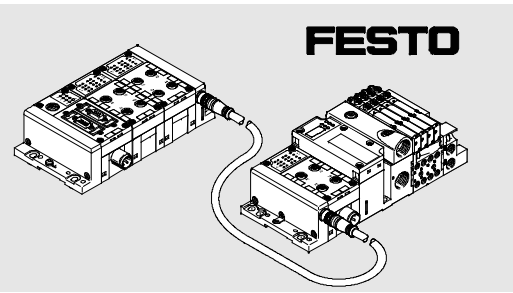


CPX Extension CPX-EXT-(M)-EP...-EV-X



Brief description

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CPX Extension CPX-(M)-EPR-EV-X, CPX-(M)-EPL-EV-X

1 Intended use
The components of the CPX extension documented in this description are exclusively intended for use in a CPX terminal. The CPX terminal is to be used as follows:
– as intended in an industrial environment
– in original status without unauthorised modifications; only the conversions or modifications described in the documentation supplied with the product are permitted
– in excellent technical status.
The limit values specified for pressures, temperatures, electrical data, torques, etc. must be complied with.

2 Sample application
The CPX extension is an extension of the CPX terminal. With this extension, you can distribute long CPX terminals in two opposed rows and thus e.g. place them in a control cabinet (→ Fig. 1).
You can also use the CPX extension to place the valve terminal separated from the electronics in two separate control cabinets.

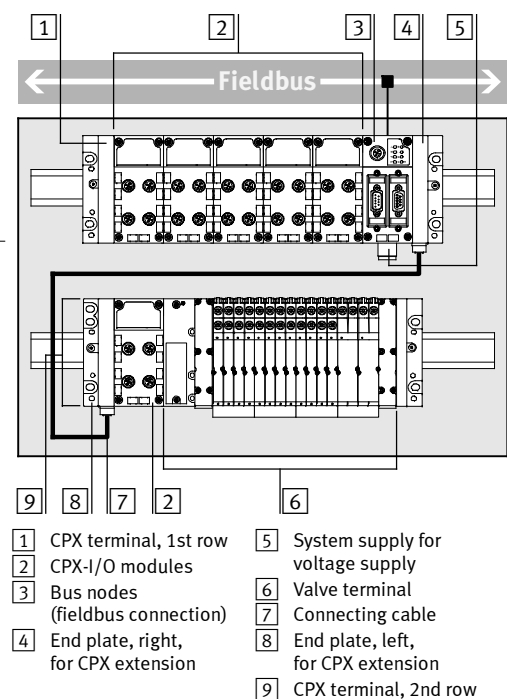


Fig. 1: Sample application

3 Overview of components
To connect the CPX rows you will require the following CPX components:
– one end plate, right, with connection for CPX extension (→ Section 3.1)
– one end plate, left, with connection for CPX extension (→ Section 3.2)
– one connecting cable (→ Section 3.3).
The mode of operation and the mounting and dismantling of these components is described in the following chapters and sections.

Variants	Type code
End plate, right, with connection for CPX extension, for CPX terminals with plastic interlinking	CPX-EPR-EV-X
End plate, right, metal, with connection for CPX extension, for CPX terminals with metal interlinking	CPX-M-EPR-EV-X

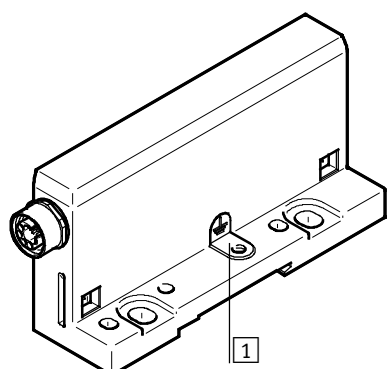


Fig. 2: End plate, right, example plastic version, CPX-EPR-EV-X

Variants	Type code
End plate, left, with connection for CPX extension, for CPX terminals with plastic interlinking	CPX-EPL-EV-X
End plate, left, metal, with connection for CPX extension, for CPX terminals with metal interlinking	CPX-M-EPL-EV-X

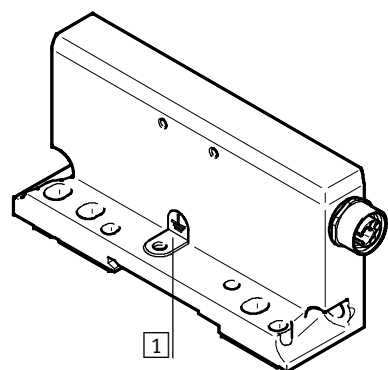


Fig. 3: End plate, left, example metal version, CPX-M-EPL-EV-X

→ Note
You will find a list of the components required for a CPX terminal with CPX extension in Chapter 7.

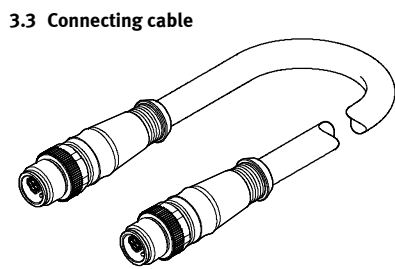


Fig. 4: Connecting cable NEBC

The connecting cable NEBC is available in the following line lengths (→ www.festo.com/catalogue):

Type code	Length
NEBC-F12G8-KH-0.25-N-S-F12G8	0.25 m
NEBC-F12G8-KH...-N-S-F12G8	0.5 m ... 2.0 m
NEBC-F12G8-KH-3-N-S-F12G8	3.0 m ¹⁾

¹⁾ Length 3.0 m is permissible only in combination with the following valve terminals: MPA-S with electronics modules VMPA...-FB-EMG or VTSA/VTSA-F (→ Section 6.3 or 6.6).

4 Mode of operation
The CPX extension conducts the internal communication signals of the CPX terminal, the operating voltage for electronics and sensors $U_{EL/SEN}$, as well as the load voltage for valves U_{VAL} from the 1st row to the 2nd row. The load voltage for outputs U_{OUT} is not transmitted.
The mode of operation of the CPX extension and the voltage supply of the CPX terminal with CPX extension are shown as an example in the following figure.

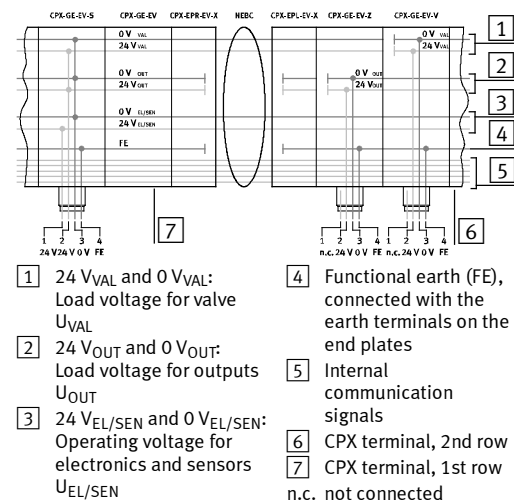


Fig. 5: Mode of operation and voltage supply (example)

5 Basic specifications
5.1 General instructions
• Observe the specifications in the CPX system description for the configuration of the modules in a CPX terminal. This concerns e.g. the calculation of the current consumption in the modules used and the connected consuming device (e.g. sensors), the fuse protection of the voltage supply as well as the calculation of the address volume for in- and outputs.
• Observe the specifications in the description of the valve terminal used. This concerns e.g. the use of MPA electronics modules (e.g. VMPA...-FB-EMG or VMPA...-FB-EMS) with specific interlinking blocks.
• Observe the specifications in the assembly instructions for the individual components (e.g. electrical air supply plate VMPA(F)-FB-SP).
• Use a CPX system supply (e.g. interlinking block CPX-GE-EV-S...) in the 1st row.
• Use a maximum 10 CPX modules in the 1st row.
• Observe Sections 5.2 ... 5.5 and Chapter 6 regarding the configuration of the CPX terminal, e.g. to determine the maximum number of modules in the 2nd row.

→ Note
• Do not use any CPX modules CPX-FVDA in a CPX terminal with CPX extension.
• Do not use any Midi/Maxi valve terminals in a CPX terminal with CPX extension.
• Configure the CPX terminal online through the product catalogue (→ www.festo.com/catalogue).

5.2 Position of the bus node or control block
• Install the bus node CPX-FB... or control block CPX-FEC or CPX-CEC... in the 1st row.
• Take note that the maximum number of CPX modules and MPA-S pneumatic modules in the 2nd row is dependent on the position of the bus node or control block (→ Section 6.2 and 6.3).

→ Note
• Position the bus node or control block in the 1st row at the last module position before the right end plate, in order to be able to use the maximum expansion possibilities (→ Section 6.2 and 6.3).

Definition: Bus node or control block position, right
The bus node CPX-FB... [1] or control block CPX-FEC or CPX-CEC... is in the 1st row at the last module position before the right end plate.

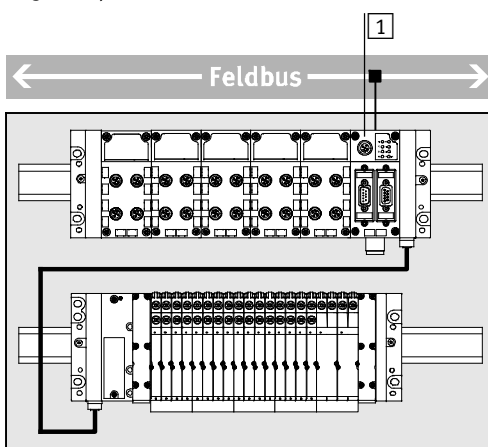


Fig. 6: Bus node position on the right (example)

Definition: Any bus node or control block position
The bus node CPX-FB... [1] or control block CPX-FEC or CPX-CEC... is in the 1st row at any module position.

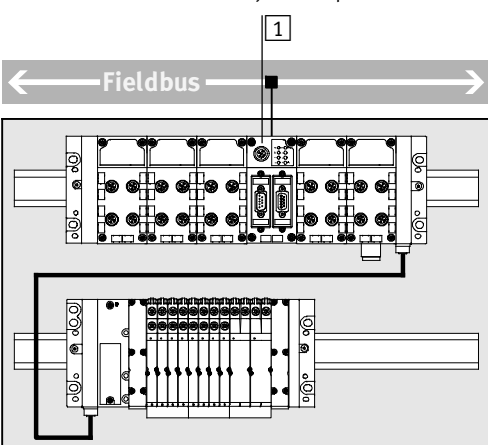


Fig. 7: Any bus node position (example)

5.3 Position of the technology modules
• Install the following modules in the 1st row only:
– CPX-CM-HPP – CPX-CMAX – CPX-CMIX – CPX-CMPX
– CPX-CMXH – CPX-CP – CPX-CTEL.

5.4 Position of the valve terminal (pneumatics modules)
• Install a valve terminal in the 2nd row only.

5.5 Voltage supply
→ Note
Observe the instructions in the CPX system description (→ Electrical connection) and in the descriptions for the valve terminal used.

Fuse protection
The maximum permissible current load for the CPX system supply for a CPX terminal with CPX extension is 6 A.
• Fuse the operating voltage $U_{EL/SEN}$ and the load voltage $U_{VAL/OUT}$ with a maximum 6 A.
If you use a CPX additional power supply for valves CPX-(M)-GE-EV-V in the 1st row:
• Fuse the load voltage U_{VAL} with a maximum 6 A.
If you use a CPX system supply with separate supply of the load voltage U_{OUT} (e.g. end plate CPX-EPL-EV-S), a CPX additional power supply for outputs CPX-(M)-GE-EV-Z or – in the 2nd row – a CPX additional power supply for valves CPX-(M)-GE-EV-V for the voltage supply:
• Observe the instructions regarding the maximum permissible current load in the CPX system description (→ Calculation of current consumption).
• Fuse the load voltage U_{VAL} or U_{OUT} with the respective maximum permissible current load.
• Fuse the operating voltage $U_{EL/SEN}$ with a maximum 6 A.

Load capacity
The maximum permissible current consumption of the consumer (e.g. sensors, actuators, CPX and pneumatics modules) through the operating voltage $U_{EL/SEN}$ amounts to:
– in the 1st and 2nd row: 6 A (total)
– in the 2nd row: 2 A.

→ Note
If the maximum permissible current consumption is exceeded, sensors and CPX modules in the 2nd row can be omitted.
• Observe the maximum permissible current consumption when configuring the consumer (→ CPX system description → Calculation of the current consumption).
• When calculating the current consumption, take note that electrical air supply plates VMPA(F)-FB-SP draw current from the operating voltage $U_{EL/SEN}$: the respective current consumption is about 300 mA.

If you use a CPX system supply with separate supply of the load voltage U_{OUT} , a CPX additional power supply for outputs or – in the 2nd row – a CPX additional power supply for valves:
• Observe the instructions regarding the maximum permissible current load in the CPX system description (→ Calculation of current consumption).

Permissible voltage range

Configuration of the 2nd row CPX modules / valve terminal	Permissible voltage range of the operating voltage $U_{EL/SEN}$ CPX system supply
CPX	21.6 V ... 30.0 V
CPX with MPA-S or MPA-F	
MPA S	22.8 V ... 26.4 V
CPX with MPA-L	
CPX with VTSA/VTSA-F	

Configuration of the 2nd row CPX modules / valve terminal	Permissible voltage range of the load voltage $U_{VAL/OUT}$ ¹⁾ Supply in the 1st row ²⁾
CPX	21.6 V ... 30.0 V
CPX with MPA-S or MPA-F	
MPA S	22.8 V ... 26.4 V
CPX with MPA-L	
CPX with VTSA or VTSA-F	

¹⁾ If you use a CPX system supply with separate supply of the load voltage U_{OUT} or a CPX additional power supply for outputs, the permissible voltage range of the load voltage U_{OUT} is not restricted.
²⁾ If you use a CPX additional power supply for valves CPX-(M)-GE-EV-V in the 2nd row or an electrical air supply plate VMPA(F)-FB-SP, the permissible voltage range of the load voltage U_{OUT} is not restricted:
• Observe the permissible voltage range for the pneumatics modules to the right of the CPX additional power supply or the electrical air supply plate.

6 Configuration rules
In the following sections, you will find the configuration rules for:
– Voltage supply (→ Section 6.1)
– CPX modules in the 2nd row – without valve terminal (→ Section 6.2)
– MPA-S valve terminal (→ Section 6.3)
– MPA-F valve terminal (→ Section 6.4)
– MPA-L valve terminal (→ Section 6.5)
– VTSA/VTSA valve terminal (→ Section 6.6).

6.1 Voltage supply
Observe the following configuration rules for the CPX modules and valve terminal in the 2nd row regarding:
– CPX system supply CPX-(M)-GE-EV-S
– CPX additional power supply for outputs CPX-(M)-GE-EV-Z
– CPX additional power supply for valves CPX-(M)-GE-EV-V
– Electrical air supply plate VMPA(F)-FB-SP.

Output modules:
• Install CPX additional power supply for outputs in the 2nd row to the left of the first output module.

MPA-S valve terminal, bus node / control block position, right:
• Install CPX system supply in the 1st row on the right, i.e. at the last module position if you use up to 8 MPA-S pneumatics modules or
• install CPX system supply in the 1st row in any position if you use up to 5 MPA-S pneumatics modules or
• install CPX additional power supply for valves in the 1st row on the right and use electronics modules with galvanic isolation (e.g. VMPA...-FB-EMG) or
• install CPX additional power supply for valves in the 2nd row and use electronics modules with galvanic isolation (e.g. VMPA...-FB-EMG).

Any MPA-S valve terminal, bus node / control block position:
• Install CPX system supply in the 1st row in any position.
MPA-S valve terminal with proportional pressure regulator VPPM:
• Install CPX additional power supply for valves in the 2nd row or
• install electrical air supply plate before the proportional valve.

MPA-F valve terminal:
• Install CPX system supply in the 1st row on the right, i.e. at the last module position or
• install CPX additional power supply for valves in the 1st row on the right and use electronics modules with galvanic isolation (e.g. VMPA...-FB-EMG) or
• install CPX additional power supply for valves in the 2nd row and use electronics modules with galvanic isolation (e.g. VMPA...-FB-EMG).

MPA-L or VTSA/VTSA-F valve terminal:
• Install CPX system supply in the 1st row on the right, i.e. at the last module position or
• install CPX additional power supply for valves in the 1st row on the right or
• install CPX additional power supply for valves in the 2nd row at any position.

6.2 CPX modules in the 2nd row – without valve terminal
If you use only CPX modules in the 2nd row:
• Observe the configuration rules in the table
Maximum number of CPX modules and pneumatics modules in the 2nd row (→ Section 6.3).

6.3 MPA-S valve terminal

Bus node/control block CPX...	Maximum number of CPX modules and pneumatics modules in the 2nd row	
	Bus node / control block position Any	Bus node / control block position On the right
FB5	3	5
FB6	3	5
FB11 ¹⁾	3	–
FB13 up to Rev. 28	3	5
FB13 from Rev. 30	5	5 / 8 ²⁾
FB14	3	5
FB20	3	5
FB21	3	5
FB23	3	5
FB32	2	4
FB33	3	5
FB34	3	5
FB35	3	5
FB36	5	5 / 8 ²⁾
FB38	2	4
FB39	5	5 / 8 ²⁾
FEC	3	5
CEC ¹⁾	2	–

¹⁾ Install in the 1st row at the first module position.
²⁾ A total of maximum 8 CPX modules and MPA-S pneumatics modules, of them a maximum 5 pneumatics modules.
Maximum 8 pneumatics modules, if:
– CPX system supply is in the 1st row on the right or
– CPX additional power supply for valves is in the 1st row on the right or
– CPX additional power supply for valves is integrated in the 2nd row.

→ Note
This is how you remove the restrictions for the maximum number of MPA-S pneumatics modules:
• Use electrical air supply plates VMPAF-FB-SP.
• Only use electronics modules with galvanic isolation (e.g. VMPA...-FB-EMG).
• Take note that an electrical air supply plate supplies a maximum 8 MPA-S pneumatics modules.

→ **Note**

- If you use a connecting cable with a length > 2 m:
- Do not use any CPX modules in the 2nd row.
 - Use a left end plate from metal CPX-M-EPL-EV-X and a port pattern from metal.
 - Mount the port pattern directly on the left end plate.
 - Use an electrical air supply plate VMPA-FB-SP directly after the port pattern.
 - Only use electronics modules with galvanic isolation (e.g. VMPA...-FB-EMG).

6.4 MPA-F valve terminal

Maximum number of CPX modules and pneumatics modules in the 2nd row

Configuration	Max. number
CPX modules	2
MPA-F pneumatics modules	8

→ **Note**

- This is how you remove the restrictions for the maximum number of MPA-F pneumatics modules:
- Use one CPX additional power supply for valves CPX-(M)-GE-EV-V in the 2nd row or electrical air supply plate VMPAF-FB-SP.
 - Only use electronics modules with galvanic isolation (e.g. VMPA...-FB-EMG).
 - Take note that an electrical air supply plate supplies a maximum 8 MPA-F pneumatics modules.

6.5 MPA-L valve terminal

Maximum number of CPX modules and solenoid coils in the 2nd row

Configuration	Max. number
CPX modules ¹⁾	2 CPX modules
MPA-L valve group 1 ²⁾	16 solenoid coils ²⁾
MPA-L valve group 2 ²⁾	8 solenoid coils ²⁾

- ¹⁾ Install at least 1 CPX module in the 2nd row.
²⁾ Group 1: Width 10 mm or 14 mm
 Group 2: Width 20 mm
 If you are using valves of group 1 and group 2 together:
- Observe the ratio of 2:1 for the number of solenoid coils.
 Example:
 10 solenoid coils of group 1 and 3 solenoid coils of group 2 can be combined with each other.

→ **Note**

- This is how you remove the restrictions for the maximum number of MPA-L solenoid coils:
- Use one CPX additional power supply for valves CPX-GE-EV-V in the 2nd row.

6.6 VTSA/VTSA-F valve terminal

Maximum number of CPX modules and solenoid coils in the 2nd row

Configuration	Max. number
CPX modules	2 CPX modules
VTSA/VTSA-F valve group 1 ¹⁾	12 solenoid coils ¹⁾
VTSA/VTSA-F valve group 2 ¹⁾	6 solenoid coils ¹⁾

- ¹⁾ Group 1: Width 18 mm, 26 mm or 42 mm
 Group 2: Width 52 mm or 65 mm
 If you are using valves of group 1 and group 2 together:
- Observe the ratio of 2:1 for the number of solenoid coils.
 Example:
 8 solenoid coils of group 1 and 2 solenoid coils of group 2 can be combined with each other.

→ **Note**

- This is how you remove the restrictions for the maximum number of VTSA/VTSA-F solenoid coils:
- Use one CPX additional power supply for valves CPX-(M)-GE-EV-V in the 2nd row.

→ **Note**

- If you use a connecting cable with a length > 2 m:
- Only use one CPX modules in the 2nd row.
 - Use one CPX additional power supply for valves CPX-(M)-GE-EV-V in the 2nd row.

7 Required components for CPX extension

For a CPX terminal with CPX extension, the following components are required:

For a CPX terminal in plastic version:

- one connecting cable NEBC in the appropriate length (→ Section 3.3)
- one end plate, right, with connection for CPX extension CPX-EPR-EV-X
- one end plate, left, with connection for CPX extension in plastic version CPX-EPL-EV-X, if the 2nd row includes CPX modules
- one port pattern in metal version CPX-M-EPL-EV-X, if the 2nd row does not include any CPX modules (→ Fig. 13)
 - VMPA-FB-EPLM for MPA-S valve terminal
 - VMPAF-FB-EPLM for MPA-F valve terminal
 - VABA-S6-1-X2 for VTSA/VTSA-F valve terminal
- for the 1st row, new tie rod in the appropriate length
- for the 2nd row, new tie rod in the appropriate length and tie rod screws if the 2nd row includes CPX modules
- for the 2nd row, interlinking screws if the 2nd row does not include any CPX modules.

For a CPX terminal in metal version:

- one connecting cable NEBC in the appropriate length (→ Section 3.3)
- one end plate, right, with connection for CPX extension, metal version, CPX-M-EPR-EV-X
- one end plate, left, with connection for CPX extension, metal version, CPX-M-EPL-EV-X.

8 Converting and mounting the CPX terminal

When converting the CPX terminal, you may need to re-lay, lengthen or shorten the electrical connecting cables and pneumatic connecting cables.

⚠ **Warning**

- Uncontrolled movements of the actuators, undefined switching states and loose tubing lines
 Injury to people, damage to the machine and system
- Switch off the operating and load voltage supplies.
 - Switch off the compressed air supply.
 - Vent the valve terminal pneumatics.

⚠ **Warning**

- Electric shock
 Injury to people, damage to the machine and system
- Only use PELV circuits in accordance with IEC 60204-1 (protective extra-low voltage, PELV) for the electrical power supply.
 - Observe the general requirements of IEC 60204-1 for PELV circuits.
 - Use only voltage sources that guarantee a reliable electric separation of operating and load voltage in accordance with IEC 60204-1.
 - Always connect all circuits for the operating and load voltage supplies $U_{EL/SEN}$, U_{VAL} and U_{OUT} .

→ **Note**

- Only personnel with the corresponding qualifications are to carry out assembly work and commissioning.

→ **Note**

- Observe the specifications in the CPX system description, in the description of the valve terminal to be used as well as in the assembly instructions of the individual components.
- Observe the instructions for correctly mounting the CPX terminal.
- Only set a CPX terminal which has been completely mounted and wired into operation.

⚠ **Note**

- Electrostatically sensitive components
- Do not touch the plug connectors.
 - Observe the handling specifications for electrostatically sensitive devices.

The following section describes the conversion:

- for the plastic version (→ Section 8.1)
- for the metal version (→ Section 8.2).

8.1 Converting the CPX terminal – plastic version

1. Switch off all voltage and compressed air supplies.
2. Vent the pneumatics.
3. Change the fuse protection of the supply voltages (→ Section 5.5).
4. Dismantle the CPX terminal.

Isolating the CPX terminal

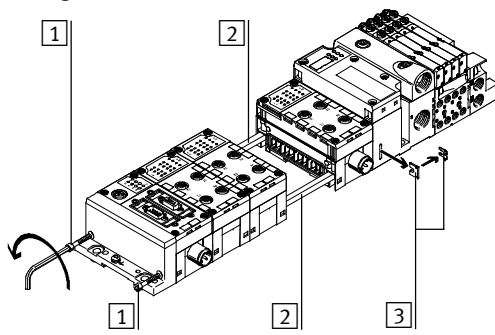


Fig. 8: Isolate the CPX terminal, plastic version

5. Unscrew and remove completely the tie rod screws [1] in the left end plate.

→ **Note**

The interlinking blocks are still held together only by the electrical plug connectors.

- Make sure that the electrical plug connectors of the interlinking blocks are not bent.

6. Use caution to pull apart the two halves of the CPX terminal without tilting them. The left half of the CPX terminal is designated as the 1st row, the right half as the 2nd row.
7. Remove the mounting and locking plate [3] in the right end plate or in the port pattern.
8. Remove the tie rod [2].
9. Check that both rows fulfil the basic specifications (→ Chapter 5) and the configuration rules (→ Chapter 6).
10. If they do not, change the configuration correspondingly.

Mounting the right end plate on the 1st row

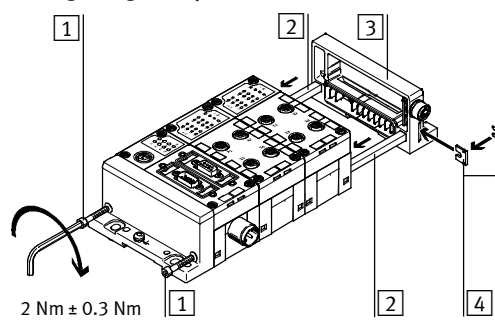


Fig. 9: Mounting the right end plate, plastic version

11. Slide the two new tie rods [2] in the 1st row.
12. Fix the two tie rods in the right end plate by placing a new mounting plate over the locking plate [4] and pushing these together into the groove intended for this purpose.
13. Take the right end plate of the CPX extension [3] and slide it together with the 1st row.
14. Adjust the 1st row of the CPX terminal on a flat surface.
15. Check that the screw connectors are seated correctly and use caution to screw the tie rod screws [1] a few turns into the tie rods.
16. Then tighten the tie rod screws [1] uniformly with an internal hexagon socket (SW3).

17. If the 2nd row does not include any CPX modules, exchange the port pattern with the corresponding port pattern in metal version.
 In this case, continue with Step 12. in Section 8.2 (→ Fig. 13).

Mounting the left end plate on the 2nd row

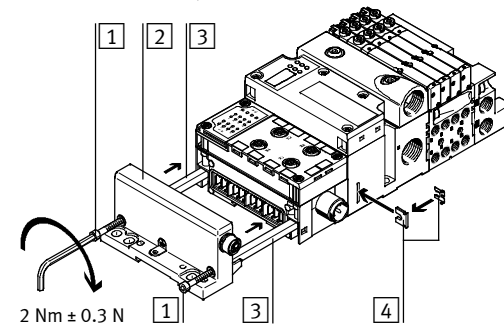


Fig. 10: Mounting the left end plate, plastic version

18. Slide the two new tie rods [3] in the 2nd row.
19. Fix the two tie rods in the port pattern or the right end plate by placing a mounting plate over the locking plate [4] and pushing these together into the groove intended for this purpose.
20. Take the left end plate [2] of the CPX extension and slide it together with the 2nd row.
21. Adjust the 2nd row of the CPX terminal on a flat surface.
22. Check that the screw connectors are seated correctly and use caution to screw the tie rod screws [1] a few turns into the tie rods.
23. Then tighten the tie rod screws [1] uniformly with an internal hexagon socket (SW3).
24. Mounting the CPX terminal (→ Section 8.3).

8.2 Converting the CPX terminal – metal version

1. Switch off all voltage and compressed air supplies.
2. Vent the pneumatics.
3. Change the fuse protection of the supply voltages (→ Section 5.5).
4. Dismantle the CPX terminal.

Isolating the CPX terminal

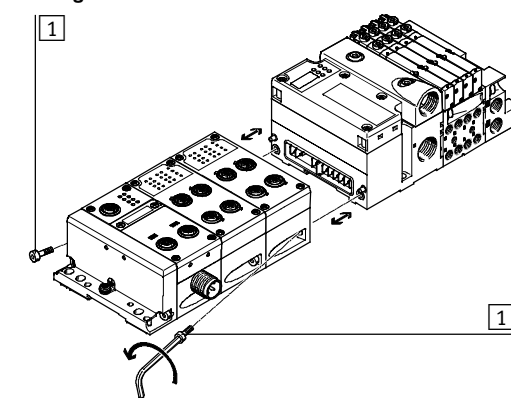


Fig. 11: Isolating the CPX terminal, metal version

5. Unscrew and remove completely the two screws on the interlinking block to the left of the separation point.

→ **Note**

The interlinking blocks are still held together at the separation point only by the electrical plug connectors.

- Make sure that the electrical plug connectors of the interlinking blocks are not bent.

6. Use caution to pull apart the two halves of the CPX terminal without tilting them. The left half of the CPX terminal is designated as the 1st row, the right half as the 2nd row.
7. Check that both rows fulfil the basic specifications (→ Chapter 5) and the configuration rules (→ Chapter 6).
8. If they do not, change the configuration correspondingly.

Mounting the right end plate on the 1st row

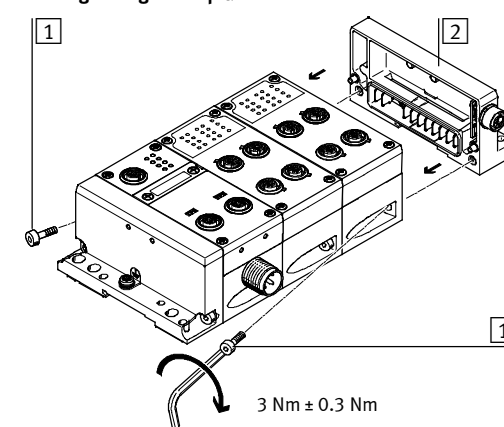


Fig. 12: Mounting the right end plate, metal version

9. Take the right end plate [2] of the CPX extension and slide it together with the 1st row.
10. Screw the interlinking screws [1] a few turns into the right end plate.
11. Then tighten the interlinking screws [1] uniformly with an internal hexagon socket (SW4).

Mounting the left end plate on the 2nd row

12. Take the left end plate [2] of the CPX extension and slide it together with the 2nd row (→ Fig. 13).
13. Screw the interlinking screws [1] a few turns into the port pattern or the adjacent interlinking block.
14. Then tighten the interlinking screws [1] uniformly with an internal hexagon socket (SW4).
15. Mounting the CPX terminal (→ Section 8.3).

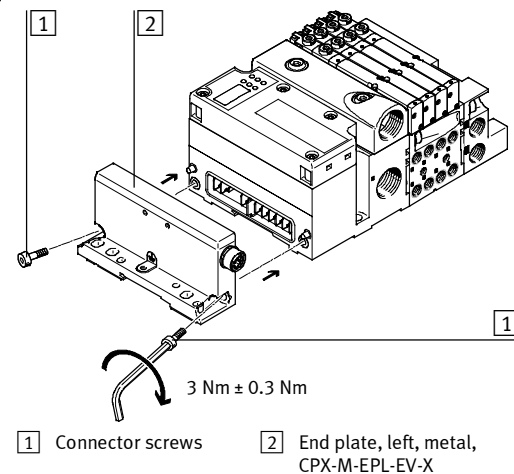


Fig. 13: Mounting the left end plate, metal version

8.3 Mounting the CPX terminal

1. Mount both CPX rows on the position intended for this purpose (top-hat rail or wall mounting).
2. For wall mounting: use all required mounting points.
3. Connect the earth terminals of the end plates to the earth potential with a short conductor with the greatest possible cross section (4 mm² Cu).

→ **Note**

Incorrect or missing earthing measures can cause malfunctions due to electromagnetic interference.

- Observe the information in the CPX system description (→ Potential equalisation).
- Take note that the 1st and 2nd row of the CPX terminal involve a device:
 - For this reason, it is imperative to lay both rows on the same earth potential by mounting both rows to the same metallic mounting plate with a permanently conductive connection (e.g. via the earth terminals of the end plates or by a potential equalisation).
 - If there is no common metallic mounting plate, you must connect the earth terminals of the end plates to each other with a short conductor with the greatest possible cross section (4 mm² Cu).

4. Connect the functional earth (FE) connections of the CPX system and additional power supply to the earth potential with a short conductor with the greatest possible cross section.
5. Re-connect all electrical cables and pneumatics lines.
6. Install the connecting cable (→ Chapter 9).

9 Installation of the connecting cable

→ **Note**

- When determining the length of the connecting cable, take into account the required bending radii of the connecting cable.
- Install the connecting cable without squeezing, buckling or stretching.
- Avoid the coupling path between the connecting cable and the power cables:
 - Install the connecting cable and the power cable separated from each other spatially.
 - If this is not possible, use pass partition plates between the connecting cable and power cables. Earth the pass partition plates over a large surface.
 - If directly crossing the connecting cable and power cables cannot be avoided, only cross the connecting cable and power cable at right angles.

→ **Note**

The connecting cable NEBC may contain phosphoric acid ester. When laid together in direct contact with PU compressed air tubing, it can result in the dissolution of the PU material.

- Use compressed air tubing made of PU-H or only install the compressed air tubing of PU separately without contact to the connecting cable.

1. Connect both CPX rows with the connecting cable.
2. Tighten the M12 plug connectors with a torque of 0.4 Nm ± 30 %.
 The following tool from Phoenix Contact can be used for nuts (M12) with lengthwise knurls:
 → TSD 04 SAC (set to 0.4 Nm) with the actuator SAC BIT M12 D15.
3. Now you can set the CPX terminal into operation (→ CPX system description).

10 Diagnostics

The diagnostics of the CPX terminal and the individual CPX modules is described in the respective documents. The following table contains information about malfunctions related to the CPX module, possible causes and measures to remedy them.

Malfunction	Possible cause	Remedy
Failure of CPX modules in the 2nd row or of connected sensors.	The maximum permissible current consumption is exceeded. Short circuit at a CPX module.	Check the configuration and the permissible current load (→ Section 5.5). Check the CPX modules and the connected sensors for short circuit.
No communication with modules in the 2nd row.	Defective connecting cable.	Exchange the connecting cable.
No voltage supply present in the 2nd row.	Connecting cable is not connected correctly.	Check the plug connector at the end plate in the 1st and 2nd row.

11 Technical data

End plates CPX-(M)-EP...-EV-X	
Dimensions (L x W x H)	116 mm x 30.5 mm x 55 mm
Weight	
CPX-(M)-EPL-EV-X	190 g
CPX-(M)-EPR-EV-X	175 g
Power supply	→ Section 5.5

Additional technical data → CPX system description.