Installation- and Operating instructions for

CU8871-0000

CFast card adapter with USB connector

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BECKHOFF

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1 Foreword

1.1 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.

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.

1.1.1 Liability Conditions

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. 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.

All pictures shown in the documentation are exemplary. Illustrated configurations can differ from standard.

1.1.2 Trademarks

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1.1.3 Patent Pending

The EtherCAT Technology is covered, including but not limited to the following patent applications and patents: EP1590927, EP1789857, DE102004044764, DE102007017835 with corresponding applications or registrations in various other countries.
The TwinCAT Technology is covered, including but not limited to the following patent applications and patents: EP0851348, US6167425 with corresponding applications or registrations in various other countries.

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1.1.5 State at Delivery

All the components are supplied in particular hardware and software configurations appropriate for the application. Modifications to hardware or software configurations other than those described in the documentation are not permitted, and nullify the liability of Beckhoff Automation GmbH & Co.KG.

1.1.6 Delivery conditions

In addition, the general delivery conditions of the company Beckhoff Automation GmbH & Co.KG apply.

1.2 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	**Acute risk of injury!** If you **do not** adhere the safety advise adjoining this symbol, there is immediate danger to life and health of individuals!

WARNING	**Risk of injury!** If you **do not** adhere the safety advise adjoining this symbol, there is danger to life and health of individuals!

CAUTION	**Hazard to individuals!** If you **do not** adhere the safety advise adjoining this symbol, there is obvious hazard to individuals!

Attention	**Hazard to devices and environment** If you **do not** adhere the notice adjoining this symbol, there is obvious hazard to materials and environment.

Note	**Note or pointer** This symbol indicates information that contributes to better understanding.

1.3 Operator's obligation to exercise diligence

The operator must ensure that

- the product is only used as intended (see chapter *Product Description*)
- the product is in a sound condition and in working order during operation (see chapter *Maintenance*)
- the product 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
- the operation manual is in good condition and complete, and always available for reference at the location of the product
- none of the safety and warning notes attached to product are removed, and that all notes remain legible.

2 Product Description

2.1 Product Overview

The CU8871-0000 offers a CFast socket with USB connector in a compact housing for DIN rail mounting. CFast Flash cards are used in the industrial environment as data memory for process and control data. The CFast cards are hot-plug capable in the CU8871 and can hence be plugged and unplugged like removable data storage devices for exchanging data with other PCs during operation.

The USB 3.0 connection offers the highest data transfer rate possible with a CFast card, but the CFast card adapter can also be connected to PCs with a USB 2.0 interface. Power is also supplied via USB. Status LEDs indicate whether the CU8871 is connected in addition to indicating data accesses and providing information on the write protection of the inserted CFast card.

Other outstanding features are:

- user-friendly installation via integrated DIN rail adapter

- no power supply needed – the box is supplied by USB (5V DC)

- USB 3.0 input for compatibility to all USB standards

- standard USB cable for data exchange

- compact industrial design.

2.2 Connections

2.2.1 Power Supply

LED (**P10**)

USB (**1**)
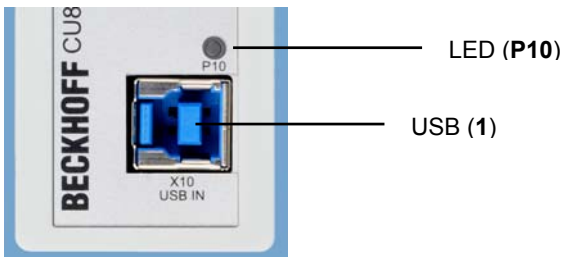
The USB-CFast card adapter does not need any additional power supply. The power supply (5V DC) is realized by the USB connector (**1**). The LED **P10** lights green when power supply is connected.

2.2.1.1 Power consumption

The power consumption of the device depends on the media plugged in the reader. The table shows the values:

Media	State	Current consumption	Power consumption
None	Standby	2mA	10mW
CFast card	Idle	1mA	5mW
CFast card	Access	20mA	100mW

2.2.1.2 UL Requirements

	UL Requirements
⚠ **Attention**	To meet the UL requirements, the device must not be connected to unlimited power sources!

2.2.2 USB 3.0 type B Port (X10) (Standard Cable)
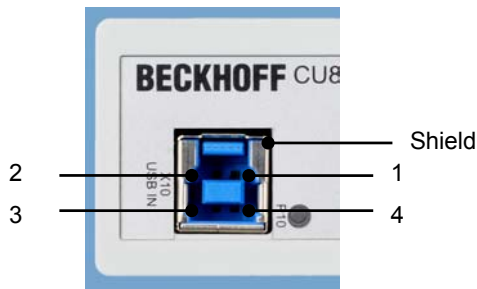
Pin	Assignment
1	VCC
2	Data -
3	Data +
4	GND
Shell	Shield

2.2.3 CFast card slot (X20) (Standard CFast Interface)

CFast Slot (**X20**)

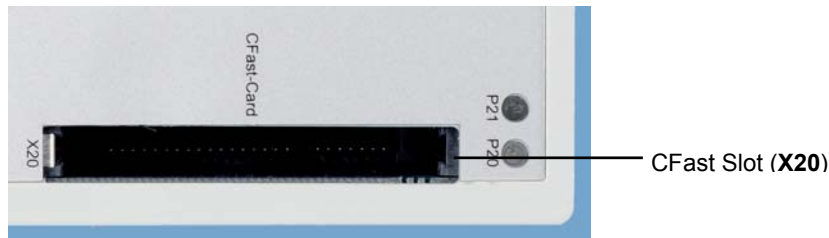| Pin	Signal Function	Pin Type	In, Out Type	Pin	Signal Function	Pin Type	In, Out Type	Pin	Signal Function	Pin Type	In, Out Type
1	GND	-	Ground	18	A02	I	I1Z	35	-IOWR	I	I3U
2	D03	I/O	I1Z,0Z3	19	A01	I	I1Z	36	-WE	I	I3U
3	D04	I/O	I1Z,0Z3	20	A00	I	I1Z	37	Ready	O	OT1
4	D04	I/O	I1Z,0Z3	21	D00	I/O	I1Z,OZ3	38	Vcc	-	Power
5	D06	I/O	I1Z,0Z3	22	D01	I/O	I1Z,OZ3	39	-CSEL	I	I2Z
6	D07	I/O	I1Z,0Z3	23	D02	I/O	I1Z,OZ3	40	-VS2	O	Open
7	-CE1	I	I3U	24	WP	O	OT3	41	RESET	I	I2Z
8	A10	I	I1Z	25	-CD2	O	Ground	42	-WAIT	O	OT1
9	-OE	I	I3U	26	-CD1	O	Ground	43	-INPACK	O	OT1
10	A09	I	I1Z	27	D11	I/O	I1Z,OZ3	44	-REG	I	I3U
11	A08	I	I1Z	28	D12	I/O	I1Z,OZ3	45	BVD2	O	OT1
12	A07	I	I1Z	29	D13	I/O	I1Z,OZ3	46	BVD1	O	OT1
13	Vcc	-	Power	30	D14	I/O	I1Z,OZ3	47	DO8	I/O	I1Z,OZ3
14	A06	I	I1Z	31	D15	I/O	I1Z,OZ3	48	DO9	I/O	I1Z,OZ3
15	A05	I	I1Z	32	-CE2	I	I3U	49	D10	I/O	I1Z,OZ3
16	A04	I	I1Z	33	-VS1	O	Ground	50	GND	-	Ground
17	A03	I	I1Z	34	-IORD	I	I3U				

2.3 Compact-Flash card

The Compact-Flash card (CFast card) is a non-volatile memory media. Data to be retained in the event of a power failure should be saved on the CFast card. The CFast card operates similar to a hard disk.

i **Note**	**Only use CFast cards that are made for industrial use** It is recommended only use CFast cards that are made for industrial use. They possess a higher number of read / write cycles and an enhance temperature range (up to + 85°C). A proper operation of the device can only be guaranteed with the use of CFast cards from Beckhoff Automation GmbH!

2.3.1 Inserting the CFast Card

The CFast card must be inserted carefully upright with the written side to the left in the CFast slot. The slot has a protection to ensure the right inserting direction. The card can only be inserted wrong direction with violence.
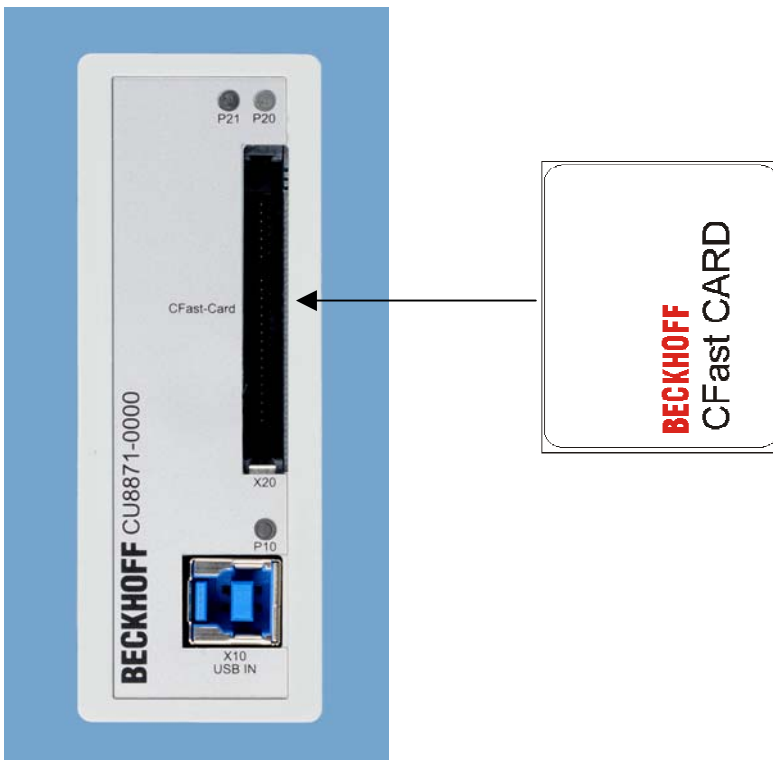
As soon as the card is inserted, the LED (**P20**) lights up green. The red LED (**P21**) flashes up shortly, too.

2.3.2 Ejecting the CFast Card

For ejecting press on the CFast card.The card now can be removed from the slot. The green LED (**P20**) goes off when the card is removed.

3 Installation

3.1 Transport and Unpacking

The specified storage conditions must be observed (see chapter *Technical Data*).

3.1.1 Transport

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

! **Attention**	**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.

3.1.2 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.

If you notice any shipping damage or inconsistencies between the contents and your order, you should notify Beckhoff Service.
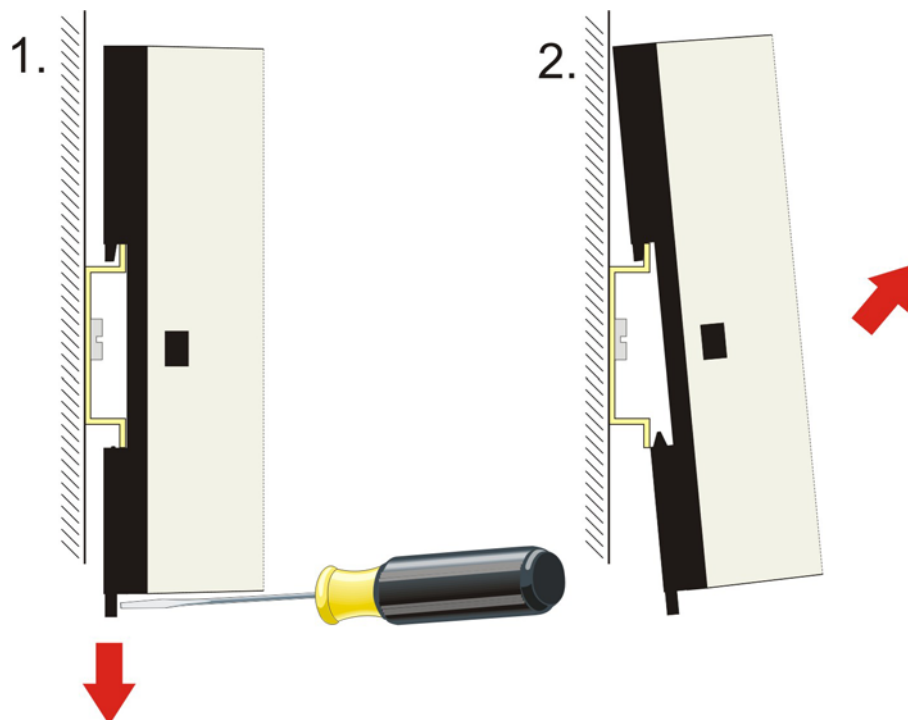
3.2 Mounting/ Demounting

The USB-CFast adapter CU8871-0000 can be snapped onto a 35 mm mounting rail conforms to EN 50022:
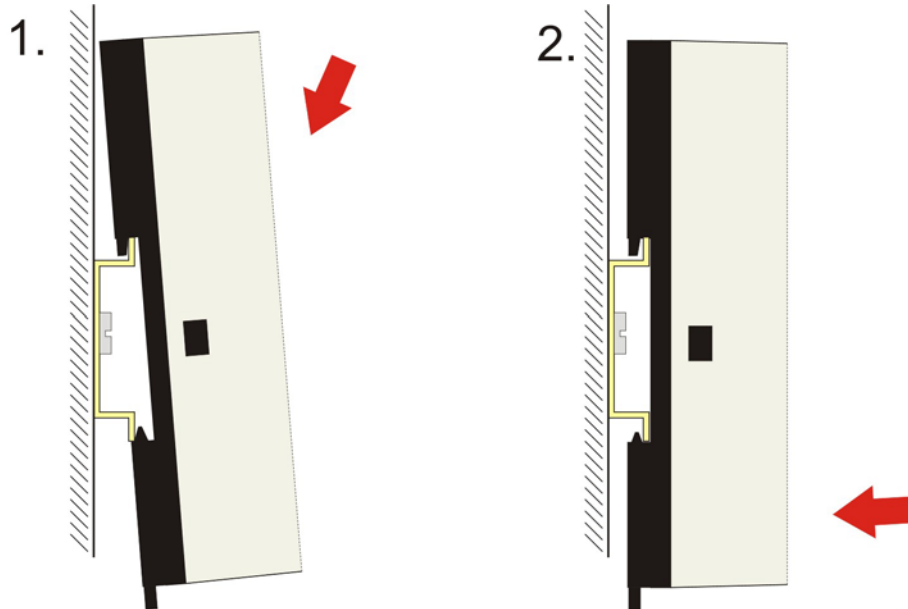
To release the CU8871-0000 from the mounting rail:

1. first pull the lug at the bottom of the hub downwards by using a screw driver (**1**)

2. then pull the hub from the mounting rail (**2**).

3.3 Connecting devices

	The power supply plug must be withdrawn
! **Attention**	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!

3.3.1 Connecting cables

The connections are documented in the section *Product Description*.

When connecting the cables to the CU8871-0000, 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 CU8871-0000 and the devices that are to be connected

- Reconnect all devices to the power supply.

3.3.2 Connecting Power Supply

The power supply is realized by the USB connector.

	First establish USB connection
i **Note**	The USB connection between the Industrial PC and the CU8871-0000 should be established before switching the PC on, otherwise over-current messages can be displayed.

4 Operation

4.1 Connection to Host

USB Host   CU8871-Box
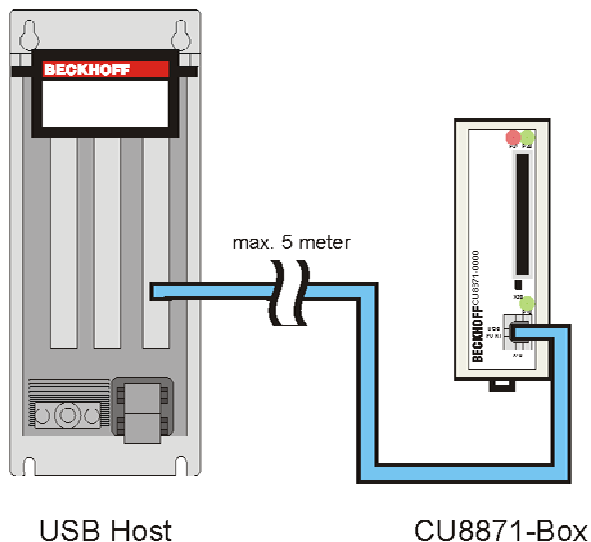
The CFast card adapter is connected to a USB host via a standard USB cable. The maximum length for the wire is 3 meters. For correct operation, use USB 3.0 suitable wire.

4.2 LED Diagnosis

LED	Mapping	Status	Meaning
P10	Power supply	off	no power supply connected (see chapter *Power Supply* for details)
		lights green	device is operational
P20	CF LOCK	off	no CFast card inserted
		lights green	CFast card is inserted and electrical connected
P21	ACCESS	off	no access on the CFast card
		flashes red	read / write access on the CFast card

4.3 Maintenance

4.3.1 Cleaning

	Disconnect power supply
⚠️ **DANGER**	Switch off the device and all connected devices, and disconnect the device from the power supply.

The device 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.

4.3.2 Maintenance

The CU8871-0000 USB-CFast adapter is maintenance-free.

4.4 Shutting down

4.4.1 Disposal

	Observe national electronics scrap regulations
i **Note**	Observe the national electronics scrap regulations when disposing of the device.

In order to dispose of the device, it must be removed and fully dismantled:
- Housing components (polycarbonate, polyamide (PA6.6)) are suitable for plastic recycling
- Metal parts 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.

5 Dimensions

The product is characterized by small overall installed size. With a height of 100 mm, the module dimensions exactly match those of the Beckhoff Bus Terminals. Together with the lowered connector surfaces, this means that it can be used in a standard terminal box with a height of 120 mm.
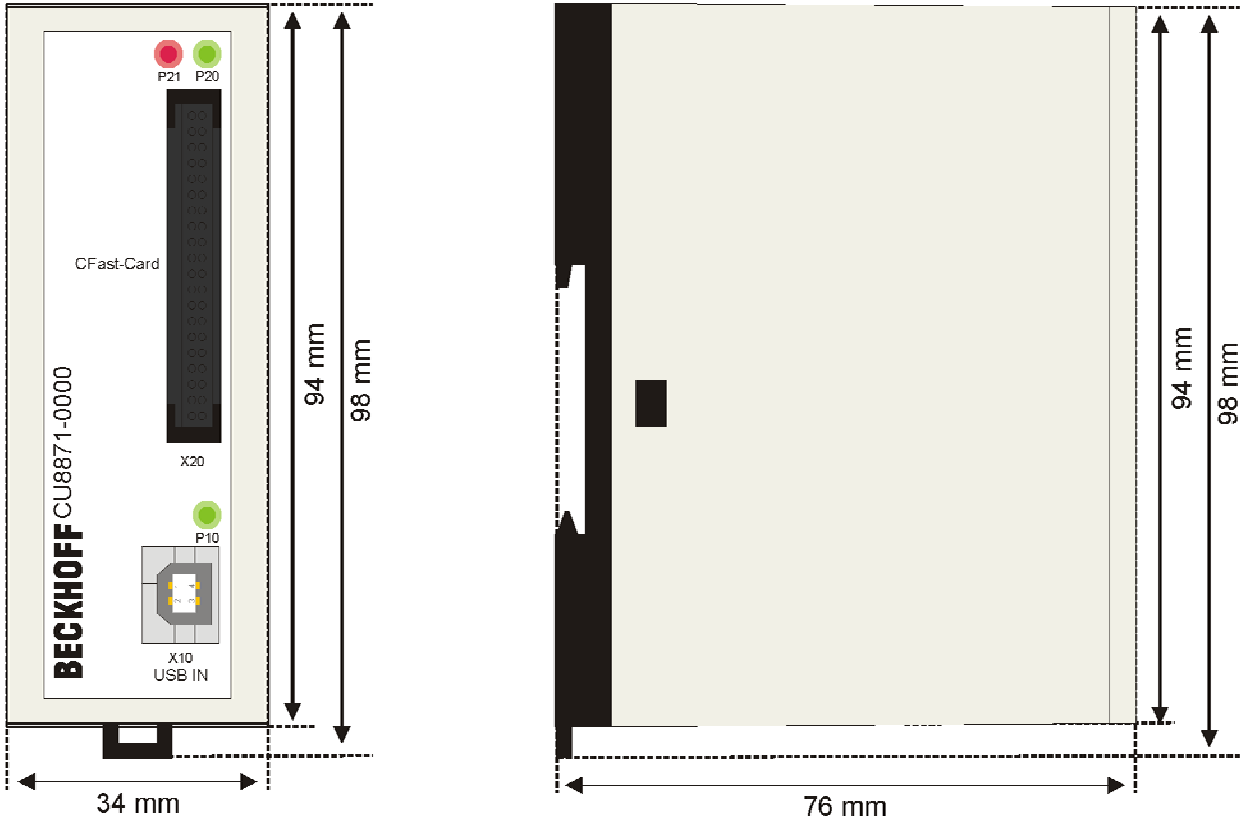
6 Technical Data

Product name	CU8871-0000
Number of USB type B ports	1
Number of CFast-card slots	1
Supported standards	USB1.1, USB2.0, USB3.0
Supported baud rates USB	12 Mbit/s, 480 Mbit/s, 5 Gbit/s
Status display	3 LEDs
Cable length USB	maximum 3 meters
Power supply	by USB (5 V DC)
Max. current input from 5V USB	maximum 500mA @ 5V DC (for details see chapter *Power Supply*)
Dimensions (W x H x D)	app. 34 mm x 100 mm x 76 mm (with lug for mounting rail release)
Weight	app. 95 g
Permissible ambient temperature	0°C to +55°C (operation) -25°C to +70°C (transport/ storage)
Permissible relative humidity	5% to 95%, no condensation
EMC resistance burst / ESD	EN 60000-6-2 / EN 60000-6-4
Vibration / Shock resistance	EN 60068-2-6 / EN 60068-2-27
Assembly	on 35 mm mounting rail conforms to EN 50022
Installation position	any
Protection class	IP20
Approvals	CE, UL (for details see chapter *UL Requirements*)

7 Appendix

7.1 Beckhoff Support and Service

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

7.1.1 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.

7.1.2 Beckhoff company headquarters

Beckhoff Automation GmbH & Co. KG
Huelshorstweg 20
33415 Verl
Germany

Phone: + 49 (0) 5246/963-0
Fax: + 49 (0) 5246/963-198
E-mail: info@beckhoff.de
Web: http://www.beckhoff.de/

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

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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

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

7.2 Approvals for USA and Canada

7.3 FCC Approval for USA

FCC: Federal Communications Commission Radio Frequency Interference Statement
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.

	Technical modifications
i **Note**	Technical modifications to the device may cause the loss of the FCC approval.

7.4 FCC Approval for Canada

FCC: Canadian Notice
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.