

TWINCAT[®]

BECKHOFF



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The Windows Control and Automation Technology

Version: 1.2

Date: 20.03.2009

BECKHOFF

TwinCAT Quick Start

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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.

1.1.1 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.

1.1.2 Copyright

© This documentation is copyrighted. Any reproduction or third party use of this publication, whether in whole or in part, without the written permission of Beckhoff Automation GmbH, is forbidden.

1.2 Safety Instructions

Consider the following safety instructions and descriptions!





Product specific safety instructions are to be found on the following pages or in the areas mounting, wiring, commissioning etc.

1.2.1 Disclaimer

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. Product specific safety instructions are to be found on the following pages or in the areas mounting, wiring, commissioning etc.

1.2.2 Description of safety symbols

The following safety symbols are used in this documentation. They are intended to alert the reader to the associated safety instructions.

 DANGER	<p>Acute risk of injury!</p> <p>If you do not adhere the safety advise adjoining this symbol, there is immediate danger to life and health of individuals!</p>
 WARNING	<p>Risk of injury!</p> <p>If you do not adhere the safety advise adjoining this symbol, there is danger to life and health of individuals!</p>
 CAUTION	<p>Hazard to individuals, environment and devices!</p> <p>If you do not adhere the safety advise adjoining this symbol, there is obvious hazard to individuals, environment and materials!</p>
 Note	<p>Note or pointer</p> <p>This symbol indicates information that contributes to better understanding.</p>

1.3 Documentation issue status

Version	Comment
1.2	Demokits updated
1.1	Safety instructions and Embedded PC updated
1.0	First public release
0.1	First version

2 Notes regarding the Demokits

The Beckhoff Demokits offer a convenient and fast introduction to fieldbus communication with Beckhoff TwinCAT based on a PC with Microsoft Windows operating system.

Currently more than 10 fieldbusses are covered, including Lightbus, RS232, Profibus, Ethernet, and EtherCAT. The aim of the Demokits is to familiarise the user with the basic Beckhoff TwinCAT automation procedures. Program creation and interfacing of the program with the hardware is explained in detail, based on examples.

For many fieldbusses the demonstration kits are available both with Bus Couplers (BKxxxx) and Bus Controllers (BCxxxx) and embedded PCs (CXxxxx). A Bus Coupler serves as a physical interface between the selected fieldbus and the I/O terminals. A Bus Coupler is therefore not programmable. In these demonstration kits the connected terminals receive their data from a higher-level PC. In contrast, the Bus Controllers are programmed from a PC via the selected fieldbus or a programming cable based on IEC61131. After programming the Bus Controllers autonomously manage the connected I/O terminals without involvement from the PC. An embedded PC has a Windows (CE or XPembedded) operating system and a corresponding TwinCAT Runtime (PLC/NC). The embedded PC will be programmed from a higher-level PC and runs autonomously like a Buscontroller. Unlike a Buscontroller, an embedded PC has mainly higher performance, more system interfaces and more programm memory.

Each Demokit consists of:

-A Bus Coupler BK(EK)xxxx/Bus Controller BCxxxx/embedded PC (CXxxxx)

- Two 24 V input terminals
- Two 24 V output terminals (embedded PC only one 4-channel output terminal)
- A Beckhoff product folder
- A Beckhoff TwinCAT CD
- This "TwinCAT QuickStart" documentation
- Documentation relating to the respective Bus Coupler/Bus Controller
- A 25 cm section of 35 mm mounting rail for fitting the terminals

If required for the respective Demokit, the following additional components are included:

- 1 programming cable (if a BCxxxx Bus Controller is used)
- 1 Power supply CX1100-00x4
- 1 TwinCAT PLC licence
- 1 end terminal
- 1 fieldbus cable (e.g. Profibus or SERCOS cable)
- 1 fieldbus interface card for the PC
(e.g. Profibus PCI master card or SERCOS PCI master card)

The following Demokits with Bus Couplers and PLC licence are currently available:

TC9910-B200	Lightbus	BK2020
TC9910-B310	Profibus	BK3150
TC9910-B400	Interbus	BK4020
TC9910-B510	CANopen	BK5150
TC9910-B520	DeviceNet	BK5520
TC9910-B750	SERCOS	BK7520
TC9910-B800	RS485	BK8000
TC9910-B810	RS232	BK8100
TC9910-B900	Ethernet	BK9100
TC9910-B903	Profinet	BK9103
TC9910-B905	Ethernet/IP	BK9105
TC9910-B110	EtherCAT	EK1100, EtherCAT Terminals

The EtherCAT Demokit is also available without PLC licence (without a PLC licence TwinCAT can be used for 30 days without restrictions).

TC9910-B111	EtherCAT	EK1100, EtherCAT Terminals
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The following Demokits with Bus Controllers and PLC licence are available:


TC9910-C200	Lightbus	BC2000
TC9910-C310	Profibus	BC3150
TC9910-C400	Interbus	BC4000
TC9910-C730	Modbus	BC7300
TC9910-C800	RS485	BC8000
TC9910-C810	RS232	BC8100
TC9910-C815	RS232	BC8150
TC9910-C900	Ethernet	BC9100

The following Demokits with embedded PCs and PLC licence are available:

TC9910-X001	CX9000	E-Bus
TC9910-X101	CX9000	K-Bus
TC9910-X002	CX9010	E-Bus
TC9910-X102	CX9010	K-Bus
TC9910-X0x3	CX1010	E-Bus
TC9910-X1x3	CX1010	K-Bus
TC9910-X0x4	CX1020	E-Bus
TC9910-X1x4	CX1020	K-Bus
TC9910-X0x5	CX1030	E-Bus
TC9910-X1x5	CX1030	K-Bus

3 Getting started with the Demokits

The manual for the Demokits is continuously updated. The detailed introduction, including the description of the TwinCAT software, is therefore only available in electronic form.

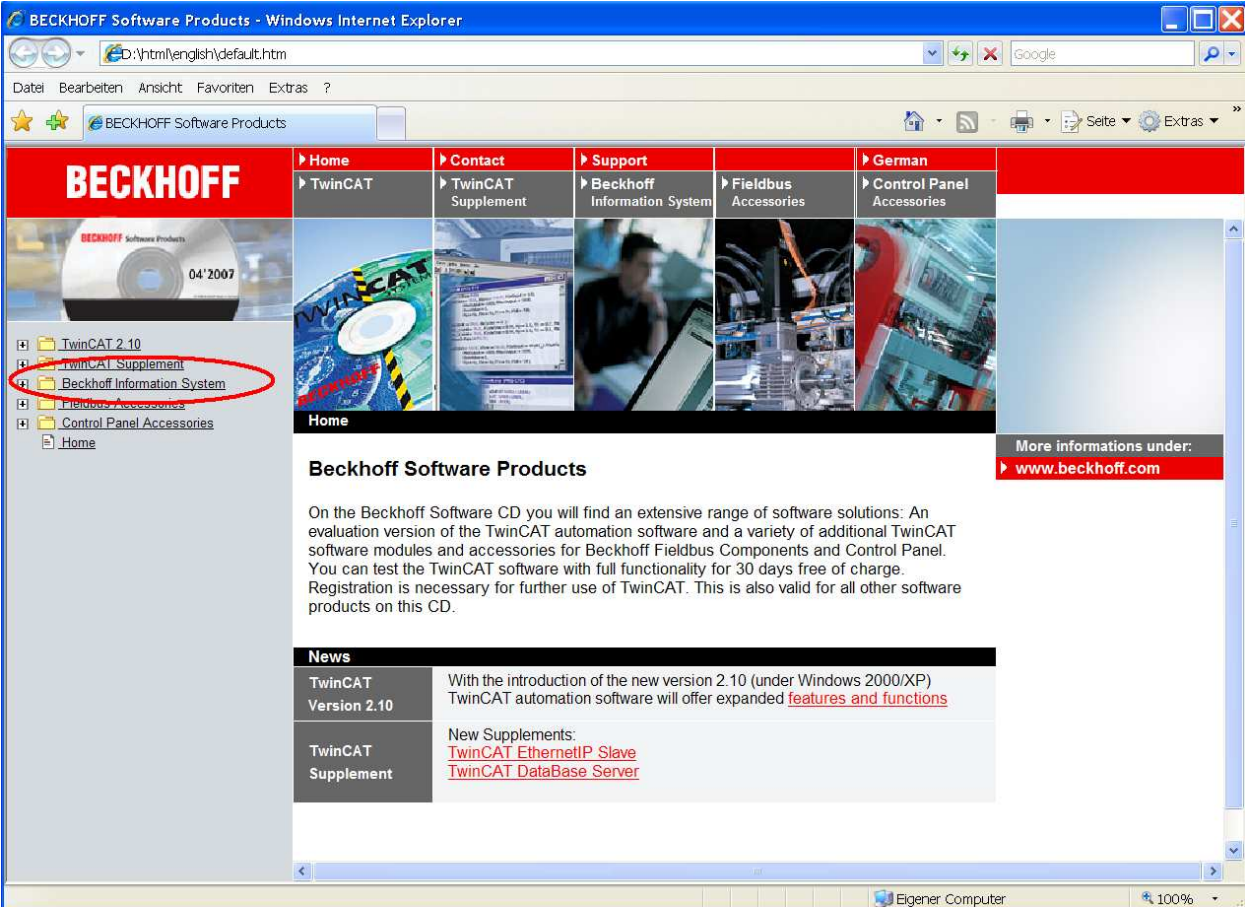
 Note	<p>Operating System</p> <p>The Beckhoff TwinCAT software and the Beckhoff Information System require a PC with Microsoft Windows operating system (2000, XP, Vista).</p>
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Please install the **Beckhoff Information System** from the enclosed "Beckhoff Software Products" CD. In this offline edition of the comprehensive information set for all Beckhoff products you will find all further documentation required for this Demokit.

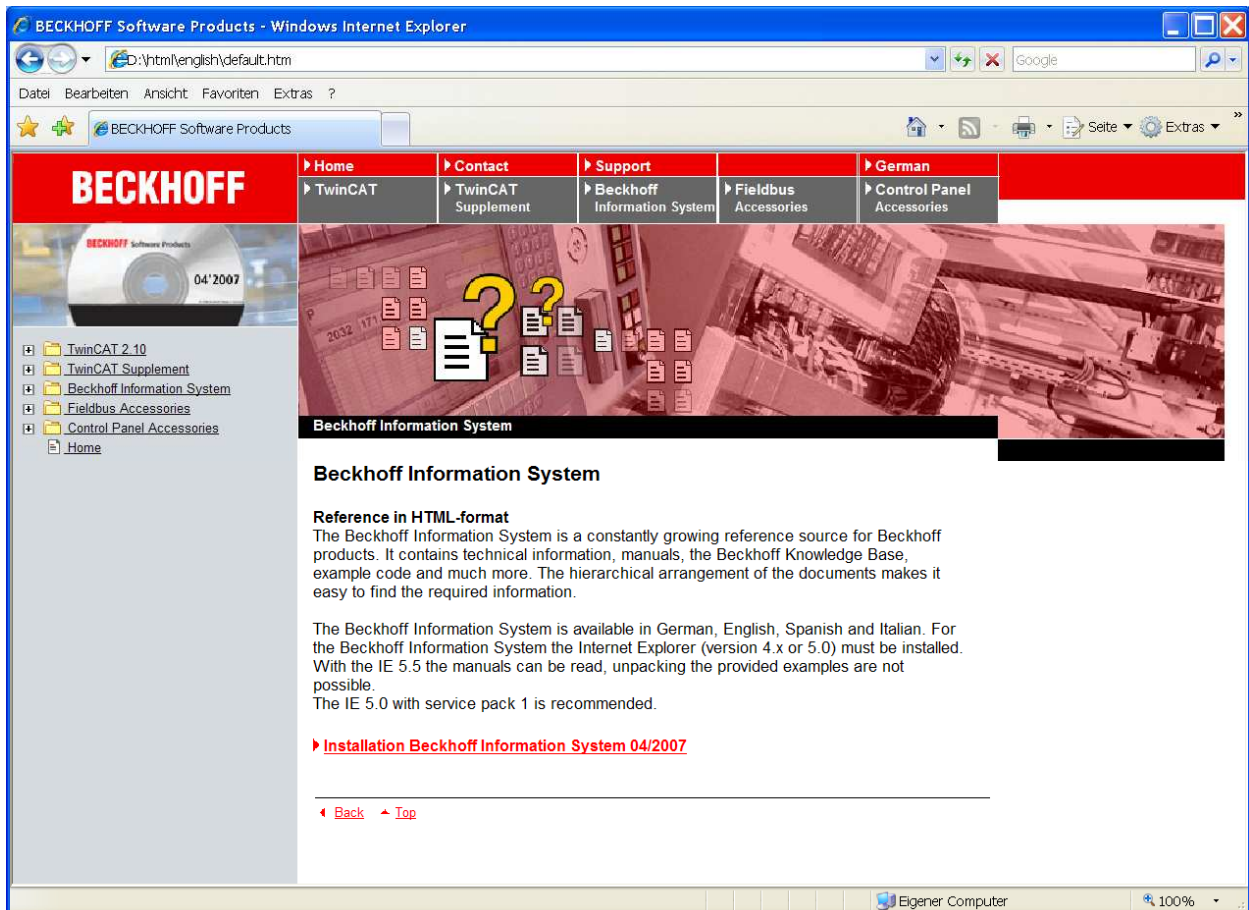
Alternatively you can use the online version (<http://infosys.beckhoff.com/>) or download the current version of the Information System from www.beckhoff.com.

The Beckhoff Information System is available in German, English, Spanish and Italian.

To install the system from the CD, insert the "Beckhoff Software Products" CD. If your browser does not automatically open with the start page of the CD, double-click on the CD drive icon on your workstation.



Click the marked Beckhoff Information System tab to install the Information System on your PC.



Follow the instructions in the installation dialog.

After the installation you will find the QuickStart section in the Beckhoff Information System.

Beckhoff Information System

Welcome to the Beckhoff Information System

The Beckhoff Information System is a constantly growing reference source for Beckhoff products. It contains technical information, manuals, example code, the Beckhoff Knowledge Base and much more. The hierarchical arrangement of the documents makes it easy to find the required information.

- The Beckhoff Information System is available in German, English, Spanish and Italian.
- Some Beckhoff documentation will also continue to be provided as a

Follow the instructions on the QuickStart section for the next steps:

- Install the Beckhoff TwinCAT software on your host computer
- If your Demokit includes a fieldbus interface card for PCI or ISA bus: If necessary, install the fieldbus interface card on the motherboard of your host computer.
- Program the Maschine.pro example program via the TwinCAT PLC interface
- Link the program with the hardware included with this Demokit (controller/coupler, terminals) via the TwinCAT System Manager.
- Create a visualisation



Note

Nomenclature of settings and devices

The QuickStart instructions have to cover different Demokits with different bus systems. The terms for settings or devices may differ from those used in the QuickStart instructions, particularly during the linking stage of your example program with the hardware included in your Demokit. However, the situation should be clear from the context. Please refer to the respective hardware sections in the Information System, if necessary.



Note

Demonstration kits with Bus Controllers BCxxxx

The Maschine.pro example program is programmed as described in the QuickStart instructions. To load the program into the BCxxxx, follow the description in the relevant sections of the Information System.

4 Appendix

4.1 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.

4.1.1 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.

4.2 Beckhoff Headquarters

Beckhoff Automation GmbH

Eiserstr. 5
33415 Verl
Germany

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fax: + 49 (0) 5246/963-198
e-mail: info@beckhoff.com
web: <http://www.beckhoff.com>

Beckhoff Support

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

- 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

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