BECKHOFF New Automation Technology

Manual | EN

CP79xx-xxxx-0010

Control Panel



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1 Notes on the documentation

This description is intended exclusively for trained specialists in control and automation technology who are familiar with the applicable national standards.
For installation and commissioning of the components, it is absolutely necessary to observe the documentation and the following notes and explanations.
The qualified personnel is obliged to always use the currently valid documentation.

The responsible staff must ensure that the application or use of the products described satisfies all 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.
We reserve the right to revise and change the documentation at any time and without notice.
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2 For your safety

The signal words and their meanings are explained in the chapter on safety. They contain fundamental safety instructions that are essential for 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 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.

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 Control Panel is designed for installation on the mounting arm and is available in a wide range of diagonals. It can be used for a wide range of automation tasks.

The control panel has the following features:

- Various display sizes and resolutions:
  - 6.5-inch (640 x 480) 4:3
  - 12-inch (800 x 600) 4:3
  - 15-inch (1024 x 768) 4:3
  - 19-inch (1280 x 1024) 5:4
- TFT display
- Aluminum housing, IP65 all around
- Front laminate in different variants:
  - only display without keys
  - function keys, with 10 special PLC keys with LEDs
  - numeric PC keyboard (US layout), with 10 special PLC keys with LEDs
  - alphanumeric PC keyboard (US layout), with 10 special PLC keys with LEDs
- 24 V DC power supply unit

3.1 Structure

Figure 1 shows the structure of the device as an example of all CP79xx versions.



Fig. 1: Structure

Table 1: Key for CP79xx configuration

No.	Component	Description
1	4 threaded holes M6 x 18 mm	For installation on the wall
2	Name plate	Information on the control panel equipment
3	Connection section	Access to interfaces
4	Display and touch screen glass	Operating the control panel
5	Optional USB socket	Connection of peripheral devices

3.2 Interface description

In the basic configuration, the control panel includes the following interfaces:

- DVI Extended input (X101)
- Power supply (X102)
- USB Extended 2.0 input (X103)

The interfaces are located at the rear of the control panel (see fig. 2). In the case of 6.5-inch and 12-inch displays, the interfaces are located on the back at the bottom right.

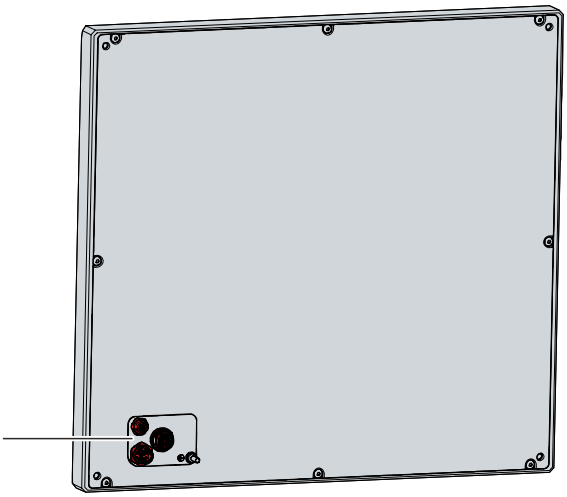


Fig. 2: Connection section

3.2.1 DVI Extended input

The control panel has a DVI Extended input (X101) according to IP65. 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.

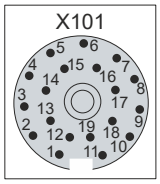


Fig. 3: DVI Extended input pin numbering

Table 2: 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		

Setting the data transfer rate

If the distance between the PC and the control panel is large, the data transfer rate for the DDC file must be limited. The DDC file is transferred from the control panel to the PC to tell the PC the properties of the display such as timing and resolution.

The VideoBIOS in the graphics card, or in case of on-board graphics the VideoBIOS in the motherboard, contains the definition of the data transfer rate for the DDC file. This value must be 50 kHz or less. If this value is too high, the image is either not displayed or only displayed after Windows starts.

Windows graphic drivers also contain a value for the data transfer rate of the DDC file. If no image is displayed under Windows, a graphic driver must be used that contains a value of 50 kHz or less for the DDC file transfer.

3.2.2 Power supply

The control panel is supplied with a nominal input voltage of 24 V_{DC}. The connection to the power supply as well as the external wiring of the device is made via the 4-pin M12 socket (X102).

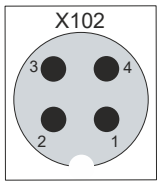


Fig. 4: Voltage socket pin numbering

Table 3: Voltage socket pin assignment

Pin	Signal	Description
1	+ 24 V	Power supply
2	NC	not connected
3	GND	0 V
4	NC	not connected

The plug for the power supply is specified for 16 A and can accommodate wire cross-sections of up to 0.75 mm^2. For long supply lines, use 0.75 mm^2 cables to achieve a low voltage drop on the supply line. There should be at least 22 V at the 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 CP79xx, round connector IP65 with strain relief for the external supply cable

3.2.3 USB Extended 2.0 input

The control panel has a USB Extended 2.0 input (X103) according to IP65. 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 2.0 (USB E 2.0) 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 2.0 cable.

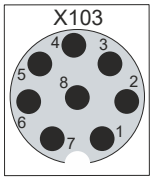


Fig. 5: USB E 2.0 input pin numbering

Table 4: USB E 2.0 input pin assignment

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

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. 6: Name plate

Table 5: Legend for CP79xx 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	Touch pad
7	Controller
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	FCC approval
10	Address of the vendor

3.4 Key functions

You can order your control panel with different versions of the front laminate. You can choose between a panel without buttons and a panel with different button configurations. Please refer to the current price list for specific ordering options.

The following table provides information about the functions of the available keys.

Table 6: Key functions CP79xx

Key	Function
	Move the cursor one step in the corresponding direction
	*Home* = cursor to beginning of the line *End* = cursor to end of the line
	*Pg Up* = scroll forward one page *Pg Dn* = turn back one page
	*Tabulator* = cursor to next input field *Shift* + *Tab* = cursor to previous input field
	*Del* = delete character to the right of the cursor
	*Enter* = confirm input
	*Backspace* = delete character to the left of the cursor
	*Shift* pressed with letter = upper case instead of lower case letter *Shift* pressed with number = displayed character instead of number
	*Caps Lock* = permanent pressing of the *Shift* key (pressing the *Shift* key deactivates the function)
	*Ctrl, Alt* = change the meaning of a key pressed at the same time
	Open the start menu of the operating system in use

	Opening the properties window of a selected object
	*Esc* = close dialog box, cancel operations
	Set printed character to the cursor position
	*Function keys* = functions of the keys determined by the software
	*Special keys* = special keys with LED that can be controlled by the TwinCAT automation software

3.5 Connection kits

The following optional connection kits are available:

Table 7: CP79xx connection kits

Connection kits	Description
C9900-K630	3 m connection kit for CP79xx-xxxx-0010, 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 CP79xx-xxxx-0010, 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-K632	10 m connection kit for CP79xx-xxxx-0010, 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 CP79xx-xxxx-0010, consisting of: 15 m DVI cable, 15 m Cat.6a 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 CP79xx-xxxx-0010, 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 CP79xx-xxxx-0010, 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 CP79xx-xxxx-0010, 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 CP79xx-xxxx-0010, 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

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.

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.

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

4.1 Transport and unpacking

The specified storage conditions must be adhered to (see chapter 8 Technical data [▶ 27]).

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 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 9.1 Service and Support).

4.2 Assembly

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.

Also see about this

- Technical data [▶ 27]

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.

On the rear side of the control panel there is the protective conductor connection PE (see Fig. 7), which ensures both the protective earthing of the panel and the functional earthing. 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.

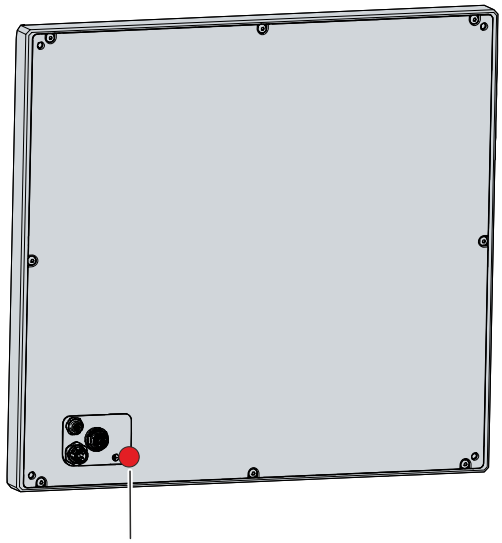


Fig. 7: CP79xx_protective conductor connection

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.

By connecting the protective earth conductor (PE), you establish a low-resistance protective earth of the control panel and thus avoid dangerous touch voltages.

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. The functional earth is also established via the connection of the PE protective conductor.

4.3.2 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 4.3.1 Grounding the control panel [▶ 20]) 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. Plug the voltage connector into the voltage socket on the panel.
2. Connect the panel to your external 24 V power supply.
3. Switch on the 24 V power supply.

5 Decommissioning

NOTICE

Hardware damage due to power supply

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

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

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

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.

Follow the steps below to disconnect the power supply and the cables:

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

⇨ You have disconnected the power supply and the cables.

Disposal

If you do not wish to continue using the control panel, you can remove it from the mounting arm and then dispose of it. When disposing of the devices follow the national electronic scrap regulations.

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 Control Tool.

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.

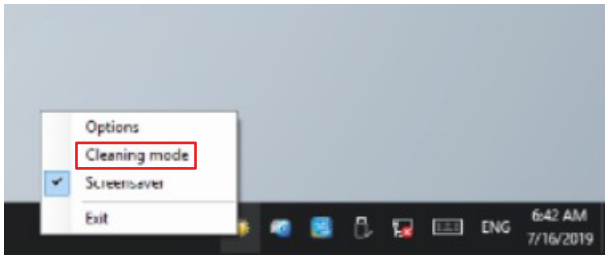


Fig. 8: Select "Cleaning Mode"

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.).

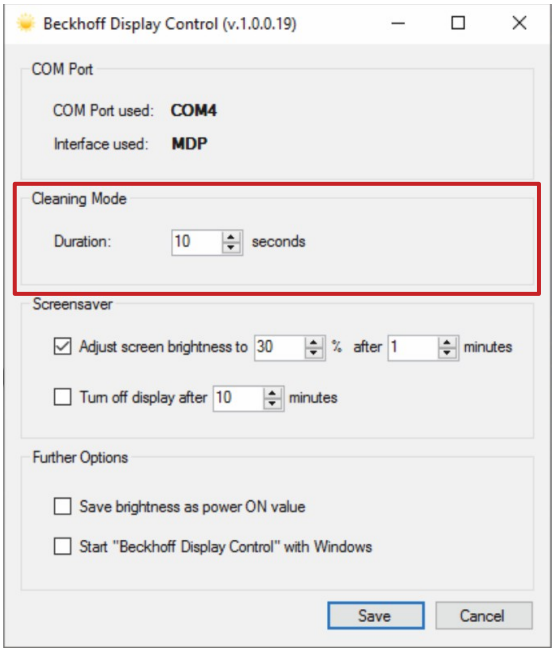


Fig. 9: Configuration "Cleaning Mode"

Repair

Only the vendor may repair the device. If a repair should be necessary, contact Beckhoff Service (see Chapter 9.1 Service and Support [▶ 28]).

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 8: Technical data

Product designation	CP79xx		
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: https://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: -25 °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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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 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.

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More Information:
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