



Installation and Operating instructions for

# Built-in Panel PC CP64xx

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**BECKHOFF**



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# General Notes

## 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. It is essential that the following notes and explanations are followed when installing and commissioning these components.

## Liability Conditions

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.

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. None of the statements of this manual represents a guarantee (Garantie) in the meaning of § 443 BGB of the German Civil Code or a statement about the contractually expected fitness for a particular purpose in the meaning of § 434 par. 1 sentence 1 BGB. 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.

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## Description of safety symbols

The following safety symbols are used in this operating manual. They are intended to alert the reader to the associated safety instructions.



**Danger**

This symbol is intended to highlight risks for the life or health of personnel.



**Warning**

This symbol is intended to highlight risks for equipment, materials or the environment.



**Note**

This symbol indicates information that contributes to better understanding.

## Basic safety measures

*Only switch the PC off after closing the software*

**Before the Industrial PC is switched off, software that is running must be properly closed.**

Otherwise it is possible that data on the hard disk is lost. Please read the section on [Switching the Industrial PC on and off](#).



**Warning**

**Switch off all parts of the equipment, then uncouple the fieldbus!**

Before opening the housing of the PC, and whenever the PC is being used for purposes other than plant control, such as during functional tests following repair, all parts of the equipment must first be switched off, after which the Industrial PC can be uncoupled from the plant.

Pulling out the fieldbus connection plug uncouples the PC (optional).

Items of equipment that have been switched off must be secured against being switched on again.

The Industrial PC's power supply unit must be supplied with 100-240 V<sub>AC</sub> or 24 V<sub>DC</sub> (optional).



**Danger**

**Do not open the power supply unit while voltage is applied!**

The supply voltage must be switched off before the power supply unit housing is opened.

**Do not exchange any parts when under power!**

When components are being fitted or removed, the supply voltage must be switched off.

Fitting work on the Industrial PC can result in damage:

- If metal objects such as screws or tools fall onto operating circuit boards.
- If connecting cables internal to the PC are removed or inserted during operation.
- If plug-in cards are removed or inserted when the PC is switched on.

Displays used for the control panel's LC-display are operated with a voltage of up to 1000 V, depending on type. For that reason:

**The supply voltage must be disconnected before the housing of the Control Panel is opened.**



**Danger**

## Operator's obligation to exercise diligence

The operator must ensure that

- the Industrial PC is only used for its intended use (see also [Product Description](#) chapter).
- the Industrial PC is in a sound condition and in working order during operation.
- the operation manual is in good condition and complete, and always available for reference at the location of the Industrial PC.
- the Industrial PC is operated, maintained and repaired only by sufficiently qualified and authorised personnel.
- the personnel is instructed regularly about relevant occupational safety and environmental protection aspects, and is familiar with the operating manual and in particular the safety notes contained herein.
- none of the safety and warning notes attached to the Industrial PC are removed, and that all notes remain legible.

*National regulations depending on the machine type*

Depending on the type of machine and plant in which the Industrial PC is being used, there will be national regulations for the control of such machines and plant that the operator must observe. These regulations cover, amongst other things, the intervals between inspections of the controller.

The operator must initiate such inspections in good time.



**Warning**

### **Only trained persons may open the Industrial PC housing!**

The operator is responsible for ensuring that only trained electrical staff opens the housing of the Industrial PC.

*Procedure in the event of a fault*

In the event of a fault in the Industrial PC, appropriate measures can be determined with the aid of the list in the [Fault correction](#) section.

## Operator requirements

*Read the operating instructions*

Every user of the Industrial PC must have read these operating instructions.

*Software knowledge*

Every user must be familiar with any of the functions of the software installed on the PC that he can reach.

# Product Description

## Appropriate Use

The CP64xx Built-in Industrial PC is designed to be used in association with the built-in Control Panel and fitted into control cabinets in machine and plant engineering applications.

*Do not use the Build-in Panel PC in areas of explosive hazard*

**The Build-in Panel PC must not be used where there is a risk of explosion.**

## Structure

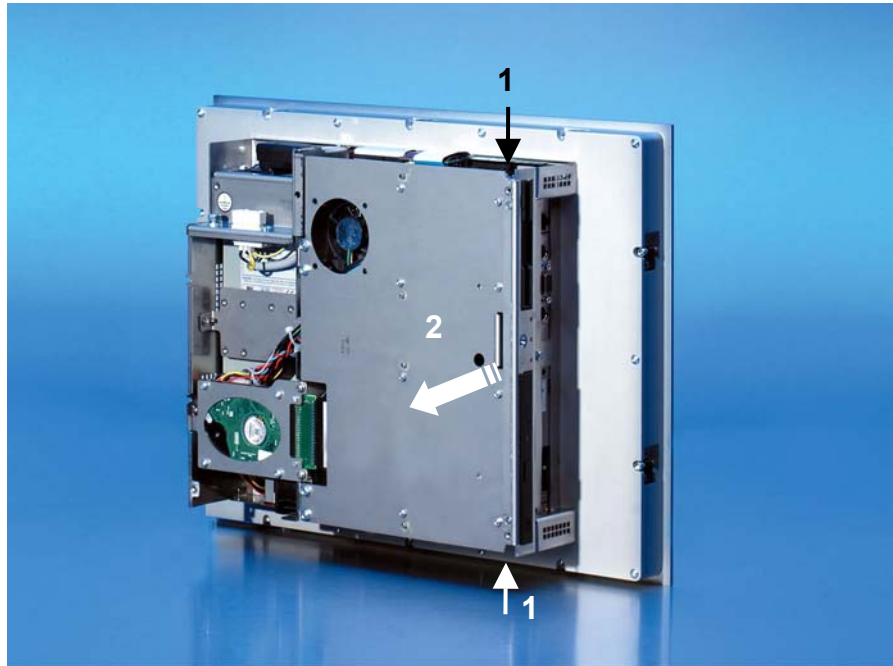
*Rear view of the CP64xx*



*Opening the housing*

In order to open the PC housing, first remove the four fastening screws (see photo above) using a cross-head screwdriver. The cover of the housing can then be removed to the rear.

*Fold-out inner chassis*



Remove the two screws (1) that hold the fold-out inner chassis. The chassis (2) can now simply be folded out backwards (see following photograph), thus providing access to the floppy disk drive, CD-ROM drive, processor, memory and plug-in cards.

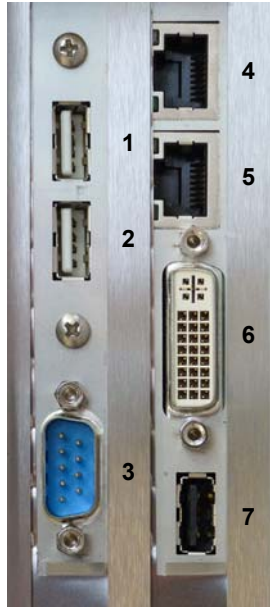


*View of the open PC*

When the upper part of the chassis has been folded away with the floppy drive (1) and CD ROM drive (2) there is a 4-slot computer core with an all-in-one plug-in card motherboard (3). The connections are located at the side of the PC (4).

## Interfaces

*Interfaces to the CP64xx  
Built-in Industrial PC*



### USB interfaces

*USB1-USB2*

Both USB interfaces (1) and (2) are used to connect peripheral devices with USB connections. USB2.0 standard is supported.

### Serial interface

*RS 232  
COM1*

The basic version of the CP64xx Industrial PC has one serial interface COM1 (3), using the type RS232, which is brought to a 9 pin SUB-D plug connector.

### Network connection

*Network*

The RJ-45 connector (4) allows the IPC to be connected to a 10/100/1000 BASE-T Local Area Network (LAN).  
The RJ-45 connector (5) allows the IPC to be connected to a 10/100 BASE-T Local Area Network (LAN).

### DVI (Digital Visual Interface)

*DVI-I*

The DVI connection (6) is used for transferring the video signal and is already connected to the panel via a connection cable.

### USB interface

*USB3*

The USB interface (7) is used to connect peripheral devices with USB connections. USB2.0 standard is supported.

### Additional plug-in cards (optional)

*Type plate*

There is a type plate on the top of the Industrial PC which provides information about the hardware configuration of the Industrial PC at the time it was supplied.

# Installation Instructions

Please also refer to chapter [General Notes](#).

## Transport and Unpacking

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

### Transport

Despite the robust design of the unit, the components are sensitive to strong vibrations and impacts. During transport, your Industrial PC should therefore be protected from excessive mechanical stress. Therefore, please use the original packaging.



**Warning**

Danger of damage to the unit!

If the device is transported in cold weather or is exposed to extreme variations in temperature, make sure that moisture (condensation) does not form on or inside the device.

Prior to operation, the unit must be allowed to slowly adjust to room temperature. Should condensation occur, a delay time of approximately 12 hours must be allowed before the unit is switched on.

### Unpacking

Proceed as follows to unpack the unit:

1. Remove packaging.
2. Do not discard the original packaging. Keep it for future relocation.
3. Check the delivery for completeness by comparing it with your order.
4. Please keep the associated paperwork. It contains important information for handling the unit.
5. Check the contents for visible shipping damage.
6. If you notice any shipping damage or inconsistencies between the contents and your order, you should notify Beckhoff Service.

## Installation of the PC in the control cabinet

The Built-in Panel PC CP64xx is designed for mounting in control cabinets in machine and plant engineering applications.

The ambient conditions specified for operation must be observed (see the section on [Technical data](#)).

### Preparation of the control cabinet

The control cabinet wall must be prepared with the required mounting opening for the computer unit according to the PC's dimensions (see chapter [Assembly dimensions](#)).



**Note**

**When the unit is installed in an enclosure, adequate space for ventilation and for opening the PC must be provided.**

**The clearance above and below the housing must be at least 100 mm in order to ensure adequate ventilation of the PC.**

Please note the following points during installation of the PC:

- Position the PC in such a way that reflections on the screen are avoided as far as possible.
- Use the position of the screen as a guide for the correct installation height; it should be optimally visible for the user at all times.
- The PC should not be exposed to direct sunlight.
- When the unit is in its mounting position, the ventilation openings must not be obstructed.



**Warning**

**Extreme environmental conditions should be avoided as far as possible. Protect the rear of your PC from dust, humidity and heat.**

**The ventilation slots of the PC must not be covered.**

### Installation in a control cabinet wall

Proceed as follows:

1. Insert the PC at the intended control cabinet wall position and protect it from falling out, prior to final mounting.
2. Release the clamping levers with a No. 3 Allen key, turn the clamping levers to the side through 90° and retighten the screws.

### Earthing measures

Earthing connections dissipate interference from external power supply cables, signal cables or cables to peripheral equipment.

Establish a low-impedance connection from the earthing point on the PC housing to the central earthing point on the control cabinet wall, in which the computer is being installed.

### Earthing measures



## Power Supply Connection

*Supplied mains power unit* The Industrial PC is fitted with a

- 100-240 V<sub>AC</sub>, 50-60 Hz power supply unit (standard) or
- with a 24 V<sub>DC</sub> power supply unit (Optional an uninterruptible power supply (UPS) can be realized using the battery pack C9900-U330).



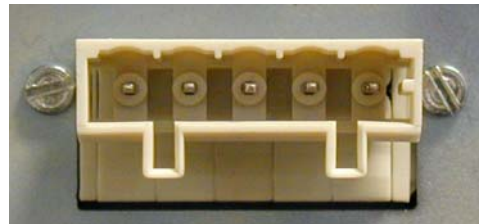
**Danger**

**Danger of Explosion if using other battery packs!**

### Pin assignment of the connector

The 5-pin CAGE CLAMP plug connector and mounting flange illustrated is located on the PC housing in order to connect the power supply.

*Socket at the PC housing*



Technical data	Connecting socket
Number of contacts	5
Contact spacing	5 mm
Minimum conductor cross-section	1.5 mm <sup>2</sup>
Minimum conductor cross-section (AWG)	16
Rated voltage (EN)	250 V
Rated voltage (CSA)	300 V
Current EN [A]	12 A
Current CSA [A]	15 A
Length of stripped conductor	8 to 9 mm

*Current carrying capacity of the 100-240 V power supply unit*

Output voltages from the 100-240 V power supply unit	Current loading maximum
+3,3 V	14 A
+5 V stand by	1,5 A
+5 V	16 A
-5 V	0,2 A
+12 V	9 A
-12 V	0,7 A

*Current carrying capacity of the 24 V power supply unit*

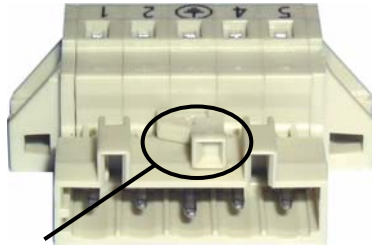
Output voltages from the 24 V power supply unit	Current loading maximum
+5 V	25 A
-5 V	1 A
+12 V	10 A
-12 V	1,5 A

*Coding pieces*

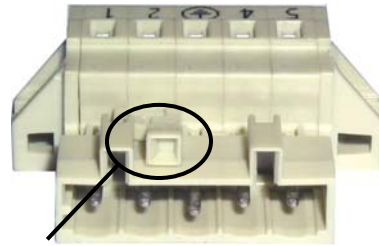


The connectors are coded differently at the factory, using snap-on coding pieces, according to the power supply unit that has been fitted.

*Differently coded plug connectors*



*Coding for the 100-240 V<sub>AC</sub>, 50-60 Hz power supply unit*



*Coding for the 24 V<sub>DC</sub> power supply unit*

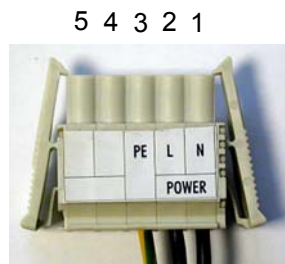
**Pin assignment and cable requirements**

*Pin assignment*

There is an adhesive label with the pin assignments on the top of the female plug connector. **The minimum permitted conductive cross-section is 1.5 mm<sup>2</sup>, fused for 10 A (AWG 16).**

**Industrial PCs with 100-240 V<sub>AC</sub>, 50-60 Hz power supply unit**

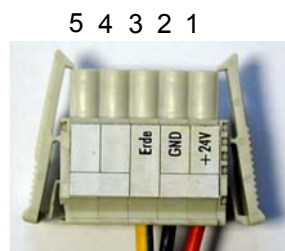
*Pin assignment for the 100-240 V, 50-60 Hz power supply unit*



Pin	Function
1	N 100 – 240V <sub>AC</sub>
2	L Power supply
3	⊕
4	Not used
5	Not used

**Industrial PCs with 24 V<sub>DC</sub> power supply unit**

*Pin assignment for the 24 V<sub>DC</sub> power supply unit*



Pin	Function
1	+ 24V <sub>DC</sub>
2	- Power supply
3	⊕
4	Not used
5	Not used

### Fitting the Power Supply Cable

A 5-pin female plug connector with CAGE CLAMP connection and insertion catches is supplied along with a snap-on strain relief housing in order to assemble the PC power supply cable.

*Female plug connector is correspondingly coded*

This female plug connector is also coded at the factory, according to the type of power supply fitted, so that the plug, when assembled, will fit the Industrial PC's connecting socket.

Technical data	Female plug connector
Number of contacts	5
Contact spacing	5 mm
Minimum conductor cross-section	1.5 mm <sup>2</sup>
Minimum conductor cross-section (AWG)	16
Rated voltage (EN)	250 V
Rated voltage (CSA)	300 V
Current (EN)	16 A
Current (CSA)	15 A
Length of stripped conductor	8 to 9 mm

*Materials for assembly of the connector*



*Female plug connector*



*Strain relief housing*

*Fitting the connector to the cable*

The plug is fitted to the cable as follows:

1. Strip insulation from the cable ends. Follow the technical data for the female plug connector in the above table!
2. Push the conductors into their mountings, simply by pushing them in as indicated on the pin assignment label.
3. Push the lower part (part **A**) of the strain relief housing (see photograph on page 13) onto the top of the female plug connector until it snaps into place.
4. Relieve the strain on the supply cable by fixing it in place with the cable clamp (part **C**) and fixing screws (part **D**) (see photograph below).

*Applying the strain relief*



Fix the upper part (part **B**) of the strain relief housing by snapping it onto the lower part.

## Connecting devices



### Warning

The power supply plug must be withdrawn!

Please read the documentation for the external devices prior to connecting them.

During thunderstorms, plug connector must neither be inserted nor removed.

When disconnecting a plug connector, always handle it at the plug. Do not pull the cable!

## Connecting cables

The connections are located at the side of the Industrial PC and at the rear (power supply connection), and are documented in the section [Product Description](#).

When connecting the cables to the Industrial PC, proceed according to the following sequence:

- Switch off all the devices that are to be connected.
- Disconnect all the devices that are to be connected from the power supply.
- Connect all the cables between the Industrial PC and to the devices that are to be connected.
- Connect all data transfer cables (if present) to the appropriate plug-in receptacles of the data/telecommunication networks.
- Reconnect all devices to the power supply.

## Check voltage rating and connect.

### With compact 100-240 V<sub>AC</sub> 50/60 Hz power supply:

1. Check that the mains voltage is correct.
2. Insert the power supply cable that you have assembled (see the section on [Fitting the Power Supply Cable](#)) into the Industrial PC's power supply socket. Then connect it to a power socket with a grounded earth connection.

### When fitted with the (optional) 24 V<sub>DC</sub> power supply unit:

1. Check that the external power supply is providing the correct voltage.
2. Insert the power supply cable that you have assembled (see the section on [Fitting the Power Supply Cable](#)) into the Industrial PC's power supply socket. Then connect it to your external 24 V power supply.



### Warning

---

**If a 24 V UPS is installed, the correct type of rechargeable battery must be used.**

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# Operating Instructions

Please also refer to chapter [General Notes](#).

## Switching the Industrial PC on and off

### Switch on

The Industrial PC does not have its own mains switch. The Industrial PC will start when the equipment is switched on, or when it is connected to the power supply.

### Shutting down and switching off

When the plant is switched off, or when it is disconnected from its power supply, the Industrial PC will be switched off.

Control software such as is typically used on Industrial PCs permits various users to be given different rights. A user who may not close software may also not switch the Industrial PC off, since data can be lost from the hard disk by switching off while software is running.



**Warning**

### First shut down, then switch off the PC!

If the Industrial PC is switched off as the software is writing a file to the hard disk, the file will be destroyed. Control software typically writes something to the hard disk every few seconds, so that the probability of causing damage by switching off while the software is running is very high.



**Warning**

When you have shut down the Industrial PC, you have to switch off power supply for at least 10 seconds before rebooting the system. After resetting power supply the PC will start booting automatically.

## First switching on and driver installation

When you switch on the Industrial PC for the first time, the pre-installed operating system (optional) will be started. In this case, all the required drivers for any additional, optional hardware components ordered with the PC will already have been installed.

If the PC was ordered without operating system, you have to install the operating system and the driver software for any auxiliary hardware yourself. Please follow the instructions in the documentation for the operating system and the additional devices.

## Operation

### Operation

The Panel PC's membrane keypad may only be actuated by fingertips.



**Note**

Attempts to actuate it with other objects can easily result in the destruction of the device. Neither may the membrane keypad be operated with a touch screen pen.

The touch screen may only be actuated by finger tips or with the touch screen pen. The operator may wear gloves but there must be no hard particles such as metal shavings, glass splinters embedded in the glove.

## Keyboard codes

*Type-dependent number of keys*

Depending on the precise type, the Control Panel can have fewer keys than those described here.

### Operation



The cursor is the blinking character that marks the point at which the next character entered will be displayed. The cursor is also known as the insertion point. The cursor keys each move the cursor one place in the associated direction.



The Home key moves the cursor to the beginning of the line, while the End key moves it to the end of the line.



The *Pg Up* key scrolls one page back, the *Pg Dn* key scrolls one page forward.



The Tab key takes the cursor to the next input field, while Shift and Tab moves to the previous input field.



The mouse cursor can be moved over the screen with the aid of the touch screen or of the touch pad (optional). The keys correspond to the left and right hand keys of a Microsoft mouse.



The *Del* key deletes the character to the right of the cursor.



The *Ins* key causes characters to the right of the cursor to be overwritten. The overwrite mode is cancelled by pressing the key again.



*Print-Screen* prints a hard copy of a text screen on the printer.



The Pause key stops the computer until another key is pressed (only under MS-DOS).



Your input is confirmed with the Enter key.



Backspace deletes the character to the left of the cursor.



If the Shift key is pressed at the same time as another key, then instead of the numbers you obtain the character printed above the number, and you obtain upper case letters instead of lower case letters.



Pressing the *Caps Lock* key once activates and locks the *Shift* key. Pressing the *Shift* key cancels this function.



Rather like the effect of the *Shift* key, *Ctrl* and *Alt* also change the meaning of another key that is pressed at the same time.



This key brings up the Start menu of the operating system in use (Windows 95, 98, ME, NT, 2000, XP).



Pressing this key opens the property sheet of the active (or marked) object.



The *Esc* key has the effect of closing dialog windows and of interrupting some of the computer's working operations.



All other keys bring the character printed on them onto the display at the position of the cursor.



The meaning of the function keys, *F1* to *F10*, is determined by the software and is displayed at the bottom edge of the display.



The function of the special keys above the display is also determined by the software. The function is displayed at the top edge of the display. The special keys each have an orange LED controlled by the software.

## Servicing and maintenance

Please also refer to chapter [General Notes](#).

### Cleaning the Industrial PC



**Danger**

Switch off the Industrial PC and all connected devices, and disconnect the Industrial PC from the power supply.

The Industrial PC and the front of the Panel can be cleaned with a soft, damp cloth. Do not use any aggressive cleaning materials, thinners, scouring material or hard objects that could cause scratches.

### Replacing the battery on the motherboard

A used battery on the motherboard has to be replaced according to the rules of the board manufacturer.



**Danger**

Danger of Explosion if battery is incorrectly replaced. Replace only with same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

### Servicing

The Industrial PC requires no maintenance.

### Replacing the fluorescent lamps in the display

Since fluorescent lamps represent a consumable item in a display, they must be replaced after a few years, depending on the number of operating hours.

The fluorescent lamps of the 12 inch and 15 inch displays can be replaced by a **technically competent person**.



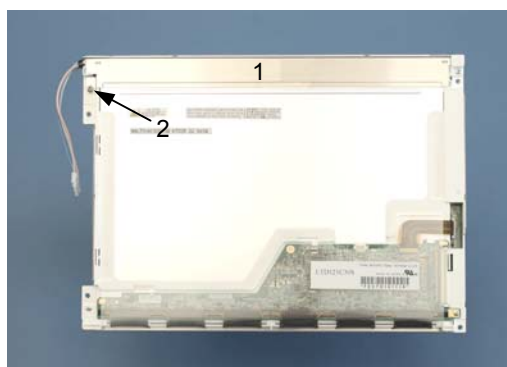
**Note**

#### Replacement of the fluorescent lamps may require partial disassembly of the display!

*Replacement for the 12 inch display*

First release the screw (2) with a small Philips screwdriver, then tilt the fluorescent tubes with their brackets (1) carefully outwards.

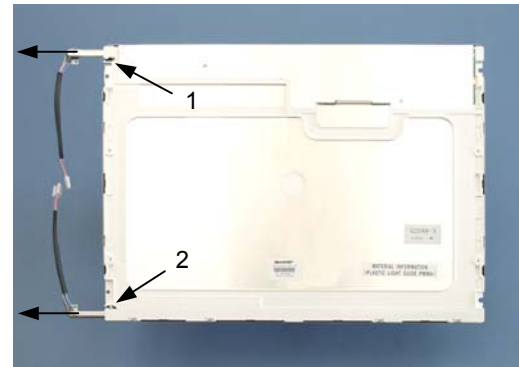
After the exchange of the fluorescent lamps the installation takes place in reverse order.



*Replacement for the 15 inch display*

First release the two screws (1) and (2) with a small Philips screwdriver, then carefully pull out the fluorescent lamps in direction of the arrows.

After the exchange of the fluorescent lamps the installation takes place in reverse order.



**Lamp sets**

Order number	Background illumination unit for
C9900 - L364	12 inch TFT display LTD121C30S
C9900 - L366	15 inch TFT display LQ150X1LW71N

**Emergency procedures**

In case of fire, the Industrial PC should be extinguished with powder or nitrogen.

**Shutting down**

**Disposal**

The device must be fully dismantled in order to dispose of it. The housing can be sent for metal recycling.

Electronic parts such as disk drives and circuit boards must be disposed of in accordance with national electronics scrap regulations.

*Dismantling the Industrial PC*

*Observe national electronics scrap regulations*

# Troubleshooting

Please also refer to chapter [General Notes](#).



**Note**

**Pixel errors in the TFT display are production-caused and represent no complaint-reason!**

## Fault correction

<b>Fault</b>	<b>Cause</b>	<b>Procedure</b>
Nothing happens after the Industrial PC has been switched on	No power supply to the Industrial PC	Check power supply cable
	Other cause.	Call Beckhoff Service
The Industrial PC does not boot fully	Floppy disk or CD in drive	Remove floppy disk or CD and press any key
	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 manufacturer of the machine or the software
Error during floppy disk or CD access	Faulty floppy disk or CD	Check the disk in another disk drive
	Faulty disk drive	Call Beckhoff Service
The Industrial PC functions only partially or only part of the time, e.g. no or dark picture, but disk drive responds when switching on	Defective components in the Industrial PC	Call Beckhoff Service

## Service and Support

Beckhoff and their partners around the world offer comprehensive service and support, making available fast and competent assistance with all questions related to Beckhoff products and system solutions.

### Beckhoff's branch offices and representatives

Please contact your Beckhoff branch office or representative for [local support and service](#) on Beckhoff products!

The addresses of Beckhoff's branch offices and representatives round the world can be found on her internet pages:

<http://www.beckhoff.com>

You will also find further [documentation](#) for Beckhoff components there.

### Beckhoff headquarters

Beckhoff Automation GmbH  
Eiserstraße 5  
D-33415 Verl  
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Phone: +49(0)5246/963-0  
Fax: +49(0)5246/963-198  
e-mail: [info@beckhoff.com](mailto:info@beckhoff.com)

### Beckhoff Support

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- and extensive training program for Beckhoff system components

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Fax: +49(0)5246/963-9157  
e-mail: [support@beckhoff.com](mailto:support@beckhoff.com)

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The Beckhoff Service Center supports you in all matters of after-sales service:

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- repair service
- spare parts service
- hotline service

Hotline: +49(0)5246/963-460  
Fax: +49(0)5246/963-479  
e-mail: [service@beckhoff.com](mailto:service@beckhoff.com)

*Quote the project number*

If servicing is required, please quote the **project number** of your Industrial PC.

# Assembly dimensions

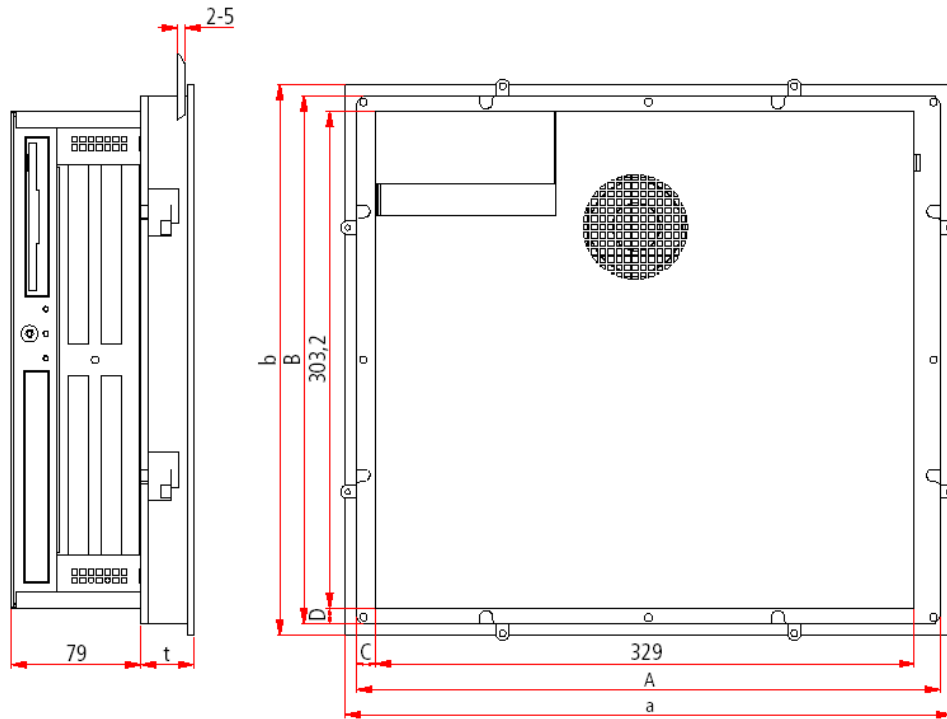


**Warning**

The assembly of the unit must take place with the orientation diagrammed here.

All dimensions are in mm.

*Built-in Panel PC  
CP64xx*



**Side view**

**Rear view**

Display only		a	b	t	A	B	C	D
CP6400	10"-Display	370	336	32	356	322	11.4	9.3
CP6401	12"-Display	372.2	342.2	32	358.2	328.2	9.6	8.6
CP6402	15"-Display	430.4	403	32	416.4	389	8.6	8.6
CP6403	19"-Display	508.4	463	43	494.4	449	10.8	9.3
With function keys		A	B	t	A	B	C	D
CP6410	10"-Display	370	336	32	356	322	11.4	9.4
CP6411	12"-Display	372.2	342.2	32	358.2	328.2	9.6	8.6
CP6412	15"-Display	430.4	403	32	416.4	389	8.6	8.6
CP6413	19"-Display	508.4	463	43	494.4	449	10.8	9.3
Numeric keypad		A	B	t	A	B	C	D
CP6420	10"-Display	414	336	32	400	322	9.2	10.2
CP6421-0000/1	12"-Display	414	336	32	400	322	9.2	10.2
CP6421-0002	12"-Display	444.2	336	32	430.2	322	43.4	9.4
CP6422	15"-Display	519.4	378.2	32	505.4	364.2	8.6	7.1
CP6423	19"-Display	567.4	434	43	553.4	420	15.8	19.3
Alphanumeric keypad		A	B	t	A	B	C	D
CP6430	10"-Display	410.4	378.2	32	396.4	364.2	9.6	48.6
CP6431-0000/1	12"-Display	410.4	378.2	32	396.4	364.2	9.6	48.6
CP6431-0002	12"-Display	430.4	378.2	32	416.4	364.2	9.7	8.4
CP6432	15"-Display	489.4	418.2	32	475.4	404.2	33.4	52.4
CP6433	19"-Display	508.4	543	43	494.4	529	41.2	89.3



# Appendix

## Technical data

<i>Dimensions</i>	<b>Dimensions (W x H x D):</b> 329 x 303 x 79 mm (without Control Panel)
	<b>Weight:</b> 6.0 kg (basic version, without Control Panel)
<i>Do not use the PC in areas of explosive hazard</i>	<b>The Industrial PC may not be used in areas of explosive hazard.</b>
	<b>The following conditions must be observed during operation:</b>
<i>Environmental conditions</i>	<b>Ambient temperature:</b> 0 to 55°C
	<b>Atmospheric humidity:</b> Maximum 95%, non-condensing
<i>Shock resistance</i>	<b>Sinusoidal vibration:</b>
	<b>(EN 60068-2-6)</b> 10 to 58 Hz: 0.035 mm
	58 to 500 Hz: 0.5 G (~ 5 m/ s <sup>2</sup> )
	<b>During reading of CD-ROM:</b> 10 to 58 Hz: 0.019 mm
	58 to 500 Hz: 0.25 G (~ 2.5 m/ s <sup>2</sup> )
	<b>Impact:</b>
	<b>(EN 60068-2-27)</b> 5 G (~ 50 m/ s <sup>2</sup> ), duration: 30 ms
	<b>During reading of CD-ROM:</b> 5 G (~ 50 m/ s <sup>2</sup> ), duration: 11 ms
<i>Protection class</i>	<b>Front side:</b> IP65
	<b>Rear side:</b> IP20
<i>Power supply</i>	<b>Supply voltage:</b> 24 V <sub>DC</sub> power supply: 24 V <sub>DC</sub> (22 – 30 V <sub>DC</sub> )
	100-240 V <sub>AC</sub> power supply: 100-240 V <sub>AC</sub> , 50-60 Hz
	<b>Power consumption:</b> approx. 75 W with 10" display
	approx. 77 W with 12" display
	approx. 88 W with 15" display
	approx. 94 W with 19" display
	If operated with UPS: additional 30 W (while charging)
	additional 44 W (UPS-output max.)
<i>Electromagnetic Compatibility (EMC)</i>	<b>Interference resistance:</b> according to EN 61000-6-2
	<b>Emitted resistance:</b> according to EN 61000-6-4
<i>Transport and storage</i>	The same values for atmospheric 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. The ambient temperature during storage and transport must be between -20°C and +65°C.



Note

**Pixel errors in the TFT display are production-caused and represent no complaint-reason!**

## Approvals

### FCC: Federal Communications Commission Radio Frequency Interference Statement

*FCC Approval for USA*

This equipment has been tested and found to comply with the limits for a 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.

### FCC: Canadian Notice

*FCC Approval for Canada*

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.