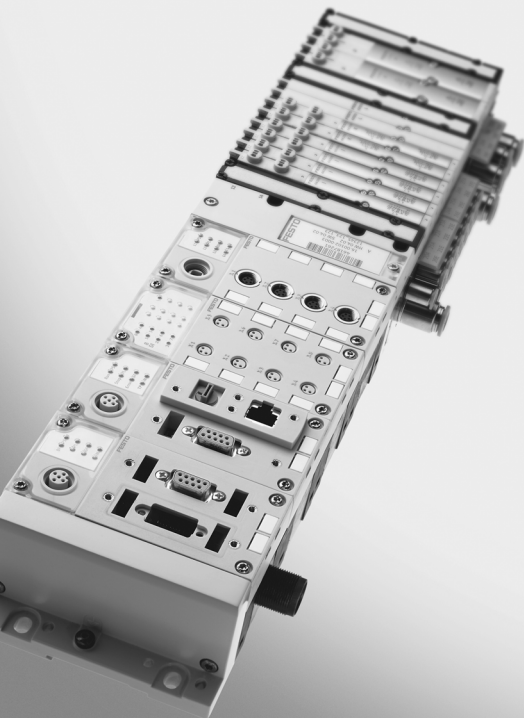


CPX-Terminal



FESTO

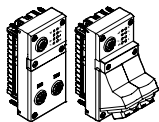
Kurz- beschreibung

Brief description

CPX-Busnoten
PROFINET IO
Typ CPX-FB33
Typ CPX-M-FB34
Typ CPX-M-FB35

CPX bus node
PROFINET IO
type CPX-FB33
type CPX-M-FB34
type CPX-M-FB35

- Deutsch
- English
- Español
- Français
- Italiano
- Svenska



752 472
1008b

Deutsch	3
English	17
Español	31
Français	45
Italiano	59
Svenska	73

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Internet: <http://www.festo.com>

E-Mail: service_international@festo.com

1 Benutzerhinweise

Die Busknoten CPX-FB33, CPX-M-FB34 und CPX-M-FB35 für CPX-Terminals sind ausschließlich für den Einsatz als Teilnehmer (I/O-Device) am Industrial-Ethernet-System PROFINET IO bestimmt.

Hierbei sind die angegebenen Grenzwerte der technischen Daten einzuhalten. Ausführliche Informationen finden Sie in der Busknoten-Beschreibung P.BE-CPX-PNIO-... sowie in der CPX-Systembeschreibung P.BE-CPX-SYS-...



Warnung

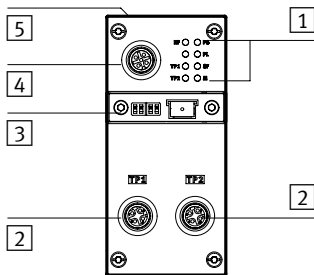
- Schalten Sie die Spannungsversorgung aus, bevor Sie Module montieren oder demontieren bzw. Steckverbinder zusammenstecken oder trennen (Gefahr von Funktionsstörungen oder der Beschädigung).
- Verwenden Sie ausschließlich Stromquellen, die eine sichere elektrische Trennung der Betriebsspannung nach IEC/DIN EN 60204-1 gewährleisten. Berücksichtigen Sie zusätzlich die allgemeinen Anforderungen an PELV-Stromkreise gemäß IEC/DIN EN 60204-1.
- Schließen Sie einen Erdleiter mit ausreichendem Leitungsquerschnitt an den mit dem Erdungssymbol gekennzeichneten Anschluss des CPX-Terminals an.
- Der CPX-Busknoten enthält elektrostatisch gefährdete Bauelemente. Berühren Sie deshalb keine Bauelemente. Beachten Sie die Handhabungsvorschriften für elektrostatisch gefährdete Bauelemente.



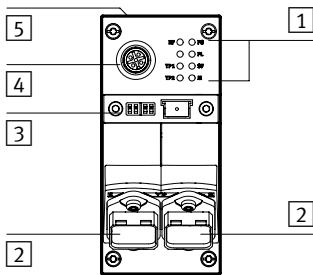
Hinweis

Nehmen Sie nur ein komplett montiertes und verdrahtetes CPX-Terminal in Betrieb.

2 Anschluss- und Anzeigeelemente



CPX-FB33



CPX-M-FB34 / CPX-M-FB35

- 1) Netzwerkstatus- und CPX-spezifische LEDs
- 2) Netzwerkanschluss
FB33: 2x M12, D-coded, 4-pol.
FB34: 2x RJ45, Push-Pull, Cu
FB35: 2x SCRJ, Push-Pull

- 3) Abdeckung für DIL-Schalter + Speicherkarte
- 4) Service-Schnittstelle für Handheld CPX-MMI + CPX-FMT
- 5) Typenschild mit MAC-ID + CPX-Revision-Code

Netzwerkstatus-LEDs		CPX-spezifische LEDs ³⁾	
NF	Network Failure (rot) ¹⁾	PS	Power System (grün)
–	–	PL	Power Load (grün)
TP1	Link/Traffic 1 (grün) ²⁾	SF	System Failure (rot) ⁴⁾
TP2	Link/Traffic 2 (grün) ²⁾	M	Modify (gelb) ⁵⁾

1) Netzwerkfehler: blinkt, wenn keine PROFINET-Verbindung besteht
 2) Netzverbindung bzw. Datenverkehr an TP1 bzw. TP2
 3) Detailinformationen: s. CPX-Systembeschreibung P.BE-CPX-SYS-..., Busknoten-Beschreibung P.BE-CPX-PNIO...
 4) Blinkt im Fehlerfall, Diagnose mittels Fehlernr. (s. P.BE-CPX-SYS-...)
 5) Parametrierung geändert oder Forcen aktiv

Normaler Betriebszustand:

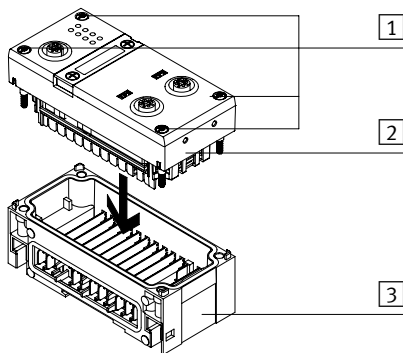
Die LEDs PS und PL leuchten grün, LED TP1 bzw. TP2 leuchtet oder blinkt (wenn Schnittstelle verwendet); die roten LEDs NF und SF leuchten oder blinken nicht.

3 Installationshinweise

3.1 Montage

Der Busknoten ist in einen Verkettungsblock des CPX-Terminals montiert.

- 1 Schrauben,
Anzugsdrehmoment
0,9 ... 1,1 Nm
- 2 CPX-Busknoten
- 3 Verkettungsblock mit
Stromschienen





Warnung

Schalten Sie die Spannungsversorgung aus, bevor Sie den Busknoten montieren oder demontieren (Gefahr von Funktionsstörungen oder der Beschädigung).

Demontage:

- Schrauben herausdrehen und Busknoten vorsichtig abheben.

Montage:

1. Dichtung und Dichtflächen prüfen und Anschlussblock wieder aufsetzen.
2. Schrauben so ansetzen, dass die vorgefurchten Gewindegänge genutzt werden. Schrauben von Hand über Kreuz anziehen.

Anzugsdrehmoment: 0,9 ... 1,1 Nm.



Hinweis

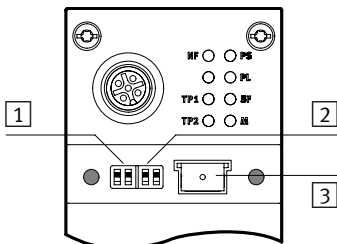
Verwenden Sie bei einer Kombination von Anschlussblöcken und Verkettungsblöcken Metall auf Kunststoff bzw. Kunststoff auf Metall grundsätzlich die für den

Verkettungsblock geeigneten Schrauben:



- bei Kunststoff-Verkettungsblöcken gewindefurchende Schneidschrauben
- bei Metall-Verkettungsblöcken Schrauben mit metrischem Gewinde

3.2 Einstellung der DIL-Schalter





- 1 DIL-Schalter 1.1 + 1.2:
Betriebsart
- 2 DIL-Schalter 2.1 + 2.2:
Diagnose-Modus (nur in
Betriebsart Remote I/O);
Datenfeld-Größe (nur in
Betriebsart Remote Controller)
- 3 Speicherkarte
(siehe Abschnitt 3.6)



Mit DIL-Schalter 1 die Betriebsart einstellen:

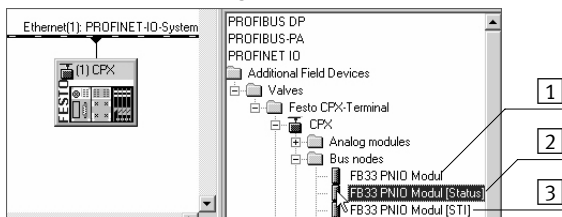
DIL-Schalter 1	Funktion
 <p>DIL 1.1: OFF DIL 1.2: OFF (Werkseinstellung)</p>	<p>Betriebsart Remote I/O Alle Funktionen des CPX-Terminals werden vom PROFINET-IO-Controller gesteuert.</p>
 <p>DIL 1.1: ON DIL 1.2: OFF</p>	<p>Betriebsart Remote Controller CPX-FEC übernimmt die EA-Steuerung. (Nur sinnvoll, wenn ein FEC im CPX-Terminal integriert ist.)</p>

Nur in Betriebsart Remote I/O:
 Mit DIL-Schalter **2** den Diagnose-Modus einstellen
 (siehe auch hierzu ergänzende Informationen auf
 der nächsten Seite):

DIL-Schalter 2	Funktion	
	Remote I/O	Remote Controller
 <p>DIL 2.1: OFF DIL 2.2: OFF (Werkseinstellung)</p>	Ohne Diagnose: EA-Diagnose-Interface und Statusbits ausgeschaltet	Datenfeld-Größe: 8 Byte E/ 8 Byte A
 <p>DIL 2.1: OFF DIL 2.2: ON</p>	Statusbits eingeschaltet	Datenfeld-Größe: 16 Byte E/ 16 Byte A
 <p>DIL 2.1: ON DIL 2.2: OFF</p>	EA-Diagnose-Interface eingeschaltet	Reserviert
 <p>DIL 2.1: ON DIL 2.2: ON</p>	Reserviert	Reserviert

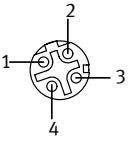
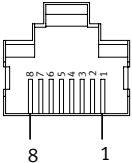
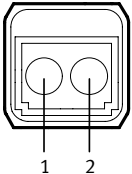


Die Einstellung der DIL-Schalter für Betriebsart und Diagnosemodus muss mit der Busknoten-Auswahl im Rahmen der SPS-Hardware-Konfiguration übereinstimmen.



Betriebsart des Busknotens	Diagnosemodus [Moduskennzeichnung]	Zusatzfunktion Fast Start-up (FSU)	Feldgerätegruppe (Stations-symbol)
Remote I/O	Ohne Diagnose 1	nein	CPX ¹⁾
		ja, mit FSU	CPX FSU ²⁾
	Statusbits [Status] 2	nein	CPX ¹⁾
		ja, mit FSU	CPX FSU ²⁾
	EA-Diagnose-Interface [STI] 3	nein	CPX ¹⁾
		ja, mit FSU	CPX FSU ²⁾
Remote Controller	n/a	n/a	CPX RC
¹⁾ CPX Rev 11 für Busknoten bis CPX-Revisions-Code Rev 11 ²⁾ Priorisierter Hochlauf, ab GSDML-Datei V. 2.2 + Rev 12			

3.3 Netzwerk-Schnittstelle

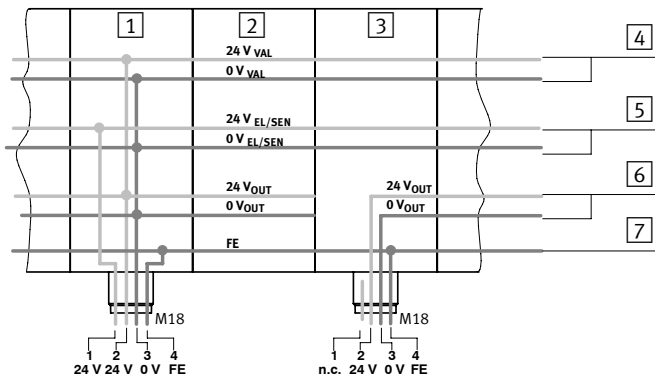
Buchse	Pin	Signal	Erläuterung
M12, D-coded	CPX-FB33		
	1 2 3 4 Gehäuse	TD+ RD+ TD- RD- Shield/FE	Sendedaten + Empfangsdaten + Sendedaten - Empfangsdaten - Schirm/Funktionserde
RJ45, Push-Pull	CPX-M-FB34		
	1 2 3 4 5 6 7 8 Gehäuse	TD+ TD- RD+ n.c. n.c. RD- n.c. n.c. Shield/FE	Sendedaten + Sendedaten - Empfangsdaten + nicht angeschlossen nicht angeschlossen Empfangsdaten - nicht angeschlossen nicht angeschlossen Schirm/Funktionserde
SCRJ, Push-Pull	CPX-M-FB35		
	1 2	TX RX	Sendedaten Empfangsdaten

Busknoten	Anschlussstechnik	Netzwerkstecker
CPX-FB33	2 x M12, D-coded, female, 4-polig, entsprechend IEC 61076-2	Stecker von Festo, Typ NECU-M-S-D12G4-C2-ET
CPX-M-FB34	2 x RJ45, Push-Pull, Cu, AIDA, entsprechend IEC 60603, IEC 61076-3	Stecker von Festo, Typ FBS-RJ45-PP-GS
CPX-M-FB35	2 x SCRJ, Push-Pull, 650 nm, AIDA, entsprechend IEC 61754-24	Stecker von Festo, Typ FBS-SCRJ-PP-GS
<p>→ Internet: www.festo.com/catalogue/</p>		

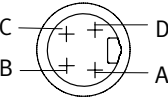
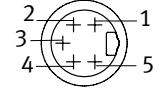
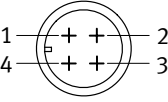
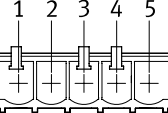
Busknoten + Netzwerkstecker	Leitungsspezifikation ¹⁾
CPX-FB33 + ...D12G4...	Ethernet-Kabel, geschirmt, Cat 5/Cat 5e, 6 ... 8 mm, 0,14 ... 0,75 mm ² (max. 100 m PROFINET-End-to-end-Link: 22 AWG)
CPX-M-FB34 + ...RJ45...	Ethernet-Kabel, geschirmt, Cat 5/Cat 5e, 5 ... 8 mm, 0,13 ... 0,36 mm ² (Δ ca. 26 ... 22 AWG) (max. 100 m PROFINET-End-to-end-Link: 22 AWG)
CPX-M-FB35 + ...SCRJ...	POF-Lichtwellenleiter, 980/1000 μm, 6,5 ... 9,5 mm (max. 50 m PROFINET-End-to-end-Link; ≤ 12,5 dB)
<p>¹⁾ Länge entsprechend Spezifikation für PROFINET-Netzwerke → Internet: www.profinet.com, www.profibus.com/downloads</p>	

3.4 Spannungsversorgung des CPX-Terminals

Die Betriebs- und Lastspannungsversorgung des CPX-Terminals wird über Verkettungsblöcke zugeführt. Die Verkettungsblöcke leiten die Betriebs- und Lastspannung an die angrenzenden Module weiter.

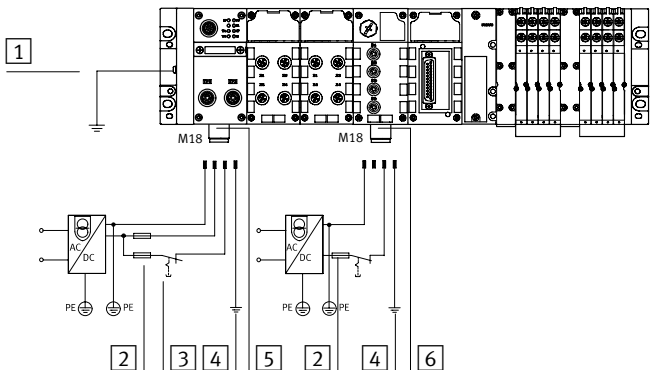


- | | |
|--|---|
| 1 Verkettungsblock mit System-einspeisung, z.B. Typ CPX-GE-EV-S | 4 Lastspannung für Ventile |
| 2 Verkettungsblock ohne Einspeisung, z.B. Typ CPX-GE-EV | 5 Betriebsspannung für Elektronik und Sensoren |
| 3 Verkettungsblock mit Zusatzeinspeisung, z.B. Typ CPX-GE-EV-Z | 6 Lastspannung für digitale Ausgänge |
| | 7 Erdungsanschluss (Funktionserde, FE) |

Verkettungs- block	CPX-(M-)GE- EV-S...	CPX-(M-)GE- EV-Z...	CPX-GE- EV-V...
7/8"-4POL 	A: 24 V _{EL/SEN} B: 24 V _{VAL} /24 V _{OUT} C: FE D: 0 V _{EL/SEN} / 0 V _{VAL} /0 V _{OUT}	A: n.c. B: 24 V _{OUT} C: FE D: 0 V _{OUT}	A: n.c. B: 24 V _{VAL} C: FE D: 0 V _{VAL}
7/8"-5POL 	1: 0 V _{VAL} /0 V _{OUT} 2: 0 V _{EL/SEN} 3: FE 4: 24 V _{EL/SEN} 5: 24 V _{VAL} /24 V _{OUT}	1: 0 V _{OUT} 2: n.c. 3: FE 4: n.c. 5: 24 V _{OUT}	–
M18 	1: 24 V _{EL/SEN} 2: 24 V _{VAL} /24 V _{OUT} 3: 0 V _{EL/SEN} / 0 V _{VAL} /0 V _{OUT} 4: FE	1: n.c. 2: 24 V _{OUT} 3: 0 V _{OUT} 4: FE	1: n.c. 2: 24 V _{VAL} 3: 0 V _{VAL} 4: FE
Push-Pull 	1: 24 V _{EL/SEN} 2: 0 V _{EL/SEN} 3: 24 V _{VAL} /24 V _{OUT} 4: 0 V _{VAL} /0 V _{OUT} 5: FE	1: n.c. 2: n.c. 3: 24 V _{OUT} 4: 0 V _{OUT} 5: FE	–
V _{EL/SEN} : Betriebsspannung Elektronik/Sensoren V _{OUT/VAL} : Lastspannung Ausgänge/Ventile FE: Erdungsanschluss (Funktionserde) n.c.: frei (not connected) A, B, C, D: Achten Sie auf die Angaben am Stecker.			

Anschlussbeispiel

Das folgende Bild zeigt beispielhaft den Anschluss bei Verwendung einer Systemeinspeisung und einer Zusatzeinspeisung (jeweils mit M18-Stecker) für elektrische Ausgänge.



- | | |
|---|---|
| 1 Potenzialausgleich | 5 Anschluss der Systemeinspeisung Typ CPX-GE-EV-S (M18) |
| 2 Externe Sicherungen | 6 Anschluss der Zusatzeinspeisung für elektrische Ausgänge Typ CPX-GE-EV-Z (M18) |
| 3 Lastspannungsversorgung der Ventile bzw. Ausgänge ist getrennt abschaltbar | |
| 4 Erdungsanschluss Pin 4 (M18-Stecker), ausgelegt für 16 A | |

3.5 Startverhalten des CPX-Terminals

Leuchtet oder blinkt nach dem Systemstart die Modify-LED (M) permanent, so ist "Systemstart mit gespeicherter Parametrierung und gespeichertem CPX-Ausbau" eingestellt bzw. "Forcen" aktiv.



Vorsicht

Bei CPX-Terminals, bei denen die M-LED permanent leuchtet oder blinkt, wird die Parametrierung bei Austausch des CPX-Terminals im Servicefall nicht selbsttätig durch das übergeordnete System hergestellt. Überprüfen Sie in diesem Fall vor dem Austausch, welche Einstellungen erforderlich sind, und stellen Sie diese Einstellungen nach dem Austausch wieder her.



Detaillierte Hinweise finden Sie in der Busknoten-Beschreibung P.BE-CPX-PNIO-....

3.6 Verwendung der Speicherkarte

Die Speicherkarte dient als Träger von Konfigurationsdaten, z.B. des Feldbus-Gerätenamens. Damit lässt sich ein Busknoten komfortabel austauschen. Detaillierte Informationen zur Verwendung: siehe P.BE-CPX-PNIO-....



Vorsicht

Schalten Sie die Spannung aus, bevor Sie die Speicherkarte entnehmen bzw. einstecken (Gefahr von Funktionsstörungen oder der Beschädigung).

4 Technische Daten

Busknoten CPX-(M)-...	FB33	FB34	FB35
Allgemeine technische Daten	siehe CPX-Systembeschreibung P.BE-CPX-SYS-...		
Schutzart nach EN 60529	IP65/IP67 (komplett montiert)		
Schutz gegen elektrischen Schlag nach IEC/DIN EN 60204-1	durch PELV-Stromkreis (Protected Extra-Low Voltage)		
Eigenstromaufnahme bei 24 V aus Betriebsspannungsversorgung Elektronik/Sensoren ($V_{EL/SEN}$)	120 mA	120 mA	150 mA (interne Elektronik)
Galvanische Trennung PROFINET-Schnittstellen zu $V_{EL/SEN}$	galvanisch getrennt (1500 V)		
Modulcode (CPX-spezifisch) – Remote I/O – Remote Controller	215 164	216 165	217 166
Modulkennzeichen – Remote I/O – Remote Controller	FB3x-RIO FB3x-RC	ProfiNet (RJ45/LWL) Remote I/O ProfiNet (RJ45/LWL) I/O bus node	
PROFINET – Protokoll – Spezifikation	PROFINET IO RT (PNIO RT) Industrial Ethernet in Anlehnung an IEEE 802.3; siehe auch PROFINET Installation Guide, http://www.profinet.com ; Switched Fast Ethernet, 100 Mbit/s, Auto-MDI		

1 User instructions

The CPX-FB33, CPX-M-FB34 and CPX-M-FB34 bus nodes for CPX terminals are specified for use as stations (I/O device) on the PROFINET IO Industrial Ethernet system exclusively.

The limits specified in the technical data must be complied with. See the description for P.BE-CPX-PNIO-... bus nodes and the P.BE-CPX-SYS-... CPX system description for more detailed information.



Warning

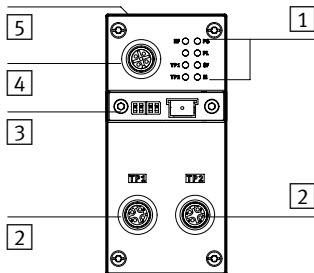
- Switch off the power supply before assembling or disassembling modules or plugging plug connectors together or separating them (risk of operative malfunction or damage).
- Use only power sources which guarantee reliable electrical isolation of the operating voltage in accordance with IEC/DIN EN 60204-1. Observe also the general requirements for PELV circuits in accordance with IEC/DIN EN 60204-1.
- Connect an earth wire with sufficient cable cross section to the terminal marked with an earth symbol.
- The CPX bus nodes contain electrostatically sensitive devices. For this reason, do not touch any components. Observe the handling specifications for electrostatically sensitive devices.



Note

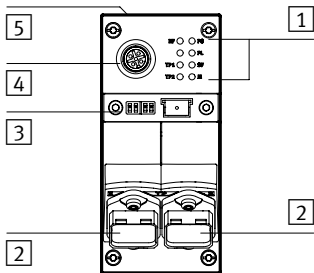
Only put a completely assembled and wired CPX terminal into commission.

2 Connection and display components



CPX-FB33

- 1 Network status and CPX-specific LEDs
- 2 Network connection
FB33: 2x M12, D-coded, 4-pin
FB34: 2x RJ45, Push-Pull, Cu
FB35: 2x SCR, Push-Pull



CPX-M-FB34 / CPX-M-FB35

- 3 Cover for DIL switch + memory card
- 4 Service interface for handheld CPX-MMI + CPX-FMT
- 5 Rating plate with MAC ID + CPX revision code

Network status LEDs		CPX-specific LEDs ³⁾	
NF	Network failure (red) ¹⁾	PS	Power system (green)
–	–	PL	Power load (green)
TP1	Link/traffic 1 (green) ²⁾	SF	System failure (red) ⁴⁾
TP2	Link/traffic 2 (green) ²⁾	M	Modify (yellow) ⁵⁾

1) Network error: flashes if there is no PROFINET connection

2) Network connection or data traffic at TP1 or TP2

3) Detail information: See P.BE-CPX-SYS-... system description
P.BE-CPX-PNIO... bus node description

4) Flashes in case of error, diagnosis using error no.
(see P.BE-CPX-SYS-...)

5) Parameterisation changed or force active

Normal operating status:

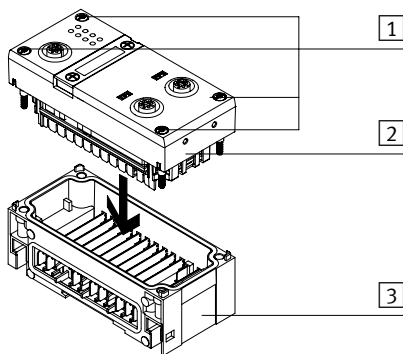
The PS and PL LEDs shine green, LED TP1 or TP2 shines or flashes (if interface used); the red LEDs NF and SF do not shine or blink.

3 Installation instructions

3.1 Assembly

The bus node is assembled in an interlinking block of the CPX terminal.

- 1 Screws
Tightening torque
0.9 to 1.1 Nm
- 2 CPX bus node
- 3 Interlinking block
with contact rails





Warning

Switch off the power supply before assembling or disassembling bus nodes (risk of operative malfunction or damage).

Dismantling:

- Unscrew screws and carefully lift out the bus nodes.

Assembly:

1. Check seals and sealing surfaces and replace the connection block.
2. Screws must be placed so that the self-cutting threads can be used. Tighten screws manually, crosswise.

Tightening torque: 0.9 to 1.1 Nm.



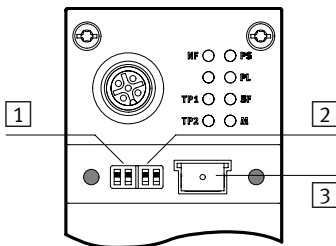
Note

With a combination of connection blocks and interlinking block with metal on plastic or plastic on metal, always use the appropriate screws for the **interlinking block**:



- for plastic interlinking blocks use thread-cutting screws
- for metal interlinking blocks use screws with metric thread

3.2 DIL switch setting





- 1 DIL switch 1.1 + 1.2:
Operation mode
- 2 DIL switch 2.1 + 2.2:
Diagnostics mode
(Remote I/O operation
mode only);
Data field size (Remote
Controller operation
mode only)
- 3 Memory card
(see section 3.6)



Setting the operation mode with DIL switch 1:

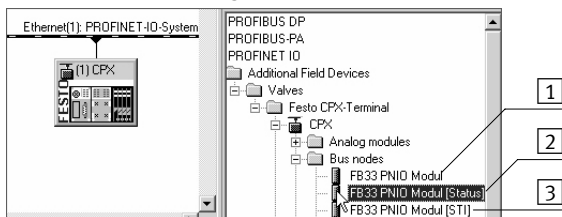
DIL switch 1	Function
 <p>DIL 1.1: OFF DIL 1.2: OFF (Factory setting)</p>	<p>Remote I/O operation mode All functions of the CPX terminal are controlled by the PROFINET I/O controller.</p>
 <p>DIL 1.1: ON DIL 1.2: OFF</p>	<p>Remote controller operation mode CPX-FEC takes over I/O control. (Only useful if an FEC is integrated into the CPX terminal.)</p>

In remote I/O operation mode only:
Set the diagnostics mode [2] with the DIL switch (also see supplementary information on the next page):

DIL switch [2]	Function		
		Remote I/O	Remote controller
	DIL 2.1: OFF DIL 2.2: OFF (Factory setting)	Without diagnostics: I/O diagnostics interface and status bits are switched off	Data field size: 8 bytes I/ 8 bytes O
	DIL 2.1: OFF DIL 2.2: ON	Status bits are switched on	Data field size: 8 bytes I/ 8 bytes O
	DIL 2.1: ON DIL 2.2: OFF	I/O diagnostic interface is switched on	Reserved
	DIL 2.1: ON DIL 2.2: ON	Reserved	Reserved



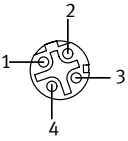
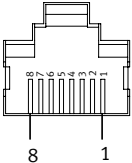
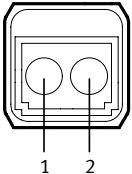
The DIL switch setting for operation mode and diagnostics mode has to conform with the bus node selection as part of a PLC hardware configuration.



Operating mode of the bus node	Diagnostic mode [Mode identification]	Additional function Fast Start-up (FSU)	Field device group (station icon)
Remote I/O	Without diagnostics [1]	no	CPX ¹⁾
		yes, with FSU	CPX FSU ²⁾
	Status Bits [Status] [2]	no	CPX ¹⁾
		yes, with FSU	CPX FSU ²⁾
	I/O Diagnostics Interface [STI] [3]	no	CPX ¹⁾
		yes, with FSU	CPX FSU ²⁾
Remote Controller	n/a	n/a	CPX RC

1) **CPX Rev 11** for bus nodes with CPX revision code up to Rev11
2) Prioritised start up, starting from GSDML file V. 2.2 + Rev 12

3.3 Network interface

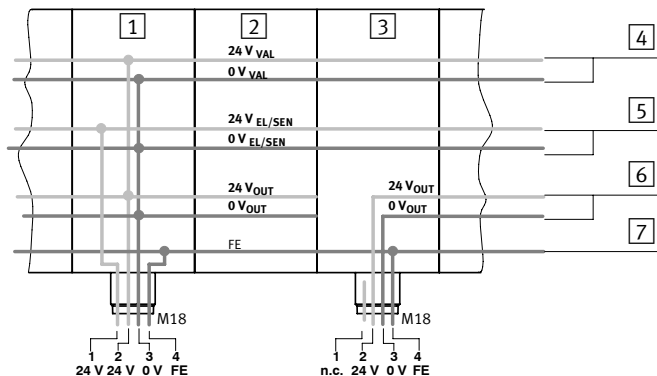
Socket	Pin	Signal	Explanation
M12, D-coded	CPX-FB33		
	1 2 3 4 Housing	TD+ RD+ TD- RD- Shield/FE	Transmitted data + Received data + Transmitted data – Received data – Shield/Functional earth
RJ45, Push-Pull	CPX-M-FB34		
	1 2 3 4 5 6 7 8 Housing	TD+ TD- RD+ n.c. n.c. RD- n.c. n.c. Shield/FE	Transmitted data + Transmitted data – Received data + not connected not connected Received data – not connected not connected Shield/Functional earth
SCRJ, Push-Pull	CPX-M-FB35		
	1 2	TX RX	Transmitted data Received data

Bus node	Connection technology	Network plug
CPX-FB33	2 x M12, D-coded, female, 4-pin, conforming to IEC 61076-2	Plug Festo type NECU-M-S-D12G4-C2-ET
CPX-M-FB34	2 x RJ45, Push-Pull, Cu, AIDA, conforming to IEC 60603, IEC 61076-3	Plug Festo type FBS-RJ45-PP-GS
CPX-M-FB35	2 x SCRJ, Push-Pull, 650 nm, AIDA, conforming to IEC 61754-24	Plug Festo type FBS-SCRJ-PP-GS
<p>→ Internet: www.festo.com/catalogue/</p>		

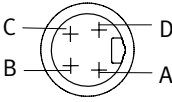
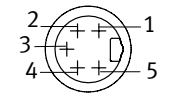
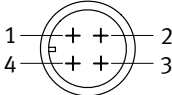
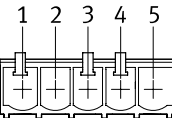
Bus node + network plug	Line specification ¹⁾
CPX-FB33 + ...D12G4...	Ethernet cable, shielded, Cat 5/Cat 5e, 6 ... 8 mm, 0,14 ... 0,75 mm ² (max. 100 m PROFINET end-to-end link: 22 AWG)
CPX-M-FB34 + ...RJ45...	Ethernet cable, shielded, Cat 5/Cat 5e, 5 ... 8 mm, 0,13 ... 0,36 mm ² (Δ approx. 26 ... 22 AWG) (max. 100 m PROFINET end-to-end link: 22 AWG)
CPX-M-FB35 + ...SCRJ...	POF optical fibre cable, 980/1000 μm, 6,5 ... 9,5 mm (max. 50 m PROFINET end-to-end link; ≤ 12,5 dB)
<p>¹⁾ Length corresponding to specification for PROFINET networks → Internet: www.profinet.com, www.profibus.com/downloads</p>	

3.4 Power supply of the CPX terminal

The operating and load power supply of the CPX terminal is fed via interlinking blocks. They forward the operating and load power to the adjacent modules.

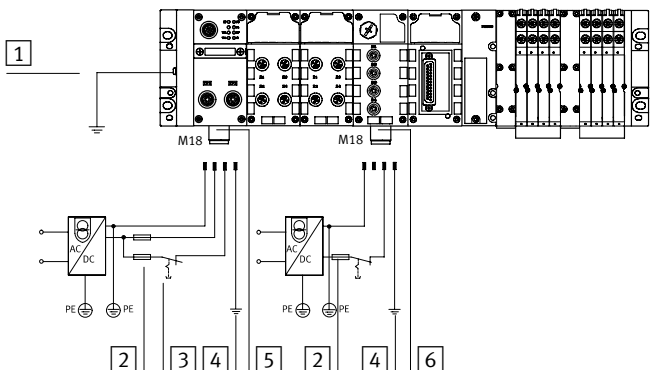


- | | | | |
|----------|--|----------|---|
| 1 | Interlinking block with system supply, e.g. type CPX-GE-EV- S | 4 | Load voltage for valves |
| 2 | Interlinking block without supply, e.g. type CPX-GE-EV | 5 | Operating voltage for electronics and sensors |
| 3 | Interlinking block with additional supply, e.g. type CPX-GE-EV- Z | 6 | Load voltage for digital outputs |
| | | 7 | Earth terminal (Functional earth, FE) |

Interlinking block	CPX-(M-)GE-EV-S...	CPX-(M-)GE-EV-Z...	CPX-GE-EV-V...
7/8"-4PIN 	A: 24 V _{EL/SEN} B: 24 V _{VAL} /24 V _{OUT} C: FE D: 0 V _{EL/SEN} / 0 V _{VAL} /0 V _{OUT}	A: n.c. B: 24 V _{OUT} C: FE D: 0 V _{OUT}	A: n.c. B: 24 V _{VAL} C: FE D: 0 V _{VAL}
7/8"-5PIN 	1: 0 V _{VAL} /0 V _{OUT} 2: 0 V _{EL/SEN} 3: FE 4: 24 V _{EL/SEN} 5: 24 V _{VAL} /24 V _{OUT}	1: 0 V _{OUT} 2: n.c. 3: FE 4: n.c. 5: 24 V _{OUT}	–
M18 	1: 24 V _{EL/SEN} 2: 24 V _{VAL} /24 V _{OUT} 3: 0 V _{EL/SEN} / 0 V _{VAL} /0V _{OUT} 4: FE	1: n.c. 2: 24 V _{OUT} 3: 0 V _{OUT} 4: FE	1: n.c. 2: 24 V _{VAL} 3: 0 V _{VAL} 4: FE
Push-Pull 	1: 24 V _{EL/SEN} 2: 0 V _{EL/SEN} 3: 24 V _{VAL} /24 V _{OUT} 4: 0 V _{VAL} /0 V _{OUT} 5: FE	1: n.c. 2: n.c. 3: 24 V _{OUT} 4: 0 V _{OUT} 5: FE	–
V _{EL/SEN} : Operating voltage electronics/sensors V _{OUT/VAL} : Load voltage outputs/valves FE: Earth terminal (Functional earth) n.c.: not connected A, B, C, D: Observe information at plug.			

Connection example

The following figure shows an example of the connection when a system supply and additional power supply (with M 18 plug each) are used for electrical outputs.



- | | |
|---|---|
| 1 Equipotential bonding | 5 System supply terminal type CPX-GE-EV-S (M18) |
| 2 External fuses | 6 Additional power supply terminal for type CPX-GE-EV-Z (M18) electrical outputs |
| 3 Load supply of valves/outputs can be switched off separately | |
| 4 Earth connection on pin 4 (M18 plug), rated for 16 A | |

3.5 Start behaviour of the CPX terminal

If the modify LED (M) continuously shines or flashes after the system start, “System start with parameterisation saved and saved CPX expansion” is set or “Force” is active.



Caution

For CPX terminals with a continuously shining or flashing M-LED, the parameterisation is not automatically created by the higher-level system when the CPX terminal is replaced during servicing. In this case, verify which settings are required before replacement, and restore these settings after replacement.



You will find detailed instructions in the P.BE-CPX-PNIO-....bus node description

3.6 Using the memory card

The memory card carries the configuration data, the name of the fieldbus device, for example. This enables a bus node to be replaced easily. For detailed information on its use: see P.BE-CPX-PNIO-....



Caution

Switch off the power supply before removing or inserting the memory card (risk of operative malfunction or damage).

4 Technical data

Bus node CPX-(M)-...	FB33	FB34	FB35
General technical data	see P.BE-CPX-SYS-... system description		
Protection class as per EN 60529	IP65/IP67 (fully assembled)		
Protection against electric shock as per IEC/DIN EN 60204-1	by means of PELV power circuit (Protected Extra-Low Voltage)		
Internal current consumption at 24 V from operating voltage supply for electronics/sensors ($V_{EL/SEN}$)	120 mA	120 mA	150 mA (internal electronics)
Electrical isolation PROFINET interface for $V_{EL/SEN}$	electrically isolated (1500 V)		
Module code (CPX-specific) – Remote I/O – Remote Controller	215 164	216 165	217 166
Module identifier – Remote I/O – Remote Controller	FB3x-RIO FB3x-RC	ProfiNet (RJ45/FO) Remote I/O ProfiNet (RJ45/FO) I/O bus node	
PROFINET – Protocol – Specification	PROFINET IO RT (PNIO RT) Industrial Ethernet based on IEEE 802.3; also see PROFINET installation guide, http://www.profinet.com ; Switched Fast Ethernet, 100 Mbit/s, Auto-MDI		

1 Instrucciones para el usuario

Los nodos de bus CPX-FB33, CPX-M-FB34 y CPX-M-FB35 para terminales CPX se han concebido exclusivamente para su uso como estaciones participantes (I/O Device) en el sistema de Ethernet industrial PROFINET IO.

Aquí deben observarse los valores máximos indicados en la sección “Especificaciones técnicas”. Puede hallarse información detallada en la descripción del nodo de bus P.BE-CPX-PNIO-..., así como en la descripción del sistema CPX P.BE-CPX-SYS-...



Advertencia

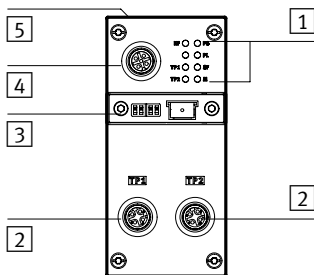
- Desconecte la fuente de alimentación antes de montar o desmontar cualquier módulo o de enchufar o desenchufar los conectores enchufables. (¡Peligro de fallo funcional o de daños!)
- Utilice sólo fuentes de alimentación que garanticen un aislamiento eléctrico de la tensión de alimentación conforme a la norma IEC/DIN EN 60204-1. Observe también los requisitos generales para circuitos PELV conforme a la norma IEC/DIN EN 60204-1.
- Conecte un cable de toma a tierra de suficiente sección transversal a la conexión marcada con el símbolo de tierra del terminal CPX.
- El nodo de bus CPX contiene elementos sensibles a las descargas electrostáticas. Debido a ello, no toque las superficies de contacto de los módulos. Observe las especificaciones sobre manipulación de elementos sensibles a las descargas electrostáticas.



Importante

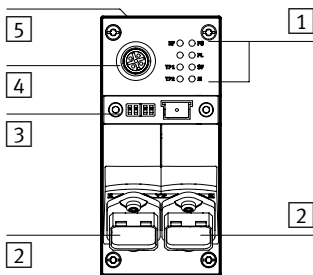
Ponga en servicio un terminal CPX sólo cuando se halle completamente montado y cableado.

2 Elementos de conexión e indicación



CPX-FB33

- 1 LEDs específicos del estado de la red y específicos de CPX
- 2 Conexión a la red:
FB33: 2x M12, codificación D, de 4 contactos
FB34: 2x RJ45, Push-Pull, Cu
FB35: 2x SCRJ, Push-Pull



CPX-M-FB34 / CPX-M-FB35

- 3 Tapa de interruptores DIL + tarjeta de memoria
- 4 Interface de servicio pa-
ra terminal de mano MMI + FMT
- 5 Placa de tipo con
MAC-ID + CPX Revision Code

LEDs de estado de la red		LEDs específicos de CPX ³⁾	
NF	Network Failure (rojo) ¹⁾	PS	Power System (verde)
-	-	PL	Power Load (verde)
TP1	Link/Traffic 1 (verde) ²⁾	SF	System Failure (rojo) ⁴⁾
TP2	Link/Traffic 2 (verde) ²⁾	M	Modify (amarillo) ⁵⁾

1) Fallo en red: intermitente, cuando no hay conexión PROFINET
 2) Conexión de red o tráfico de datos a TP1 o a TP2
 3) Información detallada: véase Descripción del sistema CPX P.BE-CPX-SYS-..., descripción de nodo de bus P.BE-CPX-PNIO...
 4) Intermitente en caso de fallo, diagnóstico mediante nº de fallo. (véase P.BE-CPX-SYS-...)
 5) Modificación de parametrización o “Force” activo

Estado operativo normal:

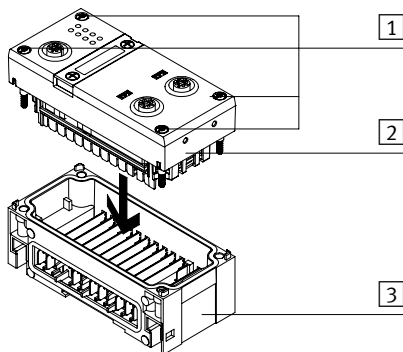
LEDs PS y PL iluminados en verde, LED TP1 o TP2 iluminado o intermitente (si se emplea interface); LEDs rojos NF y SF ni iluminados ni intermitentes.

3 Instrucciones de instalación

3.1 Montaje

El nodo de bus está montado en un bloque de distribución del terminal CPX.

- 1 Tornillos,
Par de apriete
0,9 a 1,1 Nm
- 2 Nodo de bus CPX
- 3 Bloque de distribu-
ción con barras to-
macorriente





Advertencia

Desconecte la fuente de alimentación antes de montar o desmontar el nodo de bus. (¡Peligro de fallo funcional o de daños!)

Desmontaje:

- Desenrosque los tornillos y levante con cuidado el nodo de bus.

Montaje:

1. Verifique la junta y las superficies hermetizantes y vuelva a colocar la placa de alimentación.
2. Inserte los tornillos de forma que puedan utilizarse los pasos de rosca estriados. Apriete los tornillos manualmente en secuencia diagonal alternativa.

Par de apriete de 0,9 a 1,1 Nm.



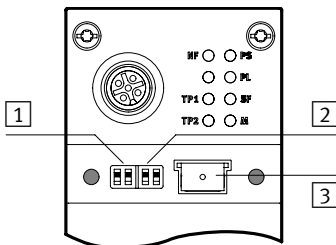
Importante

Para la combinación de placas de alimentación y bloques de distribución, use siempre metal sobre plástico o plástico sobre metal para los tornillos apropiados para el **bloque de distribución**:

- con bloques de distribución de plástico, tornillos con rosca cortante
- con bloques de distribución de metal, tornillos con rosca métrica.

3.2 Ajuste de interruptores DIL





- 1 Interruptor DIL 1.1 + 1.2:
Modo de funcionamiento
- 2 Interruptor DIL 2.1 + 2.2:
Modo de diagnóstico
(para modo de funcionamiento Remote I/O);
Tamaño del campo de datos (para modo de funcionamiento Remote Controller)
- 3 Tarjeta de memoria
(véase la sección 3.6)



Ajustar el modo de funcionamiento mediante el interruptor DIL **1**:

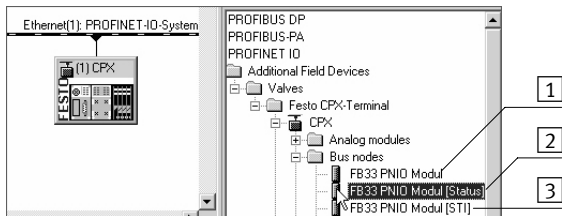
Interruptor DIL 1	Función	
	DIL 1.1: OFF DIL 1.2: OFF (ajuste de fábrica)	Modo de funcionamiento Remote I/O Todas las funciones del terminal CPX son controladas por el controlador PROFINET IO.
	DIL 1.1: ON DIL 1.2: OFF	Modo de funcionamiento Controlador remoto (Remote Controller) CPX-FEC asume el control de las I/Os. (Sólo es útil si hay un FEC integrado en el terminal CPX).

Sólo en el modo de funcionamiento Remote I/O:
Ajustar el modo de diagnóstico mediante el interruptor DIL **2** (véase también al respecto la información complementaria de la siguiente página):

Interruptor DIL 2	Función	
	Remote I/O	Remote Controller
 <p>DIL 2.1: OFF DIL 2.2: OFF (ajuste de fábrica)</p>	<p>Sin diagnosis: Interface de diagnóstico I/O y bits de estado desactivados</p>	<p>Tamaño del campo de datos: 8 bytes I/ 8 bytes O</p>
 <p>DIL 2.1: OFF DIL 2.2: ON</p>	<p>Bits de estado conectados</p>	<p>Tamaño del campo de datos: 16 bytes I/ 16 bytes O</p>
 <p>DIL 2.1: ON DIL 2.2: OFF</p>	<p>Interface de diagnóstico I/O conectado</p>	<p>Reservado</p>
 <p>DIL 2.1: ON DIL 2.2: ON</p>	<p>Reservado</p>	<p>Reservado</p>

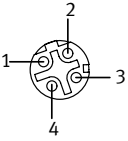
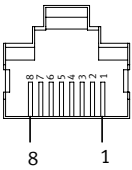
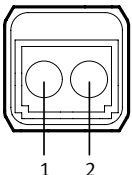


El ajuste de los interruptores DIL para el modo de funcionamiento y el modo de diagnóstico debe coincidir con la selección del nodo de bus en el marco de una configuración de hardware PLC.



Modo de funcionamiento del nodo de bus	Modo de diagnóstico [Identificación del modo]	Función adicional Fast Start-up (FSU)	Grupo de dispositivos de campo (Símbolo de estación)
Remote I/O	Sin diagnosis 1	no	CPX ¹⁾
		si, con FSU	CPX FSU ²⁾
	Bits de estado [Status] 2	no	CPX ¹⁾
		si, con FSU	CPX FSU ²⁾
	Interface de diagnóstico I/O [STI] 3	no	CPX ¹⁾
		si, con FSU	CPX FSU ²⁾
Remote Controller	n/a	n/a	CPX RC
¹⁾ CPX Rev 11 para nodo de bus con código de revisión CPX hasta Rev 11 ²⁾ Priorisierter Hochlauf, ab GSDML-Datei V. 2.2 + Rev 12			

3.3 Interface de red

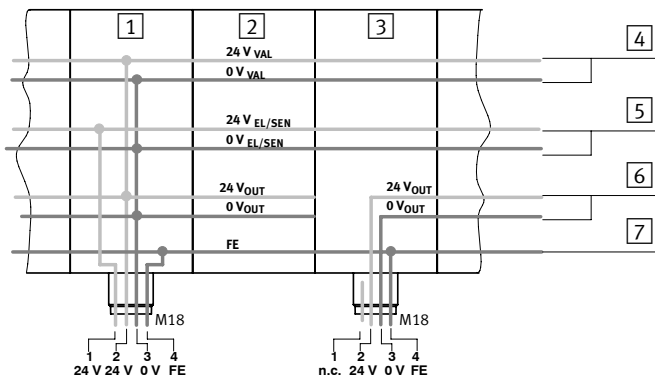
Zócalo	Pin	Señal	Explicación
M12, D-coded	CPX-FB33		
	1 2 3 4 Cuerpo	TD+ RD+ TD- RD- Shield/FE	Datos enviados + Datos recibidos + Datos enviados – Datos recibidos – Apantallamiento/Tierra funcional
RJ45, Push-Pull	CPX-M-FB34		
	1 2 3 4 5 6 7 8 Cuerpo	TD+ TD- RD+ n.c. n.c. RD- n.c. n.c. Shield/FE	Datos enviados + Datos enviados – Datos recibidos + no conectado no conectado Datos recibidos – no conectado no conectado Apantallamiento/Tierra funcional
SCRJ, Push-Pull	CPX-M-FB35		
	1 2	TX RX	Datos enviados Datos recibidos

Nodo de bus	Técnica de conexión	Conector de red
CPX-FB33	2 x M12, codif. D, hembra, de 4 contactos, conforme a norma IEC 61076-2	Conector de Festo, tipo NECU-M-S-D12G4-C2-ET
CPX-M-FB34	2 x RJ45, Push-Pull, Cu, AIDA, conforme a norma IEC 60603, IEC 61076-3	Conector de Festo, tipo FBS-RJ45-PP-GS
CPX-M-FB35	2 x SCRJ, Push-Pull, 650 nm, AIDA, conforme a norma IEC 61754-24	Conector de Festo, tipo FBS-SCRJ-PP-GS
<p>→ Internet: www.festo.com/catalogue/</p>		

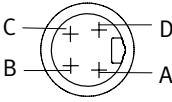
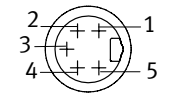
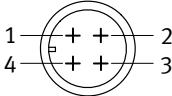
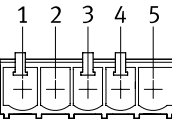
Nodo de bus + Conector de red	Especificación de cable ¹⁾
CPX-FB33 + ...D12G4...	Cable apantallado Ethernet de categoría 5 (Cat 5/Cat 5e), 6 ... 8 mm, 0,14 ... 0,75 mm ² (máximo 100 m PROFINET end-to-end link: 22 AWG)
CPX-M-FB34 + ...RJ45...	Cable apantallado Ethernet de categoría 5 (Cat 5/Cat 5e), 5 ... 8 mm, 0,13 ... 0,36 mm ² (Δ aprox. 26 ... 22 AWG) (máximo 100 m PROFINET end-to-end link: 22 AWG)
CPX-M-FB35 + ...SCRJ...	Cable de fibra óptica, POF, 980/1000 μm, 6,5 ... 9,5 mm (máximo 50 m PROFINET end-to-end link; ≤ 12,5 dB)
<p>¹⁾ Longitud según especificación para redes PROFINET → Internet: www.profinet.com, www.profibus.com/downloads</p>	

3.4 Alimentación del terminal CPX

Las tensiones de funcionamiento y de carga del terminal CPX se suministran a través de bloques de distribución. Estos conducen las tensiones de funcionamiento y de carga a los módulos vecinos.

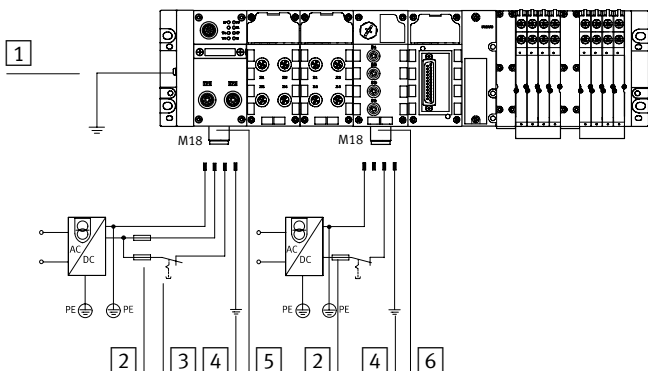


- 1 Bloque de distribución con alimentación del sistema, p. ej., tipo CPX-GE-EV-S
- 2 Bloque de distribución sin alimentación, p. ej., tipo CPX-GE-EV
- 3 Bloque de distribución con fuente de alimentación adicional, p. ej., tipo CPX-GE-EV-Z
- 4 Tensión de carga para las válvulas
- 5 Tensión de funcionamiento para electrónica y detectores
- 6 Tensión de carga para salidas digitales
- 7 Conexión de tierra (Tierra funcional, FE)

Bloque de distribución	CPX-(M-)GE- EV-S...	CPX-(M-)GE- EV-Z...	CPX-GE- EV-V...
7/8"-4PIN 	A: 24 V _{EL/SEN} B: 24 V _{VAL} /24 V _{OUT} C: FE D: 0 V _{EL/SEN} / 0 V _{VAL} /0 V _{OUT}	A: n.c. B: 24 V _{OUT} C: FE D: 0 V _{OUT}	A: n.c. B: 24 V _{VAL} C: FE D: 0 V _{VAL}
7/8"-5PIN 	1: 0 V _{VAL} /0 V _{OUT} 2: 0 V _{EL/SEN} 3: FE 4: 24 V _{EL/SEN} 5: 24 V _{VAL} /24 V _{OUT}	1: 0 V _{OUT} 2: n.c. 3: FE 4: n.c. 5: 24 V _{OUT}	–
M18 	1: 24 V _{EL/SEN} 2: 24 V _{VAL} /24 V _{OUT} 3: 0 V _{EL/SEN} / 0 V _{VAL} /0V _{OUT} 4: FE	1: n.c. 2: 24 V _{OUT} 3: 0 V _{OUT} 4: FE	1: n.c. 2: 24 V _{VAL} 3: 0 V _{VAL} 4: FE
Push-Pull 	1: 24 V _{EL/SEN} 2: 0 V _{EL/SEN} 3: 24 V _{VAL} /24 V _{OUT} 4: 0 V _{VAL} /0 V _{OUT} 5: FE	1: n.c. 2: n.c. 3: 24 V _{OUT} 4: 0 V _{OUT} 5: FE	–
V _{EL/SEN} : Tensión de funcionamiento para electrónica/detectores V _{OUT/VAL} : Tensión de carga de salidas/válvulas FE: Conexión de tierra (Tierra funcional) n.c.: libre (no conectada) A, B, C, D: Observe las indicaciones del conector.			

Ejemplo de conexión

La figura siguiente muestra como ejemplo la conexión de una fuente de alimentación del sistema y una fuente de alimentación adicional (ambas con conector M18) para salidas eléctricas.



- | | |
|---|--|
| 1 Conexión equipotencial | 5 Conexión de alimentación del sistema tipo CPX-GE-EV-S (M18) |
| 2 Fusibles externos | 6 Conexión de fuente de alimentación adicional para salidas eléctricas del tipo CPX-GE-EV-Z (M18) |
| 3 La tensión de carga de las válvulas/salidas puede desconectarse por separado | |
| 4 Conexión de tierra pin 4 (conector M18), diseñada para 16 A | |

3.5 Reacción durante el arranque del terminal CPX

Si el LED Modify (M) luce o parpadea continuamente tras el arranque del sistema, es que se ha ajustado la opción “System start with saved parametrizing and saved CPX system equipment” o se ha activado “Force”.



Atención

En el caso de terminales CPX en los que el LED M luce o parpadea permanentemente, la parametrización no será restablecida automáticamente por el sistema de orden superior si el terminal CPX ha sido reemplazado en un servicio de asistencia técnica. En estos casos, verifique antes de realizar la sustitución los ajustes que son necesarios y realícelos de nuevo tras la sustitución.



Encontrará información detallada en la descripción del nodo de bus P.BE-CPX-PNIO-....

3.6 Utilización de la tarjeta de memoria

La tarjeta de memoria sirve como soporte de datos de configuración, por ejemplo, del nombre de dispositivo del bus de campo. Ello permite cambiar de forma cómoda un nodo de bus. Información detallada para su utilización: véase P.BE-CPX-PNIO-....



Atención

Desconecte la tensión antes de extraer o insertar la tarjeta de memoria. (¡Peligro de fallo funcional o de daños!)

4 Datos técnicos

Nodo de bus CPX-(M-)-...	FB33	FB34	FB35
Datos técnicos generales	Véase la descripción del sistema CPX P.BE-CPX-SYS-...		
Clase de protección según EN 60529	IP65/67 (completamente montado)		
Protección contra descarga eléctrica según norma IEC/DIN EN 60204-1	Mediante circuito PELV (Protected Extra-Low Voltage)		
Consumo interno de corriente a 24 V de alimentación de la tensión de servicio para electrónica/detectores	120 mA	120 mA	150 mA (electrónica interna)
Aislamiento galvánico Interfaces PROFINET para $V_{EL/SEN}$	Con aislamiento galvánico (1500 V)		
Código de módulo (específico de CPX) – Remote I/O – Remote Controller	215 164	216 165	217 166
Identificador del módulo – Remote I/O – Remote Controller	FB3x-RIO FB3x-RC	ProfiNet (RJ45/FO) Remote I/O ProfiNet (RJ45/FO) I/O bus node	
PROFINET – Protocolo – Especificación	PROFINET IO RT (PNIO RT) Ethernet industrial basada en IEEE 802.3; véase también directiva de instalación PROFINET, http://www.profinet.com ; Switched Fast Ethernet, 100 Mbit/s, Auto-MDI		

1 Instructions d'utilisation

Les noeuds de bus CPX-FB33, CPX-M-FB34 et CPX-M-FB35 pour les terminaux CPX doivent être utilisés uniquement en tant qu'abonnés (I/O Device) au niveau du système Industrial Ethernet PROFINET IO.

Les valeurs limites indiquées concernant les caractéristiques techniques doivent être respectées. Pour de plus amples informations, se reporter à la description du nœud de bus P.BE-CPX-PNIO-... ainsi qu'à la description du système CPX P.BE-CPX-SYS-...



Avertissement

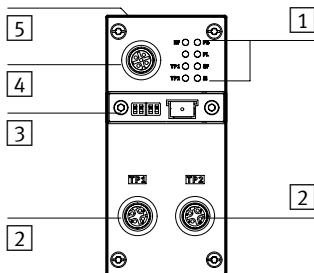
- Couper l'alimentation électrique avant de monter ou de démonter les modules ou bien de séparer ou d'enficher l'un dans l'autre les connecteurs à pousser (risque de dysfonctionnements ou d'endommagements).
- Utiliser exclusivement des sources de courant garantissant une isolation électrique sûre de la tension de service conformément à la norme CEI/DIN EN 60204-1. Observer également les exigences générales s'appliquant aux circuits électriques TBTS selon CEI/DIN EN 60204-1.
- Brancher un conducteur de terre ayant une section suffisante sur le branchement du terminal CPX identifié par le symbole de terre.
- Le nœud de bus CPX comporte des composants sensibles aux charges électrostatiques. Il ne faut donc pas toucher ces composants. Respecter les consignes concernant la manipulation des composants sensibles aux charges électrostatiques.



Nota

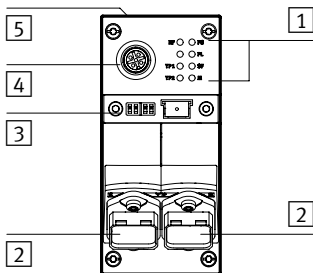
Mettre le terminal CPX en service uniquement lorsque le montage et le raccordement sont complètement terminés.

2 Organes de signalisation et de connexion



CPX-FB33

- 1 DEL d'état combinées au réseau et spécifiques au CPX
- 2 Raccordement au réseau
FB33: 2x M12, codé D, 4 pôles
FB34: 2x RJ45, Push-Pull, Cu
FB35: 2x SCRJ, Push-Pull



CPX-M-FB34 / CPX-M-FB35

- 3 Obturateur pour micro-interrupteur DIL + carte mémoire
- 4 Interface de service pour console manuelle CPX-MMI + CPX-FMT
- 5 Plaquette indicatrice MAC-ID + CPX Revision Code

DEL d'état combinées au réseau		DEL spécifiques au CPX ³⁾	
NF	Erreur réseau (rouge) ¹⁾	PS	Power System (verte)
-	-	PL	Power Load (verte)
TP1	Link/Traffic 1 (verte) ²⁾	SF	System Failure (rouge) ⁴⁾
TP2	Link/Traffic 2 (verte) ²⁾	M	Modify (jaune) ⁵⁾

1) Erreur de réseau : clignote s'il n'existe aucune liaison PROFINET
 2) Connexion au réseau ou trafic des données au niveau de TP1 ou TP2
 3) Informations détaillées : Voir description du système CPX P.BE-CPX-SYS-..., description des nœuds de bus P.BE-CPX-PNIO...
 4) Clignote en cas d'erreur, diagnostic à l'aide du n° d'erreur. (voir P.BE-CPX-SYS-...)
 5) Paramétrage modifié ou forçage actif

Etat de fonctionnement normal :

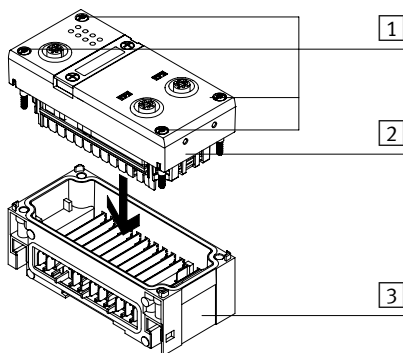
Les DEL vertes PS et PL s'allument, la DEL TP1 ou TP2 s'allume ou clignote (lorsque l'interface est utilisée); les DEL rouges NF et SF s'allument ou ne clignotent pas.

3 Instructions d'installation

3.1 Montage

Le noeud de bus est monté dans un module d'interconnexion du terminal CPX.

- 1 Vis,
couple de serrage
0,9 ... 1,1 Nm
- 2 Noeud de bus CPX
- 3 Module d'inter-
connexion avec rails
conducteurs





Avertissement

Couper l'alimentation électrique avant de monter ou de démonter le noeud de bus (risque de dysfonctionnements ou d'endommagements).

Démontage :

- Desserrer les vis et enlever le nœud de bus avec précaution.

Montage :

1. Vérifier le joint et les surfaces d'étanchéité puis remettre en place le bloc de connexion.
2. Positionner les vis de manière à utiliser les pas du filet existants. Serrer les vis à la main en diagonale.

Couple de serrage 0,9 ... 1,1 Nm.



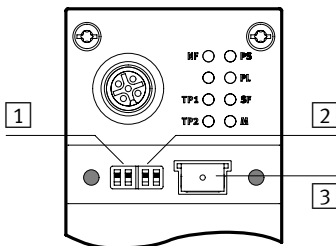
Nota

En cas de combinaison de blocs de connexion et de modules d'interconnexion en métal sur plastique ou en plastique sur métal, utiliser toujours les vis adaptées pour le **module d'interconnexion** :



- pour les modules d'interconnexion en plastique, les vis auto-taraudeuses
- pour les modules d'interconnexion en métal, les vis avec un filetage métrique

3.2 Réglage des micro-interrupteurs DIL





- 1 Micro-interrupteur
DIL 1.1 + 1.2 : Mode de
fonctionnement
- 2 Micro-interrupteur
DIL 2.1 + 2.2 : Mode de
diagnostic (uniquement
mode de fonctionnement
Remote I/O); Dimension
des champs de données
(uniquement mode de
fonctionnement Remote
Controller)
- 3 Carte mémoire
(voir paragraphe 3.6)



Régler le mode de fonctionnement avec le micro-interrupteur DIL 1 :

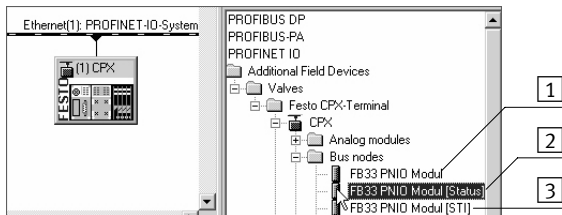
Micro-interrupteur 1	Fonction
 <p>DIL 1.1: OFF DIL 1.2: OFF (réglage à l'usine)</p>	<p>Mode de fonctionnement Remote I/O</p> <p>Toutes les fonctions du terminal CPX sont pilotées directement par le contrôleur PROFINET IO.</p>
 <p>DIL 1.1: ON DIL 1.2: OFF</p>	<p>Mode de fonctionnement Remote Controller</p> <p>Le CPX-FEC assure l'automate E/S. (Uniquement envisageable si un FEC est intégré au terminal CPX.)</p>

Uniquement en mode de fonctionnement Remote I/O:
Régler le mode de diagnostic avec le micro-interrupteur
DIL [2] (voir aussi les informations supplémentaires à la
page suivante) :

Micro-interrupteur [2]	Fonction	
	Remote I/O	Remote Controller
 <p>DIL 2.1: OFF DIL 2.2: OFF (réglage à l'usine)</p>	<p>Sans diagnostic: Bits d'état ou interface de diagnostic E/S désactivés</p>	<p>Dimension des champs de données: 8 octets E/ 8 octets S</p>
 <p>DIL 2.1: OFF DIL 2.2: ON</p>	<p>Les bits d'état sont activés</p>	<p>Dimension des champs de données: 16 octets E/ 16 octets S</p>
 <p>DIL 2.1: ON DIL 2.2: OFF</p>	<p>L'interface de diagnostic E/S est activée</p>	<p>Réservé</p>
 <p>DIL 2.1: ON DIL 2.2: ON</p>	<p>Réservé</p>	<p>Réservé</p>

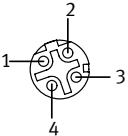
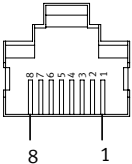
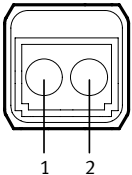


Le réglage du micro-interrupteur DIL pour le mode de fonctionnement et le mode de diagnostic doit correspondre à la sélection de nœud de bus dans le cadre d'une configuration du matériel API.



Mode de fonctionnement du nœud de bus	Mode diagnostic [Identification de mode]	Fonction aditionnelle Fast Start-up (FSU)	Groupe d'appareils de terrain (L'icône de station)
Remote I/O	Sans diagnostic [1]	non	CPX ¹⁾
		oui, avec FSU	CPX FSU ²⁾
	Bits d'état [Status] [2]	non	CPX ¹⁾
		oui, avec FSU	CPX FSU ²⁾
	Interface de diagnostic [STI] [3]	non	CPX ¹⁾
		oui, avec FSU	CPX FSU ²⁾
Remote Controller	n/a	n/a	CPX RC
¹⁾ CPX Rev 11 pour nœud de bus avec code de révision CPX jusqu'à Rev 11 ²⁾ Boot prioritaire, à partir du fichier GSDML V2.2 + Rev 12			

3.3 Interface de réseau

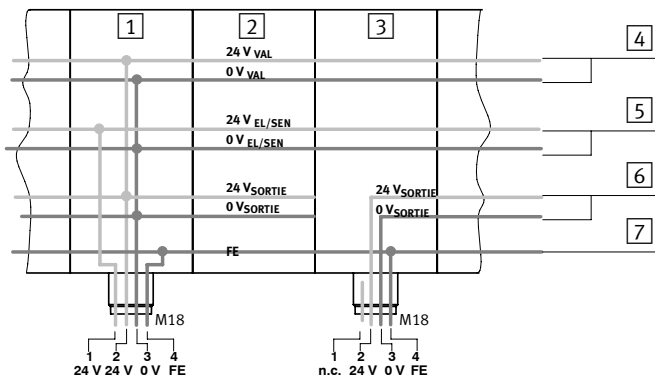
Connecteur femelle	Broche	Signal	Commentaire
M12, D-coded	CPX-FB33		
	1 2 3 4 Boîtier	TD+ RD+ TD- RD- Shield/FE	Données émises + Données reçues + Données émises – Données reçues – Blindage/Terre du système
RJ45, Push-Pull	CPX-M-FB34		
	1 2 3 4 5 6 7 8 Boîtier	TD+ TD- RD+ n.c. n.c. RD- n.c. n.c. Shield/FE	Données émises + Données émises – Données reçues + non connecté non connecté Données reçues – non connecté non connecté Blindage/Terre du système
SCRJ, Push-Pull	CPX-M-FB35		
	1 2	TX RX	Données émises Données reçues

Nœud de bus	Technique de connexion	Connecteur réseau
CPX-FB33	2 x M12, codage D, femelles, 4 pôles, selon CEI 61076-2	Connecteur Festo, type NECU-M-S-D12G4-C2-ET
CPX-M-FB34	2 x RJ45, Push-Pull, cuivre, conformes AIDA, selon CEI 60603, CEI 61076-3	Connecteur Festo, type FBS-RJ45-PP-GS
CPX-M-FB35	2 x SCRJ, Push-Pull, 650 nm, conformes AIDA, selon CEI 61754-24	Connecteur Festo, type FBS-SCRJ-PP-GS
<p>➔ Internet: www.festo.com/catalogue/</p>		

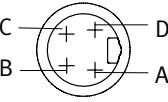
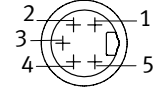
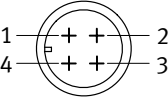
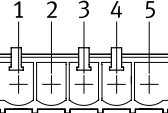
Nœud de bus + Connecteur réseau	Spécification du câble ¹⁾
CPX-FB33 + ...D12G4...	Câble Ethernet, blindé, catégorie 5 (Cat 5/Cat 5e), 6 ... 8 mm, 0,14 ... 0,75 mm ² (max. 100 m de longueur de liaison PROFINET end-to-end link: 22 AWG)
CPX-M-FB34 + ...RJ45...	Câble Ethernet, blindé, catégorie 5 (Cat 5/Cat 5e), 5 ... 8 mm, 0,13 ... 0,36 mm ² (Δ env. 26 ... 22 AWG) (max. 100 m PROFINET end-to-end link: 22 AWG)
CPX-M-FB35 + ...SCRJ...	Fibre optique câble, POF, 980/1000 μm, 6,5 ... 9,5 mm (max. 50 m PROFINET end-to-end link; ≤ 12,5 dB)
<p>¹⁾ Longueur correspondant aux spécifications relatives aux réseaux PROFINET ➔ Internet: www.profinet.com, www.profibus.com/downloads</p>	

3.4 Alimentation électrique du terminal CPX

L'alimentation principale et des sorties du terminal CPX est réalisée via des modules d'interconnexion. Ceux-ci transmettent la tension de service et la tension sous charge aux modules avoisinants.

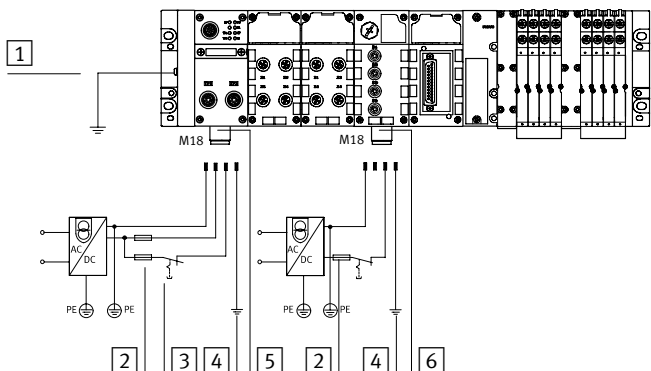


- | | | | |
|----------|--|----------|--|
| 1 | Module d'interconnexion avec alimentation du système p. ex. type CPX-GE-EV-S | 4 | Tension sous charge pour les distributeurs |
| 2 | Module d'interconnexion sans alimentation du système p. ex. type CPX-GE-EV | 5 | Tension de service pour l'électronique et les capteurs |
| 3 | Module d'interconnexion avec alimentation auxiliaire p. ex. type CPX-GE-EV-Z | 6 | Tension sous charge pour les sorties TOR |
| | | 7 | Borne de terre (Terre du système, FE) |

Module d'interconnexion	CPX-(M-)GE-EV-S...	CPX-(M-)GE-EV-Z...	CPX-GE-EV-V...
7/8"-4POL 	A: 24 V _{EL/SEN} B: 24 V _{VAL} /24 V _{OUT} C: FE D: 0 V _{EL/SEN} / 0 V _{VAL} /0 V _{OUT}	A: n.c. B: 24 V _{OUT} C: FE D: 0 V _{OUT}	A: n.c. B: 24 V _{VAL} C: FE D: 0 V _{VAL}
7/8"-5POL 	1: 0 V _{VAL} /0 V _{OUT} 2: 0 V _{EL/SEN} 3: FE 4: 24 V _{EL/SEN} 5: 24 V _{VAL} /24 V _{OUT}	1: 0 V _{OUT} 2: n.c. 3: FE 4: n.c. 5: 24 V _{OUT}	–
M18 	1: 24 V _{EL/SEN} 2: 24 V _{VAL} /24 V _{OUT} 3: 0 V _{EL/SEN} / 0 V _{VAL} /0 V _{OUT} 4: FE	1: n.c. 2: 24 V _{OUT} 3: 0 V _{OUT} 4: FE	1: n.c. 2: 24 V _{VAL} 3: 0 V _{VAL} 4: FE
Push-Pull 	1: 24 V _{EL/SEN} 2: 0 V _{EL/SEN} 3: 24 V _{VAL} /24 V _{OUT} 4: 0 V _{VAL} /0 V _{OUT} 5: FE	1: n.c. 2: n.c. 3: 24 V _{OUT} 4: 0 V _{OUT} 5: FE	–
V _{EL/SEN} : tension de service électronique/capteurs V _{OUT/VAL} : tension sous charge sorties/distributeurs FE: borne de terre (terre du système) n.c.: libre (non connectée) A, B, C, D : Respecter les indications sur le connecteur mâle.			

Exemple de branchement

La figure suivante montre à titre d'exemple le branchement en cas d'utilisation d'une alimentation du système et d'une alimentation auxiliaire (chacune avec un connecteur mâle M18) pour les sorties électriques.



- | | |
|--|--|
| 1 Liaison équipotentielle | 5 Branchement de l'alimentation du système, type CPX-GE-EV-S (M18) |
| 2 Fusibles externes | 6 Branchement de l'alimentation auxiliaire pour sorties électriques, type CPX-GE-EV-Z (M18) |
| 3 L'alimentation des distributeurs/sorties peut être coupée séparément | |
| 4 Borne de terre pour la broche 4 (connecteur mâle M18), prévue pour 16 A | |

3.5 Comportement au démarrage du terminal CPX

Si la DEL Modify (M) reste allumée ou clignote en permanence après le démarrage du système, alors le réglage « démarrage du système avec paramétrage enregistré et structure CPX enregistrée » et le « forçage » sont activés.



Attention

Sur les terminaux CPX sur lesquels la DEL M est allumée en permanence ou clignote, le paramétrage n'est pas effectué automatiquement par le système du niveau supérieur, lors de l'échange du terminal CPX. Dans ce cas, vérifier avant l'échange quels réglages sont nécessaires et les rétablir après l'échange.



Pour plus de détails, se reporter à la description du nœud de bus P.BE-CPX-PNIO-...

3.6 Utilisation de la carte mémoire

La carte mémoire sert de support de données de configuration, p. ex. pour le nom de l'appareil de bus de terrain. Le nœud de bus peut être ainsi échangé facilement. Informations détaillées concernant l'utilisation : voir P.BE-CPX-PNIO-....



Attention

Couper la tension avant de retirer ou de brancher la carte mémoire (risque de dysfonctionnements ou d'endommagements).

4 Caractéristiques techniques

Nœud de bus CPX-(M)-...	FB33	FB34	FB35
Caractéristiques techniques générales	Voir description du système CPX P.BE-CPX-SYS-...		
Indice de protection selon EN 60529	IP65/IP67 (entièrement monté)		
Protection contre l'électrocution selon la norme CEI/DIN EN 60204-1	Via le circuit électrique PELV (très basse tension de sécurité)		
Consommation interne à 24 V à partir de l'alimentation de l'électronique/des capteurs ($V_{EL/SEN}$)	120 mA	120 mA	150 mA (électronique interne)
Isolation galvanique Interfaces PROFINET vers $V_{EL/SEN}$	avec isolation galvanique (1500 V)		
Code du module (spécifique CPX)			
– Remote I/O	215	216	217
– Remote Controller	164	165	166
Identificateur de module			
– Remote I/O	FB3x-RIO	ProfiNet (RJ45/FO) Remote I/O	
– Remote Controller	FB3x-RC	ProfiNet (RJ45/FO) I/O bus node	
PROFINET			
– Protocole	PROFINET IO RT (PNIO RT)		
– Spécification	Industrial Ethernet en référence à IEEE 802.3 ; voir aussi directives d'installation PROFINET ; http://www.profinet.com ; Switched Fast Ethernet, 100 Mbit/s, Auto-MDI		

1 Indicazioni per l'utente

I nodi bus CPX-FB33, CPX-M-FB34 e CPX-M-FB35 per terminali CPX sono destinati ad essere utilizzati esclusivamente come utenze (I/O Device) del sistema Industrial Ethernet PROFINET IO.

A questo proposito osservare i valori limite specificati nei dati tecnici. Per informazioni dettagliate fare riferimento alla descrizione del nodo bus P.BE-CPX-PNIO-... nonché alla descrizione del sistema CPX P.BE-CPX-SYS-...



Avvertenza

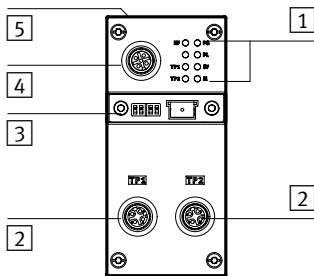
- Disinserire l'alimentazione di tensione prima di montare o smontare i moduli ovvero prima di collegare o scollegare i connettori (rischio di irregolarità di funzionamento o di danneggiamento).
- Utilizzare esclusivamente delle sorgenti di energia in grado di garantire un isolamento elettrico sicuro della tensione di esercizio conformemente a IEC/DIN EN 60204-1. Rispettare inoltre i requisiti generali previsti per i circuiti elettrici PELV dalle norme IEC/DIN EN 60204-1.
- Collegare un conduttore di massa con diametro del cavo sufficiente all'attacco del terminale CPX contraddistinto dal simbolo di terra.
- Il nodo bus CPX contiene elementi sensibili alle cariche elettrostatiche. Pertanto non toccare tali componenti. Attenersi alle prescrizioni di impiego dei componenti sensibili alle correnti elettrostatiche.



Nota

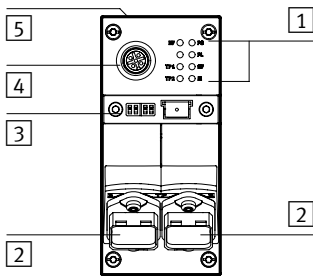
Utilizzare solamente un terminale CPX completamente assemblato e cablato.

2 Elementi di connessione e segnalazione



CPX-FB33

- 1 LED di stato della rete e LED specifici per CPX
- 2 Attacco di rete
 FB33: 2x M12, codifica D, 4poli
 FB34: 2x RJ45, Push-Pull, rame
 FB35: 2x SCRJ, Push-Pull



CPX-M-FB34 / CPX-M-FB35

- 3 Placchetta di copertura degli interruttori DIL + scheda di memoria
- 4 Interfaccia di servizio per handheld CPX-MMI + CPX-FMT
- 5 Targhetta di identificazione con MAC-ID + CPX Revision Code

LED di stato della rete		LED specifici per CPX ³⁾	
NF	Network Failure (rosso) ¹⁾	PS	Power System (verde)
-	-	PL	Power Load (verde)
TP1	Link/Traffic 1 (verde) ²⁾	SF	System Failure (rosso) ⁴⁾
TP2	Link/Traffic 2 (verde) ²⁾	M	Modify (giallo) ⁵⁾

1) Errore di rete: lampeggia in assenza di collegamento PROFINET
 2) Collegamento in rete o traffico di dati su TP1 o TP2
 3) Informazioni dettagliate: vedi descrizione del sistema CPX P.BE-CPX-SYS-..., descrizione dei nodi bus P.BE-CPX-PNIO...
 4) Lampeggia in caso di errore, diagnosi mediante numero di errore (vedi P.BE-CPX-SYS-...)
 5) Parametrizzazione modificata o Forcen attivata

Condizioni di funzionamento normali:

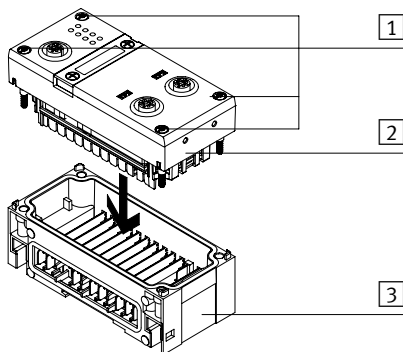
LED PS e PL illuminati in verde, LED TP1 o TP2 acceso o lampeggiante (con interfaccia in uso); LED rossi NF e SF spenti o non lampeggianti.

3 Indicazioni per installazione

3.1 Montaggio

Il nodo bus è installato in una sottobase di collegamento elettrico del terminale CPX.

- 1 Viti,
coppia di serraggio
0,9 ... 1,1 Nm
- 2 Nodo Fieldbus CPX
- 3 Sottobase di collega-
mento elettrico con
barre conduttrici





Avvertenza

Disinserire l'alimentazione di tensione prima di montare o smontare i nodi bus (rischio di irregolarità di funzionamento o di danneggiamento).

Smontaggio

- Togliere le viti e sollevare delicatamente i nodi bus.

Montaggio

1. Controllare la guarnizione e le superfici di tenuta, quindi risistemare correttamente il blocco di collegamento.
2. Per il serraggio delle viti utilizzare solo il filetto già presente. Serrare manualmente le viti operando in diagonale.

Coppia di serraggio: 0,9 ... 1,1 Nm.



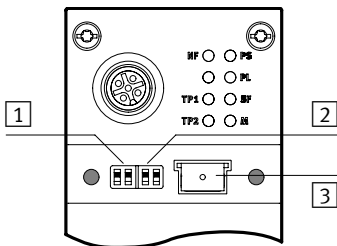
Nota

In una combinazione di blocchi di collegamento e sottobasi di collegamento elettrico in metallo su plastica ovvero in plastica su metallo utilizzare in linea di massima le apposite viti per la **sottobase di collegamento elettrico**:



- viti con maschiatura a deformazione per sottobasi di collegamento elettrico in plastica
- viti con filettatura metrica per sottobasi di collegamento elettrico in metallo

3.2 Impostazione degli interruttori DIL





- 1 Interruttore DIL 1.1 + 1.2:
Modo operativo
- 2 Interruttore DIL 2.2 + 2.2:
Modalità di diagnosi
(solo in modo operativo
Remote I/O);
Grandezza di campo dati
(solo in modo operativo
Remote Controller)
- 3 Scheda di memoria
(vedi punto 3.6)



Impostare il modo operativo con l'interruttore DIL 1:

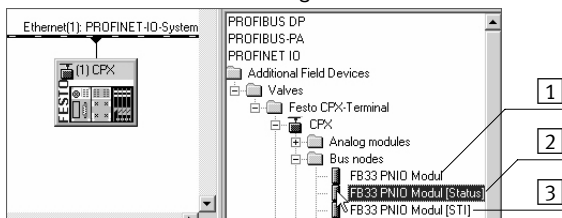
Interruttore DIL 1	Funzionamento
 <p>DIL 1.1: OFF DIL 1.2: OFF (impostazione di fabbrica)</p>	<p>Modo operativo Remote I/O Tutte le funzioni del terminale CPX sono azionate direttamente dal controller PROFINET IO.</p>
 <p>DIL 1.1: ON DIL 1.2: OFF</p>	<p>Modo operativo Remote Controller Il CPX-FEC svolge la funzione di controllo degli I/O. (Ha un senso solo se nel terminale CPX è integrata una FEC).</p>

Solo in modo operativo Remote I/O:
 Impostare la modalità di diagnosi con l'interruttore DIL 2
 (sull'argomento vedi anche le informazioni complementari
 alla pagina seguente):

Interruttore DIL 2	Funzionamento	
	Remote I/O	Remote Controller
 <p>DIL 2.1: OFF DIL 2.2: OFF (impostazione di fabbrica)</p>	<p>Senza diagnosi: L'interfaccia diagnostica I/O e i bit di stato sono disattivati</p>	<p>Grandezza di campo dati: 8 byte I/ 8 byte O</p>
 <p>DIL 2.1: OFF DIL 2.2: ON</p>	<p>1 bit di stato sono attivati</p>	<p>Grandezza di campo dati: 16 byte I/ 16 byte O</p>
 <p>DIL 2.1: ON DIL 2.2: OFF</p>	<p>L'interfaccia diagnostica I/O è attivata</p>	<p>Riservato</p>
 <p>DIL 2.1: ON DIL 2.2: ON</p>	<p>Riservato</p>	<p>Riservato</p>



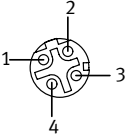
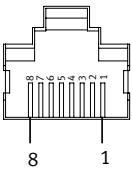
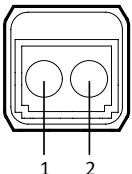
L'impostazione dell'interruttore DIL per il modo operativo e per la modalità di diagnosi deve corrispondere alla selezione dei nodi bus nell'ambito di una configurazione dell'hardware PLC.



Modo operativo del nodo bus	Modo diagnostico Identificazione del modo	Funzione supplementare Fast Start-up	Gruppo di unità di campo (icona della stazione)
Remote I/O	Senza diagnosi 1	no	CPX ¹⁾
		sì, con FSU	CPX FSU ²⁾
	Bit di stato [Status] 2	no	CPX ¹⁾
		sì, con FSU	CPX FSU ²⁾
	Interfaccia diagnostica I/O [STI] 3	no	CPX ¹⁾
		sì, con FSU	CPX FSU ²⁾
Remote Controller	n/a	n/a	CPX RC

1) **CPX Rev 11** per nodo bus con codice di revisione CPX fino a Rev 11
2) Accelerazione prioritaria, dal file GSDML v. 2.2 + Rev 12

3.3 Interfaccia di rete

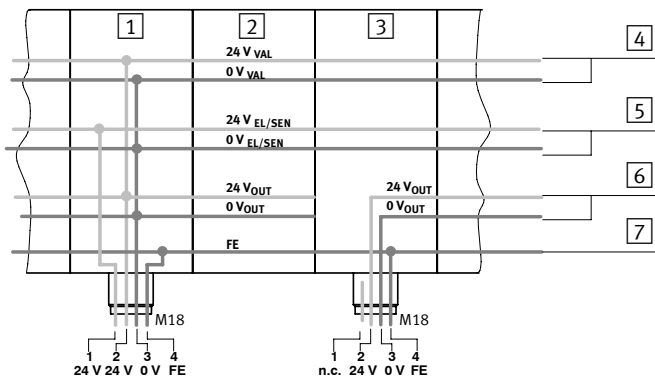
Connettore femmina	Pin	Segnale	Spiegazione
M12, codifica D	CPX-FB33		
	1 2 3 4 Corpo	TD+ RD+ TD- RD- Shield/FE	Dati di trasmissione + Dati di ricezione + Dati di trasmissione - Dati di ricezione - Schermo/Messa a terra
RJ45, Push-Pull	CPX-M-FB34		
	1 2 3 4 5 6 7 8 Corpo	TD+ TD- RD+ n.c. n.c. RD- n.c. n.c. Shield/FE	Dati di trasmissione + Dati di trasmissione - Dati di ricezione + non collegato non collegato Dati di ricezione - non collegato non collegato Schermo/Messa a terra
SCRJ, Push-Pull	CPX-M-FB35		
	1 2	TX RX	Dati di trasmissione Dati di ricezione

Nodi bus	Sistema di connessione	Connettori di rete
CPX-FB33	2 x M12, codifica D, femmina, a 4 poli, secondo IEC 61076-2	Connettore Festo, tipo NECU-M-S-D12G4-C2-ET
CPX-M-FB34	2 x RJ45, Push-Pull, rame, AIDA, secondo IEC 60603, IEC 61076-3	Connettore Festo, tipo FBS-RJ45-PP-GS
CPX-M-FB35	2 x SCRJ, Push-Pull, 650 nm, AIDA, secondo IEC 61754-24	Connettore Festo, tipo FBS-SCRJ-PP-GS
<p>➔ Internet: www.festo.com/catalogue/</p>		

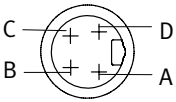
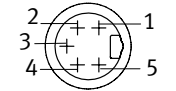
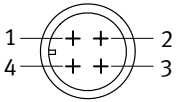
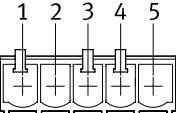
Nodi bus + Connettori di rete	Specifiche delle linee ¹⁾
CPX-FB33 + ...D12G4...	Cavo Ethernet, schermato, Cat 5/Cat 5e, 6 ... 8 mm, 0,14 ... 0,75 mm ² (max. 100 m PROFINET end-to-end link: 22 AWG)
CPX-M-FB34 + ...RJ45...	Cavo Ethernet, schermato, Cat 5/Cat 5e, 5 ... 8 mm, 0,13 ... 0,36 mm ² (Δ ca. 26 ... 22 AWG) (max. 100 m PROFINET end-to-end link: 22 AWG)
CPX-M-FB35 + ...SCRJ...	Cavo a fibre ottiche, POF, 980/1000 μm, 6,5 ... 9,5 mm (max. 50 m PROFINET end-to-end link; ≤ 12,5 dB)
<p>¹⁾ Lunghezza secondo specifica per reti PROFINET ➔ Internet: www.profinet.com, www.profibus.com/downloads</p>	

3.4 Alimentazione di tensione del terminale CPX

L'alimentazione della tensione di esercizio e della tensione di carico al terminale CPX viene assicurata attraverso le sottobasi. Esse conducono la tensione di esercizio e di carico ai moduli adiacenti.

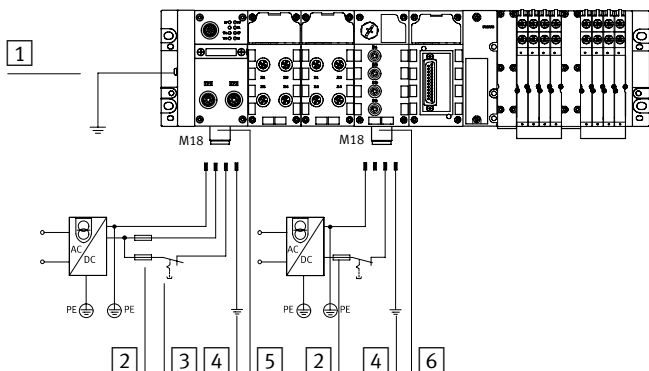


- | | | | |
|----------|--|----------|--|
| 1 | Sottobase di collegamento elettrico con alimentazione del sistema, ad es. tipo CPX-GE-EV-S | 4 | Tensione di carico per le valvole |
| 2 | Sottobase di collegamento elettrico senza alimentazione, ad es. tipo CPX-GE-EV | 5 | Tensione d'esercizio per l'elettronica e i sensori |
| 3 | Sottobase di collegamento elettrico con alimentazione supplementare, ad es. tipo CPX-GE-EV-Z | 6 | Tensione di carico per le uscite digitali |
| | | 7 | Collegamento a terra (Messa a terra, FE) |

Connettore alla sottobase di concatenamento	CPX-(M-)GE-EV-S...	CPX-(M-)GE-EV-Z...	CPX-GE-EV-V...
7/8" 4 POLI 	A: 24 V _{EL/SEN} B: 24 V _{VAL} /24 V _{OUT} C: FE D: 0 V _{EL/SEN} / 0 V _{VAL} /0 V _{OUT}	A: n.c. B: 24 V _{OUT} C: FE D: 0 V _{OUT}	A: n.c. B: 24 V _{VAL} C: FE D: 0 V _{VAL}
7/8" 5 POLI 	1: 0 V _{VAL} /0 V _{OUT} 2: 0 V _{EL/SEN} 3: FE 4: 24 V _{EL/SEN} 5: 24 V _{VAL} /24 V _{OUT}	1: 0 V _{OUT} 2: n.c. 3: FE 4: n.c. 5: 24 V _{OUT}	–
M18 	1: 24 V _{EL/SEN} 2: 24 V _{VAL} /24 V _{OUT} 3: 0 V _{EL/SEN} / 0 V _{VAL} /0 V _{OUT} 4: FE	1: n.c. 2: 24 V _{OUT} 3: 0 V _{OUT} 4: FE	1: n.c. 2: 24 V _{VAL} 3: 0 V _{VAL} 4: FE
Push-Pull 	1: 24 V _{EL/SEN} 2: 0 V _{EL/SEN} 3: 24 V _{VAL} /24 V _{OUT} 4: 0 V _{VAL} /0 V _{OUT} 5: FE	1: n.c. 2: n.c. 3: 24 V _{OUT} 4: 0 V _{OUT} 5: FE	–
V _{EL/SEN} : Tensione d'esercizio sistema elettronico/sensori V _{OUT/VAL} : Tensione di carico uscite/valvole FE: Collegamento a terra (connessione messa a terra) n.c.: libero (non collegato) A, B, C, D: Osservare le indicazioni sul connettore.			

Esempio di collegamento

L'immagine seguente illustra un esempio di collegamento in caso di impiego di un modulo di alimentazione del sistema e di un modulo di alimentazione supplementare (sempre con connettore M18) per le uscite elettriche.



- 1 Compensazione del potenziale
- 2 Fusibili esterni
- 3 L'alimentazione di carico alle valvole/uscite può essere disinserita separatamente.
- 4 Connessione messa a terra pin 4 (connettore M18), predisposto per 16 A
- 5 Collegamento del modulo di alimentazione del sistema tipo CPX-GE-EV-S (M18)
- 6 Collegamento del modulo di alimentazione supplementare per le uscite elettriche tipo CPX-GE-EV-Z (M18)

3.5 Comportamento del terminale CPX all'avviamento

Se all'avviamento del sistema il LED Modify (M) si accende o lampeggia costantemente, ciò significa che è impostata l'opzione "Start del sistema con parametrizzazione e struttura CPX memorizzate" ovvero "Forcing" attivato.



Attenzione

Nei terminali CPX, nei quali il LED M si accende o lampeggia costantemente, la parametrizzazione non viene ripristinata automaticamente dal sistema di gestione in caso di sostituzione del terminale CPX durante un intervento del servizio di assistenza. In tal caso verificare, prima della sostituzione, quali sono le impostazioni richieste e ripristinarle a sostituzione avvenuta.



Per istruzioni dettagliate fare riferimento alla descrizione dei nodi bus P.BE-CPX-PNIO-... .

3.6 Utilizzo della scheda di memoria

La scheda di memoria serve da supporto per i dati di configurazione, ad es. nome dell'apparecchio Fieldbus. Ciò consente di sostituire agevolmente un nodo bus. Per informazioni dettagliate sull'utilizzo: vedi P.BE-CPX-PNIO-... .



Attenzione

Disinserire l'alimentazione prima di estrarre o inserire la scheda di memoria (rischio di irregolarità di funzionamento o di danneggiamento).

4 Dati tecnici

Nodi Fieldbus CPX-(M)-...	FB33	FB34	FB35
Dati tecnici generali	fare riferimento alla descrizione del sistema CPX P.BE-CPX-SYS-...		
Grado di protezione mediante il corpo secondo EN 60529	IP65/IP67 (completamente assemblata)		
Garantire la protezione contro le scosse elettriche secondo IEC/DIN EN 60204-1	mediante circuito elettrico PELV (Protected Extra-Low Voltage)		
Assorbimento elettrico interno a 24 V dell'alimentazione della tensione d'esercizio elettronica/sensori	120 mA	120 mA	150 mA (componenti elettronici interni)
Isolamento galvanico Interfaccia PROFINET per $V_{EL/SEN}$	con isolamento galvanico (1500 V)		
Codice del modulo (specifico CPX) – Remote I/O – Remote Controller	215 164	216 165	217 166
Sigla del modulo – Remote I/O – Remote Controller	FB3x-RIO FB3x-RC	ProfiNet (RJ45/FO) Remote I/O ProfiNet (RJ45/FO) I/O bus node	
PROFINET – Protocollo – Specifiche	PROFINET IO RT (PNIO RT) Industrial Ethernet in conformità alla norma IEEE 802.3; vedi anche PROFINET Istruzioni per l'installazione, http://www.profinet.com ; Switched Fast Ethernet, 100 Mbit/s, Auto-MDI		

1 Användarinformation

Bussnoderna CPX-FB33, CPX-M-FB34 och CPX-M-FB35 för CPX-terminaler får bara användas som deltagare (I/O Device) i det industriella ethernet-systemet PROFINET IO.

Följ de gränsvärden som anges under Tekniska data. Ytterligare information finns i manualen till bussnoden P.BE-CPX-PNIO-... samt i CPX-systemmanualen P.BE-CPX-SYS-...



Varning

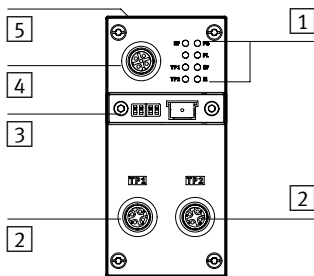
- Koppla från spänningen innan moduler monteras eller demonteras och innan kontaktdon ansluts eller dras ut (risk för funktionsfel eller skador).
- Använd endast strömkällor som garanterar en säker isolering av matningsspänningen enligt IEC/DIN EN 60204-1. Observera dessutom de allmänna kraven på PELV-strömkretsar enligt IEC/DIN EN 60204-1.
- Anslut en jordledare med tillräcklig kabelarea till den anslutning på CPX-terminalen som är märkt med jordningssymbolen.
- CPX-bussnoden innehåller elektrostatiskt känsliga komponenter. Vidrör därför inga komponenter. Följ hanteringsföreskrifterna för elektrostatiskt känsliga komponenter.



Information

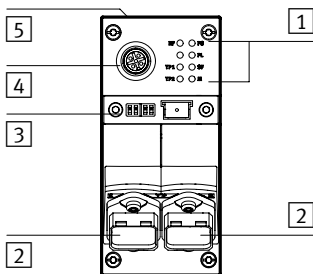
Ta endast en komplett monterad och ansluten CPX-terminal i drift.

2 Anslutnings- och indikeringslement



CPX-FB33

- 1 Nätverksstatus- och CPX-specifika lysdioder
- 2 Nätverksanslutning:
FB33: 2x M12, D-kodad, 4-pol.
FB34: 2x RJ45, Push-Pull, Cu
FB35: 2x SCRJ, Push-Pull



CPX-M-FB34 / CPX-M-FB35

- 3 Skydd för DIL-omkopplare + minneskort
- 4 Servicegränssnitt för handterminal CPX-MMI + CPX-FMT
- 5 Typskylt med MAC ID + CPX Revision Code

Lysdioder för nätverksstatus		CPX-specifika lysdioder ³⁾	
NF	Network Failure (röd) ¹⁾	PS	Power System (grön)
-	-	PL	Power Load (grön)
TP1	Link/Traffic 1 (grön) ²⁾	SF	System Failure (röd) ⁴⁾
TP2	Link/Traffic 2 (grön) ²⁾	M	Modify (gul) ⁵⁾

1) Nätverksfel: blinkar när det inte finns någon PROFINET-anslutning
 2) Nätverksanslutning eller dataöverföring till TP1 eller TP2
 3) Detaljerad information: Se CPX-systemmanualen P.BE-CPX-SYS-..., bussnodmanualen P.BE-CPX-PNIO...
 4) Blinkar vid fel, diagnos med felnummer (se P.BE-CPX-SYS-...)
 5) Parameterinställning ändrad eller tvångsstyrning aktiv

Normalt driftläge:

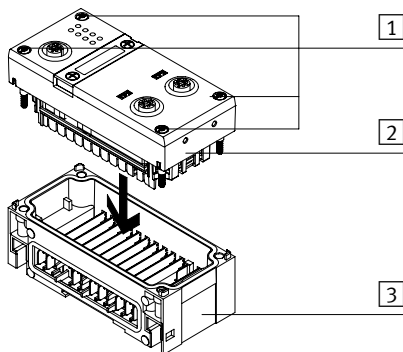
Lysdioderna PS och PL lyser grönt, lysdioden TP1 eller TP2 lyser eller blinkar (när gränssnitt används); de röda lysdioderna NF och SF lyser eller blinkar inte.

3 Installationsanvisningar

3.1 Montering

Bussnoden är monterad i ett kopplingsblock på CPX-terminalen.

- 1 Skruvar, åtdragningsmoment 0,9 - 1,1 Nm
- 2 CPX-bussnod
- 3 Kopplingsblock med strömskenor





Varning

Koppla från spänningen innan bussnoden monteras eller demonteras (risk för funktionsfel eller skador).

Demontering:

- Lossa skruvarna och lyft bussnoden försiktigt.

Montering:

1. Kontrollera tätning och tätningsytor. Sätt sedan fast anslutningsblocket igen.
2. Placera skruvarna så att de gängade spåren används. Dra åt skruvarna korsvis för hand.

Åtdragningsmoment: 0,9 - 1,1 Nm.



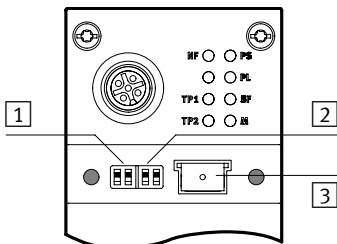
Information

Använd för en kombination av anslutningsblock och kopplingsblock metall på plast resp. plast på metall på de skruvar som är lämpade för **kopplingsblocket**:



- för plastkopplingsblock: självgängande skruvar
- för metallkopplingsblock: skruvar med metrisk gänga

3.2 Inställning av DIL-omkopplarna





- 1 DIL-omkopplare 1.1 + 1.2:
Driftsätt
- 2 DIL-omkopplare 2.1 + 2.2:
Diagnosläge (bara driftsättet Remote I/O);
Storlek datafält (bara driftsättet Remote Controller)
- 3 Minneskort
(se avsnitt 3.6)



Ställ in driftsätt med DIL-omkopplare **1**:

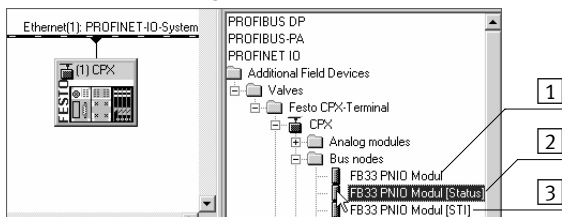
DIL-omkopplare 1	Funktion
 <p>DIL 1.1: OFF DIL 1.2: OFF (fabriksinställning)</p>	<p>Driftsätt Remote I/O Alla funktioner för CPX-terminalen styrs av PROFINET-IO-controllern.</p>
 <p>DIL 1.1: ON DIL 1.2: OFF</p>	<p>Driftsätt Remote Controller CPX-FEC tar över IO-styrningen. (Endast meningsfullt om en FEC är integrerad i CPX-terminalen.)</p>

Endast i driftsättet Remote I/O:
 Ställ in diagnosläget med DIL-omkopplare 2
 (se även informationen på nästa sida):

DIL-omkopplare 2	Funktion	
	Remote I/O	Remote Controller
 <p>DIL 2.1: OFF DIL 2.2: OFF (fabriks- inställning)</p>	<p>Utan diagnos: I/O-diagnos- gränssnitt och statusbitar är inaktiverade</p>	<p>Storlek datafält: 8 byte I/ 8 byte O</p>
 <p>DIL 2.1: OFF DIL 2.2: ON</p>	<p>Statusbitarna är aktiverade</p>	<p>Storlek datafält: 16 byte I/ 16 byte O</p>
 <p>DIL 2.1: ON DIL 2.2: OFF</p>	<p>I/O-diagnos- gränssnittet är aktiverat</p>	<p>Reserverat</p>
 <p>DIL 2.1: ON DIL 2.2: ON</p>	<p>Reserverat</p>	<p>Reserverat</p>

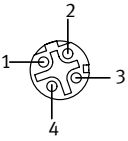
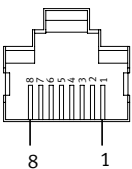
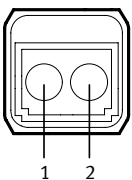


Inställningen av DIL-omkopplarna för driftsätt och diagnosläge måste stämma överens med valet av bussnod vid en PLC-hårdvarukonfiguration.



Bussnodens driftsätt	Diagnosläge [lägesbeteckning]	Tilläggfunktion	Fältenhetsgrupp (Stations-symbol)
Remote I/O	Utan diagnos 1	nej	CPX ¹⁾
		ja, med FSU	CPX FSU ²⁾
	Statusbitar [Status] 2	nej	CPX ¹⁾
		ja, med FSU	CPX FSU ²⁾
	IO-diagnosgränssnitt [STI] 3	nej	CPX ¹⁾
		ja, med FSU	CPX FSU ²⁾
Remote Controller	n/a	n/a	CPX RC
1) CPX Rev 11 för bussnodar med CPX-revisionskod till och med Rev 11			
2) Snabbstart, från och med GSDML-fil V. 2.2 + Rev 12			

3.3 Nätverksgränssnitt

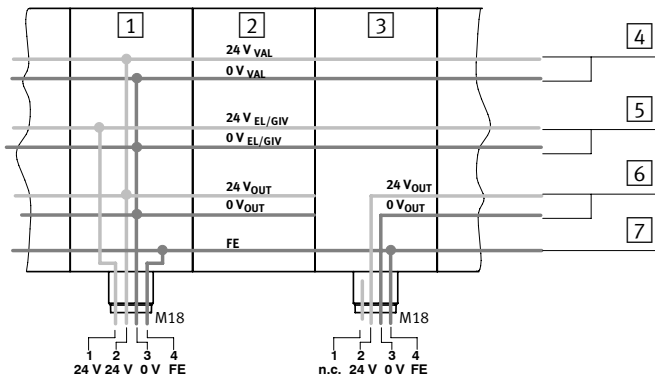
Honkontakt	Stift	Signal	Förklaring
M12, D-kodad	CPX-FB33		
	1 2 3 4 Hus	TD+ RD+ TD- RD- Shield/FE	Sändningsdata + Mottagningsdata + Sändningsdata - Mottagningsdata - Skärm/Funktionsjord
RJ45, Push-Pull	CPX-M-FB34		
	1 2 3 4 5 6 7 8 Hus	TD+ TD- RD+ n.c. n.c. RD- n.c. n.c. Shield/FE	Sändningsdata + Sändningsdata - Mottagningsdata + ej ansluten ej ansluten Mottagningsdata - ej ansluten ej ansluten Skärm/Funktionsjord
SCRJ, Push-Pull	CPX-M-FB35		
	1 2	TX RX	Sändningsdata Mottagningsdata

Bussnod	Anslutning	Nätverkskontakt
CPX-FB33	2 x M12, D-kodad, honkontakt, 4-polig, motsvarar IEC 61076-2	Kontaktidon Festo, typ NECU-M-S-D12G4-C2-ET
CPX-M-FB34	2 x RJ45, Push-Pull, koppar, AIDA, motsvarande IEC 60603, IEC 61076-3	Kontaktidon Festo, typ FBS-RJ45-PP-GS
CPX-M-FB35	2 x SCRJ, Push-Pull, 650 nm, AIDA, motsvarande IEC 61754-24	Kontaktidon Festo, typ FBS-SCRJ-PP-GS
<p>→ Internet: www.festo.com/catalogue/</p>		

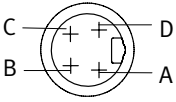
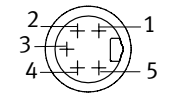
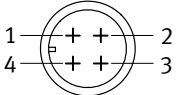
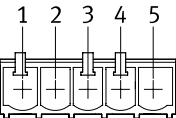
Bussnod + Nätverkskontakt	Ledningsuppgift ¹⁾
CPX-FB33 + ...D12G4...	Ethernet-kabel, skärmad, Cat 5/Cat 5e, 6 ... 8 mm, 0,14 ... 0,75 mm ² (max. 100 m PROFINET end-to-end link: 22 AWG)
CPX-M-FB34 + ...RJ45...	Ethernet-kabel, skärmad, Cat 5/Cat 5e, 5 ... 8 mm, 0,13 ... 0,36 mm ² (Δ ca. 26 ... 22 AWG) (max. 100 m PROFINET end-to-end link: 22 AWG)
CPX-M-FB35 + ...SCRJ...	Optofiber, POF, 980/1000 μm, 6,5 ... 9,5 mm (max. 50 m PROFINET end-to-end link; ≤ 12,5 dB)
<p>1) Längd enligt uppgift för industriella PROFINET-nätverk → Internet: www.profinet.com, www.profibus.com/downloads</p>	

3.4 CPX-terminalens matningsspänning

CPX-terminalens matningsspänning tillförs via kopplingsblock. Dessa leder matningsspänningen vidare till angränsande moduler.

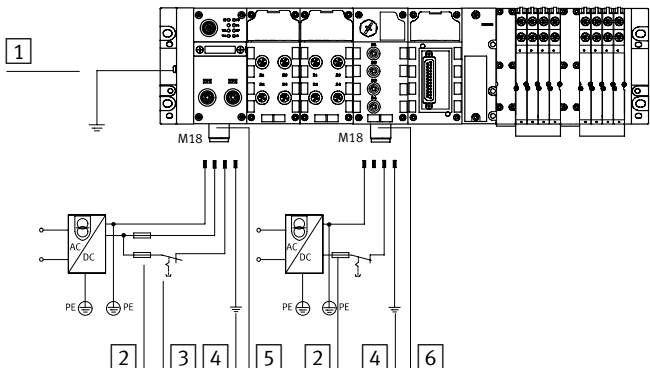


- 1 Kopplingsblock med systemmatning t.ex. typ CPX-GE-EV-**S**
- 2 Kopplingsblock utan systemmatning t.ex. CPX-GE-EV
- 3 Kopplingsblock med extramatning t.ex. typ CPX-GE-EV-**Z**
- 4 Lastspänning för ventiler
- 5 Matningsspänning för elektronik och givare
- 6 Lastspänning för digitala utgångar
- 7 Jordanslutning (Funktionsjord, FE)

Kopplings- blocket	CPX-(M-)GE- EV-S...	CPX-(M-)GE- EV-Z...	CPX-GE- EV-V...
7/8"-4POL 	A: 24 V _{EL} /SEN B: 24 V _{VAL} /24 V _{OUT} C: FE D: 0 V _{EL} /SEN / 0 V _{VAL} /0 V _{OUT}	A: n.c. B: 24 V _{OUT} C: FE D: 0 V _{OUT}	A: n.c. B: 24 V _{VAL} C: FE D: 0 V _{VAL}
7/8"-5POL 	1: 0 V _{VAL} /0 V _{OUT} 2: 0 V _{EL} /SEN 3: FE 4: 24 V _{EL} /SEN 5: 24 V _{VAL} /24 V _{OUT}	1: 0 V _{OUT} 2: n.c. 3: FE 4: n.c. 5: 24 V _{OUT}	–
M18 	1: 24 V _{EL} /SEN 2: 24 V _{VAL} /24 V _{OUT} 3: 0 V _{EL} /SEN / 0 V _{VAL} /0V _{OUT} 4: FE	1: n.c. 2: 24 V _{OUT} 3: 0 V _{OUT} 4: FE	1: n.c. 2: 24 V _{VAL} 3: 0 V _{VAL} 4: FE
Push-Pull 	1: 24 V _{EL} /SEN 2: 0 V _{EL} /SEN 3: 24 V _{VAL} /24 V _{OUT} 4: 0 V _{VAL} /0 V _{OUT} 5: FE	1: n.c. 2: n.c. 3: 24 V _{OUT} 4: 0 V _{OUT} 5: FE	–
V _{EL} /SEN: Matningsspänning elektronik/givare V _{OUT} /VAL: Lastspänning utgångar/ventiler FE: Jordanslutning (Funktionsjord) n.c.: ledig (not connected) A, B, C, D: Följ anvisningarna på kontaktdonet.			

Anslutningsexempel

Följande bild visar som exempel anslutning vid användning av systemmatning och extra spänningsmatning (respektive med M18-kontakt) för elektriska utgångar.



- 1 Potentialutjämning
- 2 Externa säkringar
- 3 Ventilernas/utgångarnas matningsspänning kan kopplas från separat
- 4 Jordanslutning stift 4 (M18-kontaktdon), konstruerad för 16 A
- 5 Anslutning av systemmatning CPX-GE-EV-S (M18)
- 6 Anslutning av extra spänningsmatning för elektriska utgångar av typen CPX-GE-EV-Z (M18)

3.5 CPX-terminalens driftsätt vid start

Om Modify-lysdioden (M) lyser eller blinkar permanent efter systemstarten, är parametern ”System start with saved parametrizing and saved CPX equipment status” inställd resp. tvångsstyrningen är aktiv.



Observera

På CPX-terminaler där M-lysdioden lyser eller blinkar permanent, ställer det överordnade systemet inte in parametrarna automatiskt om CPX-terminalen byts ut vid service. Kontrollera då före bytet vilka inställningar som krävs och ställ in dem igen när bytet är klart.



Detaljerad information finns i fältbussnodmanualen P.BE-CPX-PNIO-....

3.6 Användning av minneskort

Minneskortet används för att spara konfigureringsdata, t.ex. fältbussens enhetsbeteckning. På så vis blir det enklare att byta ut en bussnod. Mer information om användning: se P.BE-CPX-PNIO-....



Observera

Koppla från spänningen innan minneskortet tas ut eller sticks in (risk för funktionsfel eller skador).

4 Tekniska data

Bussnod CPX-(M)-...	FB33	FB34	FB35
Allmänna tekniska data	se CPX-systemmanual P.BE-CPX-SYS-...		
Kapslingsklass enligt EN 60529	IP65/IP67 (komplett monterad)		
Skydd mot elektriska stötar enligt IEC/DIN EN 60204-1	med PELV-strömkrets (Protected Extra-Low Voltage)		
Egen strömförbrukning vid 24 V från matningsspänning elektronik/givare ($V_{EL/SEN}$)	120 mA	120 mA	150 mA (intern Elektronik)
Galvanisk isolering PROFINET-gränssnitt till $V_{EL/SEN}$	galvaniskt isolerad (1500 V)		
Modulkod (CPX-specifik) – Remote I/O – Remote Controller	215 164	216 165	217 166
Modulkod (i PLC, CPX-FMT, -MMI) – Remote I/O – Remote Controller	FB3x-RIO FB3x-RC	ProfiNet (RJ45/FO) Remote I/O ProfiNet (RJ45/FO) I/O bus node	
PROFINET – Protokoll – Specifikation	PROFINET IO RT (PNIO RT) Industriellt ethernet enligt IEEE 802.3; se även PROFINET- installationsdirektivet, http://www.profinet.com ; Switched Fast Ethernet, 100 Mbit/s, Auto-MDI		