



Installation and Operating instructions for

Control Cabinet Industrial PC C6240-1007

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BECKHOFF

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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.

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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 V_{AC} - 240 V_{AC} or 24 V_{DC} (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.



Warning

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 [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 C6240-1007 Industrial PCs is designed for mounting in control cabinets for machine and plant engineering applications.

Opening the Housing

Front view of C6240-1007, configuration with 100-240 V_{AC} power supply



Front view of C6240-1007, configuration with 24 V_{DC} power supply (optional)

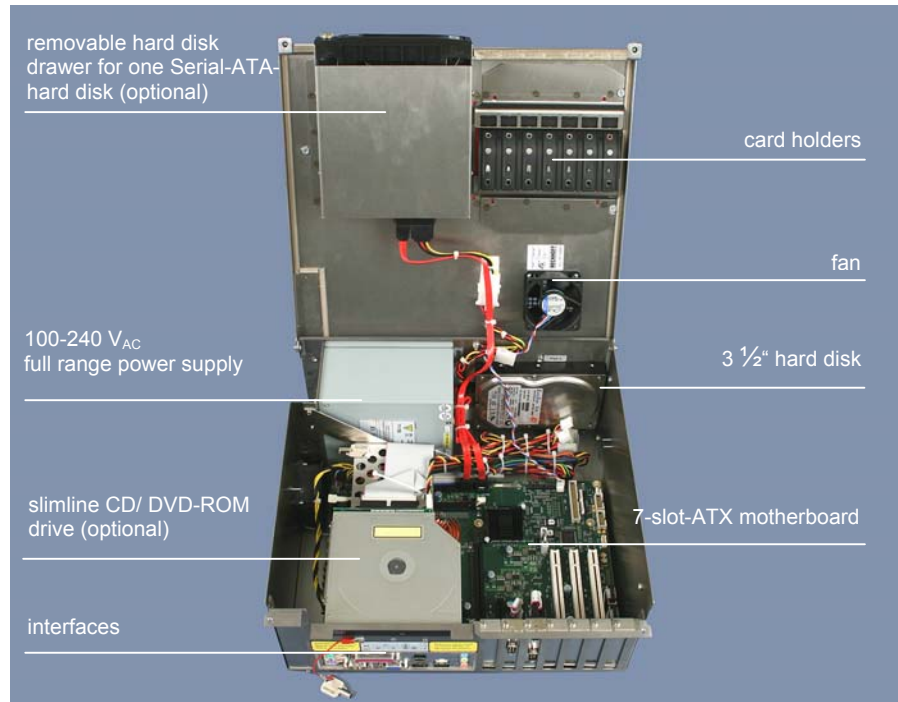


Opening the housing

After solving the two screws (1), the upper housing cover (2) can now be tilted upwards, thus providing access to the drives, 3½ inch hard disk, processor, memory and plug-in cards.

Configuration with 100-240 V_{AC} Full Range Power Supply

View of the open PC



Under the housing cover is a 7 slot computer core with standard ATX motherboard for Intel® Core™ Duo and Core™ 2 Duo and a 100-240 V_{AC} full range power supply.

Front view of the PC

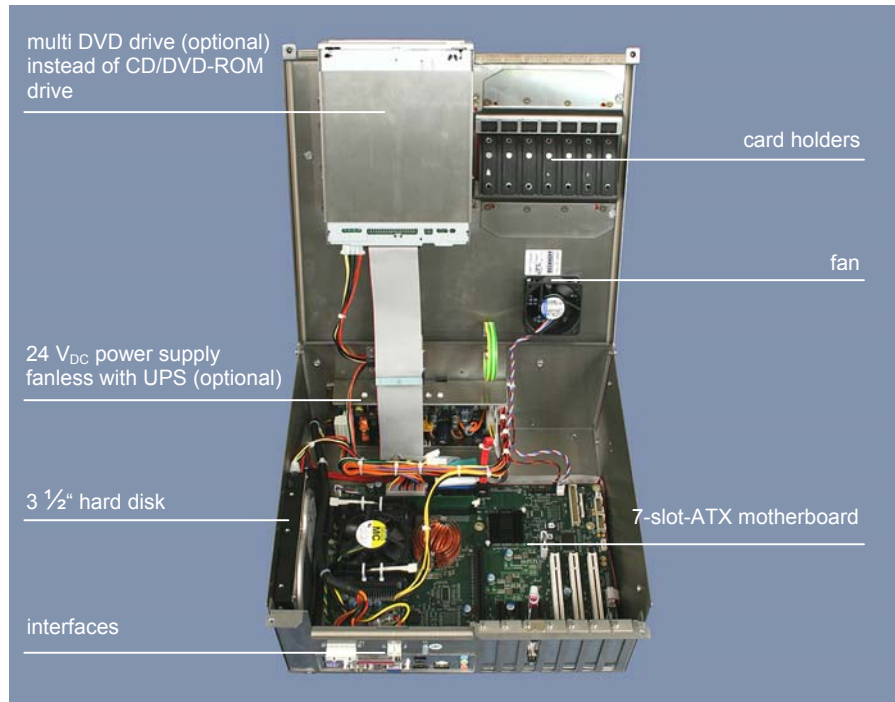


The picture shows the optional configuration of the PC with a removable hard disk drawer (1) for one Serial-ATA-hard disk drive and a slimline CD/ DVD-ROM drive (2) instead of the standard CD/ DVD-ROM drive.

The connections of the Industrial PC are located at the front of the housing.

Configuration with 24 V_{DC} Power Supply (optional)

View of the open PC



Under the housing cover is a 7 slot computer core with standard ATX motherboard for Intel® Core™ Duo and Core™ 2 Duo and a fanless 24 V_{DC} power supply unit (optional with UPS).

Front view of the PC

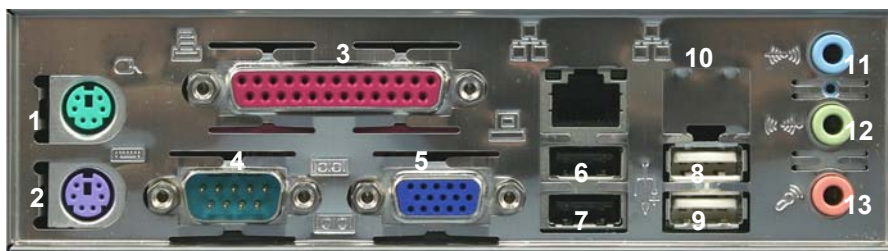


The picture shows the optional configuration of the PC with a multi DVD drive (1) instead of the standard CD/ DVD-ROM drive.

The connections of the Industrial PC are located at the front of the housing.

Interfaces

Interfaces for the C6240-1007



PS/2 connections

PS/2

The upper PS/2 connector (1) allows a PS/2 mouse to be used, while a PC keyboard can be connected to the lower PS/2 connector (2).

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 – COM4*

The basic version of the Industrial PC has 4 serial interfaces, COM1 – COM4, using the type RS 232, which are each brought to a 9 pin SUB-D plug connector.

- COM1 (4) is located in the ATX-slot of the motherboard.
- When the PC is fitted with UPS (optional), COM4 is used from the power supply unit. When fitted without UPS, the interface COM4 is located in one of the slots right beside the ATX-slot.
- COM2 and COM3 are located in a slot right beside the ATX-slot.



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 top 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 C6240-1007 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*).



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 50 mm in order to ensure adequate ventilation of the PC.



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 to the central earthing point on the control cabinet wall, in which the computer is being installed.

Power Supply Connection with 100-240 V_{AC} power supply unit

Supplied mains power unit

The Industrial PC is serially fitted with a 100-240 V_{AC}, 50-60 Hz full range 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	16 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

Mains Socket

A mains socket is located on side of the PC housing next to the main switch in order to connect the power supply.

Mains socket and main switch at the PC housing



Power supply cords

Power cords Europe

In the area Europe you use the provided cable with inlet connector for non-heating apparatus to connect the Industrial-PC to the power supply.

Power cords USA / Canada

In the area USA / Canada the power supply cable must show the following specifications according to the supply voltage:

Listed, Detachable, maximum 4.5 m (14.76 ft.) long; rated minimum 125 V, 10 A, Type SJT or Type SVT; one end terminates in NEMA 5-15P/-20P grounding-type attachment plug, other end in appliance coupler

or

Listed, Detachable, maximum 4.5 m (14.76 ft.) long; rated minimum 250 V, 10 A, Type SJT or Type SVT; one end terminates in NEMA 6-15P/-20P grounding-type attachment plug, other end in appliance coupler.

Power Supply Connection with 24 V_{DC} power supply unit

Power supply unit

The Industrial PC is optionally fitted with a 24 V_{DC} 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!

Electrical Data

Input voltage: 22 – 30 V DC
 Current consumption: 10 A (22 V)
 Output capacity: 150 W (max.)

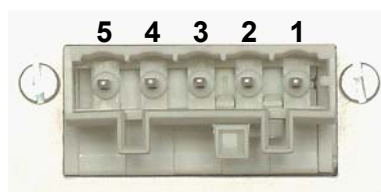
Current carrying capacity of the 24 V power supply unit

Output voltages from the 24 V power supply unit	Current loading maximum
+ 5 V	14 A
- 5 V	0.3 A
+ 12 V	12 A
- 12 V	0.5 A
+ 3,3 V	12 A
5 V VSB	1.5 A

Connecting the power supply

A 5-pin male plug connector with CAGE CLAMP connection (see photo) is installed at the PC housing in order to connect the power supply and the battery pack.

Pin assignment for connecting the power supply and the battery pack



Pin	Function
1	+ 24V _{DC}
2	- Power Supply
3	⊕
4	+ Battery Pack (with UPS)
5	-

Power Switch

The Industrial PC is switched on and off with an external power switch. Therefore the PC is equipped with a 3-pole male plug connector with CAGE CLAMP connection.

Pin assignment for connecting the power switch



Pin	Function
1	Power-Status
2	PC_ON
3	24V _{DC} Power Supply + Pole

Fitting the Power Supply Cable

Wiring in accordance with wiring diagram

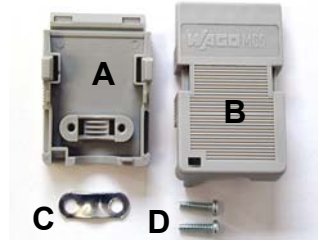
Fit the cables for the power supply of the Industrial PC, the connection of the battery pack as well as the connection of the power-switch in accordance with the wiring diagram, using the included material for assembling the connectors.

The example shows how to fit the 5-pole plug connector:

Materials for assembly of the connector



Female plug connector 5-pole



Strain relief housing

Fitting the connector

Fitting the connector to the cable

The plug is fitted to the cable as follows:

1. Strip insulation from the cable ends (insulation length 8 – 9 mm).
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 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**).

Applying the strain relief



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

Connecting 24V_{DC} Power Supply

The external wiring consists of the connection of the power supply, the battery pack (optional) and the connection of customized components for shutting down the PC.

Cable Cross Sections

Note cable cross sections, avoid voltage drop!

For the connection of the power supply, wiring with a cable-cross-section of 1.5 mm² must be used.

With bigger distances between voltage source and PC, you take the voltage drop as a function of the cable-cross-section as well as voltage fluctuations of your distribution voltage into account, so that is secured that the voltage doesn't fall under 22 V at the power supply.

Insert Fuse

The power supply must be protected with maximum 16 A.

PC_ON, Power-Status, UPS output

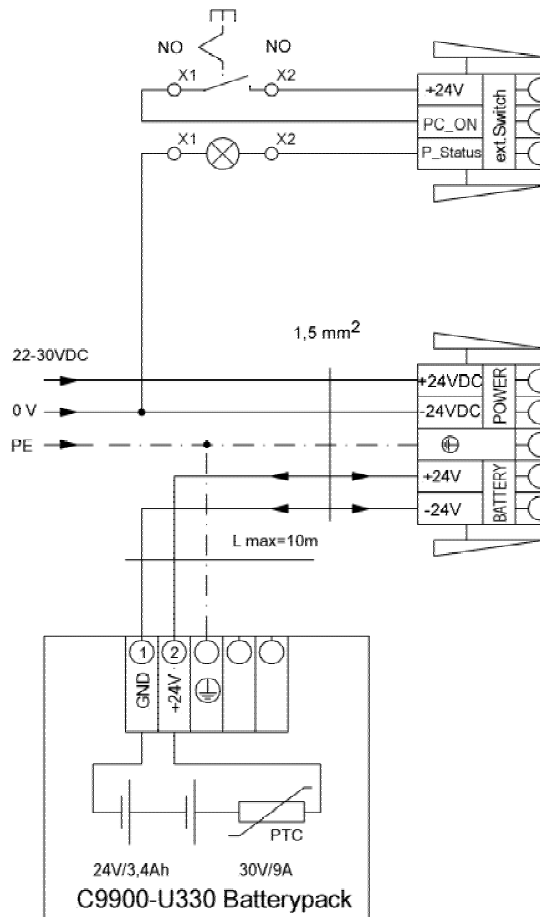
The circuit for shutting down the Industrial PC is realized using the input-signal **PC_ON** and the output-signal **Power-Status**:

- The PC starts shutting down if 24 V exists at **PC_ON**, for example using a switch.
- After shutting down, the output-voltage of 24 V at **Power-Status** is switched to 0 V. This allows connecting an air gap switch for disconnecting the system from power supply.

Wiring diagram

Wiring according to the wiring diagram (the circuit of PC_ON and Power-Status is symbolical):

Wiring diagram external switch and power supply



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 top of the Industrial PC and are documented in the product description chapter.

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.

When fitted with 100-240 V_{AC} 50/60 Hz power supply:

1. Check that the mains voltage is correct.
2. Insert the provided 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 is switched on via the main switch beside the mains socket (see chapter [Power Supply Connection with 24 VDC power supply unit](#)).
- The Industrial PC with 24 V_{DC} power supply equipment (optional) 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.

Servicing and Maintenance

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



Danger

Cleaning the Industrial PC

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 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.

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.

UPS Software Components (optional)

Installing the UPS driver software

For operating the power supply unit as a UPS, the UPS driver software and the associated UPS driver must be installed on the Industrial PC.

On delivery of the Beckhoff Industrial PC with operating system the software is already installed. Should the software not be installed on your PC, the drivers can be installed from the driver CD provided.

Installation

Installation on the PC

To install the UPS driver software, execute file **Beckhoff_UPS_vx.xx.xx.exe** from the subdirectory of **UPS\...** from the CD provided on the Industrial PC (Driver-archive for the Industrial-PC, C9900-S700-xxxx).

The program is self-extracting and will guide the user through the installation routine.

Beckhoff Information System

Help files

The driver software comes with a detailed help function.

The help files can be called up either directly from the configuration register by clicking the Help button, or under via *Start > Programs > Beckhoff > UPS software components*.

Troubleshooting

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

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.

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e-mail: service@beckhoff.com

Quote the project number

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

Assembly dimensions

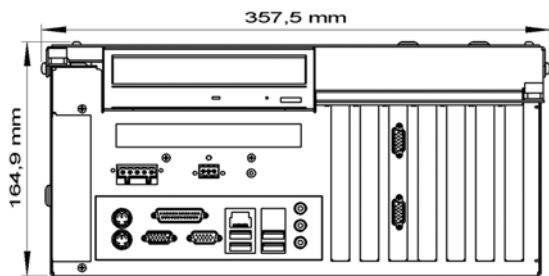
The following pages show diagrams of the Industrial PC, with dimensions in mm.

Configuration with 100-240 V_{AC} Power Supply

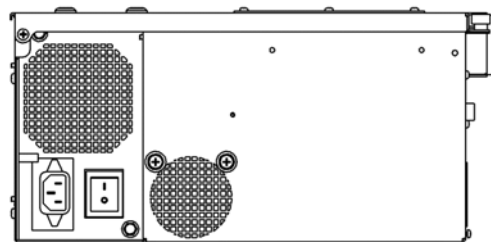


Warning

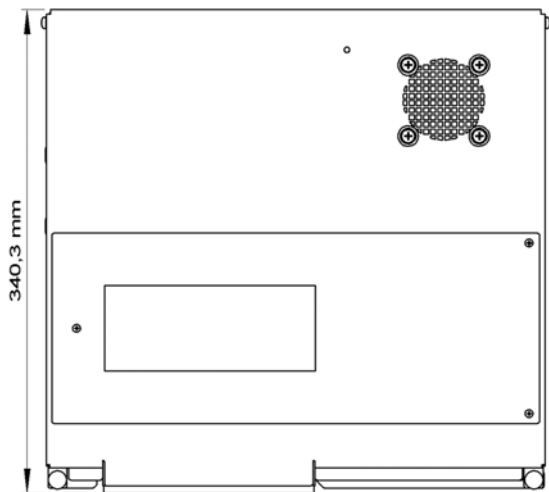
The assembly of the unit must take place with the orientation diagrammed here.



front view



left view



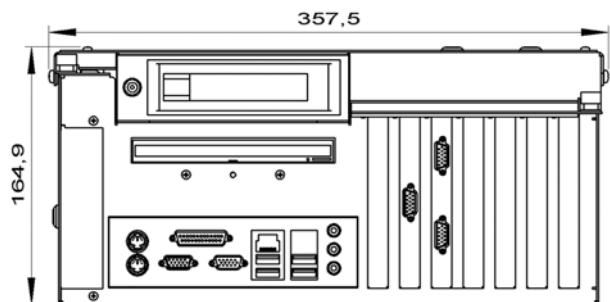
top view

Configuration with 24 V_{DC}-Power Supply (optional)

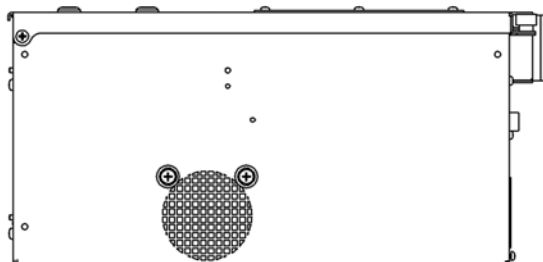


Warning

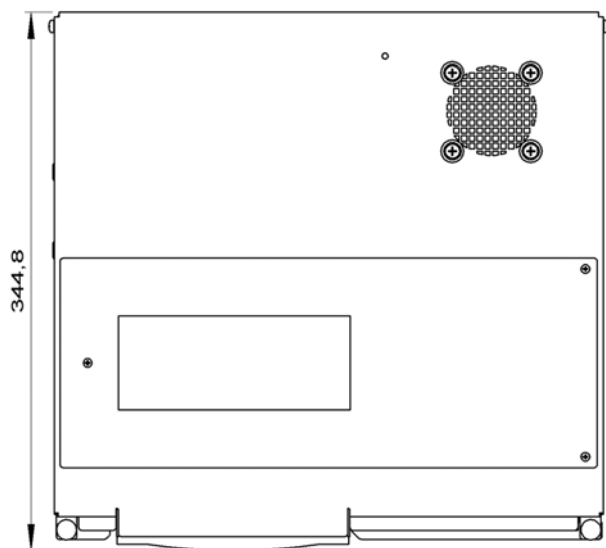
The assembly of the unit must take place with the orientation diagrammed here.



front view



left view



top view

Appendix

Technical data

<i>Industrial PC C6240-1007</i>	Dimensions (W x H x D):	see chapter Assembly dimensions
	Weight:	9,5 kg (basic configuration)
<i>Do not use the PC in areas of explosive hazard</i>	The Industrial PC may not be used in areas of explosive hazard.	
	The following conditions must be observed during operation:	
<i>Environmental conditions</i>	Ambient temperature:	0 to 55°C
	Atmospheric humidity:	Maximum 95%, non-condensing
<i>Shock resistance</i>	Sinusoidal vibration:	
	(EN 60068-2-6)	10 to 58 Hz: 0.035 mm 58 to 500 Hz: 0.5 G (~ 5 m/ s ²)
	During reading of CD-ROM:	10 to 58 Hz: 0.019 mm 58 to 500 Hz: 0.25 G (~ 2.5 m/ s ²)
	Impact:	
	(EN 60068-2-27/ -29)	5 G (~ 50 m/ s ²), duration: 30 ms
	During reading of CD-ROM:	5 G (~ 50 m/ s ²), duration: 11 ms
<i>Protection class</i>	Protection class:	IP20
<i>Power supply 100-240 V_{AC} power pack</i>	Supply voltage:	100-240 V _{AC} 50-60 Hz
	Power consumption:	85 W for the basic version
<i>Power supply 24 V_{DC} power pack (optional)</i>	Supply voltage:	22 – 30 V _{DC}
	Power consumption:	85 W for the basic version
<i>Electromagnetic Compatibility (EMC)</i>	Interference resistance:	according to EN 61000-6-2
	Emitted resistance:	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.	

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

CC 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.