BECKHOFF New Automation Technology

Manual | EN

# CPX39xx-0010

Multi touch Control Panel with CP-Link 4 for use in hazardous areas, zone 2/22




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# 1 Notes on the documentation

This description is intended exclusively for trained specialists in control and automation technology who are familiar with the applicable national standards.
The documentation and the following notes and explanations must be complied with when installing and commissioning the components.
The trained specialists must always use the current valid documentation.

The trained specialists must ensure that the application and use of the products described is in line with all safety requirements, including all relevant laws, regulations, guidelines, and standards.

### Disclaimer

The documentation has been compiled with care. The products described are, however, constantly under development.
We reserve the right to revise and change the documentation at any time and without notice.
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# 2 For your safety

The signal words and their meanings are explained in the chapter on safety. They contain fundamental safety instructions that are essential for preventing personal injuries and damage to property.

### Exclusion of liability

Beckhoff shall not be held liable in the event that this documentation is not complied with and the devices are therefore not used in line with the documented operating conditions.

## 2.1 Signal words

The signal words used in the documentation are classified below.

### Warning on personal injuries

| ⚠ DANGER |
| --- |
| High-risk hazard that will result in death or serious injury. |

| ⚠ WARNING |
| --- |
| Medium-risk hazard that may result in death or serious injury. |

| ⚠ CAUTION |
| --- |
| Low-risk hazard that may result in minor injury. |

### Warning on property and environmental damage

| *NOTICE* |
| --- |
| The environment, equipment, or data may be damaged. |

## 2.2 Intended use

The control panel is designed for industrial application in machine and system engineering. It serves as the operating unit of the machine or plant.

The device has been developed for an IP65 working environment. It offers full protection against contact (dust-tight) and against water jets (nozzle) from any angle.

The specified limits for technical data must be adhered to.

The device can be used within the documented operating conditions.

### Potentially hazardous area

This device is only suitable for the following hazardous areas:

- For Zone 2 where gas is present as a combustible material. Zone 2 means that the environment is usually either not explosive or only for a short period of time.
- For Zone 22 where dust is present as a combustible material. Zone 22 means that the surrounding area in the form of a cloud is either not at risk of explosion or only for a short period of time.

### Improper use

Do not use the device outside the documented operating conditions.

The device is not suitable for use in the following environments:

- The device may only be used in Zone 2/22 environments.
- The device is not suitable for use in aggressive environments, for example with aggressive gases or chemicals.

- The device is not suitable for residential areas. Relevant standards regarding interference emissions must be observed. The device must be installed in a housing or a control cabinet with suitable shielding.

## 2.3 Fundamental safety instructions

The following safety instructions must be observed when handling the device.

**Application conditions**

- Do not use the device under extreme environmental conditions.
- Do not use the device in hazardous areas.
- Do not carry out any work on the device while it is live. Always switch off the supply voltage for the device before mounting it, replacing device components or rectifying malfunctions.
- Never plug or unplug connectors during thunderstorms. There is a risk of electric shock.
- Ensure that the device has a protective and functional earth connection.

**Damage to property, loss of data and impairment of functions**

- Ensure that only trained specialists with a control and automation engineering background, operate the device. Use by unauthorized persons can lead to damage to property and loss of data.
- Fuse the power supply line to protect the supply line in the event of a short circuit according to its cross-section.
- In case of fire, extinguish the device with powder or nitrogen.

## 2.4 Operator's obligation to exercise diligence

The operator must ensure that

- the products are used only for their intended purpose (see Chapter 2.2 Intended use [▶ 6]).
- the products are only operated in sound condition and in working order.
- the products are operated only by suitably qualified and authorized personnel.
- the personnel is instructed regularly about relevant occupational safety and environmental protection aspects, and is familiar with the operating instructions and in particular the safety instructions contained herein.
- the operating instructions are in good condition and complete, and always available for reference at the location where the products are used.

## 2.5 Notes on information security

The products of Beckhoff Automation GmbH & Co. KG (Beckhoff), insofar as they can be accessed online, are equipped with security functions that support the secure operation of plants, systems, machines and networks. Despite the security functions, the creation, implementation and constant updating of a holistic security concept for the operation are necessary to protect the respective plant, system, machine and networks against cyber threats. The products sold by Beckhoff are only part of the overall security concept. The customer is responsible for preventing unauthorized access by third parties to its equipment, systems, machines and networks. The latter should be connected to the corporate network or the Internet only if appropriate protective measures have been set up.

In addition, the recommendations from Beckhoff regarding appropriate protective measures should be observed. Further information regarding information security and industrial security can be found in our https://www.beckhoff.com/secguide.

Beckhoff products and solutions undergo continuous further development. This also applies to security functions. In light of this continuous further development, Beckhoff expressly recommends that the products are kept up to date at all times and that updates are installed for the products once they have been made available. Using outdated or unsupported product versions can increase the risk of cyber threats.

To stay informed about information security for Beckhoff products, subscribe to the RSS feed at https://www.beckhoff.com/secinfo.

## 2.6 Special conditions (ATEX)

**⚠ WARNING**

**Danger of explosion**

Gases or dusts can be ignited in potentially explosive areas. Read and follow the safety instructions to prevent deflagration or explosions.

Provisions shall be made to prevent the rated voltage from being exceeded by transient disturbances of more than 119 V.

If the temperatures during rated operation are higher than 70 °C at the feed-in points of cables, lines or pipes, or higher than 80°C at the wire branching points, then cables must be selected whose temperature data correspond to the actual measured temperature values.

Observe the permissible ambient temperature during operation in potentially explosive areas. The permissible ambient temperature range during operation is 0 °C to +50 °C.

The connections of the device may only be connected or disconnected if the supply voltage has been switched off or if a non-explosive atmosphere is ensured.

The connectors on the backside of the device must be protected against mechanical damage with the attached protective housing or on site by customer installation.

The connectors on the backside must be fully tightened to meet the IP65 rating.

The equipment shall be installed in such a way that the risk of mechanical danger is low.

The equipment shall only be used in an area of not more than pollution degree 2, as defined in IEC 60664-1.

The device may only be mounted horizontally (see: Mounting).

## 2.7 Special conditions (IECEx)

**⚠ WARNING**

**Danger of explosion**

Gases or dusts can be ignited in potentially explosive areas. Read and follow the safety instructions to prevent deflagration or explosions.

Provisions shall be made to prevent the rated voltage from being exceeded by transient disturbances of more than 119 V.

If the temperatures during rated operation are higher than 70 °C at the feed-in points of cables, lines or pipes, or higher than 80°C at the wire branching points, then cables must be selected whose temperature data correspond to the actual measured temperature values.

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The connections of the device may only be connected or disconnected if the supply voltage has been switched off or if a non-explosive atmosphere is ensured.

The connectors on the backside of the device must be protected against mechanical damage with the attached protective housing or on site by customer installation.

The connectors on the backside must be fully tightened to meet the IP65 rating.

The equipment shall be installed in such a way that the risk of mechanical danger is low.

The equipment shall only be used in an area of not more than pollution degree 2, as defined in IEC 60664-1.

The device may only be mounted horizontally (see: Mounting).

# 3 Product overview

The CPX series of robust control panels is designed for use in zone 2/22 hazardous areas. It is designed to be mounted on a mounting arm.

The device has the following features:

- Various display sizes and resolutions:
  - 15-inch, 1024 x 768 (4:3)
  - 19-inch, 1280 x 1024 (5:4)
  - 21.5-inch, 1920 x 1080 (16:9)
- Multi-finger touch screen (PCT): e.g. for 10-finger touch
- Aluminum housing with glass front for use in zone 2/22 hazardous areas
- Protection rating IP65
- Installation on an optional mounting arm system

## 3.1 Structure

The following figure shows the structure of the device as an example for all CPX39xx variants.




Fig. 1: Structure

*Table 1: Legend – Structure*

| No. | Component | Description |
|---|---|---|
| 1 | Display and touch screen glass | Operating the device |
| 2 | Connection section | Accessing the connections |
| 3 | Connection block | 100 x 100 threaded holes for adaptation to a mounting arm system |

## 3.2 Interface description

The device features the following interfaces, which are located at the back of the device:

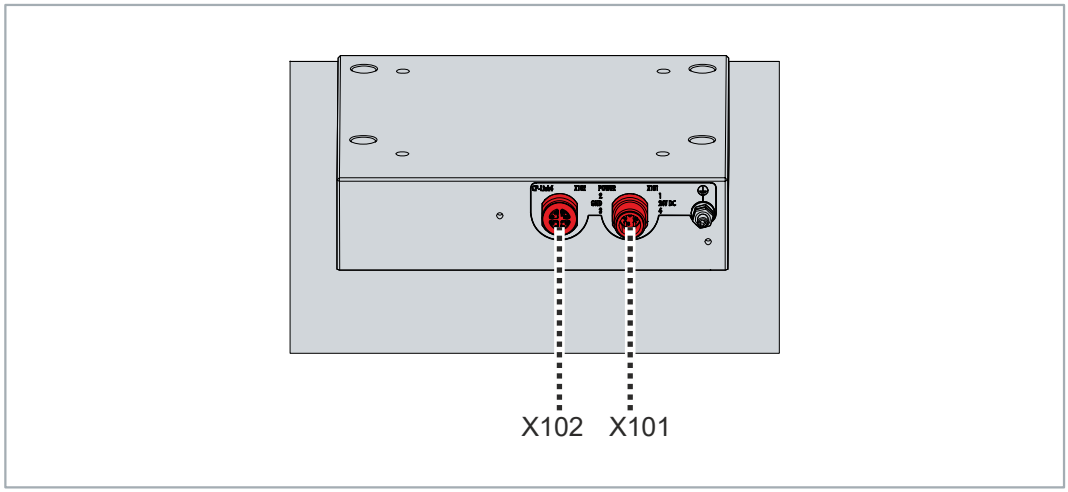



Fig. 2: Connection section

*Table 2: Legend Connection section*

| Name | Interface |
|---|---|
| X101 | Power supply [▶ 13] |
| X102 | CP-Link 4 [▶ 14] |

In the delivery state, a protective plate is fitted around the connection section. You can remove this by removing the two M3 screws.

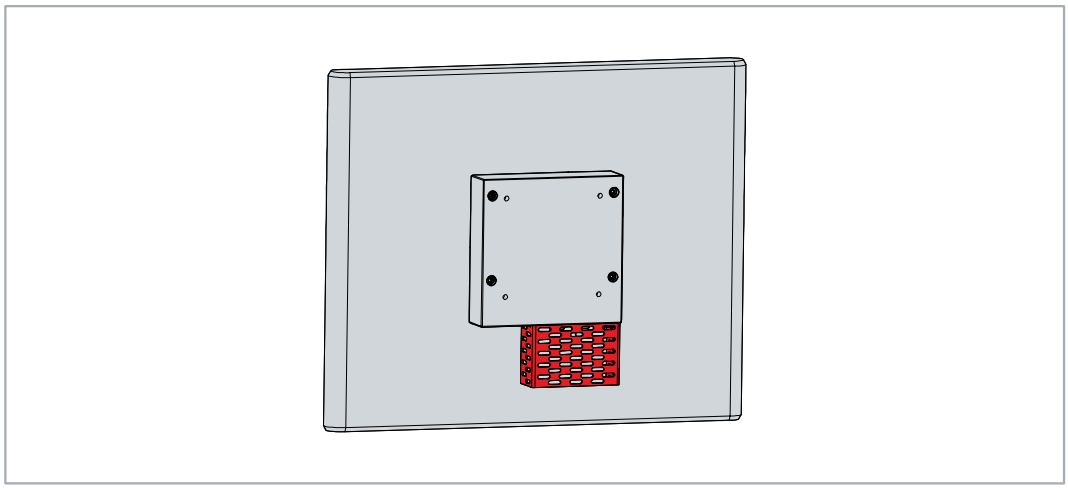


Fig. 3: Guard plate

If you have mounted one of the two Beckhoff mounting arm adapters C9900-M761 or -M763 on your device, you must first remove the cover in order to access the interfaces. Follow the steps below:

1. Insert a screwdriver into the recesses on the bottom of the mounting arm adapter (section A).
2. Bend the cover slightly outwards so that you can push out the latching lugs (Section A).
3. Slide the cover upwards off the mounting arm adapter (section B).

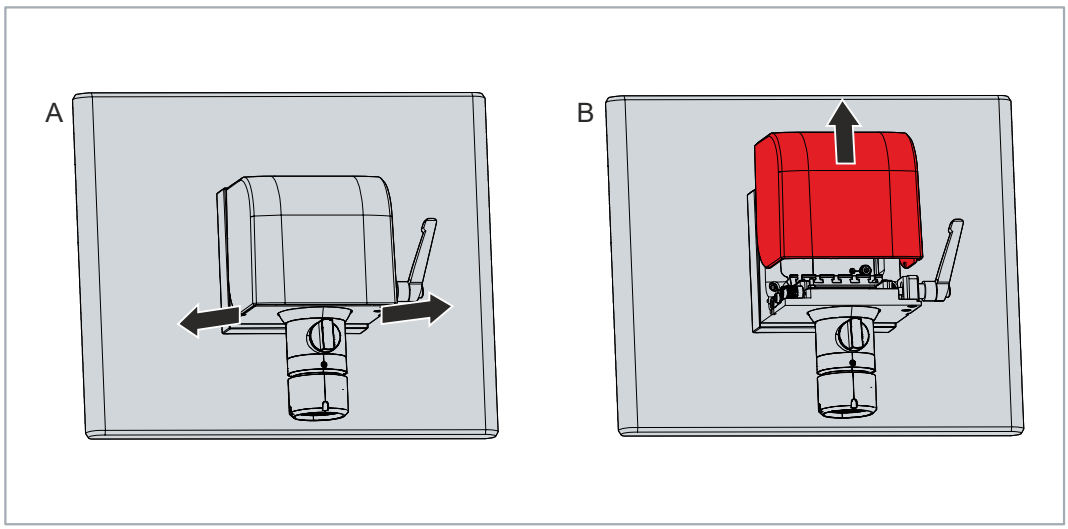



Fig. 4: Access to interfaces

⇨ You have removed the cover.

### 3.2.1 Power supply

The control panel is supplied with a rated input voltage of 24 V. The connection to the power supply and the external wiring of the control panel is established via the 4-pin M12 socket (X101). The connector is assigned both +24 V and GND.

If the CP39xx-0010 Control Panel is connected to an industrial PC via the CU8803 transmitter box, no additional power supply to the control panel is required via the voltage socket.

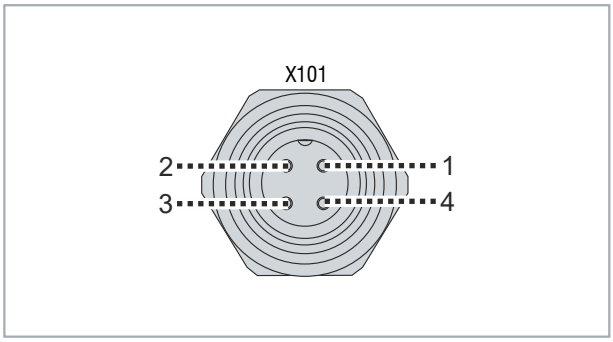



Fig. 5: Voltage socket pin numbering

*Table 3: Voltage socket pin assignment*

| Pin | Signal | Description |
|---|---|---|
| 1 | 24 V | Power supply |
| 2 | GND | 0 V |
| 3 | GND | 0 V |
| 4 | 24 V | Power supply |

The power supply plug is specified for 16 A. Due to the dual connection, maximum wire cross-sections of 4 x 0.75 $mm^2$ can be accommodated. For long supply lines, use 4 x 0.75 $mm^2$ cables to achieve a low voltage drop on the supply lines. There should be a minimum of 22 V at the control panel's power supply plug so that the control panel will remain on in the event of voltage fluctuations. The plug is included in the scope of delivery. You can obtain a replacement plug from your Beckhoff Sales using the following ordering option:

- C9900-P916: power supply connector for CP39xx, round connector IP65 with strain relief for the external supply cable

## 3.2.2 CP-Link 4

The control panel has a CP-Link-4 input (X102) in the form of an 8-pin M12 socket. Via the interface, the control panel can be connected to an industrial PC located at a distance of up to 100 m. The connection can be made either directly to an industrial PC with an appropriate PCIe® module or indirectly via an intermediate transmitter box.

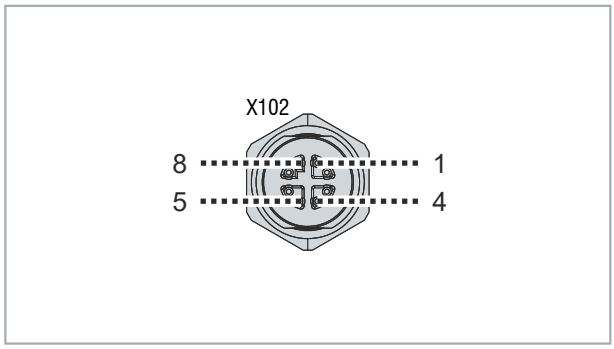



Fig. 6: CP-Link 4 pin numbering

*Table 4: CP-Link 4 pin assignment*

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | HDBT_0+ | 7 | HDBT_2- |
| 2 | HDBT_0+ | 8 | HDBT_2+ |
| 3 | HDBT_1+ | S1 | Shield |
| 4 | HDBT_1- | S2 | Shield |
| 5 | HDBT_3+ | S3 | Shield |
| 6 | HDBT_3+ | | |

CP-Link 4 is available as a Two Cable Display Link on an industrial PC with PCIe® module. The devices shown below are examples of all CP-Link 4-capable industrial PCs and control panels.

The control panel can be connected directly to the industrial PC via the module. USB 2.0 (100 Mbit/s) and DVI are transmitted together via a CP-Link 4 cable. An additional power supply is required for the control panel.

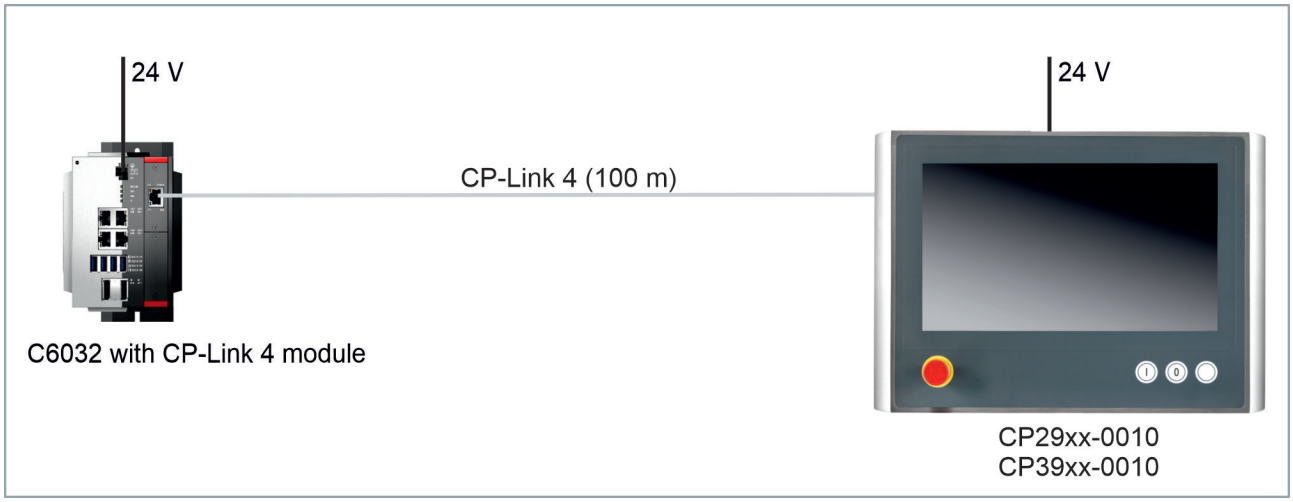



Fig. 7: CP-Link 4

### CP-Link 4 with CU8802 transmitter box

If the industrial PC is not equipped with a PCIe® module, a transmitter box is required for connecting the control panel.

When installing the control panel with the CU8802 transmitter box, the industrial PC is connected to the transmitter box via USB and DP/DVI. The transmitter box is then connected to the control panel via the CP-Link 4 connection of the transmitter box using a CP-Link 4 cable. USB and DVI are transmitted together via this cable. An additional power supply is required for the control panel (Two Cable Display Link). The following figure shows the wire connection to the CU8802-000x.

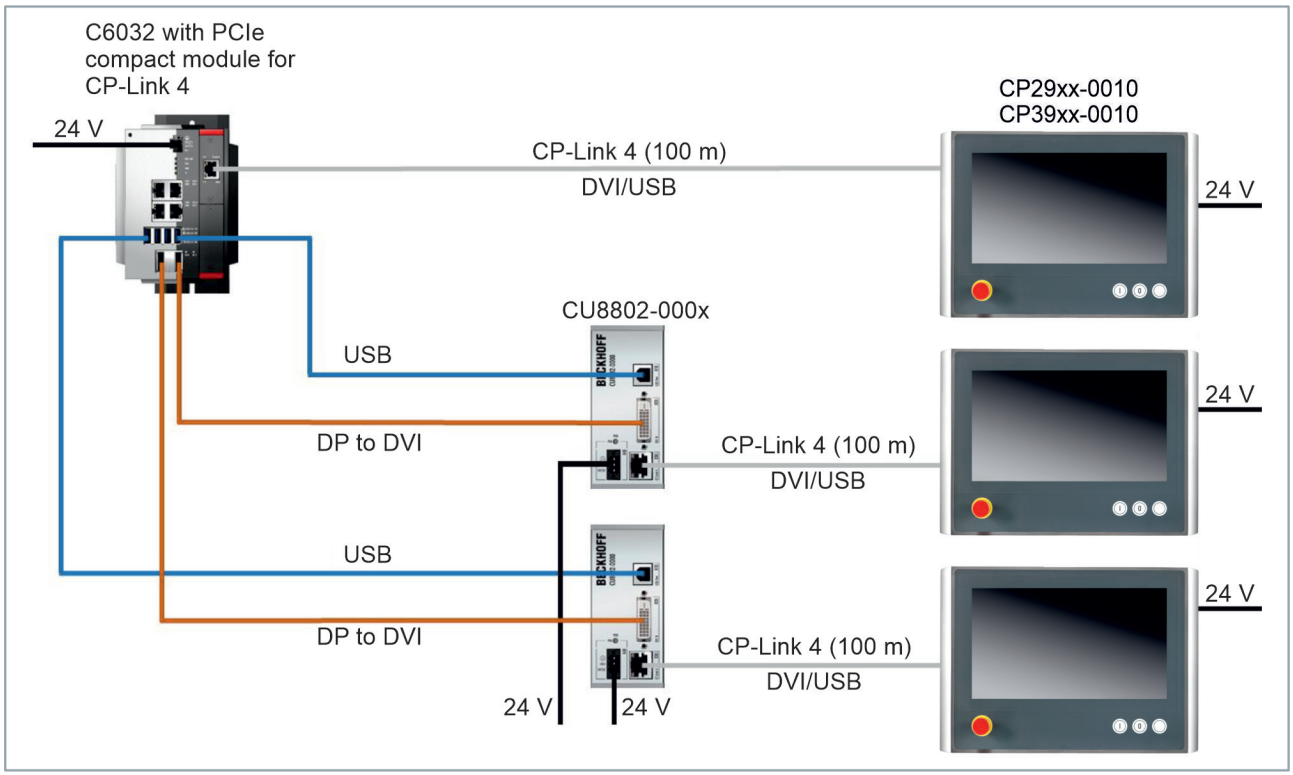



Fig. 8: CP-Link 4, CU8802-000x

The following ordering options are available for the transmitter boxes:

- CU8802-0000: DVI-to-DVI cable included in the box
- CU8802-0010: DisplayPort to DVI cable included with box

## 3.3 Name plate

The name plate provides information about the equipment of your device. The name plate shown here serves only as an example.

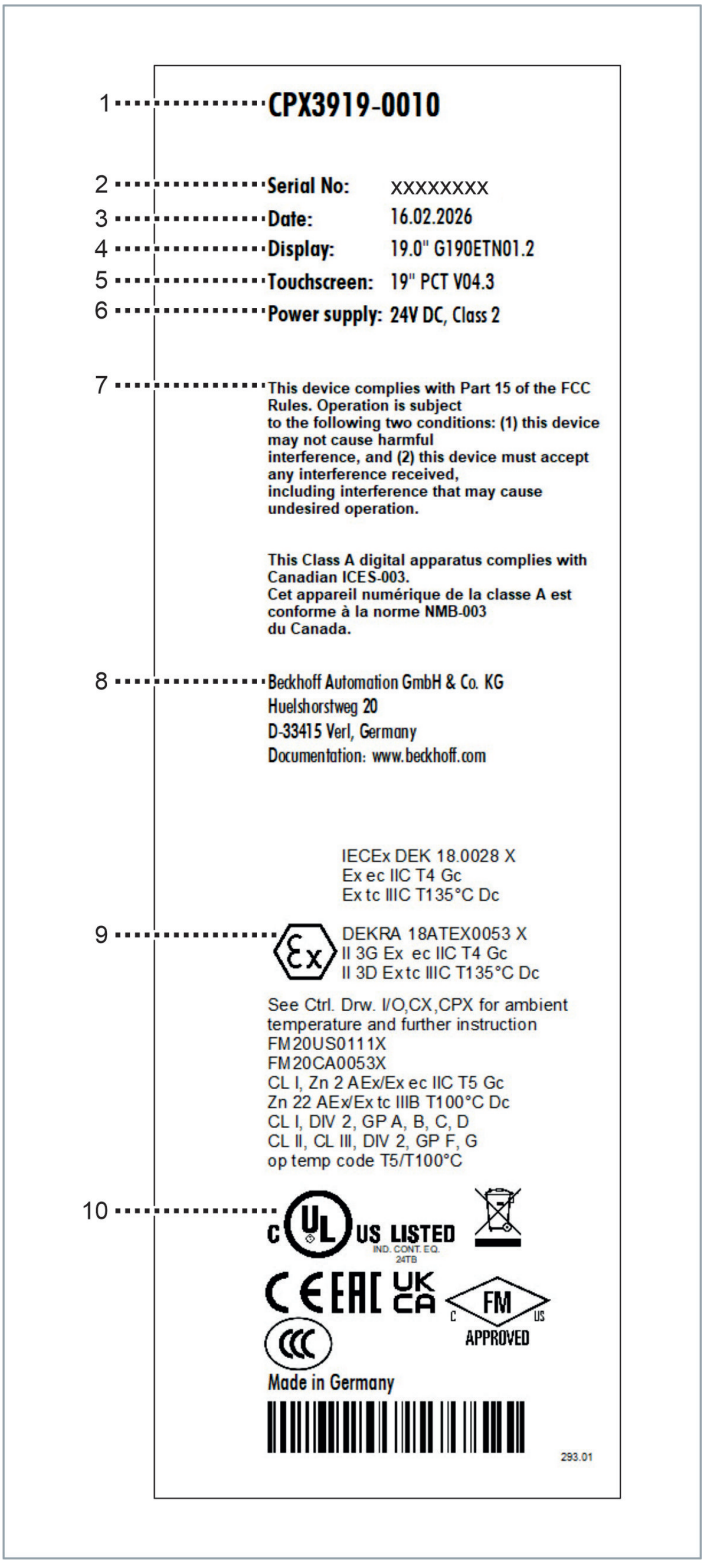



Fig. 9: Name plate

*Table 5: Name plate key*

| No. | Description |
|---|---|
| 1 | Model: the last four digits indicate the device generation. |

| No. | Description |
|---|---|
| 2 | Serial number = Beckhoff Traceability Number (BTN) |
| 3 | Date of manufacture |
| 4 | Display |
| 5 | Touch screen |
| 6 | Power supply |
| 7 | FCC marking |
| 8 | Address of the vendor |
| 9 | Markings for use in potentially explosive atmospheres |
| 10 | Symbols |

The CPX39xx--0010 Control Panel is certified for potentially explosive atmospheres and bears the following markings:

**ATEX:**



DEKRA 18ATEX0053 X
II 3G Ex ec IIC T4 Gc
II 3D Ex tc IIIC T135°C

**IECEx:**

IECEx DEK 18.0028 X
Ex ec IIC T4 Gc
Ex tc IIIC T135°C Dc

See Ctrl. Drw. I/O,CX,CPX for ambient temperature and further instruction
FM20US0111X
FM20CA0053X
CL I, Zn 2 AEx/Ex ec IIC T5 Gc
Zn 22 AEx/Ex tc IIIB T100°C Dc
CL I, DIV 2, GP A, B, C, D
CL II, CL III, DIV 2, GP F, G
op temp code T5/T100°C

# 4 Commissioning

In order to use the device, you must first commission it. The first step is to transport the device to is operating location and unpack it. This is followed by the installation of the device on the mounting arm, the connection of the cables and the power supply and finally the switching on of the device.

### Operating the device

The device is operated via the touch screen.

**NOTICE**

**Damage to the touch screen**

Operating the touch screen with unsuitable objects may damage the touch screen.

- Operate the touch screen only with bare fingers or wearing suitable gloves.
- If you use gloves, make sure that no hard particles such as metal shavings, glass splinters or similar adhere to the glove.

If you, as the user, require additional protection for the touch screen against dirt and scratching, for example due to dirty hands, this can be achieved with a protective film. The film provides short-term protection for a few days.

You can either order a protective film individually and fit it yourself retrospectively, or you can order the film for fitting directly ex factory. The protective films available for the display size of your device can be found on the Beckhoff website.

Proceed as follows to attach the protective film to the touch screen:

1. Ensure that the environment is as dust-free as possible.
2. Thoroughly clean the surface of the device to be fitted with the film and remove all grease residues.
3. Detach the film from the backing at the short edge and place it on the surface.
4. Gradually remove the film from the backing. At the same time, use a doctor blade or other object with a soft rubber or felt edge to apply the film.
5. Brush away air bubbles towards the edge with a doctor blade or other object with a soft rubber or felt edge.

⇨ The film is now fitted.

You can use the Dimming, Screensaver and Cleaning mode functions with the Display Control Tool. The Beckhoff Information System provides more information about the tool: https: https://infosys.beckhoff.com/content/1031/panelconfigurationtools/11725543179.html?id=7993182328699786200.

## 4.1 Transport and unpacking

The specified storage conditions must be adhered to (see chapter 8 Technical data).

Despite the robust design of the unit, the components are sensitive to strong vibrations and impacts. During transport the device must therefore be protected from mechanical stress. Appropriate packaging of the device, such as the original packaging, can improve the vibration resistance during transport.

**NOTICE**

**Hardware damage due to condensation**

Unfavorable weather conditions during transport can cause damage to the device.

- Protect the device against moisture (condensation) during transport in cold weather or in case of extreme temperature fluctuations.
- Do not put the device into operation until it has slowly adjusted to the room temperature.
- Should condensation occur, wait for about 12 hours before switching the device on.

Proceed as follows to unpack the unit:

1. Check the packaging for transport damage.
2. Remove packaging.
3. Keep the packaging for possible future transport.
4. Check your delivery for completeness by comparing it with your order.
5. Check the contents for visible shipping damage.
6. Inform the Beckhoff Service Dept. in case of discrepancies between the packaging content and the order or in the event of transport damage.

⇨ You have unpacked the device.

## 4.2 Mounting

**NOTICE**

**Extreme environmental conditions**

Extreme environmental conditions can cause damage to the device.

- Avoid extreme environmental conditions.
- Protect the device from moisture and heat.

The device is designed for installation on a mounting arm system. The environmental conditions specified for operation must be observed.

In its basic configuration, your device is equipped with a connection block with four M6 threaded holes at a distance of 100 x 100 mm (1). You can fit any mounting arm system to it.

You can also order your device with a connection block that has four M6 threaded holes spaced 70 x 130 mm (2) apart by using the order identifier C9900-M344. You can mount the two Beckhoff mounting arm adapters C9900-M761 and -M763 on the connection block (see Chap. 4.2.1 Mounting arm adapter installation [▶ 21]).

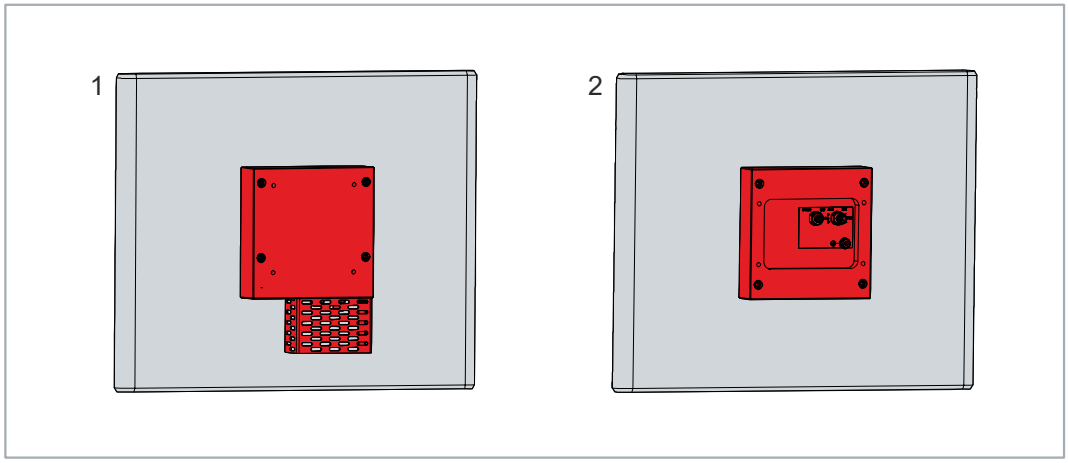



Fig. 10: Connection block options

### Dimensions

For the device dimensions, please refer to the “Technical Drawings” section in the Download Finder on the Beckhoff website. Simply enter the desired device in the search bar.

All dimensions are in mm.

### 4.2.1 Mounting arm adapter installation

If you ordered your device with ordering option C9900-M344, it has a connection block with four M6 threaded holes spaced 70 x 130 mm apart. This allows you to mount two Beckhoff mounting arm adapters on your device:

- C9900-M761: Rotatable and tiltable mounting arm adapter with clamping lever to fix the tilt
- C9900-M763: Rotatable and tiltable mounting arm adapter

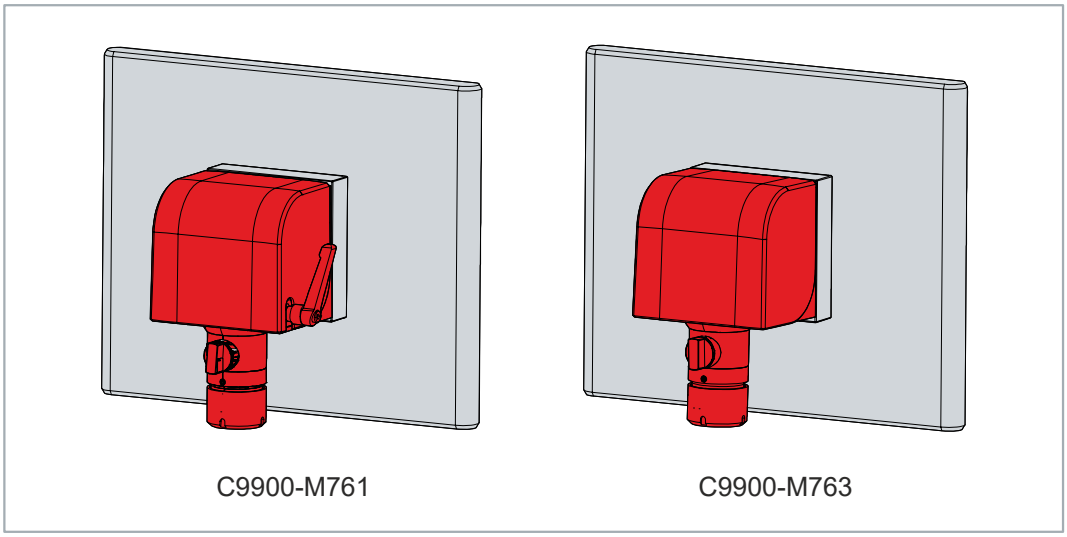



Fig. 11: Mounting arm adapter options

**Mounting arm adapter installation**

Regardless of which of the two mounting arm adapters you have chosen, the installation procedure is the same. The only decision you need to make is whether to orient the mounting arm adapter upwards or downwards.

To mount the mounting arm adapter, follow the steps below:

1. Insert a screwdriver into the recesses on the bottom of the mounting arm adapter (section A).
2. Bend the cover slightly outwards so that you can push out the latching lugs (Section A).
3. Slide the cover upwards off the mounting arm adapter (section B).

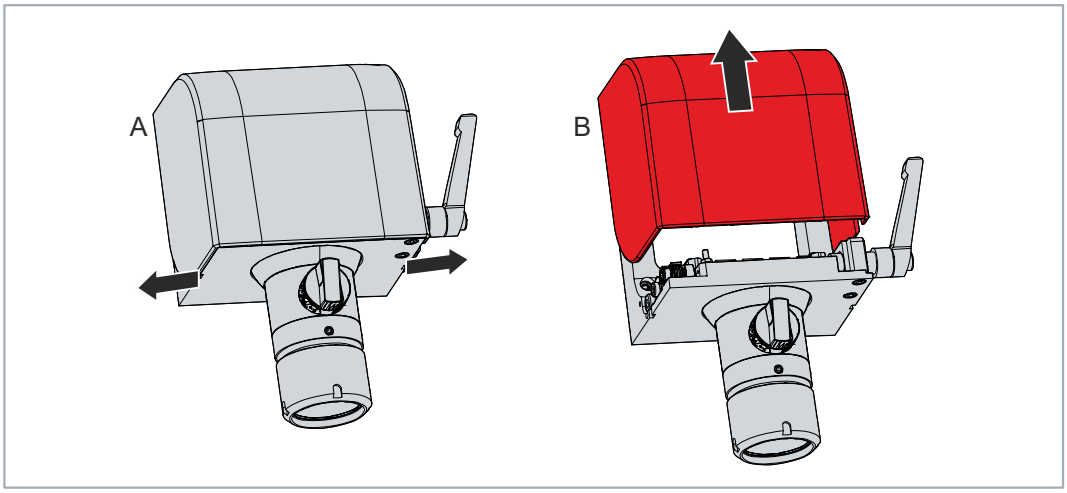



Fig. 12: Removing the cover

4. Attach the mounting arm adapter to the four M6 threaded holes on the connection block using the four M6 screws (Section C).
5. Tighten the four screws with a tightening torque of 6 Nm. (Section C).
6. Replace the cover on the mounting arm adapter. (Section D).

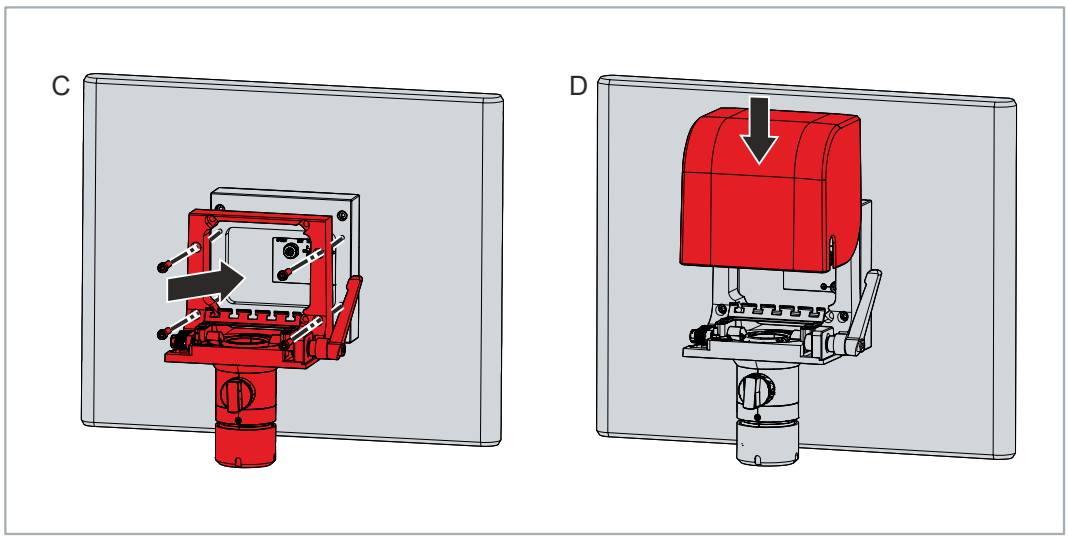



Fig. 13: Mounting arm adapter installation

⇨ You have installed the mounting arm adapter on the device.

## 4.2.2 Mounting arm tube installation

Observe the following points when installing the mounting arm tube on the mounting arm adapter:

- For the correct installation height, use the position of the screen for guidance. This should always be optimally visible to the user.
- Do not expose the device to direct sunlight.

Regardless of the orientation of the mounting arm adapter, you must follow in the same procedure to install the mounting arm tube. Depending on whether you have oriented the mounting arm adapter upwards or downwards, the mounting arm tube has to be installed on the adapter in the same direction.

Among other tools you need a hook wrench for the installation. You can order this from your Beckhoff Sales using the following order identifier:

- C9900-Z263: Hook wrench size 58-62 for tightening and loosening the slotted nut of the C9900-M75x mounting arm adapter

To install the mounting arm tube on the mounting arm adapter, follow the steps below:

1. Unscrew the hexagon socket screw (1) a few turns with a 3 mm Allen key.
2. Push the connection cables of the device through the mounting arm tube.
3. Insert the mounting arm tube 50.2 mm into the mounting arm adapter to the stop.

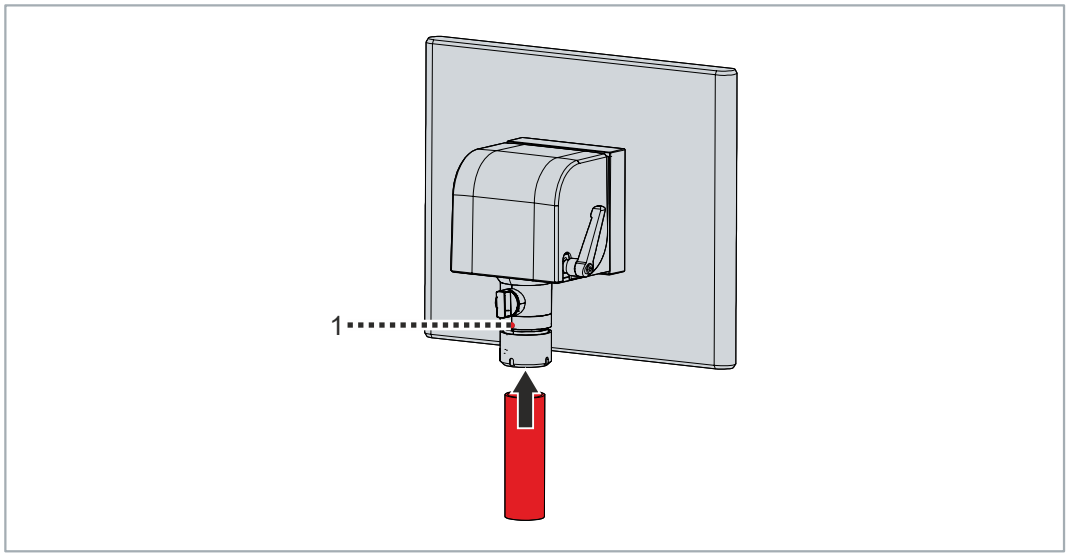



Fig. 14: Inserting the mounting arm tube

4. Retighten the hexagon socket screw with a torque of 3 Nm.
5. Tighten the slotted nut of the mounting arm adapter with a hook wrench size 58-62 clockwise with a torque of 20 Nm.

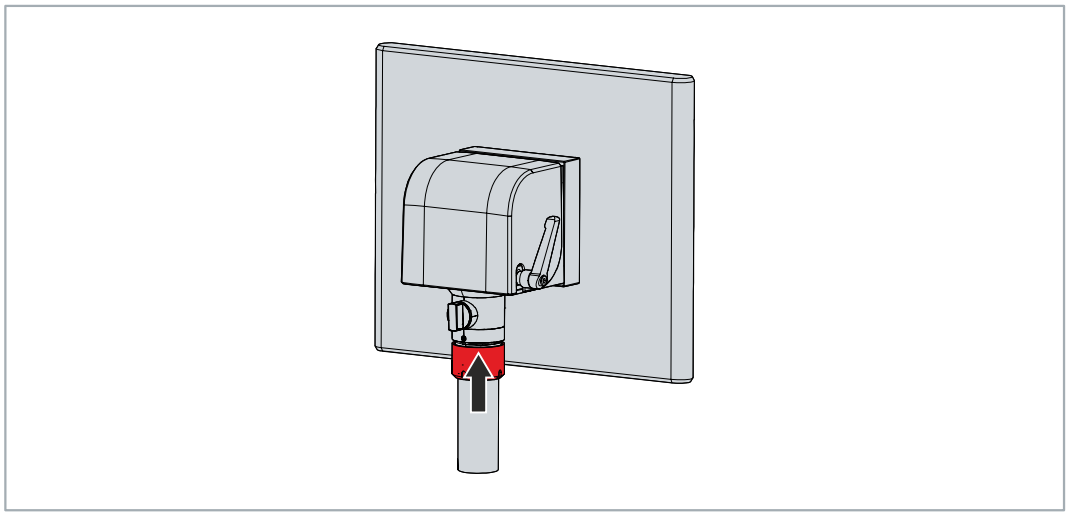


Fig. 15: Mounting arm tube installation

⇨ You have installed the mounting arm tube on the mounting arm adapter.

The mounting arm adapter allows you to tilt the device mounted on the mounting arm by +/- 20° and rotate it by +/- 165°.

## 4.3 Connecting the control panel

**⚠ CAUTION**

**Risk of electric shock**

Dangerous touch voltages can lead to electric shock. To avoid electric shock, observe the following:

- Never connect or disconnect the device cables during a thunderstorm.
- Provide protective earthing for handling the device.

To make the device ready for operation, you have to connect it. The first step is to ground the device. Then you can connect the cables and the power supply.

An external power supply providing 24 V DC from an isolated source is required. This must be protected by a fuse in accordance with UL 248 with a maximum nominal value of 4 A. A nominal voltage of at least 22 V must be applied to the power supply plug of the device at all times.

The cabling of the device in the control cabinet must be done in accordance with the standard EN 60204-1:2006 PELV = Protective Extra Low Voltage:

- The PE conductor (protective earth) and the "0 V" conductor of the voltage source must be on the same potential (connected in the control cabinet).
- Standard EN 60204-1:2006, section 6.4.1:b stipulates that one side of the circuit, or a point of the energy source for this circuit must be connected to the protective conductor system.

Peripheral devices connected to the device with their own power supply must have the same potential for the PE and "0 V" conductors (no potential difference).

## 4.3.1 Power supply cable installation

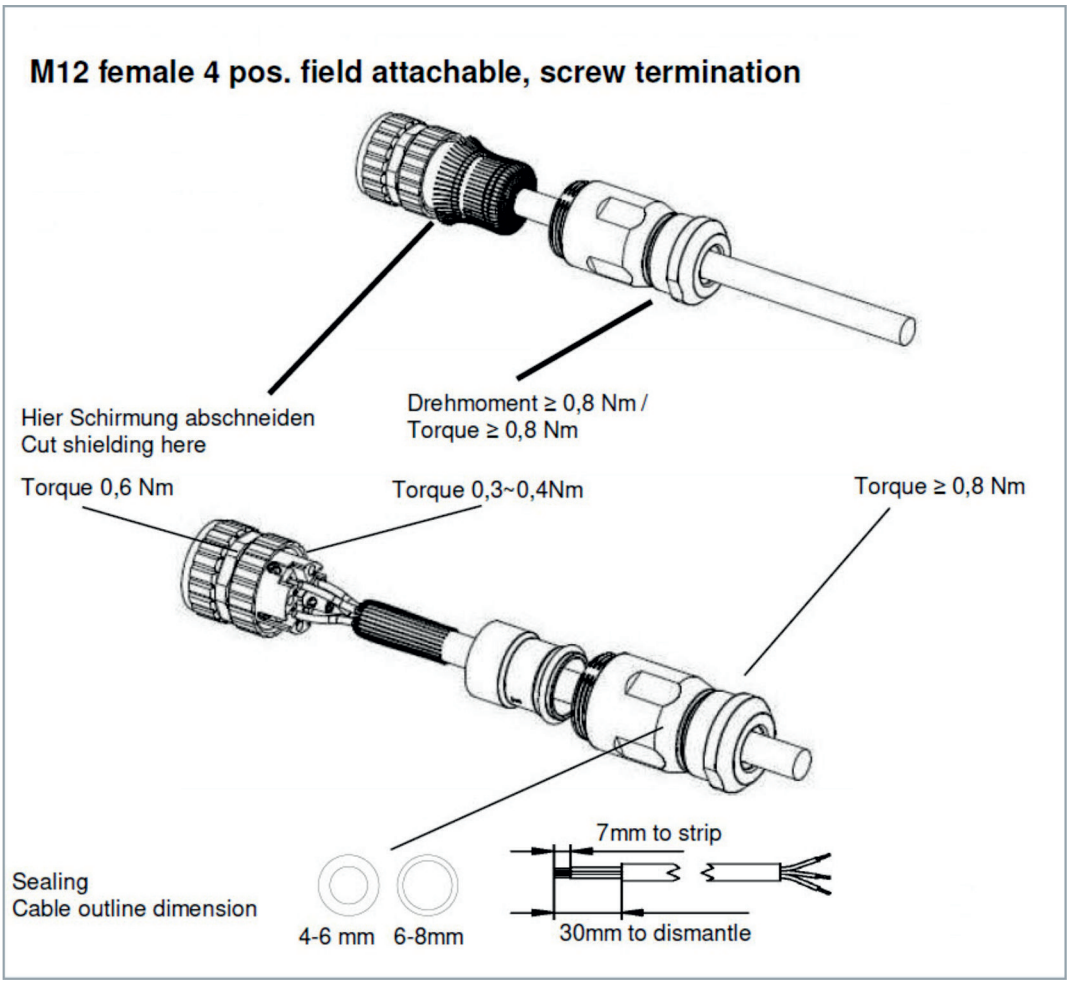



Fig. 16: Power supply cable installation

## 4.3.2 Grounding the control panel

Potential differences are minimized and electrical currents are diverted to the ground through grounding or potential equalization of electronic devices. This is to prevent dangerous touch voltages and electromagnetic interference.

**EMC**

**NOTICE**

**Hardware damage due to electromagnetic interference**

The use of the device without a functional earth can lead to material damage due to electromagnetic interference.

- Only use the device with functional earth.

Electromagnetic compatibility (EMC) of the device includes on the one hand not affecting other devices and equipment by electromagnetic interference and on the other hand not being disturbed by electrical or electromagnetic effects itself.

To do this, the device must comply with certain protection requirements. The device has EMC interference immunity according to EN 61000-6-2. The EMC interference emission of the device meets the requirements of EN 61000-6-4.

The functional earth is necessary for the EMC of the device. Connect the functional earth using the ground terminal on the back of the unit at the connection block. The position of the connection varies between the two available connection blocks. Use wires with a cross-section of at least 4 $mm^2$ or a flat conductor for the ground connection, as the circumference of the conductor should be as large as possible.

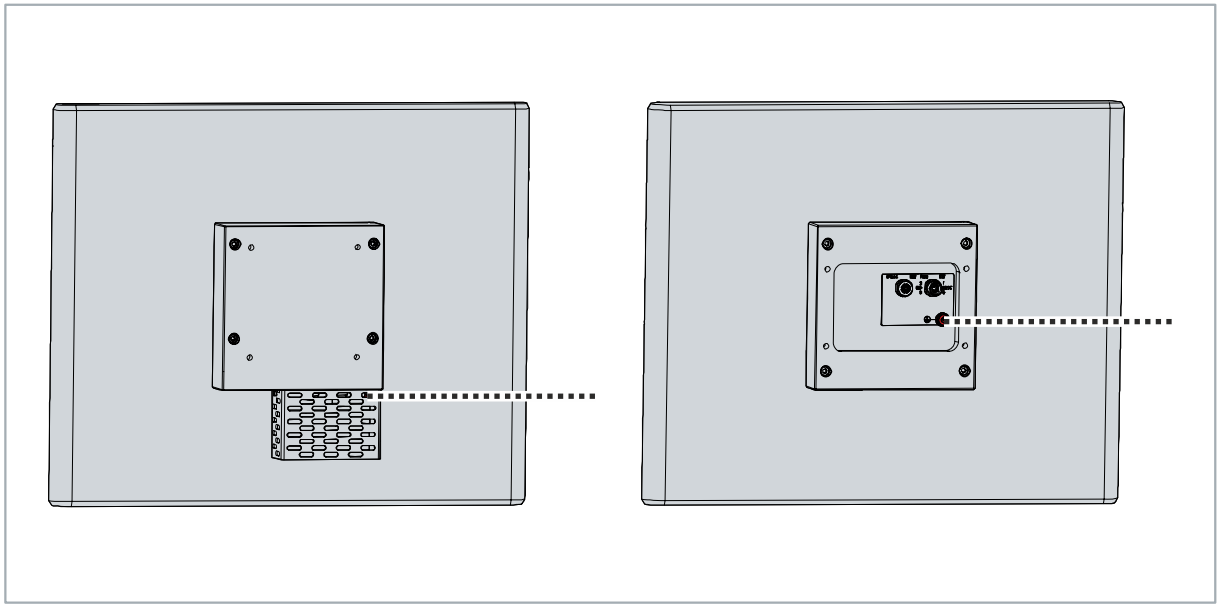


Fig. 17: Ground connections

## 4.3.3 Connecting cables and power supply

**NOTICE**

**Incorrect connection procedure**

Incorrect procedure when connecting the cables and the power supply can cause hardware damage.

- Follow the documented procedure for connecting the cables and the power supply.
- Always connect the cables first and only then switch on the power supply.
- Please read the documentation for the external devices prior to connecting them.

The connections are located on the back of the device on the connection block.

### Connecting cables

Make sure that you first ground the device (see chapter 4.3.2 Grounding the control panel [▶ 24]) and then plug in all data transmission cables.

### Connecting the power supply

Cables with a maximum cable cross-section of 0.75 $mm^2$ can be used for connecting the power supply. For long supply lines, use 0.75 $mm^2$ cables to achieve a low voltage drop on the supply line. There should be at least 22 V at the voltage connector of the device, so that the device remains switched on during voltage fluctuations.

Proceed as follows to connect the 24 V DC power supply:

1. Plug the power supply cable into the power supply socket on the device.
2. Connect the device to your external 24 V power supply.
3. Switch on the 24 V power supply.

⇨ You have connected the 24 V DC power supply.

# 5 Decommissioning

**NOTICE**

**Hardware damage due to power supply**

A connected power supply can cause damage to the device during disassembly.

- Disconnect the power supply from the device before starting to disassemble it.

As part of the decommissioning of the device, you must first disconnect the power supply and cables. Afterwards, you can dismount the device from the mounting arm. If you do not wish to use the device any further, chapter Disassembly and disposal provides information on the correct disposal of the device.

## 5.1 Disconnecting the power supply and cables

**⚠ CAUTION**

**Risk of electric shock**

Dangerous touch voltages can lead to electric shock. To avoid electric shock, observe the following:

- Never connect or disconnect the device cables during a thunderstorm.
- Provide protective earthing for handling the device.

Proceed as follows to disconnect the power supply and lines:

1. Shut down the device.
2. Disconnect the device from your external 24 V power supply.
3. Remove the voltage connector from the voltage socket.
4. Make a note of the wiring of all data transmission cables if you want to restore the cabling with another device.
5. Disconnect all data transmission cables from the device.
6. Finally, disconnect the ground connection.

⇨ You have disconnected the power supply and the cables.

## 5.2 Disassembly and disposal

**NOTICE**

**Material damage due to falling down**

If the device is suspended from the ceiling and you undo the slotted nut of the mounting arm adapter without securing it, the device will fall down.

- Make sure the device is secured against falling down before you undo the slotted nut of the mounting arm adapter.

Before you can remove the device from the mounting arm, you must first disconnect the power supply and cables (see chapter Disconnecting the power supply and cables).

### Disassembly of the mounting arm tube

To remove the mounting arm tube from the mounting arm adapter, follow the steps below:

1. Loosen the slotted nut (1) of the mounting arm adapter with a hook wrench size 58-62 (C9900-Z263) in counterclockwise direction.
2. Unscrew the hexagon socket screw (2) a few turns with a 3 mm Allen key.
3. Pull the mounting arm tube out of the mounting arm adapter.

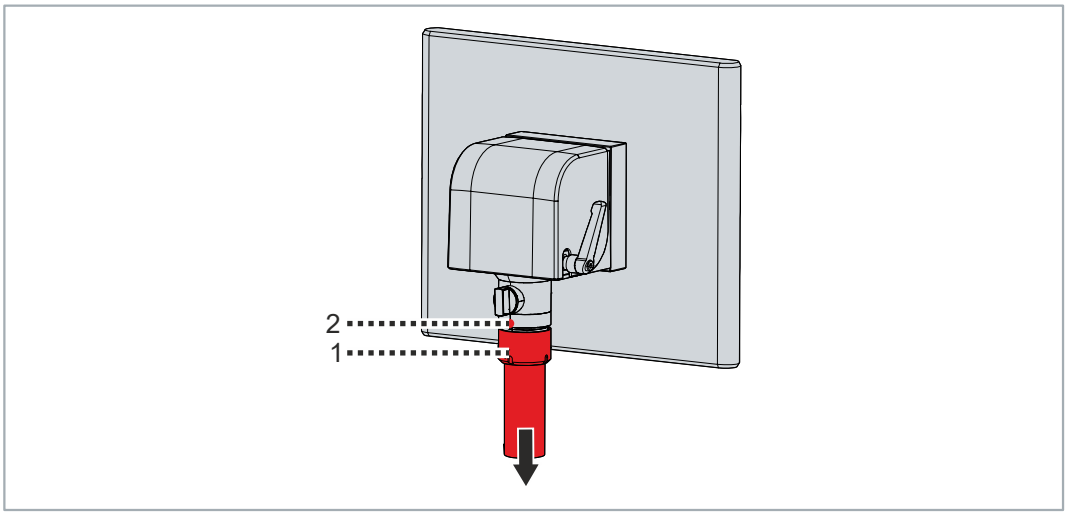



Fig. 18: Disassembly of the mounting arm tube

4. Pull the connecting cables out of the mounting arm tube.
5. Screw in the hexagon socket screw until it no longer protrudes on the outside.

⇨ You have removed the mounting arm tube from the mounting arm adapter.

### Disassembly of the mounting arm adapter

To remove the mounting arm adapter from the device, follow the steps below:

1. Remove the cover (see chapter 3.2 Interface description [▶ 11]).
2. Remove the four M6 screws. Make sure that the mounting arm adapter is secured against falling down.
3. Remove the mounting arm adapter from the device.

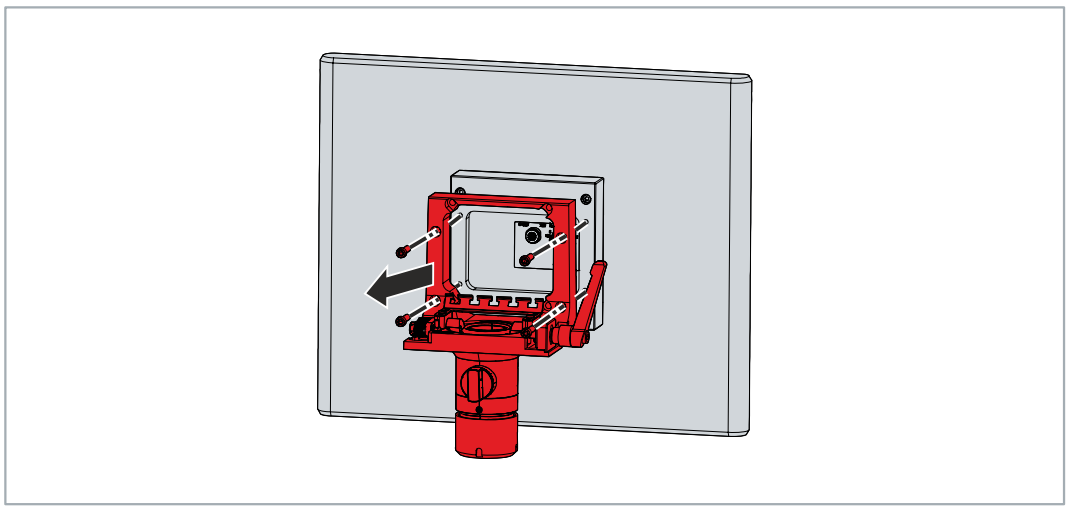


Fig. 19: Disassembly of the mounting arm adapter

⇨ You have removed the mounting arm adapter.

When disposing of the device follow the national electronic scrap regulations. In order to dispose of the device, it must be removed and fully dismantled. Dispose of the components in the following way:

- Send plastic parts (polycarbonate, polyamide (PA6.6)) for plastics recycling.
- Take metal parts to the metal recycling collection point.
- Electronic parts such as fans and circuit boards must be disposed of in accordance with national electronic scrap regulations.
- Stick insulating tape over the poles of the CR2032 battery on the motherboard and dispose of the battery via the local battery recycling.

# 6 Maintenance

Maintenance measures increase the efficiency of the device by ensuring long-term functionality. Cleaning the device contributes to this.

Defective pixels in the TFT display are production-related and are not grounds for complaint.

### Cleaning

**NOTICE**

**Unsuitable cleaning agents**

The use of unsuitable cleaning agents can damage the device.

- Clean the device only as specified.

It is essential to observe the following points when cleaning the device:

- Keep to the boundary conditions of protection rating IP65.
- Never use compressed air to clean the device.
- Maintain an ambient temperature range of 0 °C to 50 °C.

### Cleaning agents

You must use suitable cleaning agents to avoid damaging the front of the device during cleaning. Examples include:

- Benzine
- Spirit
- Glass cleaner

Avoid the following cleaning agents:

- Detergents with scouring or abrasive components
- Metal cleaning objects such as razor blades or steel spatulas
- Steam jet cleaner or very hot water
- Cold water with a heated device
- High water pressure, e.g. high-pressure cleaner

### Cleaning the front screen

You can clean the front screen of the device during operation. In order to avoid inadvertent touch entries when doing this, you must first set the device to "Cleaning Mode" with the help of the Beckhoff Display Control Tool. Also make sure that you not only clean the display area, but also the edge of the glass pane. Impurities in the edge area or liquids that do not run down the glass pane as drops but as a long short-circuit bridge create an electrically conductive connection between the touch screen area and the metal housing of the device. This unintentionally triggers a touch event at the edge of the touch screen, which can lead to incorrect operation.

The Beckhoff Display Control Tool does not start automatically when the device starts up. Proceed as follows to activate the "Cleaning Mode" of the tool:

1. Click the Beckhoff Display Control Tool icon to start it.
   ⇨ When the tool is started, a small sun symbol appears in the taskbar.
2. Right-click the sun symbol.
3. Select the "Cleaning Mode" (see Fig.).

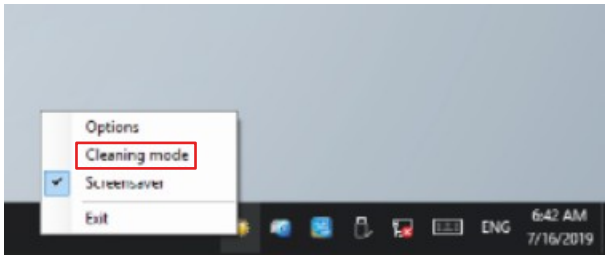



Fig. 20: Select "Cleaning Mode"

⇨ "Cleaning Mode" is activated. You can now clean the front panel.

You can set the duration for which the device should remain in "Cleaning Mode". The period can be set between 5 and 120 seconds. Right-click the sun symbol again and click "Options". Now select the appropriate duration (see figure.).

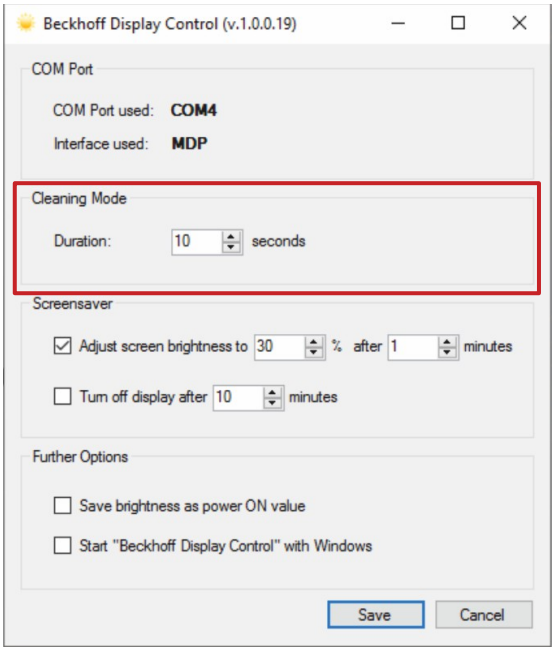



Fig. 21: Configuration "Cleaning Mode"

### Repair

Only the vendor may repair the device. If a repair should be necessary, contact Beckhoff Service (see Chapter 9.1 Service and Support).

# 7 Troubleshooting

*Table 6: Troubleshooting*

| Fault | Cause | Measures |
|---|---|---|
| No control panel function | Lack of power supply to the control panel<br>Other cause | Check the power supply cable<br>Call Beckhoff Service |
| The control panel only works partially or only temporarily (e.g. dark screen image or none at all) | Defective backlight in the display<br>Components in the control panel defective | Call Beckhoff Service<br>Call Beckhoff Service |
| Malfunction of the touch screen | Poor or missing functional earth of the device<br>Poor or missing ground connection of the user | Establish functional earth<br>User must stand on the floor with normal shoes |
| USB error during access with TwinCAT via USB | Cycle times in TwinCAT set to 10 ms (default) | Increase the cycle times to between 50 ms and 80 ms |

# 8 Technical data

*Table 7: Technical data*

| Product designation | CPX39xx | | |
|---|---|---|---|
| Weight | CPX3915-0010: approx. 5.3 kg<br>CPX3919-0010: approx. 7.4 kg<br>CPX3921-0010: approx. 8.0 kg | | |
| Supply voltage | 22–30 $V_{DC}$ (24 $V_{DC}$ power supply unit, NEC class 2) | | |
| Power consumption | Data sheet for power consumption and power loss in the download finder:<br>https://www.beckhoff.com/en-en/support/download-finder/search-result/?download_group=691754572 | | |
| Protection rating | IP65 | | |
| Vibration resistance (sinusoidal vibration) | EN 60068-2-6: | 10 … 58 Hz: | 0.035 mm |
| | | 58 … 500 Hz: | 0.5 G (~ 5 $m/s^2$) |
| Shock resistance (shock) | EN 60068-2-27: | 5 G (~ 50 $m/s^2$), duration: 30 ms | |
| EMC interference immunity | conforms to EN 61000-6-2 | | |
| EMC interference emission | conforms to EN 61000-6-4 | | |
| permissible ambient temperature | Operation: 0°C … +50°C<br>Transport/storage: -20 °C ... +65 °C | | |
| permissible relative air humidity | maximum 95 %, no condensation | | |
| Transport and storage | The values for air humidity and shock resistance are to be observed during transport and storage and in operation. The vibration resistance during transport can be improved by suitable packaging of the device. | | |

# 9 Appendix

In the appendix you will find information for servicing and details of the approvals that your device has.

## 9.1 Service and support

Beckhoff and its worldwide subsidiaries offer comprehensive service and support, providing fast and competent assistance for all issues relating to Beckhoff products and system solutions.

**Beckhoff Service**

The Beckhoff service center provides support in all forms of after-sales service:

- on-site service
- repair service
- spare parts service
- hotline service

Hotline: + 49 5246/963-460
email: service@beckhoff.com

If your device requires attention, please state its serial number, which you can find on the name plate.

**Beckhoff Support**

Support offers you comprehensive technical assistance to help you with the application of individual Beckhoff products, and also with other extensive services:

- world-wide support
- design, programming, and commissioning of complex automation systems
- extensive training program for Beckhoff system components

Hotline: + 49 5246/963-157
email: support@beckhoff.com

**Headquarters**

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Phone: + 49 5246/963-0
email: info@beckhoff.de

The addresses of the worldwide Beckhoff branches and agencies can be found on our website at http://www.beckhoff.com/.

You can also find further documentation for Beckhoff components there.

## 9.2 Approvals

Your device has at least the following approvals:

- CE
- FCC

You will find all other applicable approvals on the name plate of your device.

### FCC approvals for the United States of America

FCC: Federal Communications Commission Radio Frequency Interference Statement

This device was tested and complies with the limits for a digital device of class A, according part 15 of the FCC regulations. These limits are designed to provide adequate protection against adverse interference, if the device is used in a commercial environment. This device generates, uses and may emit radio frequency energy and may cause adverse interference with radio communications, if it is not installed and used in accordance with the operating instructions. If this device is used in a residential area it is likely to cause adverse interference, in which case the user must take appropriate countermeasures in order to eliminate the interference at his own expense.

### FCC approvals for Canada

FCC: Canadian Notice

This device does not exceed the class A limits for radiation, as specified by the Radio Interference Regulations of the Canadian Department of Communications.

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