

# Beckhoff Industrial PC C5002

## Operating Instructions

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**BECKHOFF**  
INDUSTRIE ELEKTRONIK



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# Industrial PC C5002 Operating Instructions

## Safety instructions

*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 off".

*Switch off all parts of the equipment, then uncouple the field bus*

**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 field bus connection plug uncouples the PC.

**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 230 V / 115 V AC.

*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 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.

## The operator's duties

*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.

*Test regulations*

The operator must initiate such inspections in good time.

*Only trained personnel may open the PC's*

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

*Software knowledge*

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

*Make operating instructions accessible*

The contents of these operating instructions must be known by every user of the Industrial PC and by every fitter who installs, removes or opens the device.

*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 "Faults" section.

The BECKHOFF Service number:

for Germany: 05246/963-460  
international: 0049-5246/963-460

## The user's duties

*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.**

## Appropriate Use

The C5002 Industrial Computer is intended for fitting into 19 inch racks for industrial application in machine and plant control engineering. A complete IBM compatible PC with a standard ATX motherboard, hard disk and floppy drive is built into a 7-slot plug-in unit.

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

**The Industrial PC may not be used in areas of explosive hazard. The following technical data must be observed during operation:**

*Environmental conditions*

**Ambient temperature:** 0 to 55 °C  
**Atmospheric humidity:** Maximum 95 %, non-condensing

*Shock resistance*

**Housing & chassis:** Vibrations 5 G at 10..55 Hz  
Impact resistance 30 G  
**Disk drive:** Vibrations 0.5 G at 5..500 Hz  
Impact resistance 5 G  
**Hard disk:** Vibrations 0.5 G at 17..500 Hz  
Impact resistance 10 G  
**Protection type:** IP60

*Power supply  
230/115 V AC mains power  
supply unit*

**Supply voltage:** Switchable between  
115 V 60 Hz  
230 V 50 Hz

**Max. power consumption:** 64 W for the basic version

*Compatibility*

**Resistance to interference:** according to EN 50082-2

*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 +60 °C.

## Connections

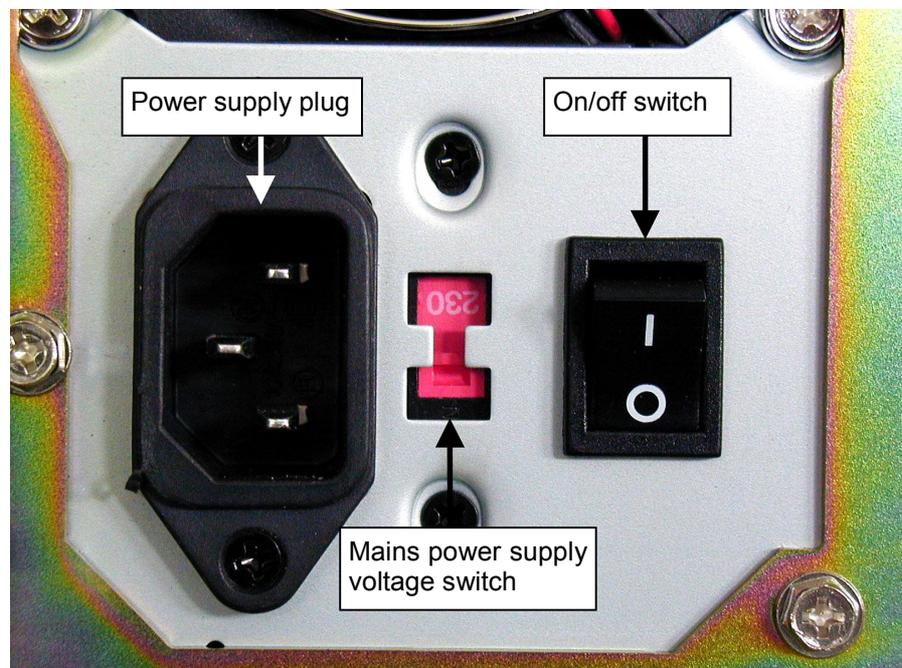


Rear view of the basic version of the C5002 Industrial PC

### Power supply

The C5002 Industrial PC has a standard ATX 230/115 V 50/60 Hz power supply.

Mains power supply unit



Current loading capacity 230 V power supply unit

Output voltages of the 115/230 V power supply unit	Current loading maximum
+5 V	22 A
-5 V	0,3 A
+3,3 V	14 A
+12 V	8 A
-12 V	0,8 A

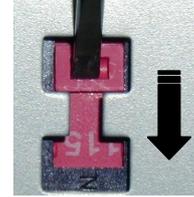
*Setting the mains voltage*

Mains voltages of 230 V 50 Hz or 115 V 60 Hz may be set. In order to do this the slide switch (see photos below) is moved to the appropriate position with the aid of a small screwdriver. The voltage that has been set can be read.

*Changing from 230 V to 115 V*



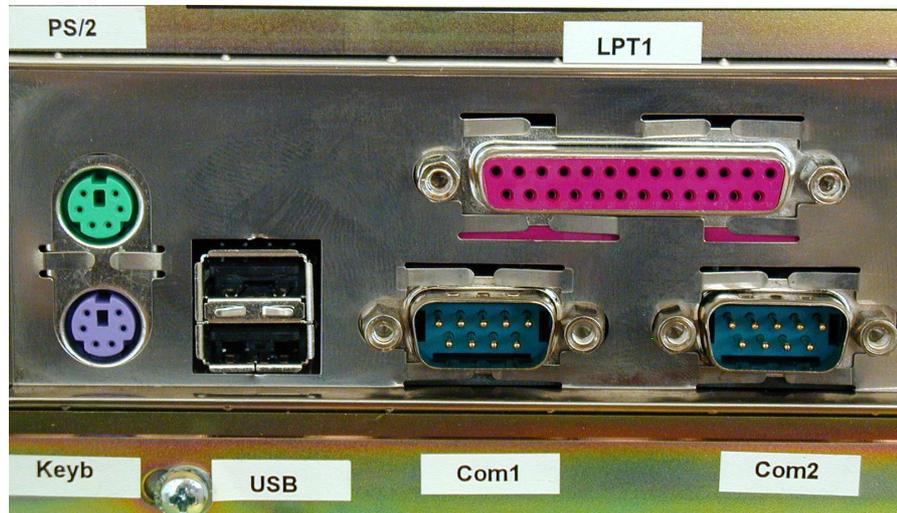
*Changing from 115 V to 230 V*



*RS 232  
COM1 - COM2*

**Serial interfaces**

The basic version of the C5002 Industrial PC has two serial interfaces, COM1 and COM2, using the type RS 232, which are brought to a 9 pin SUB-D pin connector.



*Printer  
LPT1*

**Parallel interface**

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

*PS/2*

**PS/2 Connections**

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

*USB1 – USB2*

**USB Interfaces**

Both USB interfaces provide for the connection of any peripheral devices with USB connections.

*Video*

**Video connection**

A 15-pin SUB-D socket allows a VGA monitor to be connected.



*Type plate*

**Additional plug-in cards (optional)**

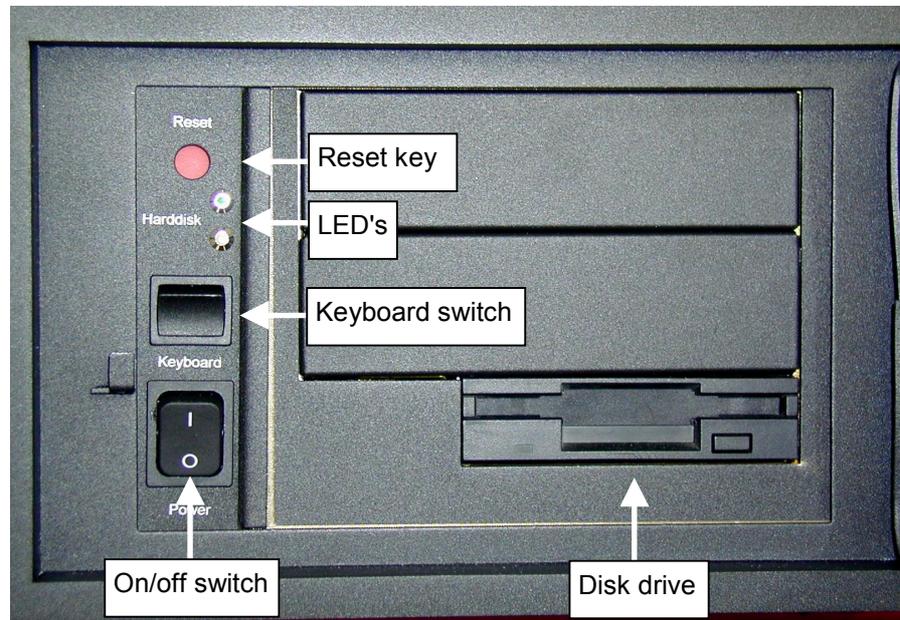
There is a type plate on the rear of the PC which provides information about the hardware configuration of the PC at the time it was supplied.

## Operation of the Industrial PC

The front of the PC has a lockable front cover, behind which operating elements and LED's are located. There is a number on the lock.

If the key is lost, the number on the lock can be used to order a replacement.

*Operating and LED's  
behind the front cover*



*Switching on*

The Industrial PC has its own ON switch (see photo above), although this can optionally be configured to have no function.

*Reset key*

At the top left behind the front panel there is a reset button with which the system can be re-booted (see photo above).

*Switching 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 the software must also be unable to switch the Industrial PC off, since data can be lost from the hard disk by switching off while the software is running.

If the Industrial PC is switched off while the software is writing a file to the hard disk, this data can be damaged. Control software generally writes files such as logs to the disk of its own accord at intervals of just a few seconds, which means that the probability of damage is quite high if the computer is switched off while the software is running.

*KeyLock*

A keyboard switch above the mains switch allows a connected PC keyboard to be switched off.

*LED's*

There are two LED's behind the front cover. The yellow LED indicates hard disk activity, while the green LED indicates that the power is switched on.

## Servicing and maintenance

### Changing the Air Filter

Usable life

The PC has an air filter that must be changed at regular intervals. The filter's usable life depends on the number of operating hours and on the amount of dust in the surrounding air.



Caution

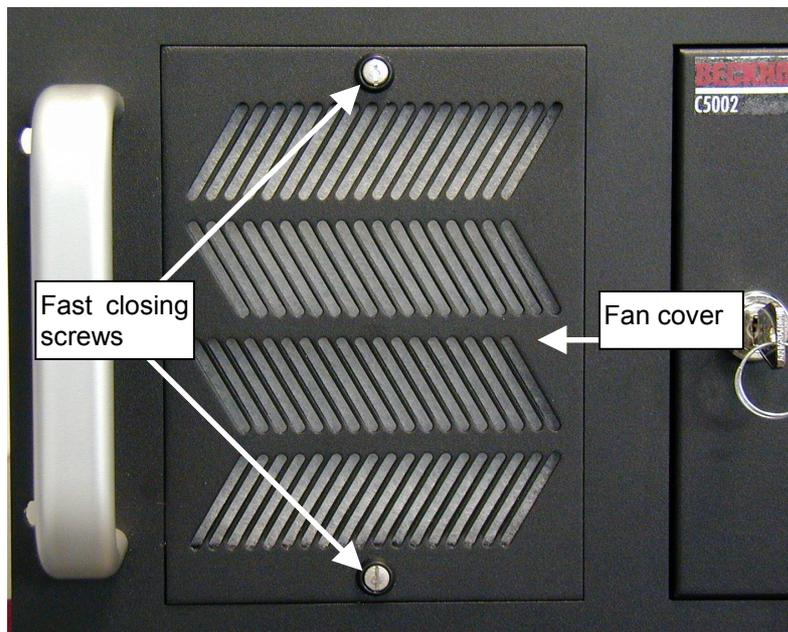
If it is not possible to determine the need to change the filter with a visual check, then if the air is very dusty the filter must be changed once a month.

If a necessary filter change is omitted components within the computer can be damaged or destroyed through overheating.

Item number

The ordering/item number for replacement filters is: **C9900-Z210**

View of the fan cover



Filter changing procedure



Caution!

**Follow these instructions when changing the air filter:**

1. First use a screwdriver to turn one of the fast closing screws (see photo above) 90 degrees in any direction.
2. Hold the fan cover in place while you do the same with the second screw. Failure to follow this procedure can result in injury to persons or damage to objects situated underneath the PC or to the cover itself as it falls.
3. The fan cover is not fixed to the housing in any other way, and can be drawn forwards to remove it.
4. The dust filter can easily be pulled out and exchanged.
5. Return the filter cover to its original position on the housing.
6. Press **and** turn both the fast-closing screws 90 degrees in any direction with a screwdriver.

### Cleaning

First switch the Industrial PC off

The front of 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. The Industrial PC must be switched off for cleaning.

## Disposal

*Remove the Industrial PC and dismantle it Observe national electronics scrap regulations*

In order to dispose of the device, it must be removed and fully dismantled. 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.

## Faults

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

fault	Cause	Procedure
No function after the Industrial PC has been switched on	No power supply.	1. Measure voltage at connection, check plug wiring. 2. Call Beckhoff Service.
The Industrial PC does not boot fully	Floppy disk in drive.  Hard disk damaged (e.g. by switching off while software running).  Incorrect setup.  Other cause.	Remove floppy disk and press any key  Call Beckhoff Service.  Check the set-up. If necessary, call the Beckhoff service department  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 access	Faulty floppy disk.  Faulty disk drive.	Check disk in another PC.  Call Beckhoff Service.