# Table of contents

1 Foreword .................................................................................................................................................. 5  
   1.1 Notes on the documentation............................................................................................................. 5  
   1.2 Safety instructions ............................................................................................................................ 6  
2 Installation options ................................................................................................................................ 7  
3 Integration in Visual Studio .................................................................................................................. 9  
4 Installation of TwinCAT 3 Engineering and Runtime ........................................................................... 11  
   4.1 Installing TwinCAT 3 Engineering and Runtime ............................................................................. 11  
   4.2 Installing TwinCAT 3 Engineering ................................................................................................... 16  
   4.3 Installing the TwinCAT 3 Runtime ................................................................................................. 22  
5 Command line-based installation ............................................................................................................ 28  
6 Installation: TwinCAT runtime (XAR) .................................................................................................... 29  
7 Parallel installation of TwinCAT 2 and TwinCAT 3 ............................................................................... 34  
8 Uninstalling TwinCAT 3 .......................................................................................................................... 35  
9 Installation of the TwinCAT 3 documentation ..................................................................................... 36  
10 Installation of the Visual Studio help system ....................................................................................... 41  
11 Calling the TwinCAT 3 documentations ............................................................................................... 43  
12 Updating the TwinCAT 3 documentation ............................................................................................. 48  
   12.1 Update in Visual Studio ................................................................................................................... 48  
   12.2 Update in Visual Studio 2010 ........................................................................................................ 50  
13 Changing the language of the TwinCAT development environment .................................................. 54
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 applicable national standards.

It is essential that the documentation and the following notes and explanations are followed when installing and commissioning the components.

It is the duty of the technical personnel to use the documentation published at the respective time of each installation and commissioning.

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.

Disclaimer

The documentation has been prepared with care. The products described are, however, constantly under development.

We reserve the right to revise and change the documentation at any time and without prior announcement.

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.

Trademarks

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1.2 Safety instructions

Safety regulations
Please note the following safety instructions and explanations!
Product-specific safety instructions can be found on following pages or in the areas mounting, wiring, commissioning etc.

Exclusion of liability
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.

Personnel qualification
This description is only intended for trained specialists in control, automation and drive engineering who are familiar with the applicable national standards.

Description of symbols
In this documentation the following symbols are used with an accompanying safety instruction or note. The safety instructions must be read carefully and followed without fail!

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>🚨 DANGER 🚨</td>
<td>Serious risk of injury! Failure to follow the safety instructions associated with this symbol directly endangers the life and health of persons.</td>
</tr>
<tr>
<td>⚠️ WARNING ⚠️</td>
<td>Risk of injury! Failure to follow the safety instructions associated with this symbol endangers the life and health of persons.</td>
</tr>
<tr>
<td>💩 CAUTION 😢</td>
<td>Personal injuries! Failure to follow the safety instructions associated with this symbol can lead to injuries to persons.</td>
</tr>
<tr>
<td>📑 NOTE 📑</td>
<td>Damage to the environment or devices Failure to follow the instructions associated with this symbol can lead to damage to the environment or equipment.</td>
</tr>
</tbody>
</table>

Tip or pointer
This symbol indicates information that contributes to better understanding.
2 Installation options

TwinCAT 3 is delivered with a component-based setup that you can download from the Download section on the Beckhoff homepage.

TwinCAT 3 is installed by default in the directory C:\TwinCAT\3.x (x = TwinCAT-version number). Changing the installation path is not recommended.

The following setups are available for each new version of TwinCAT 3.1:

- TwinCAT 3.1 eXtended Automation Engineering (XAE) (full installation)
- TwinCAT 3.1 eXtended Automation Runtime (XAR)
- TwinCAT 3.1 Engineering Remote Manager
- TwinCAT 3.1 ADS

Full installation - TwinCAT 3.1 eXtended Automation Engineering (XAE)

The full installation of TwinCAT 3.1 contains various installation options that you can select during the installation:

- Full installation - TwinCAT 3.1 Engineering and Runtime (Complete option)
- Full installation - TwinCAT 3.1 Engineering (Custom option)
- Full installation - TwinCAT 3.1 Runtime (Custom option)

<table>
<thead>
<tr>
<th>Installation option</th>
<th>Scope</th>
<th>Use</th>
</tr>
</thead>
</table>
| Full installation - TwinCAT 3 Engineering and Runtime (Standard installation) | Installs the complete TwinCAT system on a single PC:  
  - TwinCAT 3 Engineering (XAR, development system/environment)  
  - local TwinCAT 3 Runtime (real-time runtime system/environment, XAR) | • First installation  
  • On development workstations that use the PC at the same time as a control computer.  
  • No external test system required: you can also use the development system as a test system. Additional control hardware for tests is not absolutely necessary. |
| TwinCAT 3 Engineering full installation | Installs the TwinCAT 3 Engineering for the development computer | • If the control computer is always strictly separated from the development system.  
  • External test system required: you CANNOT use the development computer as a test system for the control program. |
| Full installation - TwinCAT 3 Runtime | Installs the TwinCAT 3 Runtime for the control computer  
  The TwinCAT 3 Runtime (XAR) is already pre-installed on many Beckhoff IPCs or can be ordered as an option. | • For pure control computers without a development system |

See also:

- Integration in Visual Studio | 9 |
- Installation of TwinCAT 3 Engineering and Runtime | 11 |

Installation of the TwinCAT 3 eXtended Automation Runtime (XAR)

This installation contains only the components that are needed for the TwinCAT 3 Runtime. The setup is thus much smaller than that for the full installation of TwinCAT 3.

Typical application for the setup:

- New installation or update of the TwinCAT 3 Runtime system on a target system.
Installation options

Installation of the TwinCAT 3 Engineering Remote Manager

This installation contains only the engineering components of a TwinCAT 3 version and cannot be installed stand-alone. It always requires a newer full version of TwinCAT 3.1.

Typical application for the setup:

- Use of older TwinCAT 3 Engineering versions without several TwinCAT 3 versions being completely installed alongside one another. Following the installation, a TwinCAT 3 Engineering version is then available in the Remote Manager and can be selected before loading a project. This installer is thus always only provided for downloading with the subsequent TwinCAT version.

Installation of TwinCAT 3 ADS

This installation contains only the components necessary for the use of ADS. ADS (TwinCAT Automation Device Specification) is a medium-independent protocol for communication with/between TwinCAT components. ADS is normally installed automatically together with TwinCAT 3 XAE or TwinCAT 3 XAR.

Typical application for the setup:

- A separate HMI system (with no control function of its own) that exchanges its process data with a TwinCAT-based control computer via ADS.

See also:

- Command line-based installation [28]
- Parallel installation of TwinCAT 2 and TwinCAT 3 [34]
3 Integration in Visual Studio

TwinCAT 3.1 is integrated into Visual Studio during the installation.

Requirements for the integration into Visual Studio

- Full version of Visual Studio 2013-2019

or

- Visual Studio Shell 2013-2019

but

- not Visual Studio Express

Installation sequence

In order to integrate TwinCAT 3 into Visual Studio you must install Visual Studio first. Only then can you install TwinCAT 3 and integrate it into Visual Studio.

You cannot integrate TwinCAT 3 into Visual Studio if Visual Studio was installed after TwinCAT 3. In this case you must first uninstall TwinCAT 3, then install Visual Studio and then reinstall TwinCAT 3.

Sample: Following the installation of TwinCAT 3 you decide that you also wish to program in C++ and want to subsequently install a full version of Visual Studio in order to be able to do so.

Standard installation cases

Case 1: You have not installed a full version of Visual Studio on the development computer.

In this case a Visual Studio 2017 Shell delivered with TwinCAT 3 will be installed as the default development environment for TwinCAT.

Case 2: One or more full versions of Visual Studio 2013-2019 are installed on the development computer.

The TwinCAT 3 setup offers you the option of selecting which already installed full version of Visual Studio TwinCAT 3 is to be integrated in (multiple selection is possible).


The TwinCAT 3 setup offers you the option of integrating TwinCAT 3 in the already installed Visual Studio Shell (instead of installing the standard Visual Studio 2019 Shell)

See also: Installation of TwinCAT 3 Engineering and Runtime [11]

Download and installation of Visual Studio Shell versions

With the exception of the Visual Studio Shell 2019 contained in the installer, Beckhoff does not deliver any other Visual Studio Shell versions together with TwinCAT 3. However, you can download them free of charge from the Microsoft website and install them. Visual Studio Shells are free of charge, but do not enable high-level language programming such as C++ or C#.

Installation requirements: Windows 7, Windows 8 or Windows 10

Call http://www.microsoft.com/download in your browser.

- Search for "Visual Studio 201x Shell (Isolated) Redistributable Package," download it and install it.
- Search for "Visual Studio 201x Shell (Integrated) Redistributable Package," download it and install it.

Visual Studio 201x Shell (Integrated) Redistributable Package is an attachment to Visual Studio 201x Shell (Isolated) Redistributable Package, therefore the "isolated" version must be installed first. Details for this can be found on the Microsoft website.
Use of TwinCAT C++

If you wish to use TwinCAT C++ it is essential to install the option "Microsoft Foundation Classes for C++" during the full installation of Visual Studio. Otherwise the SDK will be missing and TwinCAT C++ will not be available even with a full Visual Studio.

Language settings

The language used in TwinCAT depends on the language of the preinstalled Visual Studio. If TwinCAT 3 is to be displayed in German, then Visual Studio (Shell) also has to be installed in German and selected.

You can install the Visual Studio language packs after the installation of TwinCAT 3. You can then change the language in the Visual Studio settings.
4 Installation of TwinCAT 3 Engineering and Runtime

The following sections describe how to install all TwinCAT 3 components on a system (full installation). During the installation you can choose whether to install the complete TwinCAT 3 system (Engineering and Runtime), only the TwinCAT 3 Engineering or only the TwinCAT 3 Runtime. TwinCAT is integrated into Visual Studio during the installation.

See also:

- Integration in Visual Studio [9]
- FAQ

4.1 Installing TwinCAT 3 Engineering and Runtime

✓ You have read the section Integration in Visual Studio [9].
✓ You have downloaded the current installation program TC31-Full-Setup 3.1 from the Beckhoff homepage.

1. Run the program to start the installation. If you use Windows 7 or Windows 8, run the program as an administrator. To do this, right-click on the file and select the corresponding option in the context menu.
   - The TwinCAT 3.1 - Install Shield Wizard will open, which guides you through the installation and in which you make all further installation settings (licence agreement, customer information, setup type).
2. Click on **Next** to proceed with the installation.

3. Accept the license agreement and click on **Next**.
4. Enter your **User Name** and **Organization**. Click on **Next**.

5. Activate the **Complete** option to install the complete TwinCAT system. Click on **Next**.

6. If you have already installed Visual Studio 2010/2012/2013/2015/2017 (or a Visual Studio Shell 2010-2017), activate the *Integrate TwinCAT* selection boxes for the versions in which you wish to install TwinCAT 3.
   If you also want to (re-)activate the TwinCAT XAE settings, activate the associated *Activate TC Settings* selection boxes.
If you have not yet installed any Visual Studio version, activate the **Install Microsoft Visual Studio XY Shell** selection box in order to install the Visual Studio Shell as the environment. Click on **Next**.

7. Click on **Install** to start the installation. TwinCAT 3 will be installed in the specified directory `C:\TwinCAT\3.1`.
8. Activate the **Always trust software from Beckhoff Automation GmbH** selection box and click on **Install** to install all drivers (alternatively you will be requested several times to confirm).

![Image of Windows Security window]

9. Click on **Finish**.

![Image of TwinCAT 3 - Version 3.1.4022.28 - Setup]

10. To complete the installation, you have to restart the system. If you wish to automatically restart the system immediately, click on **Yes** in the following dialog.

![Image of Beckhoff TwinCAT 3.1 (Build 4022) Installer Information]

You must restart your system for the configuration changes made to Beckhoff TwinCAT 3.1 (Build 4022) to take effect. Click Yes to restart now or No if you plan to restart later.

Yes  No
Following the restart TwinCAT is ready for use. The status of the runtime system (XAR) is indicated by a blue (configuration mode) or green (run mode) symbol in the Windows menu bar.

4.2 Installing TwinCAT 3 Engineering

✓ You have read the section Integration in Visual Studio.
✓ You have downloaded the current installation program TC31-Full-Setup 3.1 from the Beckhoff homepage.

1. Run the program to start the installation. If you use Windows 7 or Windows 8, run the program as an administrator. To do this, right-click on the file and select the corresponding option in the context menu.

   ✔ The TwinCAT 3.1 - Install Shield Wizard will open, which guides you through the installation and in which you make all further installation settings (licence agreement, customer information, setup type).
2. Click on **Next** to proceed with the installation.

3. Accept the license agreement and click on **Next**.
4. Enter your **User Name** and **Organization**. Click on **Next**.

![Installation Screen 1](image1)

5. Activate the **Custom** option to install just the TwinCAT 3 Engineering. Click on **Next**.

![Installation Screen 2](image2)
6. Deselect **TwinCAT XAR** and the subordinate features by clicking on the symbol in front of the respective entry and selecting **This feature will not be available** in the opening context menu. Click on **Next**.

7. If you have already installed Visual Studio 2010/2012/2013/2015/2017 (or a Visual Studio Shell 2010-2017), activate the **Integrate TwinCAT** selection boxes for the versions in which you wish to install TwinCAT 3.
If you also want to (re-)activate the TwinCAT XAE settings, activate the associated **Activate TC Settings** selection boxes.
If you have not yet installed any Visual Studio version, activate the **Install Microsoft Visual Studio XY Shell** selection box in order to install the Visual Studio Shell as the environment. Click on **Next**.

8. Click on **Install** to start the installation. TwinCAT 3 will be installed in the specified directory \TwinCAT\3.1\.
9. Activate the **Always trust software from Beckhoff Automation GmbH** selection box and click on **Install** to install all drivers (alternatively you will be requested several times to confirm).

10. Click on **Finish**.

11. To complete the installation, you have to restart the system. If you wish to automatically restart the system immediately, click on **Yes** in the following dialog.
Following the restart TwinCAT is ready for use. The status of the runtime system (XAR) is indicated by a blue (configuration mode) or green (run mode) symbol in the Windows menu bar.

4.3 Installing the TwinCAT 3 Runtime

✓ You have read the section Integration in Visual Studio [9].
✓ You have downloaded the current installation program TC31-Full-Setup 3.1 from the Beckhoff homepage.

1. Run the program to start the installation. If you use Windows 7 or Windows 8, run the program as an administrator. To do this, right-click on the file and select the corresponding option in the context menu.
   - The TwinCAT 3.1 - Install Shield Wizard will open, which guides you through the installation and in which you make all further installation settings (licence agreement, customer information, setup type).
2. Click on **Next** to proceed with the installation.

3. Accept the license agreement and click on **Next**.
4. Enter your **User Name** and **Organization**. Click on **Next**.

5. Activate the **Custom** option to install just the TwinCAT 3 Runtime. Click on **Next**.

6. Deselect **TwinCAT XAE** and the subordinate features by clicking on the symbol in front of the respective entry and selection **This feature will not be available** in the opening context menu. You can choose which of the runtime environments you wish to install: TwinCAT 3 PLC, TwinCAT 3 C++ or TwinCAT 3 MC. If you deselect a runtime environment you cannot operate the corresponding module on the
computer. Click on **Next**.
7. Click on **Install** to start the installation. TwinCAT 3 will be installed in the specified directory `C:\TwinCAT\3.1`.

8. Activate the **Always trust software from Beckhoff Automation GmbH** selection box and click on **Install** to install all drivers (alternatively you will be requested several times to confirm).
9. Click on **Finish**.

10. To complete the installation, you have to restart the system. If you wish to automatically restart the system immediately, click on **Yes** in the following dialog.

Following the restart TwinCAT is ready for use. The status of the runtime system (XAR) is indicated by a blue (configuration mode) or green (run mode) symbol in the Windows menu bar.
5 Command line-based installation

In general, TwinCAT 3.1 can only be installed "unattended", but not "silently". This means that you can install TwinCAT by script or command line command, but windows will be opened and closed automatically despite that. The installation therefore doesn't proceed "silently".

Command line command for the installation

The complete command line command to install TwinCAT 3.1 is:

```
TC31-Full-Setup.exe /s /v"/qr ALLUSERS=1"
```

Activation of the TwinCAT XAE settings

Depending on which Visual Studio version is installed, you can activate the TwinCAT settings for a corresponding Visual Studio version with the following additions (corresponds to an activated check box in TwinCAT 3.1 - InstallShield Wizard):

```
ACTIVATEVS2010SETTINGS=1, if VS2010 is installed
ACTIVATEVS2012SETTINGS=1, if VS2012 is installed
ACTIVATEVS2013SETTINGS=1, if VS2013 is installed
ACTIVATEVS2015SETTINGS=1, if VS2015 is installed
ACTIVATEVS2017SETTINGS=1, if VS2017 is installed
```

If no Visual Studio Shell is installed on the system yet, do not call any ACTIVATEVS201xSETTINGS; the Visual Studio Shell 2013 and all settings will be installed automatically in this case.

Example for Visual Studio 2015:

```
TC31-Full-Setup.exe /s /v"/qr ALLUSERS=1 ACTIVATEVS2015SETTINGS=1"
```

To activate the settings, Visual Studio 2015 is automatically started with the corresponding call and also closed again.

Suppression of the automatic reboot

The automatic reboot can be suppressed with the following addition.

```
REBOOT=ReallySuppress
```

Sample:

```
TC31-Full-Setup.exe /s /v"/qr REBOOT=ReallySuppress ALLUSERS=1 ACTIVATEVS2015SETTINGS=1"
```

See also:

- Integration in Visual Studio [9]
- Installation of TwinCAT 3 Engineering and Runtime [11]
Preconditions for Proper Real-Time Behavior

For a reliable, optimized and performant real-time behavior, a completely aligned system design (hardware, BIOS, OS, drivers, realtime-runtime) is mandatory. Each single component of the control system has to be checked and optimized for this type of application - that is the one and only way for an optimal, reliable and performant real-time behavior. Beckhoff IPCs are optimized in each detail for this type of operation. There is no guarantee for proper, reliable real-time behavior on third-party PCs.

TwinCAT XAR represents the TC3 runtime. To install only a TC3 runtime, please perform the following steps.

1. Download the XAR setup.
2. Start TwinCAT 3 XAR setup by right-clicking its corresponding setup file. This will start the TwinCAT 3 installation process.

Run as Administrator

With Windows 7 or 8 operating system, please execute the setup with the option "Run as Administrator" by right-clicking the setup file and selecting the corresponding option from the context menu.
3. Click on **Next** and **accept** the terms in the **license agreement**

4. Enter your **username** and your **organization**. Click on **Next**.
5. Select **Custom** as Setup-Type. Click on **Next**.

6. Select **TwinCAT 3** and **TwinCAT XAR**, and deselect **TwinCAT XAE** and the subordinates features with a click on the icon in front of each entry.

In the XAR folder, you can choose which runtime environments you would like to install: TwinCAT 3 PLC, TwinCAT 3 C++ and/or TwinCAT 3 MC. Click on **Next**.

**Deselection of a Runtime Environment**

If you deselected a runtime environment, you cannot run the related functionality on this system!
7. Click on **Install** to start the installation process.

8. You need to agree to the installation of the Beckhoff Device Software. Click on **Install**.
9. After the installation has finished, the system needs to be restarted. Please click on **Finish** and then answer the following question with **Yes** to automatically restart the system.

After reboot TwinCAT is ready for use.

The status of the runtime system XAR is indicated by a blue (config-mode) or green (running-mode) systemtray icon.

**Hidden Icon**

If you cannot see this icon, it might be located in the "hidden icons" area (e.g. Windows 7). This can be reached by clicking on the small arrow pointing upwards.
Parallel installation of TwinCAT 2 and TwinCAT 3

You can install TwinCAT 3 and TwinCAT 2 on the same computer.

Installation cases

Case 1: TwinCAT 3 is to be installed on a computer on which TwinCAT 2 is already installed.

When installing TwinCAT 3, an existing TwinCAT 2 system will be detected and deactivated for the running installation. Following the installation TwinCAT 3 is then activated (see also: Switching between TwinCAT 2 and TwinCAT 3).

Case 2: TwinCAT 2 is to be installed or updated on a computer on which TwinCAT 3 is already installed.

Prior to the installation or updating of TwinCAT 2, the active TwinCAT 3 version must be deactivated or you must switch to an installed TwinCAT 2 version (see Switching between TwinCAT 2 and TwinCAT 3). Only then may the TwinCAT 2 installation be started. If the TwinCAT 2 installation is executed without deactivating TwinCAT 3 first, the TwinCAT 3 installation will be rendered unusable and will have to be executed again afterwards.

Switching between TwinCAT 2 and TwinCAT 3

In general, only one TwinCAT Runtime System (XAR) may ever be active at any one time. With the help of the TcSwitchRuntime program, however, you can switch between the two installations at any time and activate and deactivate TwinCAT 2 and TwinCAT 3. To open the TcSwitchRuntime program, right-click on the TwinCAT icon in the Windows menu bar and select TwinCAT Switch Runtime from the menu which then opens.

After switching from TwinCAT 3 to TwinCAT 2 using “TwinCAT Switch Runtime” you need to manually open TwinCAT Switch Runtime from “C:\TwinCAT\TcSwitchRuntime\TcSwitchRuntime.exe” in order to switch back from TwinCAT 2 to TwinCAT 3.
8 Uninstalling TwinCAT 3

Uninstalling sequence

The TwinCAT 3 installation has a modular structure and consists of a series of component-based setups that are executed consecutively during the installation.

If you wish to completely remove TwinCAT 3 from a computer, the following procedure is recommended:

1. Windows Control Panel > Programs and Features is open.
2. Uninstall all TwinCAT 3 functions. This step should take place before uninstalling TwinCAT, since several functions unregister with TwinCAT during the uninstallation. If TwinCAT is no longer available, the uninstallation will abort with an error message.
3. Uninstall all TwinCAT component setups (e.g. TwinCAT Scope, TwinCAT Target Browser, TwinCAT Block Diagram).
4. Uninstall TwinCAT.

Uninstalling the Visual Studio Shell

Please note that any Microsoft Visual Studio 2010 Shell installed by TwinCAT has to be uninstalled separately if you do not wish to retain it on your system.

Uninstall TwinCAT 3

All components of TwinCAT 3 can be simply uninstalled using the standard Windows functions provided for this purpose; no separate uninstall program is required.

Alternatively, you can run the installation program again. The program recognises that TwinCAT 3 is already installed and offers you the option of modifying (Modify option), repairing (Repair option) or removing (Remove option) the existing installation.
9  Installation of the TwinCAT 3 documentation

The TwinCAT 3 Information System is part of the Beckhoff Information System and contains the complete
TwinCAT 3 documentation. In order to be able to use the TwinCAT 3 Information System without Internet
connection, you can install it locally on your Engineering PC.

TwinCAT 3 uses the Visual Studio help system (Microsoft Help Viewer), which can be used online or offline.
You can use a default browser or the Help Viewer to display the help system.

The setup for the TwinCAT 3 Information System supports the help systems of Visual Studio 2010 (Help
Viewer 1.0, Help Viewer 1.1), Visual Studio 2012 (Help Viewer 2.0), Visual Studio 2013 (Help Viewer 2.1),
Visual Studio 2015 (Help Viewer 2.2) and Visual Studio 2017 (Help Viewer 2.3). It is available in German and
English. The setup is updated on a monthly basis.

The TwinCAT 3 Help already installed can be updated. See Updating the TwinCAT 3 documentation.

The installer can be downloaded from the Beckhoff homepage: https://download.beckhoff.com/download/
Software/TwinCAT/TwinCAT3/InfoSystem/

System requirements

The following components must be installed for local installation and application of the
TwinCAT 3 Information System:

- **TwinCAT 3 Engineering (XAE)** including Visual Studio Shell or Visual Studio 2010 / 2012 / 2013 / 2015 / 2017 / 2019
  (Express versions of Visual Studio are not supported.)

- **Visual Studio Help System**
  - Visual Studio 2010: Installation of the help system in Visual Studio with Service Pack 1
  - Visual Studio 2012 / 2013 / 2015: Help system as an integral part of Visual Studio
  - Visual Studio 2017 / 2019: Installation of the help system as a component during the installation of
    Visual Studio

See also: Installation of the Visual Studio help system [41]

Installation of the TwinCAT 3 documentation

- TwinCAT 3 and/or a compatible Visual Studio help system is available.
- All Visual Studio applications are closed.
- You have downloaded the current installation file TC3-InfoSys.exe for the TwinCAT 3 Information System
  from the Beckhoff website: https://download.beckhoff.com/download/Software/TwinCAT/TwinCAT3/In-
  foSystem/

1. Right-click the installation file and select Run as Admin from the context menu that opens.
2. Follow the instructions of the setup procedure:
   - Activate the Complete option if the TwinCAT 3 Information System is to be installed for all compatible
     and available Visual Studio help systems and languages.
     Please note that the installation can take up a significant amount of disk space, since the
TwinCAT 3 Information System is installed for all help systems when several compatible Visual Studio versions are present.

- Select **Custom** if you only want to install certain languages for selected Visual Studio help systems.
• If you select the **Custom** option, you then have to select the installation components (Features).

The overview shows the languages available for the TwinCAT 3 Information System. Each language contains the available and supported Visual Studio help systems as a subfeature. The features may vary depending on the system configuration and setup.

You can set the installation for each of the components that are listed. To install the TwinCAT 3 Information System, you have to select at least one language variant from the available languages and one Visual Studio help system from the available help systems.

- A selected feature is marked with a hard disk icon.
- An unselected / excluded feature is marked with a red cross.

• Enable the option **Automatic updates for TwinCAT 3 documentation** to automatically update the installed TwinCAT 3 Information System via the Visual Studio help system (this option is available from Visual Studio 2012).

If you selected a Visual Studio help system that supports automatic updating in the previous dialog, this option is enabled by default, otherwise the option is disabled automatically.
If this option is enabled, the setup creates a scheduled task “TwinCAT_3_documentation_update...”. This task checks weekly (every Friday between 11:00 and 17:00) whether updates are available for the installed TwinCAT 3 Information System.

3. Click Install to install the TwinCAT 3 Information System with the selected settings.
4. Complete the installation with Finish.

The TwinCAT 3 Information System is installed locally. With Visual Studio 2012 or later versions, an entry for opening and updating the local TwinCAT 3 Information System is created in the Windows Start menu in the Beckhoff > TwinCAT3 Information System folder.

The Option “Yes, check for program updates (Recommended) after the setup completes.” searches for updates of the installed TwinCAT 3 documentation if an internet connection is available.
See also:

- Updating the TwinCAT 3 documentation [48]
- Calling the TwinCAT 3 documentations [43]
10 Installation of the Visual Studio help system

The local TwinCAT 3 Information System is installed in the Visual Studio help system (Microsoft Help Viewer). Depending on the Visual Studio version, the Visual Studio help system is either an integral part of Visual Studio or it has to be installed separately.

- Visual Studio 2010 help system
- Visual Studio 2012 / 2013 / 2015 help system
- Visual Studio 2017 / 2019 help system

Visual Studio 2010 help system

Help Viewer 1.0 or 1.1 is required for displaying and using the locally installed TwinCAT 3 Information System.

Help Viewer 1.0 is automatically installed with Visual Studio 2010. You can install Help Viewer 1.1 by installing Service Pack 1 for Visual Studio 2010.

Download Visual Studio 2010, Service Pack 1

Service Pack 1 can be downloaded from the My.VisualStudio.com website through your Visual Studio subscription account.

Visual Studio 2012 / 2013 / 2015 help system

Depending on the Visual Studio version, one of the following help systems is required for displaying and using the locally installed TwinCAT 3 Information System:

Visual Studio 2012: Help Viewer 2.0
Visual Studio 2013: Help Viewer 2.1
Visual Studio 2015: Help Viewer 2.2

The help systems are included as standard with the installation of Visual Studio 2012 / 2013 / 2015.

Visual Studio 2017 / 2019 help system

Help Viewer 2.3 is required for displaying and using the locally installed TwinCAT 3 Information System.

In contrast to previous Visual Studio versions, the help system is no longer an integrated component of Visual Studio. Instead, it is provided as an optional component during the installation of Visual Studio 2017 / 2019.

Installing the Visual Studio help system

The help system is installed as a component during the installation of Visual Studio 2017 / 2019.

1. Click the Individual components tab.
2. Select the **Help Viewer** component in the **Code tools** section.

<table>
<thead>
<tr>
<th>Workloads</th>
<th>Individual components</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code tools</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Class Designer</td>
</tr>
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<td>Developer Analytics tools</td>
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<td>Git for Windows</td>
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<td>GitHub extension for Visual Studio</td>
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<td>Help Viewer</td>
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<td>LINQ to SQL tools</td>
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(Source: [https://docs.microsoft.com/de-de/visualstudio/ide/microsoft-help-viewer-installation?view=vs-2017](https://docs.microsoft.com/de-de/visualstudio/ide/microsoft-help-viewer-installation?view=vs-2017))

11 Calling the TwinCAT 3 documentations

From Visual Studio 2013, the TwinCAT 3 help system uses the Beckhoff Information System if no local TwinCAT Information System has been installed. In this case, the TwinCAT 3 context help uses the browser of the operating system to search for the articles online in the Beckhoff Information System and to display them according to the search in the system’s web browser.

An Internet connection is required for this and the address https://infosys.beckhoff.com must be reachable.

With the installation of the TwinCAT 3 Information System, the help system is set to use the local help.

The use of the local help or the online help respectively can be set in the TwinCAT Help menu (Visual Studio 2013 and later).

In the Help menu, open the submenu "Define help settings".

- **Browser**: Searches online in the Beckhoff Information System for articles on the context help used.
- **Help Viewer**: Searches in the installed local TwinCAT 3 Help for the corresponding articles

You can call the local help system via the Windows Start menu or in the TwinCAT 3 Engineering (XAE) via the context help (F1 Help) or the Help menu.

- [Calling up the TwinCAT 3 documentation via the Windows Start menu](#)
- [Calling up the TwinCAT 3 documentation via the Help menu](#)
- [Calling up the TwinCAT 3 documentation via the context help](#)

**Calling up the TwinCAT 3 documentation via the Windows Start menu**

- You have downloaded and installed the TwinCAT 3 Information System.
- During the installation, a shortcut to the Help Viewer was created in the Windows Start menu. Depending on the system configuration and the (pre-)set installation components, several links may be available (e.g. for the German and English versions of the TwinCAT 3 Information System).
1. Open the Beckhoff folder in the Windows Start menu.

2. Click Information System <Language> - VS <Version>.
   ⇒ The TwinCAT 3 Information System is opened with Help Viewer.

**Calling up the TwinCAT 3 documentation via the Help menu**

✓ TwinCAT 3 Engineering is open.
1. Open the Help menu and select the Show Help command.

The TwinCAT 3 Information System is opened with the Help Viewer of the Visual Studio help system. In the tree view of the open Help Viewer, select Help Viewer - Home > Welcome to the Beckhoff Information System > TwinCAT 3.

Calling up the TwinCAT 3 documentation via the context help

With the context help, the position of the mouse pointer (for graphical elements) or a selected text expression within the editor is evaluated by the help system in order to display the appropriate linked help text.

Limited help function due to different language settings

If you have installed the TwinCAT 3 Information System in a language other than Visual Studio, the help system is only available to a limited extent.
Various displays

From Visual Studio 2013 it is possible to use the context help with the Beckhoff Information System. Depending on the setting of the help system [43], the result is displayed locally in the Help Viewer or in the system's web browser.

The following guide shows you how to use the local TwinCAT 3 Help. The online help is used analogously. Only the articles are displayed in the web browser.

- A TwinCAT 3 project is opened.
- The Start in Help Viewer command is enabled in the menu Help > Define help settings (from Help Viewer 2.0).

1. Open an editor for the supported text-based TwinCAT 3 programming languages, e.g. ST or C++.
2. Select the desired expression and press the [F1] key.
The Help Viewer opens, and the corresponding article from the TwinCAT 3 Information System linked to the selected expression is displayed. The "BCD_TO_DEC" function block allows numbers in BCD to be converted to decimal format. The BCD number to be converted is checked for the reliability of the values.
12 Updating the TwinCAT 3 documentation

All language variants of the TwinCAT 3 Information System are updated weekly. A locally installed TwinCAT 3 Information System can be updated manually via the Visual Studio help system. The procedure depends on the Visual Studio version or the help system.

See also:
- Installation of the TwinCAT 3 documentation [36]

12.1 Update in Visual Studio


When the TwinCAT 3 Information System is installed, an entry is created in the Windows start menu, which can be used to update the TwinCAT 3 Information System directly.

- An internet connection is available.
- You have administrator rights.

1. Open the Beckhoff folder in the Windows Start menu.
2. Click Update TC3-InfoSys (<Language>) (VS<Version>).
3. In the dialog that opens, confirm that changes may be made to the system.

The help system checks whether an update for the TwinCAT 3 Information System is available. A help system icon is displayed in the Windows menu bar.

When you move the mouse pointer over the help system icon, the update progress is displayed.

4. Confirm that the TwinCAT 3 Information System may be updated.
12.2 Update in Visual Studio 2010

If an internet connection is available, the installed TwinCAT 3 Information System can be updated directly via the Visual Studio help system in TwinCAT 3 Engineering.

1. An internet connection is available.
2. Start TwinCAT 3 Engineering or Visual Studio 2010.
3. Select Manage Help Settings from the Help menu.
3. In the help system dialog that opens, click **Check for updates online**.

   ![Help Library Manager](image)

   The help system checks whether an update for the TwinCAT 3 Information System is available. Available updates for installed documentation components are displayed.

   ![Checking for Updates](image)
4. Click **Update** to download the available updates.

5. Confirm the installation of the update package with **Yes**.
Close the dialog after a successful update with **Finish**.
13 Changing the language of the TwinCAT development environment

Installing Visual Studio language packs

TwinCAT 3 uses Visual Studio ("Professional" functionality or higher) or the Visual Studio Shell as the development environment. Various language packs are offered for Visual Studio. A distinction is thereby made between the functional specification of the development environment and the supported languages.

The languages supported by Visual Studio are described on the MSDN page:


Log in to VS or Microsoft to download the speech package.

Installation of the German language pack for the TwinCAT development environment (Visual Studio Shell)

- You have downloaded the appropriate language pack from the MSDN page for the Visual Studio Shell you are using ([https://msdn.microsoft.com](https://msdn.microsoft.com)):
  - The language packs can be downloaded from the MSDN customer area (login required).
  - (a) Language pack for Visual Studio Shell (isolated)
  - (b) Language pack for Visual Studio Shell (integrated)

1. First install the language pack for the "isolated shell" (a).
2. Now install the language pack for the "integrated shell" (b).

Following successful installation, you can change the language of the TwinCAT 3 development environment [p. 54].

Changing the TwinCAT menu language

The Visual Studio Shell is used with the installation of TwinCAT 3 without Visual Studio. The preset menu language is English. You can change the menu language in the Visual Studio options.
1. Select the **Options** command in the **Tools** menu and **Environment > International Settings** in the options dialog which then opens.

- The **Language** area displays the languages (in this case German, English).

2. Select the desired available language and close the dialog with **OK**.

- The language change becomes effective with the next restart of Visual Studio.

**Calling Visual Studio with language parameters**

It is also possible to quickly check the installed menu language of Visual Studio and to change the language with a direct call.

1. Enter the following command in the command line or in the **Run** window:
   - `devenv /lcid 1031` for the German menu language
   - `devenv /lcid 1033` for the English menu language

- Visual Studio or the TwinCAT 3 development environment (Visual Studio Shell) then opens with the specified menu language, provided this language is installed.
More Information:
www.beckhoff.com/automation