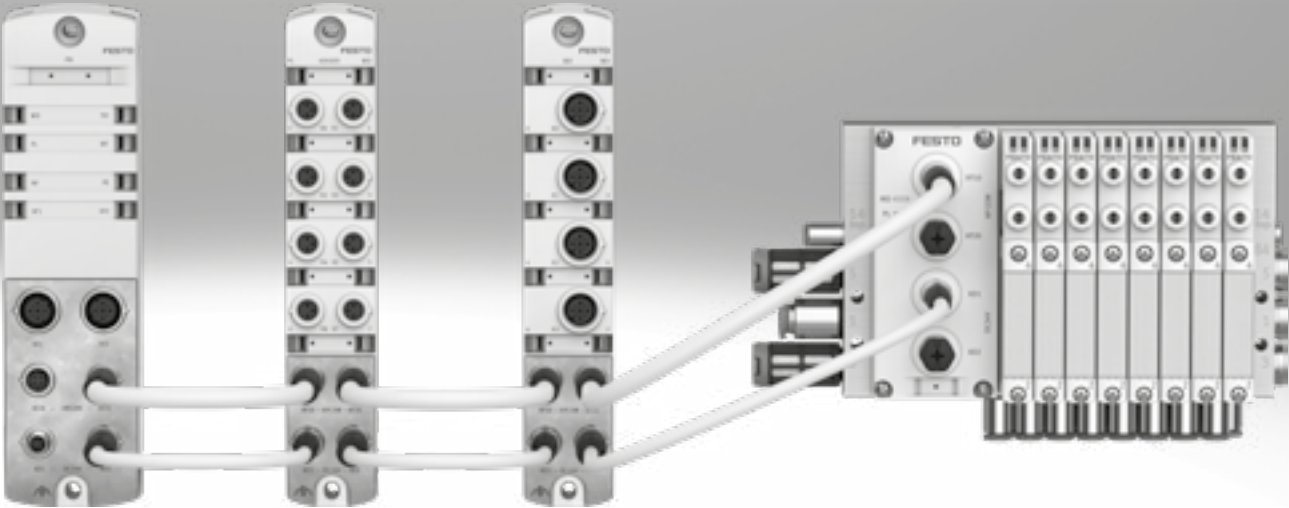
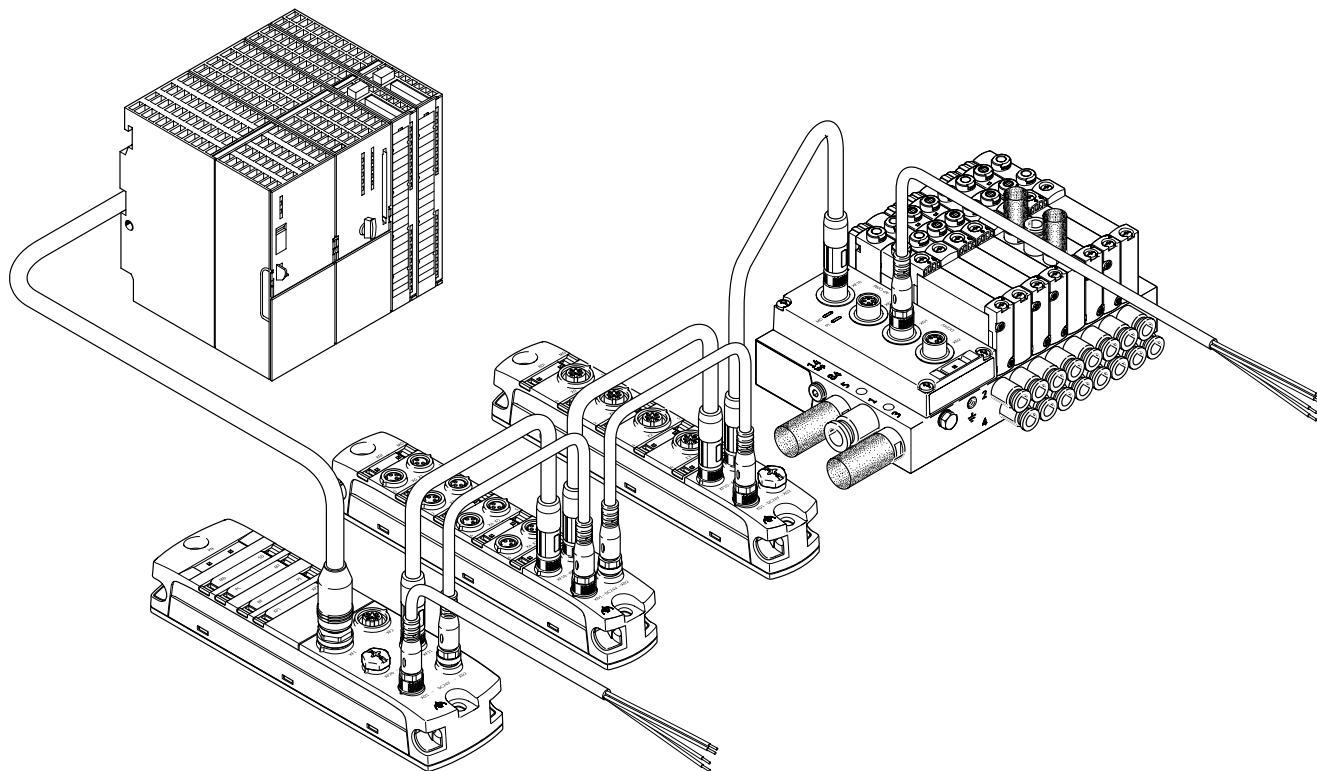


Automation system CPX-AP-I



Key features



Key features

CPX-AP-I is a flexible, decentralised, compact and lightweight automation system with high degree of protection IP65/IP67.

The performance of the system with reference to future demands on the digital factory is future-proof and advantageous compared with a slow point-to-point connection.

The simple structure and high degree of scalability also equip the automation system CPX-AP-I for future applications:

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

- Easy to update of firmware
- Simple maintenance access to the system via Ethernet
- Easy integration
- Realtime capability
- Up to 80 individual modules/valve terminals per bus interface
- Easy adaptation to different control systems by exchanging the bus interface
- Choice of M8 or M12 electrical connections
- Up to 50 m cable length between the modules

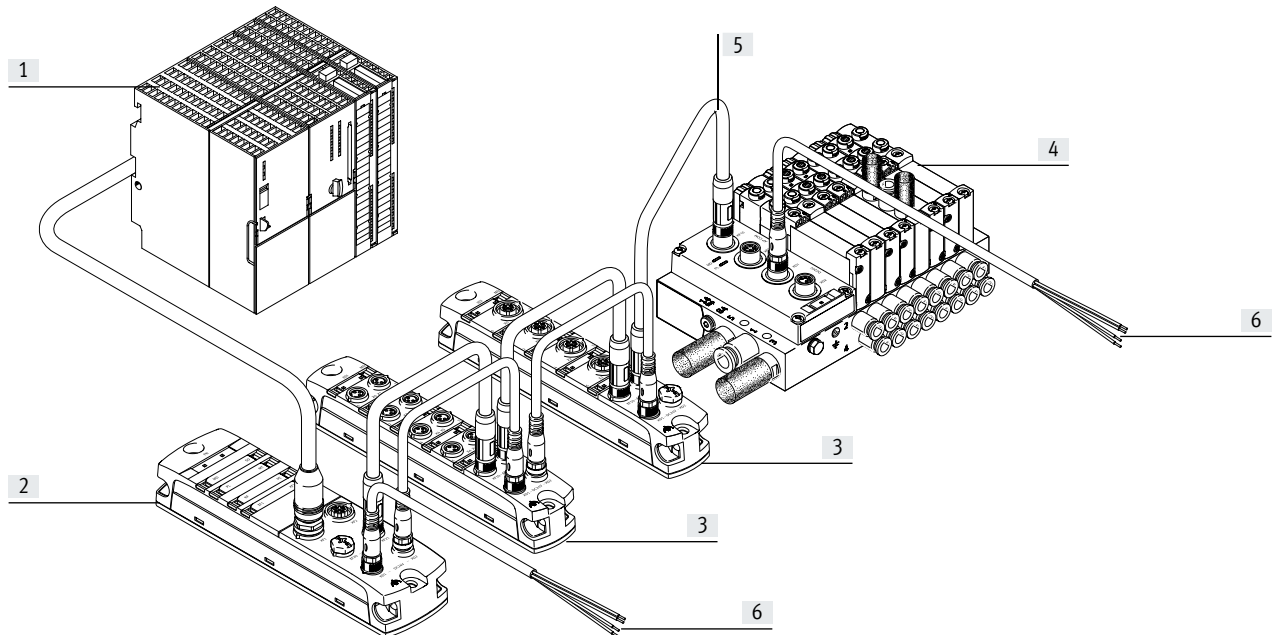
An automation system CPX-AP-I consists of a bus interface and at least one other module. System communication between the modules takes place via connecting cables. The process data is exchanged cyclically.

The following modules types are available:

- Bus interface
- Input modules
- Input/output modules
- Interface to the valve terminal


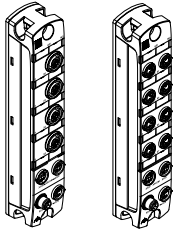
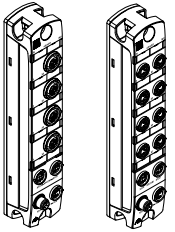
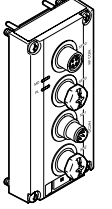
Key features

Overview

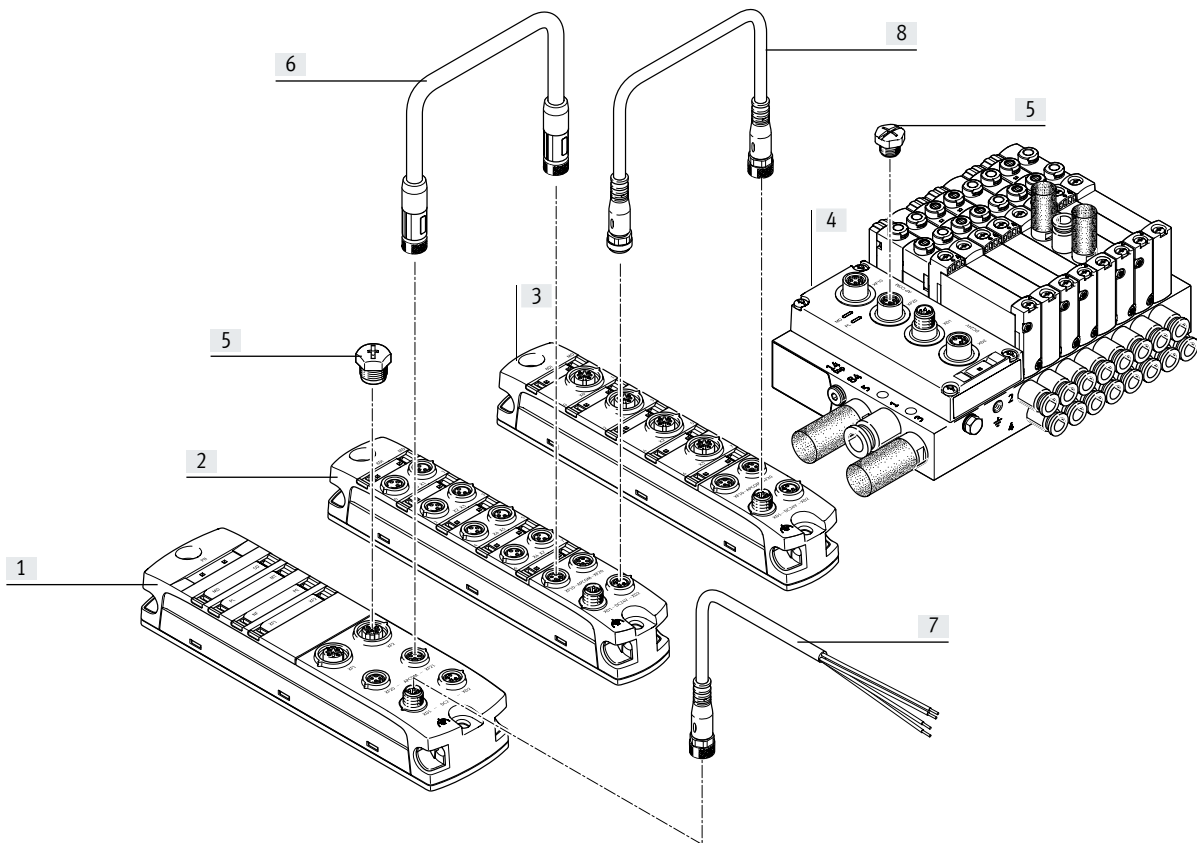


- [1] Higher-order controller
- [2] Bus interface for connecting the automation system CPX-AP-I to a higher-order controller via a standard bus protocol such as PROFINET
- [3] Input module, output module or input/output module; allows sensors and actuators to be connected to the automation system CPX-AP-I. Up to 80 modules per bus interface possible
- [4] Valve terminal with electrical interface for CPX-AP-I. Behaves like an output module within the automation system CPX-AP-I
- [5] Connecting cable for communication between the modules and the bus interface. The maximum line length from the bus interface to the module is 50 m
- [6] Connecting cable for supplying power to the components of the automation system CPX-AP-I. Each module can be connected individually or a central supply is transmitted from module to module

Product range overview

Function	Version	Type	→ Page		
Bus interface	Interface 	PROFINET	CPX-AP-I-PN-M12	<ul style="list-style-type: none"> Control via PROFINET Two PROFINET connections Two connections for system communication Two connections for power supply and transmission 	10
		EtherCAT	CPX-AP-I-EC-M12	<ul style="list-style-type: none"> Control via EtherCAT Two EtherCAT connections Two connections for system communication Two connections for power supply and transmission 	15
		EtherNet/IP	CPX-AP-I-EP-M12	<ul style="list-style-type: none"> Control via EtherNet/IP Two Ethernet connections Two connections for system communication Two connections for power supply and transmission 	15
Input module	Digital 	8 inputs	CPX-AP-I-8DI	<ul style="list-style-type: none"> LED indicator PNP (positive switching) Characteristic curve of inputs according to IEC 61131-2, type 3 Electrical connection M8x1, 3-pin Electrical connection M12x1, 5-pin 	25
Input/output module	Digital 	<ul style="list-style-type: none"> 4 inputs 4 outputs 	CPX-AP-I-4DI4DO	<ul style="list-style-type: none"> LED indicator PNP (positive switching) Characteristic curve of inputs according 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 	30
Electrical interface for valve terminal	Valve terminal VTUG 	<ul style="list-style-type: none"> 12 or 24 valve positions Up to 48 solenoid coils 	VAEM-L1-S	<ul style="list-style-type: none"> LED indicator 3 sizes (10 mm, 14 mm and 18 mm) 2x 3/2-way valves 3/2-way valves 5/2-way valves 5/3-way valves Fixed-grid linkage 130 ... 1000 l/min flow rate 	35

Peripherals overview



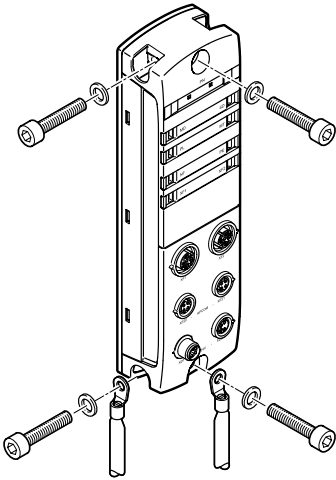
	Type	Description	→ Page/Internet
[1]	Bus interface CPX-AP-I-PN-M12 CPX-AP-I-EC-M12 CPX-AP-I-EP-M12	Connection of the CPX-AP-I to a higher-order controller	10 15 20
[2]	Module with M8 connections CPX-AP-I-8DI-M8-3P CPX-AP-I-4DI4DO-M8-3P	Digital input and input/output modules	25 30
[3]	Module with M12 connections CPX-AP-I-8DI-M12-5P CPX-AP-I-4DI4DO-M12-5P	Digital input and input/output modules	25 30
[4]	Electrical interface for valve terminal VAEM-L1-S	For valve terminal VTUG	35
[5]	Cover cap ISK-M8 ISK-M12	For sealing unused electrical connections, connection size M8 and M12	isk
[6]	Connecting cable NEBC	For connecting the modules for communication	nebc
[7]	Connecting cable NEBL	For connecting the power supply	nebl
[8]	Connecting cable NEBL	For power transmission from module to module	nebl

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

Key features – Assembly

Mounting

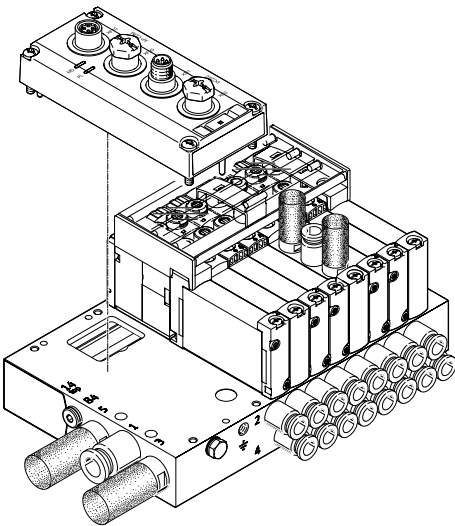
Mounting – Modules



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

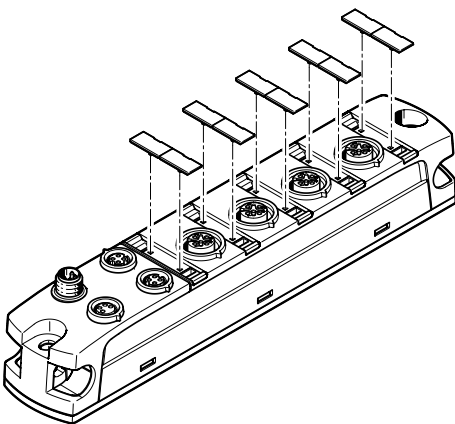
The mounting holes likewise include the earthing connection for the modules.

Mounting – Electrical interface



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

Labels



All modules are supplied with the same, clip-on inscription labels.

The inscription label is made up of two parts and can be divided into two smaller units if required.

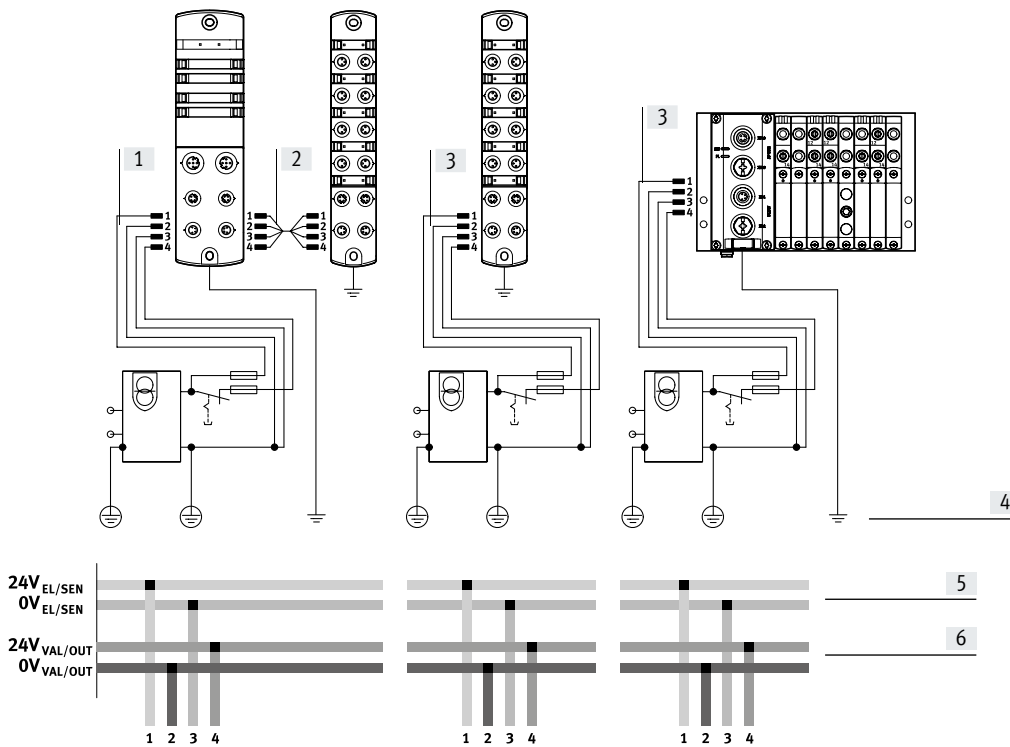
Inscription templates can be downloaded from the Support Portal:

→ Internet: CPX-AP-I

In the “Software” area.

Key features – Power supply

Power supply concept



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

In principle, the automation system CPX-AP-I has two separate electrical circuits:

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

At the same time, the automation system allows each individual module to be supplied with power individually, or for the power supply to be transmitted the power supply from module to module.

This creates electrically isolated, all-pin disconnectable potential groups/voltage segments.

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

Key features – Diagnostics

System performance

Diagnostics

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

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

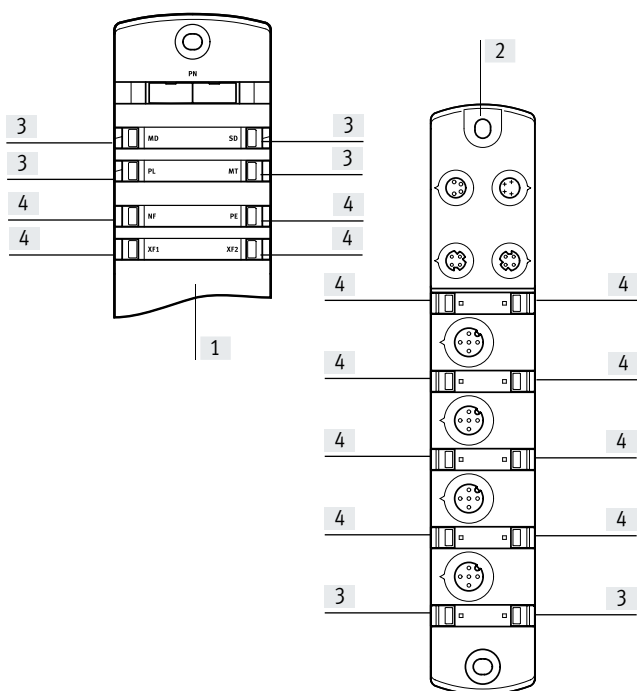
The automation system CPX-AP-I supports on-the-spot diagnostics using LED indicators on each module. This is separate from the connection area and therefore provides good visual access to status and diagnostic information.

Module and channel-specific diagnostics are supported, for example

- Undervoltage identification
- Short circuit detection

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

Indicator lights



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

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

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

Parameterisation

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

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

Key features – Addressing

Addressing

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

Maximum system configuration:

- 1 bus interface
- 80 input and/or input/output modules and/or electrical interfaces

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

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



Note

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

Overview – Address space for CPX-AP-I bus interface

	Protocol	Max. total Inputs	Outputs
CPX-AP-I-PN-M12	PROFINET	1024 bytes	1024 bytes
CPX-AP-I-EC-M12	EtherCAT	2048 bytes	2048 bytes
CPX-AP-I-EP-M12	EtherNet/IP	1324 bytes	1324 bytes



Note

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

Overview – Allocated addresses for CPX-AP-I modules

		Inputs [bytes]	Outputs [bytes]
CPX-AP-I-8DI-M8-3P	Digital input module, 8 inputs	1	–
CPX-AP-I-8DI-M12-5P	Digital input module, 8 inputs	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
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

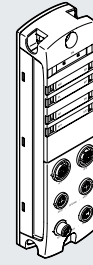
Example CPX-AP-I-PN-M12 (PROFINET)

	Inputs [bytes]	Outputs [bytes]	Comments
26x CPX-AP-I-8DI-M8-3P	26	–	<ul style="list-style-type: none"> • The maximum number of modules is achieved 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	
Allocated address space	71	81	

Data sheet – PROFINET Interface



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



Bus connection

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

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

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

General technical data

Fieldbus interface

Protocol		PROFINET IRT PROFINET RT
Function		Bus connection incoming/outgoing
Transmission rate	[Mbps]	100
Type		Ethernet
Connection type		2 x socket
Connection technology		M12x1, D-coded to EN 61076-2-101
Number of pins/wires		4
Galvanic isolation		Yes
Max. address capacity outputs	[bytes]	1024
Max. address capacity inputs	[bytes]	1024

Communication interface

Protocol		AP-COM
Function		System communication XF10 IN / XF20 OUT
Connection type		2 x socket
Connection technology		M8x1, D-coded to EN 61076-2-114
Number of pins/wires		4
Screening		Yes

Data sheet – PROFINET interface

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

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

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

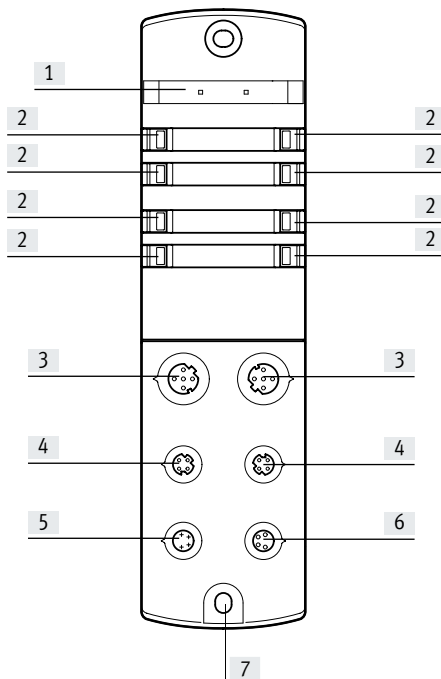
Materials	
Housing	PA
	PC
	Nickel-plated, die-cast zinc
Note on materials	RoHS-compliant

Data sheet – PROFINET interface

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

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

Connection components and indicator lights

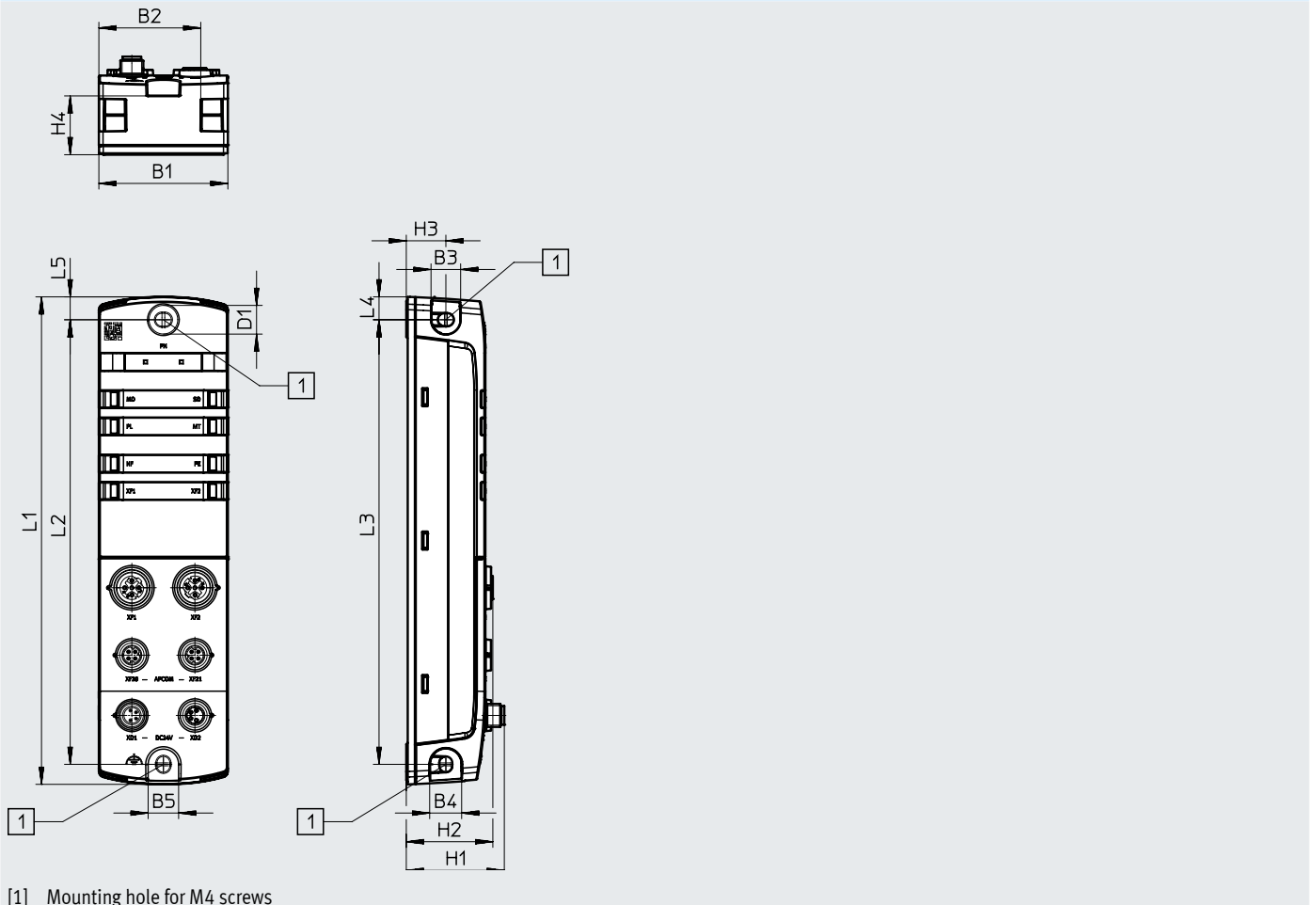


- [1] Location for inscription label
- [2] LED indicators
- [3] Network connections 1 and 2, PROFINET
- [4] Communication interface
- [5] Electrical connection, power supply
- [6] Electrical connection, power transmission
- [7] Earthing connection

Data sheet – PROFINET interface

Dimensions

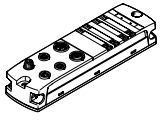
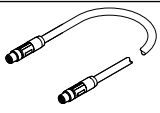
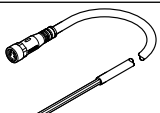
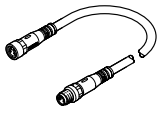
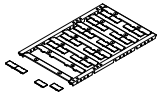

Download CAD data → www.festo.com



[1] Mounting hole for M4 screws

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

Data sheet – PROFINET interface

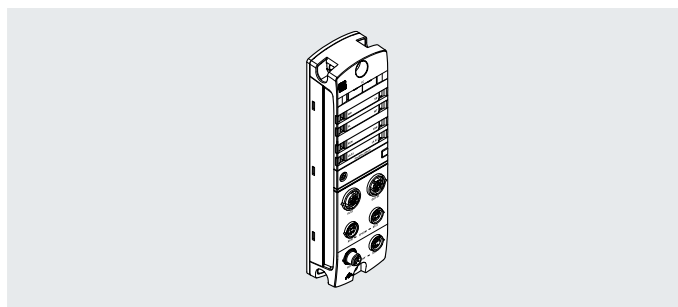
Ordering data		Part no.	Type				
	PROFINET interface	8086607	CPX-AP-I-PN-M12				
Ordering data – Accessories							
Description		Part no.	Type	PE ¹⁾			
Connecting cable							
	For communication interface	Straight plug, M8x1, 4-pin, D-coded	Straight plug, M8x1, 4-pin, D-coded	0.3 m	8082902	NEBC-D8G4-ES-0.3-N-S-D8G4-ET	1
				0.5 m	8065123	NEBC-D8G4-ES-0.5-N-S-D8G4-ET	1
				1.0 m	8065125	NEBC-D8G4-ES-1-N-S-D8G4-ET	1
				2.0 m	8065127	NEBC-D8G4-ES-2-N-S-D8G4-ET	1
				5.0 m	8065129	NEBC-D8G4-ES-5-N-S-D8G4-ET	1
				7.5 m	8065131	NEBC-D8G4-ES-7.5-N-S-D8G4-ET	1
				10.0 m	8065133	NEBC-D8G4-ES-10-N-S-D8G4-ET	1
				15.0 m	8065135	NEBC-D8G4-ES-15-N-S-D8G4-ET	1
	For power supply	Straight socket, M8 x 1, 4-pin, A-coded	Open cable end, 4-wire	5.0 m	8065110	NEBL-M8G4-E-5-N-LE4	1
				7.5 m	8065113	NEBL-M8G4-E-7,5-N-LE4	1
				10.0 m	8065117	NEBL-M8G4-E-10-N-LE4	1
				15.0 m	8065121	NEBL-M8G4-E-15-N-LE4	1
	For power transmission	Straight socket, M8 x 1, 4-pin, A-coded	Straight plug, M8 x 1, 4-pin, A-coded	0.3 m	8082904	NEBL-M8G4-E-0.3-N-M8G4	1
				0.5 m	8065102	NEBL-M8G4-E-0.5-N-M8G4	1
				1.0 m	8065104	NEBL-M8G4-E-1-N-M8G4	1
				2.0 m	8065106	NEBL-M8G4-E-2-N-M8G4	1
				5.0 m	8065108	NEBL-M8G4-E-5-N-M8G4	1
				7.5 m	8065111	NEBL-M8G4-E-7.5-N-M8G4	1
				10.0 m	8065115	NEBL-M8G4-E-10-N-M8G4	1
15.0 m	8065119	NEBL-M8G4-E-15-N-M8G4	1				
Inscription label							
	For modules CPX-AP-I	Size 6x 12.5 mm, 10 frames with 24 pieces each	8087174	ASLR-L-X4-612-P240	240		
Cover cap							
	For sealing unused connections	For connection M8x1	177672	ISK-M8	10		
		For connection M12x1	165592	ISK-M12	10		

1) Packaging unit.

Data sheet – EtherCAT interface



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


General technical data

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

Data sheet – EtherCAT interface

General data		
Configuration support		ESI file
Maximum number of modules		80
Diagnostics via LED		Individual module diagnostics
		EtherCAT RUN
		Power supply, electronics/sensors
		Power supply load
		System diagnostics
Diagnostics via bus		Maintenance required
		Load switch-off
		Load overvoltage
		Load undervoltage
		Electronics/sensors overvoltage
		Electronics/sensors undervoltage
Diagnostics per internal communication		APDD invalid
		Communication to AP module interrupted
		Module error
		Short circuit/overload in sensor supply
		Short circuit/overload at output
Maximum cable length	[m]	50 system communication
Information on maximum cable length		Power supply according to nominal voltage
Reverse polarity protection		Yes
Technical data – Electrical components		
Nominal operating voltage for electronics/sensors	[V DC]	24
Nominal operating voltage, load	[V DC]	24
Permissible voltage fluctuations, electronics/sensors	[%]	±25
Permissible voltage fluctuations, load	[%]	±25
Note regarding operating voltage		SELV/PELV power supply units required Note voltage drop
Mains buffering	[ms]	10
Max. power supply	[A]	2x 4
		External fuse required
Intrinsic current consumption at nominal operating voltage for electronics/sensors	[mA]	Typically 90
Intrinsic current consumption at nominal operating voltage for load	[mA]	Typically 5
Electrical connection, power supply		
Function		Incoming electronics/sensors and load
Connection type		Plug
Connection technology		M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4
Electrical connection for power transmission		
Function		Outgoing electronics/sensors and load
Connection type		Socket
Connection technology		M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4
Technical data – Mechanical components		
Type of mounting		With through-hole
Product weight	[g]	186
Dimensions W x L x H	[mm]	45 x 170 x 35
Tightening torque	[Nm]	1.2
Materials		
Housing		PA
		PC
		Nickel-plated, die-cast zinc
Note on materials		RoHS-compliant

Data sheet – EtherCAT interface

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

1) Corrosion resistance class CRC 1 to Festo standard FN 940070

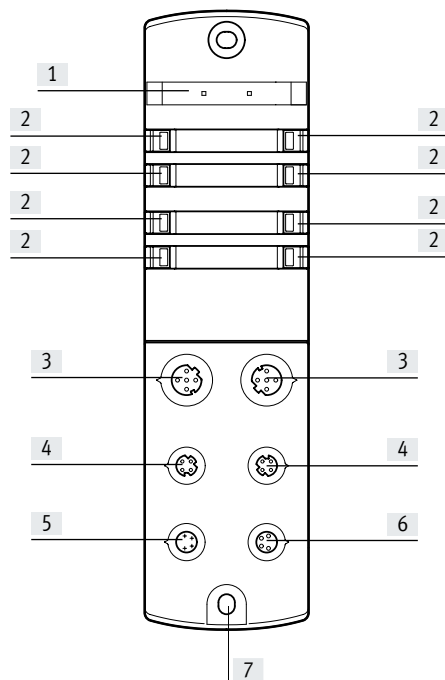
Low corrosion stress. Dry internal application or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp → Certificates.

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

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

Connection components and indicator lights

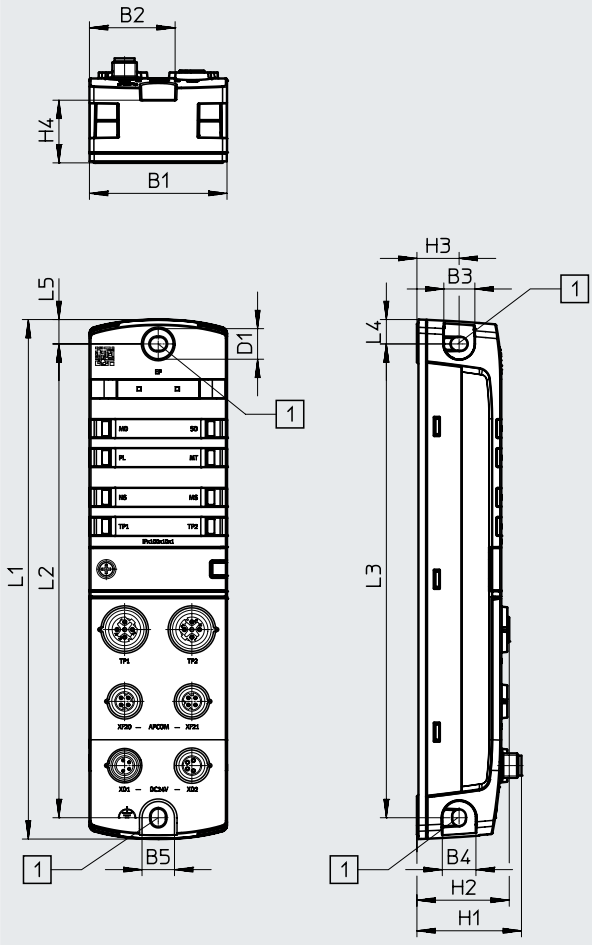


- [1] Location for inscription label
- [2] LED indicators
- [3] Network connections 1 and 2, EtherCAT
- [4] Communication interface
- [5] Electrical connection, power supply
- [6] Electrical connection, power transmission
- [7] Earthing connection

Data sheet – EtherCAT interface

Dimensions

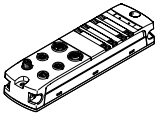
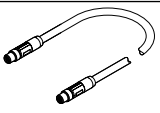
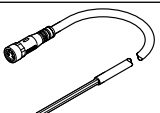
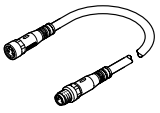
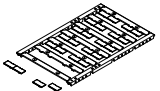

Download CAD data → www.festo.com



[1] Mounting hole for M4 screws

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

Data sheet – EtherCAT interface

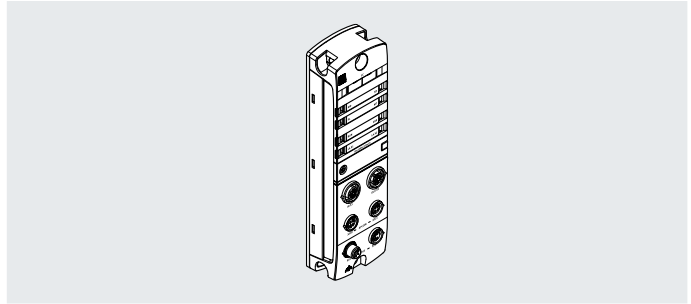
Ordering data		Part no.	Type				
	EtherCAT interface	8086609	CPX-AP-I-EC-M12				
Ordering data – Accessories							
Description		Part no.	Type	PE ¹⁾			
Connecting cable							
	For communication interface	Straight plug, M8x1, 4-pin, D-coded	Straight plug, M8x1, 4-pin, D-coded	0.3 m	8082902	NEBC-D8G4-ES-0.3-N-S-D8G4-ET	1
				0.5 m	8065123	NEBC-D8G4-ES-0.5-N-S-D8G4-ET	1
				1.0 m	8065125	NEBC-D8G4-ES-1-N-S-D8G4-ET	1
				2.0 m	8065127	NEBC-D8G4-ES-2-N-S-D8G4-ET	1
				5.0 m	8065129	NEBC-D8G4-ES-5-N-S-D8G4-ET	1
				7.5 m	8065131	NEBC-D8G4-ES-7.5-N-S-D8G4-ET	1
				10.0 m	8065133	NEBC-D8G4-ES-10-N-S-D8G4-ET	1
	For power supply	Straight socket, M8 x 1, 4-pin, A-coded	Open cable end, 4-wire	5.0 m	8065110	NEBL-M8G4-E-5-N-LE4	1
				7.5 m	8065113	NEBL-M8G4-E-7,5-N-LE4	1
				10.0 m	8065117	NEBL-M8G4-E-10-N-LE4	1
				15.0 m	8065121	NEBL-M8G4-E-15-N-LE4	1
	For power transmission	Straight socket, M8 x 1, 4-pin, A-coded	Straight plug, M8 x 1, 4-pin, A-coded	0.3 m	8082904	NEBL-M8G4-E-0.3-N-M8G4	1
				0.5 m	8065102	NEBL-M8G4-E-0.5-N-M8G4	1
				1.0 m	8065104	NEBL-M8G4-E-1-N-M8G4	1
				2.0 m	8065106	NEBL-M8G4-E-2-N-M8G4	1
				5.0 m	8065108	NEBL-M8G4-E-5-N-M8G4	1
				7.5 m	8065111	NEBL-M8G4-E-7.5-N-M8G4	1
				10.0 m	8065115	NEBL-M8G4-E-10-N-M8G4	1
				15.0 m	8065119	NEBL-M8G4-E-15-N-M8G4	1
Inscription label							
	For modules CPX-AP-I	Size 6x 12.5 mm, 10 frames with 24 pieces each	8087174	ASLR-L-X4-612-P240	240		
Cover cap							
	For sealing unused connections	For connection M8x1	177672	ISK-M8	10		
		For connection M12x1	165592	ISK-M12	10		

1) Packaging unit.

Data sheet – EtherNet/IP interface

EtherNet/IP™

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

**General technical data****Fieldbus interface**

Protocol	EtherNet/IP
Function	Bus connection incoming/outgoing
Transmission rate	[Mbps] 100
Type	Ethernet
Connection type	2 x socket
Connection technology	M12x1, D-coded to EN 61076-2-101
Number of pins/wires	4
Galvanic isolation	Yes
Max. address capacity outputs	[bytes] 1324
Max. address capacity inputs	[bytes] 1324

Communication interface

Protocol	AP-COM
Function	System communication XF10 IN / XF20 OUT
Connection type	2 x socket
Connection technology	M8x1, D-coded to EN 61076-2-114
Number of pins/wires	4
Screening	Yes

Data sheet – EtherNet/IP interface

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

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

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

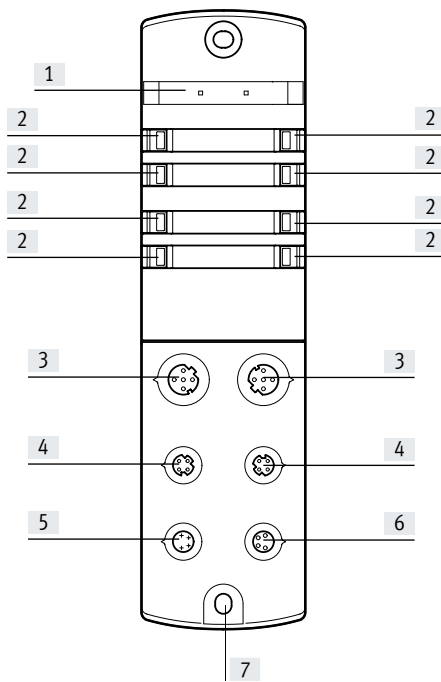
Materials	
Housing	PA
	PC
	Nickel-plated, die-cast zinc
Note on materials	RoHS-compliant

Data sheet – EtherNet/IP interface

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

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

Connection components and indicator lights

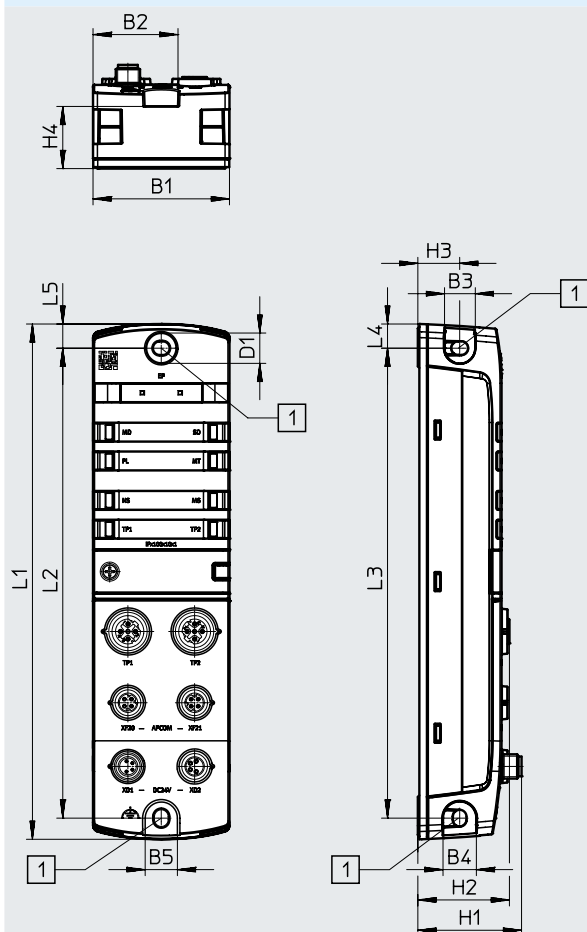


- [1] Location for inscription label
 [2] LED indicators
 [3] Network connections 1 and 2, EtherNet/IP
 [4] Communication interface
 [5] Electrical connection, power supply
 [6] Electrical connection, power transmission
 [7] Earthing connection

Data sheet – EtherNet/IP interface

Dimensions

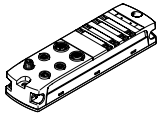
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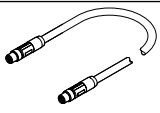
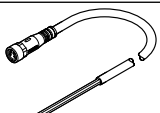
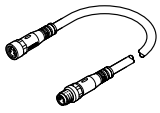
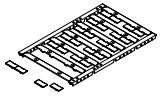



[1] Mounting hole for M4 screws

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

Data sheet – EtherNet/IP interface

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

Ordering data – Accessories							
Description				Part no.	Type	PE ¹⁾	
Connecting cable							
	For communication interface	Straight plug, M8x1, 4-pin, D-coded	Straight plug, M8x1, 4-pin, D-coded	0.3 m	8082902	NEBC-D8G4-ES-0.3-N-S-D8G4-ET	1
				0.5 m	8065123	NEBC-D8G4-ES-0.5-N-S-D8G4-ET	1
				1.0 m	8065125	NEBC-D8G4-ES-1-N-S-D8G4-ET	1
				2.0 m	8065127	NEBC-D8G4-ES-2-N-S-D8G4-ET	1
				5.0 m	8065129	NEBC-D8G4-ES-5-N-S-D8G4-ET	1
				7.5 m	8065131	NEBC-D8G4-ES-7.5-N-S-D8G4-ET	1
				10.0 m	8065133	NEBC-D8G4-ES-10-N-S-D8G4-ET	1
				15.0 m	8065135	NEBC-D8G4-ES-15-N-S-D8G4-ET	1
	For power supply	Straight socket, M8 x 1, 4-pin, A-coded	Open cable end, 4-wire	5.0 m	8065110	NEBL-M8G4-E-5-N-LE4	1
				7.5 m	8065113	NEBL-M8G4-E-7,5-N-LE4	1
				10.0 m	8065117	NEBL-M8G4-E-10-N-LE4	1
				15.0 m	8065121	NEBL-M8G4-E-15-N-LE4	1
	For power transmission	Straight socket, M8 x 1, 4-pin, A-coded	Straight plug, M8 x 1, 4-pin, A-coded	0.3 m	8082904	NEBL-M8G4-E-0.3-N-M8G4	1
				0.5 m	8065102	NEBL-M8G4-E-0.5-N-M8G4	1
				1.0 m	8065104	NEBL-M8G4-E-1-N-M8G4	1
				2.0 m	8065106	NEBL-M8G4-E-2-N-M8G4	1
				5.0 m	8065108	NEBL-M8G4-E-5-N-M8G4	1
				7.5 m	8065111	NEBL-M8G4-E-7.5-N-M8G4	1
				10.0 m	8065115	NEBL-M8G4-E-10-N-M8G4	1
15.0 m	8065119	NEBL-M8G4-E-15-N-M8G4	1				
Inscription label							
	For modules CPX-AP-I	Size 6x 12.5 mm, 10 frames with 24 pieces each		8087174	ASLR-L-X4-612-P240		240
Cover cap							
	For sealing unused connections	For connection M8x1		177672	ISK-M8		10
		For connection M12x1		165592	ISK-M12		10

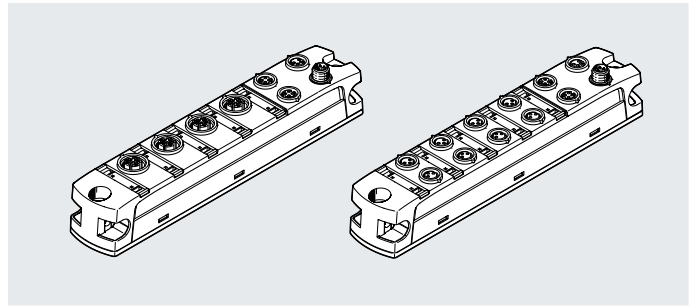
1) Packaging unit.

Data sheet – Digital input modules

Function

Digital input modules facilitate the connection of electric sensors to IEC 61131-2 type 3 (inductive, capacitive) having 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		CPX-AP-I-8DI-M8-3P	CPX-AP-I-8DI-M12-5P
Type		CPX-AP-I-8DI-M8-3P	CPX-AP-I-8DI-M12-5P
Number of inputs		8	
Electrical connection, input			
Function		Digital input	
Connection type		8x socket	4x socket
Connection technology		M8x1, A-coded to EN 61076-2-104	M12x1, A-coded to EN 61076-2-101
Number of pins/wires		3	5
Input switching logic		PNP (positive switching) 2-wire sensors to IEC 61131-2 3-wire sensors to IEC 61131-2	
Characteristic curve of inputs		To IEC 61131-2, type 3	
Switching level	[V]	Signal 0: ≤5	
	[V]	Signal 1: ≥11	
Fuse protection inputs (short circuit)		Internal electronic fuse per module	
Input debounce time	[ms]	0.1	
	[ms]	3	
	[ms]	10	
	[ms]	20	
Communication interface			
Protocol		AP-COM	
Function		System communication XF10 IN / XF20 OUT	
Connection type		2 x socket	
Connection technology		M8x1, D-coded to EN 61076-2-114	
Number of pins/wires		4	
Screening		Yes	
General data			
Electrical isolation between channel and internal communication		Yes	
Electrical isolation between channels		No	
Diagnostics via LED		Individual module diagnostics Status per channel	
Diagnostics per internal communication		Short circuit/overload in sensor supply Electronics/sensors overvoltage Electronics/sensors undervoltage	
Maximum cable length	[m]	30 inputs	
	[m]	50 system communication	
Information on maximum cable length		Power supply according to nominal voltage	
Reverse polarity protection		Yes	

Data sheet – Digital input modules

Technical data – Electrical components		
Nominal operating voltage for electronics/sensors	[V DC]	24
Permissible voltage fluctuations, electronics/sensors	[%]	±25
Note regarding operating voltage		Note voltage drop SELV/PELV power supply units required
Mains buffering	[ms]	10
Max. power supply	[A]	2x 4
		External fuse required
Max. residual current of inputs per module	[A]	1.8
Intrinsic current consumption at nominal operating voltage for electronics/sensors	[mA]	Typically 32
Electrical connection, power supply		
Function		Incoming electronics/sensors and load
Connection type		Plug
Connection technology		M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4
Electrical connection for power transmission		
Function		Outgoing electronics/sensors and load
Connection type		Socket
Connection technology		M8x1, A-coded to EN 61076-2-104
Number of pins/wires		4
Technical data – Mechanical components		
Type of mounting		With through-hole
Product weight	[g]	126
Dimensions W x L x H	[mm]	30 x 170 x 35
Tightening torque	[Nm]	1.2
Materials		
Housing		PA PC Nickel-plated, die-cast zinc
Note on materials		RoHS-compliant
Operating and environmental conditions		
Ambient temperature	[°C]	-20 ... +50
Storage temperature	[°C]	-40 ... +70
Corrosion resistance CRC ¹⁾		1
Relative humidity	[%]	5 ... 95
		Non-condensing
CE marking (see declaration of conformity) ³⁾		To EU EMC Directive ²⁾
KC mark		KC-EMV
Certification		RCM
Degree of protection		IP65 IP67
Note on degree of protection		Unused connections sealed

1) Corrosion resistance class CRC 1 to Festo standard FN 940070

Low corrosion stress. Dry internal application or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

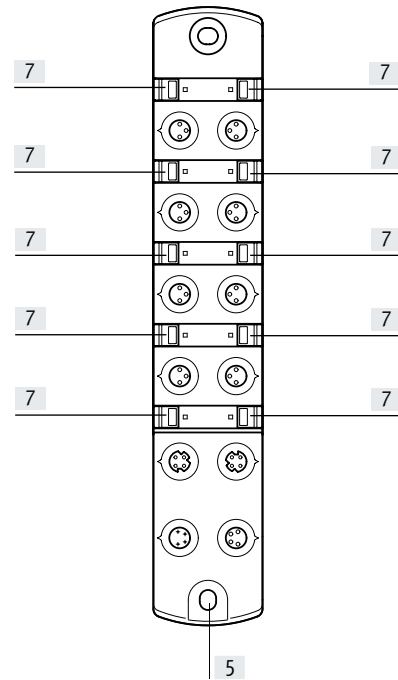
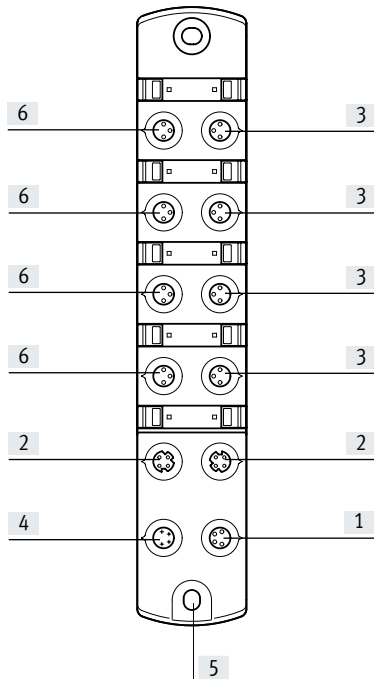
2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp → Certificates.

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

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

Data sheet – Digital input modules

Connection components and indicator lights



[1] Electrical connection, power transmission
[2] Communication interface

[3] Electrical connection, inputs
[4] Electrical connection, power supply

[5] Earthing connection
[6] Location for inscription label

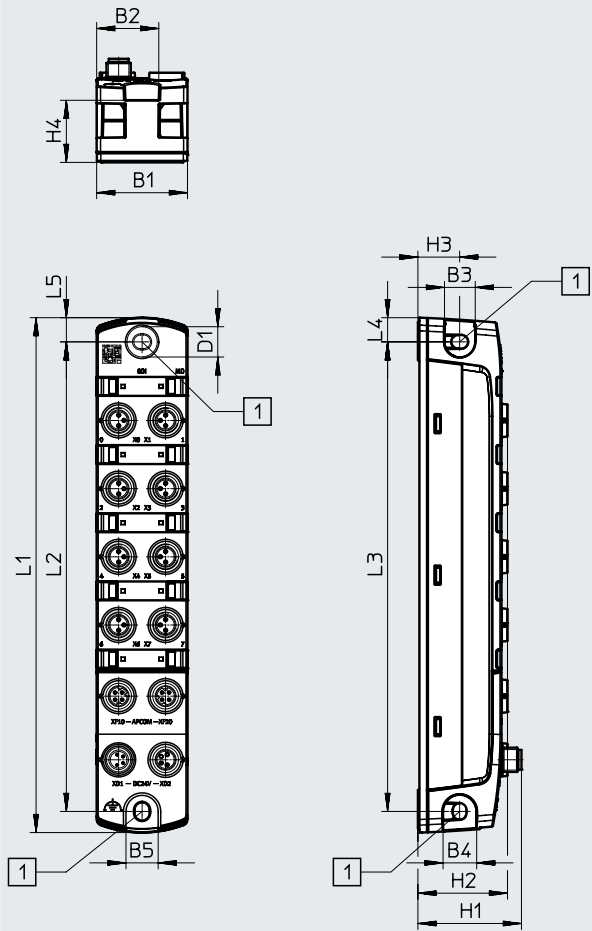
[7] LED indicators

Data sheet – Digital input modules

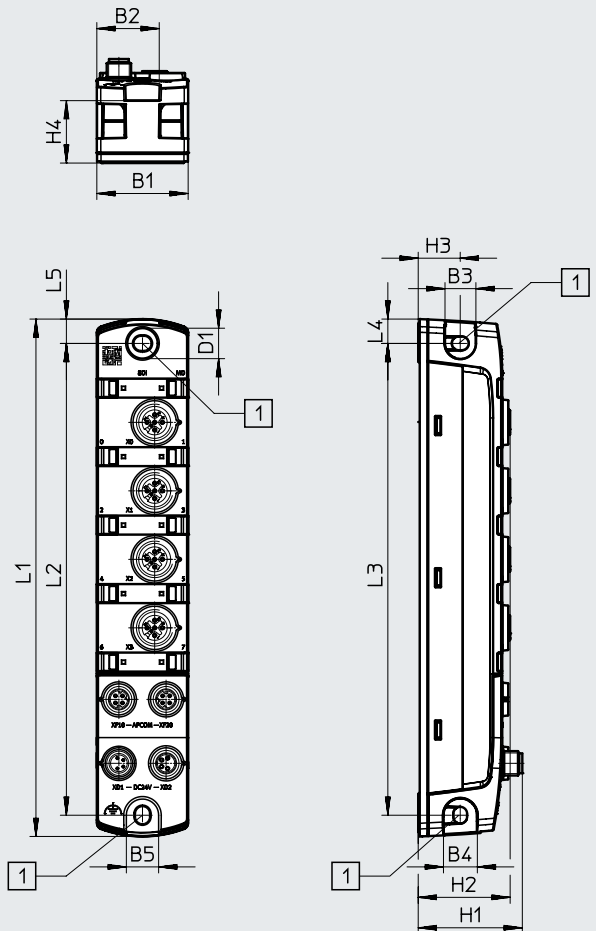
Dimensions

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



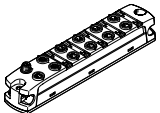
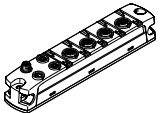
CPX-AP-I-8DI-M12-5P

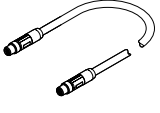
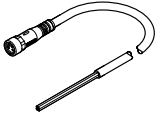
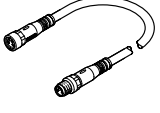
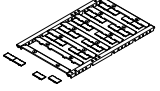



[1] Mounting hole for M4 screws

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

Data sheet – Digital 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	PE ¹⁾	
Connecting cable							
	For communication interface	Straight plug, M8x1, 4-pin, D-coded	Straight plug, M8x1, 4-pin, D-coded	0.3 m	8082902	NEBC-D8G4-ES-0.3-N-S-D8G4-ET	1
				0.5 m	8065123	NEBC-D8G4-ES-0.5-N-S-D8G4-ET	1
				1.0 m	8065125	NEBC-D8G4-ES-1-N-S-D8G4-ET	1
				2.0 m	8065127	NEBC-D8G4-ES-2-N-S-D8G4-ET	1
				5.0 m	8065129	NEBC-D8G4-ES-5-N-S-D8G4-ET	1
				7.5 m	8065131	NEBC-D8G4-ES-7.5-N-S-D8G4-ET	1
				10.0 m	8065133	NEBC-D8G4-ES-10-N-S-D8G4-ET	1
				15.0 m	8065135	NEBC-D8G4-ES-15-N-S-D8G4-ET	1
	For power supply	Straight socket, M8 x 1, 4-pin, A-coded	Open cable end, 4-wire	5.0 m	8065110	NEBL-M8G4-E-5-N-LE4	1
				7.5 m	8065113	NEBL-M8G4-E-7,5-N-LE4	1
				10.0 m	8065117	NEBL-M8G4-E-10-N-LE4	1
				15.0 m	8065121	NEBL-M8G4-E-15-N-LE4	1
	For power transmission	Straight socket, M8 x 1, 4-pin, A-coded	Straight plug, M8 x 1, 4-pin, A-coded	0.3 m	8082904	NEBL-M8G4-E-0.3-N-M8G4	1
				0.5 m	8065102	NEBL-M8G4-E-0.5-N-M8G4	1
				1.0 m	8065104	NEBL-M8G4-E-1-N-M8G4	1
				2.0 m	8065106	NEBL-M8G4-E-2-N-M8G4	1
				5.0 m	8065108	NEBL-M8G4-E-5-N-M8G4	1
				7.5 m	8065111	NEBL-M8G4-E-7.5-N-M8G4	1
				10.0 m	8065115	NEBL-M8G4-E-10-N-M8G4	1
15.0 m	8065119	NEBL-M8G4-E-15-N-M8G4	1				
Inscription label							
	For modules CPX-AP-I	Size 6x 12.5 mm, 10 frames with 24 pieces each		8087174	ASLR-L-X4-612-P240		240
Cover cap							
	For sealing unused connections	For connection M8x1		177672	ISK-M8		10
		For connection M12x1		165592	ISK-M12		10

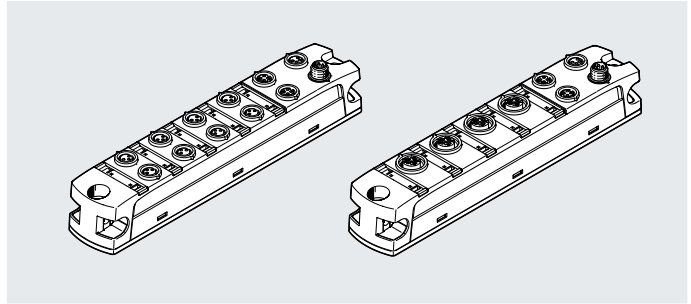
1) Packaging unit.

Data sheet – Digital input/output modules

Function

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

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



General technical data		CPX-AP-I-4DI4DO-M8-3P	CPX-AP-I-4DI4DO-M12-5P
Type		CPX-AP-I-4DI4DO-M8-3P	CPX-AP-I-4DI4DO-M12-5P
Number of inputs		4	
Number of outputs		4	
Electrical connection, input			
Function		Digital input	
Connection type		4x socket	2x socket
Connection technology		M8x1, A-coded to EN 61076-2-104	M12x1, A-coded to EN 61076-2-101
Number of pins/wires		3	5
Input switching logic		PNP (positive switching)	
		2-wire sensors to IEC 61131-2	
		3-wire sensors to IEC 61131-2	
Characteristic curve of inputs		To IEC 61131-2, type 3	
Switching level	[V]	Signal 0: ≤5	
	[V]	Signal 1: ≥11	
Fuse protection inputs (short circuit)		Internal electronic fuse per module	
Input debounce time	[ms]	0.1	
	[ms]	3	
	[ms]	10	
	[ms]	20	
Electrical isolation of inputs between channel and internal communication		Yes	
Electrical isolation of inputs between channels		No	
Electrical connection output			
Function		Digital output	
Connection type		4x socket	2x socket
Connection technology		M8x1, A-coded to EN 61076-2-104	M12x1, A-coded to EN 61076-2-101
Number of pins/wires		3	5
Switching logic at outputs		PNP (positive switching)	
Characteristic curve of outputs		To IEC 61131-2, type 0.5	
Output delay with resistive load	[μs]	Signal change from 0 to 1: <200	
	[μs]	Signal change from 1 to 0: <200	
Fuse protection outputs (short circuit)		Internal electronic fuse per channel	
Electrical isolation of outputs between channel and internal communication		Yes	
Electrical isolation of outputs between channels		No	
Communication interface			
Protocol		AP-COM	
Function		System communication XF10 IN / XF20 OUT	
Connection type		2 x socket	
Connection technology		M8x1, D-coded to EN 61076-2-114	
Number of pins/wires		4	
Screening		Yes	

Data sheet – Digital input/output modules

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

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

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

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

Data sheet – Digital input/output modules

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

1) Corrosion resistance class CRC 1 to Festo standard FN 940070

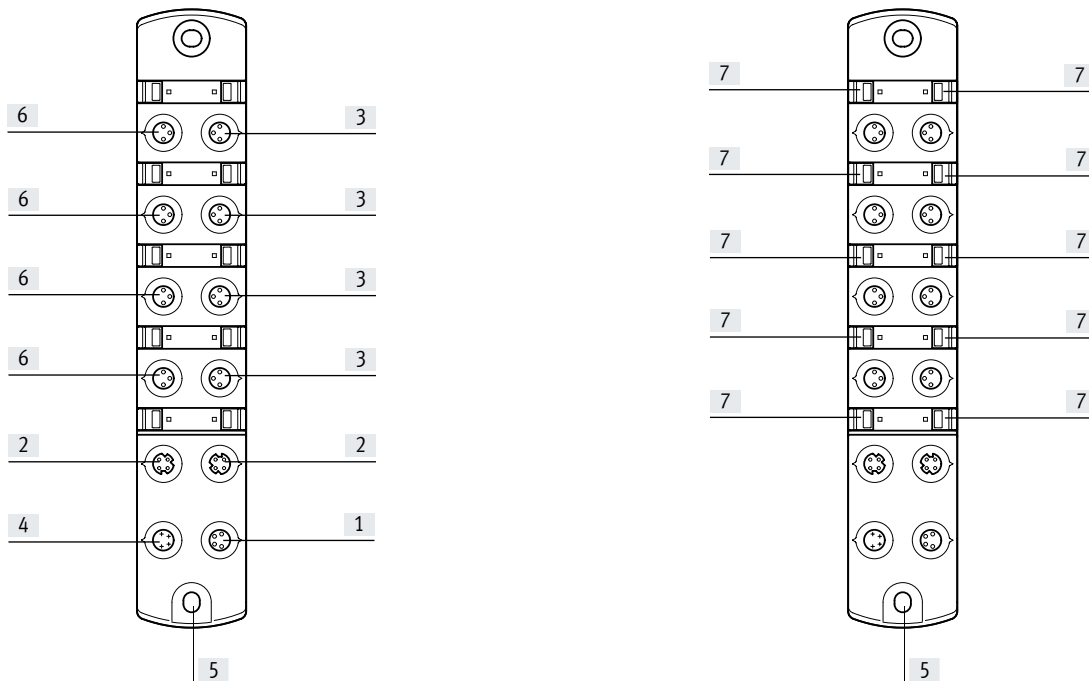
Low corrosion stress. Dry internal application or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp → Certificates.

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

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

Connection components and indicator lights



[1] Electrical connection, power transmission

[2] Communication interface

[3] Electrical connection, inputs/ outputs

[4] Electrical connection, power supply

[5] Earthing connection

[6] Location for inscription label

[7] LED indicators

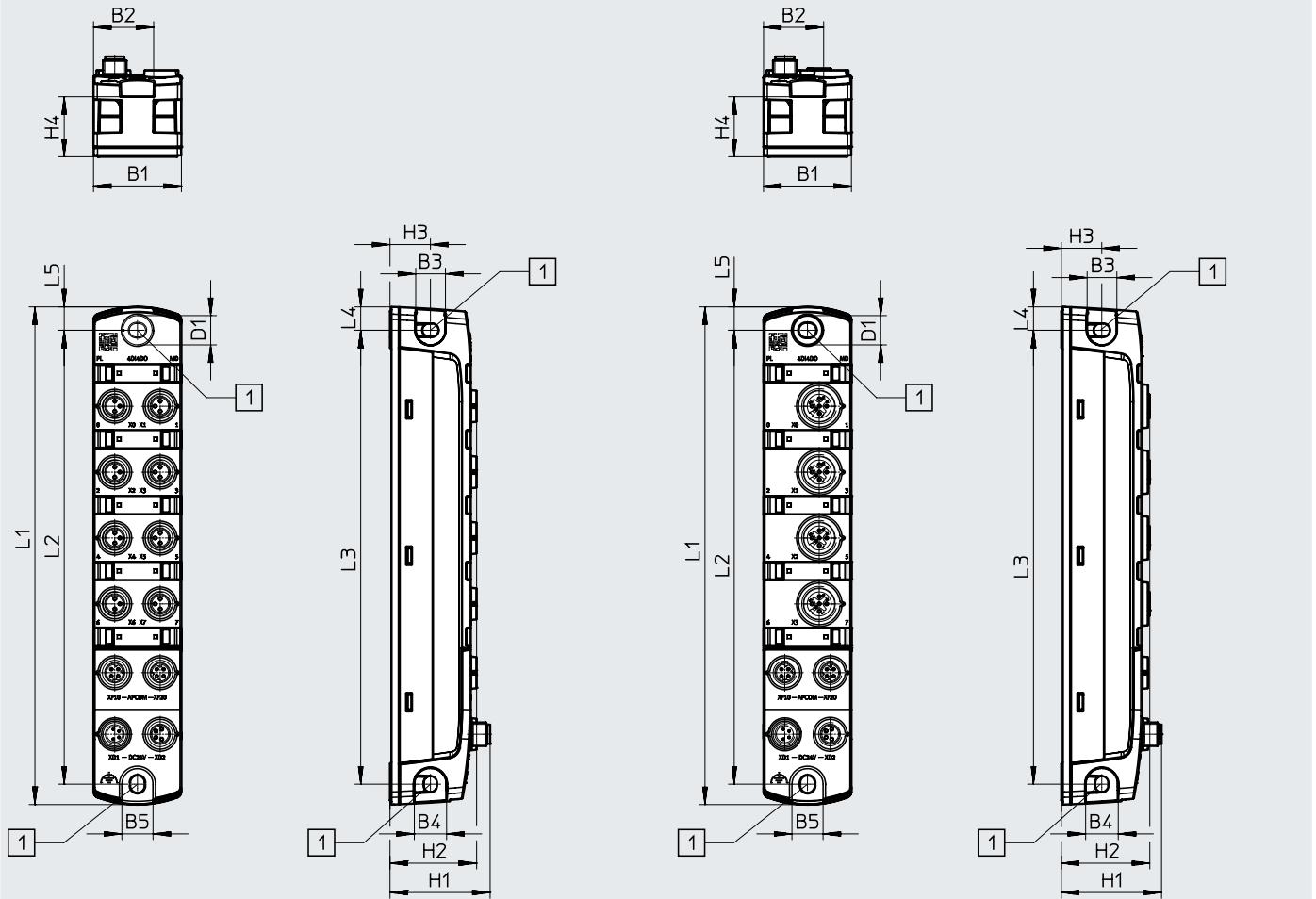
Data sheet – Digital input/output modules

Dimensions

Download CAD data → www.festo.com

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

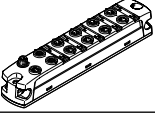
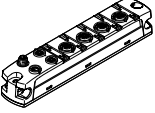
CPX-AP-I-4DI4DO-M12-5P

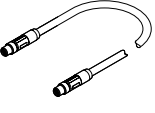
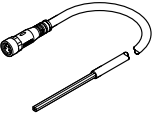
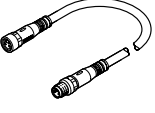
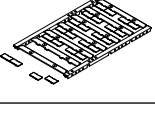



[1] Mounting hole for M4 screws

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

Data sheet – Digital input/output modules

Ordering data		Part no.	Type
	Digital input/output module	8086601	CPX-AP-I-4DI4DO-M8-3P
		8086603	CPX-AP-I-4DI4DO-M12-5P

Ordering data – Accessories							
Description				Part no.	Type	PE ¹⁾	
Connecting cable							
	For communication interface	Straight plug, M8x1, 4-pin, D-coded	Straight plug, M8x1, 4-pin, D-coded	0.3 m	8082902	NEBC-D8G4-ES-0.3-N-S-D8G4-ET	1
				0.5 m	8065123	NEBC-D8G4-ES-0.5-N-S-D8G4-ET	1
				1.0 m	8065125	NEBC-D8G4-ES-1-N-S-D8G4-ET	1
				2.0 m	8065127	NEBC-D8G4-ES-2-N-S-D8G4-ET	1
				5.0 m	8065129	NEBC-D8G4-ES-5-N-S-D8G4-ET	1
				7.5 m	8065131	NEBC-D8G4-ES-7.5-N-S-D8G4-ET	1
				10.0 m	8065133	NEBC-D8G4-ES-10-N-S-D8G4-ET	1
				15.0 m	8065135	NEBC-D8G4-ES-15-N-S-D8G4-ET	1
	For power supply	Straight socket, M8 x 1, 4-pin, A-coded	Open cable end, 4-wire	5.0 m	8065110	NEBL-M8G4-E-5-N-LE4	1
				7.5 m	8065113	NEBL-M8G4-E-7,5-N-LE4	1
				10.0 m	8065117	NEBL-M8G4-E-10-N-LE4	1
				15.0 m	8065121	NEBL-M8G4-E-15-N-LE4	1
	For power transmission	Straight socket, M8 x 1, 4-pin, A-coded	Straight plug, M8 x 1, 4-pin, A-coded	0.3 m	8082904	NEBL-M8G4-E-0.3-N-M8G4	1
				0.5 m	8065102	NEBL-M8G4-E-0.5-N-M8G4	1
				1.0 m	8065104	NEBL-M8G4-E-1-N-M8G4	1
				2.0 m	8065106	NEBL-M8G4-E-2-N-M8G4	1
				5.0 m	8065108	NEBL-M8G4-E-5-N-M8G4	1
				7.5 m	8065111	NEBL-M8G4-E-7.5-N-M8G4	1
				10.0 m	8065115	NEBL-M8G4-E-10-N-M8G4	1
				15.0 m	8065119	NEBL-M8G4-E-15-N-M8G4	1
Inscription label							
	For modules CPX-AP-I	Size 6x 12.5 mm, 10 frames with 24 pieces each		8087174	ASLR-L-X4-612-P240		240
Cover cap							
	For sealing unused connections	For connection M8x1		177672	ISK-M8		10
		For connection M12x1		165592	ISK-M12		10

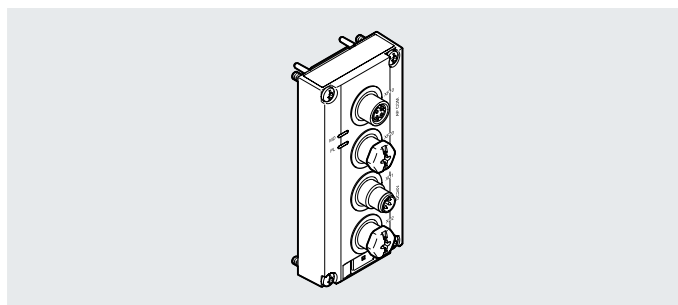
1) Packaging unit.

Data sheet – Electrical interface for valve terminal VTUG

Function

The electrical interface facilitates a valve terminal VTUG to be operated as a component of the automation system CPX-AP-I.

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



General technical data		
Type	VAEM-L1-S-12-AP	VAEM-L1-S-24-AP
Maximum number of valve positions	12	24
Maximum number of solenoid coils	24	48
Communication interface		
Protocol	AP-COM	
Function	System communication XF10 IN / XF20 OUT	
Connection type	2 x socket	
Connection technology	M8x1, D-coded to EN 61076-2-114	
Number of pins/wires	4	
Screening	Yes	
General data		
Module parameters	Configuration of voltage monitoring load supply PL	
	Response in error state	
Diagnostics via LED	Individual module diagnostics	
	Power supply load	
Diagnostics per internal communication	Electronics/sensors overvoltage	
	Electronics/sensors undervoltage	
	Load overvoltage	
	Load undervoltage	
	Load switch-off	
Maximum cable length	[m]	50 system communication

Data sheet – Electrical interface for valve terminal VTUG

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

Data sheet – Electrical interface for valve terminal VTUG

Technical data – Mechanical components		
Type of mounting		Screwed on
Connection position		Top
Product weight	[g]	76
Dimensions W x L x H	[mm]	42 x 91 x 30
Materials		
Housing		Reinforced PA
Threaded sleeve		Nickel-plated brass
Note on materials		RoHS-compliant
Operating and environmental conditions		
Ambient temperature	[°C]	-5 ... +50
Storage temperature	[°C]	-20 ... +60
Corrosion resistance CRC ¹⁾		2
Relative humidity	[%]	5 ... 95
		Non-condensing
Nominal altitude of use		≤ 2000 m NHN
CE marking (see declaration of conformity) ³⁾		To EU EMC Directive ²⁾
KC mark		KC-EMV
Degree of protection		IP65
		IP67
Note on degree of protection		In assembled state
		Unused connections sealed

1) Corrosion resistance class CRC 1 to Festo standard FN 940070

Low corrosion stress. Dry internal application or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

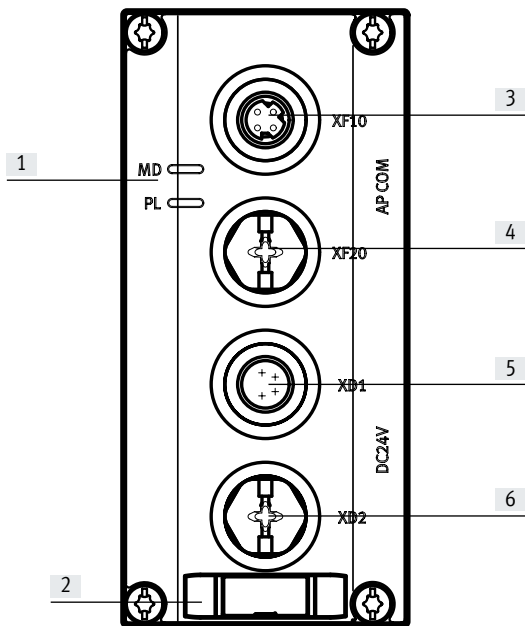
2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp → Certificates.

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

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

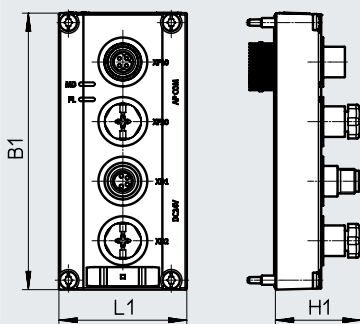
Data sheet – Electrical interface for valve terminal VTUG

Connection components and indicator lights



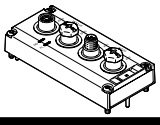
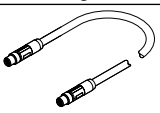
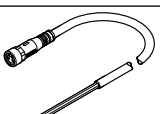
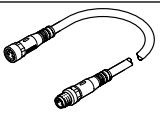
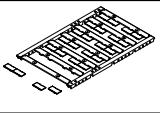

- [1] LED indicators
- [2] Location for inscription label
- [3] Communication interface
- [4] Communication interface 2
- [5] Electrical connection, power supply
- [6] Electrical connection, power transmission

Dimensions

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

Data sheet – Electrical interface for valve terminal VTUG

Ordering data		Part no.	Type					
	Electrical interface for valve terminal VTUG	12 valve positions	8081922	VAEM-L1-S-12-AP				
		24 valve positions	8081923	VAEM-L1-S-24-AP				
Ordering data – Accessories								
Ordering data – Accessories		Description	Part no.	Type	PE ¹⁾			
Connecting cable								
	For communication interface	Straight plug, M8x1, 4-pin, D-coded	Straight plug, M8x1, 4-pin, D-coded	0.3 m	8082902	NEBC-D8G4-ES-0.3-N-S-D8G4-ET		1
				0.5 m	8065123	NEBC-D8G4-ES-0.5-N-S-D8G4-ET		1
				1.0 m	8065125	NEBC-D8G4-ES-1-N-S-D8G4-ET		1
				2.0 m	8065127	NEBC-D8G4-ES-2-N-S-D8G4-ET		1
				5.0 m	8065129	NEBC-D8G4-ES-5-N-S-D8G4-ET		1
				7.5 m	8065131	NEBC-D8G4-ES-7.5-N-S-D8G4-ET		1
				10.0 m	8065133	NEBC-D8G4-ES-10-N-S-D8G4-ET		1
				15.0 m	8065135	NEBC-D8G4-ES-15-N-S-D8G4-ET		1
	For power supply	Straight socket, M8 x 1, 4-pin, A-coded	Open cable end, 4-wire	5.0 m	8065110	NEBL-M8G4-E-5-N-LE4		1
				7.5 m	8065113	NEBL-M8G4-E-7,5-N-LE4		1
				10.0 m	8065117	NEBL-M8G4-E-10-N-LE4		1
				15.0 m	8065121	NEBL-M8G4-E-15-N-LE4		1
	For power transmission	Straight socket, M8 x 1, 4-pin, A-coded	Straight plug, M8 x 1, 4-pin, A-coded	0.3 m	8082904	NEBL-M8G4-E-0.3-N-M8G4		1
				0.5 m	8065102	NEBL-M8G4-E-0.5-N-M8G4		1
				1.0 m	8065104	NEBL-M8G4-E-1-N-M8G4		1
				2.0 m	8065106	NEBL-M8G4-E-2-N-M8G4		1
				5.0 m	8065108	NEBL-M8G4-E-5-N-M8G4		1
				7.5 m	8065111	NEBL-M8G4-E-7.5-N-M8G4		1
				10.0 m	8065115	NEBL-M8G4-E-10-N-M8G4		1
15.0 m	8065119	NEBL-M8G4-E-15-N-M8G4		1				
Inscription label								
	For modules CPX-AP-I	Size 6x 12.5 mm, 10 frames with 24 pieces each		8087174	ASLR-L-X4-612-P240		240	
Cover cap								
	For sealing unused connections		For connection M8x1	17762	ISK-M8		10	

1) Packaging unit.