BECKHOFF New Automation Technology

Manual | EN

CP6900-0001-0010

Economy Control Panel



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Table of contents

1 Notes on the documentation 5

2 For your safety 6

2.1 Signal words 6
2.2 Intended use 6
2.3 Fundamental safety instructions 7
2.4 Operator's obligation to exercise diligence 7
2.5 Notes on information security 8

3 Product overview 9

3.1 Structure 10
3.2 Interface description 12
3.2.1 Power supply 13
3.2.2 USB output 14
3.2.3 USB input 14
3.2.4 USB Extended input 15
3.2.5 DVI Extended input 16
3.3 Name plate 17

4 Commissioning 18

4.1 Transport and unpacking 19
4.2 Control cabinet installation 19
4.3 Connecting the Control Panel 22
4.3.1 Mounting power supply cable 22
4.3.2 Grounding the Control Panel 23
4.3.3 Connecting cables and power supply 24

5 Decommissioning 26

5.1 Disconnecting the power supply and cables 26
5.2 Disassembly and disposal 27

6 Maintenance 28

7 Troubleshooting 30

8 Technical data 31

9 Chemical resistance 32

10 Appendix 33

10.1 Service and support 33
10.2 Approvals 34

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.
It is absolutely necessary to comply with the documentation and the following notes and explanations 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.

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The documentation has been compiled with care. The products described are, however, constantly under development.
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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 front of the device is designed for an IP54 working environment. There is complete protection against contact and against dust in harmful quantities, as well as protection against splash water on all sides.

The rear side is designed for a working environment that meets the IP20 protection rating. This involves finger protection and protection against solid foreign objects up to 12.5 mm. There is no protection against water. Operation of the device in wet and dusty environments is not permitted.

If you have ordered your device with a stainless steel front, the front has an IP65 protection rating. It offers full protection against contact (dust-tight) and against water jets (nozzle) from any angle. The protection rating of the back of the device does not change.

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.

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.

3 Product overview

The economy built-in control panel is designed for installation in the front of a control cabinet. It can be used for various automation tasks.

The control panel has the following features:

- 10.1-inch display, 1024 x 600 resolution
- Single-finger touch screen
- Aluminum front with sheet-steel rear cover, front IP54, rear IP20
- Control cabinet installation via pull-out clamping levers for fast installation without loose parts
- 24 V DC power supply unit

Push-button extension

You have the possibility to order the control panel with the following push-button extensions:

- C9900-G072: push button extension for CP6x00 with horizontal 10.1-inch display
- C9900-G073: push button extension for CP6x00 with horizontal 10.1-inch display

For explanations of the push button extensions and the functions, refer to the manual C9900-G072/G073.

Figure 1 shows the control panel without (1) and with (2) push-button extension.

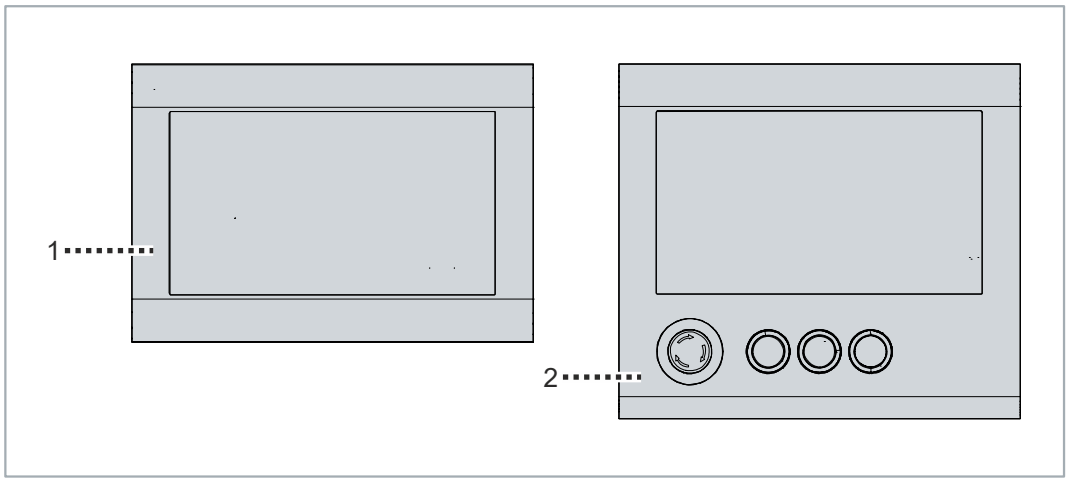


Fig. 1: Without and with push-button extension

If you have opted for a stainless steel device, you cannot order a push-button extension.

3.1 Structure

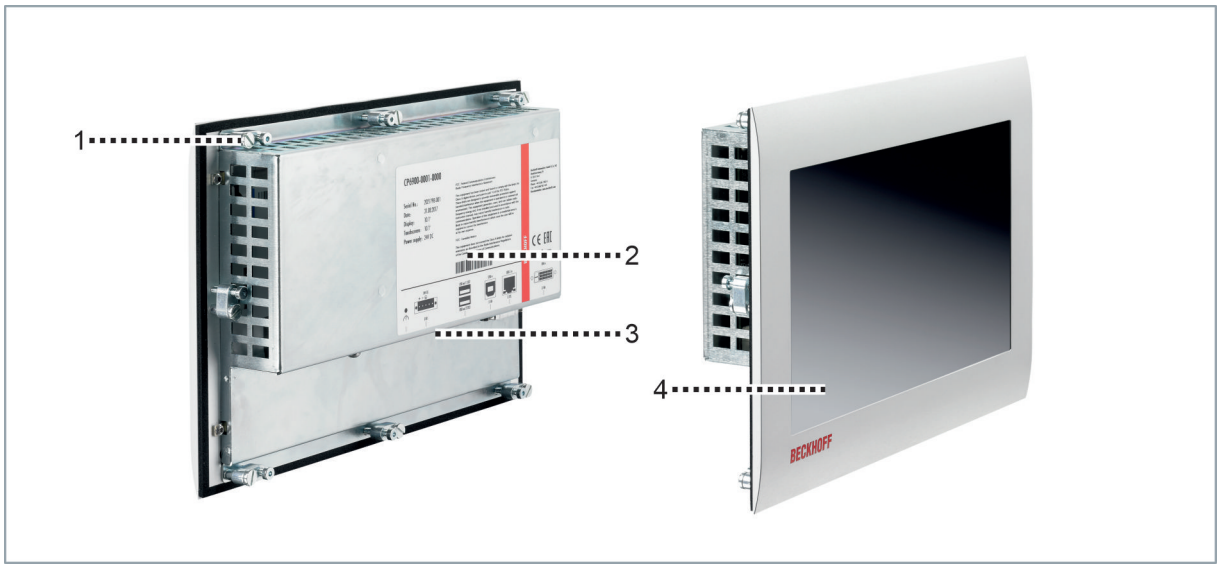


Fig. 2: Structure

Table 1: Legend structure

No.	Component	Description
1	Clamping lever	Mounting the control panel in the control cabinet wall
2	Name plate	Information on the control panel equipment
3	Access to interfaces	Interfaces on the underside
4	Display and touch screen glass	Operating the control panel

You can optionally order the device with a stainless steel front:

- CP6900-1400

The following figure shows the structure of a stainless steel device.

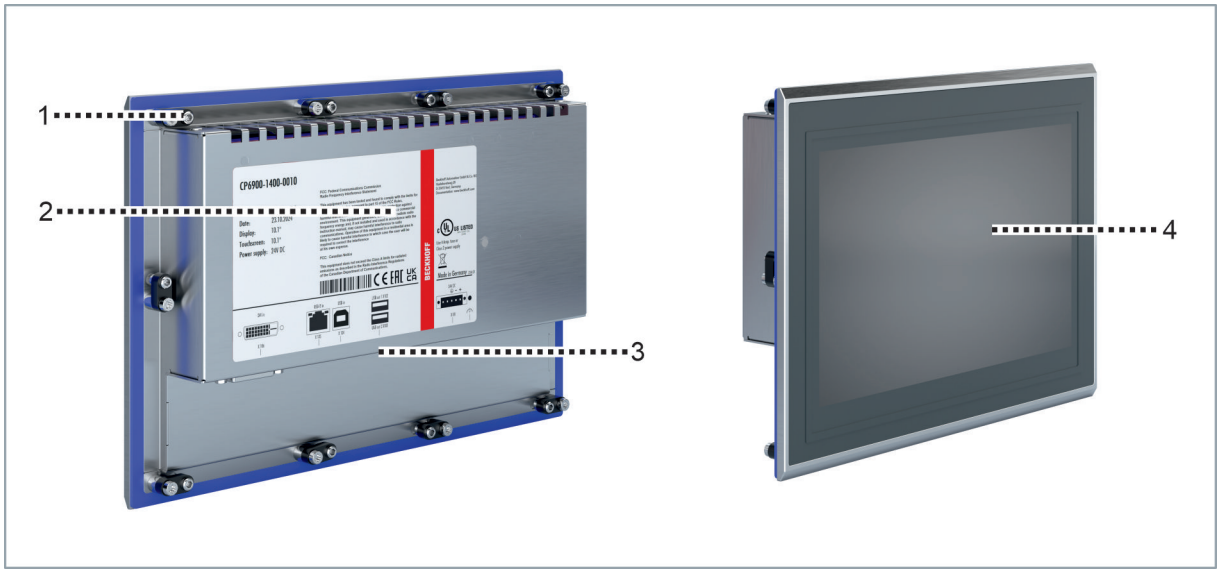


Fig. 3: Structure stainless steel device

Table 2: Legend structure stainless steel device

No.	Component	Description
1	Clamping lever	Mounting the control panel in the control cabinet wall
2	Name plate	Information on the control panel equipment
3	Access to interfaces	Interfaces on the underside
4	Display and touch screen glass	Operating the control panel

3.2 Interface description

The CP6900-0001-0010 has the following interfaces:

- Power supply (X101)
- USB output (X102, X103)
- USB input (X104)
- USB Extended input (X105)
- DVI Extended input (X106)

The interfaces are located on the back of the control panel at the bottom of the connection section (see fig. 4).

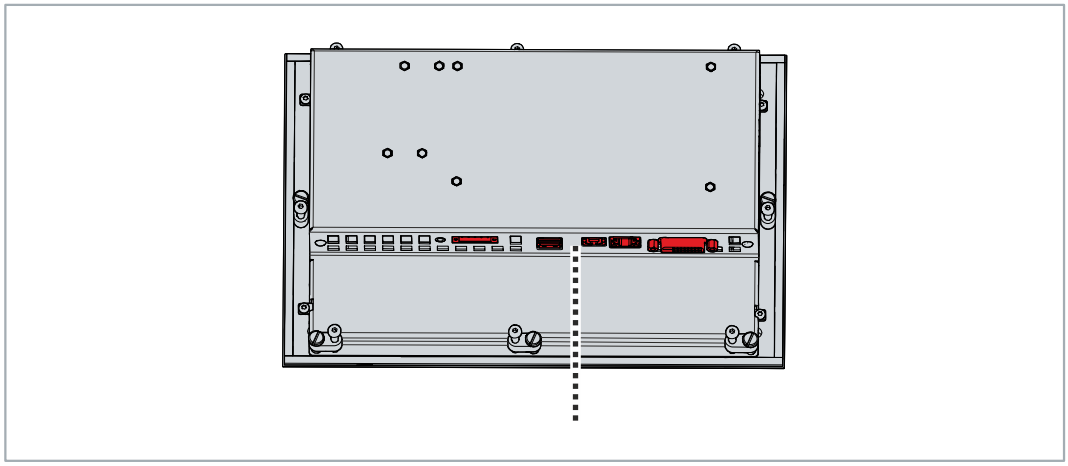


Fig. 4: Connection section

3.2.1 Power supply

The control panel is supplied with a nominal input voltage of 24 V_{DC}. The power supply and the protective earth of the device are connected via the 5-pin voltage socket (X101).

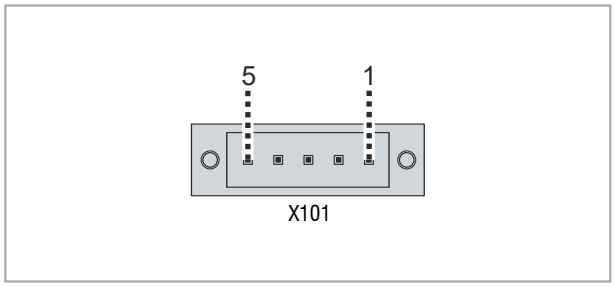


Fig. 5: Power supply pin numbering

Table 3: Voltage socket pin assignment

Pin	Signal	Description
1	NC	not used
2	NC	not used
3	⏚	Protective earth
4	-	Negative pole power supply 24 V
5	+ 24 V	24 V power supply, positive pole

The plug for the power supply is specified for 16 A and can accommodate wire cross-sections of up to 1.5 mm^2. For long supply lines, use 1.5 mm^2 cables to achieve a low voltage drop on the supply line. 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-P927: Power supply connector for CP690x Control Panel, 5-pin connector with strain relief for the external supply cable

3.2.2 USB output

The control panel has two USB outputs (X102, X103) with socket type A. The interfaces are used to connect peripheral devices with USB connection. USB specification 2.0 is supported.

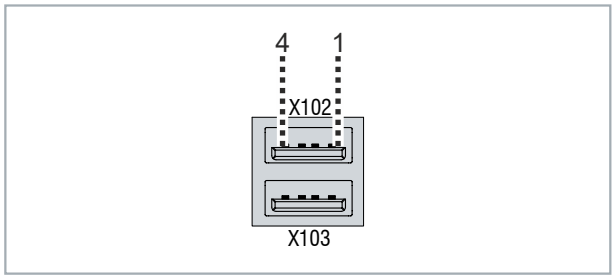


Fig. 6: USB interface pin numbering

Table 4: USB interface pin assignment

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

3.2.3 USB input

The control panel has a USB input (X104) with socket type B. The USB input is used to connect the control panel directly to the standard output of an industrial PC at distances of up to 5 m. USB specification 2.0 is supported.

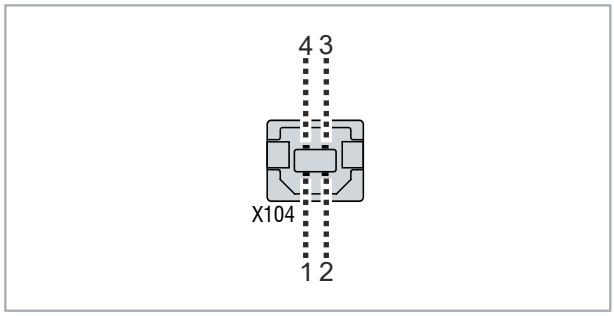


Fig. 7: USB input pin numbering

Table 5: USB interface pin assignment

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

3.2.4 USB Extended input

The control panel has a USB Extended input (X105) in the form of an RJ45 socket. The control panel is connected to the CU8801 USB-to-USB Extended converter box via the interface. The interface transmits USB 2.0 with 480 Mbit/s.

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.

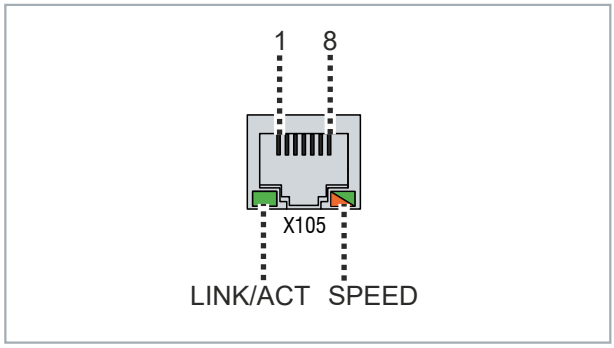


Fig. 8: USB-E input pin numbering

Table 6: USB-E input pin assignment

Pin	Signal	Description
1	T2 +	Pair 2
2	T2 -	
3	T3 +	Pair 3
4	T1 +	Pair 1
5	T1 -	
6	T3 -	Pair 3
7	T4 -	Pair 4
8	T4 -	

3.2.5 DVI Extended input

The CP6900-0001-0010 Control Panel has a DVI Extended input (X106). 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.

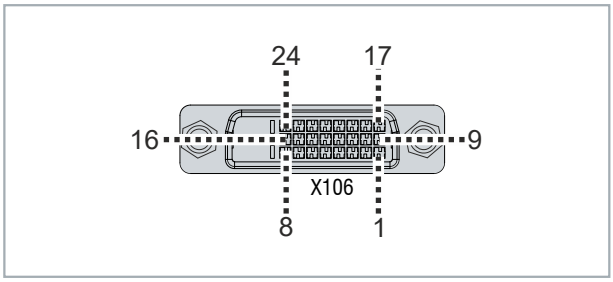


Fig. 9: DVI Extended input pin numbering

Table 7: DVI Extended interface pin assignment

Pin	Connection	Pin	Connection	Pin	Connection
1	TDMS Data 2 -	9	TDMS Data 1 -	17	TDMS Data 0 -
2	TDMS Data 2 +	10	TDMS Data 1 +	18	TDMS Data 0 +
3	TDMS Data 2/4 Shield	11	TDMS Data 1/3 Shield	19	TDMS Data 0/5 Shield
4	TDMS Data 4 -	12	TDMS Data 3 -	20	TDMS Data 5 -
5	TDMS Data 4 +	13	TDMS Data 3 +	21	TDMS Data 5 +
6	DDC Clock	14	+ 5 V Power	22	TDMS Clock Shield
7	DDC Data	15	Ground (+ 5 V, Analog H/V Sync)	23	TDMS Clock +
8	Analog Vertical Sync	16	Hot Plug Detect	24	TDMA Clock -

3.3 Name plate

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

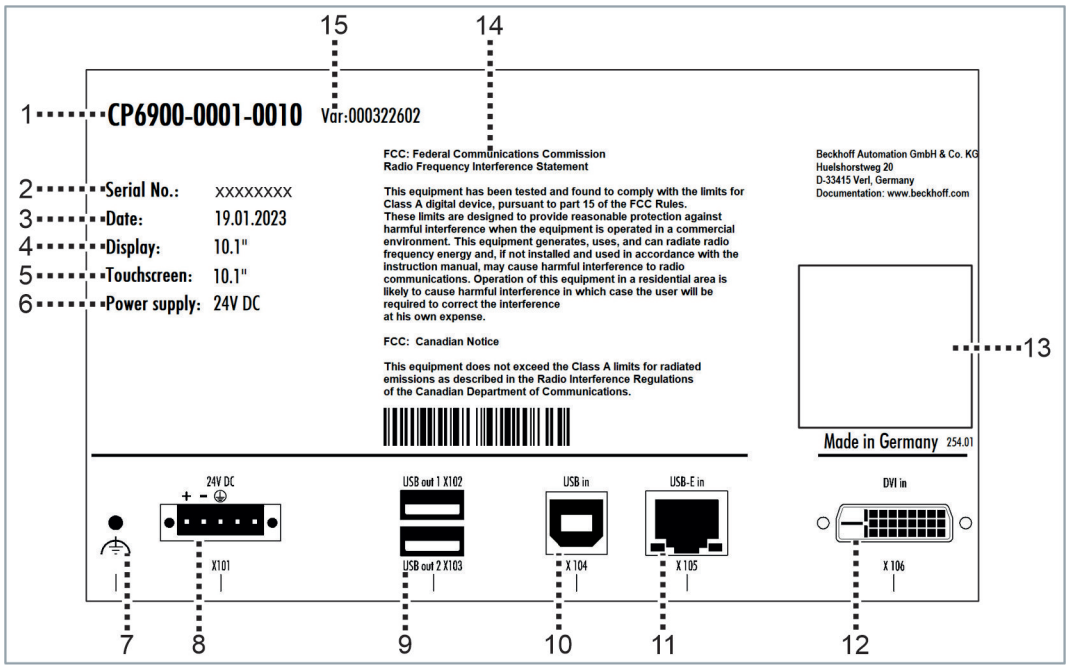


Fig. 10: Name plate

Table 8: Legend name plate CP6900-0001-0010

No.	Description
1	Model: The last four digits indicate the device generation.
2	Serial number (BTN)
3	Date of manufacture
4	Display
5	Touch screen
6	Power supply: 24 V_{DC}, NEC class 2
7	Grounding bolt for functional earthing of the control panel
8	Connection of the power supply and protective earth of the control panel (X101)
9	USB output (X102, X103)
10	USB input (X104)
11	USB Extended Interface (X105)
12	DVI Extended interface (X106)
13	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 [▶ 34].
14	FCC approval
15	Variant number: commercial number of the order code including ordering options

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 installing the device in the control cabinet front, connecting the cables and the 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 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.

If you want to remove the protective film again, you must proceed with caution so as not to damage the touch foil, which is located between the glass pane of the control panel and the applied protective film.

To remove the protective film, proceed as follows:

1. Carefully loosen one corner of the protective film.
2. Carefully pull the protective film off the control panel at the loosened corner at as flat an angle as possible.

⇨ You have removed the protective film.

4.1 Transport and unpacking

The specified storage conditions must be adhered to (see chapter 8 Technical data [▶ 31]).

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 control panel, in particular the original packaging, can improve the shock 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 device:

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 10.1 Service and Support [▶ 33]).

4.2 Control cabinet installation

NOTICE

Extreme environmental conditions

Extreme environmental conditions can cause damage to the device.

- Avoid extreme environmental conditions.
- Protect the device against dust, moisture and heat.

NOTICE

Lack of air circulation

Incorrect installation of the device prevents air circulation in the device and thus causes overheating and impaired functioning.

- Only install the device in the corresponding wall in the orientation shown.

NOTICE

Incorrect installation

Mounting the device in a way that deviates from the documentation can impair its functionality.

- Mount the device only in the orientations shown in the documents.

The device is designed for installation in a control cabinet for machine and system engineering. The environmental conditions specified for operation must be observed.

Dimensions

The dimensions of the control panel can be found on the Beckhoff website: https://www.beckhoff.com/de-de/support/downloadfinder/technische-zeichnungen/.

All dimensions are in mm.

Preparation of the control cabinet

The control cabinet must have the required installation cutout according to the device dimensions of the control panel.

The wall thickness must be between 2 mm and 5 mm for installation. After installation, be sure to check the tightness between the control panel and the installation wall.

Please also note the following for installation in a control cabinet:

- Position the control panel such that reflections from light sources on the screen are avoided as far as possible.
- 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.

Installation in the control cabinet

Once you have made the required cutout in the control cabinet, you can install the control panel in the control cabinet. Clamping levers are provided at the rear side of the housing for mounting of the device. In the delivery state, the clamping levers are turned onto the device.

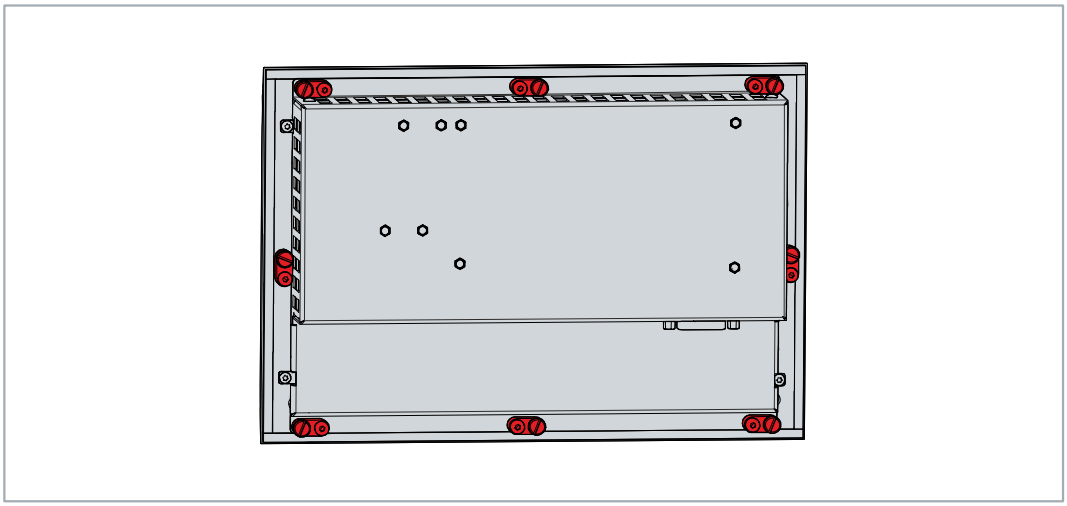


Fig. 11: Delivery state clamping lever

To install and secure the control panel in the control cabinet, follow the steps below:

1. Insert the control panel at the intended position in the control cabinet wall. Make sure that the device is secured against falling out until it is fastened properly.

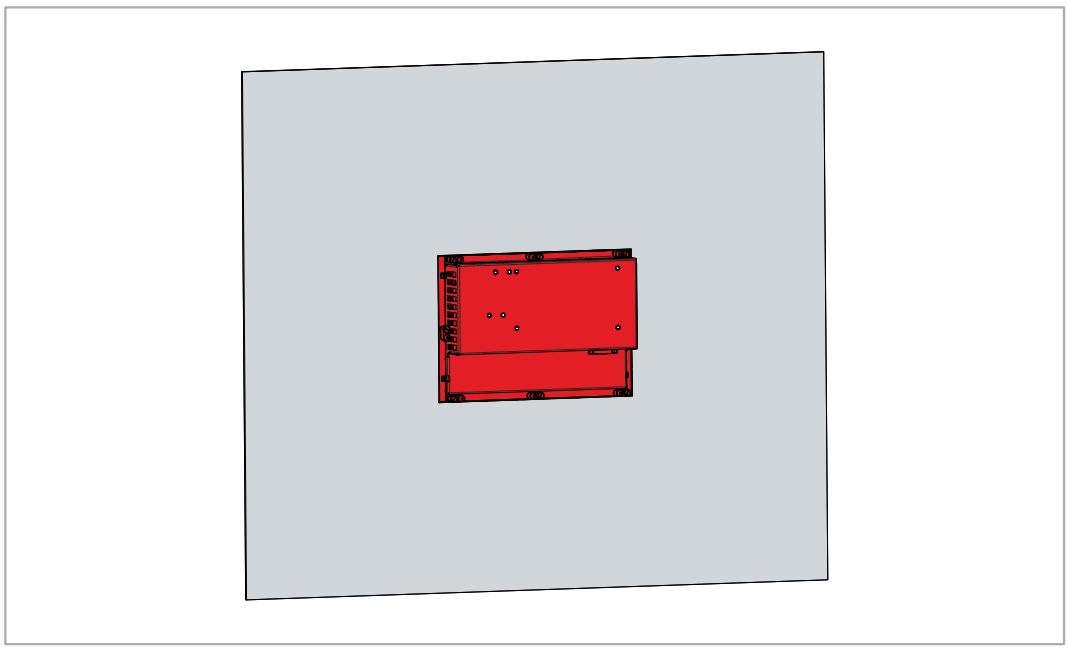


Fig. 12: Wall positioning

2. Turn the clamping levers 90° outwards (sections A and B).
3. Tighten the clamping levers with the Allen key 3.0 mm (section C).

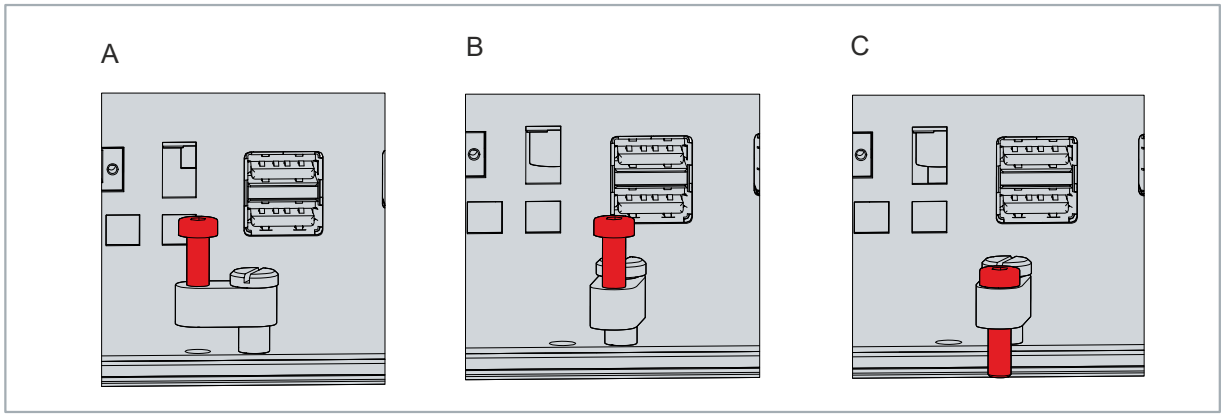


Fig. 13: Control cabinet installation

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 24 V DC power supply is required to operate the device. 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 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 Mounting power supply cable

Install the cable for the power supply of the control panel using the material supplied for connector assembly. It consists of a 5-pin connection strip and a strain relief housing with cable tie.

If you require a replacement for the voltage connector or the strain relief housing, you can order these from Beckhoff Sales using the following ordering option:

- C9900-P927: power supply connector for CP69xx or CP66xx Control Panel, 5-pin connector with strain relief for the external supply cable

Mounting power supply cable

First mount the plug on the cable as follows:

1. Remove a few centimeters of the cable sheath.
2. Remove the insulation from the wire ends (8-9 mm).
3. Crimp the ferrules onto the stripped wire ends.
4. Insert the cable ends with the ferrules into the 5-pin connection strip. For the pin assignment of the connector, see Chapter 3.2.1 Power supply [▶ 13].
5. Screw the cable ends into the 5-pin connection strip.

⇨ You have mounted the plug on the cable.

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.

Protective earth

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.

Establish low-resistance protective earth of the control panel via the voltage connection to avoid dangerous touch voltages. There is a pin in the voltage socket for the protective earth (PE).

EMC

NOTICE

Hardware damage due to electromagnetic interference

Using the control panel without functional earth can lead to hardware damage due to electromagnetic interference.

- Only use the device with functional earth.

Electromagnetic compatibility (EMC) of the control panel 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.

The control panel must comply with certain protection requirements. The control panel 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. You establish functional earthing via the ground connection between the threaded hole in the connection section on the back of the control panel (see Fig. 14) and the central grounding point of the control cabinet in which the panel is installed. 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.

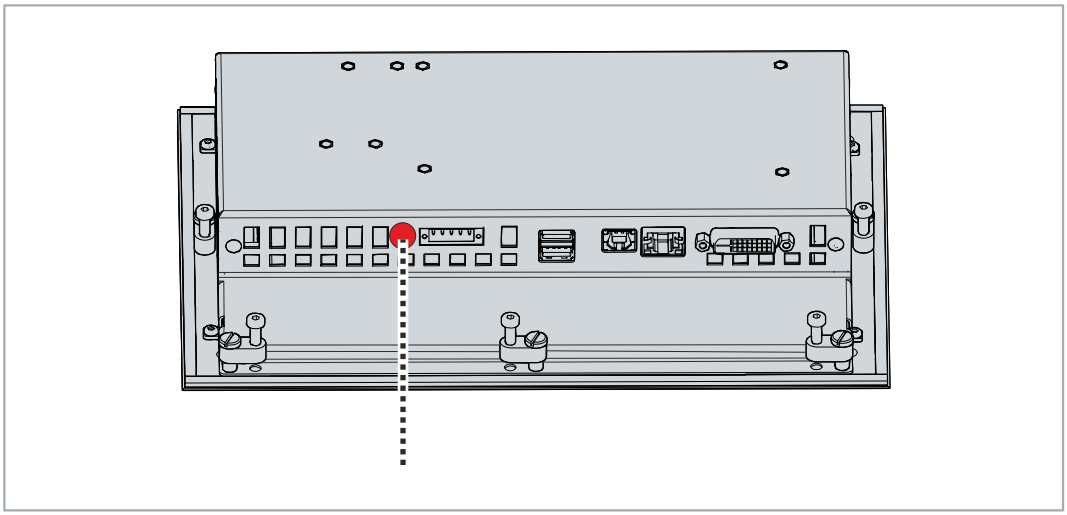


Fig. 14: Ground connection Functional earthing

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 at the rear in the connection section of the device.

Connecting cables

Make sure that you first ground the panel (see Chapter 4.3.2 Grounding the control panel [▶ 23]) and then plug in all data transmission cables.

When connecting the control panel to an industrial PC with UPS output, Beckhoff recommends using this for the connection so that the display is also active in UPS mode. Only one control panel may be connected to the UPS output on the PC.

Connect power supply cable

Cables with a maximum cable cross-section of 1.5 mm^2 can be used for connecting the power supply. For long supply lines, use 1.5 mm^2 cables to achieve a low voltage drop on the supply line. There should be at least 22 V at the power supply plug 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. First mount the power supply cable with the 5-pin connection strip without its strain relief housing.
2. Plug the voltage connector into the voltage socket on the panel.
3. Screw the voltage connector to the voltage socket.
4. Connect the panel to your external 24 V power supply.
5. Switch on the 24 V power supply.
6. Measure the voltage at the 5-pin connection strip of the panel.
7. Mount the strain relief housing on the 5-pin connection strip.

Assembly of strain relief housing

Now mount the strain relief housing on the previously connected plug and power supply cable as shown:

1. Thread the cable tie into the lower part of the strain relief housing (section A).
2. Insert the connection strip into the lower part of the strain relief housing (section B).

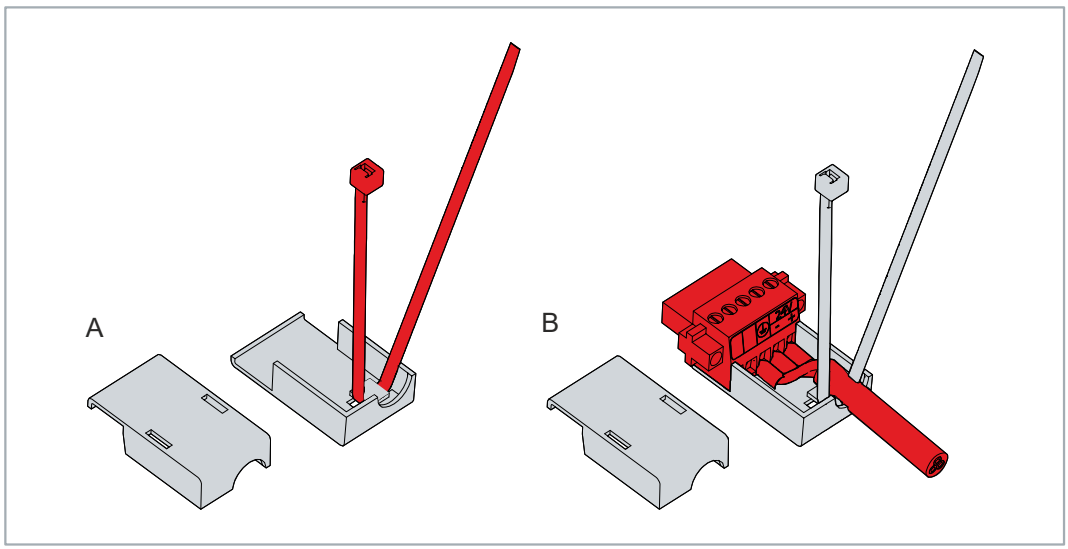


Fig. 15: Assembly of strain relief housing

3. Tighten the cable tie and remove the plastic tab (section C).
4. Attach the upper part of the strain relief housing by snapping it onto the lower part (section D).

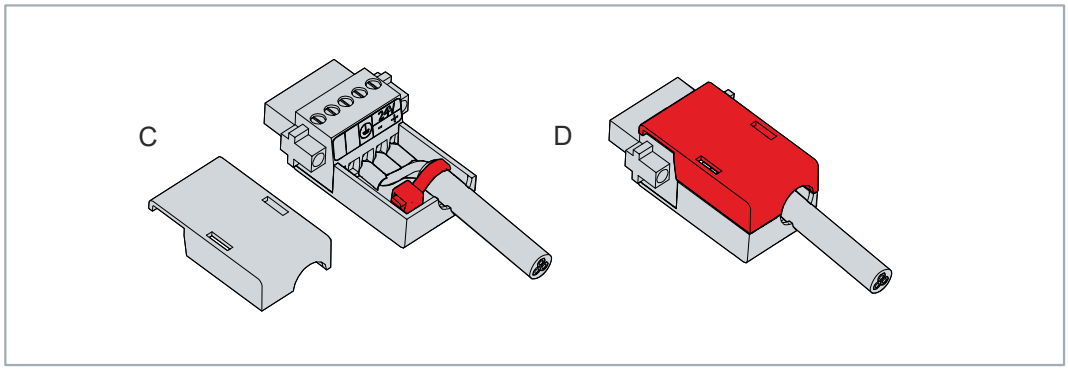


Fig. 16: Assembly of strain relief housing

⇨ You have mounted the strain relief housing.

To remove the strain relief housing, proceed as follows:

1. Use your fingers to bend the latching lugs on the lower part slightly outwards.

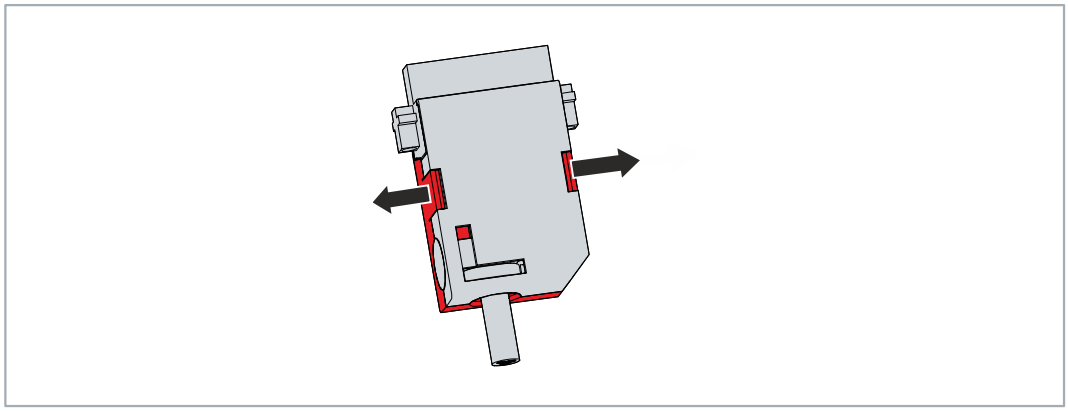


Fig. 17: Disassembly of the strain relief housing

2. Lever the upper part off the lower part.
3. Cut the cable tie.

⇨ You have removed the strain relief housing.

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 remove the device from the control cabinet.

If you do not wish to use the control panel any further, chapter 5.2 Disassembly and disposal [▶ 27] 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.

Before disassembling the control panel, disconnect the power supply and the cables. Follow the steps below:

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. Remove the power supply cable if the connector is to remain with the panel.
6. Make a note of the wiring of all data transmission cables if you want to restore the cabling with another device.
7. Disconnect all data transfer cables from the control panel.
8. Finally, disconnect the ground connection.

⇨ You have disconnected the power supply and the cables.

5.2 Disassembly and disposal

In order to be able to dismount the control panel from the control cabinet, you must first have disconnected the power supply and the cables (see Chapter 5.1 Disconnecting the power supply and cables [▶ 26]).

To remove the control panel from the control cabinet, follow the steps below:

1. Loosen the clamping levers with a 3.0 mm Allen key (sections A and B). Make sure that the device is secured against falling out of the control cabinet wall.
2. Turn the clamping levers back by 90° onto the housing (section C).

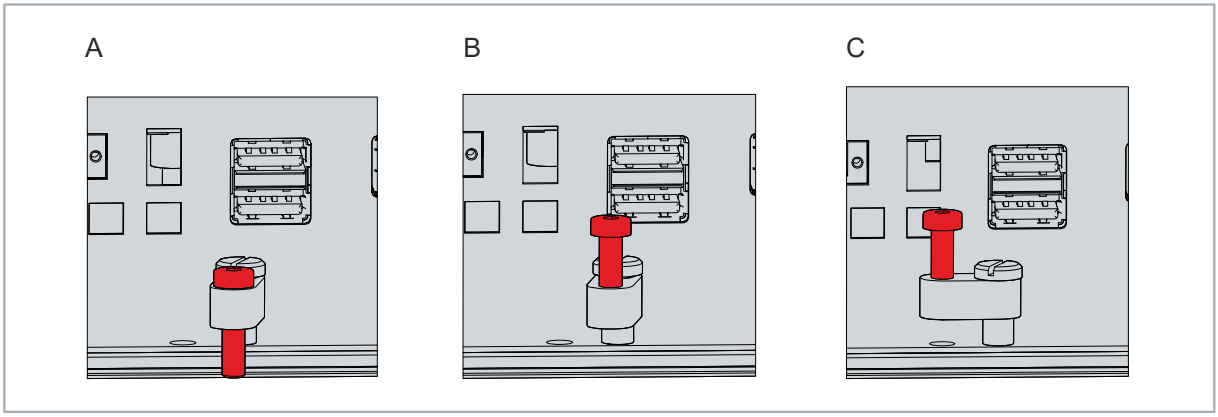


Fig. 18: Removal from the control cabinet

⇨ You can now remove the control panel from the corresponding cutout in the control cabinet wall.

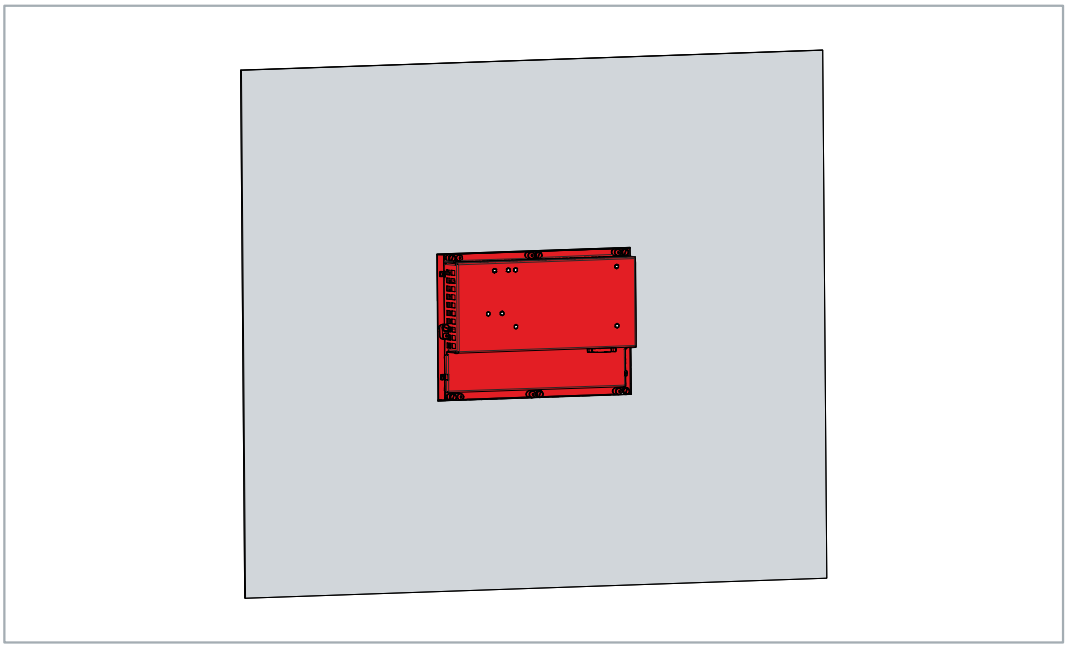


Fig. 19: Wall positioning

Disposal of the control panel

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 aspects when cleaning the control panel:

- Ensure that no dust enters the panel via the rear.
- 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 Display Control Tool.

The Beckhoff Display 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. 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.).

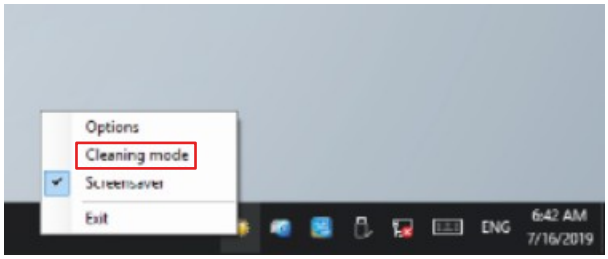


Fig. 20: Select "Cleaning Mode"

⇨ "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 Fig.).

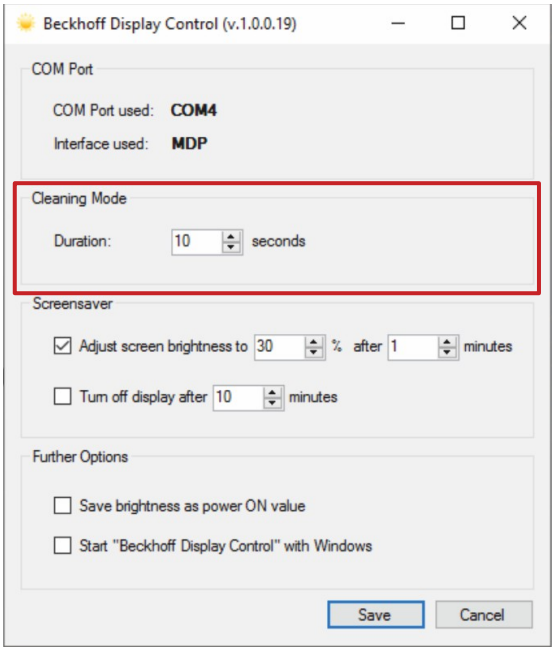


Fig. 21: Configuration "Cleaning Mode"

Repair

Only the vendor may repair the device. If a repair should be necessary, contact Beckhoff Service (see Chapter 10.1 Service and Support [▶ 33]).

If you have opted for a device with a stainless steel front, there is a silicone seal on the back of the device to protect the connection section from aggressive cleaning agents, water and dirt.

The silicone seal may become porous after a long operating time. Check the seal regularly for leaks. As soon as you notice any damage to the seal, contact the service department and have the seal replaced.

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 9: Technical data

Product designation	CP6900-0001-0010		
Supply voltage	22-30 V_{DC} (24 VDC power supply) NEC class 2		
Weight	approx. 1.4 kg		
Power consumption	Data sheet for power consumption and power loss in the download finder: https://www.beckhoff.com/en-en/support/download-finder/search-result/?download_group=691754572		
Standard protection rating/ Stainless steel protection rating	Front IP54, rear IP20/ Front IP65, rear IP20		
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: -25 °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. Suitable packaging of the control panel can improve the resistance to impact during transport.		

9 Chemical resistance

The following table provides information on the chemical resistance of stainless steel devices with flush-mounted touch screen.

Description	Properties
Observe the maximum ambient temperature	Liquids and vapors that act on the device for several minutes must not exceed a temperature of 45 °C at the device.
	Flush-mounted Beckhoff touch screens are resistant to many solvents. The following solvents have been explicitly tested.
Solvent resistance	According to DIN 42115 Part 2, with an action time of more than 24 hours:
	- ethanol, cyclohexanol, glycol, glycerine, methanol
	- acetone, methylene chloride, methyl ethyl ketone
	acetic acid (< 50%), phosphoric acid (< 30%), hydrochloric acid (< 36%), nitric acid (< 10%), sulfuric acid (< 10%), chloracetic acid (< 50%)
	ammonia (< 40%), caustic soda (< 40%)*, alkali carbonate solution*, potassium ferrocyanide, potassium hydroxide (< 30%)
	paraffin oil, castor oil, pure turpentine
	isopropanol, hexanol, diacetone alcohol
	turpentine, mineral oils, cutting oil, linseed oil
	unleaded petrol, diesel oil, petroleum benzine*, white spirit
	engine oil, gearbox oil, antifreeze
	bleach*, SBP 60/95*
Not resistant to	concentrated mineral acids, concentrated alkaline solutions, high-pressure steam over 100 °C
	benzyl alcohol, methylene chloride, dimethylformamide, tetrahydrofuran
	The same applies to a large number of household chemicals. The following household chemicals have been explicitly tested.
Resistance to household chemicals	according to DIN 42115 Part 2 with an action time of more than 24 hours:
	dissolved Ariel* powder, dissolved Persil* powder, Wisk, Lenor*, Downey*
	Ajax, dissolved Vim, Windex*
	glass cleaner (ammonia-based)
	detergents
	household cleaners (Fantastic, Formula 401, Joy, Gumption*, etc.)
	vinegar, coffee, tea, cooking fat, salad oil, salt
	tomato ketchup
Splash resistance	Flush-mounted Beckhoff touch screens are resistant to splash water.
	* Very minimal sheen formation was noted

10 Appendix

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

10.1 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

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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.

10.2 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

Fig. 1 Without and with push-button extension 9
Fig. 2 Structure 10
Fig. 3 Structure stainless steel device 10
Fig. 4 Connection section 12
Fig. 5 Power supply pin numbering 13
Fig. 6 USB interface pin numbering 14
Fig. 7 USB input pin numbering 14
Fig. 8 USB-E input pin numbering 15
Fig. 9 DVI Extended input pin numbering 16
Fig. 10 Name plate 17
Fig. 11 Delivery state clamping lever 20
Fig. 12 Wall positioning 21
Fig. 13 Control cabinet installation 21
Fig. 14 Ground connection Functional earthing 23
Fig. 15 Assembly of strain relief housing 25
Fig. 16 Assembly of strain relief housing 25
Fig. 17 Disassembly of the strain relief housing 25
Fig. 18 Removal from the control cabinet 27
Fig. 19 Wall positioning 27
Fig. 20 Select "Cleaning Mode" 29
Fig. 21 Configuration "Cleaning Mode" 29

List of tables

Table 1 Legend structure 10
Table 2 Legend structure stainless steel device 11
Table 3 Voltage socket pin assignment 13
Table 4 USB interface pin assignment 14
Table 5 USB interface pin assignment 14
Table 6 USB-E input pin assignment 15
Table 7 DVI Extended interface pin assignment 16
Table 8 Legend name plate CP6900-0001-0010 17
Table 9 Technical data 31

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