2	H3	H4	L1	L2	L3	L4	L5
CPX-AP-I-4IOL-M12	30	20.5	10	11	11	10	34.2	30.2	13.8	20.5	170	155	155	8	8

Datasheet – IO-Link master

Ordering data

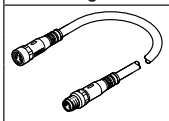
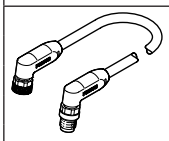
			Part no.	Type
	IO-Link Master	Electrical connection IO-Link® 4x sockets, 5-pin M12x1	**8086604**	**CPX-AP-I-4IOL-M12**

Ordering data – Accessories

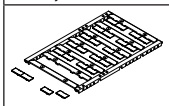
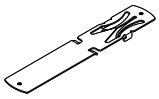
	Description				Part no.	Type
Plug connectors for self-assembly						
	For IO-Link®	Straight plug, M12x1, 5-pin, A-coded	Screw terminal		**8162296**	**NECB-S-M12G5-C2**
Connecting cable						
	For IO-Link®	Straight socket, M12x1, 5-pin, A-coded	Straight plug, M12x1, 5-pin, A-coded	5.0 m	**574321**	**NEBU-M12G5-E-5-Q8N-M12G5**
				7.5 m	**574322**	**NEBU-M12G5-E-7.5-Q8N-M12G5**
	For communication interface	Straight plug, M8x1, 4-pin, D-coded	Straight plug, M8x1, 4-pin, D-coded	0.3 m	**8082902**	**NEBC-D8G4-ES-0.3-N-S-D8G4-ET**
				0.5 m	**8065123**	**NEBC-D8G4-ES-0.5-N-S-D8G4-ET**
				1.0 m	**8065125**	**NEBC-D8G4-ES-1-N-S-D8G4-ET**
				2.0 m	**8065127**	**NEBC-D8G4-ES-2-N-S-D8G4-ET**
				5.0 m	**8065129**	**NEBC-D8G4-ES-5-N-S-D8G4-ET**
				7.5 m	**8065131**	**NEBC-D8G4-ES-7.5-N-S-D8G4-ET**
				10.0 m	**8065133**	**NEBC-D8G4-ES-10-N-S-D8G4-ET**
				15.0 m	**8065135**	**NEBC-D8G4-ES-15-N-S-D8G4-ET**
				20.0 m	**8146031**	**NEBC-D8G4-ES-20-N-S-D8G4-ET**
				25.0 m	**8146032**	**NEBC-D8G4-ES-25-N-S-D8G4-ET**
				30.0 m	**8146033**	**NEBC-D8G4-ES-30-N-S-D8G4-ET**
				40.0 m	**8146034**	**NEBC-D8G4-ES-40-N-S-D8G4-ET**
				50.0 m	**8146035**	**NEBC-D8G4-ES-50-N-S-D8G4-ET**
		Angled plug, M8x1, 4-pin, D-coded	Angled plug, M8x1, 4-pin, D-coded	0.5 m	**8065124**	**NEBC-D8W4-ES-0.5-N-S-D8W4-ET**
				1.0 m	**8065126**	**NEBC-D8W4-ES-1-N-S-D8W4-ET**
				2.0 m	**8065128**	**NEBC-D8W4-ES-2-N-S-D8W4-ET**
				5.0 m	**8065130**	**NEBC-D8W4-ES-5-N-S-D8W4-ET**
				7.5 m	**8065132**	**NEBC-D8W4-ES-7.5-N-S-D8W4-ET**
				10.0 m	**8065134**	**NEBC-D8W4-ES-10-N-S-D8W4-ET**
				15.0 m	**8065136**	**NEBC-D8W4-ES-15-N-S-D8W4-ET**
				20.0 m	**8146036**	**NEBC-D8W4-ES-20-N-S-D8W4-ET**
				25.0 m	**8146037**	**NEBC-D8W4-ES-25-N-S-D8W4-ET**
				30.0 m	**8146038**	**NEBC-D8W4-ES-30-N-S-D8W4-ET**
				40.0 m	**8146039**	**NEBC-D8W4-ES-40-N-S-D8W4-ET**
				50.0 m	**8146040**	**NEBC-D8W4-ES-50-N-S-D8W4-ET**
	For power supply	Straight socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	5.0 m	**8065110**	**NEBL-M8G4-E-5-N-LE4**
				7.5 m	**8065113**	**NEBL-M8G4-E-7,5-N-LE4**
				10.0 m	**8065117**	**NEBL-M8G4-E-10-N-LE4**
				15.0 m	**8065121**	**NEBL-M8G4-E-15-N-LE4**
		Angled socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	7.5 m	**8065114**	**NEBL-M8W4-E-7.5-N-LE4**
				10.0 m	**8065118**	**NEBL-M8W4-E-10-N-LE4**
				15.0 m	**8065122**	**NEBL-M8W4-E-15-N-LE4**

Datasheet – IO-Link master

Ordering data – Accessories

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

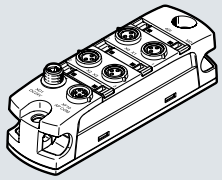
Ordering data – Accessories

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

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

General technical data – 4-way digital input modules	
Electrical isolation of inputs between channel – internal communication	Yes
Diagnostics via LED	Diagnostics per module Status per channel
Diagnostics via internal communication	Short circuit/overload in sensor supply Electronics/sensors overvoltage Electronics/sensors undervoltage
Max. cable length	30 m inputs 50 m system communication
Reverse polarity protection	Yes

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

Datasheet – 4-way digital input modules

Technical data – Mechanics – 4-way digital input modules	
Type of mounting	With through-hole
Product weight	81 g
Dimensions W x L x H	30 mm x 102.5 mm x 35 mm

Materials – 4-way digital input modules	
Housing material	PA; PC; nickel-plated die-cast zinc
Sealing material	NBR
O-ring material	Fluoro rubber
Note on materials	RoHS compliant
LABS (PWIS) conformity	VDMA24364-B2-L
Cleanroom class	Element installed statically, no meaningful evaluation possible according to ISO 14644-1

Operation and environmental conditions – 4-way digital input modules	
Ambient temperature	-20 ... 50 °C
Storage temperature	-40 ... 70 °C
Corrosion resistance class CRC [1]	1 - Low corrosion stress
Relative humidity	5 - 95%, non-condensing
CE marking (see declaration of conformity) [2]	To EU EMC Directive
UKCA mark (see declaration of conformity) [3]	To UK EMC regulations
KC marking	KC-EMV
Certification	RCM c UL us - Listed (Oil)
Certificate issuing authority	UL E239998
Degree of protection	IP65; IP67
Note on degree of protection	Unused connections sealed

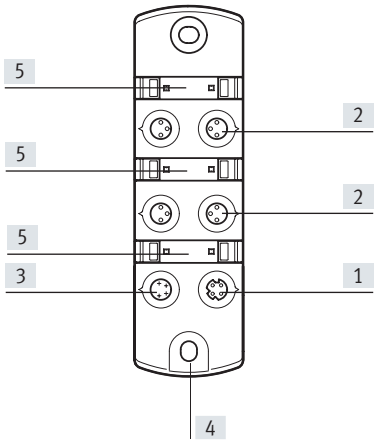
1) More information www.festo.com/x/topic/crc

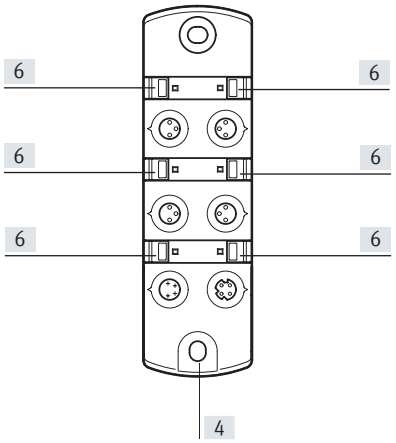
2) More information www.festo.com/catalogue/... Support/Downloads.

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

Datasheet – 4-way digital input modules

Connection and display components

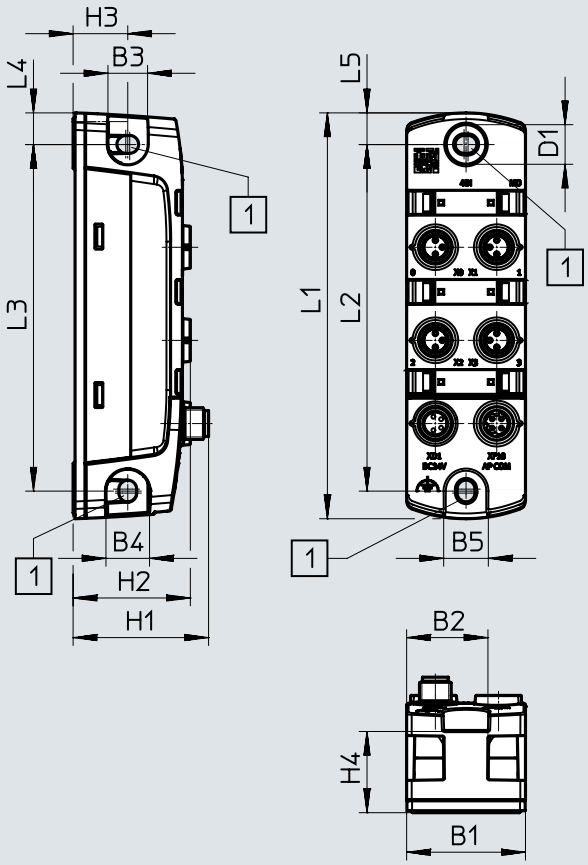




[1] Communication interface
[2] Electrical connection, inputs
[3] Electrical connection, power supply
[4] Earth connection
[5] Space for inscription label
[6] LED indicators

Datasheet – 4-way digital input modules

Dimensions Download CAD data➔ www.festo.com



[1] Mounting hole for M4 screws

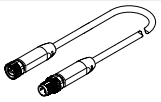
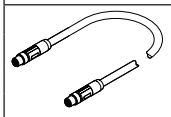
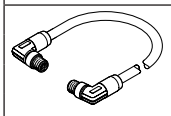
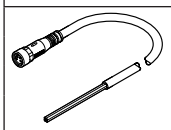
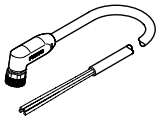
	B1	B2	B3	B4	B5	D1 ⌀	H1	H2	H3	H4	L1	L2	L3	L4	L5
CPX-AP-I-4DI-M8-3P	30	20.5	10	11	11	10	34.2	29.6	13.8	20.5	102.5	87.5	87.5	8	8

Datasheet – 4-way digital input modules

Ordering data

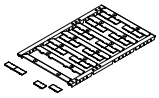
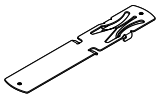
			Part no.	Type
	Digital input module	Electrical connection input 4x socket, 3-pin, M8x1	**8086605**	**CPX-AP-I-4DI-M8-3P**

Ordering data – Accessories

	Description				Part no.	Type
Plug connectors for self-assembly						
	For inputs	Straight plug, M8x1, 3-pin, A-coded	Screw terminal		**8162298**	**NECB-S-M8G3-C2**
Connecting cable						
	For inputs	Straight plug, M8x1, 3-pin, A-coded	Straight socket, M8x1, 3-pin, A-coded	0.5 m	**8078282**	**NEBA-M8G3-U-0.5-N-M8G3**
				1.0 m	**8078283**	**NEBA-M8G3-U-1-N-M8G3**
				1.5 m	**8078284**	**NEBA-M8G3-U-1.5-N-M8G3**
				2.5 m	**8078286**	**NEBA-M8G3-U-2.5-N-M8G3**
				5.0 m	**8078287**	**NEBA-M8G3-U-5-N-M8G3**
				10.0 m	**8078288**	**NEBA-M8G3-U-10-N-M8G3**
	For communication interface	Straight plug, M8x1, 4-pin, D-coded	Straight plug, M8x1, 4-pin, D-coded	0.3 m	**8082902**	**NEBC-D8G4-ES-0.3-N-S-D8G4-ET**
				0.5 m	**8065123**	**NEBC-D8G4-ES-0.5-N-S-D8G4-ET**
				1.0 m	**8065125**	**NEBC-D8G4-ES-1-N-S-D8G4-ET**
				2.0 m	**8065127**	**NEBC-D8G4-ES-2-N-S-D8G4-ET**
				5.0 m	**8065129**	**NEBC-D8G4-ES-5-N-S-D8G4-ET**
				7.5 m	**8065131**	**NEBC-D8G4-ES-7.5-N-S-D8G4-ET**
				10.0 m	**8065133**	**NEBC-D8G4-ES-10-N-S-D8G4-ET**
				15.0 m	**8065135**	**NEBC-D8G4-ES-15-N-S-D8G4-ET**
				20.0 m	**8146031**	**NEBC-D8G4-ES-20-N-S-D8G4-ET**
				25.0 m	**8146032**	**NEBC-D8G4-ES-25-N-S-D8G4-ET**
				30.0 m	**8146033**	**NEBC-D8G4-ES-30-N-S-D8G4-ET**
				40.0 m	**8146034**	**NEBC-D8G4-ES-40-N-S-D8G4-ET**
				50.0 m	**8146035**	**NEBC-D8G4-ES-50-N-S-D8G4-ET**
		Angled plug, M8x1, 4-pin, D-coded	Angled plug, M8x1, 4-pin, D-coded	0.5 m	**8065124**	**NEBC-D8W4-ES-0.5-N-S-D8W4-ET**
				1.0 m	**8065126**	**NEBC-D8W4-ES-1-N-S-D8W4-ET**
				2.0 m	**8065128**	**NEBC-D8W4-ES-2-N-S-D8W4-ET**
				5.0 m	**8065130**	**NEBC-D8W4-ES-5-N-S-D8W4-ET**
				7.5 m	**8065132**	**NEBC-D8W4-ES-7.5-N-S-D8W4-ET**
				10.0 m	**8065134**	**NEBC-D8W4-ES-10-N-S-D8W4-ET**
				15.0 m	**8065136**	**NEBC-D8W4-ES-15-N-S-D8W4-ET**
				20.0 m	**8146036**	**NEBC-D8W4-ES-20-N-S-D8W4-ET**
				25.0 m	**8146037**	**NEBC-D8W4-ES-25-N-S-D8W4-ET**
				30.0 m	**8146038**	**NEBC-D8W4-ES-30-N-S-D8W4-ET**
				40.0 m	**8146039**	**NEBC-D8W4-ES-40-N-S-D8W4-ET**
				50.0 m	**8146040**	**NEBC-D8W4-ES-50-N-S-D8W4-ET**
	For power supply	Straight socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	5.0 m	**8065110**	**NEBL-M8G4-E-5-N-LE4**
				7.5 m	**8065113**	**NEBL-M8G4-E-7,5-N-LE4**
				10.0 m	**8065117**	**NEBL-M8G4-E-10-N-LE4**
				15.0 m	**8065121**	**NEBL-M8G4-E-15-N-LE4**
		Angled socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	7.5 m	**8065114**	**NEBL-M8W4-E-7.5-N-LE4**
				10.0 m	**8065118**	**NEBL-M8W4-E-10-N-LE4**
				15.0 m	**8065122**	**NEBL-M8W4-E-15-N-LE4**

Datasheet – 4-way digital input modules

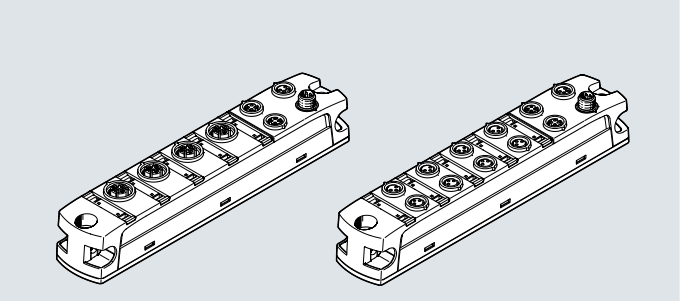
Ordering data – Accessories

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

Datasheet – 8-way digital 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 – 8-way digital input modules

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

General data – 8-way digital input modules

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

Datasheet – 8-way digital input modules

Technical data – Electrics – 8-way digital input modules	
Nominal operating voltage DC for electronics/sensors	24 V
Permissible voltage fluctuations, electronics/sensors	± 25%
Note on operating voltage	SELV/PELV power supply units required; note voltage drop
Power failure buffering	10 ms
Max. power supply	2 x 4 A (external fuse required)
Max. total current of inputs per module	1.8 A
Intrinsic current consumption at nominal operating voltage, electronics/sensors	Typical 32 mA
Power supply, function	Incoming electronics/sensors and load
Power supply, connection type	Plug
Power supply, connection technology	M8x1, A-coded to EN 61076-2-104
Power supply, number of pins/cores	4
Power transmission, function	Outgoing electronics/sensors and load
Power transmission, connection type	Socket
Power transmission, connection technology	M8x1, A-coded to EN 61076-2-104
Power transmission, number of pins/cores	4

Technical data – Mechanics – 8-way digital input modules	
Type of mounting	On DIN rail with accessories; with through-hole
Product weight	126 g
Dimensions W x L x H	30 mm x 170 mm x 35 mm

Materials – 8-way input modules	
Housing material	PA; PC; nickel-plated die-cast zinc
O-ring material	Fluoro rubber
Note on materials	RoHS compliant
LABS (PWIS) conformity	VDMA24364-B2-L
Cleanroom class	Element installed statically, no meaningful evaluation possible according to ISO 14644-1

Operating and environmental conditions – 8-way digital input modules	
Ambient temperature	-20 ... 50 °C
Storage temperature	-40 ... 70 °C
Corrosion resistance class CRC [1]	1 - Low corrosion stress
Relative humidity	5 - 95%, non-condensing
CE marking (see declaration of conformity) [2]	To EU EMC Directive
UKCA mark (see declaration of conformity) [3]	To UK EMC regulations
KC marking	KC-EMV
Certification	RCM c UL us - Listed (Oil)
Certificate issuing authority	UL E239998
Degree of protection	IP65; IP67
Note on degree of protection	Unused connections sealed

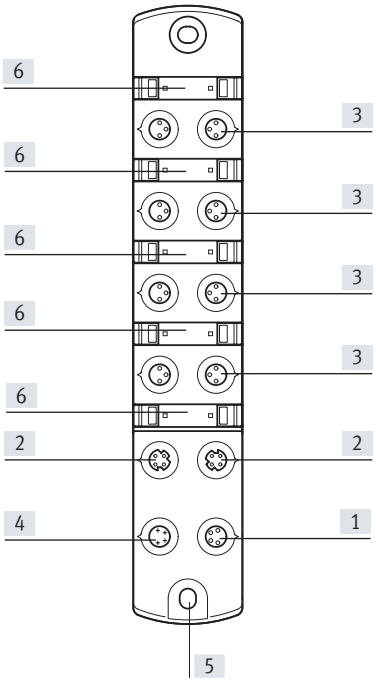
1) More information www.festo.com/x/topic/crc

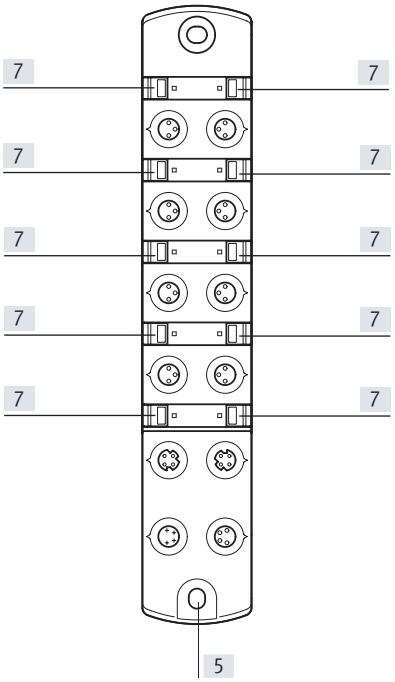
2) More information www.festo.com/catalogue/... Support/Downloads.

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

Datasheet – 8-way digital input modules

Connection and display components

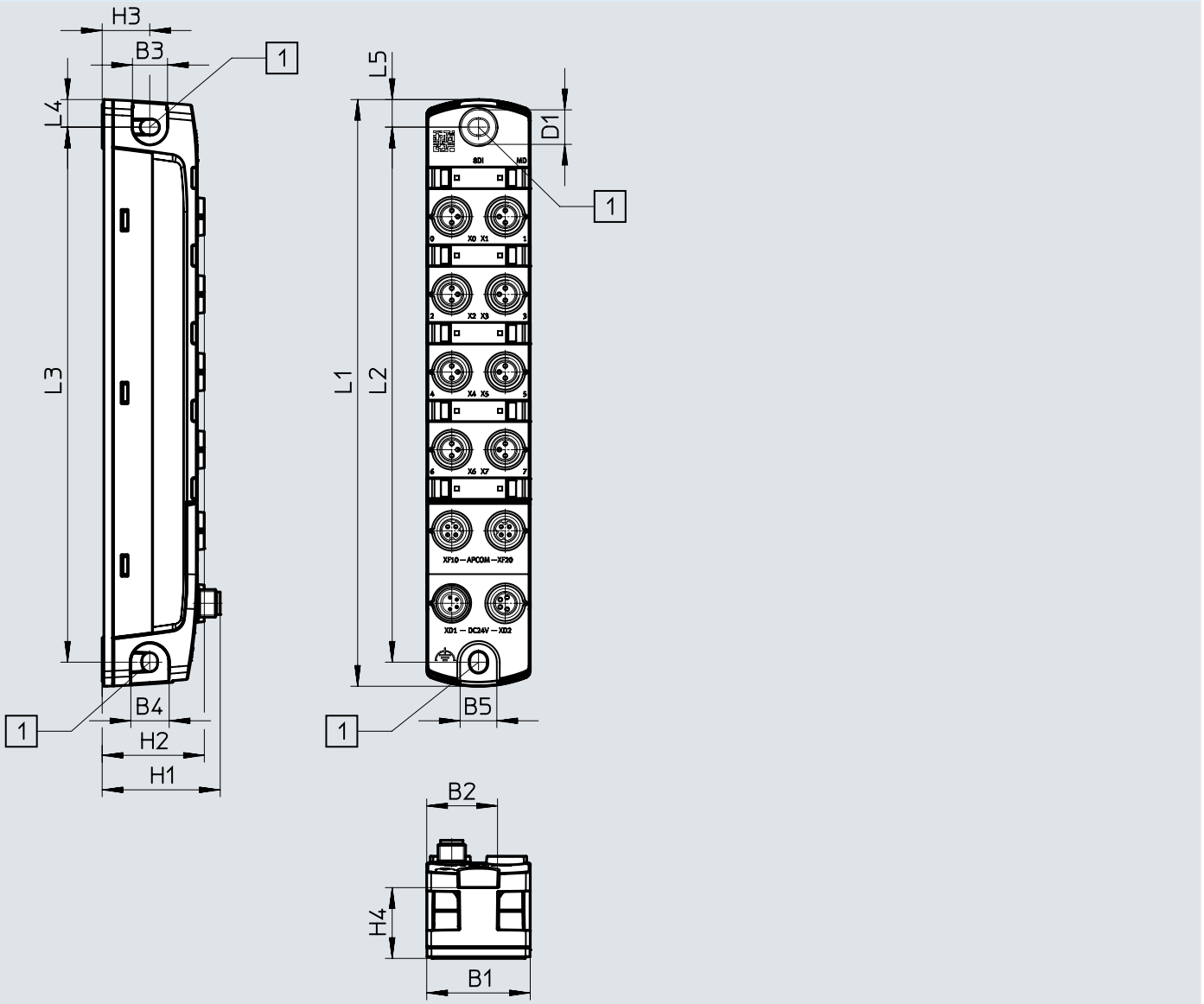




[1] Electrical connection, power transmission
[2] Communication interface
[3] Electrical connection, inputs
[4] Electrical connection, power supply
[5] Earth connection
[6] Space for inscription label
[7] LED indicators

Datasheet – 8-way digital input modules

Dimensions – CPX-AP-I-8DI-M8-3P Download CAD data➔ www.festo.com

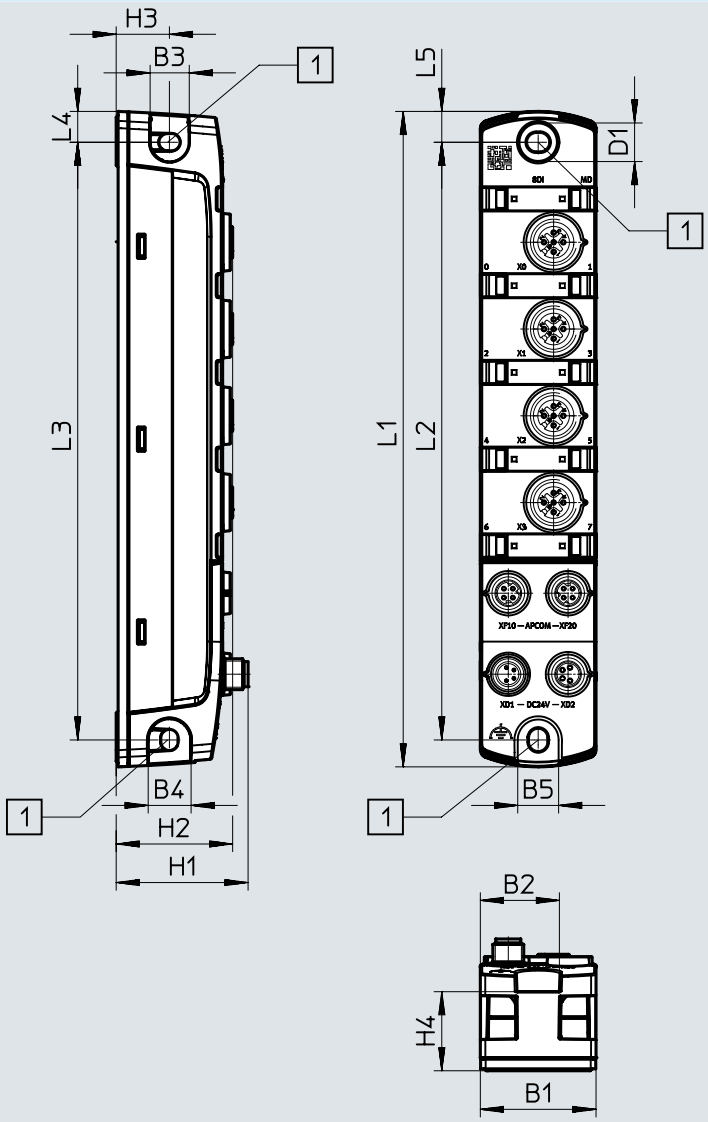


[1] Mounting hole for M4 screws

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

Datasheet – 8-way digital input modules

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

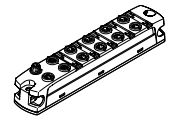
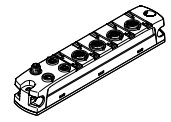


[1] Mounting hole for M4 screws

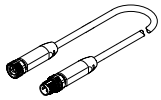
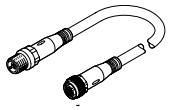
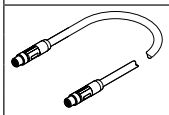
	B1	B2	B3	B4	B5	D1 ø	H1	H2	H3	H4	L1	L2	L3	L4	L5
CPX-AP-I-8DI-M12-5P	30	20.5	10	11	11	10	34.2	30.2	13.8	20.5	170	155	155	8	8

Datasheet – 8-way digital input modules

Ordering data

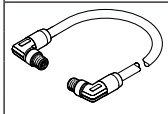
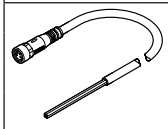
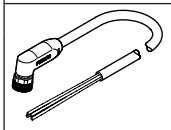
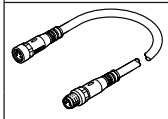
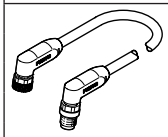
			Part no.	Type
	Digital input module	Electrical connection input 8x socket, 3-pin, M8x1	**8086600**	**CPX-AP-I-8DI-M8-3P**
		Electrical connection input 4x socket 5-pin M12x1	**8086602**	**CPX-AP-I-8DI-M12-5P**

Ordering data – Accessories

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

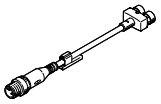
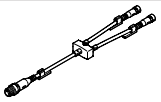
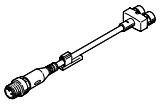
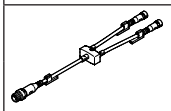
Datasheet – 8-way digital input modules

Ordering data – Accessories

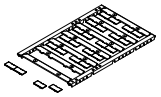
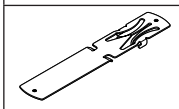
	Description				Part no.	Type
Connecting cable						
	For communication interface	Angled plug, M8x1, 4-pin, D-coded	Angled plug, M8x1, 4-pin, D-coded	0.5 m	**8065124**	**NEBC-D8W4-ES-0.5-N-S-D8W4-ET**
				1.0 m	**8065126**	**NEBC-D8W4-ES-1-N-S-D8W4-ET**
				2.0 m	**8065128**	**NEBC-D8W4-ES-2-N-S-D8W4-ET**
				5.0 m	**8065130**	**NEBC-D8W4-ES-5-N-S-D8W4-ET**
				7.5 m	**8065132**	**NEBC-D8W4-ES-7.5-N-S-D8W4-ET**
				10.0 m	**8065134**	**NEBC-D8W4-ES-10-N-S-D8W4-ET**
				15.0 m	**8065136**	**NEBC-D8W4-ES-15-N-S-D8W4-ET**
				20.0 m	**8146036**	**NEBC-D8W4-ES-20-N-S-D8W4-ET**
				25.0 m	**8146037**	**NEBC-D8W4-ES-25-N-S-D8W4-ET**
				30.0 m	**8146038**	**NEBC-D8W4-ES-30-N-S-D8W4-ET**
				40.0 m	**8146039**	**NEBC-D8W4-ES-40-N-S-D8W4-ET**
				50.0 m	**8146040**	**NEBC-D8W4-ES-50-N-S-D8W4-ET**
	For power supply	Straight socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	5.0 m	**8065110**	**NEBL-M8G4-E-5-N-LE4**
				7.5 m	**8065113**	**NEBL-M8G4-E-7,5-N-LE4**
				10.0 m	**8065117**	**NEBL-M8G4-E-10-N-LE4**
				15.0 m	**8065121**	**NEBL-M8G4-E-15-N-LE4**
		Angled socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	7.5 m	**8065114**	**NEBL-M8W4-E-7.5-N-LE4**
				10.0 m	**8065118**	**NEBL-M8W4-E-10-N-LE4**
				15.0 m	**8065122**	**NEBL-M8W4-E-15-N-LE4**
	For power transmission	Straight socket, M8x1, 4-pin, A-coded	Straight plug, M8x1, 4-pin, A-coded	0.3 m	**8082904**	**NEBL-M8G4-E-0.3-N-M8G4**
				0.5 m	**8065102**	**NEBL-M8G4-E-0.5-N-M8G4**
				1.0 m	**8065104**	**NEBL-M8G4-E-1-N-M8G4**
				2.0 m	**8065106**	**NEBL-M8G4-E-2-N-M8G4**
				5.0 m	**8065108**	**NEBL-M8G4-E-5-N-M8G4**
				7.5 m	**8065111**	**NEBL-M8G4-E-7.5-N-M8G4**
				10.0 m	**8065115**	**NEBL-M8G4-E-10-N-M8G4**
				15.0 m	**8065119**	**NEBL-M8G4-E-15-N-M8G4**
		Angled socket, M8x1, 4-pin, A-coded	Angled plug, M8x1, 4-pin, A-coded	0.3 m	**8146577**	**NEBL-M8W4-E-0.3-N-M8W4**
				0.5 m	**8065103**	**NEBL-M8W4-E-0.5-N-M8W4**
				1.0 m	**8065105**	**NEBL-M8W4-E-1-N-M8W4**
				2.0 m	**8065107**	**NEBL-M8W4-E-2-N-M8W4**
				5.0 m	**8065109**	**NEBL-M8W4-E-5-N-M8W4**
				7.5 m	**8065112**	**NEBL-M8W4-E-7.5-N-M8W4**
				10.0 m	**8065116**	**NEBL-M8W4-E-10-N-M8W4**
				15.0 m	**8065120**	**NEBL-M8W4-E-15-N-M8W4**

Datasheet – 8-way digital input modules

Ordering data – Accessories

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

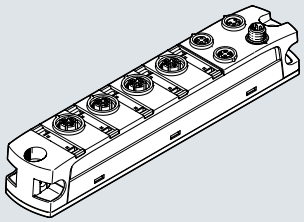
Ordering data – Accessories

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

Datasheet – Analogue input modules

Function
Analogue input modules make it possible to detect 4 analogue input signals.
All 4 channels can be set separately to measure current, voltage, temperature or resistance.

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



General technical data – Analogue input modules

Number of inputs	4
Electrical connection, input, function	Analogue input
Electrical connection, input, type of connection	4x socket
Electrical connection, input, connection technology	M12x1 A-coded to EN 61076-2-101
Electrical connection, input, note on connection technology	To achieve the technical specifications, the opposite side must be screened and designed with gold contact surfaces.
Electrical connection, input, number of pins/cores	5
Fuse protection inputs (short circuit)	Internal electronic fuse per module
Signal range	-10 - 10 V; -5 - 5 V; 0 - 10 V; 1 - 5 V; 0 - 20 mA; 4 - 20 mA; 0 - 500 Ohm
Data format	15 bit + prefix; linear scaling
Measured variable	Voltage; current; temperature; resistance
Note on the measured variable	Temperature: PT100 and NI100 supported
Repetition accuracy	±0,025% at 25 °C
Operating error limit related to the ambient temperature range	±0.15% for voltage; ±0.15% for current; ±0.9% for temperature; ±0.35% for resistance
Basic error limit at 25 °C	±0.1% for voltage; ±0.1% for current; ±0.4% for temperature; ±0.2% for resistance
Communication interface, protocol	AP
Communication interface, function	System communication XF10 IN / XF20 OUT
Communication interface, connection type	2x socket
Communication interface, connection technology	M8x1, D-coded to EN 61076-2-114
Communication interface, number of pins/cores	4
Communication interface, screened	Yes

General data – Analogue input modules

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

Datasheet – Analogue input modules

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

Technical data – Mechanics – Analogue input modules	
Type of mounting	On DIN rail with accessories; with through-hole
Product weight	166 g
Dimensions W x L x H	30 mm x 170 mm x 35 mm

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

Operating and environmental conditions – Analogue input modules	
Ambient temperature	-20 ... 50 °C
Storage temperature	-40 ... 70 °C
Corrosion resistance class CRC [1]	1 - Low corrosion stress
Relative humidity	5 - 95%, non-condensing
CE marking (see declaration of conformity) [2]	To EU EMC Directive
UKCA mark (see declaration of conformity) [3]	To UK EMC regulations
KC marking	KC-EMV
Certification	RCM c UL us - Listed (Oil)
Certificate issuing authority	UL E239998
Degree of protection	IP65; IP67
Note on degree of protection	Unused connections sealed

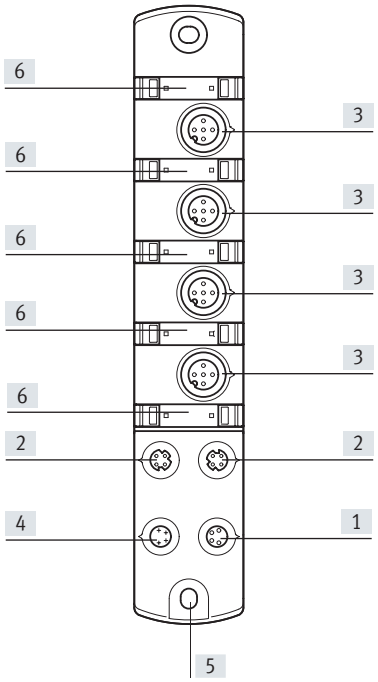
1) More information www.festo.com/x/topic/crc

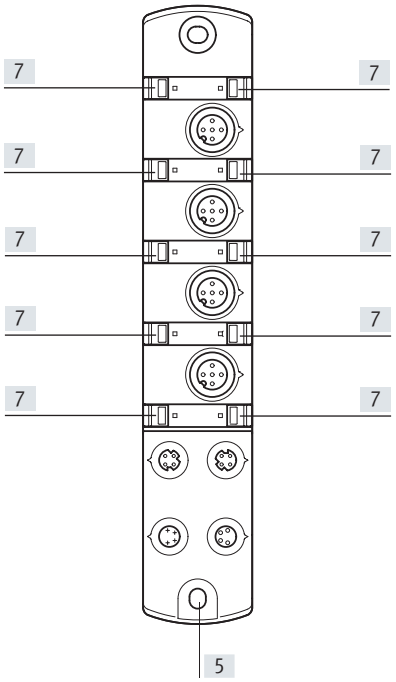
2) More information www.festo.com/catalogue/... Support/Downloads.

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

Datasheet – Analogue input modules

Connection and display components

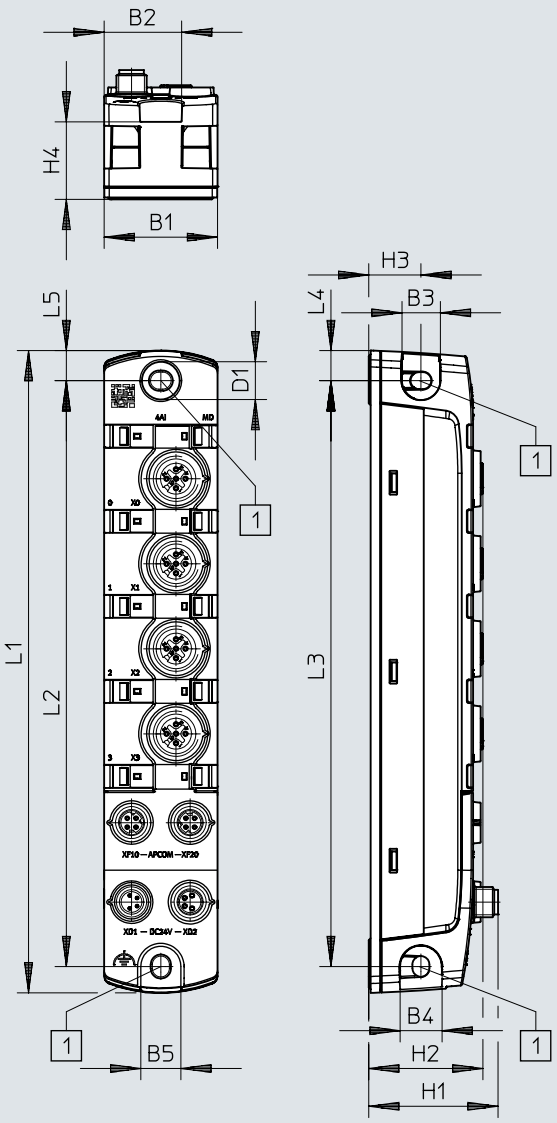




[1] Electrical connection, power transmission
[2] Communication interface
[3] Electrical connection, inputs
[4] Electrical connection, power supply
[5] Earth connection
[6] Space for inscription label
[7] LED indicators

Datasheet – Analogue input modules

Dimensions Download CAD data➔ www.festo.com

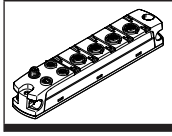


[1] Mounting hole for M4 screws

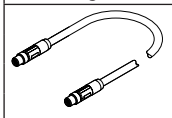
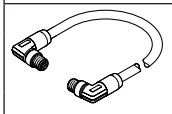
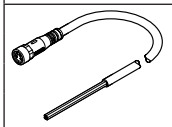
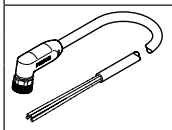
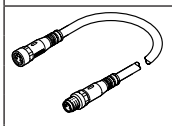
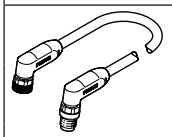
	B1	B2	B3	B4	B5	D1 ø	H1	H2	H3	H4	L1	L2	L3	L4	L5
CPX-AP-I-4AI-U-I-RTD-M12	30	20.5	10	11	11	10	34.2	30.2	13.8	20.5	170	155	155	8	8

Datasheet – Analogue input modules

Ordering data

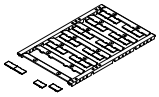
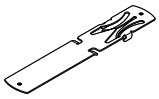
			Part no.	Type
	Analogue input module	Electrical connection input 4x socket 5-pin M12x1	**8086606**	**CPX-AP-I-4AI-U-I-RTD-M12**

Ordering data – Accessories

	Description				Part no.	Type
Connecting cable						
	For communication interface	Straight plug, M8x1, 4-pin, D-coded	Straight plug, M8x1, 4-pin, D-coded	0.3 m	**8082902**	**NEBC-D8G4-ES-0.3-N-S-D8G4-ET**
				0.5 m	**8065123**	**NEBC-D8G4-ES-0.5-N-S-D8G4-ET**
				1.0 m	**8065125**	**NEBC-D8G4-ES-1-N-S-D8G4-ET**
				2.0 m	**8065127**	**NEBC-D8G4-ES-2-N-S-D8G4-ET**
				5.0 m	**8065129**	**NEBC-D8G4-ES-5-N-S-D8G4-ET**
				7.5 m	**8065131**	**NEBC-D8G4-ES-7.5-N-S-D8G4-ET**
				10.0 m	**8065133**	**NEBC-D8G4-ES-10-N-S-D8G4-ET**
				15.0 m	**8065135**	**NEBC-D8G4-ES-15-N-S-D8G4-ET**
				20.0 m	**8146031**	**NEBC-D8G4-ES-20-N-S-D8G4-ET**
				25.0 m	**8146032**	**NEBC-D8G4-ES-25-N-S-D8G4-ET**
				30.0 m	**8146033**	**NEBC-D8G4-ES-30-N-S-D8G4-ET**
				40.0 m	**8146034**	**NEBC-D8G4-ES-40-N-S-D8G4-ET**
				50.0 m	**8146035**	**NEBC-D8G4-ES-50-N-S-D8G4-ET**
		Angled plug, M8x1, 4-pin, D-coded	Angled plug, M8x1, 4-pin, D-coded	0.5 m	**8065124**	**NEBC-D8W4-ES-0.5-N-S-D8W4-ET**
				1.0 m	**8065126**	**NEBC-D8W4-ES-1-N-S-D8W4-ET**
				2.0 m	**8065128**	**NEBC-D8W4-ES-2-N-S-D8W4-ET**
				5.0 m	**8065130**	**NEBC-D8W4-ES-5-N-S-D8W4-ET**
				7.5 m	**8065132**	**NEBC-D8W4-ES-7.5-N-S-D8W4-ET**
				10.0 m	**8065134**	**NEBC-D8W4-ES-10-N-S-D8W4-ET**
				15.0 m	**8065136**	**NEBC-D8W4-ES-15-N-S-D8W4-ET**
				20.0 m	**8146036**	**NEBC-D8W4-ES-20-N-S-D8W4-ET**
				25.0 m	**8146037**	**NEBC-D8W4-ES-25-N-S-D8W4-ET**
				30.0 m	**8146038**	**NEBC-D8W4-ES-30-N-S-D8W4-ET**
				40.0 m	**8146039**	**NEBC-D8W4-ES-40-N-S-D8W4-ET**
				50.0 m	**8146040**	**NEBC-D8W4-ES-50-N-S-D8W4-ET**
	For power supply	Straight socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	5.0 m	**8065110**	**NEBL-M8G4-E-5-N-LE4**
				7.5 m	**8065113**	**NEBL-M8G4-E-7,5-N-LE4**
				10.0 m	**8065117**	**NEBL-M8G4-E-10-N-LE4**
				15.0 m	**8065121**	**NEBL-M8G4-E-15-N-LE4**
		Angled socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	7.5 m	**8065114**	**NEBL-M8W4-E-7.5-N-LE4**
				10.0 m	**8065118**	**NEBL-M8W4-E-10-N-LE4**
				15.0 m	**8065122**	**NEBL-M8W4-E-15-N-LE4**
	For power transmission	Straight socket, M8x1, 4-pin, A-coded	Straight plug, M8x1, 4-pin, A-coded	0.3 m	**8082904**	**NEBL-M8G4-E-0.3-N-M8G4**
				0.5 m	**8065102**	**NEBL-M8G4-E-0.5-N-M8G4**
				1.0 m	**8065104**	**NEBL-M8G4-E-1-N-M8G4**
				2.0 m	**8065106**	**NEBL-M8G4-E-2-N-M8G4**
				5.0 m	**8065108**	**NEBL-M8G4-E-5-N-M8G4**
				7.5 m	**8065111**	**NEBL-M8G4-E-7.5-N-M8G4**
				10.0 m	**8065115**	**NEBL-M8G4-E-10-N-M8G4**
				15.0 m	**8065119**	**NEBL-M8G4-E-15-N-M8G4**
		Angled socket, M8x1, 4-pin, A-coded	Angled plug, M8x1, 4-pin, A-coded	0.3 m	**8146577**	**NEBL-M8W4-E-0.3-N-M8W4**
				0.5 m	**8065103**	**NEBL-M8W4-E-0.5-N-M8W4**
				1.0 m	**8065105**	**NEBL-M8W4-E-1-N-M8W4**
				2.0 m	**8065107**	**NEBL-M8W4-E-2-N-M8W4**
				5.0 m	**8065109**	**NEBL-M8W4-E-5-N-M8W4**
				7.5 m	**8065112**	**NEBL-M8W4-E-7.5-N-M8W4**
				10.0 m	**8065116**	**NEBL-M8W4-E-10-N-M8W4**
				15.0 m	**8065120**	**NEBL-M8W4-E-15-N-M8W4**

Datasheet – Analogue input modules

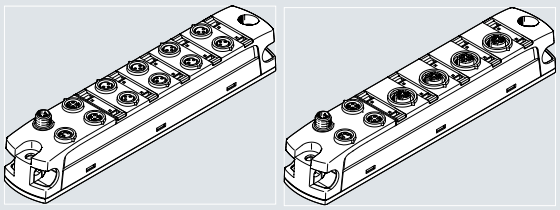
Ordering data – Accessories

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

Datasheet – 8-way digital output modules

Function
Digital output modules make it possible to connect electrical consumers according to IEC1131-2 type 0.5 (valves, contactors or display components) with an operating voltage of 24 V DC.
Status and error messages can be shown by LED indicators on the module. The module behaviour can be set via parameters.

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



General technical data – 8-way digital output modules

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

General data – 8-way digital output modules

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

Datasheet – 8-way digital output modules

Technical data – Electrics – 8-way digital output modules	
Nominal operating voltage DC for electronics/sensors	24 V
Nominal operating voltage DC load	24 V
Permissible voltage fluctuations, electronics/sensors	± 25%
Permissible voltage fluctuations, load	± 25%
Note on operating voltage	SELV/PELV power supply units required; note voltage drop
Power failure buffering	10 ms
Max. power supply	2 x 4 A (external fuse required)
Max. power supply per channel	0.5 A
Max. total current of outputs per module	4 A
Intrinsic current consumption at nominal operating voltage, electronics/sensors	Typical 35 mA
Intrinsic current consumption at nominal operating voltage, load	Typical 10 mA
Power supply, function	Incoming electronics/sensors and load
Power supply, connection type	Plug
Power supply, connection technology	M8x1, A-coded to EN 61076-2-104
Power supply, number of pins/cores	4
Power transmission, function	Outgoing electronics/sensors and load
Power transmission, connection type	Socket
Power transmission, connection technology	M8x1, A-coded to EN 61076-2-104
Power transmission, number of pins/cores	4

Technical data – Mechanics – 8-way digital output modules	
Type of mounting	On DIN rail with accessories; with through-hole
Product weight	127 g
Dimensions W x L x H	30 mm x 170 mm x 35 mm

Materials – 8-way digital output modules	
Housing material	PA; PC; nickel-plated die-cast zinc
O-ring material	Fluoro rubber
Note on materials	RoHS compliant
LABS (PWIS) conformity	VDMA24364-B2-L
Cleanroom class	Element installed statically, no meaningful evaluation possible according to ISO 14644-1

Operating and environmental conditions – 8-way digital output modules	
Ambient temperature	-20 ... 50 °C
Storage temperature	-40 ... 70 °C
Corrosion resistance class CRC [1]	1 - Low corrosion stress
Relative humidity	5 - 95%, non-condensing
CE marking (see declaration of conformity) [2]	To EU EMC Directive
UKCA mark (see declaration of conformity) [3]	To UK EMC regulations
KC marking	KC-EMV
Certification	RCM c UL us - Listed (Oil)
Certificate issuing authority	UL E239998
Degree of protection	IP65; IP67
Note on degree of protection	Unused connections sealed

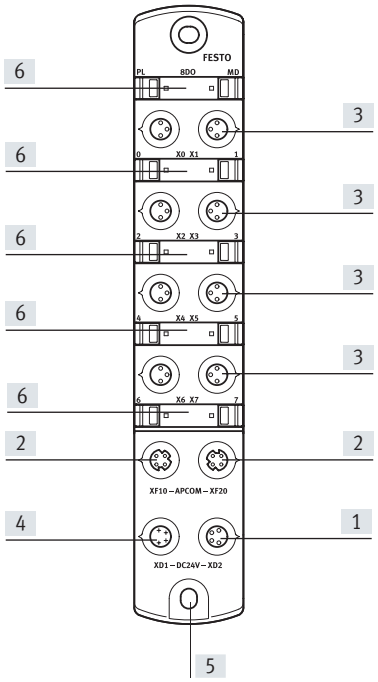
1) More information www.festo.com/x/topic/crc

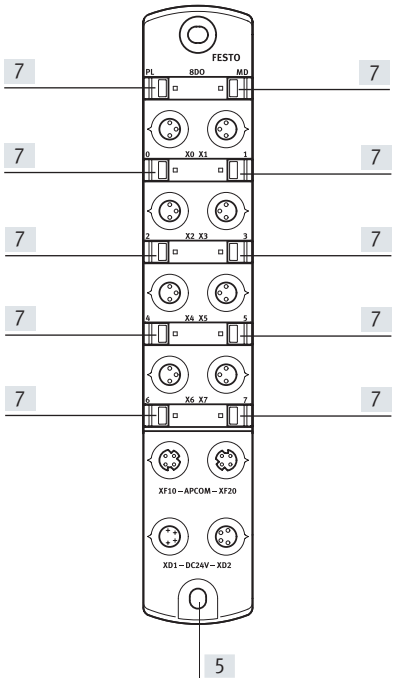
2) More information www.festo.com/catalogue/... Support/Downloads.

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

Datasheet – 8-way digital output modules

Connection and display components

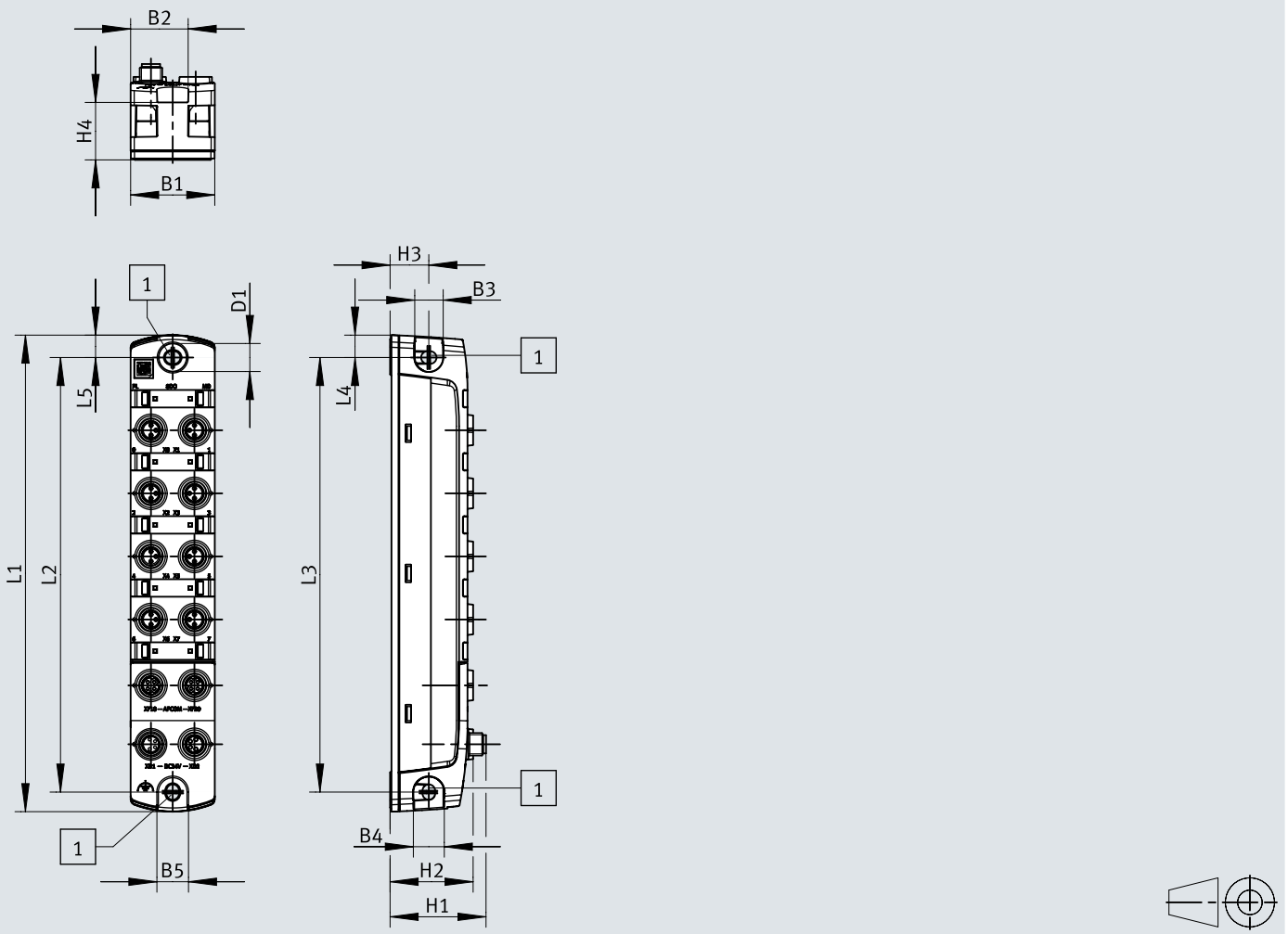




[1] Electrical connection, power transmission
[2] Communication interface
[3] Electrical connection, outputs
[4] Electrical connection, power supply
[5] Earth connection
[6] Space for inscription label
[7] LED indicators

Datasheet – 8-way digital output modules

Dimensions – CPX-AP-I-8DO-M8-3P Download CAD data➔ www.festo.com

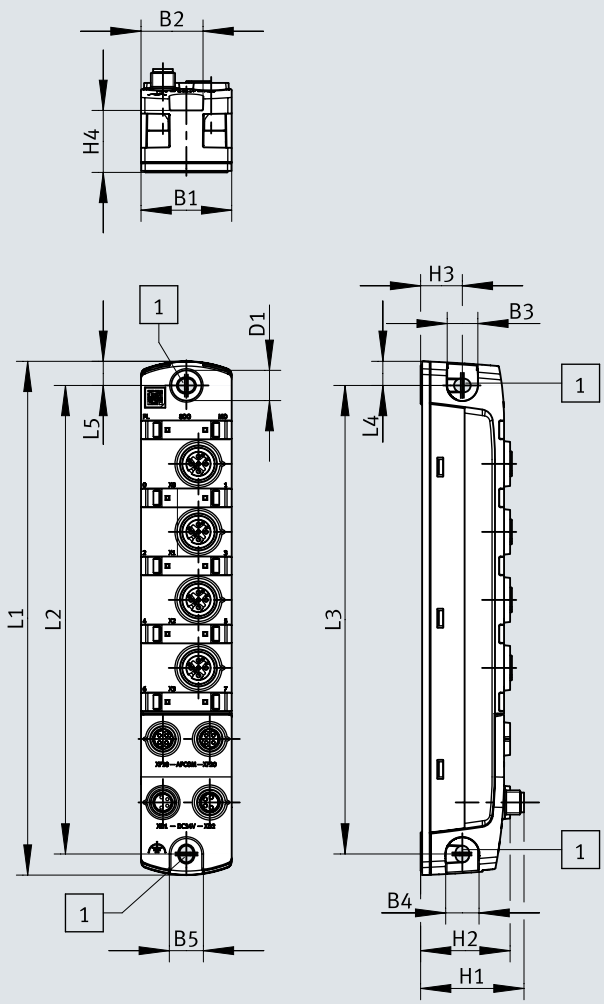


[1] Mounting hole for M4 screws

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

Datasheet – 8-way digital output modules

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

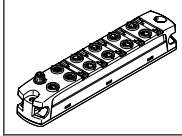
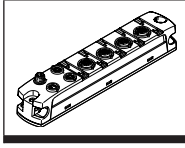


[1] Mounting hole for M4 screws

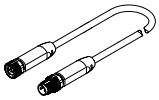
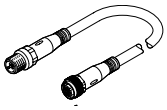
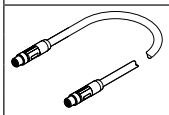
	B1	B2	B3	B4	B5	D1 ø	H1	H2	H3	H4	L1	L2	L3	L4	L5
CPX-AP-I-8DO-M12-5P	30	20.5	10	11	11	10	34.2	30.2	13.8	20.5	170	155	155	8	8

Datasheet – 8-way digital output modules

Ordering data

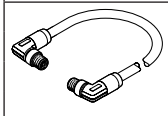
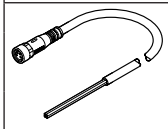
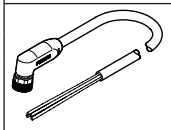
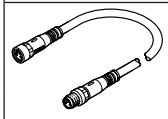
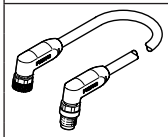
			Part no.	Type
	Digital output module	Electrical connection output 8x socket, 3-pin, M8x1	**8179438**	**CPX-AP-I-8DO-M8-3P**
		Electrical connection output 4x socket, 5-pin, M12x1	**8179439**	**CPX-AP-I-8DO-M12-5P**

Ordering data – Accessories

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

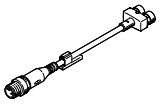
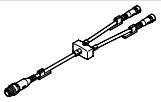
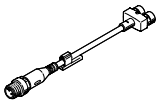
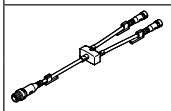
Datasheet – 8-way digital output modules

Ordering data – Accessories

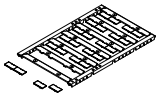
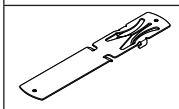
	Description				Part no.	Type
Connecting cable						
	For communication interface	Angled plug, M8x1, 4-pin, D-coded	Angled plug, M8x1, 4-pin, D-coded	0.5 m	**8065124**	**NEBC-D8W4-ES-0.5-N-S-D8W4-ET**
				1.0 m	**8065126**	**NEBC-D8W4-ES-1-N-S-D8W4-ET**
				2.0 m	**8065128**	**NEBC-D8W4-ES-2-N-S-D8W4-ET**
				5.0 m	**8065130**	**NEBC-D8W4-ES-5-N-S-D8W4-ET**
				7.5 m	**8065132**	**NEBC-D8W4-ES-7.5-N-S-D8W4-ET**
				10.0 m	**8065134**	**NEBC-D8W4-ES-10-N-S-D8W4-ET**
				15.0 m	**8065136**	**NEBC-D8W4-ES-15-N-S-D8W4-ET**
				20.0 m	**8146036**	**NEBC-D8W4-ES-20-N-S-D8W4-ET**
				25.0 m	**8146037**	**NEBC-D8W4-ES-25-N-S-D8W4-ET**
				30.0 m	**8146038**	**NEBC-D8W4-ES-30-N-S-D8W4-ET**
				40.0 m	**8146039**	**NEBC-D8W4-ES-40-N-S-D8W4-ET**
				50.0 m	**8146040**	**NEBC-D8W4-ES-50-N-S-D8W4-ET**
	For power supply	Straight socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	5.0 m	**8065110**	**NEBL-M8G4-E-5-N-LE4**
				7.5 m	**8065113**	**NEBL-M8G4-E-7,5-N-LE4**
				10.0 m	**8065117**	**NEBL-M8G4-E-10-N-LE4**
				15.0 m	**8065121**	**NEBL-M8G4-E-15-N-LE4**
		Angled socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	7.5 m	**8065114**	**NEBL-M8W4-E-7.5-N-LE4**
				10.0 m	**8065118**	**NEBL-M8W4-E-10-N-LE4**
				15.0 m	**8065122**	**NEBL-M8W4-E-15-N-LE4**
	For power transmission	Straight socket, M8x1, 4-pin, A-coded	Straight plug, M8x1, 4-pin, A-coded	0.3 m	**8082904**	**NEBL-M8G4-E-0.3-N-M8G4**
				0.5 m	**8065102**	**NEBL-M8G4-E-0.5-N-M8G4**
				1.0 m	**8065104**	**NEBL-M8G4-E-1-N-M8G4**
				2.0 m	**8065106**	**NEBL-M8G4-E-2-N-M8G4**
				5.0 m	**8065108**	**NEBL-M8G4-E-5-N-M8G4**
				7.5 m	**8065111**	**NEBL-M8G4-E-7.5-N-M8G4**
				10.0 m	**8065115**	**NEBL-M8G4-E-10-N-M8G4**
				15.0 m	**8065119**	**NEBL-M8G4-E-15-N-M8G4**
		Angled socket, M8x1, 4-pin, A-coded	Angled plug, M8x1, 4-pin, A-coded	0.3 m	**8146577**	**NEBL-M8W4-E-0.3-N-M8W4**
				0.5 m	**8065103**	**NEBL-M8W4-E-0.5-N-M8W4**
				1.0 m	**8065105**	**NEBL-M8W4-E-1-N-M8W4**
				2.0 m	**8065107**	**NEBL-M8W4-E-2-N-M8W4**
				5.0 m	**8065109**	**NEBL-M8W4-E-5-N-M8W4**
				7.5 m	**8065112**	**NEBL-M8W4-E-7.5-N-M8W4**
				10.0 m	**8065116**	**NEBL-M8W4-E-10-N-M8W4**
				15.0 m	**8065120**	**NEBL-M8W4-E-15-N-M8W4**

Datasheet – 8-way digital output modules

Ordering data – Accessories

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

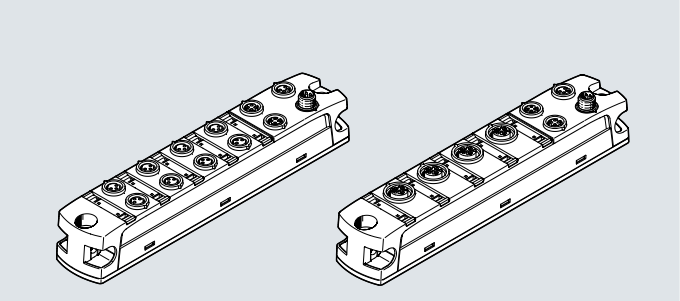
Ordering data – Accessories

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

Datasheet – Digital input/output modules

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

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



General technical data – Digital input/output modules

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

Datasheet – Digital input/output modules

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

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

Technical data – Mechanics – Digital input/output modules	
Type of mounting	On DIN rail with accessories; with through-hole
Product weight	129
Dimensions W x L x H	30 mm x 170 mm x 35 mm

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

Datasheet – Digital input/output modules

Operating and ambient conditions – Digital input/output modules

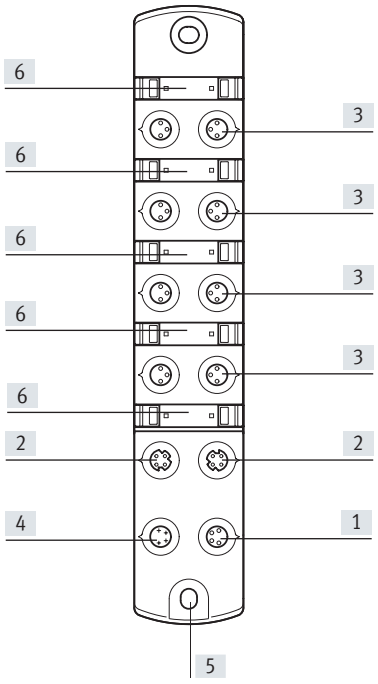
Ambient temperature	-20 ... 50 °C
Storage temperature	-40 ... 70 °C
Corrosion resistance class CRC [1]	1 - Low corrosion stress
Relative humidity	5 - 95%, non-condensing
CE marking (see declaration of conformity) [2]	To EU EMC Directive
UKCA mark (see declaration of conformity) [3]	To UK EMC regulations
KC marking	KC-EMV
Certification	RCM c UL us - Listed (Oil)
Certificate issuing authority	UL E239998
Degree of protection	IP65; IP67
Note on degree of protection	Unused connections sealed

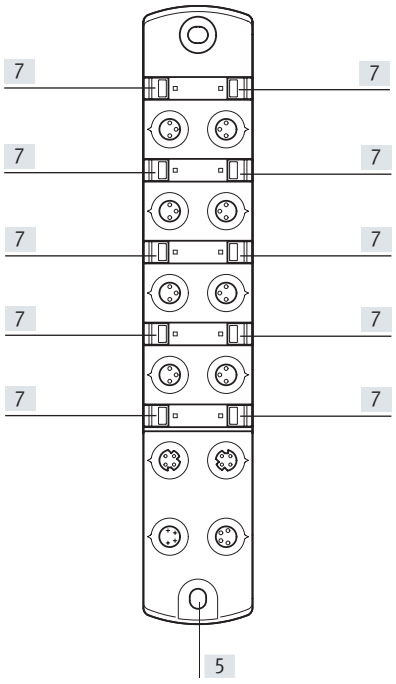
1) More information www.festo.com/x/topic/crc

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

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

Connection and display components





[1] Electrical connection, power transmission

[2] Communication interface

[3] Electrical connection, inputs/outputs

[4] Electrical connection, power supply

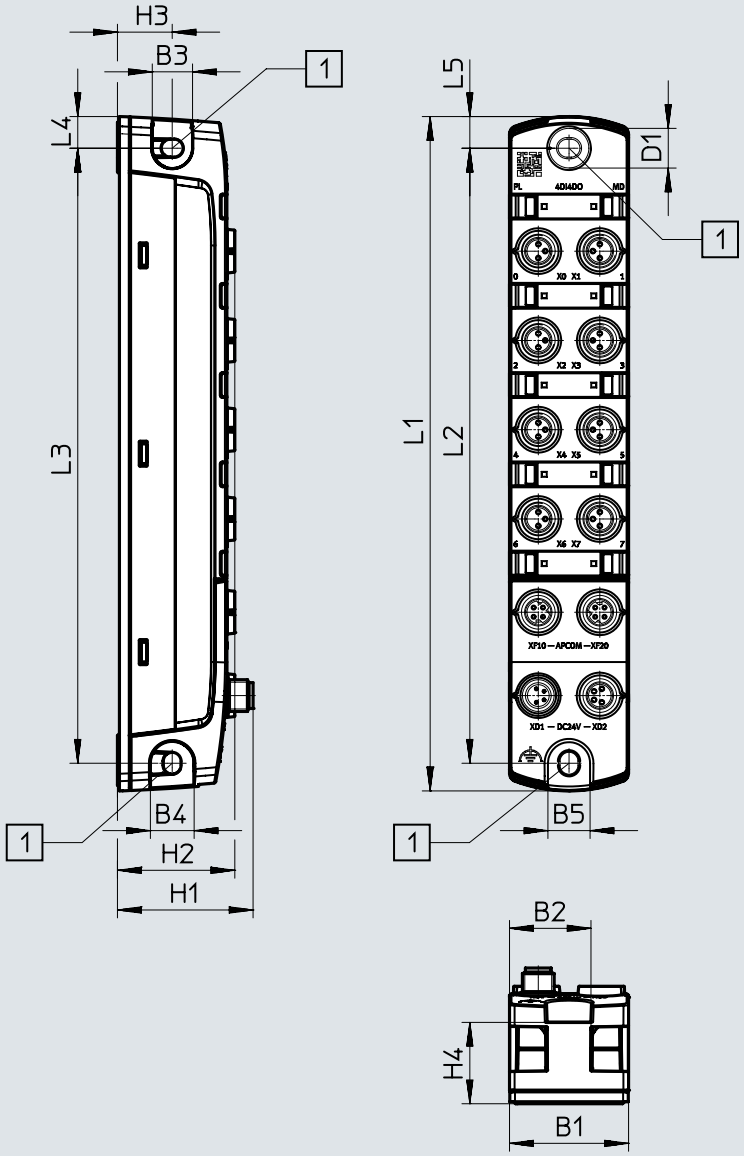
[5] Earth connection

[6] Space for inscription label

[7] LED indicators

Datasheet – Digital input/output modules

Dimensions – CPX-AP-I-4DI4DO-M8-3P Download CAD data➔ www.festo.com

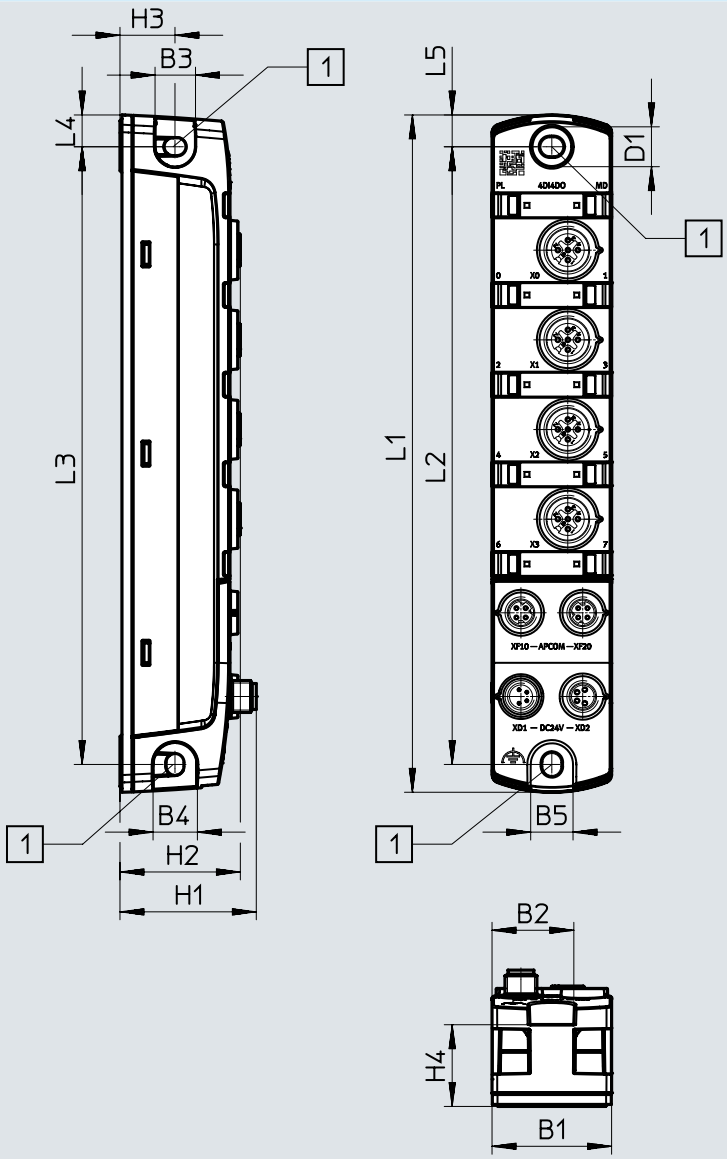


[1] Mounting hole for M4 screws

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

Datasheet – Digital input/output modules

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

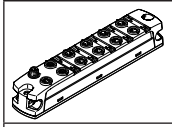
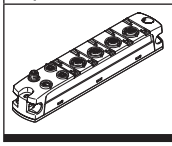


[1] Mounting hole for M4 screws

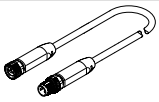
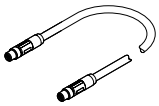
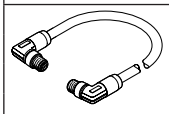
	B1	B2	B3	B4	B5	D1 ⌀	H1	H2	H3	H4	L1	L2	L3	L4	L5
CPX-AP-I-4DI4DO-M8-3P	30	20.5	10	11	11	10	34.2	29.6	13.8	20.5	170	155	155	8	8
CPX-AP-I-4DI4DO-M12-5P	30	20.5	10	11	11	10	34.2	30.2	13.8	20.5	170	155	155	8	8

Datasheet – Digital input/output modules

Ordering data

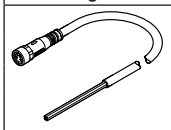
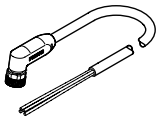
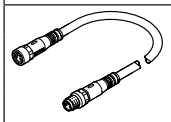
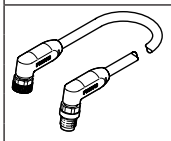
			Part no.	Type
	Digital input/output module	• Electrical connection input 4x socket, 3-pin, M8x1 • Electrical connection output 4x socket, 3-pin, M8x1	**8086601**	**CPX-AP-I-4DI4DO-M8-3P**
		• Electrical connection input 2x socket 5-pin M12x1 • Electrical connection output 2x socket, 5-pin, M12x1	**8086603**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

Ordering data – Accessories

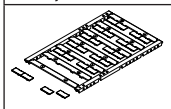
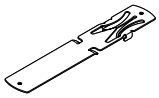
	Description				Part no.	Type
Plug connectors for self-assembly						
	For inputs	Straight plug, M8x1, 3-pin, A-coded	Screw terminal		**8162298**	**NECB-S-M8G3-C2**
		Straight plug, M12x1, 5-pin, A-coded	Screw terminal		**8162296**	**NECB-S-M12G5-C2**
Connecting cable						
	For inputs	Straight plug, M8x1, 3-pin, A-coded	Straight socket, M8x1, 3-pin, A-coded	0.5 m	**8078282**	**NEBA-M8G3-U-0.5-N-M8G3**
				1.0 m	**8078283**	**NEBA-M8G3-U-1-N-M8G3**
				1.5 m	**8078284**	**NEBA-M8G3-U-1.5-N-M8G3**
				2.5 m	**8078286**	**NEBA-M8G3-U-2.5-N-M8G3**
				5.0 m	**8078287**	**NEBA-M8G3-U-5-N-M8G3**
				10.0 m	**8078288**	**NEBA-M8G3-U-10-N-M8G3**
	For communication interface	Straight plug, M8x1, 4-pin, D-coded	Straight plug, M8x1, 4-pin, D-coded	0.3 m	**8082902**	**NEBC-D8G4-ES-0.3-N-S-D8G4-ET**
				0.5 m	**8065123**	**NEBC-D8G4-ES-0.5-N-S-D8G4-ET**
				1.0 m	**8065125**	**NEBC-D8G4-ES-1-N-S-D8G4-ET**
				2.0 m	**8065127**	**NEBC-D8G4-ES-2-N-S-D8G4-ET**
				5.0 m	**8065129**	**NEBC-D8G4-ES-5-N-S-D8G4-ET**
				7.5 m	**8065131**	**NEBC-D8G4-ES-7.5-N-S-D8G4-ET**
				10.0 m	**8065133**	**NEBC-D8G4-ES-10-N-S-D8G4-ET**
				15.0 m	**8065135**	**NEBC-D8G4-ES-15-N-S-D8G4-ET**
				20.0 m	**8146031**	**NEBC-D8G4-ES-20-N-S-D8G4-ET**
				25.0 m	**8146032**	**NEBC-D8G4-ES-25-N-S-D8G4-ET**
				30.0 m	**8146033**	**NEBC-D8G4-ES-30-N-S-D8G4-ET**
				40.0 m	**8146034**	**NEBC-D8G4-ES-40-N-S-D8G4-ET**
				50.0 m	**8146035**	**NEBC-D8G4-ES-50-N-S-D8G4-ET**
		Angled plug, M8x1, 4-pin, D-coded	Angled plug, M8x1, 4-pin, D-coded	0.5 m	**8065124**	**NEBC-D8W4-ES-0.5-N-S-D8W4-ET**
				1.0 m	**8065126**	**NEBC-D8W4-ES-1-N-S-D8W4-ET**
				2.0 m	**8065128**	**NEBC-D8W4-ES-2-N-S-D8W4-ET**
				5.0 m	**8065130**	**NEBC-D8W4-ES-5-N-S-D8W4-ET**
				7.5 m	**8065132**	**NEBC-D8W4-ES-7.5-N-S-D8W4-ET**
				10.0 m	**8065134**	**NEBC-D8W4-ES-10-N-S-D8W4-ET**
				15.0 m	**8065136**	**NEBC-D8W4-ES-15-N-S-D8W4-ET**
				20.0 m	**8146036**	**NEBC-D8W4-ES-20-N-S-D8W4-ET**
				25.0 m	**8146037**	**NEBC-D8W4-ES-25-N-S-D8W4-ET**
				30.0 m	**8146038**	**NEBC-D8W4-ES-30-N-S-D8W4-ET**
				40.0 m	**8146039**	**NEBC-D8W4-ES-40-N-S-D8W4-ET**
				50.0 m	**8146040**	**NEBC-D8W4-ES-50-N-S-D8W4-ET**

Datasheet – Digital input/output modules

Ordering data – Accessories

	Description				Part no.	Type
Connecting cable						
	For power supply	Straight socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	5.0 m	**8065110**	**NEBL-M8G4-E-5-N-LE4**
				7.5 m	**8065113**	**NEBL-M8G4-E-7,5-N-LE4**
				10.0 m	**8065117**	**NEBL-M8G4-E-10-N-LE4**
				15.0 m	**8065121**	**NEBL-M8G4-E-15-N-LE4**
		Angled socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	7.5 m	**8065114**	**NEBL-M8W4-E-7.5-N-LE4**
				10.0 m	**8065118**	**NEBL-M8W4-E-10-N-LE4**
				15.0 m	**8065122**	**NEBL-M8W4-E-15-N-LE4**
	For power transmission	Straight socket, M8x1, 4-pin, A-coded	Straight plug, M8x1, 4-pin, A-coded	0.3 m	**8082904**	**NEBL-M8G4-E-0.3-N-M8G4**
				0.5 m	**8065102**	**NEBL-M8G4-E-0.5-N-M8G4**
				1.0 m	**8065104**	**NEBL-M8G4-E-1-N-M8G4**
				2.0 m	**8065106**	**NEBL-M8G4-E-2-N-M8G4**
				5.0 m	**8065108**	**NEBL-M8G4-E-5-N-M8G4**
				7.5 m	**8065111**	**NEBL-M8G4-E-7.5-N-M8G4**
				10.0 m	**8065115**	**NEBL-M8G4-E-10-N-M8G4**
				15.0 m	**8065119**	**NEBL-M8G4-E-15-N-M8G4**
		Angled socket, M8x1, 4-pin, A-coded	Angled plug, M8x1, 4-pin, A-coded	0.3 m	**8146577**	**NEBL-M8W4-E-0.3-N-M8W4**
				0.5 m	**8065103**	**NEBL-M8W4-E-0.5-N-M8W4**
				1.0 m	**8065105**	**NEBL-M8W4-E-1-N-M8W4**
				2.0 m	**8065107**	**NEBL-M8W4-E-2-N-M8W4**
				5.0 m	**8065109**	**NEBL-M8W4-E-5-N-M8W4**
				7.5 m	**8065112**	**NEBL-M8W4-E-7.5-N-M8W4**
				10.0 m	**8065116**	**NEBL-M8W4-E-10-N-M8W4**
				15.0 m	**8065120**	**NEBL-M8W4-E-15-N-M8W4**

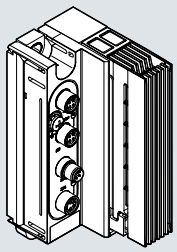
Ordering data – Accessories

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

Datasheet – Pneumatic interface plate for valve terminal VTUX

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

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



General technical data – Pneumatic interface plate for valve terminal VTUX

Compatible with	Valve terminal VTUX-A-P	Valve terminal VTUX-A-S
Valve terminal design	Valve sizes can be mixed	
Size	1 2	
Protocol	AP	
Electrical control	AP interface	
Max. address volume for outputs	4 bytes	
Maximum number of valve coils	32	128

Communication interface – Pneumatic interface plate for valve terminal VTUX

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

General data – Pneumatic interface plate for valve terminal VTUX

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

Datasheet – Pneumatic interface plate for valve terminal VTUX

Technical data – Electrics – Interface plate for valve terminal VTUX	
Nominal operating voltage DC for electronics/sensors	24 V
Permissible voltage fluctuations, electronics/sensors	± 25%
Nominal operating voltage DC load	24 V
Permissible voltage fluctuations, load	± 10%
Load/valves undervoltage (diagnostic message)	≤21,1 V
Note on operating voltage	SELV/PELV power supply units required; note voltage drop
Power failure buffering	10 ms
Max. power supply	2 x 4 A (external fuse required)
Fuse protection (short circuit)	Internal electronic fuse per channel
Inductive protective circuit	Integrated
Overvoltage category	II
Protection against direct and indirect contact	PELV, SELV
Reverse polarity protection	Yes
Intrinsic current consumption at nominal operating voltage, electronics/sensors	Typical 27 mA
Intrinsic current consumption at nominal operating voltage, load	Typical 13 mA
Power consumption at 24 VDC	650 FW
Pollution degree	2
Electrical isolation of outputs between channel - internal communication	Yes
Electrical isolation between the supply voltages electronics/sensors and load/valves	Yes

Electrical connection – Power supply – Interface plate for valve terminal VTUX	
Power supply, function	Incoming electronics/sensors and load
Power supply, connection type	Socket
Power supply, connection technology	M8x1, A-coded to EN 61076-2-104
Power supply, number of pins/cores	4

Electrical connection – Power transmission – Interface plate for valve terminal VTUX	
Power transmission, function	Outgoing electronics/sensors and load
Power transmission, connection type	Socket
Power transmission, connection technology	M8x1, A-coded to EN 61076-2-104
Power transmission, number of pins/cores	4

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

Materials – Pneumatic interface plate for valve terminal VTUX	
Sub-base material	Reinforced PA
Cover material	Reinforced PA
Film material	Polyester
Sleeve material	High-alloy stainless steel
Clamp material	High-alloy stainless steel
Nut material	High-alloy stainless steel
Sealing material	NBR
Note on materials	RoHS compliant
LABS (PWIS) conformity	VDMA24364-B1/B2-L

Datasheet – Pneumatic interface plate for valve terminal VTUX

Operating and environmental conditions – Pneumatic interface plate for valve terminal VTUX		
Compatible with	Valve terminal VTUX-A-P	Valve terminal VTUX-A-S
Ambient temperature	-20 ... 50 °C	-5 ... 50 °C
Storage temperature	-20 ... 70 °C	
Corrosion resistance class CRC [1]	2 - Moderate corrosion stress	
Relative humidity	5 - 95%	
Nominal operating altitude	<= 2000 m NHN	
Max. setup altitude	3.500 m	
Vibration resistance	Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6	
Shock resistance	Shock test with severity level 2 to FN 942017-5 and EN EN 60068-2-27	
CE marking (see declaration of conformity) [2]	To EU EMC Directive To EU RoHS Directive	
UKCA mark (see declaration of conformity) [3]	To UK EMC regulations To UK RoHS regulations	
KC marking	KC-EMV	
Certification	RCM	
Degree of protection	IP65	
Note on degree of protection	Unused connections sealed	

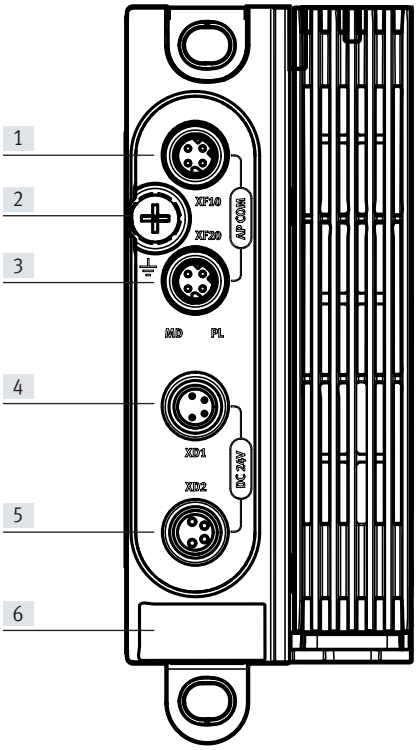
1) More information www.festo.com/x/topic/crc

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

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

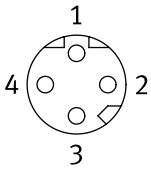
Datasheet – Pneumatic interface plate for valve terminal VTUX

Connection and display components

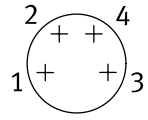


[1] XF10 Communication interface
[2] Earth connection
[3] XF20 Communication interface
[4] XD1 Electrical connection, power supply
[5] XD2 Electrical connection, power transmission
[6] Rating plate

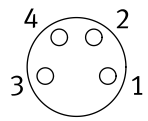
Pin assignment for communication interface 2x socket M8x1, D-coded, 4-pin

Plug pattern	Pin	Assignment	Description
	1	TX-	Transmitted data-
	2	RX+	Received data+
	3	TX+	Transmitted data+
	4	RX-	Received data

Pin assignment for power supply M8x1, A-coded, 4-pin

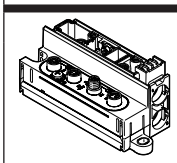
Plug pattern	Pin	Assignment	Description
	1	24 V	Operating voltage 24 V electronics and sensors
	2	0 V	Operating voltage 0 V load voltage supply
	3	0 V	Operating voltage 0 V electronics and sensors
	4	24 V	Operating voltage 24 V load voltage supply

Pin assignment for power transmission, socket M8x1, A-coded, 4-pin

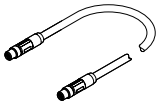
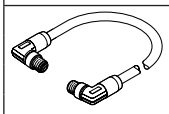
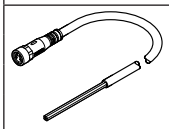
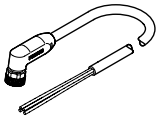
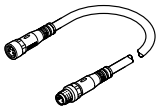
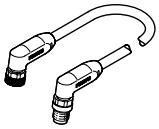
Plug pattern	Pin	Assignment	Description
	1	24 V	Operating voltage 24 V electronics and sensors
	2	0 V	Operating voltage 0 V load voltage supply
	3	0 V	Operating voltage 0 V electronics and sensors
	4	24 V	Operating voltage 24 V load voltage supply

Datasheet – Pneumatic interface plate for valve terminal VTUX

Ordering data

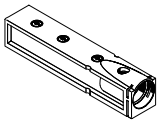
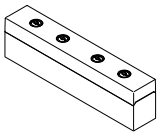
				Part no.	Type
	Pneumatic interface plate for valve terminal VTUX	Parallel communication	Maximum 32 valve coils	**8189592**	**VABX-A-P-EL-E12-API-SHUH-XL**
		Serial communication	Maximum 128 valve coils	**8189593**	**VABX-A-S-EL-E12-API-SHUH-XL**

Ordering data – Accessories

	Description				Part no.	Type
Connecting cable						
	For communication interface	Straight plug, M8x1, 4-pin, D-coded	Straight plug, M8x1, 4-pin, D-coded	0.3 m	**8082902**	**NEBC-D8G4-ES-0.3-N-S-D8G4-ET**
				0.5 m	**8065123**	**NEBC-D8G4-ES-0.5-N-S-D8G4-ET**
				1.0 m	**8065125**	**NEBC-D8G4-ES-1-N-S-D8G4-ET**
				2.0 m	**8065127**	**NEBC-D8G4-ES-2-N-S-D8G4-ET**
				5.0 m	**8065129**	**NEBC-D8G4-ES-5-N-S-D8G4-ET**
				7.5 m	**8065131**	**NEBC-D8G4-ES-7.5-N-S-D8G4-ET**
				10.0 m	**8065133**	**NEBC-D8G4-ES-10-N-S-D8G4-ET**
				15.0 m	**8065135**	**NEBC-D8G4-ES-15-N-S-D8G4-ET**
				20.0 m	**8146031**	**NEBC-D8G4-ES-20-N-S-D8G4-ET**
				25.0 m	**8146032**	**NEBC-D8G4-ES-25-N-S-D8G4-ET**
				30.0 m	**8146033**	**NEBC-D8G4-ES-30-N-S-D8G4-ET**
				40.0 m	**8146034**	**NEBC-D8G4-ES-40-N-S-D8G4-ET**
				50.0 m	**8146035**	**NEBC-D8G4-ES-50-N-S-D8G4-ET**
		Angled plug, M8x1, 4-pin, D-coded	Angled plug, M8x1, 4-pin, D-coded	0.5 m	**8065124**	**NEBC-D8W4-ES-0.5-N-S-D8W4-ET**
				1.0 m	**8065126**	**NEBC-D8W4-ES-1-N-S-D8W4-ET**
				2.0 m	**8065128**	**NEBC-D8W4-ES-2-N-S-D8W4-ET**
				5.0 m	**8065130**	**NEBC-D8W4-ES-5-N-S-D8W4-ET**
				7.5 m	**8065132**	**NEBC-D8W4-ES-7.5-N-S-D8W4-ET**
				10.0 m	**8065134**	**NEBC-D8W4-ES-10-N-S-D8W4-ET**
				15.0 m	**8065136**	**NEBC-D8W4-ES-15-N-S-D8W4-ET**
				20.0 m	**8146036**	**NEBC-D8W4-ES-20-N-S-D8W4-ET**
				25.0 m	**8146037**	**NEBC-D8W4-ES-25-N-S-D8W4-ET**
				30.0 m	**8146038**	**NEBC-D8W4-ES-30-N-S-D8W4-ET**
				40.0 m	**8146039**	**NEBC-D8W4-ES-40-N-S-D8W4-ET**
				50.0 m	**8146040**	**NEBC-D8W4-ES-50-N-S-D8W4-ET**
	For power supply	Straight socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	5.0 m	**8065110**	**NEBL-M8G4-E-5-N-LE4**
				7.5 m	**8065113**	**NEBL-M8G4-E-7,5-N-LE4**
				10.0 m	**8065117**	**NEBL-M8G4-E-10-N-LE4**
				15.0 m	**8065121**	**NEBL-M8G4-E-15-N-LE4**
		Angled socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	7.5 m	**8065114**	**NEBL-M8W4-E-7.5-N-LE4**
				10.0 m	**8065118**	**NEBL-M8W4-E-10-N-LE4**
				15.0 m	**8065122**	**NEBL-M8W4-E-15-N-LE4**
	For power transmission	Straight socket, M8x1, 4-pin, A-coded	Straight plug, M8x1, 4-pin, A-coded	0.3 m	**8082904**	**NEBL-M8G4-E-0.3-N-M8G4**
				0.5 m	**8065102**	**NEBL-M8G4-E-0.5-N-M8G4**
				1.0 m	**8065104**	**NEBL-M8G4-E-1-N-M8G4**
				2.0 m	**8065106**	**NEBL-M8G4-E-2-N-M8G4**
				5.0 m	**8065108**	**NEBL-M8G4-E-5-N-M8G4**
				7.5 m	**8065111**	**NEBL-M8G4-E-7.5-N-M8G4**
				10.0 m	**8065115**	**NEBL-M8G4-E-10-N-M8G4**
				15.0 m	**8065119**	**NEBL-M8G4-E-15-N-M8G4**
		Angled socket, M8x1, 4-pin, A-coded	Angled plug, M8x1, 4-pin, A-coded	0.3 m	**8146577**	**NEBL-M8W4-E-0.3-N-M8W4**
				0.5 m	**8065103**	**NEBL-M8W4-E-0.5-N-M8W4**
				1.0 m	**8065105**	**NEBL-M8W4-E-1-N-M8W4**
				2.0 m	**8065107**	**NEBL-M8W4-E-2-N-M8W4**
				5.0 m	**8065109**	**NEBL-M8W4-E-5-N-M8W4**
				7.5 m	**8065112**	**NEBL-M8W4-E-7.5-N-M8W4**
				10.0 m	**8065116**	**NEBL-M8W4-E-10-N-M8W4**
				15.0 m	**8065120**	**NEBL-M8W4-E-15-N-M8W4**

Datasheet – Pneumatic interface plate for valve terminal VTUX

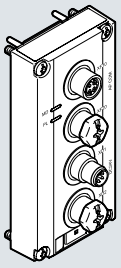
Ordering data – Accessories

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

Datasheet – Electrical interface for valve terminal VTUG

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

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



General technical data – Electrical interface for valve terminal VTUG

Max. number of valve positions	12 24
Maximum number of valve coils	24 48

Communication interface – Electrical interface for valve terminal VTUG

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

General data – Electrical interface for valve terminal VTUG

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

Technical data – Electrics – Electrical interface for valve terminal VTUG

Maximum number of valve coils	24	48
Nominal operating voltage DC for electronics/sensors	24 V	
Permissible voltage fluctuations, electronics/sensors	± 25%	
Nominal operating voltage DC load	24 V	
Permissible voltage fluctuations, load	± 10%	
Note on operating voltage	SELV/PELV power supply units required; note voltage drop	
Power failure buffering	10 ms	
Power failure buffering Load	3 ms	
Max. power supply	2 x 4 A (external fuse required)	
Fuse protection (short circuit)	Internal electronic fuse per channel	
Protection against direct and indirect contact	PELV, SELV	
Reverse polarity protection	Yes	
Intrinsic current consumption at nominal operating voltage, electronics/sensors	Typical 34 mA	
Intrinsic current consumption at nominal operating voltage, load	Typical 16 mA	Typical 22 mA

Datasheet – Electrical interface for valve terminal VTUG

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

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

Technical data – Mechanics – Electrical interface for valve terminal VTUG	
Type of mounting	Screw-clamped
Connection position	On top
Product weight	76 g
Dimensions W x L x H	42 mm x 91 mm x 30 mm

Materials – Electrical interface for valve terminal VTUG	
Housing material	Reinforced PA
Threaded sleeve material	Nickel-plated brass
Note on materials	RoHS compliant
LABS (PWIS) conformity	VDMA24364-B1/B2-L

Operating and environmental conditions – Electrical interface for valve terminal VTUG	
Ambient temperature	-5 ... 60 °C
Storage temperature	-20 ... 60 °C
Corrosion resistance class CRC [1]	2 - Moderate corrosion stress
Relative humidity	5 - 95%, non-condensing
Nominal operating altitude	<= 2000 m NHN
CE marking (see declaration of conformity) [2]	To EU EMC Directive
UKCA mark (see declaration of conformity) [3]	To UK EMC regulations
KC marking	KC-EMV
Certification	RCM c UL us - Recognised (Oil)
Degree of protection	IP65; IP67
Note on degree of protection	In assembled state, unused connections closed

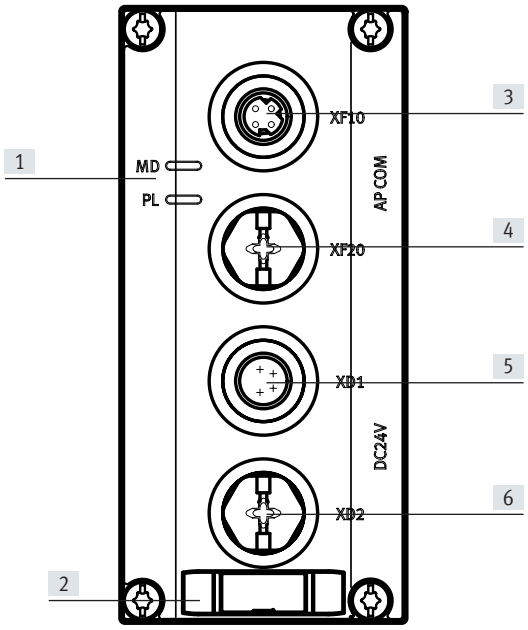
1) More information www.festo.com/x/topic/crc

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

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

Datasheet – Electrical interface for valve terminal VTUG

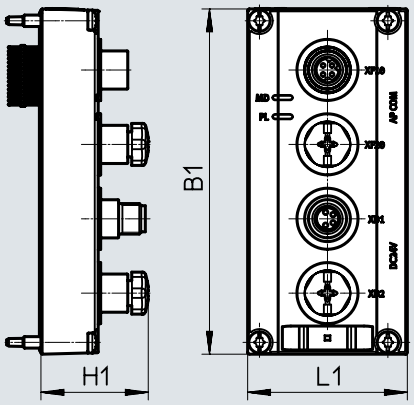
Connection and display components



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

Dimensions

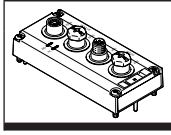
Download CAD data➔ www.festo.com



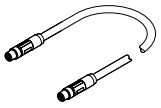
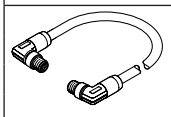
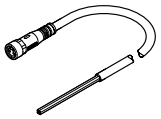
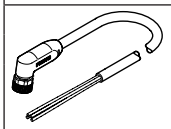
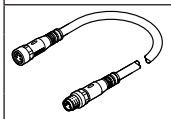
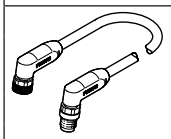
	B1	H1	L1
VAEM-L1-S-12-AP	90.5	28.1	41.8
VAEM-L1-S-24-AP	90.5	28.1	41.8

Datasheet – Electrical interface for valve terminal VTUG

Ordering data

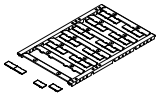
			Part no.	Type
	Electrical interface for VTUG valve terminal	12 valve positions	**8081922**	**VAEM-L1-S-12-AP**
		24 valve positions	**8081923**	**VAEM-L1-S-24-AP**

Ordering data – Accessories

	Description				Part no.	Type
Connecting cable						
	For communication interface	Straight plug, M8x1, 4-pin, D-coded	Straight plug, M8x1, 4-pin, D-coded	0.3 m	**8082902**	**NEBC-D8G4-ES-0.3-N-S-D8G4-ET**
				0.5 m	**8065123**	**NEBC-D8G4-ES-0.5-N-S-D8G4-ET**
				1.0 m	**8065125**	**NEBC-D8G4-ES-1-N-S-D8G4-ET**
				2.0 m	**8065127**	**NEBC-D8G4-ES-2-N-S-D8G4-ET**
				5.0 m	**8065129**	**NEBC-D8G4-ES-5-N-S-D8G4-ET**
				7.5 m	**8065131**	**NEBC-D8G4-ES-7.5-N-S-D8G4-ET**
				10.0 m	**8065133**	**NEBC-D8G4-ES-10-N-S-D8G4-ET**
				15.0 m	**8065135**	**NEBC-D8G4-ES-15-N-S-D8G4-ET**
				20.0 m	**8146031**	**NEBC-D8G4-ES-20-N-S-D8G4-ET**
				25.0 m	**8146032**	**NEBC-D8G4-ES-25-N-S-D8G4-ET**
				30.0 m	**8146033**	**NEBC-D8G4-ES-30-N-S-D8G4-ET**
				40.0 m	**8146034**	**NEBC-D8G4-ES-40-N-S-D8G4-ET**
				50.0 m	**8146035**	**NEBC-D8G4-ES-50-N-S-D8G4-ET**
		Angled plug, M8x1, 4-pin, D-coded	Angled plug, M8x1, 4-pin, D-coded	0.5 m	**8065124**	**NEBC-D8W4-ES-0.5-N-S-D8W4-ET**
				1.0 m	**8065126**	**NEBC-D8W4-ES-1-N-S-D8W4-ET**
				2.0 m	**8065128**	**NEBC-D8W4-ES-2-N-S-D8W4-ET**
				5.0 m	**8065130**	**NEBC-D8W4-ES-5-N-S-D8W4-ET**
				7.5 m	**8065132**	**NEBC-D8W4-ES-7.5-N-S-D8W4-ET**
				10.0 m	**8065134**	**NEBC-D8W4-ES-10-N-S-D8W4-ET**
				15.0 m	**8065136**	**NEBC-D8W4-ES-15-N-S-D8W4-ET**
				20.0 m	**8146036**	**NEBC-D8W4-ES-20-N-S-D8W4-ET**
				25.0 m	**8146037**	**NEBC-D8W4-ES-25-N-S-D8W4-ET**
				30.0 m	**8146038**	**NEBC-D8W4-ES-30-N-S-D8W4-ET**
				40.0 m	**8146039**	**NEBC-D8W4-ES-40-N-S-D8W4-ET**
				50.0 m	**8146040**	**NEBC-D8W4-ES-50-N-S-D8W4-ET**
	For power supply	Straight socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	5.0 m	**8065110**	**NEBL-M8G4-E-5-N-LE4**
				7.5 m	**8065113**	**NEBL-M8G4-E-7,5-N-LE4**
				10.0 m	**8065117**	**NEBL-M8G4-E-10-N-LE4**
				15.0 m	**8065121**	**NEBL-M8G4-E-15-N-LE4**
		Angled socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	7.5 m	**8065114**	**NEBL-M8W4-E-7.5-N-LE4**
				10.0 m	**8065118**	**NEBL-M8W4-E-10-N-LE4**
				15.0 m	**8065122**	**NEBL-M8W4-E-15-N-LE4**
	For power transmission	Straight socket, M8x1, 4-pin, A-coded	Straight plug, M8x1, 4-pin, A-coded	0.3 m	**8082904**	**NEBL-M8G4-E-0.3-N-M8G4**
				0.5 m	**8065102**	**NEBL-M8G4-E-0.5-N-M8G4**
				1.0 m	**8065104**	**NEBL-M8G4-E-1-N-M8G4**
				2.0 m	**8065106**	**NEBL-M8G4-E-2-N-M8G4**
				5.0 m	**8065108**	**NEBL-M8G4-E-5-N-M8G4**
				7.5 m	**8065111**	**NEBL-M8G4-E-7.5-N-M8G4**
				10.0 m	**8065115**	**NEBL-M8G4-E-10-N-M8G4**
				15.0 m	**8065119**	**NEBL-M8G4-E-15-N-M8G4**
		Angled socket, M8x1, 4-pin, A-coded	Angled plug, M8x1, 4-pin, A-coded	0.3 m	**8146577**	**NEBL-M8W4-E-0.3-N-M8W4**
				0.5 m	**8065103**	**NEBL-M8W4-E-0.5-N-M8W4**
				1.0 m	**8065105**	**NEBL-M8W4-E-1-N-M8W4**
				2.0 m	**8065107**	**NEBL-M8W4-E-2-N-M8W4**
				5.0 m	**8065109**	**NEBL-M8W4-E-5-N-M8W4**
				7.5 m	**8065112**	**NEBL-M8W4-E-7.5-N-M8W4**
				10.0 m	**8065116**	**NEBL-M8W4-E-10-N-M8W4**
				15.0 m	**8065120**	**NEBL-M8W4-E-15-N-M8W4**

Datasheet – Electrical interface for valve terminal VTUG

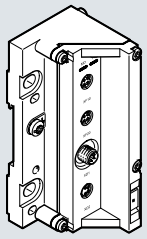
Ordering data – Accessories

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

Datasheet – Electrical interface for valve terminal MPA-L

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

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



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

Valve terminal design	Valve sizes can be mixed
Max. number of valve positions	32
Maximum number of valve coils	32

Communication interface – End plate for valve terminal MPA-L

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

General data – End plate for valve terminal MPA-L

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

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

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

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

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

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

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

Datasheet – Electrical interface for valve terminal MPA-L

Technical data – Mechanics – End plate for valve terminal MPA-L	
Type of mounting	Tie rod
Connection position	On top
Product weight	194 g
Dimensions W x L x H	43.1 mm x 107.5 mm x 50.2 mm

Materials – End plate for valve terminal MPA-L	
Housing material	Die-cast Al, varnished Reinforced PA
Threaded sleeve material	Nickel-plated brass
Note on materials	RoHS compliant
LABS (PWIS) conformity	VDMA24364-B1/B2-L

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

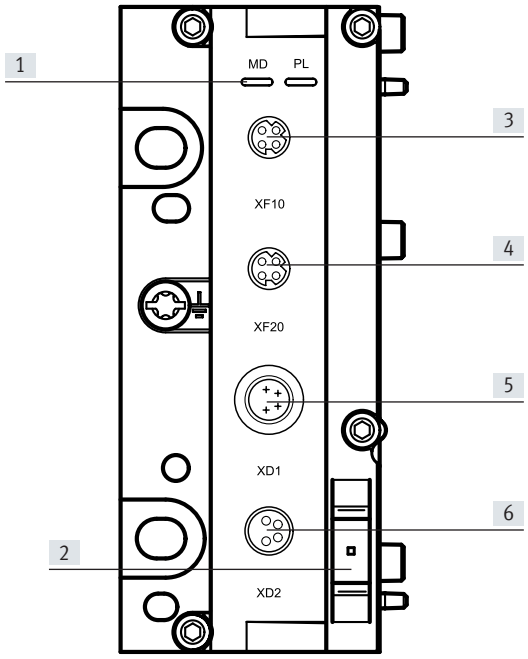
1) More information www.festo.com/x/topic/crc

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

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

Datasheet – Electrical interface for valve terminal MPA-L

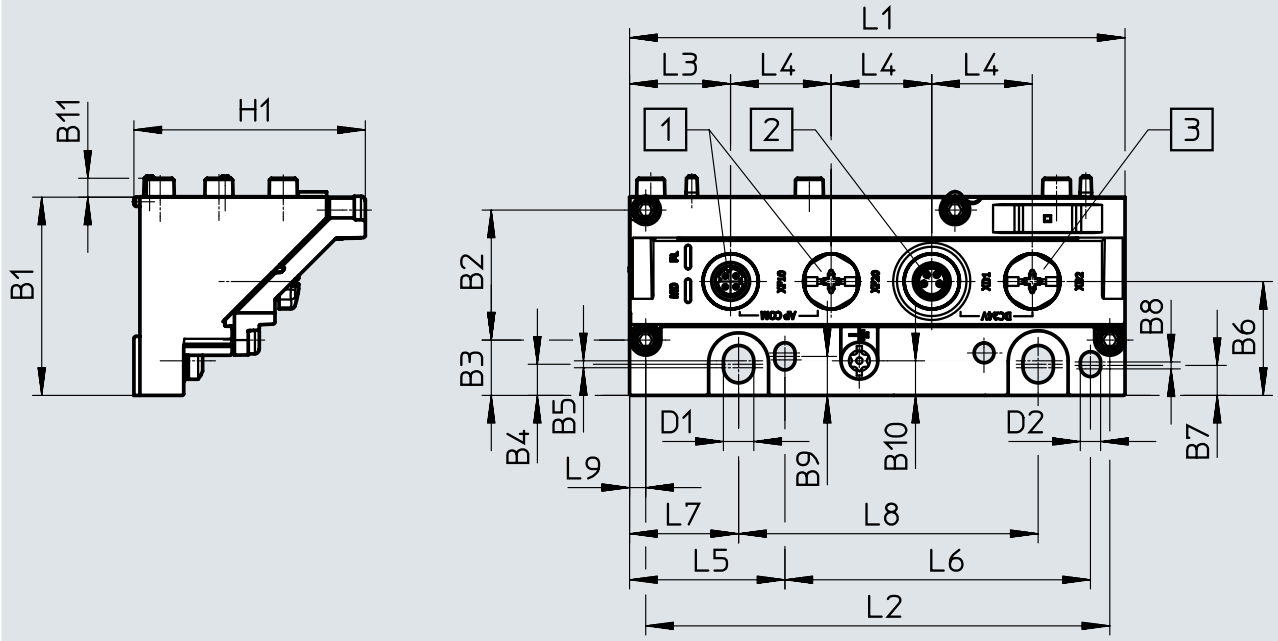
Connection and display components



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

Dimensions

Download CAD data➔ www.festo.com



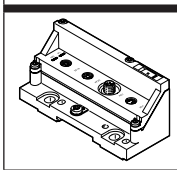
[1] Socket M8x1, D-coded [2] Plug M8x1, A-coded [3] Socket M8x1, A-coded

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

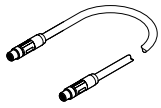
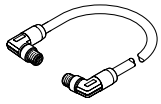
	L1	L2	L3	L4	L5	L6	L7	L8	L9
VMPAL-EPL-AP	107.5	100.7	21.9	21.8	33.7	66.3	23.7	65	3.5

Datasheet – Electrical interface for valve terminal MPA-L

Ordering data

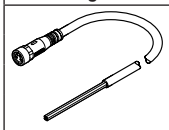
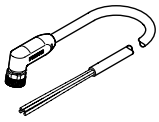
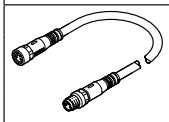
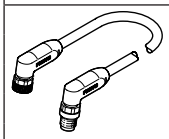
			Part no.	Type
	Electrical interface for valve terminal MPA-L	32 valve positions	**8087171**	**VMPAL-EPL-AP**

Ordering data – Accessories

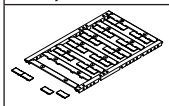
	Description				Part no.	Type
Connecting cable						
	For communication interface	Straight plug, M8x1, 4-pin, D-coded	Straight plug, M8x1, 4-pin, D-coded	0.3 m	**8082902**	**NEBC-D8G4-ES-0.3-N-S-D8G4-ET**
				0.5 m	**8065123**	**NEBC-D8G4-ES-0.5-N-S-D8G4-ET**
				1.0 m	**8065125**	**NEBC-D8G4-ES-1-N-S-D8G4-ET**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

Datasheet – Electrical interface for valve terminal MPA-L

Ordering data – Accessories

	Description				Part no.	Type
Connecting cable						
	For power supply	Straight socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	5.0 m	**8065110**	**NEBL-M8G4-E-5-N-LE4**
				7.5 m	**8065113**	**NEBL-M8G4-E-7,5-N-LE4**
				10.0 m	**8065117**	**NEBL-M8G4-E-10-N-LE4**
				15.0 m	**8065121**	**NEBL-M8G4-E-15-N-LE4**
		Angled socket, M8x1, 4-pin, A-coded	Open cable end, 4-core	7.5 m	**8065114**	**NEBL-M8W4-E-7.5-N-LE4**
				10.0 m	**8065118**	**NEBL-M8W4-E-10-N-LE4**
				15.0 m	**8065122**	**NEBL-M8W4-E-15-N-LE4**
	For power transmission	Straight socket, M8x1, 4-pin, A-coded	Straight plug, M8x1, 4-pin, A-coded	0.3 m	**8082904**	**NEBL-M8G4-E-0.3-N-M8G4**
				0.5 m	**8065102**	**NEBL-M8G4-E-0.5-N-M8G4**
				1.0 m	**8065104**	**NEBL-M8G4-E-1-N-M8G4**
				2.0 m	**8065106**	**NEBL-M8G4-E-2-N-M8G4**
				5.0 m	**8065108**	**NEBL-M8G4-E-5-N-M8G4**
				7.5 m	**8065111**	**NEBL-M8G4-E-7.5-N-M8G4**
				10.0 m	**8065115**	**NEBL-M8G4-E-10-N-M8G4**
				15.0 m	**8065119**	**NEBL-M8G4-E-15-N-M8G4**
		Angled socket, M8x1, 4-pin, A-coded	Angled plug, M8x1, 4-pin, A-coded	0.3 m	**8146577**	**NEBL-M8W4-E-0.3-N-M8W4**
				0.5 m	**8065103**	**NEBL-M8W4-E-0.5-N-M8W4**
				1.0 m	**8065105**	**NEBL-M8W4-E-1-N-M8W4**
				2.0 m	**8065107**	**NEBL-M8W4-E-2-N-M8W4**
				5.0 m	**8065109**	**NEBL-M8W4-E-5-N-M8W4**
				7.5 m	**8065112**	**NEBL-M8W4-E-7.5-N-M8W4**
				10.0 m	**8065116**	**NEBL-M8W4-E-10-N-M8W4**
				15.0 m	**8065120**	**NEBL-M8W4-E-15-N-M8W4**

Ordering data – Accessories

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