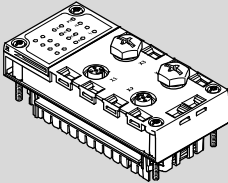


Electrical interface
CPX-CTEL-2-M12-5POL-LK



FESTO

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Brief description

8101617

Translation of the original instructions

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[8101619]

Electrical interface CPX-CTEL-2-M12-5POL-LK English

 For all available product documentation → www.festo.com/pk

1 Intended use

The module described in this document provides 2 outward interfaces to connect devices with IO-Link interface (devices).
The module is intended for use in an industrial environment. Outside of industrial environments, e.g. in commercial and mixed-residential areas, actions to suppress interference may have to be taken.
The module is intended exclusively for use in CPX terminals from Festo for installation in machines or automated systems and may be used only in the following ways:

- in perfect technical condition
- in original status without unauthorised modifications, except for the adaptations described in this documentation
- within the limits of the product defined through the technical data.

 IO-Link® is a registered trademark of its respective trademark holder in certain countries.

2 Security

This documentation is directed exclusively toward technicians trained in control and automation technology.

 You can find detailed information in the description for the module (P.BE-CPX-CTEL-2-M12-5POL-LK-...) as well as in the CPX system description (P.BE-CPX-SYS-...).

 Warning

Electric shock
Injury to people, damage to the machine and system

- For the electrical power supply, use only PELV circuits in accordance with IEC 60204-1 (Protective Extra-Low Voltage, PELV).
- Observe the general requirements of IEC 60204-1 for PELV circuits.
- Use only voltage sources that guarantee a reliable electrical disconnection of operating and load voltage in accordance with IEC 60204-1.
- Always connect all circuits for operating and load voltage supplies $U_{EL/SEN}$, U_{VAL} and U_{OUT} .

 Note

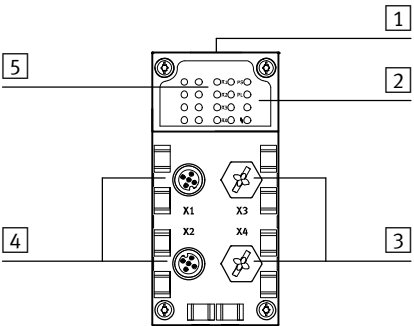
 Electrostatically sensitive devices

- Do not touch any components.
- Observe the handling specifications for electrostatically sensitive devices.

 Note

- Take into account the specifications and notes in the description of the module and mounting instructions of the components.
- Commission the module only if fully mounted and wired.

3 Connections and displays



1

Rating plate

2

CPX-specific LEDs

4

Port 1 and port 2²⁾

5

Status LEDs for port 1 and port 2

3

X3 and X4¹⁾

1) Equip with protective cap (without function)

2) Connector socket: M12, A-coded, 5-pin

3.1 Interfaces

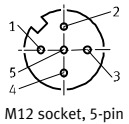
Port	Pin	Allocation	Function
	1	24 V $U_{EL/SEN}$	Power supply (PS)
	2	24 V $U_{VAL/OUT}$	Load voltage supply (PL)
	3	0 V $U_{EL/SEN}$	Power supply (PS)
	4	C/Q	Communication C/Q
	5	0 V $U_{VAL/OUT}$	Load voltage supply (PL)

Fig. 2

3.2 LED indicators

Status LEDs for port 1 and 2		CPX-specific LEDs ²⁾	
X1 ... X2 (green/red)	Status port 1 and 2 ¹⁾	PS (green)	Operating voltage supply (Power System)
	Connection status OK, device error, configuration error or compatibility error	PL (green)	Load voltage supply (Power Load)
		↓ (red)	CPX peripheral error
1) Detailed information (→ description for the module P.BE-CPX-CTEL-2-M12-5POL-LK-...)			
2) Detailed information (→ CPX system description P.BE-CPX-SYS-...)			

Fig. 3

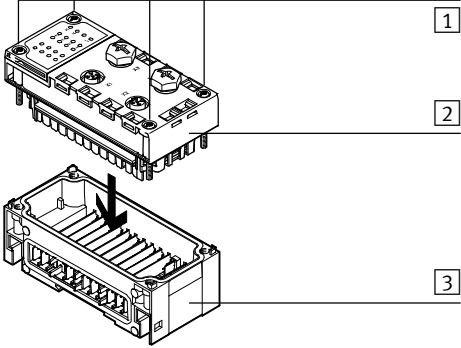
4 Mounting and installation

 Warning

Electric shock
Injury to people, damage to the machine and system

- Switch off the power supply before mounting or dismantling the module (danger of malfunctions or damage).

The module is mounted in an interlinking block of the CPX terminal.



1

Screws,
tightening torque: 0.9 ... 1.1 Nm

3

Interlinking block with contact rails

2

Module

4.1 Dismantling

- Unscrew screws and carefully lift off the module.

 Note

Material damage due to incorrect mounting

- Select screws suited to the material of the interlocking block:
 - plastic: Thread-cutting tapping screws
 - metal: Screws with metric thread.

If an individual module without CPX terminal is ordered, both screw types are included.

4.2 Mounting

- 1. Check seal and seal surfaces.
- 2. Carefully insert module into the interlinking block and press it in.
- 3. Screws must be set so that the existing self-cutting threads can be used.
- 4. Tighten the screws by hand in diagonally opposite sequence. Tightening torque: 0.9 ... 1.1 Nm

4.3 Electrical installation

The operating and load voltage supply for the CPX terminal is fed in via interlinking blocks. These conduct the operating and load voltages to the adjacent modules (→ CPX system description P.BE-CPX-SYS-...).

Connection of devices

→ **Note**

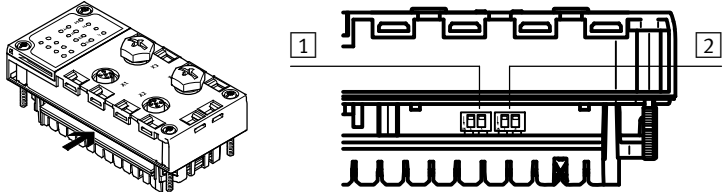
Malfunction due to impermissible cabling

- If possible, use only specified connecting cables from Festo (→ www.festo.com/catalogue).
- Observe the maximum length of the connecting cables of 20 m.

To avoid errors in data exchange between the module and the connected devices.

5 Commissioning

5.1 I/O configuration presetting



- 1 DIL switch group 1: Available address space
- 2 DIL switch group 2: Without function

Fig. 5

Setting DIL switch 1	S1.1	S1.2	Module I/O length	Inputs (per port)	Outputs (per port)
	OFF	OFF	8 bytes (64 bits)	4 bytes (32 bits)	4 bytes (32 bits)
	OFF	ON	16 bytes (128 bits)	8 bytes (64 bits)	8 bytes (64 bits)
	ON	OFF	24 bytes (192 bits)	12 bytes (96 bits)	12 bytes (96 bits)
	ON	ON	32 bytes (256 bits)	16 bytes (128 bits)	16 bytes (128 bits)

Fig. 6

Setting DIL switch 1	S1.1	S1.2	Module I/O length	Inputs (per port)	Outputs (per port)
	OFF	OFF	8 bytes (64 bits)	4 bytes (32 bits)	4 bytes (32 bits)
	OFF	ON	16 bytes (128 bits)	8 bytes (64 bits)	8 bytes (64 bits)
	ON	OFF	24 bytes (192 bits)	12 bytes (96 bits)	12 bytes (96 bits)
	ON	ON	32 bytes (256 bits)	16 bytes (128 bits)	16 bytes (128 bits)

5.2 Parameterisation

→ **Note**

The CPX terminal and the module described here can be parameterised with the operator unit (CPX-MMI) or the Festo Maintenance Tool (CPX-FMT) software.

6 Technical data

General	
General technical data	→ CPX system description (P.BE-CPX-SYS-...)
Degree of protection through housing ¹⁾ in accordance with IEC 60529, completely mounted, plug connector in plugged-in status or with protective caps ²⁾ .	IP65/IP67
Protection against electric shock Protection against direct and indirect contact as per IEC 60204-1	Through the use of PELV circuits (Protected Extra-Low Voltage)
Module code (CPX-specific)	194/1 (C2/01)
Module identifier (in operator unit)	CTEL-2-LK I-port LK master
Dimensions W x L x H	50 x 107 x 55 mm (incl. interlinking block)
Product weight	Approx. 110 g
Housing material information	PA-reinforced, PC
Note on materials	RoHS-compliant
Ambient temperature	−5 ... +50 °C
Storage temperature	−20 ... +70 °C
Humidity/heat (corresponding to IEC 60068-2-30)	95 %/50 °C
Vibration and shock (in accordance with IEC 60068) Vibration (part 2 ... 6) Shock (part 2 ... 27) Continuous shock resistance (part 2 ... 29)	Mounting-dependent: Wall mounting SG 2, H-rail mounting SG 1 Wall mounting SG 2, H-rail mounting SG 1 Wall and H-rail mounting SG 1

1) Observe that connected devices may only satisfy a lower degree of protection or smaller temperature range, etc.
2) Cover caps from Festo, type ISK-M12, for ports X3 and X4, included in delivery.

Fig. 7

Power supply	
Operating and load voltage range DC The following special features apply: Recommended minimum voltage PL for devices on connecting cables > 5 m	18 ... 30 V 21.6 V (24 V −10 %)
Nominal operating voltage DC	24 V
Module current consumption (without connected devices)	Typ. 65 mA
Maximum current consumption per port from operating voltage supply (U _{EL} /SEN) load voltage supply of valves (U _{VAL})	1.6 A 1.6 A
Electrical isolation between operating voltage supply (U _{EL} /SEN) and load voltage supply, valves (U _{VAL})	Yes, with potential-isolated supply
Electrical isolation of PS and PL supplies between the ports	No
Functional earth connection	Optional, through earthing plate
Mains buffering time corresp. IEC 1131, part 2	10 ms

Fig. 8

Module and devices	
Design Protocol Number of ports Maximum number of devices per port Maximum cable length per port Maximum number of I/Os per port Transmission rate (per port)	IO-Link 2 1 20 m 16 bytes I/16 bytes O 230.4 kBit/s (COM3) 38.4 kBit/s (COM2) 4.8 kBit/s (COM1)
Internal cycle time (dependent on the connected devices) Control elements	Min. 1 ms (per 1 byte of user data parallel each connected device) DIL switches
Electrical connection	2 x socket M12, 5-pin, A-coded
Short circuit protection, module – device supply (PS) – load voltage (PL) – behaviour after short circuit	Internal (electronic) separate per port Internal (electronic) separate per port Dependent on parameter “Behaviour after port short circuit”
Reverse polarity protection	Separate for each system and load voltage, not separated per port
Diagnostics Module-oriented diagnostics Undervoltage/shor t-circuit modules Communication errors	Undervoltage PS Undervoltage PL (over device) Communication errors Short-circuit PS/PL Device error
Trigger level, undervoltage identification Load voltage supply (PS)	Approx. 17.5 V (measured in the module)
Hysteresis undervoltage identification Load voltage supply (PS)	Approx. 500 mV (measured in the module)

Fig. 9