**Installation and Operating instructions for**

# Build-in Industrial PC C33xx

**Version: 1.3**
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**BECKHOFF**

# Table of contents

# General instructions

## 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.

## 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 $V_{AC}$ or 24 $V_{DC}$ (optional).

*Danger*

**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.

# Operator's obligation to exercise diligence

The operator must ensure that

- the Industrial PC is only used for its intended use (see also chapter *Product Description*).
- 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 C33xx Industrial PC is designed for mounting in control cabinets for machine and plant engineering applications. In addition to the PC with standard ATX-motherboard, a hard disk, floppy disk drive, machine-fair keyboard and a TFT display are integrated in a 19 inch rack.

## Structure

*Lockable front flap*

There is a lockable front flap above the display, behind which a floppy disk drive, a CD-ROM/ DVD drive (**optional**), status-LEDs, a reset button and a further lock for opening the front cover are located.

Lock for opening the front flap (**see arrow**).



When the front flap has been unlocked, it can be folded upwards.

*Front view of the Industrial PC C33xx with front flap opened*



*Opening the housing*

The housing is opened from the front. Under the front flap there is a lock to open the front door **(see arrow)**. The key differs from that the front flap, so that between users and service personnel can be differentiated administratively.

**i** *Note*

The second lock is only to be opened by service technicians for the purposes of fitting, extending or repairing the controller! The key must only be available to the service personnel.

*Internal view of the PC*
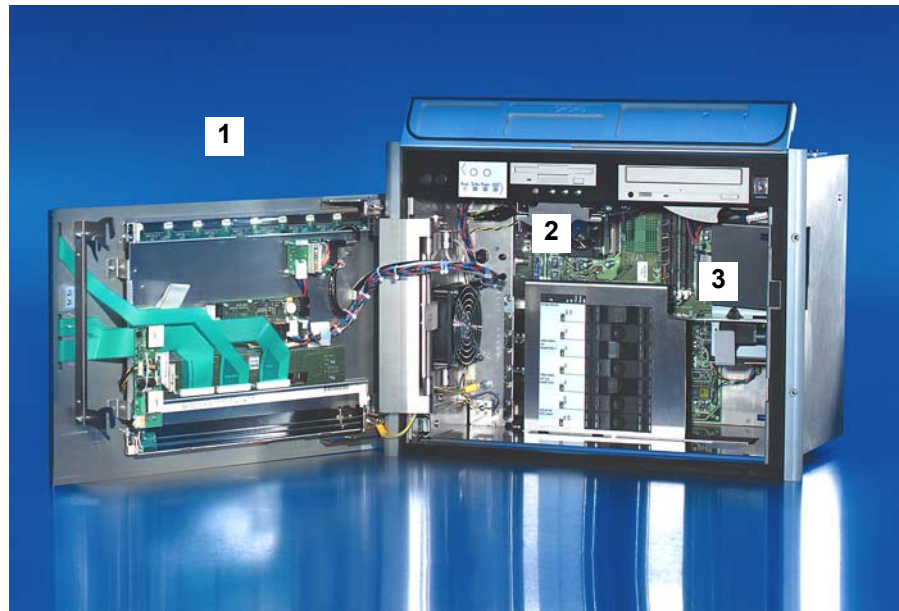


Behind the front door (**1**) is a 7 slot computer core with standard ATX motherboard **(2)** and power supply unit (**3**).

*Removing the drives*
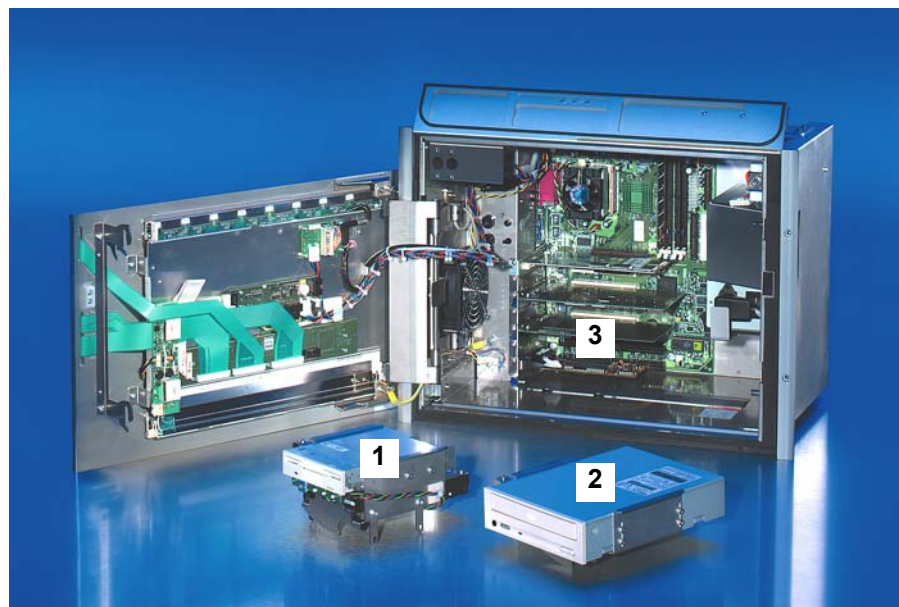


The drives **(1, 2)** can be removed without using any tool.
After removing the card holder the plug-in cards **(3)** can be remoted.

*Connections of the Industrial PC*
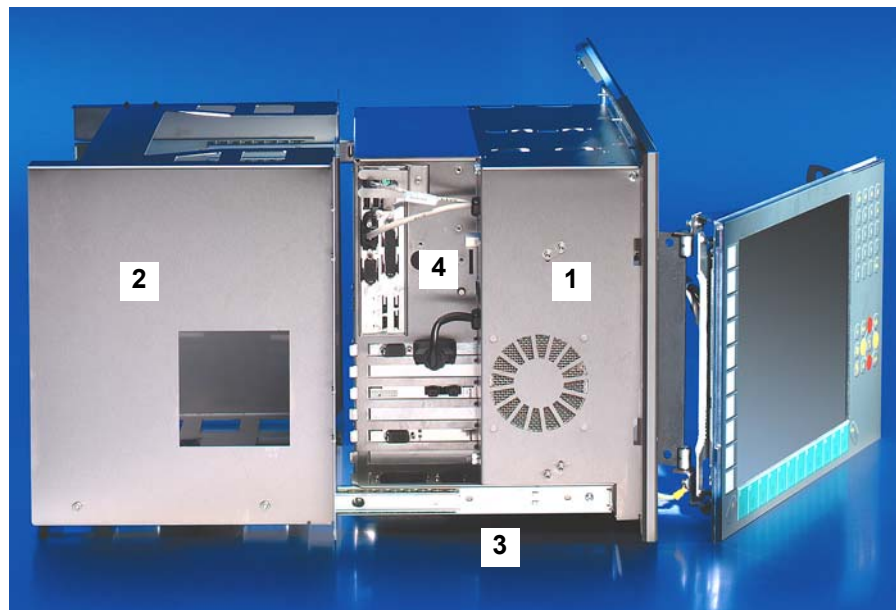


The illustration shows the assembly of the PC **(1)** with excerpt frameworks **(2)** and telescope rails **(3)**. The interface connections are at the side of the housing **(4)**.

*Connections behind the front flap*

The connections for the mouse **(1)**  and the keyboard **(2)** are located behind the front flap.

# Interfaces

*Interfaces for the C33xx*
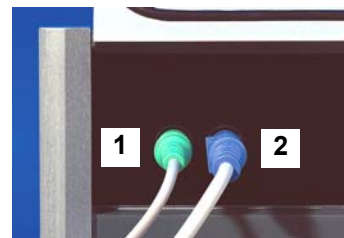
*Illustration turned around 90 degrees*

## PS/2-connectors

*PS/2*

The lower PS/2 connector (**2**) allows a keyboard to be used, while a PS/2 mouse can be connected to the upper PS/2 connector (**1**).
If the PC is fitted with an optional Touch Pad also this PS/2 connection is occupied.

## Parallel interface

*Printer*
*LPT1*

The parallel interface (**3**) corresponds to the Centronics standard, and is addressed by the software as LPT1.

## Serial interfaces

*RS 232*
*COM1 – COM2*

The basic version of the Industrial PC has two serial interfaces, COM1 (**4**) and COM2, using the type RS 232, which are each brought to a 9 pin SUB-D plug connector. The interface COM2 is located in the first slot right below the ATX-slot.
One of the two seriell interfaces is used for connecting the special keys and the LEDs on the front side. If the PC is fitted with Touch Srcreen (optional), the second seriell interface is occupied too.

## VGA connection

*VGA*

A 15-pin SUB-D socket connector (**5**) allows a VGA monitor to be connected.

## USB interfaces

*USB1 – USB4*

The four USB interfaces (**6 – 9**) are used to connect peripheral devices with USB connections.

## Network connection

*Network*

The RJ-45 connector (**10**) allows the PC to be connected to a Local Area Network (LAN).

## Sound-On-Board

*Sound*

The Industrial PC has a on-board-interface with the following connectors: Line In jack (**11**), Line Out jack (**12**) and Microphone jack (**13**).

## Additional plug-in cards (optional)

*Type plate*

A type plate is located on the upper side of the PC, providing information about the Industrial PC equipment as delivered.

# Installation Instructions

Please also refer to chapter *General* instructions.

## 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 C33xx Industrial PC is designed for mounting in control cabinets for machine and plant engineering applications.

The ambient conditions specified for operation must be observed (see chapter *Technical data*).

*Preparation of the control cabinet*

Four holes for the fixing bolts have to be provided in the control cabinet according to the dimensions of the PC (see chapter *Assembly dimensions)*.

**i** *Note*

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

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 PC from dust, moisture and heat.**

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

## Earthing measures

*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 (see photograph on the left) to the central earthing point on the control cabinet wall, in which the computer is being installed.

# Power Supply Connection

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*
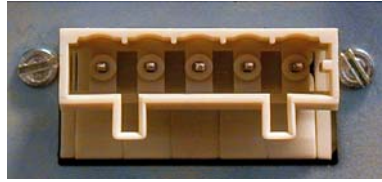
| Technical data | Connecting socket |
|---|---|
| Number of contacts | 5 |
| Contact spacing | 5 mm |
| Minimum conductor cross-section | 1.5 mm² |
| Minimum conductor cross-section (AWG) | 16 |
| Rated voltage (EN) | 250 V |
| Rated voltage (CSA) | 300 V |
| Current EN [A] | 12 A |
| Current CSA [A] | 15 A |
| Length of stripped conductor | 8 to 9 mm |

*Supplied mains power unit*

The Industrial PC is either fitted with a 100-240 V, 50-60 Hz power supply unit (standard) or with a 24 $V_{DC}$ power supply unit (with the option of an uninterruptible power supply, UPS).

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

*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 | 20 A |
| +5 V stand by | 2 A |
| +5 V | 25 A |
| -5 V | 0.3 A |
| +12 V | 13 A |
| -12 V | 0.8 A |

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

*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 |

## Differently coded Connectors

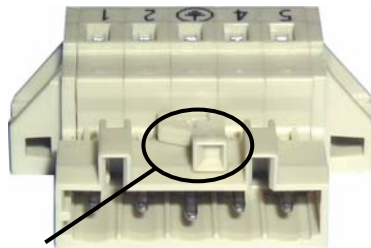*Coding pieces*



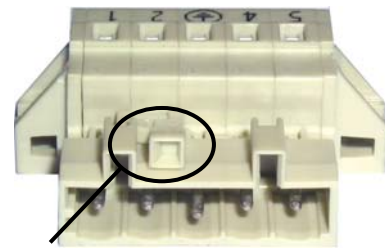*Differently coded plug connectors*

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



*Coding for the 100-240 V$_{AC}$, 50-60 Hz power supply unit*
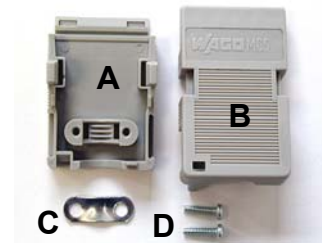
*Coding for the 24 V$_{DC}$ power supply unit*

## 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.

*Materials for assembly of the connector*



*Female plug connector*

*Strain relief housing*

*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 mm² |
| 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 |

**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 mm², fused for 10 A (AWG 16).**

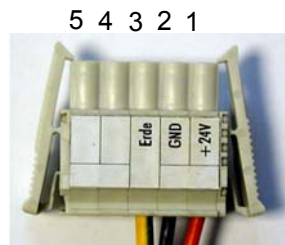**Industrial PCs with 100-240 $V_{AC}$, 50-60 Hz power supply unit**

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

5 4 3 2 1
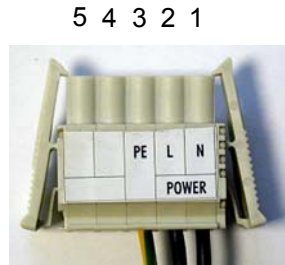


| Pin | Function | |
|-----|----------|---|
| **1** | N | 100 – 240V $_{AC}$ |
| **2** | L | Power supply |
| **3** | ⏚ | |
| **4** | not used | |
| **5** | not used | |

**Industrial PCs with 24 $V_{DC}$ power supply unit**

*Pin assignment for the 24 $V_{DC}$ power supply unit*

5 4 3 2 1



| Pin | Function | |
|-----|----------|---|
| **1** | + | 24V $_{DC}$ |
| **2** | - | Power supply |
| **3** | ⏚ | |
| **4** | not used | |
| **5** | not used | |

*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 where the product is described.

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 $V_{AC}$ 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 $V_{DC}$ 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.**

# Operating Instructions

Please also refer to chapter
*General* instructions.

## 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.

*Reset-key*

A Reset button **(1)** for rebooting the system is provided under the front flap below the floppy disk drive.



*LEDs*

Three LEDs are located next to the Reset button **(2)**:

The red LED signalises hard disk activity, the green LED signalises the presence of the voltage supply, while the yellow LED indicates Turbo operation.

### 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.

# Operating the Industrial-PC

*Type-dependent number of keys*

Depending on the precise type, the Industrial PC can have fewer keys than those described here.

## Description of the keys

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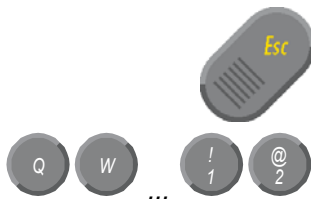
Rather like the effect of the *Shift* key, *Ctrl* and *Alt* also change the meaning of another key that is pressed at the same time.

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

## Function keys

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

## Special keys

The function of the special keys left beside the display is also determined by the software. The function is displayed at the top edge of the display or by the marked module strips.

The special keys each have an orange LED controlled by the software.

# Maintenance

Please also refer to chapter
*General* instructions.

### 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 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 manufactorer.

*⚠ 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.

# Shutting down

### Disposal

*Dismantling the Industrial PC*

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

*Observe national electronics scrap regulations*

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

# Troubleshooting

Please also refer to chapter
*General* instructions.

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

## Fault correction

| Fault | Cause | Procedure |
|---|---|---|
| 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 the 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. |
| Floppy disk or CD access error | Faulty disk or CD. | Check disk or CD in another 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

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D-33415 Verl
Germany

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| Fax: | +49(0)5246/963-198 |
| e-mail: | info@beckhoff.com |

## Beckhoff Support

Support offers you comprehensive technical assistance, helping you no only with the application of individual Beckhoff products, but also with other, wide-ranging services:

- world-wide support
- design, programming and commissioning of complex automation systems
- and extensive training program for Beckhoff system components

| | |
|---|---|
| Hotline: | +49(0)5246/963-157 |
| Fax: | +49(0)5246/963-9157 |
| e-mail: | support@beckhoff.com |

## 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(0)5246/963-460 |
| Fax: | +49(0)5246/963-479 |
| e-mail: | service@beckhoff.com |

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

# Assembly dimensions

The following pages show diagrams of the Industrial PCs, with dimensions in mm.

⚠️ *Warning*

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

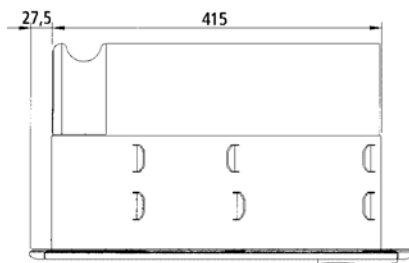*Industrial-PC* **C3320**

**screw mounting M3x10**

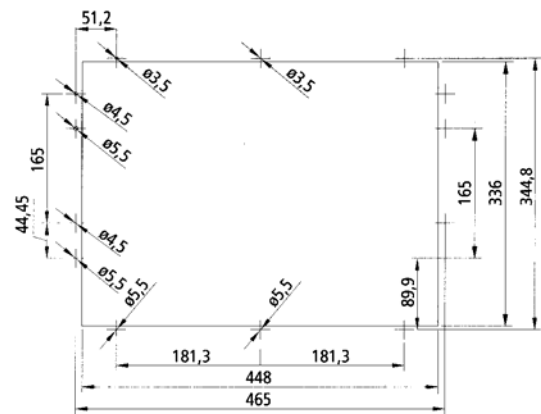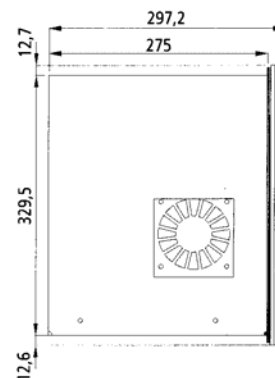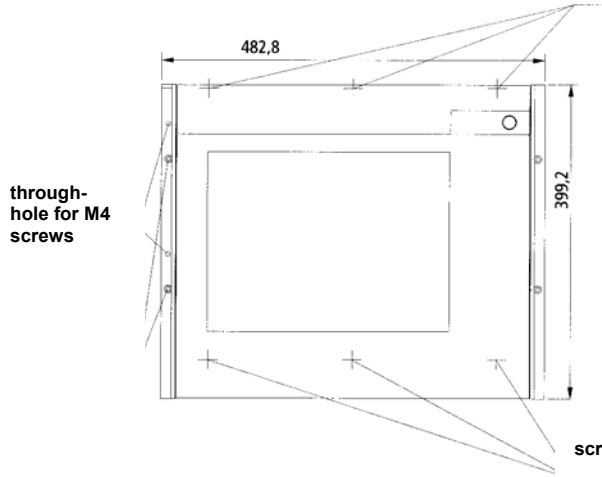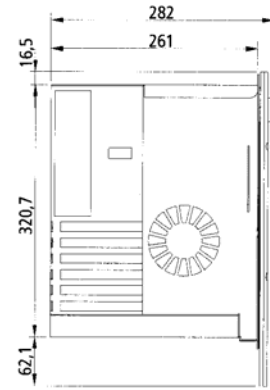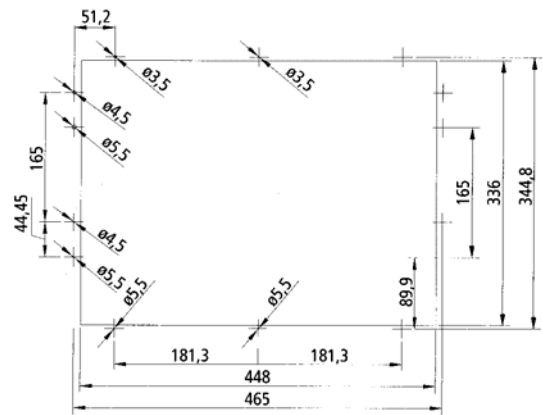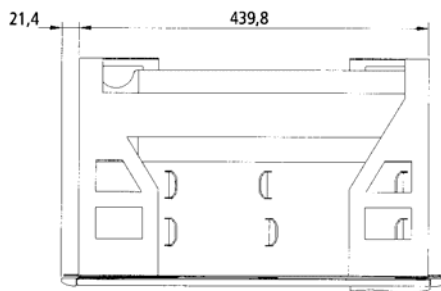**through-hole for M4 screws**
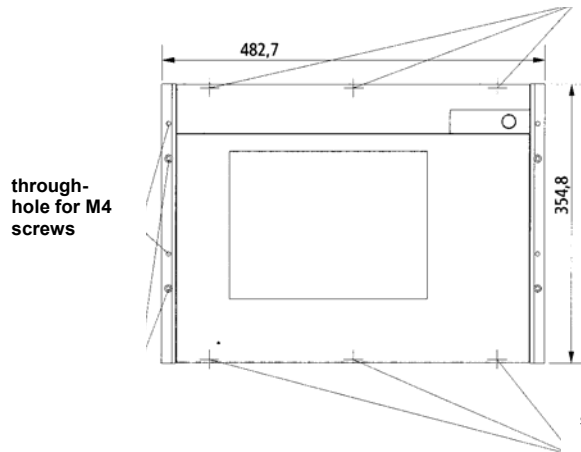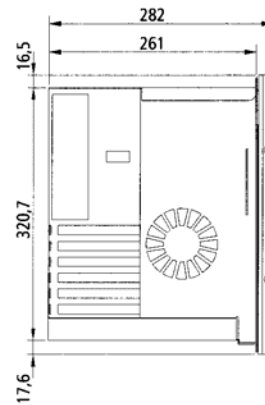
**screw mounting M3x10**

**front view**

**side view**

**plan view**

**cut out for installation**
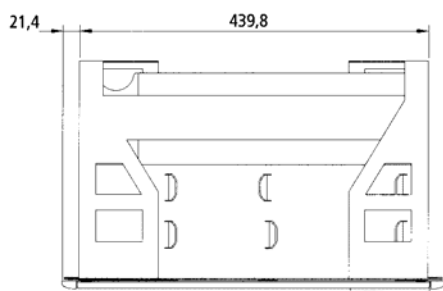
**Warning**

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

*Industrial-PC* **C3330**

screw mounting M3x10
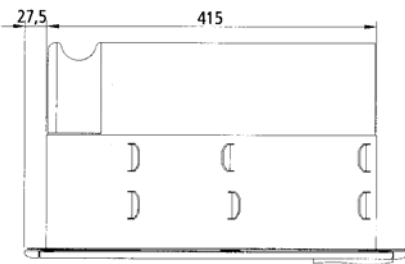
through-hole for M4 screws

screw mounting M3x10

**front view**
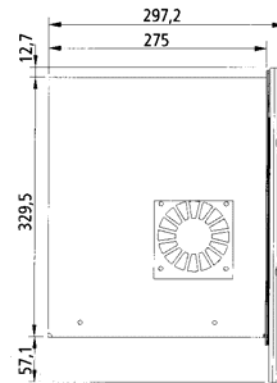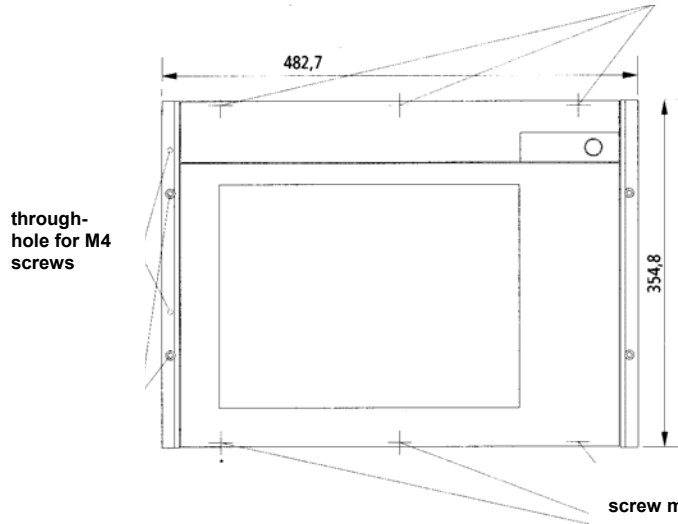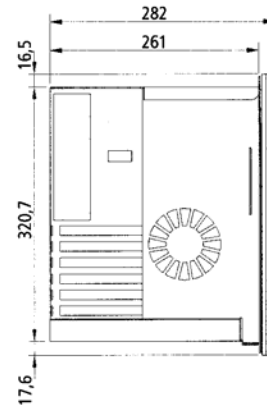
**side view**

**plan view**

**cut out for installation**

**plan view with excerpt-frame for front assembly**

**side view with excerpt-frame for front assembly**

**Warning**

The assembly of the unit must take place with the orientation diagrammed here.
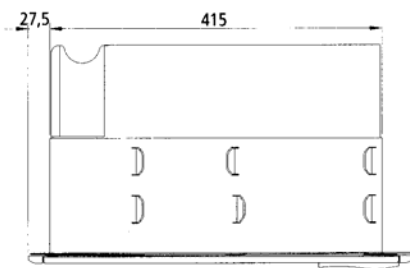
*Industrial-PC* **C3340**

screw mounting M3x10

through-
hole for M4
screws

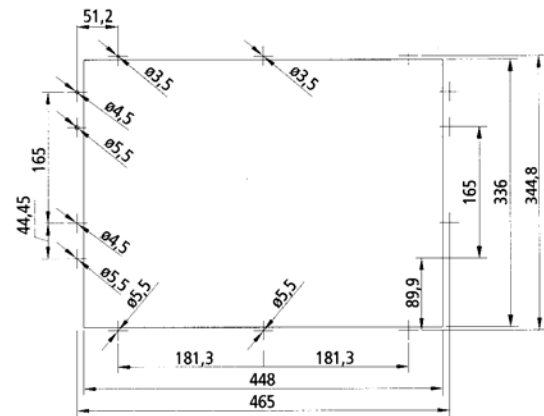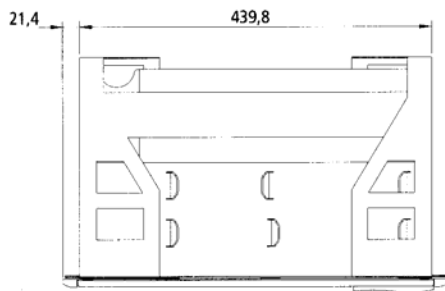screw mounting M3x10
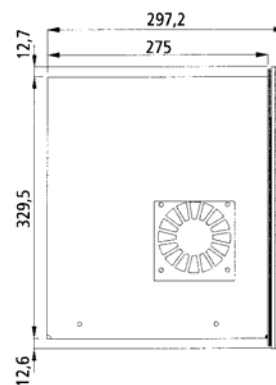
**front view**

**side view**

**plan view**

**cut out for installation**

**plan view with excerpt-frame for
front assembly**

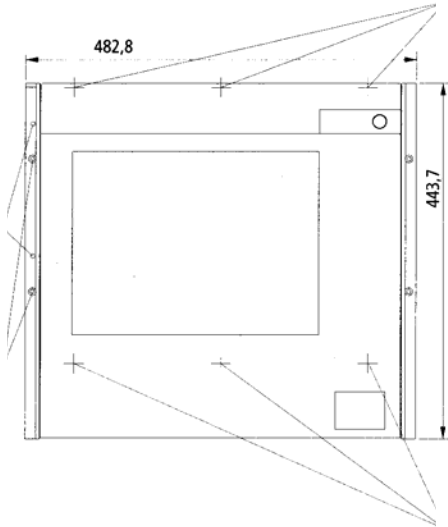**side view with excerpt-frame for
front assembly**

**Warning**

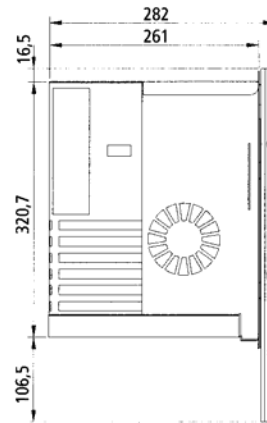The assembly of the unit must take place with the orientation diagrammed here.

*Industrial-PC* **C3350**

Gewindebolzen M3x10 im

**screw mounting M3x10**
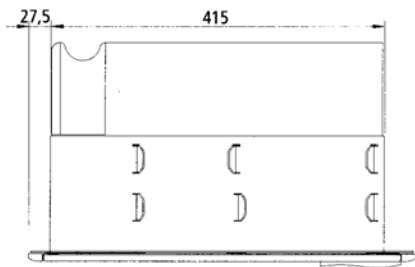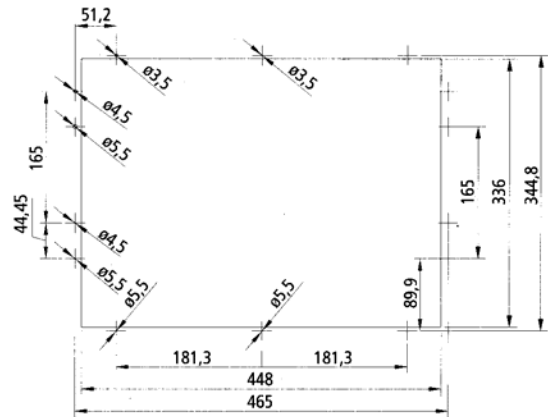
**through-hole for M4 screws**

482,8

443,7

**screw mounting M3x10**

**front view**

282

261

16,5

320,7

106,5

**side view**

27,5    415

**plan view**

51,2

ø3,5    ø3,5

ø4,5

ø5,5

165

44,45    ø4,5

ø5,5  ø5,5    ø5,5

181,3    181,3

448

465

165    336    344,8

89,9

**cut out for installation**

21,4    439,8

**plan view with excerpt-frame for front assembly**

297,2

275

12,7

329,5

101,6
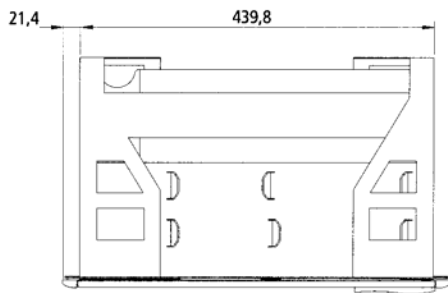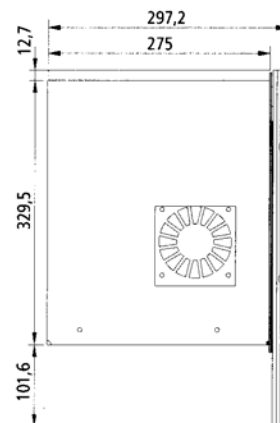
**side view with excerpt-frame for front assembly**

# Appendix

## Technical data

| | | |
|---|---|---|
| *Industrial-PC C3320* | **Dimensions (W x H x D):** | 482,7 x 355 x 282 mm |
| | **Weight:** | 18 kg (basic configuration) |
| *Industrial-PC C3330* | **Dimensions (W x H x D):** | 482,7 x 400 x 282 mm |
| | **Weight:** | 18,5 kg (basic configuration) |
| *Industrial-PC C3340* | **Dimensions (W x H x D):** | 482,7 x 355 x 282 mm |
| | **Weight:** | 18,5 kg (basic configuration) |
| *Industrial-PC C3350* | **Dimensions (W x H x D):** | 482,7 x 444 x 282 mm |
| | **Weight:** | 19 kg (basic configuration) |

*Do not use the PC in areas of explosive hazard*

**The Industrial PC may not be used in areas of explosive hazard.**

**The following conditions must be observed during operation:**

| | | |
|---|---|---|
| *Environmental conditions* | **Ambient temperature:** | 0 to 55°C |
| | **Atmospheric humidity:** | Maximum 95%, non-condensing |
| *Shock resistance* | **Sinusoidal vibration:** **(EN 60068-2-6)** | 10 to 58 Hz:   0.035 mm <br> 58 to 500 Hz: 0.5 G ($\sim$ 5 m/ s$^2$) |
| | **During reading of CD-ROM:** | 10 to 58 Hz:   0.019 mm <br> 58 to 500 Hz: 0.25 G ($\sim$ 2.5 m/ s$^2$) |
| | **Impact:** **(EN 60068-2-27/ -29)** | 5 G ($\sim$ 50 m/ s²), duration: 30 ms |
| | **During reading of CD-ROM:** | 5 G ($\sim$ 50 m/ s²), duration: 11 ms |
| *Protection class* | **Protection class:** | IP 65 (front side), IP20 (back side) |
| *Power supply* | **Supply voltage:** | 100-240 V 50-60 Hz |
| *100-240 V$_{AC}$ power pack* | **Power consumption:** | 100 W for the basic version |
| *Power supply 24 V$_{DC}$ power pack (optional)* | **Supply voltage:** | 24 V$_{DC}$ |
| | **Power consumption:** | 100 W for the basic version |
| *Electromagnetic Compatibility (EMC)* | **Interference resistance:** | according to EN 61000-6-2 |
| | **Emitted resistance:** | according to EN 61000-6-4 |

*Transport and storage*

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.

| | |
|---|---|
| **i** *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.