Installation and Operating instructions for

Built-in Panel PC CP67xx

Version: 2.0
Date: 2009-07-07

BECKHOFF

Table of contents

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 this reason, the documentation may not always be have been fully checked for consistency with the performance data, standards or other characteristics described. None of the statements in this manual represent a guarantee for as set out in § 443 of the German Civil Code or a statement about the assumed use according to the contract as set out in § 434 para. 1 clause 1 no. 1 of the German Civil Code. 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 Built-in Panel 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 *Switching the Built-in Panel PC on and off.*

Warning

Before opening the housing, and whenever the Built-in Panel PC is not being used for control purposes (such as during functional checks after a repair), all parts of the equipment must first be switched off, after which the Built-in Panel PC is to be disconnected from the equipment.

Disconnect the device by unplugging the connectors on the rear side of the Built-in Panel PC.

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

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

Danger

The supply voltage must be disconnected before the housing of the Built-in Panel PC is opened!

Note

Assembly work on the Built-in Panel PC during operation may damage the device:
- if metal objects such as screws or tools fall onto operating circuit boards.
- if connecting cables internal to the Built-in Panel PC are removed or inserted during operation.

Operator's obligation to exercise diligence

The operator must ensure that

- the Industrial PC is only used for its intended purpose (see *Product Description* section);
- the Industrial PC is only operated in a sound condition and in working order;
- the instruction manual is in good condition and complete, and always available for reference at the place of installation of the Industrial PC;
- the Industrial PC is operated, maintained and repaired only by suitably qualified and authorized personnel.
- the personnel is instructed regularly about relevant occupational safety and environmental protection aspects, and is familiar with the operating manual and in particular the safety notes contained herein.
- none of the safety and warning notes attached to the Industrial PC are removed, and 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 used, national regulations governing the controllers of such machines will apply, and must be observed by the operator. 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 faults at the Industrial PC, the list in the section *Troubleshooting* can be used to determine the measures to be taken.

Operator requirements

Read the operating instructions

Anyone who uses the Industrial PC must have read these operating instructions.

Software knowledge

Every user must be familiar with all the functions of the software installed on the Industrial PC to which he has access.

UL-Certificate of Compilance

We herewith confirm that the Built-in Panel PC CP67xx of Beckhoff Automation GmbH meets the requirements of the Underwriters Laboratories Inc.® (UL)-standard:

Certificate Number:	280607 – E220403
Report Reference:	E220403, April 16th, 2007
Issue Date:	2007 June 28

Standards for Safety

The correspondance of the mentioned product with these requirements is proved by the fact that this product meets with the following single standards:

- UL 60950-1, 1st Edition, 2006-07-07 (Information Technology Equipment – Safety - Part 1: General Requirements)

- CSA C22.2 No. 60950-1-03, 1st Edition, 2006-07 (Information Technology Equipment - Safety - Part 1: General Requirements)

Product Description

Appropriate Use

The CP67xx Built-in Panel PC is designed for industrial application in machine and plant engineering. In addition to the integrated PC, a TFT display, touch screen/ pad (optional) and a PC keyboard (optional) are accommodated in an aluminum housing. The Panel PC is installed in the front of control cabinets.

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

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

Connections

Built-in Panel PC CP67xx connections
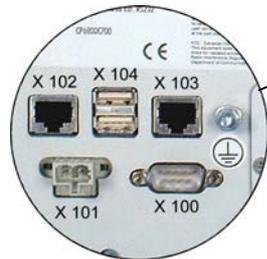
Pin assignment

*X 100
Serial interface*

D-SUB plug 9-pin (RS 232)

Pin	Signal	Pin	Signal
1	CD	6	DSR
2	RxD	7	RTS
3	TxD	8	CTS
4	DTR	9	RI
5	GND		

*X 101
Power supply*

SLWG 1X2-pole WAGO built-in CAGE CLAMP (WAGO 721-602 / 019-000)

Pin	Signal	Pin	Signal
1	+ 24V	11	GND

*X 102, X 103
Network*

RJ-45 connector (Ethernet 10/ 100 Mbit)

Pin	Signal	Pin	Signal
Housing	Screen	5	n.c.
1	TD +	6	RD -
2	TD -	7	n.c.
3	RD +	8	n.c.
4	n.c.		

X 104 USB1, USB2
USB ports

Pin	Signal	Pin	Signal
1	5V	3	D+
2	D-	4	GND

USB Type-A twin circuit board mounting
(FCI 72309-0030B USB Double Receptacle
A-Type)

Connector description

Serial interface

Serial interface
COM1

The Built-in Panel PC is equipped with a COM1 (**X 100**) serial interface
(Type RS232) for the connection of serial peripheral devices.

Power supply

Power supply

The power supply for the Built-in Panel PC is established via the Cage
clamp socket **(X 101).**

A power supply connector is provided with the Built-in Panel PC.

Network interfaces

Network

The RJ-45 sockets (**X 102, X 103**) enable connection of the Built-in Panel
PC to an Ethernet network.

USB interfaces

USB1 – USB2

The two USB2.0 interfaces (**X 104, connector type A**) are used for
connecting peripheral devices with USB connection.

Protective Earthing

Protective Earthing

The low resistance protective earthing connection is
established via the ground bolt, which is located at the rear of
the housing.

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 CP67xx 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 Built-in Panel PC's dimensions.

Note

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

Please note the following points during installation of the Built-in Panel PC:

- Position the Panel 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 Panel 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.

Installation in a control cabinet wall

Proceed as follows:

1. Insert the Built-in Panel 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.

Protective Earthing

Protective Earthing

The low resistance protective earthing connection is established via the ground bolt, which is located at the rear of the housing.
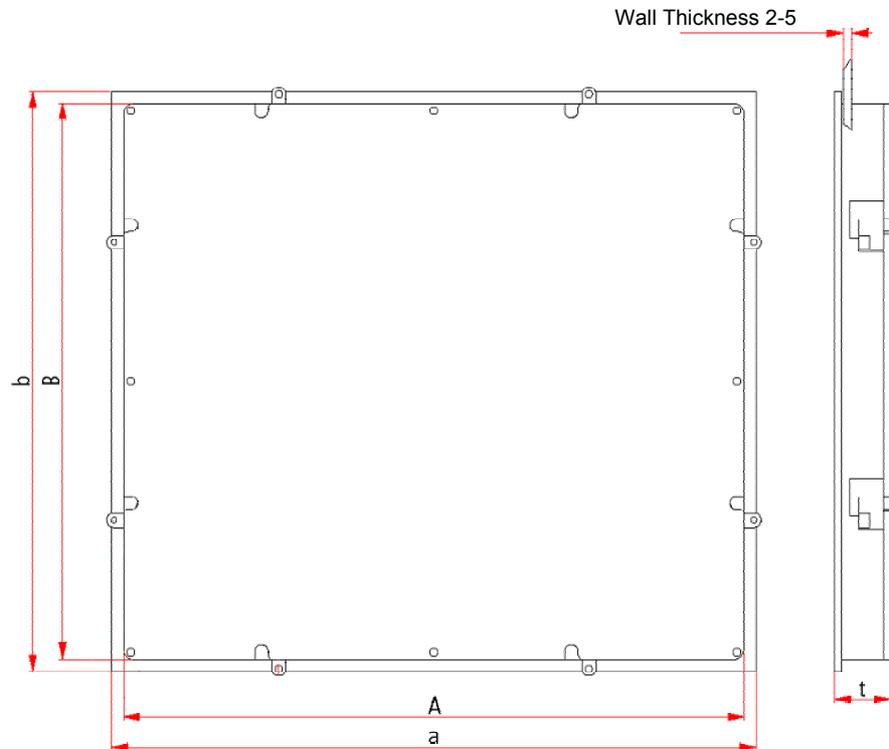
Warning

Assembly dimensions

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

The figure shows the dimensions of the Built-in Panel PCs. Please refer to the tables for cutout dimensions.

All dimensions are in mm.

Built-in Panel PC CP670x

Dimensions		a	b	t	A	B
CP6709	6,5" display	272.3	181	42	258.3	167
CP6701	12" display	372.2	342.2	32	358.2	328.2
CP6702	15" display	430.4	403	32	416.4	389
CP6703	19" display	508.4	463	43	494.4	449

Built-in Panel PC CP671x

Dimensions		a	b	t	A	B
CP6719	6,5" display	272.3	221	42	258.3	207
CP6711	12" display	372.2	342.2	32	358.2	328.2
CP6712	15" display	430.4	403	32	416.4	389
CP6713	19" display	508.4	463	43	494.4	449

Built-in Panel PC CP672x

Dimensions		a	b	t	A	B
CP6729	6,5" display	340.4	221	42	326.4	207
CP6721	12" display	414	336	32	400	322
CP6721-0002	12" display	444.2	336	32	430.2	322
CP6722	15" display	519.4	378.2	32	505.4	364.2
CP6723	19" display	567.4	434	43	553.4	420

Built-in Panel PC CP673x

Dimensions		a	b	t	A	B
CP6731	12" display	410.4	378.2	32	396.4	364.2
CP6731-0002	12" display	430.4	378.2	32	416.4	364.2
CP6732	15" display	489.4	418.2	32	475.4	404.2
CP6733	19" display	508.4	543	43	494.4	529

Mounting of the Built-in Panel PC
Please refer to the tables for the Built-in Panel PC cutout dimensions.

Mounting of the Built-in Panel PC
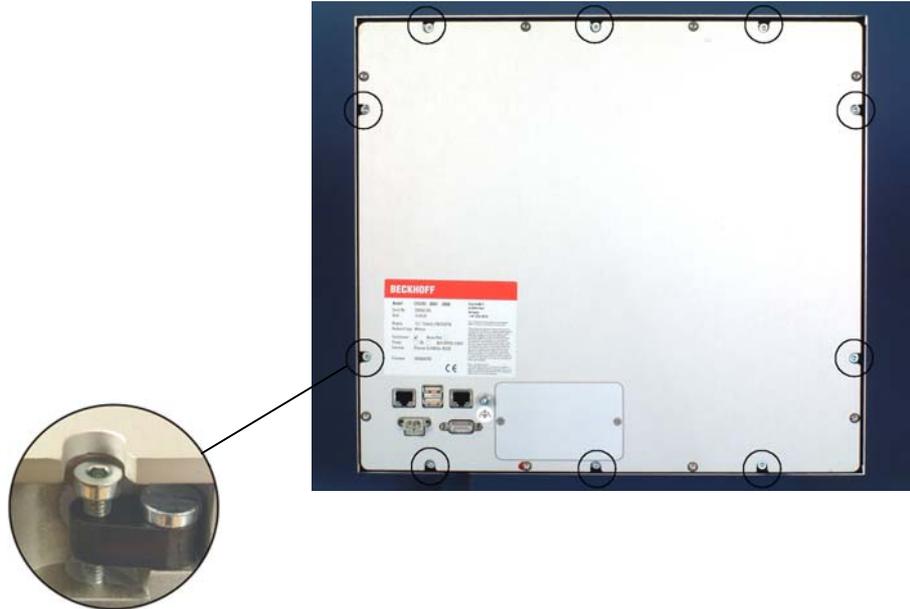
Release clamping levers,

Insert the Built-in Panel PC into the cutout.

Release the clamping levers with a No. 2.5 Allen key.

Folding them out

Turn the clamping levers to the side through 90°

and retighten them.

and retighten the screws.

Connecting the Built-in Panel PC

Danger

Warning

The Built-in Panel PC must never be connected or disconnected in an area that is subject to explosion hazard! Risk of explosion!

The mains plug of the Panel PC must be disconnected!

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 rear of the Built-in Panel PC and are documented in the *Product Description* section.

When connecting cables to the Panel PC, please adhere to the following order:

- Disconnect the Panel PC from the power supply.
- Connect all cables at the Panel PC and at the devices to be connected.
- Ensure that all screw connections between connectors and sockets are tight!
- Reconnect all devices to the power supply.

Protective Earthing

Protective Earthing

The low resistance protective earthing connection is established via the ground bolt, which is located at the rear of the housing.

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Operating Instructions

Please also refer to chapter *General Notes*.

Switching the Built-in Panel PC on and off

Switch on

The Built-in Panel PC does not have its own mains power switch. As soon as the power supply is switched on the Panel PC is activated.

Shutting down and switching off

Control software, as typically applied in Industrial PCs, enables the assignment of different rights to all users. A user who is not entitled to shut down the software may not switch off the Built-in Panel PC as an attempt to shut it down when the software is running could result in the loss of software data on the Compact Flash memory card (CF card).

First shut down, then switch off the Panel PC!

Warning

If the Built-in Panel PC is shut down while the software is writing a file onto the CF Card memory card, the file will be destroyed. Control software typically writes something to the CF card 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 Panel PC, you have to switch off power supply for at least 10 seconds before rebooting the system.
After resetting power supply the Panel PC will start booting automatically.

Operation

Operation

The Built-in 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.

Compact Flash memory card

Compact Flash memory card

A Compact Flash memory card (CF card) is located behind a cover at the rear of the Built-in Panel PC. It is provided to save the operating system. Only use memory cards with extended temperature ranges according to industrial standards!
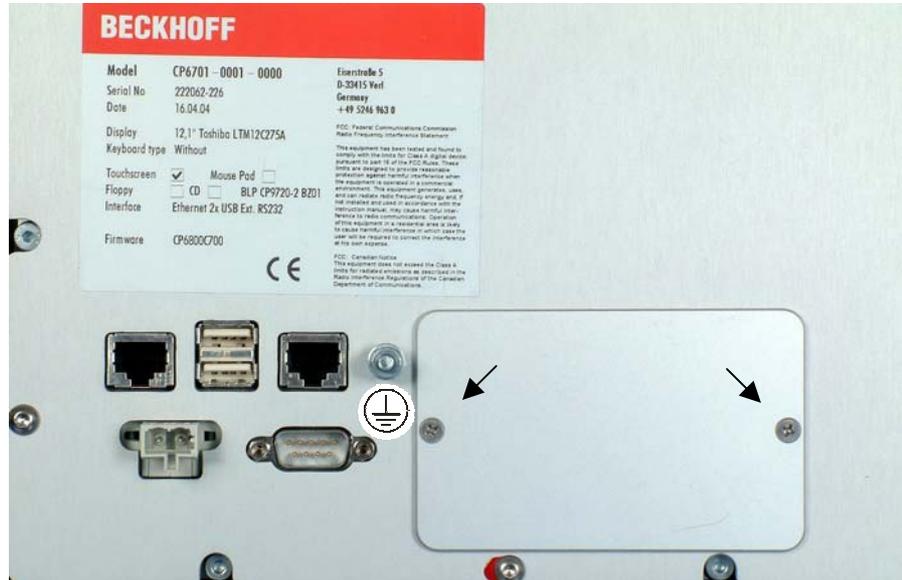
Removing the cover

To change the CF card, first of all unscrew the two screws (see above photo) with a crosstip screwdriver. The aluminum cover can be removed and enables access to the memory card and the battery (see below photo).
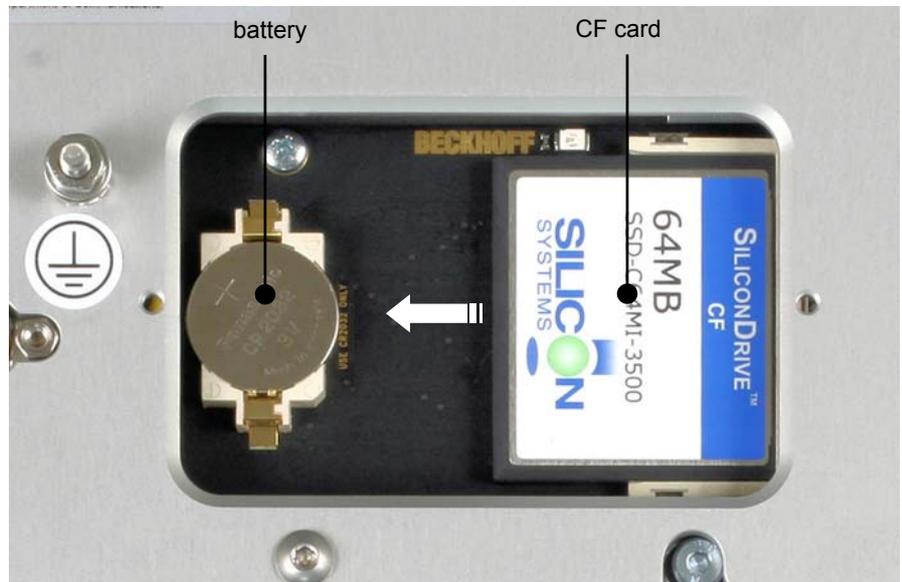
Removing the CF card

The CF card can be removed with due care along the guides.

⚠️ **W*arning***

Avoid any use of force! Otherwise the contact pins may be damaged!

Insertion of CF card

Installation is in reverse of the above order.

Servicing and maintenance

Please also refer to chapter *General Notes*.

Cleaning the Built-in Panel PC

First switch off the Built-in Panel PC

Switch off the Built-in Panel PC and all devices connected to it, so that keys cannot be unintentionally actuated.

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

Servicing

The Built-in Panel PC is maintenance-free.

Replacement of the Battery

i *Note*

A lithium battery is installed in the Panel PC to buffer data. This battery can be replaced and is located beside the CF card (see chapter *Compact Flash memory card*).

Article description: Battery 3V/ 225mAh 2032 coin cell.

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**.
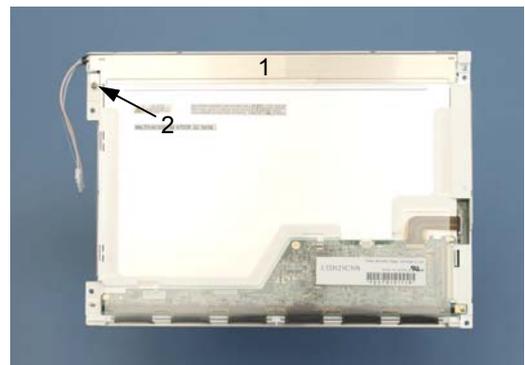
i *Note*

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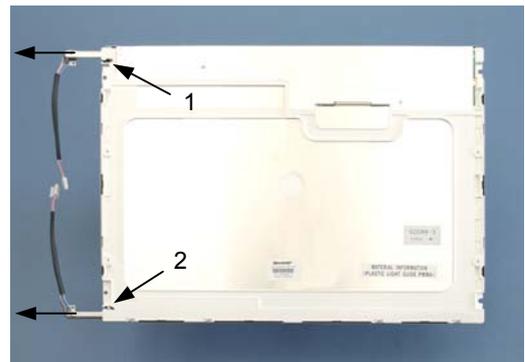
After the exchange of the fluorescent lamps the installation takes place in reverse order.

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 Built-in Panel PC should be extinguished with powder or nitrogen.

Shutting down

Disposal

Dismantle the Built-in Panel 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 lamps and circuit boards must be disposed of in accordance with national electronics scrap regulations.

Troubleshooting

Please also refer to chapter *General Notes*.

i *Note*

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

Fault correction

Fault	Cause	Measures
No Panel PC function	No power supply to Panel PC Cable not connected	Check power supply cable 1. Correctly connect cable 2. Call Beckhoff Service
Panel PC boots, software starts, but control does not operate correctly	The cause of the error is in the software or in parts of the equipment outside the Panel PC	Call the manufacturer of the machine or the software
The Panel PC has only partial function, or only functions some of the time, for instance the picture is dark or absent	Faulty fluorescent bulb in the display Defective components in Panel PC	Replace fluorescent tube in the display in accordance with description Call Beckhoff Service

Beckhoff Support & Service

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

Beckhoff branches and partner companies

Please contact your Beckhoff branch office or partner company for local support and service on Beckhoff products!

The contact addresses for your country can be found in the list of Beckhoff branches and partner companies: www.beckhoff.com

You will also find further documentation for Beckhoff components there.

Beckhoff Headquarters

Beckhoff Automation GmbH
Eiserstraße 5
33415 Verl
Germany

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

Beckhoff Support

Beckhoff offers you comprehensive technical assistance, helping you not only with the application of individual Beckhoff products, but also with wide-ranging services:

- worldwide support
- design, programming and commissioning of complex automation systems
- 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 product.

Appendix

Technical data

Dimensions	**Dimensions (W x H x D):**	see section *Assembly dimensions*

Operation in areas that are subject to explosion hazard

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

Environmental conditions

The following conditions must be observed during operation:
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
58 to 500 Hz: 0.5 G ($\sim$ 5 m/ s^2)

Impact:
(EN 60068-2-27/ 29)   5 G ($\sim$ 50 m/ s²), duration: 30 ms

Protection class

Front side: IP65
Rear side: IP20

Power supply

Supply voltage: 24 V_{DC} (20.4 – 28.8 V_{DC})
Power consumption: approx. 23 W with 6.5" display
approx. 27 W with 12" display
approx. 38 W with 15" display
approx. 45 W with 19" display

EMC compatibility

Resistance to interference: conforms to EN 61000-6-2

Emission of interference: conforms 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. Suitable packaging of the Built-in Panel PC can improve the resistance to impact during transport. The ambient temperature during storage and transport must be between -20°C and +65°C.

$\boxed{\mathbf{i}}$ *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.