BECKHOFF New Automation Technology

Manual | EN

CP39xx

Control Panel

2024-03-19 | Version: 4.0

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1 Notes on the documentation

This description is only intended for the use of trained specialists in control and automation engineering who are familiar with the applicable national standards.

The following instructions and explanations must be followed during installation and commissioning of the components. The responsible staff must ensure that the application or use of the products described satisfy all the requirements for safety, including all the relevant laws, regulations, guidelines and standards.

Disclaimer

The documentation has been prepared with care. The products described are, however, constantly under development. For that reason the documentation is not in every case checked for consistency with performance data, standards or other characteristics. In the event that it contains technical or editorial errors, we retain the right to make alterations at any time and without warning. No claims for the modification of products that have already been supplied may be made on the basis of the data, diagrams, and descriptions in this documentation. All illustrations shown are only examples. The configurations depicted may deviate from the standard.

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Delivery state

All the components are supplied in particular hardware and software configurations appropriate for the application. Changes to the hardware or software configuration are permitted, provided they are within the specified limits for power consumption and power loss (please refer to the respective data sheet).

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Please check whether you are using the current and valid version of this document. The current version is always available for download from the Beckhoff website. In case of doubt, contact Technical Support.

Delivery conditions

In addition, the general delivery conditions of the company Beckhoff Automation GmbH & Co. KG apply.

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 the avoidance of personal injuries and damage to property.

Exclusion of liability

Beckhoff shall not be liable in the event of non-compliance with this documentation and thus the use of the devices outside the documented operating conditions.

2.1 Signal words

The signal words used in the documentation are classified below.

Warning of personal injuries

⚠ DANGER
Hazard with high risk of death or serious injury.

⚠ WARNING
Hazard with medium risk of death or serious injury.

⚠ CAUTION
There is a low-risk hazard that can result in minor injury.

Warning of property and environmental damage

NOTICE
There is a possibility of damage to the environment, equipment or data.

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 DVI/USB extension technology integrated in the CP39xx-0000 Control Panel enables the panel to be located up to 50 m away from the PC.

The CP-Link 4 technology integrated in the CP39xx-0010 Control Panel enables the panel to be located up to 100 m away from the PC via a CP-Link 4 cable with optionally integrated or separate 24 V power supply, depending on the transmitter module.

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.

Improper use

Do not use the device outside the documented operating conditions.

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.
- Only use the device in hazardous areas if it is explicitly designed for this purpose.
- 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.
- In the case of a 24 V DC power supply unit, fuse the power supply line according to its cross-section to protect the supply line in the event of a short circuit.
- 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.

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

3 Product overview

The Beckhoff Panel generation with industrial multi-touch display is designed for installation on the mounting arm. The devices offer suitable solutions for a variety of applications. The model variety ranges from different display sizes and formats to customer-specific models.

The control panel has the following features:

- Different display sizes and resolutions, landscape and portrait mode:
  - 7-inch (800 x 480) 5:3
  - 12-inch (800 x 600) 4:3
  - 12.1-inch (1280 x 800) 16:10
  - 15-inch (1024 x 768) 4:3
  - 15.6-inch (1366 x 768) 16:9
  - 18.5-inch (1366 x 768) 16:9
  - 19-inch (1280 x 1024) 5:4
  - 21.5-inch, 1920 x 1080 (Full HD) (16:9)
  - 24-inch, 1920 x 1080 (Full HD) (16:9)
- Multi-finger touch screen (PCT): e.g. for 10-finger touch
- Aluminum housing with glass front, IP65 all-round; the housing surface is electrically insulating
- Installation on the mounting arm system

Push button extension

You have the possibility to order the following control panels in landscape mode ex factory with the corresponding push button extension C9900-G02x or C9900-G05x:

- CP3912 (C9900-G022)
- CP3913 (C9900-G029)
- CP3915 (C9900-G023)
- CP3916 (C9900-G024, C9900-G050, C9900-G051)
- CP3918 (C9900-G025, C9900-G052, C9900-G053)
- CP3919 (C9900-G026)
- CP3921 (C9900-G028, C9900-G054, C9900-G055)
- CP3924 (C9900-G027, C9900-G056, C9900-G057)

Notes on the push button extension and the functions can be found in the installation and operating instructions for the C9900-G02x or C9900-G05x. Figure 1 shows an example of a control panel without (1) and with (2) push button extension.

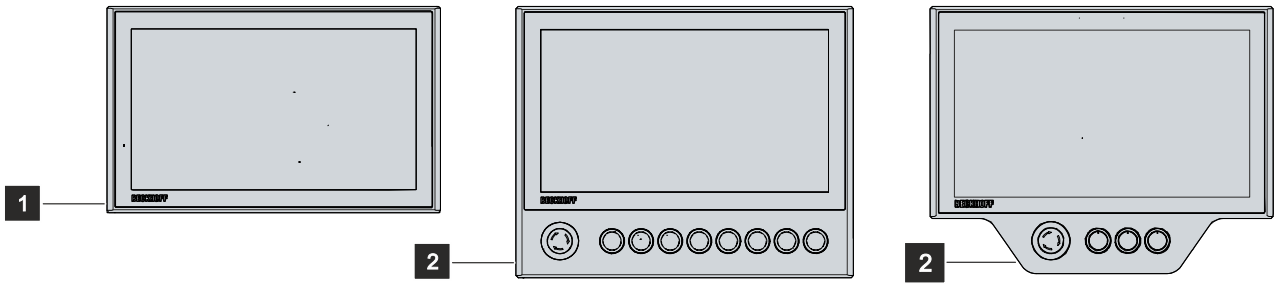


Fig. 1: Control panel with push button extension

Mechanical extensions

You have the option of ordering the control panel with mechanical extensions such as a toolboard (1) or a handle (2) (see Fig. 2). The extensions are mounted ex factory. The following ordering options are available to you:

Table 1: Ordering options for toolboards and handle

Order identifier	Version
C9900-M406	Toolboard for keyboard or tools, mounted on the bottom of a Control Panel or Panel PC CP3x12 to CP3x24, with integrated USB socket IP65 on the rear side
C9900-M423	Toolboard for keyboard and mouse or tools, mounted on the bottom of a Control Panel or Panel PC CP3x12 to CP3x24, with integrated 2-port USB-A socket IP65 on the rear side, and cable channel on the rear side for mouse and keyboard cables
C9900-M419	Toolboard for keyboard or tools, mounted on the bottom of a Control Panel or Panel PCs CP3x12 to CP3x24, without integrated USB IP65 socket on the rear side
C9900-M361	Handle, length = 386 mm, anodized aluminum, mounted on the bottom of a Control Panel or Panel PCs CP3x12 to CP3x24

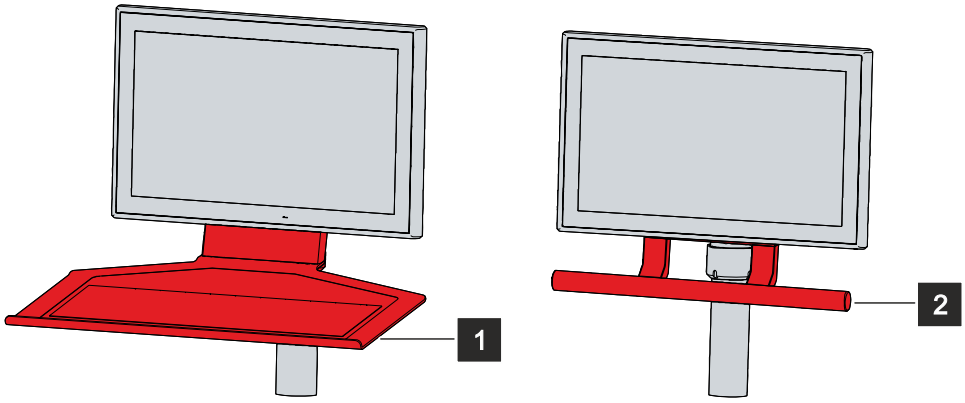


Fig. 2: Toolboard and handle

3.1 Structure

Figure 3 shows the device configuration as an example of all CP39xx versions.

The control panel connection interfaces vary, depending on the product version. Otherwise, there are no differences in the external design of the device.

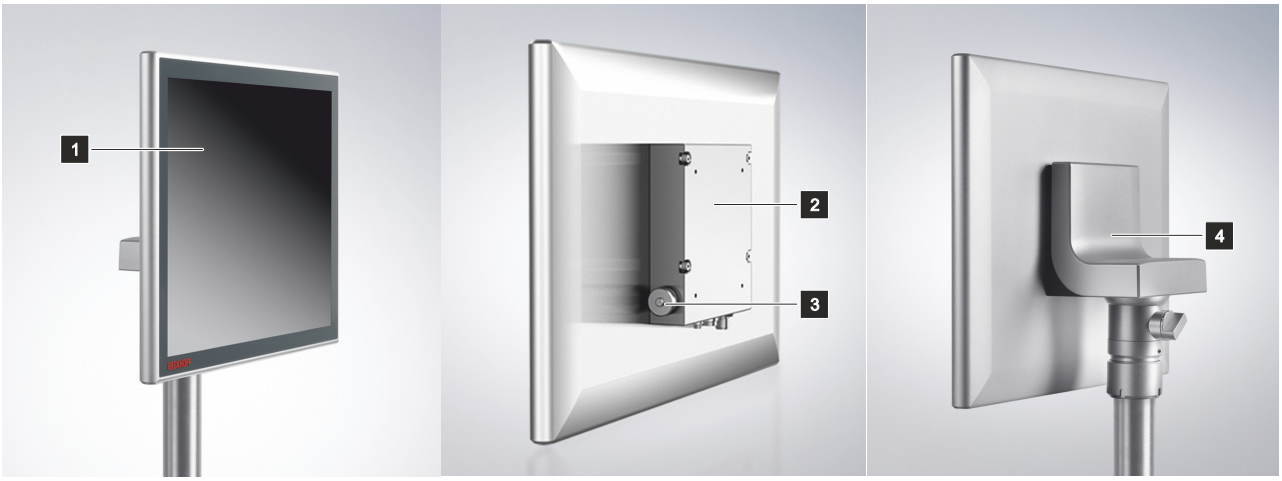


Fig. 3: Structure

Table 2: CP39xx configuration key

No.	Component	Description
1	Display and touch screen glass	Operating the control panel
2	Connection block	Control panel interfaces accessible
3	Optional USB interface under screw cap	Connection of peripheral devices
4	Optional mounting arm adapter	Beckhoff adapter for installation on the mounting arm tube from below

3.2 CP39xx-0000 interface description

In the basic configuration, the CP39xx-0000 includes the following interfaces:

- Power supply (X101)
- DVI Extended input (X102)
- USB Extended input (X103)

The interfaces are located on the rear side of the control panel at the connection block and point downwards. The interfaces are freely accessible (see Fig. 4).

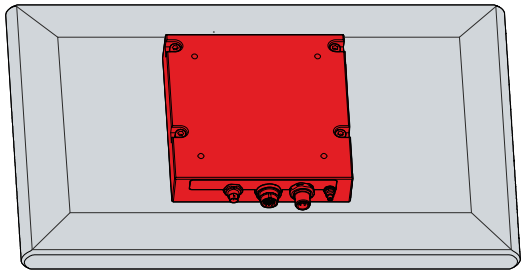


Fig. 4: Connection block

For the control panel with Beckhoff mounting arm adapter, the connections are located inside the adapter. You must first gain access to the interfaces. The procedure is the same, regardless of whether you have ordered the mounting arm adapter with upwards or downwards orientation. The procedure is shown as an example for the mounting arm adapter with downwards orientation. Follow the steps below, as shown in Figure 5:

1. Insert a flat-blade screwdriver in the recesses on the underside of the mounting arm adapter (section A).
2. Bend the cover slightly outwards so that the latching lugs on the cover release the cover to allow it to be removed.
3. Carefully release the latching lugs (see marking in section A) using a flat-blade screwdriver as a lever.
4. Slide the cover upwards off the mounting arm adapter (section B).
   ⇨ You now have access to the interfaces (section C).
5. Then push the cover back onto the mounting arm adapter from top to bottom until the latching lugs snap back into place.

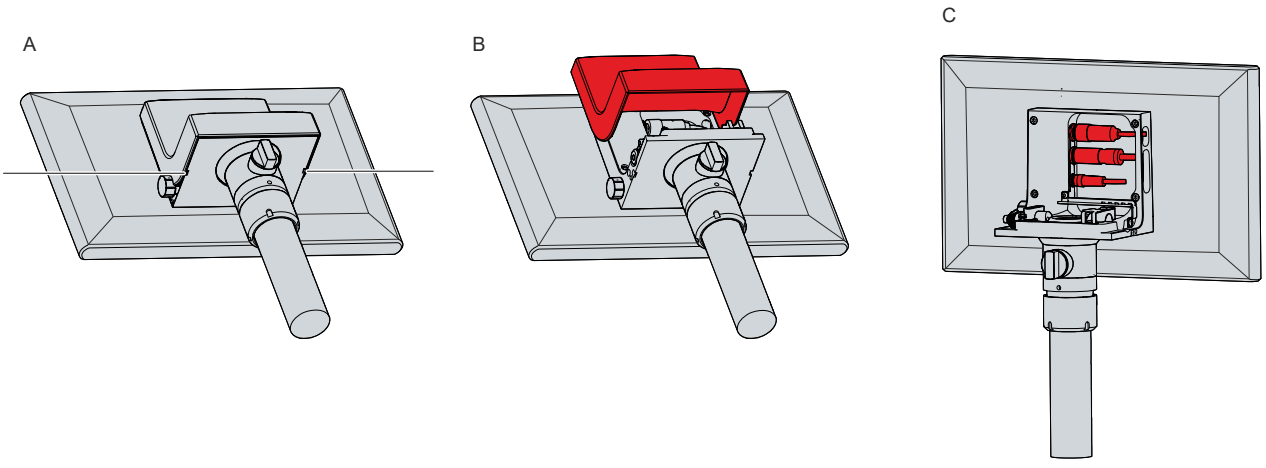


Fig. 5: Access to interfaces

3.2.1 Power supply

The control panel is supplied with a nominal 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 plug is connected to + 24 V and GND.

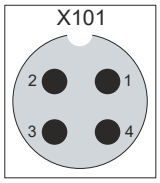


Fig. 6: Voltage socket pin numbering

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 plug for the power supply 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 at least 22 V at the power supply plug of the control panel, so that the control panel remains switched on during voltage fluctuations. The plug is included in the 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 DVI Extended input

The CP39xx-0000 Control Panel has a DVI Extended input (X102). It is used to transmit the graphics signal from the industrial PC to the control panel.

The graphics signal is transferred directly via a DVI cable over a distance of 50 m max. Such a cable length leads to strong distortion of the graphics signal on arrival at the control panel. A signal processor is used in the control panel to fully restore the DVI signal. The industrial PC requires a conventional DVI output.

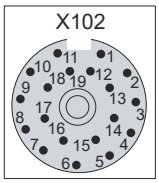


Fig. 7: DVI Extended input pin numbering

Table 4: DVI Extended interface pin assignment

Pin	Connection	Pin	Connection
1	Shield	11	IN_TMDS_C+
2	IN_TMDS_2+	12	GND
3	GND	13	IN_TMDS_2+
4	IN_TMDS_1-	14	IN_TMDS_1+
5	GND	15	GND
6	IN_TMDS_0-	16	IN_TMDS_0+
7	GND	17	HPD_DVI
8	+ 5 V_DVI	18	GND
9	DDC DAT	19	IN_TMDS_C-
10	I2C-CLK		

3.2.3 USB Extended input

The CP39xx-0000 Control Panel has a USB Extended input (X103). The interface is used to connect the control panel to the CU8801 USB-to-USB extended transmitter box.

To realize a distance of 50 m without hubs, USB Extended converts the USB signal so that it can be transmitted via a 50 m CAT 5 cable. In the control panel the signal is converted back to USB. This is not an Ethernet connection. No Ethernet switch or hub can be integrated in the USB-Extended cable.

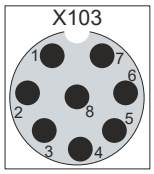


Fig. 8: USB-E input pin numbering

Table 5: USB-E input pin assignment

Pin	Signal
1	MX0-
2	MX1+
3	MX1-
4	MX2+
5	MX2-
6	MX3+
7	MX3-
8	MX0+

3.3 CP39xx-0010 interface description

In the basic configuration, the CP39xx-0010 includes the following interfaces:

- Power supply (X101)
- CP-Link 4 input (X102)

The interfaces are located on the rear side of the control panel at the connection block and point downwards. The interfaces are freely accessible (see Fig. 9).

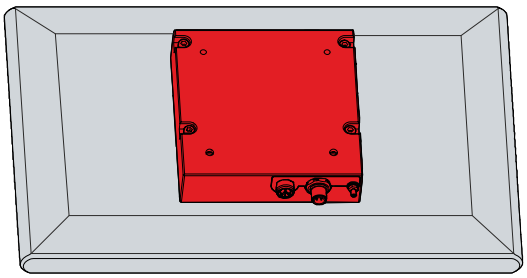


Fig. 9: Connection block

For the control panel with Beckhoff mounting arm adapter, the connections are located inside the adapter. You must first gain access to the interfaces. The procedure is the same, regardless of whether you have ordered the mounting arm adapter with upwards or downwards orientation. The procedure is shown as an example for the mounting arm adapter with downwards orientation. Follow the steps below, as shown in Figure 10:

1. Insert a flat-blade screwdriver in the recesses on the underside of the mounting arm adapter (section A).
2. Bend the cover slightly outwards so that the latching lugs on the cover release the cover to allow it to be removed.
3. Carefully release the latching lugs (see marking in section A) using a flat-blade screwdriver as a lever.
4. Slide the cover upwards off the mounting arm adapter (section B).
   ⇨ You now have access to the interfaces (section C).
5. Then push the cover back onto the mounting arm adapter from top to bottom until the latching lugs snap back into place.

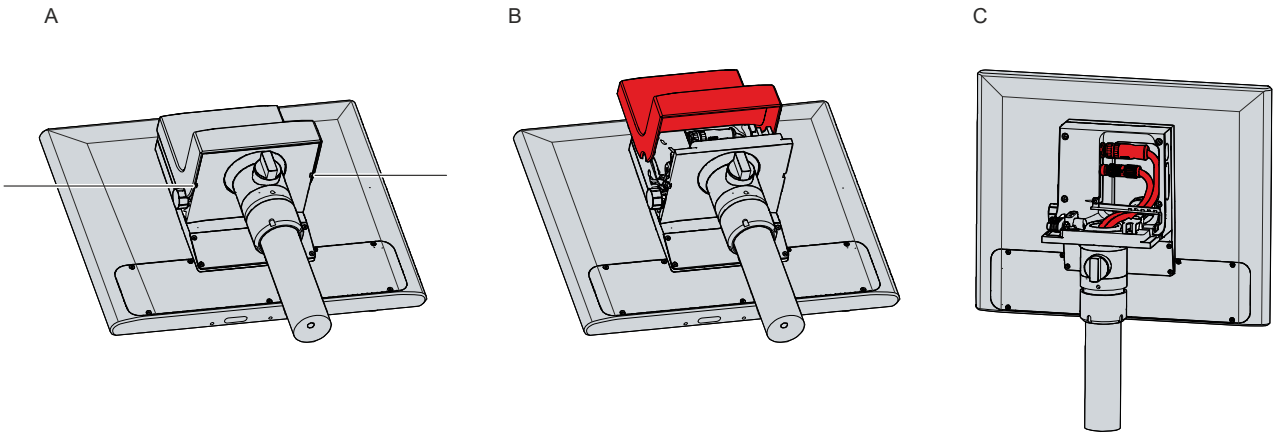


Fig. 10: Access to interfaces

3.3.1 Power supply

The control panel is supplied with a nominal 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).

If the 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.

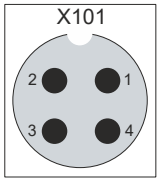


Fig. 11: Voltage socket pin numbering

Table 6: 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 plug for the power supply 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 at least 22 V at the power supply plug of the control panel, so that the control panel remains switched on during voltage fluctuations. The plug is included in the 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

3.3.2 CP-Link-4 input

The CP39xx-0010 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 at a distance of up to 100 m. The connection can be made either directly with an industrial PC with a corresponding PCIe module or indirectly via an intermediate transmitter box.

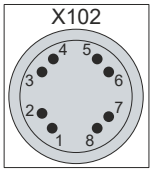


Fig. 12: CP-Link 4 pin numbering

Table 7: 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 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 CP39xx-0010 (see Fig. 13).

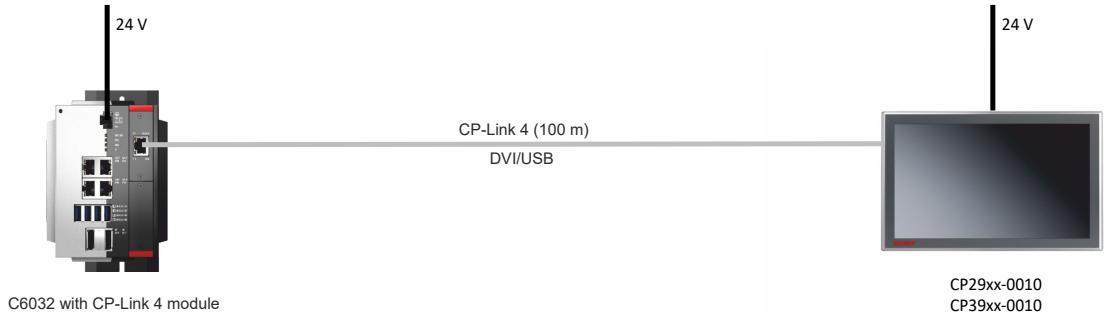


Fig. 13: CP-Link 4

CP-Link 4 with transmitter box

If the industrial PC is not equipped with a PCIe module, a transmitter box is required for connecting a CP39xx-0010.

The CU8802 transmitter boxes (Two Cable Display Link) and CU8803 (One Cable Display Link) are available for this purpose.

NOTICE

Material damage due to double voltage connection with CU8803

Connecting an additional power supply to the voltage socket of the control panel can cause damage to the panel.

- Power the control panel exclusively via One Cable Display Link through the CU8803 transmitter box.
- When using the CU8803 transmitter box, never connect an additional power supply to the voltage socket of the control panel.
- Only connect an additional power supply to the voltage socket of the control panel when using the CU8802 transmitter box.

When installing the CP39xx-0010 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). Figure 14 shows the wire connection to the CU8802-00x0.

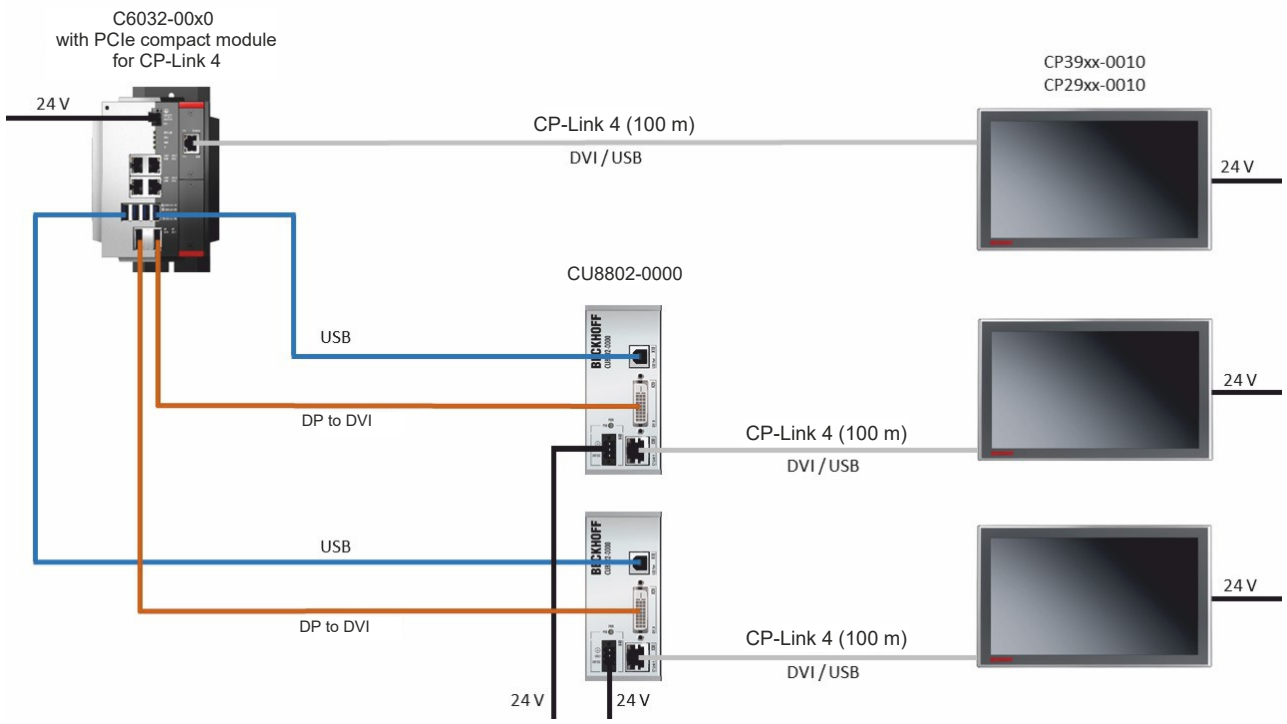


Fig. 14: CP-Link 4, CU8802-00x0

When installing the CP39xx-0010 with the CU8803 transmitter box, the industrial PC is likewise 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. With this box, USB, DP/DVI and power supply can be transmitted together via the cable (One Cable Display Link). Be careful not to connect an additional power supply to the CP39xx-0010 to avoid property damage. Figure 15 shows the wiring with the CU8803.

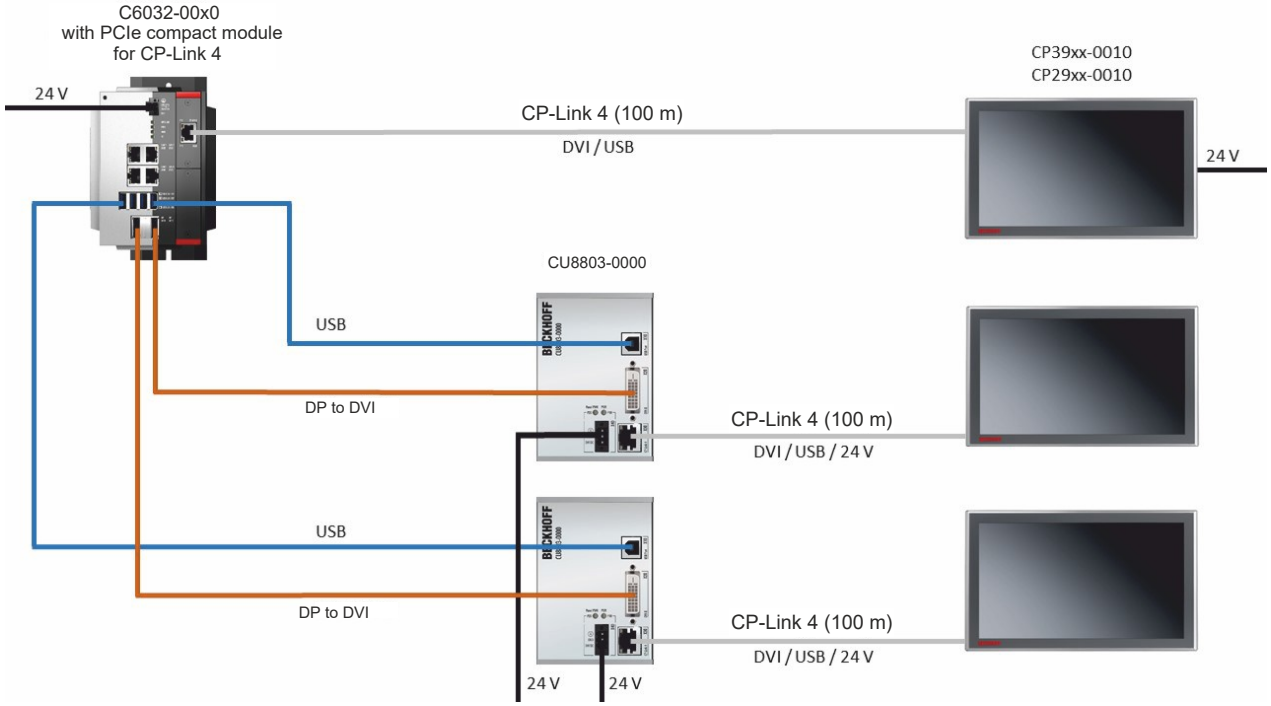


Fig. 15: CP-Link 4, CU8803

The following ordering options are available for the transmitter boxes:

- CU8802-0000: DVI-to-DVI cable included in the box
- CU8802-0001: DisplayPort to DVI cable included with box
- CU8803-0000: DVI-to-DVI cable included in the box
- CU8803-0001: DisplayPort to DVI cable included with box

3.4 Optional USB interface

The CP39xx can be extended beyond the basic configuration with an additional USB interface. The following ordering options are available:

- USB (order identifier: C9900-E274)

If you have ordered the device with a Beckhoff mounting arm adapter, the additional USB interface is located on the adapter. On a device without a mounting arm adapter, the interface is located at the side of the connection block. Fig. 16 shows the interface on the mounting arm adapter (A) and on the connection block (B).

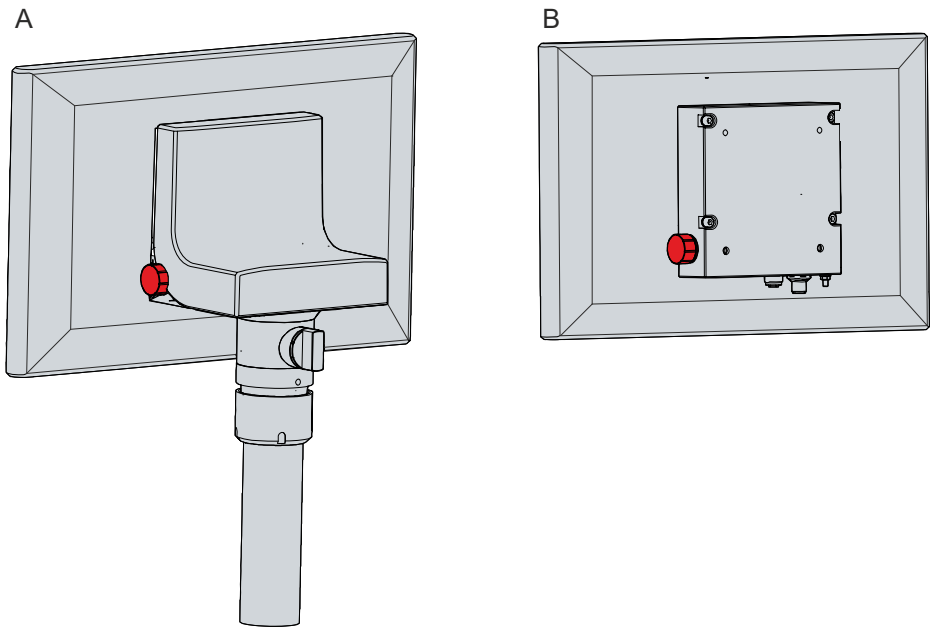


Fig. 16: Optional USB interface

The interface is located under a screw cap with IP65 protection class. This is fastened by an interior retaining wire and therefore cannot be lost even after unscrewing. In order to gain access to the interface, unscrew the cap and let it dangle on the retaining wire.

The USB interface is used to connect peripheral devices with a USB connection. It is a USB-A socket. USB specification 2.0 is supported.

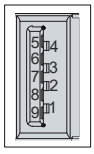


Fig. 17: Optional USB interface

Table 8: USB interface pin assignment

Pin	Connection
1	Vbus
2	D -
3	D +
4	GND

3.5 Name plate

The name plate provides information about the control panel equipment. The name plate shown here serves only as an example.

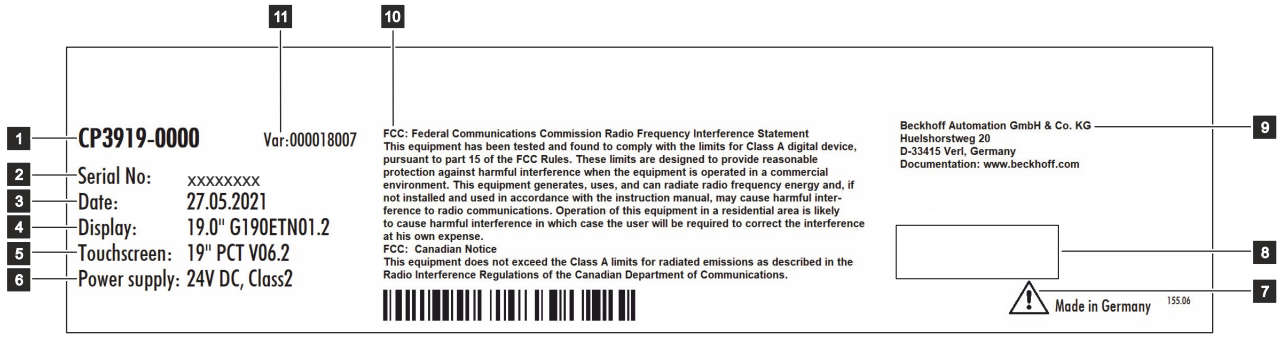


Fig. 18: Name plate

Table 9: Key for CP39xx name plate

No.	Description
1	Model: the last four digits indicate the product version.
2	Serial number (BTN)
3	Date of manufacture
4	Display
5	Touch screen
6	Power supply: 24 $V_{DC,}$ NEC class 2
7	Note: be sure to read the device manual.
8	Symbols Note: Here are the symbols applicable to the device such as CE, EAC, UKCA,  . The approvals of your device can be found on the name plate and in chapter 9.2 Approvals.
9	Address of the vendor
10	FCC approval
11	Variant number: commercial number of the order code including ordering options

3.6 Connection cables/connection kits

Different connection kits or connection cables are available, depending on the product version.

3.6.1 CP39xx-0000 connection kits

The following connection kits are available for the CP39xx-0000:

Table 10: CP39xx-0000 connection kits

Connection kits	Description
C9900-K630	3 m connection kit for CP39xx-0000, consisting of: 3 m DVI cable, 3 m CAT-5 cable for USB-E-2.0, CU8801 USB-to-USB-E-2.0 converter for DIN rail mounting next to the PC and 1 m USB cable for connecting the USB-to-USB-E-2.0 converter to the PC
C9900-K631	5 m connection kit for CP39xx-0000, consisting of: 5 m DVI cable, 5 m CAT-5 cable for USB-E-2.0, CU8801 USB-to-USB-E-2.0 converter for DIN rail mounting next to the PC and 1 m USB cable for connecting the USB-to-USB-E-2.0 converter to the PC
C9900-K670	6 m connection kit for CP39xx-0000, consisting of: 6 m DVI cable, 6 m CAT-5 cable for USB-E-2.0, CU8801 USB-to-USB-E-2.0 converter for DIN rail mounting next to the PC and 1 m USB cable for connecting the USB-to-USB-E-2.0 converter to the PC
C9900-K632	10 m connection kit for CP39xx-0000, consisting of: 10 m DVI cable, 10 m CAT-5 cable for USB-E-2.0, CU8801 USB-to-USB-E-2.0 converter for DIN rail mounting next to the PC and 1 m USB cable for connecting the USB-to-USB-E-2.0 converter to the PC
C9900-K649	15 m connection kit for CP39xx-0000, consisting of: 15 m DVI cable, 15 m CAT-7 cable for USB-E-2.0, CU8801 USB-to-USB-E-2.0 converter for DIN rail mounting next to the PC and 1 m USB cable for connecting the USB-to-USB-E-2.0 converter to the PC
C9900-K633	20 m connection kit for CP39xx-0000, consisting of: 20 m DVI cable, 20 m CAT-5 cable for USB-E-2.0, CU8801 USB-to-USB-E-2.0 converter for DIN rail mounting next to the PC and 1 m USB cable for connecting the USB-to-USB-E-2.0 converter to the PC
C9900-K634	30 m connection kit for CP39xx-0000, consisting of: 30 m DVI cable, 30 m CAT-5 cable for USB-E-2.0, CU8801 USB-to-USB-E-2.0 converter for DIN rail mounting next to the PC and 1 m USB cable for connecting the USB-to-USB-E-2.0 converter to the PC
C9900-K635	40 m connection kit for CP39xx-0000, consisting of: 40 m DVI cable, 40 m CAT-5 cable for USB-E-2.0, CU8801 USB-to-USB-E-2.0 converter for DIN rail mounting next to the PC and 1 m USB cable for connecting the USB-to-USB-E-2.0 converter to the PC
C9900-K636	50 m connection kit for CP39xx-0000, consisting of: 50 m DVI cable, 50 m CAT-5 cable for USB-E-2.0, CU8801 USB-to-USB-E-2.0 converter for DIN rail mounting next to the PC and 1 m USB cable for connecting the USB-to-USB-E-2.0 converter to the PC

3.6.2 CP39xx-0010 connection cable

The following connection cables are available for the CP39xx-0010:

Table 11: CP39xx-0010 connection cable

Connection cable	Description
C9900-K669	RJ45 connection cable CAT.6_A, 1 m, one end with IP65 connector for Control Panel CP39xx-0010 or CPX39xx-0010
C9900-K667	RJ45 connection cable CAT.6_A, 3 m, one end with IP65 connector for Control Panel CP39xx-0010 or CPX39xx-0010
C9900-K652	RJ45 connection cable CAT.6_A, 5 m, one end with IP65 connector for Control Panel CP39xx-0010 or CPX39xx-0010
C9900-K685	RJ45 connection cable CAT.6_A, 6 m, one end with IP65 connector for Control Panel CP39xx-0010 or CPX39xx-0010
C9900-K663	RJ45 connection cable CAT.6_A, 9 m, one end with IP65 connector for Control Panel CP39xx-0010 or CPX39xx-0010
C9900-K653	RJ45 connection cable CAT.6_A, 10 m, one end with IP65 connector for Control Panel CP39xx-0010 or CPX39xx-0010
C9900-K664	RJ45 connection cable CAT.6_A, 12 m, one end with IP65 connector for Control Panel CP39xx-0010 or CPX39xx-0010
C9900-K665	RJ45 connection cable CAT.6_A, 15 m, one end with IP65 connector for Control Panel CP39xx-0010 or CPX39xx-0010
C9900-K654	RJ45 connection cable CAT.6_A, 20 m, one end with IP65 connector for Control Panel CP39xx-0010 or CPX39xx-0010
C9900-K666	RJ45 connection cable CAT.6_A, 25 m, one end with IP65 connector for Control Panel CP39xx-0010 or CPX39xx-0010
C9900-K655	RJ45 connection cable CAT.6_A, 30 m, one end with IP65 connector for Control Panel CP39xx-0010 or CPX39xx-0010
C9900-K656	RJ45 connection cable CAT.6_A, 40 m, one end with IP65 connector for Control Panel CP39xx-0010 or CPX39xx-0010
C9900-K657	RJ45 connection cable CAT.6_A, 50 m, one end with IP65 connector for Control Panel CP39xx-0010 or CPX39xx-0010
C9900-K658	RJ45 connection cable CAT.6_A, 60 m, one end with IP65 connector for Control Panel CP39xx-0010 or CPX39xx-0010
C9900-K659	RJ45 connection cable CAT.6_A, 70 m, one end with IP65 connector for Control Panel CP39xx-0010 or CPX39xx-0010
C9900-K660	RJ45 connection cable CAT.6_A, 80 m, one end with IP65 connector for Control Panel CP39xx-0010 or CPX39xx-0010
C9900-K661	RJ45 connection cable CAT.6_A, 90 m, one end with IP65 connector for Control Panel CP39xx-0010 or CPX39xx-0010
C9900-K662	RJ45 connection cable CAT.6_A, 100 m, one end with IP65 connector for Control Panel CP39xx-0010 or CPX39xx-0010

Connection cable	Description
C9900-K724	RJ45 connection cable CAT.6_A, 3 m, one end with IP65 connector for Control Panel CP39xx-0010 or CPX39xx-0010, drag-chain suitable
C9900-K704	RJ45 connection cable CAT.6_A, 5 m, one end with IP65 connector for Control Panel CP39xx-0010 or CPX39xx-0010, drag-chain suitable
C9900-K705	RJ45 connection cable CAT.6_A, 10 m, one end with IP65 connector for Control Panel CP39xx-0010 or CPX39xx-0010, drag-chain suitable
C9900-K706	RJ45 connection cable CAT.6_A, 20 m, one end with IP65 connector for Control Panel CP39xx-0010 or CPX39xx-0010, drag-chain suitable
C9900-K707	RJ45 connection cable CAT.6_A, 30 m, one end with IP65 connector for Control Panel CP39xx-0010 or CPX39xx-0010, drag-chain suitable
C9900-K708	RJ45 connection cable CAT.6_A, 40 m, one end with IP65 connector for Control Panel CP39xx-0010 or CPX39xx-0010, drag-chain suitable
C9900-K709	RJ45 connection cable CAT.6_A, 50 m, one end with IP65 connector for Control Panel CP39xx-0010 or CPX39xx-0010, drag-chain suitable
C9900-K710	RJ45 connection cable CAT.6_A, 60 m, one end with IP65 connector for Control Panel CP39xx-0010 or CPX39xx-0010, drag-chain suitable
C9900-K711	RJ45 connection cable CAT.6_A, 70 m, one end with IP65 connector for Control Panel CP39xx-0010 or CPX39xx-0010, drag-chain suitable
C9900-K712	RJ45 connection cable CAT.6_A, 80 m, one end with IP65 connector for Control Panel CP39xx-0010 or CPX39xx-0010, drag-chain suitable

4 Commissioning

To use the control panel, you must first put it into operation. The first step is to transport the device to is operating location and unpack it. This is followed by mounting the device on the mounting arm, connecting the cables and power supply, and finally switching on the control panel. Since the control panel does not have its own power switch, switching the power supply on and off also switches the control panel on and off.

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 Beckhoff protective film. The film provides short-term protection for a few days.

You can either order a Beckhoff protective film individually and fit it yourself retrospectively, or you can order the film for fitting directly ex factory. Please refer to the price list for the available protective films according to the display size of your device.

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: //infosys-cdn.beckhoff.com/content/1033/panelconfigurationtools/11725543179.html?id=1863235424645236061.

4.1 Transport and unpacking

The specified storage conditions must be observed (see chapter 8 Technical data [▶ 48]).

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.

Unpacking

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. In case of discrepancies between the package contents and the order, or in case of transport damage, please inform Beckhoff Service (see Chapter 9.1 Service and support).

4.2 Mounting

You can find the device dimensions in the current drawings on our website at: https://download.beckhoff.com/download/Technical_Drawings/Industrial_PC/Control_Panel/CP39xx.

In the basic configuration, there is a connection block with four M6 threaded holes on the rear side of the housing. This can be used to install the control panel on a mounting arm system.

The control panel can optionally be ordered with the Beckhoff mounting arm adapter. The following ordering options are available:

Table 12: Mounting arm adapter ordering options

Order identifier	Version
C9900-M750	Rotatable and tiltable mounting arm adapter on Control Panel CP3912 to CP3924 for Rittal and Rolec mounting arm systems with 48 mm tube from above
C9900-M751	Rotatable and tiltable mounting arm adapter on Control Panel CP3912 to CP3924 for Rittal and Rolec mounting arm systems with 48 mm tube from below
C9900-M752	Rotatable and tiltable mounting arm adapter on Control Panel CP3912 to CP3924 with push button extension C9900-Gxxx for Rittal and Rolec mounting arm systems with 48 mm tube from above
C9900-M753	Rotatable and tiltable mounting arm adapter on Control Panel CP3912 to CP3924 with push button extension C9900-Gxxx for Rittal and Rolec mounting arm systems with 48 mm tube from below
C9900-M761	Rotatable and tiltable mounting arm adapter for CP39xx-0000 with option C9900-M362 and CP39xx-0010 with option C9900-M338, clamping lever to lock the tilt
C9900-M763	Rotatable and tiltable mounting arm adapter for CP39xx-0000 with option C9900-M362 and CP39xx-0010 with option C9900-M338

The C9900-M750, -M751, -M752 and -M753 options are mounted directly ex factory. You must mount the two options C9900-M761 and -M763 yourself (see chapter 4.2.1 Mounting the mounting arm adapter [▶ 31]).

Depending on the ordering option, the mounting arm adapters mounted ex factory are either oriented upwards or downwards. In addition, you have the option of ordering the device with a mounted push button extension (see chapter 3 Product overview [▶ 9]). With the push button extension, the mounting arm adapter can also be oriented either upwards or downwards. All mounting arm adapters have a locking screw to prevent rotation (1). Figure 19 shows the control panel with all four mounting arm adapter options mounted ex factory, for example.

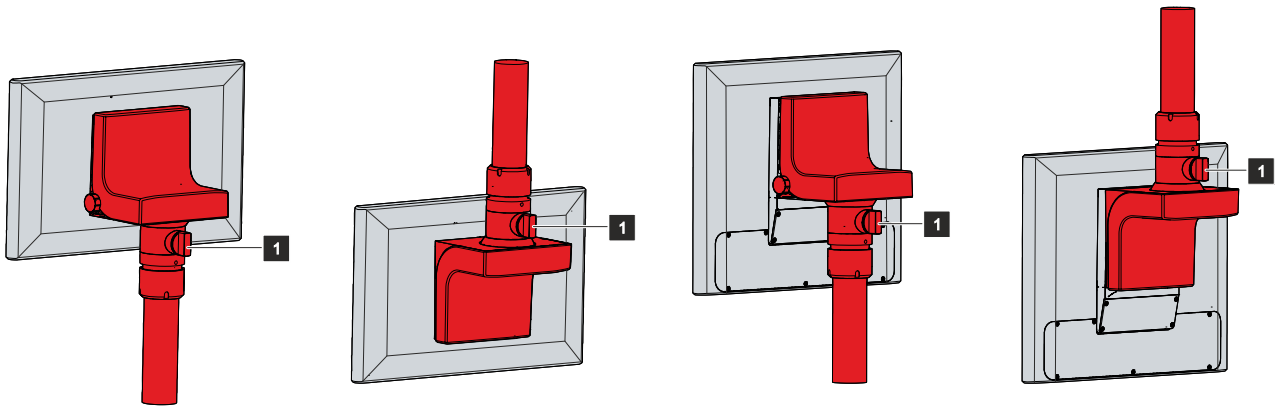


Fig. 19: Options mounting arm adapter

For a control panel with push button extension, a cable channel between the panel and the mounting arm adapter is included in the ordering option (see Fig. 20).

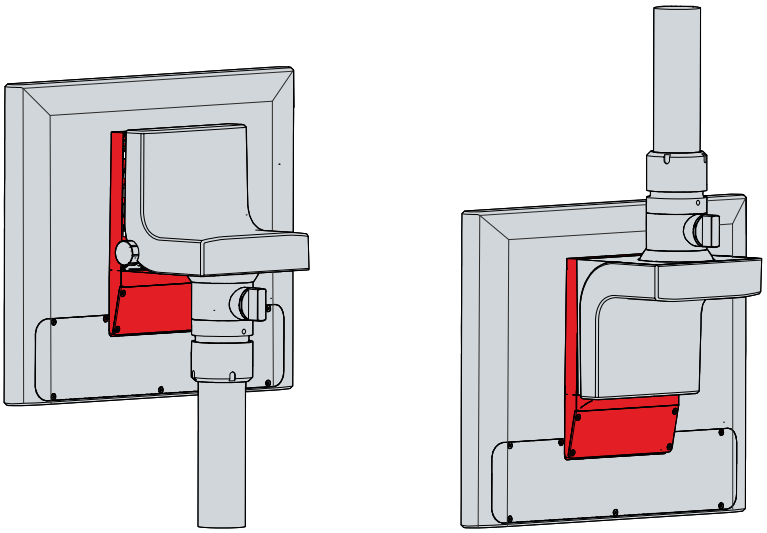


Fig. 20: Cable channel

The cables for the C9900-G02x push button extension run through the mounting arm tube into the mounting arm adapter and further through the cable channel into the push button extension. You have to open both the cable channel and the push button extension in order to route the cables.

To open the cable channel, follow the steps below as shown in Figure 21:

1. Remove the four Torx TX10 screws from the cable channel (section A).
2. Remove the cover of the cable channel (section B).

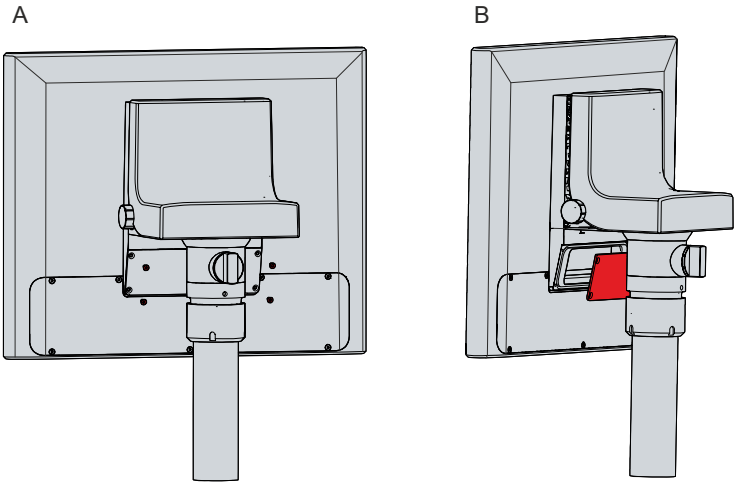


Fig. 21: Opening the cable channel

To open the push button extension, follow the steps below as shown in Figure 22:

1. Remove the seven Torx TX10 screws from the push button extension (section A).
2. Remove the cover of the push button extension (section B).

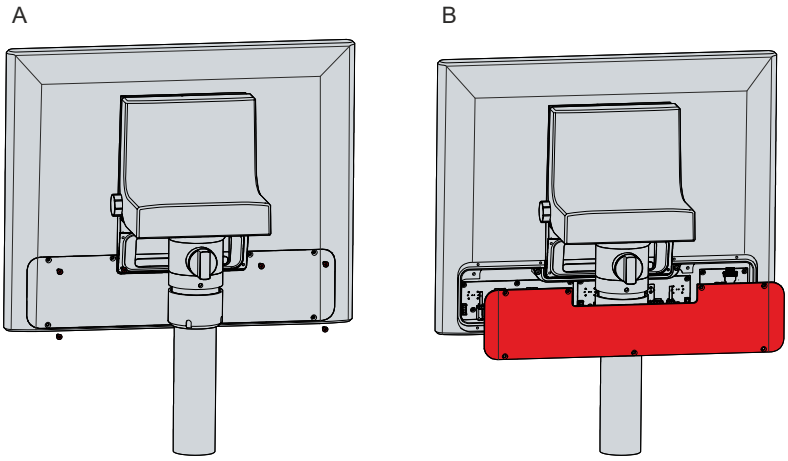


Fig. 22: Opening the push button extension

Also see about this

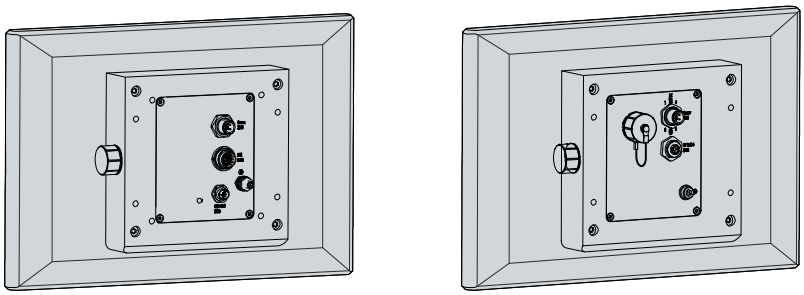
- Technical data [▶ 48]

4.2.1 Installing the mounting arm adapter

If you have chosen one of the two mounting arm adapter options C9900-M761 or C9900-M763, you must mount them yourself. The prerequisite for this is an adapter plate on the rear side of the device on which you can mount the selected mounting arm adapter. The following options are available for the adapter plates (see Fig. 23):

Table 13: Options adapter plates

Device	Ordering option
CP39xx-0000	C9900-M362
CP39xx-0010	C9900-M338



CP39xx-0000, C9900-M362

CP39xx-0010, C9900-M338

Fig. 23: Adapter plates

You can add the USB sockets C9900-E324 or C9900-E274 to both adapter plates.

To mount the C9900-M761 and -M763 mounting arm adapters to the adapter plates, follow the steps below:

1. Use a screwdriver to reach into the recesses on the underside of the mounting arm adapter (section A).
2. Bend the cover slightly outwards so that you can push out the latching lugs.
3. Slide the cover upwards off the mounting arm adapter (section B).
4. Place the mounting arm adapter with the four M6 screws in front of the four M6 threaded holes on the adapter plate (section C).

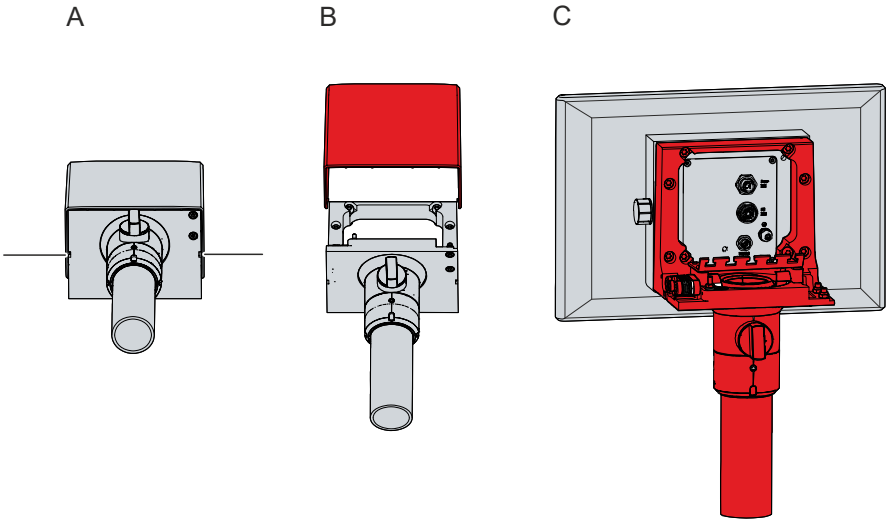


Fig. 24: Installing the mounting arm adapter

5. Tighten the four screws with a tightening torque of 6 Nm.
6. Replace the cover on the mounting arm adapter.

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

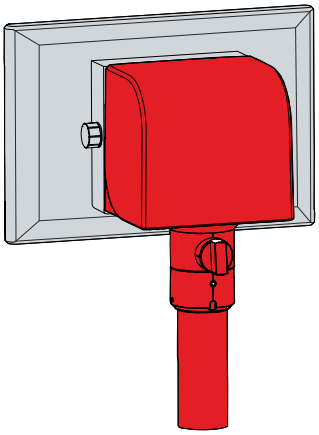


Fig. 25: Mounting arm adapter installed

4.2.2 Mounting arm tube installation

Observe the following points when installing the control panel on the mounting arm tube:

- 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 control panel to direct sunlight.

The Beckhoff mounting arm adapters are designed for Rittal and Rolec mounting arm systems with 48 mm tubes. The tube diameter may have a maximum tolerance of -0.1 mm and +0.8 mm.

If you have chosen a device with a mounting arm adapter, you must fit the mounting arm tube yourself. The procedure for fitting the mounting arm adapters with upwards or downwards orientation is the same.

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 the slotted nut of the C9900-M75x mounting arm adapter

Fig. 26 shows an example of the procedure with the mounting arm adapter facing downwards.

To install the mounting arm tube on the mounting arm adapter, proceed as follows:

1. Unscrew the hexagon socket screw (1) a few turns with a 3 mm Allen key (section A).
2. Push the connecting cables of the control panel through the mounting arm tube.
3. Insert the mounting arm tube 50.2 mm into the mounting arm adapter to the stop (section B).
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 (section C).

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

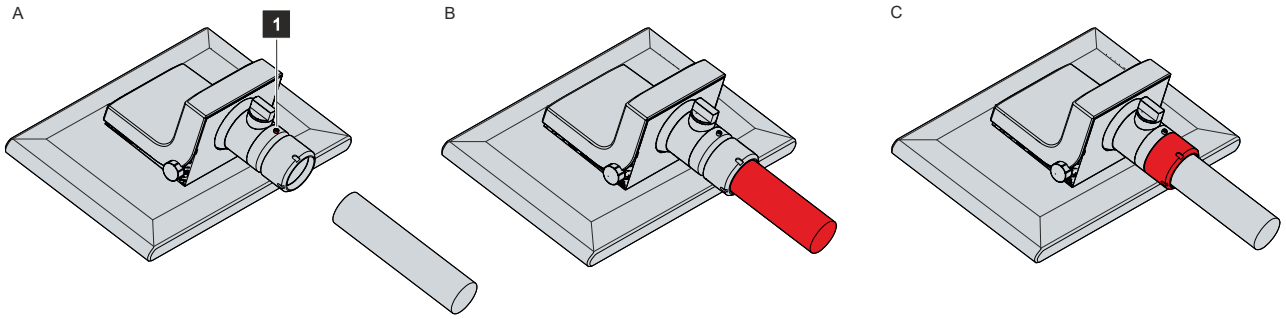


Fig. 26: Mounting arm tube installation

The mounting arm adapter facilitates tilting of the control panel fitted to the mounting arm tube 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 unit is required for the power supply, which supplies 24 V DC (-15%/+20%) from an isolated source. This must be protected by a fuse in accordance with UL 248 with a maximum nominal value of 4 A.

The cabling of the panel PC 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 as the control panel (no potential difference).

4.3.1 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.

The protective grounding of a device serves to avoid dangerous touch voltages. According to the EN 60204-1 standard (Chapter 8 Potential equalization), protective grounding is required if:

- the device exceeds dimensions of 50 mm x 50 mm,
- the device can be touched or encompassed over a large area,
- contact between the device and active parts is possible,
- an insulation fault may occur.

The control panel connections feature a protective conductor connection (PE), which must be used to establish the low-resistance protective earthing and functional earthing of the panel. If the device is equipped with a connection block, the protective conductor connection is located directly next to the connections. For a device with a Beckhoff mounting arm adapter, the connection is located in the connection compartment (see Fig. 27).

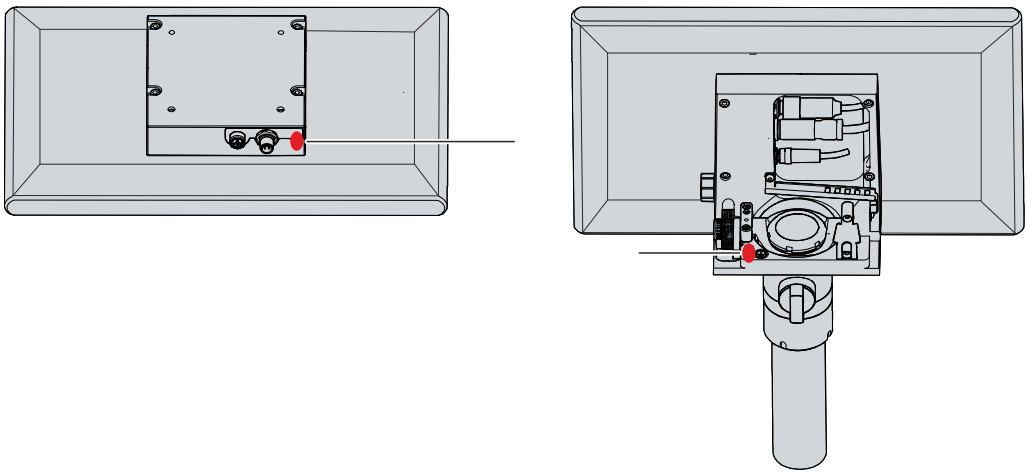


Fig. 27: Protective conductor connection PE

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. Functional earth is also established via the PE protective conductor connection in the connection section of the control panel.

4.3.2 Routing the cables in the mounting arm adapter

NOTICE

Cable damage due to incorrect cable routing

Incorrect cable routing can cause cable damage when rotating and tilting the mounting arm adapter.

- Be sure to route the cables inside the mounting arm adapter in the specified arrangement.

Depending on the device equipment, the connections are either located at the connection block on the rear side of the control panel or inside the mounting arm adapter. If you have ordered the control panel with one of the following Beckhoff mounting arm adapters installed ex factory, it is essential that you observe the cable routing shown (see Fig. 28) in order to avoid cable damage:

- C9900-M750
- C9900-M751
- C9900-M752
- C9900-M753

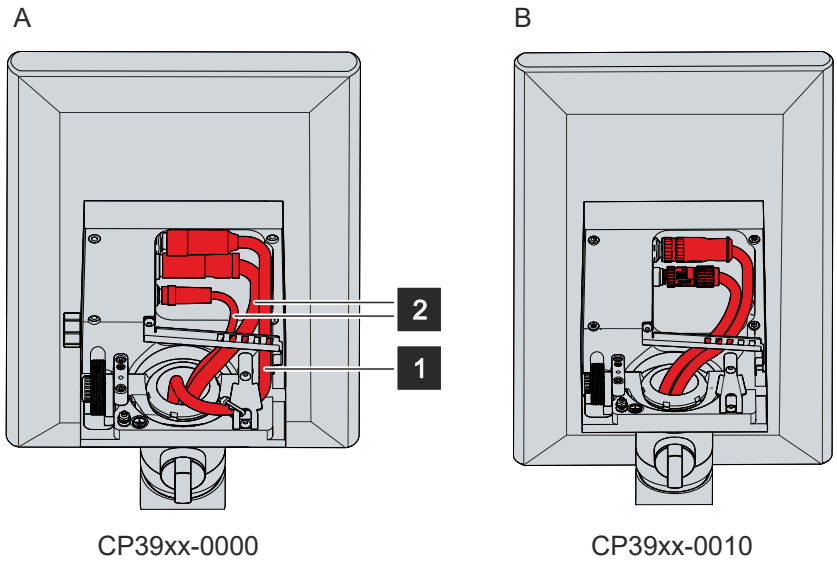


Fig. 28: Routing the cables in the mounting arm adapter

For the CP39xx-0000 (section A) you have to route the power supply cable (1) further outside and the data cables (2) inside. You must fix the cables to the strain relief rail with cable ties as follows:

- Attach the power cable (1) to the far right of the strain relief rail by pulling the cable tie through the two outer right straps of the rail.
- Attach the data cables (2) to the far left of the strain relief rail, using a cable tie to secure both cables together. To do this, use the left and the third strap from the left.

For the CP39xx-0010 (section B) you have to route all cables inside. If you use the CU8803 transmitter box, you only have one cable, which you also have to lay inside. You must fix the cables to the strain relief rail with cable ties as follows:

- In the case of two cables use a cable tie to secure both cables together on the far left of the strain relief rail. To do this, use the left and the third strap from the left.
- In the case of one cable pull the cable tie through the two outer left straps on the far left of the strain relief rail.

When routing the cables for both device versions, follow the steps below as shown in figure 29:

1. Loosen the Torx TX20 screw of the strain relief rail (section A).
2. Rotate the strain relief rail by 180° to the left (section B).
3. Route the signal and power supply cable inside the mounting arm adapter as shown in Figure 28.
4. Route the data cables inside the mounting arm adapter as shown in figure 28.

5. Rotate the strain relief rail back over the cable (section C).
6. Tighten the Torx TX20 screw again (section D).
7. Fasten the cable to the strain relief rail with cable ties.

The figure shows the steps, taking the CP39xx-0000 as an example. The procedure is the same regardless of the product version.

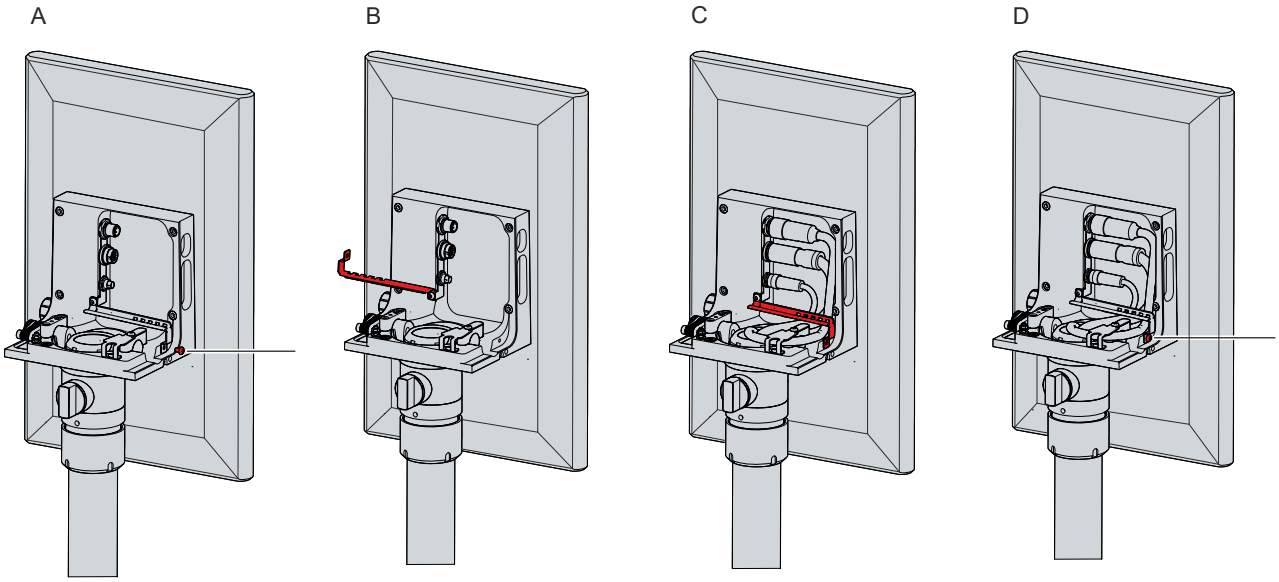


Fig. 29: Cable routing procedure

In the case of the CP39xx-0000 you also have to fasten the power cable that lies further to the outside to a strain relief plate in addition to the strain relief rail (see Fig. 30). To do this, pull the cable through under the plate and then fasten the cable to the plate with cable ties.

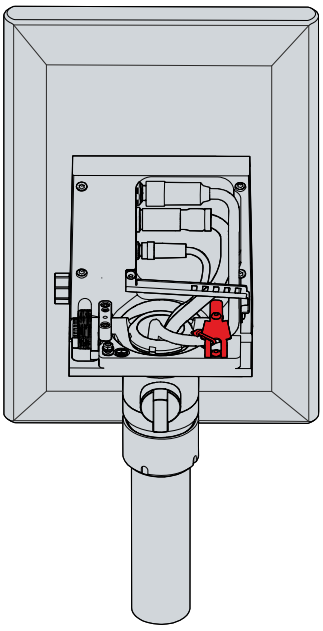


Fig. 30: Power supply cable strain relief plate

The cables pass through the mounting arm tube into the connection compartment of the mounting arm adapter.

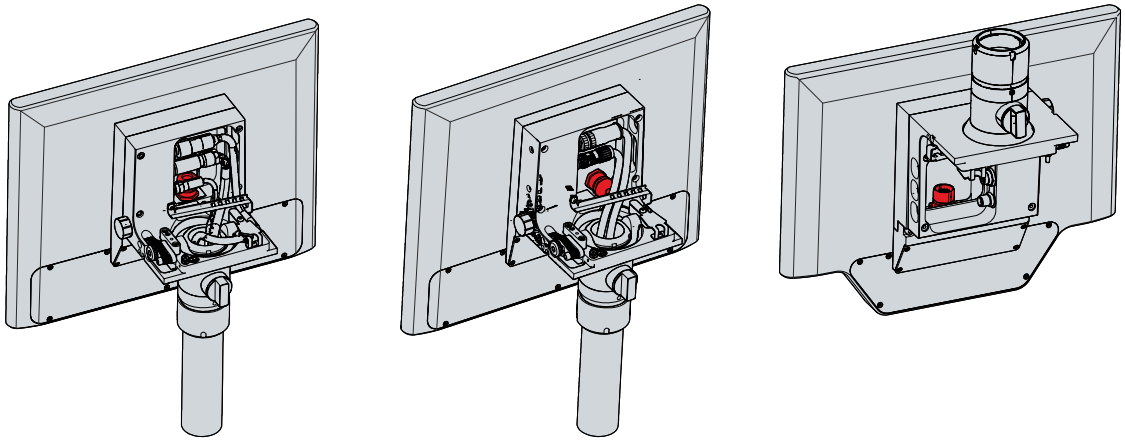
4.3.3 Push button extension cable routing

If you ordered the control panel with a push button extension, you must also connect it. If the device has a mounting arm adapter, the cable for the push button extension is first fed through the mounting arm adapter into the cable channel and then into the push button extension. Before you can lay the cables, you must open the cable channel and the push button extension (see chapter 4.2 Mounting [▶ 28]).

Depending on the push button extension, the cable is either fed into the cable channel through an M20 gland or connected to a 19-pin round connector. The assignment is as follows:

- C9900-G02x: cable routing through an M20 gland
- C9900-G05x: cable connection to a 19-pin round connector

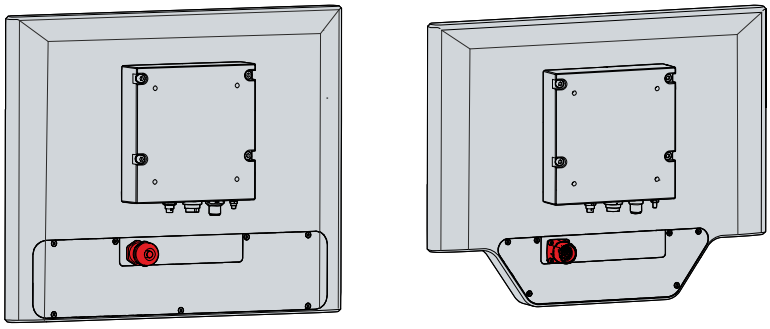
Figure 31 shows the position of the M20 gland and the 19-pin round connector in the mounting arm adapter. In the case of the M20 gland, the device version is additionally decisive for the position of the cable gland.



CP39xx-0000, C9900-G02x | CP39xx-0010, C9900-G02x | CP39xx-0000, C9900-G05x

Fig. 31: M20 cable gland and 19-pin round connector with mounting arm adapter

In the case of a device with a connection block instead of the mounting arm adapter, the M20 cable gland or the 19-pin round connector is in a different position on the device (see Fig. 32).



C9900-G02x | C9900-G05x

Fig. 32: M20 cable gland and 19-pin round connector with connection block

You must carry out the wiring of the C9900-G02x push button extension yourself. To do this, feed the cables through the M20 cable gland and the cable channel into the push button extension.

Beckhoff takes care of the wiring of the C9900-G05x push button extension for you. Therefore you can order ready-to-use cables from Beckhoff Sales. For more detailed information on cable options and wiring diagram, refer to the C9900-G05x manual. You only have to plug the selected cable into the 19-pin round connector.

4.3.4 Connection 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.

Connecting cables

Make sure that you first ground the panel (see chapter 4.3.1 Grounding the control panel [▶ 35]) and then plug in all data transmission cables.

Lay the cables in the mounting arm adapter as shown in chapter 4.3.2 Routing the cables in the mounting arm adapter [▶ 36] and then plug in all data transmission cables.

Check the screw connections between the plugs and sockets.

When connecting the control panel to an industrial PC with UPS output, we recommend using this for the connection. In the case of CP-Link 4, we recommend connecting the CU880x transmitter boxes to the UPS output of the PC.

Connecting the power supply

Cables with a maximum cable cross-section of 4 x 0.75 mm^2 can be used for connecting the power supply. For long supply lines, use 4 x 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 control panel, so that the panel remains switched on during voltage fluctuations.

Proceed as follows to connect the 24 V_{DC} power supply unit:

1. Check the correct voltage of your external power supply.
2. Plug the voltage connector into the voltage socket on the panel.
3. Screw the voltage connector to the voltage socket. Then check the screw connection.
4. Connect the panel to your external 24 V power supply.
5. Switch on the 24 V power supply.
6. Calculate the voltage at the power supply plug.

In order to check the voltage at the power supply plug, you must first calculate the voltage drop on the supply cable. You can orient yourself to the following calculation example:

- CP3924-0000
- Power consumption: 34 W
- Current consumption: 34 W / 22 V = 1.5 A
- Connection with 10 m two-core 0.75 mm^2 cable, where the supply cable length then corresponds to 20 m
- Constant of specific resistance of pure copper: 0.0178 Ohm * mm^2 / m
- Resistance of the supply line: 0.0178 ohm*mm^2/m * 20 m / 0.75 mm^2 = 0.0178 * 20 / 0.75 = 0.475 ohm

With the listed data, you can now calculate the voltage drop on the supply line:

- 1.5 A * 0.475 Ohm = 0.7 V

With a CP39xx-0010 with CP-Link 4 and CU8802 transmitter box or PCIe module, the power consumption increases. In this case, orient yourself to the following example:

- CP3924-0010
- Power consumption: 40 W
- Current consumption: 40 W / 22 V = 1.8 A

- Voltage drop: 1.8 A * 0.475 Ohm = 0.85 V

With a CP39xx-0010 with CP-Link 4 and CU8803 transmitter box, you only have to pay attention to the voltage on the supply line to the transmitter box. For more detailed information, please refer to the manual for the CU8803.

All information on the power consumption can be found in chapter 8 Technical data [▶ 48].

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.

When taking the control panel out of operation, you must first disconnect the power supply and cables. You can then dismantle the device.

If you do not want to continue using the control panel, Chapter 5.2 Disassembly and disposal [▶ 43] 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.

NOTICE

Hardware damage due to power supply

Disconnecting the CP-Link 4 connection while the transmitter box power supply is switched on may cause damage to the transmitter box.

- Switch off the power supply to the CU8803 transmitter box before disconnecting the CP-Link 4 connection.

Before disassembling the control panel, disconnect the power supply and the cables. Before disconnecting the power supply and the cables, you must first release the cables from the respective strain relief according to the device version.

In the case of the CP39xx-0000, release the power supply cable from the strain relief plate by cutting the cable ties (see Fig. 33).

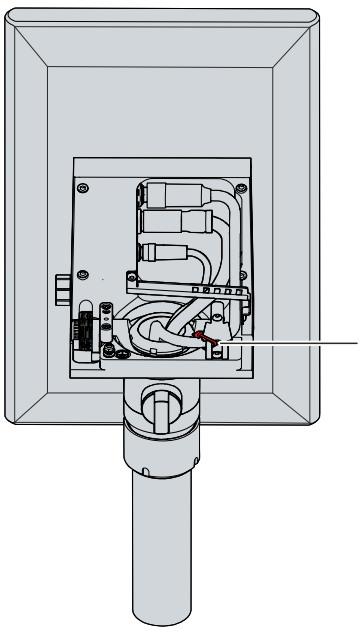


Fig. 33: Cable ties on strain relief plate

In the case of the CP39xx-0000 and CP39xx-0010, release all cables from the strain relief rail by following the steps below as shown in fig. 34:

1. Sever the cable ties.
2. Loosen the Torx TX20 screw of the strain relief rail (section A).
3. Rotate the strain relief rail by 180° to the left (section B).

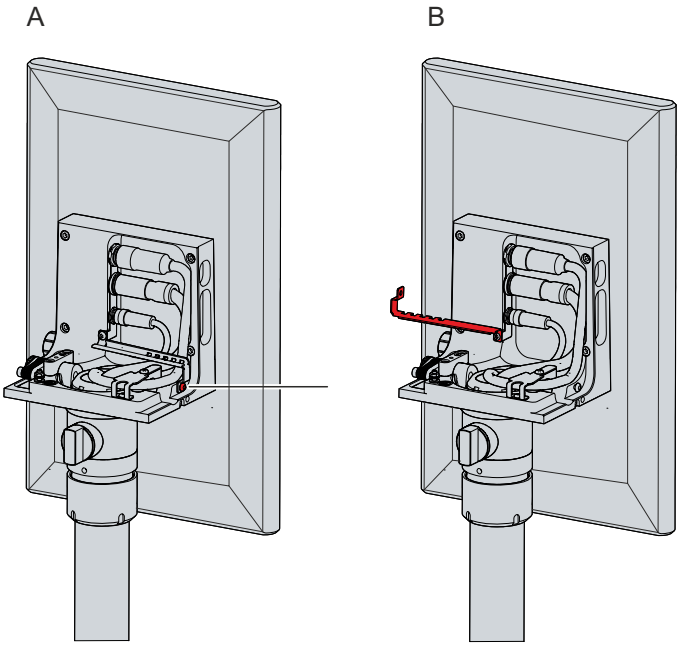


Fig. 34: Releasing the strain relief rail

Disconnecting the power supply and cables

Proceed as follows to disconnect the power supply and lines:

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

⇨ You have disconnected the power supply and the cables.

5.2 Disassembly and disposal

Before you can remove the control panel from the mounting arm tube, you must first disconnect the power supply and the cables (see chapter 5.1 Disconnecting the power supply and cables [▶ 41]).

Disassembly mounting arm tube

NOTICE

Damage to property due to falling down

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

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

To remove the control panel from the mounting arm tube, follow the steps shown in Fig. 35:

1. Release the slotted nut of the mounting arm adapter with a hook wrench size 58-62 in counterclockwise direction (section A). The ordering option for the hook wrench can be found in chapter 4.2 Mounting [▶ 28]).
2. Unscrew the hexagon socket screw (1) a few turns with a 3 mm Allen key (section B).
3. Pull the mounting arm tube out of the mounting arm adapter (section C).
4. Pull the connecting cables out of the mounting arm tube.
5. Retighten the hexagon socket screw with a torque of 3 Nm.

⇨ You have dismantled the mounting arm tube.

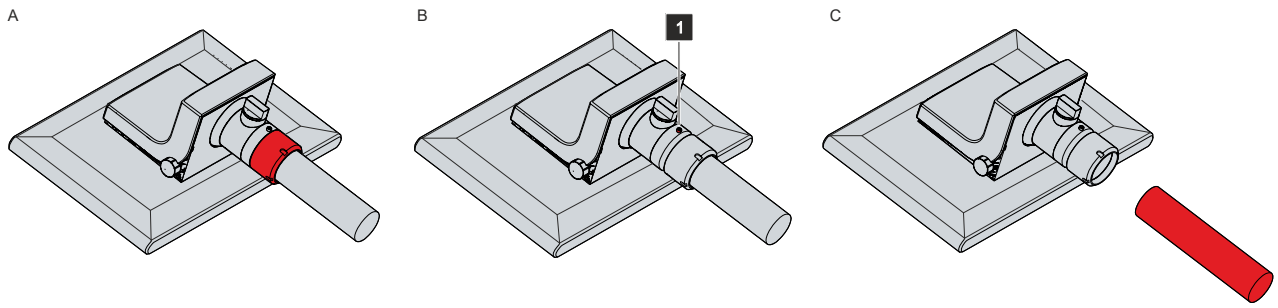


Fig. 35: Disassembly mounting arm tube

Disassembly tray and handle

To remove the toolboard (1) or handle (2) from the control panel, remove the three M5 screws from the three threaded holes on the bottom of the housing.

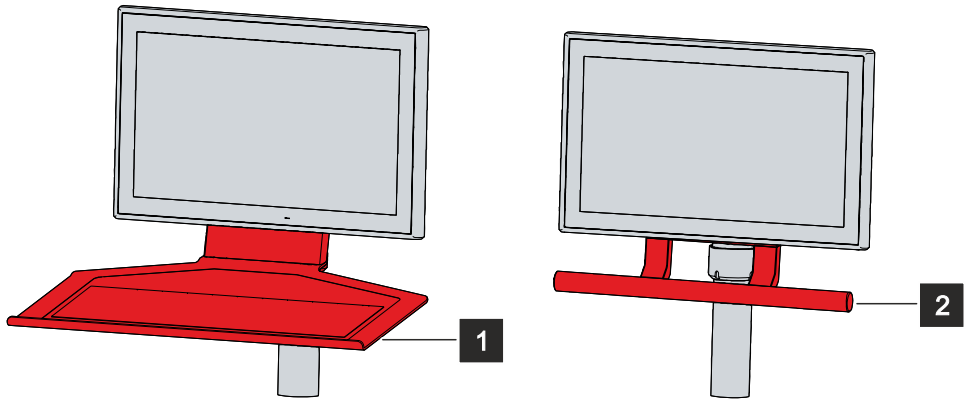


Fig. 36: Toolboard and handle

Disposal of the control panel

When disposing of the control panel the national electronic waste regulations must be followed.

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 aspects when cleaning the control panel:

- Keep to the boundary conditions of protection rating IP65.
- Never use compressed air to clean the panel.
- Maintain an ambient temperature range of 0 °C to 55 °C.

Cleaning agents

In order to avoid damage to the front of the panel PC during cleaning, you must use suitable cleaning agents. 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 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 Control Tool does not start automatically when the device starts up. Proceed as follows to activate the "Cleaning Mode" of the Beckhoff Control Tool:

1. Go to the Beckhoff Control Tool 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.).

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

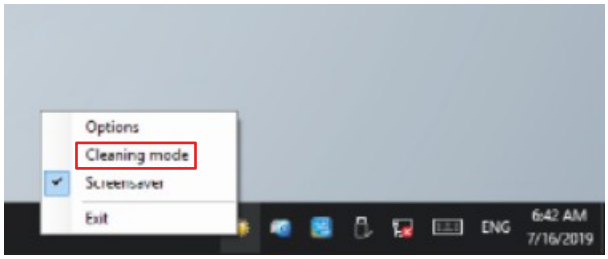


Fig. 37: Select "Cleaning Mode"

You can set the duration for which the panel PC 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 Fig.).

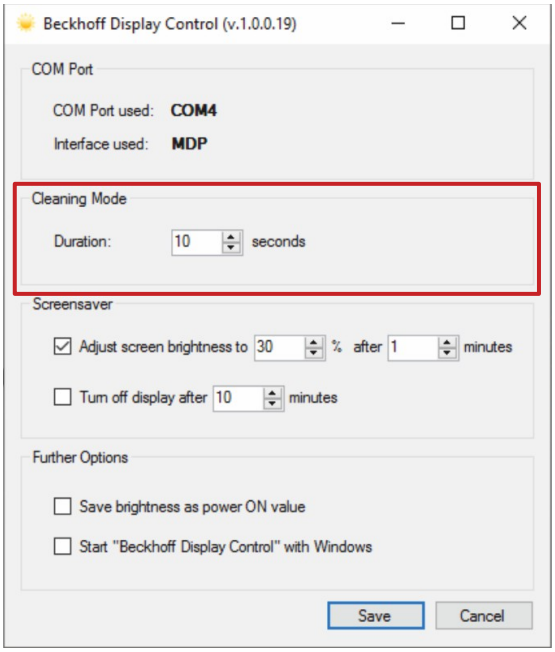


Fig. 38: Configuration "Cleaning Mode"

7 Troubleshooting

Fault	Cause	Measures
No control panel function	Lack of power supply to the control panel Other cause	Check the power supply cable Call Beckhoff Service
The control panel only works partially or only temporarily (e.g. dark image or none at all)	Defective backlight in the display Components in the control panel defective	Call Beckhoff Service Call Beckhoff Service
Malfunction of the touch screen	Poor or missing functional earth of the device Poor or missing ground connection of the user	Establish functional earth 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 14: Technical data

Product designation	CP39xx-0000		
Weights (with connection block/ with mounting arm adapter)	CP3907: 1.8 kg CP3912: 3.4 kg/4.2 kg CP3913: 3.1 kg/3.9 kg CP3915: 3.9 kg/4.7 kg CP3916: 4.5 kg/5.3 kg CP3918: 5.5 kg/6.3 kg CP3919: 6.1 kg/6.9 kg CP3921: 6.6 kg/7.4 kg CP3924: 7.6 kg/8.4 kg		
Supply voltage	22-30 V_{DC} (24 V_{DC} power supply unit) NEC class 2		
Power consumption	Data sheet for calculating power consumption and power loss in the download finder - Data sheets: http://www.beckhoff.com/downloadfinder		
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 ... +55 °C Transport / storage: -20 °C ... +65 °C		
Permissible relative air humidity	Maximum 95%, no condensation		
Transport and storage	The same values for air humidity and shock resistance are to be observed during transport and storage as in operation. Suitable packaging of the control panel can improve the resistance to impact during transport.		

Product designation	CP39xx--0010		
Weights (with connection block/ with mounting arm adapter)	CP3907: 1.8 kg CP3912: 3.4 kg/4.2 kg CP3913: 3.1 kg/3.9 kg CP3915: 3.9 kg/4.7 kg CP3916: 4.5 kg/5.3 kg CP3918: 5.5 kg/6.3 kg CP3919: 6.1 kg/6.9 kg CP3921: 6.6 kg/7.4 kg CP3924: 7.6 kg/8.4 kg		
Supply voltage	22-30 V_{DC} (24 V_{DC} power supply unit) NEC class 2		
Power consumption with CU8802/ with CU8803	Data sheet for calculating power consumption and power loss in the download finder - Data sheets: http://www.beckhoff.com/downloadfinder		
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 Transport / storage: -20 °C ... +65 °C		
Permissible relative air humidity	Maximum 95%, no condensation		
Transport and storage	The same values for air humidity and shock resistance are to be observed during transport and storage as in operation. Suitable packaging of the control panel can improve the resistance to impact during transport.		

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 branch offices offer comprehensive service and support, providing fast and competent assistance with all issues relating to Beckhoff products and system solutions.

Beckhoff Service

The Beckhoff Service Center supports you in all matters 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 service, please indicate the serial number, which you can find on the name plate.

Beckhoff Support

Support offers you comprehensive technical assistance, helping you not only with the application of individual Beckhoff products, but also with other, wide-ranging services:

- World-wide support
- Design, programming and commissioning of sophisticated automation systems
- extensive training program for Beckhoff system components

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

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

You will also find further documentation for Beckhoff components there.

9.2 Approvals

Your device has at least the following approvals:

- CE
- EAC
- UKCA
- 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.

List of figures

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More Information:
www.beckhoff.com/cp39xx

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