# BECKHOFF New Automation Technology

Manual | EN

# C6920

Industrial PC

# Table of contents

# 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.

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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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**Delivery conditions**

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# 2   For your safety

The Safety chapter first explains the safety symbols used in the documentation and their meanings. 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 Industrial PC is intended for control cabinet installation and use as a control system in machine construction and plant engineering for automation, visualization and communication.

The Industrial PC has been developed for an IP20 working environment. It is protected against the penetration of fingers and solid foreign bodies of 12.5 mm or larger in size. It is not protected against water. Operation of the devices in wet and dusty environments is not permitted.

The specified limits for technical data must be adhered to.

The Industrial PC can be used within the documented operating conditions.

**Improper use**

Do not use the Industrial PC outside the documented operating conditions.

## 2.3 Fundamental safety instructions

The following safety instructions must be observed when handling the Industrial PC.

**Application conditions**

- Do not use the Industrial PC under extreme environmental conditions.
- Never use the Industrial PC in potentially explosive atmospheres.
- Do not carry out any work on the Industrial PC when it is live. Always switch off the supply voltage for the device before mounting it, replacing device components or rectifying malfunctions. This does not apply to the replacement of hard disks in a RAID configuration.
- 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**

- If you change the hardware and software configurations, you must keep within the specified limits of power consumption and power dissipation (please refer to the respective data sheet).
- Ensure that only trained specialists with a control and automation technology background, operate the Industrial PC. Use by unauthorized persons can lead to damage to property and loss of data.
- Protect the power supply cable with a fuse with a max. rating of 16 A. The fuse serves to protect the supply line in the event of a short circuit.
- In case of fire, extinguish the Industrial PC 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.

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## 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.

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# 3   Product overview

The C6920 Industrial PC belongs to the series of compact Industrial PCs for space-saving control cabinet installation. The device is suitable for various applications and requirements.

Thanks to the available processors, the Industrial PC can be used for the following applications, among others:

- diverse automation and visualization tasks
- wide range of IoT tasks with data preprocessing
- complicated HMI applications
- extensive axis controllers
- short cycle times
- high-volume data handling

The basic configuration of the C6920 includes the following aspects:

- Intel® processor
- 1 DVI connection, graphic adapter integrated in the Intel® processor
- 2 x 100/1000BASE-T connections, on-board dual Ethernet adapter
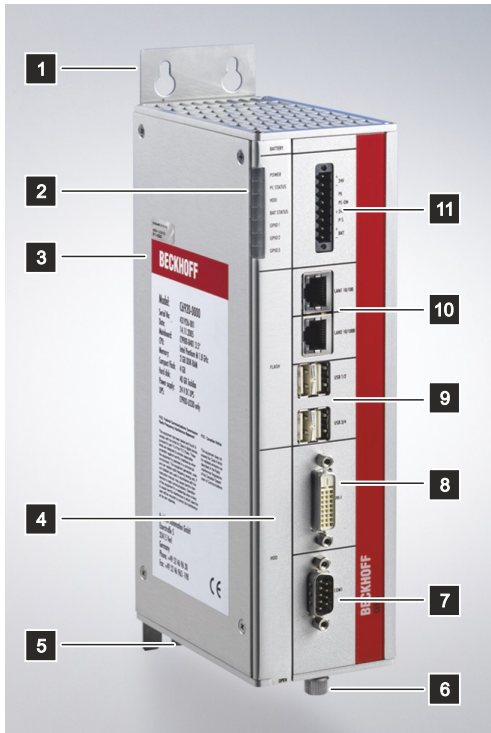- Hard disk
- 4 x USB
- 1 x RS232

# 3.1 Structure



Fig. 1: C6920_structure

*Table 1: Key: C6920 structure*

| No. | Component | Description |
|-----|-----------|-------------|
| 1 | Mounting plate | Plate for mounting the Industrial PC by its the rear side in the control cabinet |
| 2 | Status LEDs | Status display for power, TwinCAT, hard disk, fan, User LED, fieldbus activity, fieldbus error |
| 3 | Name plate | Information on the equipment of the Industrial PC |
| 4 | Front flap | Access to battery and storage media |
| 5 | Grounding screw | Functional earthing of the Industrial PC |
| 6 | Fan cartridge | tool-less access with knurled screw |
| 7 | RS232 interface (X109) | Serial interface according to RS232 standard |
| 8 | DVI interface (X108) | Connection of a DVI-capable monitor |
| 9 | USB interfaces (X104 - X107) | Connection of peripheral devices |
| 10 | RJ45 Ethernet interfaces (X102, X103) | Connection of the Industrial PC to a 100/1000BASE-T network or EtherCAT |
| 11 | Power supply (X101) | Connection of the power supply, protective earth and external wiring |

## 3.2 Interface description

The basic version of the C6920 has the following interfaces:

- Power supply (X101)
- Ethernet RJ45 (X102, X103)
- USB (X104 - X107)
- DVI (X108)
- RS232 (X109)

### 3.2.1 Power supply

The industrial PC is supplied with a nominal voltage of 24 V. The 8-pin voltage socket (X101) is used for connection to the power supply and the external wiring of the industrial PC. The main supply voltage is applied between PIN 5 (-24 V) and PIN 6 (+24 V) of the socket. If the industrial PC is equipped with an integrated uninterruptible power supply (UPS), an external battery pack can additionally be connected to PIN 1 and PIN 2.
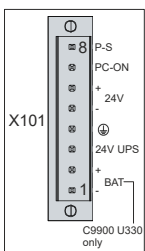


Fig. 2: C6920_voltage socket pin numbering

*Table 2: Voltage socket pin assignment*

| Pin | Signal | Description |
|-----|--------|-------------|
| 8 | P-S | Power Status output, minus is the negative pole of the supply voltage |
| 7 | PC-ON | Input PC-ON |
| 6 | + 24 V | 24 V supply voltage, positive pole |
| 5 | - | 24 V supply voltage, negative pole |
| 4 | ⏚ | Protective earth |
| 3 | 24 V UPS | 24 V UPS output 2.5 A, minus is – BAT |
| 2 | + BAT | Positive pole of the battery pack |
| 1 | - BAT | Negative pole of the battery pack |

To operate the buffered 24 V output, you must use PIN 1 (-) and PIN 3 (+).

## 3.2.2 Ethernet RJ45

The C6920 has two Gigabit LAN ports (X102, X103). The 100Base-T and 1000Base-T Ethernet standards enable the connection of corresponding network components and data rates of 100/1000 Mbit/s. The required speed is selected automatically.

The RJ45 connection technology with twisted-pair cables is used. The maximum length of the cable connection is 100 m.

The controllers are used as follows, based on the device generations:

*Table 3: Controller classification based on device generations*

| Generation | Controller |
|---|---|
| C6920-0050 | Intel® i218 for LAN1 and i210 for LAN2 |
| C6920-0060 | Intel® i219 for LAN1 and i210 for LAN2 |
| C6920-0070 | Intel® i219 for LAN1 and i210 for LAN2 |

The Ethernet port i210 connected via PCIe is usually suitable for cycle times <= 1 ms and for distributed clock applications with EtherCAT.

The Ethernet port i218/i219 integrated in the chipset is usually suitable for real-time Ethernet applications with cycle times > 1 ms (without distributed clocks).
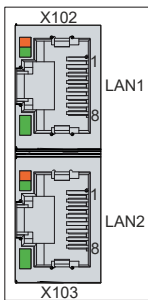


Fig. 3: C6920_Ethernet interface pin numbering

*Table 4: Ethernet interface 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 - | |

The LEDs of the LAN interfaces indicate the activity and the speed of the data transfer (Mbit/s). The top LED indicates whether the interface is connected to a network. If this is the case, the LED lights up green. The LED flashes when data transfer is in progress.

The lower LED indicates the speed of the data transfer. If the speed is 100 Mbit/s the LED is orange, at 1000 Mbit/s it is green

### 3.2.3 USB

The Industrial PC has four USB interfaces (X104-X107). They are used to connect peripheral devices with USB interfaces. The following table shows the interface assignment based on the device generation:

*Table 5: USB interfaces based on device generation*

| Generation | USB interfaces |
|---|---|
| C6920-0050 | 2x USB 3.0<br>2x USB 2.0 |
| C6920-0060 | 4x USB 3.0 |
| C6920-0070 | 4x USB 3.1 |
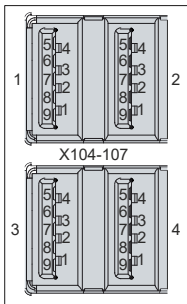


Fig. 4: C6920_USB interface pin numbering

*Table 6: USB interface pin assignment*

| Pin | Connection |
|---|---|
| 1 | Vbus |
| 2 | D - |
| 3 | D + |
| 4 | GND |
| 5 | StdA_SSRX - |
| 6 | StdA_SSRX + |
| 7 | GND_DRAIN |
| 8 | StdA_SSTX - |
| 9 | StdA_SSTX + |

For USB 2.0 only the first four pin assignments are relevant.

## 3.2.4        DVI

The Industrial PC has a DVI connection (X108), to which a DVI-capable monitor can be connected. Only digital signals are transmitted.
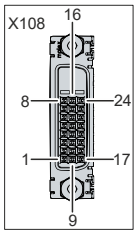
Fig. 5: C6920_DVI interface

*Table 7: DVI 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 | not connected | 12 | not connected | 20 | not connected |
| 5 | not connected | 13 | not connected | 21 | not connected |
| 6 | DDC Clock | 14 | + 5V 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 - |

## 3.2.5        RS232

The serial interface (X109) is fed out via a 9-pin standard DSUB connector. The signals comply with the RS232 standard. The port address and the interrupt used are set with the help of the BIOS setup.
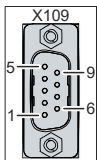
Fig. 6: C6920_RS232 interface pin numbering

*Table 8: RS232 pin assignment*

| Pin | Signal | Description |
|-----|--------|-------------|
| 1 | DCD | Data Carrier Detect |
| 2 | RxD | Receive Data |
| 3 | TxD | Transmit Data |
| 4 | DTR | Data Terminal Ready |
| 5 | GND | Ground |
| 6 | DSR | Data Set Ready |
| 7 | RTS | Request to Send |
| 8 | CTS | Clear to Send |
| 9 | RI | Ring Indicator |

# 3.3 Optional interfaces

A variety of interface options are available to you for extending your Industrial PC beyond the basic equipment level with additional interfaces. The following table provides information about the available interfaces, depending on the device generation:

*Table 9: C6920 interface options*

| Order option | Description | Device generation |
|---|---|---|
| FC9071-0000 | Gigabit-Ethernet PC network card 10/100/1000 Mbit/s, 1 channel, PCIe interface, covers the fieldbus connection range | C6920-0050 C6920-0060 C6920-0070 |
| C9900-E238 | Additional DVI-D socket led out to a slot cover, only for PCs with plug-in card slots | C6920-0050 C6920-0060 C6920-0070 |
| C9900-E294 | Additional DisplayPort interface, covers the fieldbus connection range, max. resolution 1920 x 1080, can be ordered only once per PC and not together with a second DVI connection | C6920-0060 C6920-0070 |
| C9900-E308 | Serial interface, RS232, electrical isolation, D-Sub, 9-pin, PCIe interface covers the fieldbus connection range | C6920-0060 |

**PCI and PCIe plug-in card slots**

In addition, you have the option to order the Industrial PC with additional PCI and PCIe plug-in card slots. In this case you can extend the device by additional fieldbus interfaces and Ethernet ports. The following plug-in card slots are available to you:

*Table 10: Ordering options – plug-in card slots*

| Order identifier | Description |
|---|---|
| C9900-B506 | 2 PCIe-x1 plug-in card slots on passive backplane, integrated in the C6920, for the insertion of PCIe-x1 plug-in cards up to 190 mm in length |
| C9900-B510 | 2 PCI plug-in card slots on passive backplane, integrated in the C6920, for the insertion of PCI plug-in cards up to 190 mm in length |
| C9900-B514 | 1 PCI and 1 PCIe-x1 plug-in card slot on passive backplane, integrated in the C6920, for the insertion of 1 PCI and 1 PCIe-x1 plug-in card up to 190 mm in length |

The plug-in card slots are located behind the flap next to the connection area of the Industrial PC. In order to mount plug-in cards, you have to loosen the Philips screw and open the flap (see fig. 7).
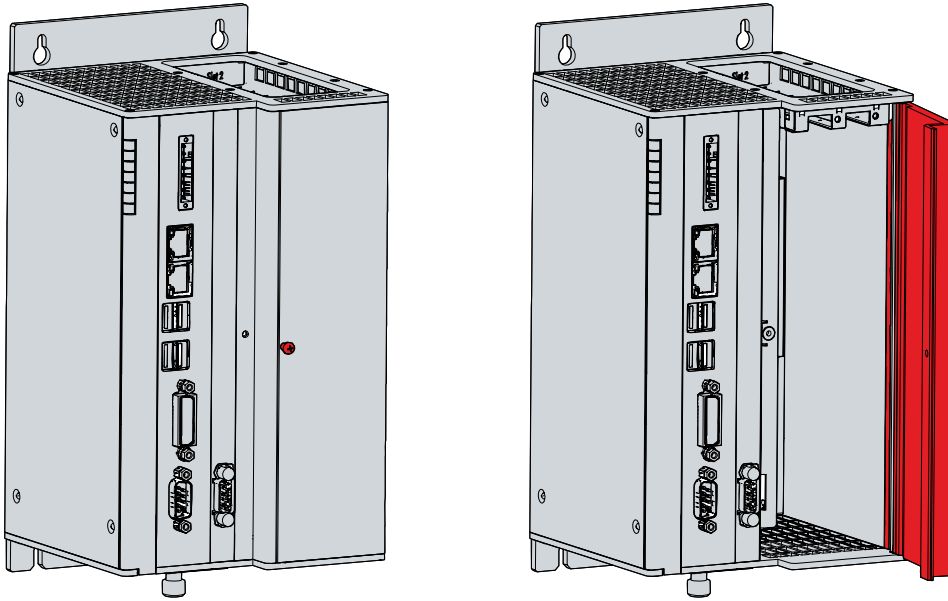
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Fig. 7: C6920_Access to plug-in card slots

When you have inserted the plug-in cards, the card connections are located on the right on the top side of the PC (see fig. 8).
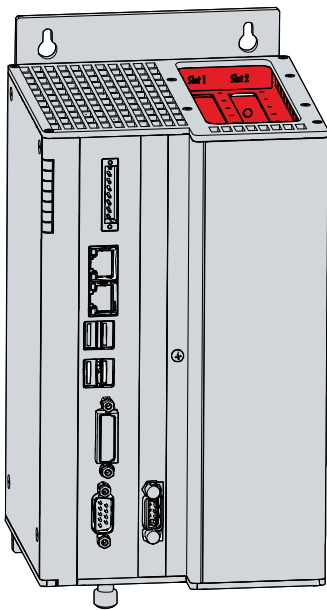


Fig. 8: C6920_Plug-in card connections

The additional plug-in card slots change the dimensions of the Industrial PC. The width of the device increases by 70 mm and the depth by 18 mm.

## 3.4    Status LEDs

The Industrial PC has seven status LEDs: PWR, TC, IDE, FAN, USR, FB RUN, FB ERR. They provide information on the following aspects:

- the status of the power controller
- the TwinCAT status
- the hard disk activity
- the fan status
- the user
- the fieldbus activity
- the fieldbus status

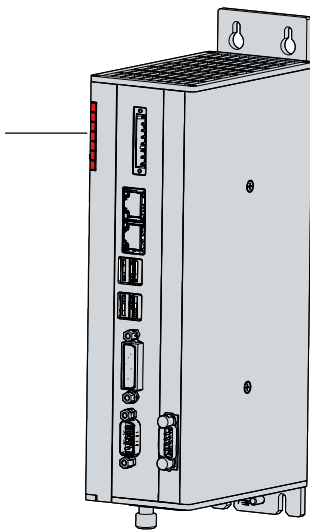The figure shows where the LEDs are located on the Industrial PC.

Fig. 9: C6920 Status LEDs

*Table 11: Meaning of the Status LEDs*

| LED | Color/flashing interval | Meaning |
|---|---|---|
| PWR (Power) | green | Operation |
| | green flashing | Standby |
| TC (TwinCAT) | red | Stop Mode |
| | green | Run Mode |
| | blue | Configuration mode |
| IDE/HDD | red | Access to storage medium |
| FAN | green | Fans running |
| | red | Fans failed |
| USR (user) | | programmable |
| FB RUN (fieldbus active) | green | active |
| | red | not active |
| FB Error (fieldbus error) | red | error |

## 3.5    Name plate

The name plate provides information on the equipment fitted to the Industrial PC. The name plate shown here serves only as an example.
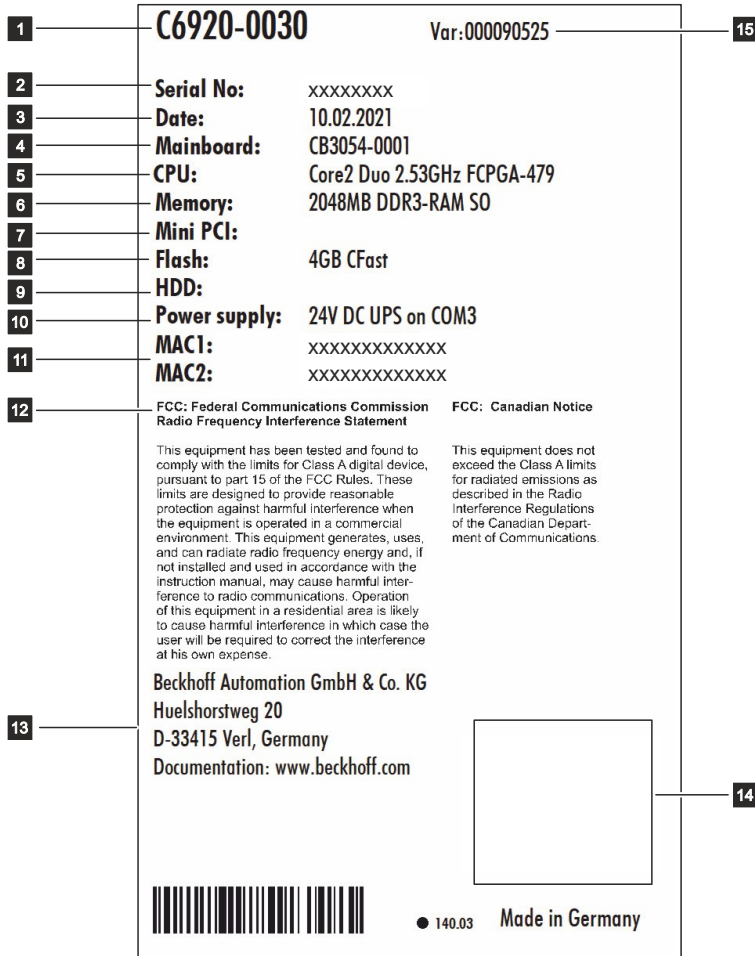
**1** C6920-0030          Var:000090525 — **15**

**2** Serial No:          xxxxxxxx
**3** Date:               10.02.2021
**4** Mainboard:          CB3054-0001
**5** CPU:                Core2 Duo 2.53GHz FCPGA-479
**6** Memory:             2048MB DDR3-RAM SO
**7** Mini PCI:
**8** Flash:              4GB CFast
**9** HDD:
**10** Power supply:      24V DC UPS on COM3
**MAC1:**                 xxxxxxxxxxxxx
**11** MAC2:              xxxxxxxxxxxxx

**12** FCC: Federal Communications Commission
Radio Frequency Interference Statement

FCC:  Canadian Notice

This equipment has been tested and found to comply with the limits for Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This equipment does not exceed the Class A limits for radiated emissions as described in the Radio Interference Regulations of the Canadian Department of Communications.

Beckhoff Automation GmbH & Co. KG

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**14**

● 140.03    Made in Germany

Fig. 10: C6920_Name plate example

*Table 12: Key: name plate C6920*

| No. | Description |
|-----|-------------|
| 1 | Model: The last four digits indicate the device generation. |
| 2 | Serial number (BTN) |
| 3 | Date of manufacture |
| 4 | Mainboard |
| 5 | CPU |
| 6 | RAM |
| 7 | Mini PCI slot |
| 8 | Storage media |
| 9 | Storage media |
| 10 | Power supply unit: 24 $V_{DC}$ |
| 11 | MAC addresses of the Ethernet interfaces (X102, X103) |
| 12 | FCC approval |
| 13 | Address of the vendor |
| 14 | Symbols<br><br>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 10.2 Approvals [▶ 49]. |
| 15 | Variant number: Commercial number of the order code including ordering options |

# 4 Commissioning

To be able to use the Industrial PC, you must first commission it. 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, connecting the cables and the power supply and finally switching on the Industrial PC.

## 4.1 Transport and unpacking

Note the specified transport and storage conditions (see Chapter 9 Technical data [▶ 47]).

Despite the robust design of the unit, the components are sensitive to strong vibrations and impacts. Transporting a control cabinet with a built-in PC can result in excessive impact on the industrial PC. During transport the device must therefore be protected from excessive mechanical stress. Appropriate packaging of the industrial PC, in particular 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. Remove packaging.
2. Keep the packaging for possible future transport.
3. Check your delivery for completeness by comparing it with your order.
4. Check the contents for visible shipping damage.
5. 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).

## 4.2    Installation in the control cabinet

| 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 C6920 Industrial PC is designed for mounting in control cabinets in machine and plant engineering applications. Please observe the environmental conditions prescribed for the operation (see Chapter 9 Technical data [▶ 47]).

Using different mounting plates, you can align the cable entry based on the application requirements.

Figure 11 shows the two available mounting plates: the standard mounting plate 1 and the optional mounting plate 2. Mounting plate 1 in mounted on the rear panel of the Industrial PC and mounting plate 2 on the right-hand side panel. In both cases, four M4 x 8 countersunk head Philips screws are used for mounting.
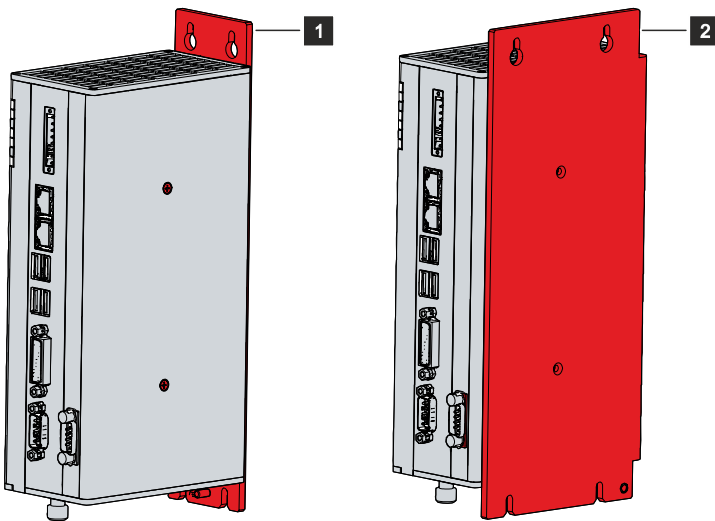


Fig. 11: C6920_Mounting plates

In the basic equipment version, the Industrial PC is delivered with mounting plate 1 already mounted as shown in fig. 11. Mounting plate 2 is not included in the scope of delivery. You can choose the following ordering options:

- C9900-M653: Mounting plate on the side panel instead of on the rear panel

## 4.2.1  Dimensions

The dimensions of the Industrial PC and the mounting plate are used to prepare the control cabinet and to mount the device correctly in the control cabinet.

All dimensions are in mm.

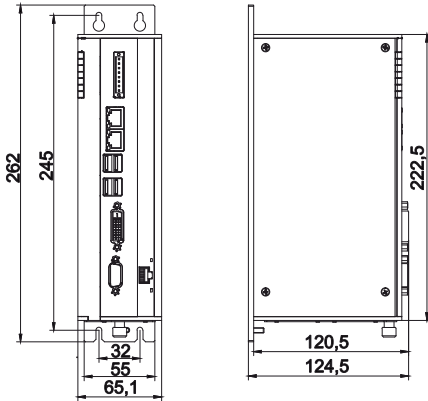Figure 12 illustrates the dimensions of the Industrial PC with mounting plate 1.



Fig. 12: C6920_Dimensions with mounting plate 1

Figure 13 illustrates the dimensions of the Industrial PC with mounting plate 2.
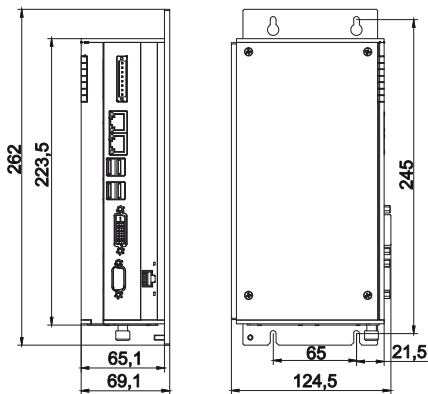


Fig. 13: C6920_Dimensions with mounting plate 2

If you have chosen the ordering option for the device with additional PCI and PCIe plug-in card slots, the dimensions of the device will change as a result. In this case you must use mounting plate 3 or 4 to mount the device.

Figure 14 illustrates the dimensions of the Industrial PC with mounting plate 3 and the additional plug-in card slots.
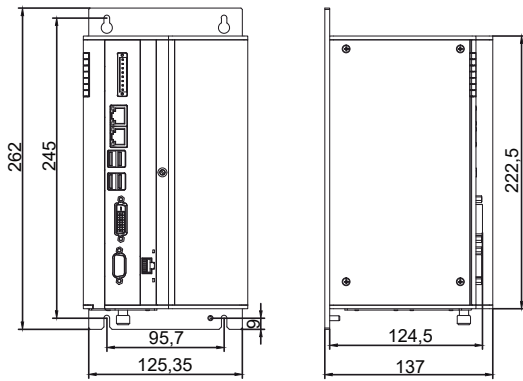
Fig. 14: C6920_Dimensions with mounting plate 3 and plug-in card slots

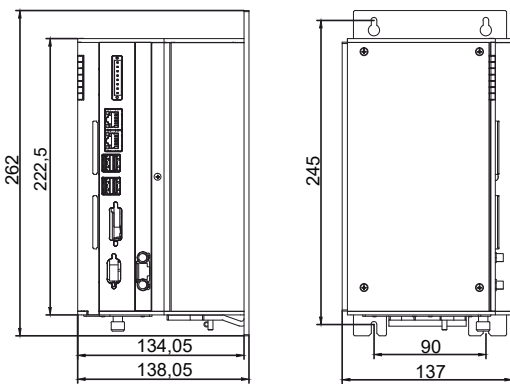Figure 15 illustrates the dimensions of the Industrial PC with mounting plate 4 and the additional plug-in card slots.

Fig. 15: C6920_Dimensions with mounting plate 4 and plug-in card slots

## 4.2.2 Installation in the control cabinet

| 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. |
| • Do not cover the device's ventilation grille. |

When installing in the control cabinet, note that there must be 5 cm of free space above and below the device for ventilation.

**Mounting via mounting plates**

In order to mount the Industrial PC by its rear or side panel in the control cabinet using the mounting plates, the control cabinet must be equipped with drill holes for the fastening screws corresponding to the dimensions of the PC (see chapter 4.2.1 Dimensions [▶ 22]). You need M4 screws for mounting.

After you have drilled the holes for the fastening screws in the control cabinet, you can mount the Industrial PC in the control cabinet with the mounting plates. If your device is equipped with additional plug-in card slots, the device and thus the mounting plates are wider. However, the mounting procedure is the same.

Fig. 16: C6920_Control cabinet installation

To install the Industrial PC in the control cabinet, follow the steps below:

1. Place the fastening screws in the drill holes in the rear panel of the control cabinet.
2. Hang the PC on the screws at the marked places on the mounting plate (see fig. 16).
3. Tighten the fastening screws.
⇨ You have successfully installed the Industrial PC in the control cabinet.

## 4.3 Connecting the Industrial PC

| ⚠ CAUTION |
|---|
| **Risk of electric shock**<br><br>Dangerous touch voltages can lead to electric shock. To avoid electric shock, observe the following:<br><br>• Never connect or disconnect the device cables during a thunderstorm.<br>• Provide protective earthing for handling the device. |

To prepare the Industrial PC for operation, it must be connected. 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 to supply 24 V DC (-15 %/+20 %) for operating the device.

Wire the Industrial PC in the control cabinet in accordance with the EN 60204-1:2006 standard on Protective Extra Low Voltage (PELV) so that one side of the circuit or a point on the power source of this circuit is connected to the protective conductor system.

## 4.3.1 Installing the supply cable

Mount the cable for the power supply to the Industrial PC using the material provided for the connector assembly. It consists of a 8-pin connection strip and a strain relief housing with cable tie.

**Installing the supply cable**

First mount the plug on the cable as follows:

1. Remove the insulation from the cable ends (8-9 mm).
2. Screw the cable ends into the 8-pin connection strip. For the pin assignment of the connector, see Chapter 3.2.1 Power supply [▶ 11].

**Assembly of the strain relief housing**

Now mount the strain relief housing on the already connected connector and supply cable as shown in fig. 17:

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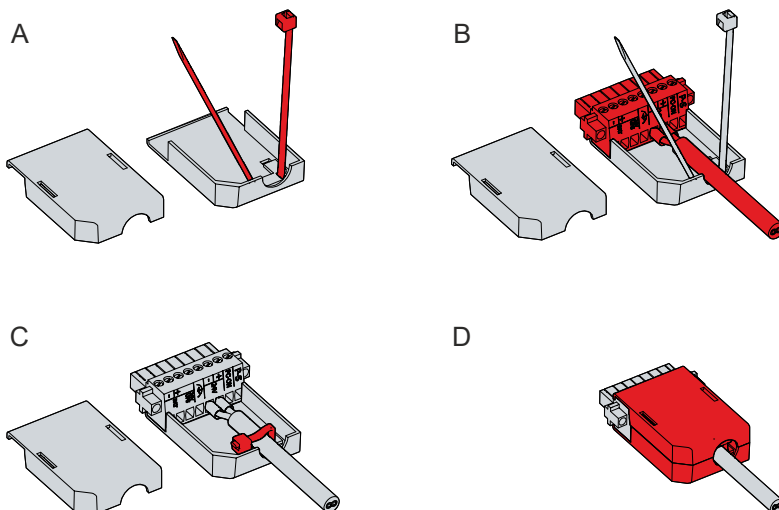4. Attach the upper part of the strain relief housing by snapping it onto the lower part (section D).

A

B

C

D

Fig. 17: C6920_Mounting the strain relief housing

## 4.3.2    Grounding of the Industrial PC

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.

At the lower end of the Industrial PC mounting plate there is an grounding screw (see also chapter 3.1 Structure [▶ 10]), via which the functional earth of the PC can be connected. Use cables with a cross-section of at least 4 mm$^2$ to connect the protective conductor.

**Protective earth**

Establish the low-resistance protective earth of the Industrial PC via the voltage connection, thus avoiding dangerous contact voltages. There is a pin in the voltage socket for the protective earth (PE).

**EMC**

| *NOTICE* |
|---|
| **Hardware damage due to electromagnetic interference** |
| Using the Industrial PC without functional earthing can lead to hardware damage due to electromagnetic interference. |
| • Only use the device with functional earthing. |

Electromagnetic compatibility (EMC) of the industrial PC 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.

For this purpose, the Industrial PC must comply with certain protection requirements. The Industrial PC 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 established by connecting the grounding point on the PC mounting plate to the central grounding point of the control cabinet in which the PC is installed.

### 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. |

| NOTICE |
|---|
| **Connection of incorrect battery packs** |
| The connection of incorrect battery packs can lead to damage to the Industrial PC and to the battery packs. |
| • Connect only Beckhoff battery packs to your Industrial PC. |

**Connecting cables**

The connections are located in the front of the industrial PC and are documented in Chapter 3.1 Structure [▶ 10].

Make sure that you first ground the PC (see chapter Grounding of the Industrial PC [▶ 28]) and then plug in all data transmission cables.

**Connecting the power supply**

Cables with a maximum cable cross-section of 1.5 mm$^2$ must be used for connecting the power supply. To achieve the lowest possible voltage drop on the supply line, we recommend connecting the maximum possible cross-section. In case of larger distances between the power source and the PC, take into account the voltage drop in relation to the cable cross-section as well as fluctuations in your supply voltage in order to ensure that the voltage at the power supply unit does not fall below 22 V.

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

1. Check the correct voltage of your external power supply.
2. Install the power cable.
3. Plug the power cable into the voltage socket of the industrial PC.
4. Screw the power cable to the voltage socket of the industrial PC.
5. Connect the PC to your external 24 V power supply.
6. Switch on the 24 V power supply.

**External battery pack and UPS output**

If you ordered your device with an integrated UPS, then you can connect an external battery pack and install it on a DIN rail near to the PC. Use only Beckhoff battery packs for this:

• C9900-U330: Universal battery pack for PCs and Panel PCs in any configuration

When using the C9900-U330 battery pack, you can use the UPS output of the power supply unit (UPS Output). The method of connecting different components can be taken from the wiring diagram in fig. 18.
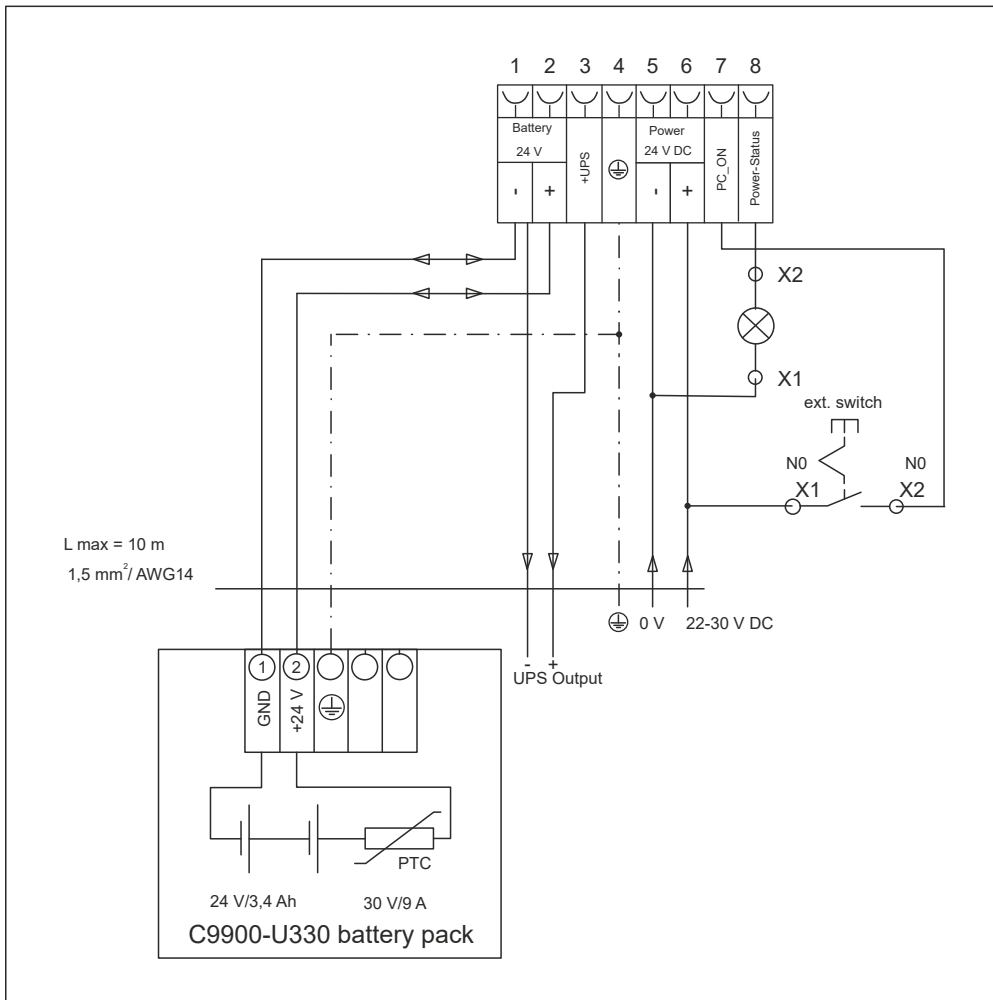
Fig. 18: C6920_Wiring diagram

So that the Industrial PC still has a monitor output in case of a power failure, a Control Panel can be connected to the UPS output of the power supply unit. Even after a power failure there is a voltage of 24 $V_{DC}$ between the UPS output and the negative pole of the battery pack. The maximum load is 1.4 A (max. 2.5 A from year of manufacture 2016).

Once the PC has been de-energized via the UPS software, the UPS output is switched to 0 V. A connected panel is switched off.

## 4.4    Switching the Industrial PC on and off

| NOTICE |
|---|
| **Public networks** |
| Connecting the PC to public networks without additional protective measures can compromise the safety of the device. |
| • Protect the PC before connecting it to public networks. |

| NOTICE |
|---|
| **Data loss due to switching off the industrial PC while the software is running** |
| Switching off the industrial PC before the running software is terminated and the operating system is shut down can lead to data loss. |
| • Quit the running software and shut down the operating system before switching off the PC. |

| NOTICE |
|---|
| **Shortened battery life due to switching off the power supply** |
| If the power supply is simply switched off, the operating system shuts down via the battery. With daily use, this significantly shortens the life of the battery. |
| • Avoid switching off the power supply before shutting down the operating system. |
| • Use the PC-ON input (see below) to shut down the operating system in a battery-friendly manner. |

The industrial PC starts up when the system is switched on or when the power supply is connected.

**Input PC-ON**

You can use the PC-ON input of the PC to control the startup and shutdown of the operating system. The PC-ON signal is inverted, which is why the operating system boots up at 0 V at the input and shuts down at 24 V. During operation, 0 V must therefore be permanently applied to the input.

If you want to shut down the operating system, you must apply 24 V to the PC-ON input. Once the operating system has shut down, the PC power supply unit sets the Power Status output from 24 V to 0 V. This indicates that the shutdown is complete and you can turn off the power supply. You can then switch off the power supply. If you remove the 24 V from the PC-ON input before you have switched off the power supply, the operating system restarts. Therefore, 24 V must be applied to the input until you have switched off the power supply.

If you have an industrial PC with UPS and simply switch off the power supply, the operating system shuts down via the battery. With frequent use, this shortens the life of the battery.

**Driver installation**

When you switch on the industrial PC for the first time, the pre-installed operating system (optional) will be started. For any additional hardware you have connected, you have to install the drivers yourself afterwards. In addition, the Beckhoff Device Manager starts automatically. The Device Manager is a software from Beckhoff that supports you in configuring the PC.

If you have ordered the PC without an operating system, you must install this and the driver software for the additional hardware you have connected and for the devices in the PC yourself. Please follow the instructions in the documentation for the operating system and the additional devices.

**Switching off the industrial PC**

When the system is switched off or disconnected from its own power supply, the industrial PC is also switched off.

To shut down the operating system properly, you can install an additional ON/OFF switch next to the machine's main switch to turn the machine on and off. The main switch can thus remain switched on in principle and thus ensures that the PC is still supplied with power during the shutdown of the operating system.

Via the Power Status output, you can switch, for example, a contactor that switches off the entire system. The maximum load for the Power Status output is 0.5 A and a suitable fuse should be provided.

You can assign different access rights to all users in the operating system and in the application software. Since there is a risk of data loss if the industrial PC is switched off incorrectly, assign the rights advisedly. A user who is not allowed to terminate the software should also not be allowed to shut down the operating system and switch off the industrial PC.

**UPS software components**

To operate the power supply unit as a UPS, the UPS driver software with the corresponding drivers must be installed on the industrial PC. The software and drivers are already installed on delivery of the PC with operating system. Otherwise, you will have to install them yourself.

You can obtain software and drivers either online for download via the following link: https:// download.beckhoff.com/download/software/Industrial_PC/OS_Support/Driver_DVD or you can contact Beckhoff Service (service@beckhoff.com), which will provide you with software and drivers. The driver software comes with a detailed help function. Call up the help files either directly from the configuration register by clicking the Help button or start the file under *Start > Programs > Beckhoff > UPS software components.*

The method of communication between your PC and the UPS depends on the PC generation. The following table provides information about the method of communication according to the device generation:

*Table 13: UPS communication*

| Device generation | UPS communication method |
|---|---|
| C6920-0050 | Serial communication |
| C6920-0060 | Communication via BIOS API |
| C6920-0070 | Communication via BIOS API |

In the case of serial communication, all you need is the UPS driver. If the communication takes place via the BIOS API, you also need the Beckhoff Automation Device Driver in addition to the UPS driver.

# 5    Beckhoff Device Manager

The Beckhoff Device Manager enables detailed system diagnostics with uniform secure access to the existing hardware and software components. System data is recorded, analyzed and evaluated during operation. The data helps to detect deviations at an early stage and prevent PC downtime.

The Beckhoff Device Manager always starts automatically after the industrial PC has been booted. In addition, you have the option of manually starting the previously closed Device Manager at any time.

The industrial PC is delivered with predefined access data as standard:

- User name: Administrator
- Password: 1

You also have the option of using the Beckhoff Device Manager to remotely configure the industrial PC via a web browser. More detailed information is available in the Beckhoff Device Manager manual.

**First start Beckhoff Device Manager**

When your industrial PC is booted for the first time, the Beckhoff Device Manager also starts automatically for the first time. The Security Wizard opens. This tells you that you should reset the default password set by Beckhoff. Proceed as follows:

1.  Click **Next** on the Security Wizard start page.
    ⇨ This will take you to the **Change Passwords** page:
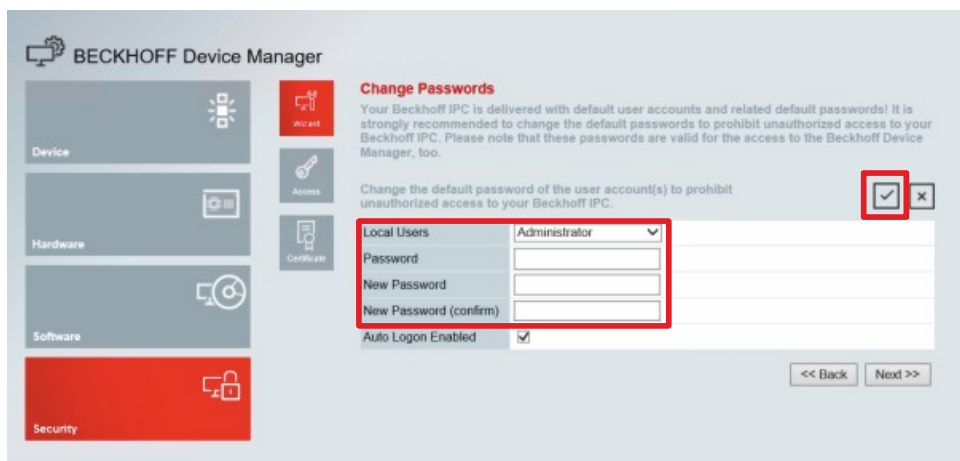


Fig. 19: Beckhoff Device Manager - Change passwords

2.  Enter the access data of the Device Manager on delivery.
3.  Choose a secure new password. Instructions for choosing a secure password are given below.
4.  Confirm the changes by clicking on the tick in the red box on the right.
5.  Exit the Security Wizard.
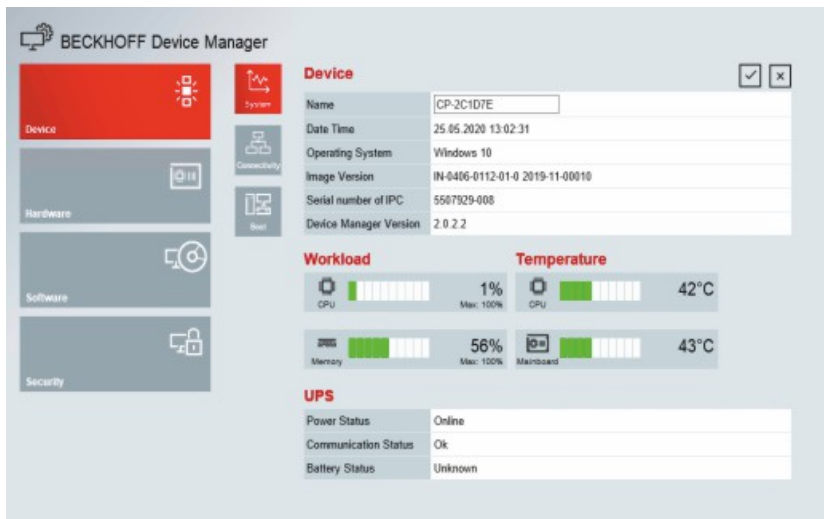⇨ You have reached the Device Manager start page.

Fig. 20: Beckhoff Device Manager – Start page

Navigate forward in the menu and configure the industrial PC. Note that modifications only become active once they have been confirmed. It may be necessary to restart the industrial PC.

**Manual start Beckhoff Device Manager**

To start the Beckhoff Device Manager manually, proceed as follows:

1. Open a web browser locally on the industrial PC.
2. Enter *localhost/config* in the web browser to start the Beckhoff Device Manager.

The Beckhoff Device Manager starts. The Security Wizard appears.

**Secure passwords**

Strong passwords are an important prerequisite for a secure system.

Beckhoff supplies the device images with standard user names and standard passwords for the operating system. It is imperative that you change these.

Controllers are shipped without a password in the UEFI/BIOS setup. Beckhoff recommends assigning a password here as well.

Please note the following:

- Passwords should be unique for each user and service.
- Only change passwords after an incident in which passwords have become known without authorization.
- Train the device users in the use of passwords.

A secure password has the following characteristics:

- Password complexity: the password should contain capital and lower-case letters, numbers, punctuation marks and special characters.
- Password length: the password should be at least 10 characters long.

# 6 Decommissioning

| NOTICE |
|---|
| **Hardware damage due to power supply** |
| A connected power supply can cause damage to the Industrial PC during disassembly. |
| • Disconnect the power supply from the device before starting to disassemble it. |

When taking the Industrial PC 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 want to continue using the Industrial PC, Chapter 6.2 Disassembly and disposal [▶ 36] provides information on the correct disposal of the device.

## 6.1 Disconnecting the power supply and cables

| ⚠ CAUTION |
|---|
| **Risk of electric shock** |
| Disconnecting the industrial PC during a thunderstorm can lead to electric shock. |
| • Never disconnect the cables from the device during thunderstorms. |

Before you remove the industrial PC from the control cabinet, you must disconnect the cables and the power supply. Follow the steps below:

1. Shut down the operating system.
2. Disconnect the PC from your external 24 V power supply.
3. Unscrew the voltage connector and pull it out of the PC.
4. Remove the power supply cable if the connector is to remain with the PC.
5. Make a note of the wiring of all data transmission cables if you want to restore the cabling with another device.
6. Disconnect the data transmission cables from the industrial PC.
7. Finally, disconnect the grounding strap.
⇨ You have disconnected the cables and the power supply.

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## 6.2 Disassembly and disposal

Before you can remove the Industrial PC from the control cabinet, you must first disconnect the power supply and the cables (see Chapter 6.1 Disconnecting the power supply and cables [▶ 35]).

**Disassembly via mounting plates**

Proceed as follows to remove the Industrial PC with the corresponding mounting plate from the control cabinet:

1. Loosen the fastening screws just enough so that they remain attached to the control cabinet.
2. Lift the PC far enough so that the mounting screws slip into the keyholes (see fig. 21).
3. Remove the PC from the control cabinet.
   ⇨ You have successfully disassembled the PC.

Fig. 21: C6920_Dismantling the control cabinet

**Disposal of the Industrial PC**

Be sure to observe the national electronic scrap regulations when disposing of the Industrial PC.

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.

# 7    Maintenance

| ⚠ CAUTION |
|---|
| **Risk of electric shock** |
| Working on the industrial PC while it is live can lead to electric shock. |
| • Turn off the supply voltage before cleaning the device or replacing device components. Excluded from this is the replacement of hard disks in RAID configuration and fan cartridges. |

Maintenance measures increase the efficiency of the device by ensuring long-term functionality. Cleaning and maintenance of certain device components and the replacement of other device components contribute to this.

**Repair**

Only the vendor may repair the device. If a repair should be necessary, contact Beckhoff Service (see Chapter 10.1 Service and Support [▶ 48]).

## 7.1    Cleaning

| *NOTICE* |
|---|
| **Unsuitable cleaning agents** |
| The use of unsuitable cleaning agents can damage the device. |
| • Only clean the Industrial PC as specified. |

It is essential to observe the following aspects when cleaning the Industrial PC:

- Make sure that no dust gets into the PC.
- Always keep the ventilation grilles free.
- Only use a vacuum cleaner to clean the PC. The Industrial PC does not have to be switched off for this.
- Never use compressed air to clean the PC.

## 7.2 Maintenance

| NOTICE |
|---|
| **Use of incorrect spare parts** |
| The use of spare parts not ordered from Beckhoff Service can lead to unsafe and faulty operation. |
| • Only use spare parts that you have ordered from Beckhoff Service. |

Beckhoff Industrial PCs are manufactured from components of the highest quality and robustness. They are selected and tested for best interoperability, long-term availability and reliable function under the specified environmental conditions.

Nevertheless, some components of the Industrial PC may be subject to a limited service life if they are operated under certain conditions, such as more demanding ambient conditions during operation or during storage, or if they are out of service for long periods of storage.

Beckhoff therefore recommends replacing some of the Industrial PC components after the time after which predictions of the remaining service life of such components can no longer be reliably calculated.

These are the following components:

- Battery and battery pack
- Storage media
- Fan

The following table provides recommendations for the regular, precautionary replacement of the PC components:

*Table 14: Replacement recommendations for PC components*

| Component | Recommendation for replacement intervals (years) |
|---|---|
| UPS battery pack | 5 years |
| 2.5-inch hard disk | 5 years or after 20,000 operating hours at more than 40 °C or after 30,000 operating hours at less than 40 °C |
| 3.5-inch hard disk | 5 years, irrespective of the operating hours |
| Fan | 7 years |
| Compact Flash, CFast or SSD | 10 years |
| Motherboard battery | 5 years |

Beckhoff is excluded from liability in the event of possible damage occurring during maintenance work. In order to avoid damage caused by electrostatic discharge when replacing device components, protective measures are recommended. Below are some suggestions.

**ESD protection**

| NOTICE |
|---|
| **Electrostatic discharge** |
| The replacement of device components without ESD protection can lead to functional impairment and destruction of the device. |
| • If possible, apply ESD protection measures during maintenance work. |

When working on electronic devices, there is a risk of damage due to ESD (electrostatic discharge), which can impair the function or destroy the device.

Protect the Industrial PC and create an ESD-protected environment in which any electrostatic charges are discharged to the ground in a controlled manner and charging is prevented.

An ESD-protected environment can best be created by setting up ESD protection zones. The following measures serve this purpose:

- ESD-compliant floors with sufficient conductivity to the reference potential PE;
- ESD-compatible work surfaces such as tables and shelves;

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- Wrist grounding strap, especially for sedentary activities;
- grounded and electrostatically dissipating equipment and operating materials (e.g. tools) within the ESD protection zone.

If it is not possible to create an ESD protection zone, you can still protect the device against ESD damage. For example, the following measures can be used:

- Use conductive mats connected to the ground potential as underlays.
- Dissipate possible charges from your own body by touching earthed metal (e.g. control cabinet door).
- Wear a wrist grounding strap.
- Only remove new electronic components from the ESD packaging (tinted plastic bag) after putting on the wrist grounding strap.
- Do not walk around with electronic components in your hand if they are not in ESD packaging.

## 7.2.1    Access to device components

In order to be able to replace certain device components, you must first gain access to these components.

**Access to battery and storage media**

To get access to the battery and the storage media, open the front flap (see fig. 22).
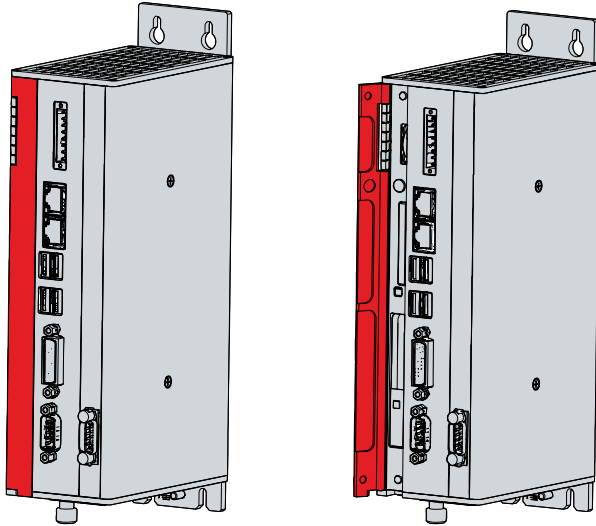


Fig. 22: C6920_tool-less access to battery and storage media

You now have access to the battery (1) and storage media (2) (see Fig. 23).
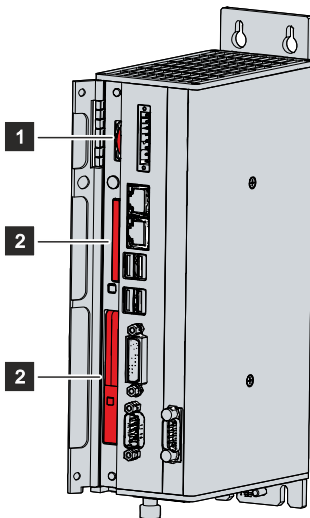


Fig. 23: C6920 _Battery and storage media

**Fan access**

You can access the fan cartridge from the underside of the Industrial PC.

## 7.2.2        Replacing the battery

| NOTICE |
|---|
| **Incorrect battery type** |
| Replace battery with R/C (BBCV2), Part. No. CR2032, rated 3 V only. Use of another battery may present a risk of fire or explosion. |
| • Only replace the battery with a replacement battery from Beckhoff Service. |
| • When replacing the battery, make sure that the polarity is correct. |

| NOTICE |
|---|
| **Battery damage** |
| Incorrect handling of the motherboard battery can damage it. |
| • Do not recharge the battery. |
| • Do not throw the battery on the fire. |
| • Do not open the battery. |
| • Protect the battery against direct sunlight and moisture. |

The Industrial PC does not contain a lithium-ion battery. The motherboard battery is a CR2032 lithium-metal cell. It is used to supply power to the clock integrated on the motherboard. If the battery is depleted or missing, the date and time are displayed incorrectly.

*Table 15: Technical data of the battery.*

| Battery type | Electrical properties (at 20 °C) | | Dimensions | | |
|---|---|---|---|---|---|
| | Nominal voltage | Nominal capacity | Diameter | Height | Weight |
| CR2032 | 3.0 V | 225 mAh | 20.0 mm | 3.20 mm | 3.1 g |

Chapter 7.2.1 <u>Access to device components [▶ 41]</u> shows how to access the battery.

To change the battery, proceed as follows:

1. Pull the battery out of the Industrial PC with needle-nose pliers.
2. Insert the new battery into the PC by hand. Pay attention to the correct polarity. The negative pole of the battery must face the voltage socket of the industrial PC (see fig. 24).
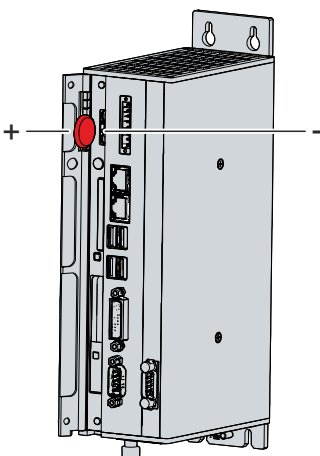


Fig. 24: C6920_Battery change

To dispose of the battery, remove it, stick insulating tape over the poles and take it to the local battery recycling.

## 7.2.3 Replacing the storage media

Storage media should only be obtained from Beckhoff Service (see Chapter 10.1 Service and support).

The old storage media must be disposed of in accordance with the national electronic waste regulations.

**Data transmission before replacement**

If you want to exchange a storage medium according to Beckhoff's recommendation, you must copy the data from the old to the new storage medium. You can use the Beckhoff Service Tool (BST) for this purpose. The BST is a graphical backup and restore program for industrial PCs with a Windows operating system. You can create an image of your operating system and use it to back up the operating system. Then you can restore the created image to a new data carrier. The BST is available on a bootable BST USB flash drive. This includes Windows and a backup software. Select the size of the BST USB flash drive according to the size of the backup copy of your operating system. You can then keep the flash drive as a backup copy. For this purpose, the BST USB flash drives are designed for particularly long data preservation by means of special flash. For more information on the function of the BST, please refer to the corresponding documentation.

If your storage medium is defective and there is no backup, Beckhoff Service can provide you with a fresh Windows image. For this to be possible, the Beckhoff IPC must already have been shipped with a valid operating system license. When installing the fresh image, the applications must be reinstalled.

**Exchange CFast**

Chapter 7.2.1 Access to device components [▶ 41] shows how you can access the CFast.

To change the CFast, follow the steps below, which are shown in fig. 25:

1. Press frontally against the CFast (section A).
   ⇨ The CFast now protrudes from the PC (section B).
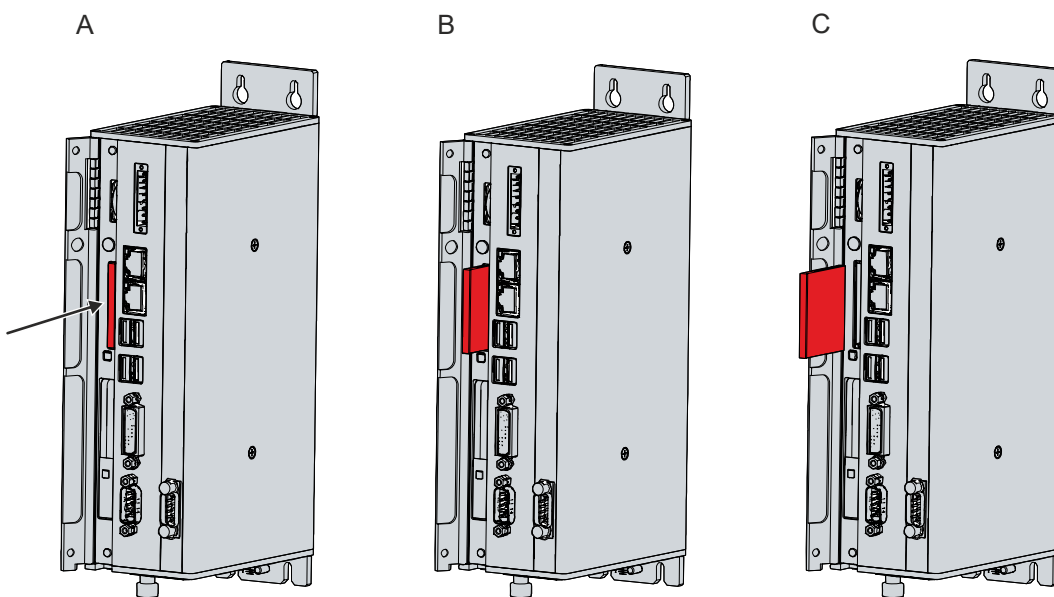2. Pull the CFast out of the PC (section C).



Fig. 25: C6920_Cfast replacement

3. Insert the new CFast into the PC.
4. Press frontally against the protruding CFast.
⇨ The CFast is now fully inserted in the PC. You have replaced the CFast.

**Replacing the SSD**

Chapter 7.2.1 Access to device components [▶ 41] shows how to access the SSD.

Proceed as follows to change the SSD:

1. Remove the SSD from the PC by pulling forcefully on the protruding Beckhoff sticker (see fig. 27).
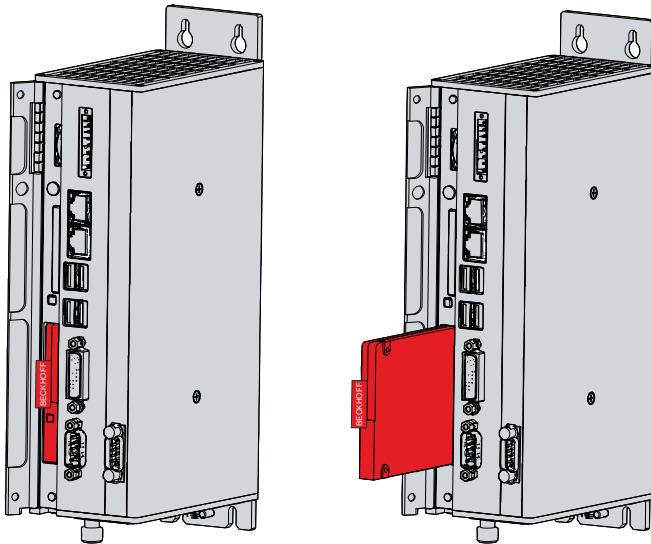
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Fig. 26: C6920_SSD replacement

2. Insert the new SSD into the PC in the same orientation up to the stop.

⇨ You have replaced the SSD.

## 7.2.4    Replacing the fan

| *NOTICE* |
|---|
| **Incorrect fan type** |
| The Industrial PC may be damaged if the wrong type of fan is installed. |
| • Replace the fan cartridge exclusively by a cartridge from Beckhoff Service. |

The fan cartridge with the two fans ensures optimal cooling of the Industrial PC. Order a new fan cartridge exclusively from Beckhoff. To do this, contact Beckhoff Service (see Chapter 10.1 Service and support).

You can replace the fan cartridge while the PC is running. Insert the new cartridge immediately after removing the old one.

To change the fan cartridge, follow the steps below, which are shown in fig. 27:

1. Loosen the knurled screw on the underside of the PC (section A).
2. Flip the cartridge down (section B).
3. Remove the cartridge in the upward direction (section C).
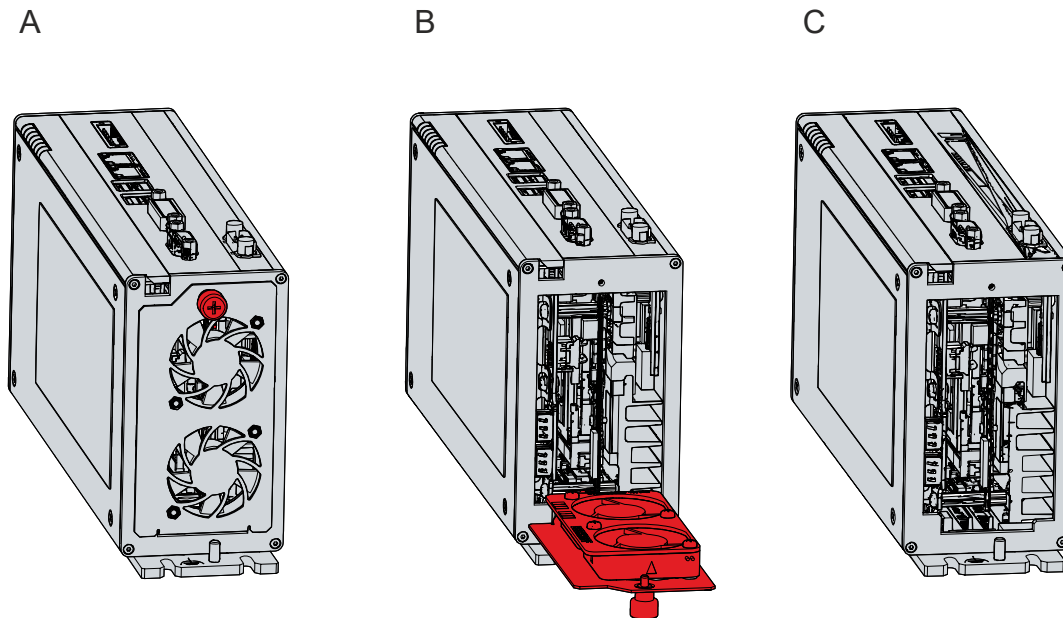


Fig. 27: C6920_Fan cartridge replacement

4. Insert the new fan cartridge.
5. Flip the cartridge back up.
6. Tighten the knurled screw firmly again.
⇨ You have now replaced the fans.

The old fan cartridge must be disposed of in accordance with the national electronic scrap regulation.

# 8   Troubleshooting

*Table 16: Troubleshooting*

| Fault | Cause | Measures |
|---|---|---|
| Nothing happens after the Industrial PC has been switched on | Missing power supply of the Industrial PC | Check the power supply cable |
| | Other cause | Call Beckhoff Service |
| The Industrial PC does not boot fully | Setup settings are incorrect | Check the setup settings |
| | Other cause | Call Beckhoff Service |
| Computer boots, software starts, but control does not operate correctly | Cause of the fault is either in the software or in parts of the plant outside the Industrial PC | Call the machine and software manufacturer |

# 9   Technical data

*Table 17: Technical data*

| Product designation | C6920 |
|---|---|
| Dimensions (W x H x D) | 65 x 235 x 121, without mounting plate, without plug-in card slots |
| Weight | 1900 g with basic configuration |
| Supply voltage | 22-30 V DC (24 V DC power supply unit) |
| Maximum power consumption with basic configuration [1] | C6920-0050: max. 60 W; C6920-0060 max. 40 W, C6920-0070: max. 52 W with basic configuration |
| Protection rating | IP20 |
| Vibration resistance (sinusoidal vibration) | EN 60068-2-6: 10 to 58 Hz: 0.035 mm <br> 58 to 500 Hz: 0.5 G (approx. 5 m/ $s^2$) |
| Shock resistance (shock) | EN 60068-2-27: 5 G (approx. 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 | +0 °C to +55 °C (operation) <br> -25 °C to +65 °C (transport / storage) |
| Permissible 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. The shock resistance during transport can be improved by means of suitably packing the industrial PC. |

[1] The power consumption of your device beyond the basic configuration can be found in the data sheet Power loss and power consumption. There you will find information on how the power consumption of your device changes according to the selected equipment, accessories and connected devices.

# 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 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

**Headquarters**

Beckhoff Automation GmbH & Co. KG
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Germany

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 will also find further documentation for Beckhoff components there.

## 10.2  Approvals

The following table shows the approvals of the Industrial PC based on the device generation:

*Table 18: C6920 approvals*

| Device generation | Approvals |
|---|---|
| C6920-0050 | CE, EAC, UKCA, FCC |
| C6920-0060 | CE, EAC, UKCA, FCC |
| C6920-0070 | 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:
**www.beckhoff.com/C6920/**