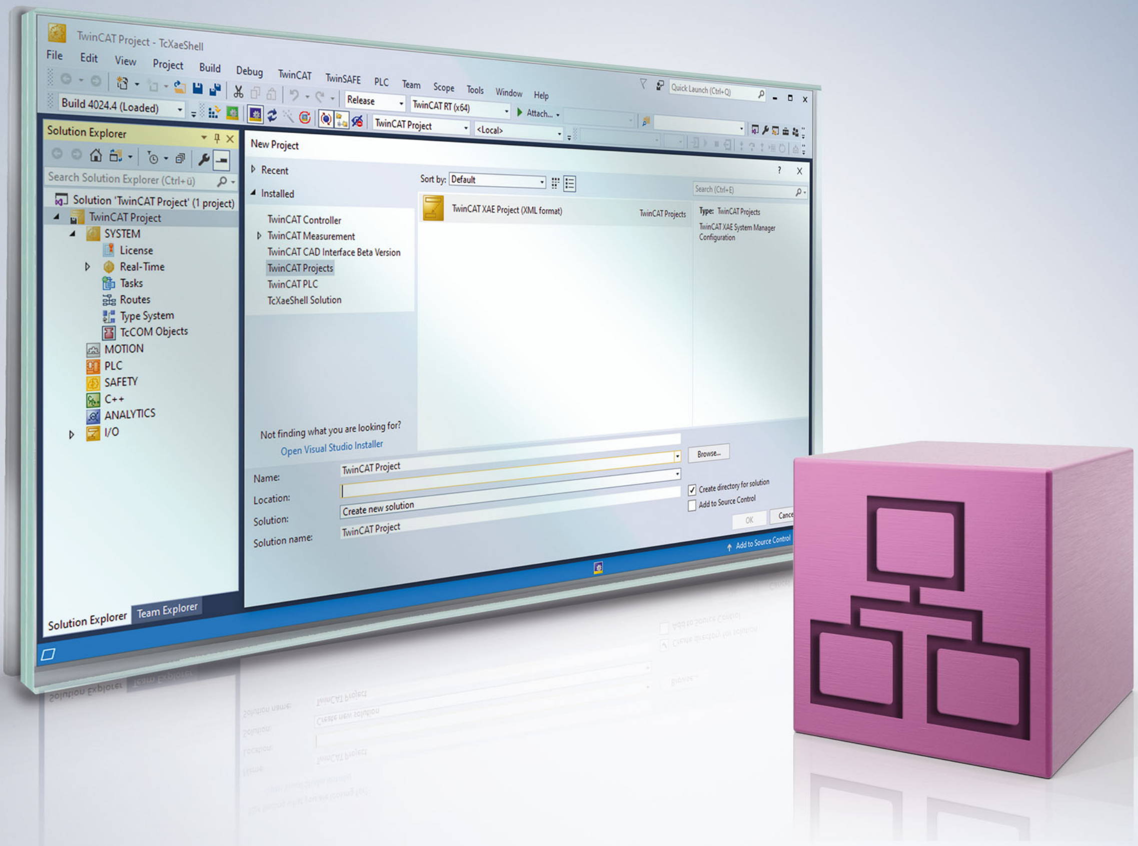
BECKHOFF New Automation Technology

Manual | EN

TF6300

TwinCAT 3 | FTP Client



2024-04-05 | Version: 1.3.2

Table of contents

1 Foreword

1.1 Notes on the documentation

This description is intended exclusively for trained specialists in control and automation technology who are familiar with the applicable national standards.
For installation and commissioning of the components, it is absolutely necessary to observe the documentation and the following notes and explanations.
The qualified personnel is obliged to always use the currently valid documentation.

The responsible staff must ensure that the application or use of the products described satisfies all 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 notice.
No claims to modify products that have already been supplied may be made on the basis of the data, diagrams, and descriptions in this documentation.

Trademarks

Beckhoff®, TwinCAT®, TwinCAT/BSD®, TC/BSD®, EtherCAT®, EtherCAT G®, EtherCAT G10®, EtherCAT P®, Safety over EtherCAT®, TwinSAFE®, XFC®, XTS® and XPlanar® are registered and licensed trademarks of Beckhoff Automation GmbH.
If third parties make use of designations or trademarks used in this publication for their own purposes, this could infringe upon the rights of the owners of the said designations.

Patents

The EtherCAT Technology is covered, including but not limited to the following patent applications and patents:
EP1590927, EP1789857, EP1456722, EP2137893, DE102015105702
and similar applications and registrations in several other countries.

EtherCAT.

EtherCAT® is registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany

Copyright

1.2 For your safety

Safety regulations

Read the following explanations for your safety.
Always observe and follow product-specific safety instructions, which you may find at the appropriate places in this document.

Exclusion of liability

All the components are supplied in particular hardware and software configurations which are 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 technology who are familiar with the applicable national standards.

Signal words

The signal words used in the documentation are classified below. In order to prevent injury and damage to persons and property, read and follow the safety and warning notices.

Personal injury warnings

⚠ DANGER
Hazard with high risk of death or serious injury.

⚠ WARNING
Hazard with medium risk of death or serious injury.

⚠ CAUTION
There is a low-risk hazard that could result in medium or minor injury.

Warning of damage to property or environment

NOTICE
The environment, equipment, or data may be damaged.

Information on handling the product

This information includes, for example:
recommendations for action, assistance or further information on the product.

1.3 Notes on information security

The products of Beckhoff Automation GmbH & Co. KG (Beckhoff), insofar as they can be accessed online, are equipped with security functions that support the secure operation of plants, systems, machines and networks. Despite the security functions, the creation, implementation and constant updating of a holistic security concept for the operation are necessary to protect the respective plant, system, machine and networks against cyber threats. The products sold by Beckhoff are only part of the overall security concept. The customer is responsible for preventing unauthorized access by third parties to its equipment, systems, machines and networks. The latter should be connected to the corporate network or the Internet only if appropriate protective measures have been set up.

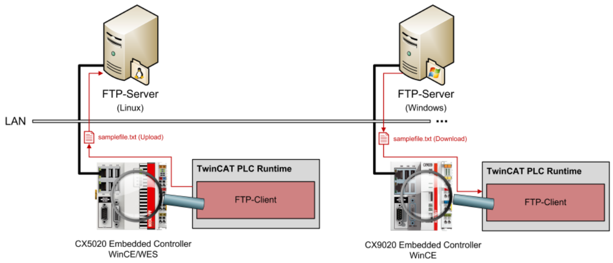
In addition, the recommendations from Beckhoff regarding appropriate protective measures should be observed. Further information regarding information security and industrial security can be found in our https://www.beckhoff.com/secguide.

Beckhoff products and solutions undergo continuous further development. This also applies to security functions. In light of this continuous further development, Beckhoff expressly recommends that the products are kept up to date at all times and that updates are installed for the products once they have been made available. Using outdated or unsupported product versions can increase the risk of cyber threats.

To stay informed about information security for Beckhoff products, subscribe to the RSS feed at https://www.beckhoff.com/secinfo.

2 Product description

The TwinCAT 3 Function TF6300 FTP provides features to implement an FTP-Client in the TwinCAT PLC in order to communicate with an FTP-Server via the standardized File Transfer Protocol (FTP) . FTP functionalities, e.g. file upload/download, can be accessed via Function Blocks directly from within a PLC program.



The following functions are provided:

Connection establishment

- Authenticating to an FTP-Server
- Connecting to an FTP-Server using active FTP (since version 1.0.8)
- Connecting to an FTP-Server using passive FTP

File transfer functions: Uploading files to an FTP-Server

- Downloading files from an FTP-Server

File functions:

- Rename files on an FTP-Server
- Removing files from an FTP-Server
- Searching files on an FTP-Server
- Creating folders on an FTP-Server
- Removing folders from an FTP-Server

All functionalities can be used out of the PLC with the help of function blocks. You can create connections to different FTP Servers, which can be distinguished and referenced via so-called "handles". Because of these "handles" you don't need to specify connection-related parameters (e.g. IP-Address and port of FTP-Server, authentication data, etc.) every time you want to transfer files.

We recommend to read the following articles of this documentation:

Topic	Content
System requirements [▶ 10]	Describes the system requirements of TwinCAT FTP Client.
Installation	Installation manual of TwinCAT FTP Client.
Licensing	Licensing manual of TwinCAT FTP Client.
Introduction to File Transfer Protocol (FTP) [▶ 16]	Important article about FTP basics. Describes the design of FTP and its specification.
Configure Data-Ports for active FTP [▶ 17]	Describes a feature to configure the used Data-Ports of TwinCAT FTP Client when using active FTP.
Activate an error logfile [▶ 18]	Describes how to activate an error logfile for diagnostics.
Overview about function blocks [▶ 22]	Provides an overview about all PLC Function Blocks of TwinCAT FTP Client.
Samples [▶ 44]	Overview about all available samples. Also provides sample download.

In addition we also recommend to visit our "**Samples** " chapter, in which you can find multiple PLC programs which show how to use TwinCAT FTP Client.

Requirements

Development Environment	Target Platform	PLC Libraries to include
TwinCAT v3.0 Build 3102	PC or CX (x86)	Tc2_FTP

3 Installation

3.1 System requirements

The TwinCAT 3 Function TF6300 FTP is available for WinXP-based Operating Systems (Windows XP, Windows 7, ...) and their Embedded parts (WES2009, WES7, ...).

- **Supported hardware platforms:** 32-bit
- **Supported Operating Systems:** Windows XP, Windows XP Embedded, Windows Embedded Standard 2009, Windows 7 Pro, Windows Embedded Standard 7
- **Supported TwinCAT 3 versions:** since TwinCAT 3.0 Build 3102 (XAE/XAR)
- **Needed TwinCAT 3 licenses:** TC1200 PLC and TF6300 FTP. Alternatively 7-Day trial version. See licensing documentation.
- **.NET Framework version:** 2.0

3.2 Installation

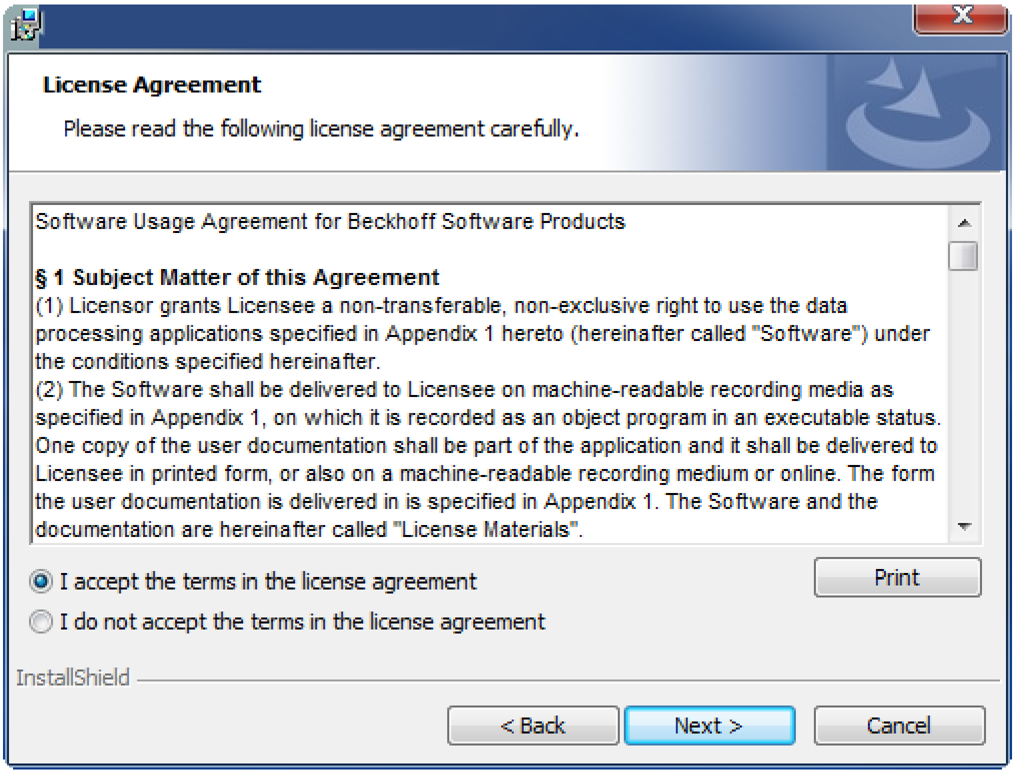
The following section describes how to install the TwinCAT 3 Function for Windows-based operating systems.

✓ The TwinCAT 3 Function setup file was downloaded from the Beckhoff website.

1. Run the setup file as administrator. To do this, select the command **Run as administrator** in the context menu of the file.

   ⇨ The installation dialog opens.

2. Accept the end user licensing agreement and click **Next**.



License Agreement

Please read the following license agreement carefully.

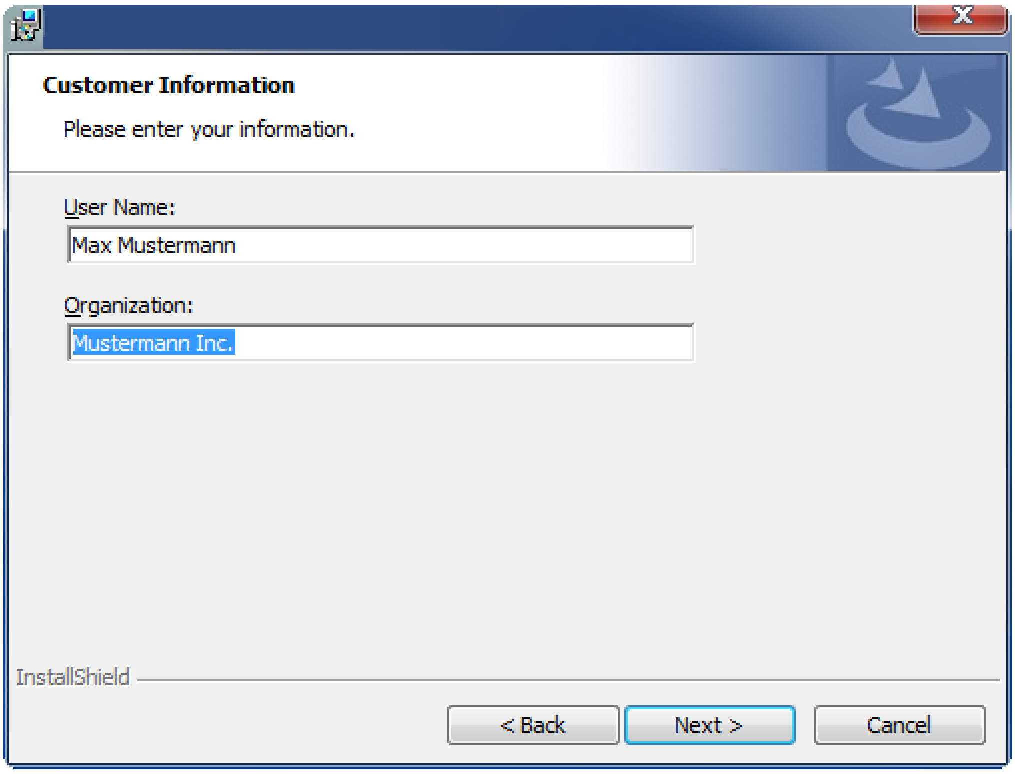
Software Usage Agreement for Beckhoff Software Products

§ 1 Subject Matter of this Agreement
(1) Licensor grants Licensee a non-transferable, non-exclusive right to use the data processing applications specified in Appendix 1 hereto (hereinafter called "Software") under the conditions specified hereinafter.
(2) The Software shall be delivered to Licensee on machine-readable recording media as specified in Appendix 1, on which it is recorded as an object program in an executable status. One copy of the user documentation shall be part of the application and it shall be delivered to Licensee in printed form, or also on a machine-readable recording medium or online. The form the user documentation is delivered in is specified in Appendix 1. The Software and the documentation are hereinafter called "License Materials".

● I accept the terms in the license agreement

○ I do not accept the terms in the license agreement

3. Enter your user data.



Customer Information

Please enter your information.

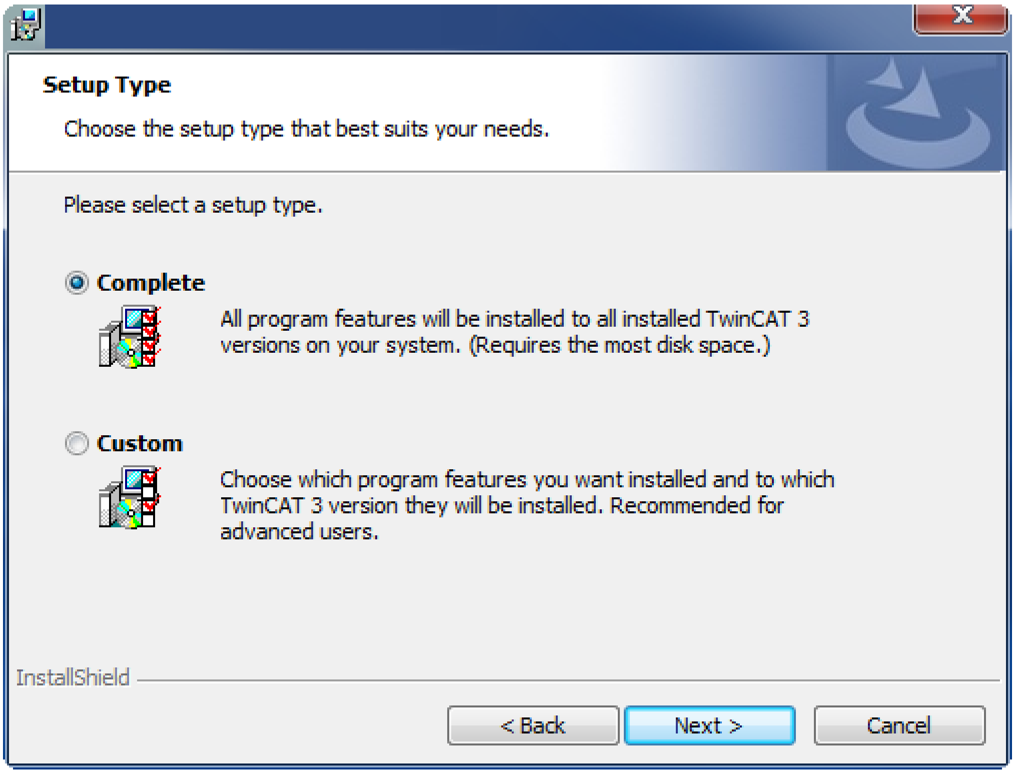
User Name:

Max Mustermann

Organization:

Mustermann Inc.

4. If you want to install the full version of the TwinCAT 3 Function, select **Complete** as installation type. If you want to install the TwinCAT 3 Function components separately, select **Custom**.



Setup Type

Choose the setup type that best suits your needs.

Please select a setup type.

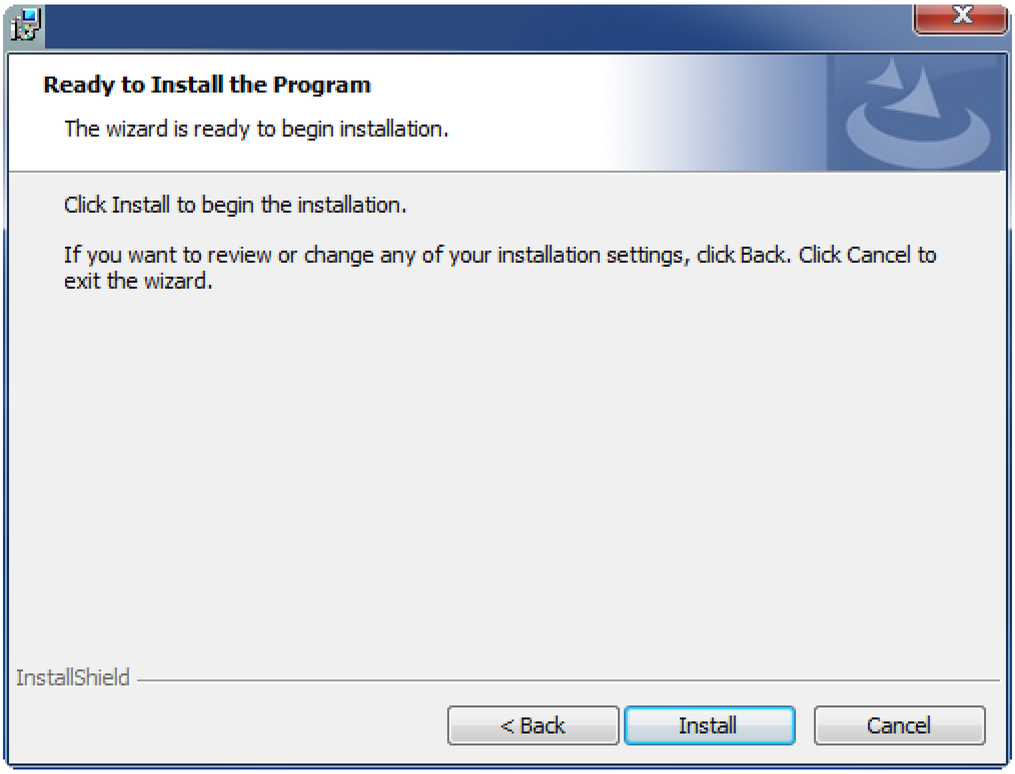
● **Complete**

All program features will be installed to all installed TwinCAT 3 versions on your system. (Requires the most disk space.)

○ **Custom**

Choose which program features you want installed and to which TwinCAT 3 version they will be installed. Recommended for advanced users.

5. Select **Next**, then **Install** to start the installation.



Ready to Install the Program

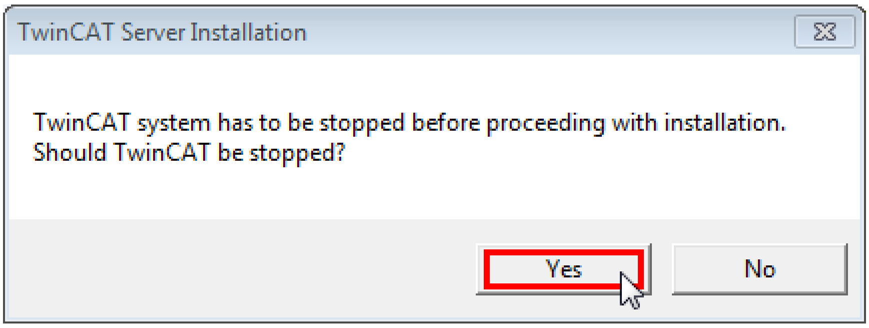
The wizard is ready to begin installation.

Click Install to begin the installation.

If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.

⇨ A dialog box informs you that the TwinCAT system must be stopped to proceed with the installation.

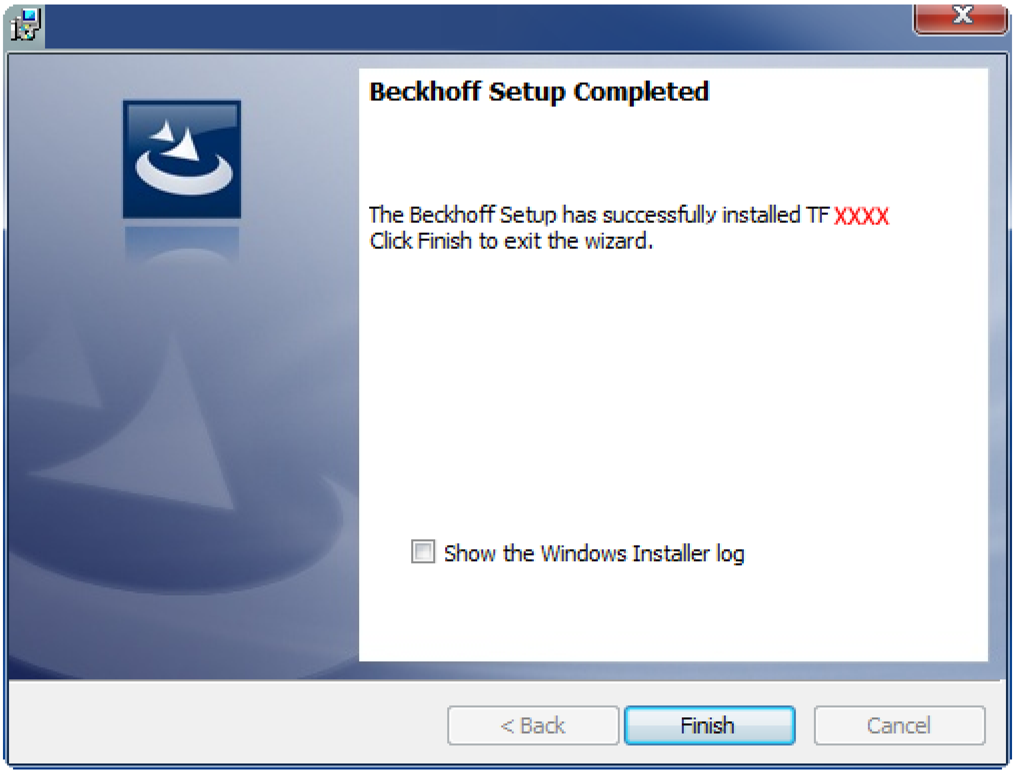
6. Confirm the dialog with **Yes**.



TwinCAT Server Installation

TwinCAT system has to be stopped before proceeding with installation. Should TwinCAT be stopped?

7. Select **Finish** to exit the setup.



Beckhoff Setup Completed

The Beckhoff Setup has successfully installed TF XXXX
Click Finish to exit the wizard.

□ Show the Windows Installer log

⇨ The TwinCAT 3 Function has been successfully installed.

3.3 Licensing

The TwinCAT 3 function can be activated as a full version or as a 7-day test version. Both license types can be activated via the TwinCAT 3 development environment (XAE).

Licensing the full version of a TwinCAT 3 Function

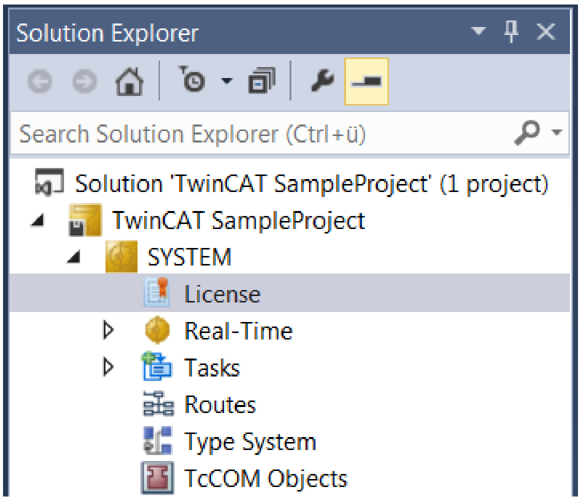
A description of the procedure to license a full version can be found in the Beckhoff Information System in the documentation "TwinCAT 3 Licensing".

Licensing the 7-day test version of a TwinCAT 3 Function

A 7-day test version cannot be enabled for a TwinCAT 3 license dongle.

1. Start the TwinCAT 3 development environment (XAE).
2. Open an existing TwinCAT 3 project or create a new project.
3. If you want to activate the license for a remote device, set the desired target system. To do this, select the target system from the **Choose Target System** drop-down list in the toolbar.
   ⇨ The licensing settings always refer to the selected target system. When the project is activated on the target system, the corresponding TwinCAT 3 licenses are automatically copied to this system.

4. In the **Solution Explorer**, double-click **License** in the **SYSTEM** subtree.



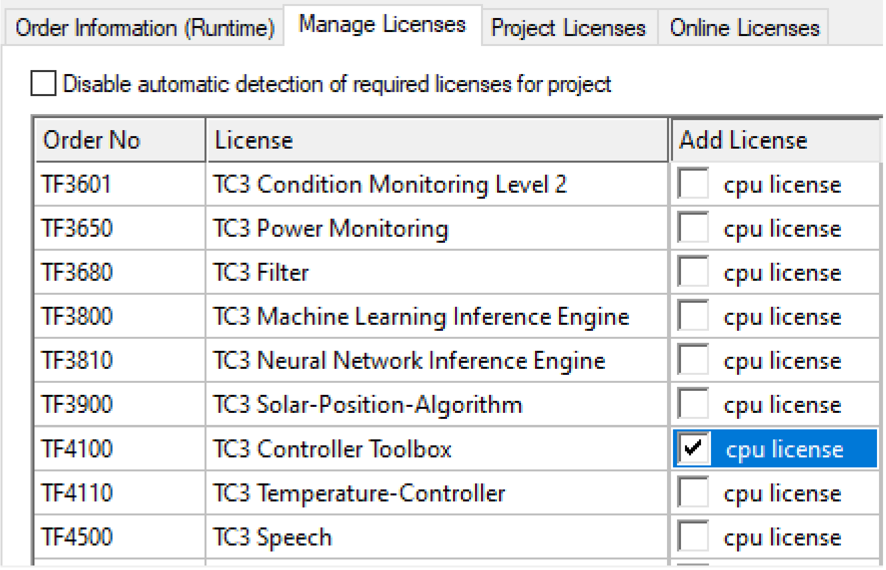
Solution Explorer

Search Solution Explorer (Ctrl+ü)

- Solution 'TwinCAT SampleProject' (1 project)
  - TwinCAT SampleProject
    - SYSTEM
      - License
      - Real-Time
      - Tasks
      - Routes
      - Type System
      - TcCOM Objects

⇨ The TwinCAT 3 license manager opens.

5. Open the **Manage Licenses** tab. In the **Add License** column, check the check box for the license you want to add to your project (e.g. "TF4100 TC3 Controller Toolbox").



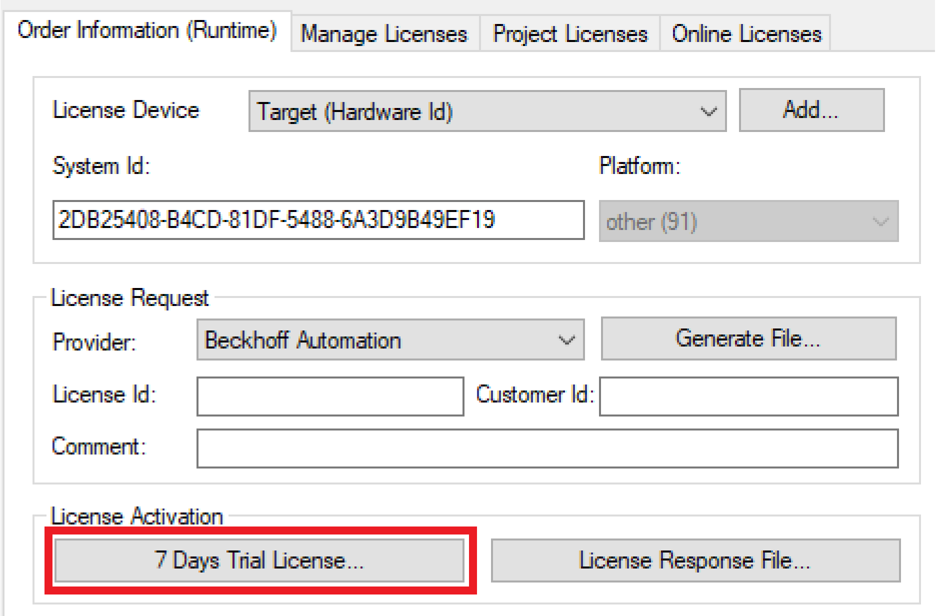
□ Disable automatic detection of required licenses for project

Order No	License	Add License
TF3601	TC3 Condition Monitoring Level 2	□ cpu license
TF3650	TC3 Power Monitoring	□ cpu license
TF3680	TC3 Filter	□ cpu license
TF3800	TC3 Machine Learning Inference Engine	□ cpu license
TF3810	TC3 Neural Network Inference Engine	□ cpu license
TF3900	TC3 Solar-Position-Algorithm	□ cpu license
TF4100	TC3 Controller Toolbox	☑ cpu license
TF4110	TC3 Temperature-Controller	□ cpu license
TF4500	TC3 Speech	□ cpu license

6. Open the **Order Information (Runtime)** tab.

⇨ In the tabular overview of licenses, the previously selected license is displayed with the status “missing”**.**

7. Click **7-Day Trial License...** to activate the 7-day trial license.



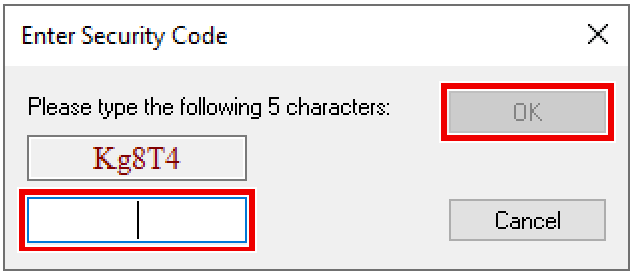
License Device: Target (Hardware Id)

System Id: 2DB25408-B4CD-81DF-5488-6A3D9B49EF19

Platform: other (91)

Provider: Beckhoff Automation

⇨ A dialog box opens, prompting you to enter the security code displayed in the dialog.



Please type the following 5 characters: Kg8T4

8. Enter the code exactly as it is displayed and confirm the entry.
9. Confirm the subsequent dialog, which indicates the successful activation.
   ⇨ In the tabular overview of licenses, the license status now indicates the expiry date of the license.
10. Restart the TwinCAT system.

⇨ The 7-day trial version is enabled.

4 Configuration

4.1 Introduction to File Transfer Protocol (FTP)

This chapter of the documentation gives some basic information about the File Transfer Protocol and provides links to other, in-depth articles.

General

The File Transfer Protocol (FTP) is based exclusively on TCP-based communication connections. FTP specifies two TCP ports, which are important for data transmission:

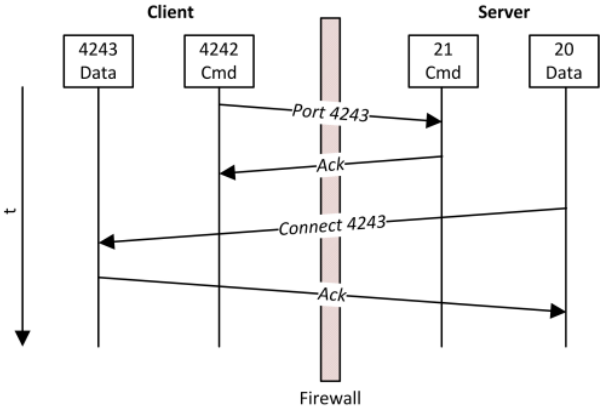
- Port 20/tcp: This port is also referred to as **data port** and is used to send/receive files and directory lists.
- Port 21/tcp: This port is generally referred to as **command port** and is used to exchange status information between the client and server.

Separate TCP connections are used for sending and receiving files (data port) and for transmitting commands (command port). With FTP, two connection modes are available for setting up such connections: "**Active FTP**" and "**Passive FTP**". Depending on the connection mode, the two ports mentioned above are initiated differently, which is described in more detail below.

i The TwinCAT FTP Client supports both connection modes from version 1.0.8. For older versions only "Passive FTP" is supported. The connection mode is selected e.g. in the function block FB_FTP_OpenEx [▸ 25] via the input parameter eMode of type E_FTP_ConnMode [▸ 42].

Active FTP

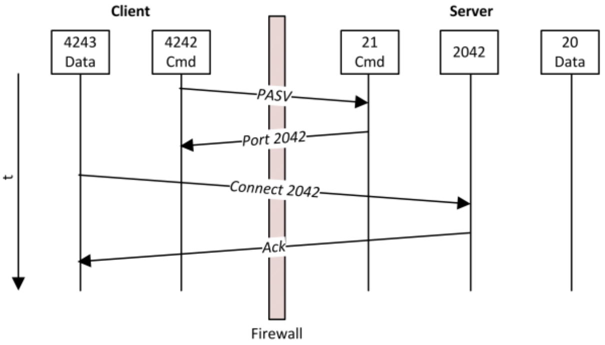
When using the connection mode "Active FTP", the Client connects to the Command-Port of the FTP-Server by using a randomly selected source port N, e.g. 4242/tcp. Subsequently the Client binds itself to port N+1 and notifies the Server of this port. The Server then connects to this port N+1 and uses its Data-Port as the source port.



One of the problems when using active FTP connections is, that the Client itself does not initiate a connection to the Server's Data-Port. Instead, the Client notifies the Server of its own Data-Port (N+1) and then the Server actively connects to this port. If the Client is located behind a Firewall or NAT-device, this could involve additional configuration on the Client's Firewall because the Client's Data-Port must be reachable for the Server (cf. picture "Connect 4243"). The Data-Ports used by TwinCAT FTP-Client can be permanently configured, which makes the Firewall configuration easier. For this special Registry Keys exists to Configure Data-Ports for active FTP [▸ 17].

Passive FTP

This method is used when the client is not directly accessible by the server. This is the case, for example, if the client is behind a firewall that uses NAT to rewrite the client's address. With passive FTP, the FTP client initiates a connection via two random TCP ports N (command port) and N+1 (data port). The first port is used to connect to the server's command port. However, instead of the client communicating its port N+1 to the server so that the server can open a connection to it (see active FTP), the client first transmits a so-called PASV command. The server now knows that the connection is via passive FTP. As a result, the server opens a (random) port P as data port and transmits it to the client. The client then initiates a connection with port P and uses port N+1 (data port) as the source port. This connection is then used to transfer the data.



On closer examination it becomes apparent that the firewall problem of active FTP is reversed with passive FTP. On the server side, the firewall should be configured such that the data port of the server can be reached by the client. Many FTP servers offer the option to configure the data ports to be used.

Sources

Wikipedia: File Transfer Protocol URL: http://de.wikipedia.org/wiki/File_Transfer_Protocol Version: 10. April 2011

Requirements

Development Environment	Target Platform	PLC Libraries to include
TwinCAT v3.0 Build 3102	PC or CX (x86)	Tc2_FTP

4.2 Configure Data-Ports for active FTP

In active FTP connection mode the data port for the connection to the FTP server is specified from the client and the server connects to this port. If the TwinCAT FTP Client is to be operated in active FTP mode, a port range can be defined from which a free port is to be used for establishing the connection.

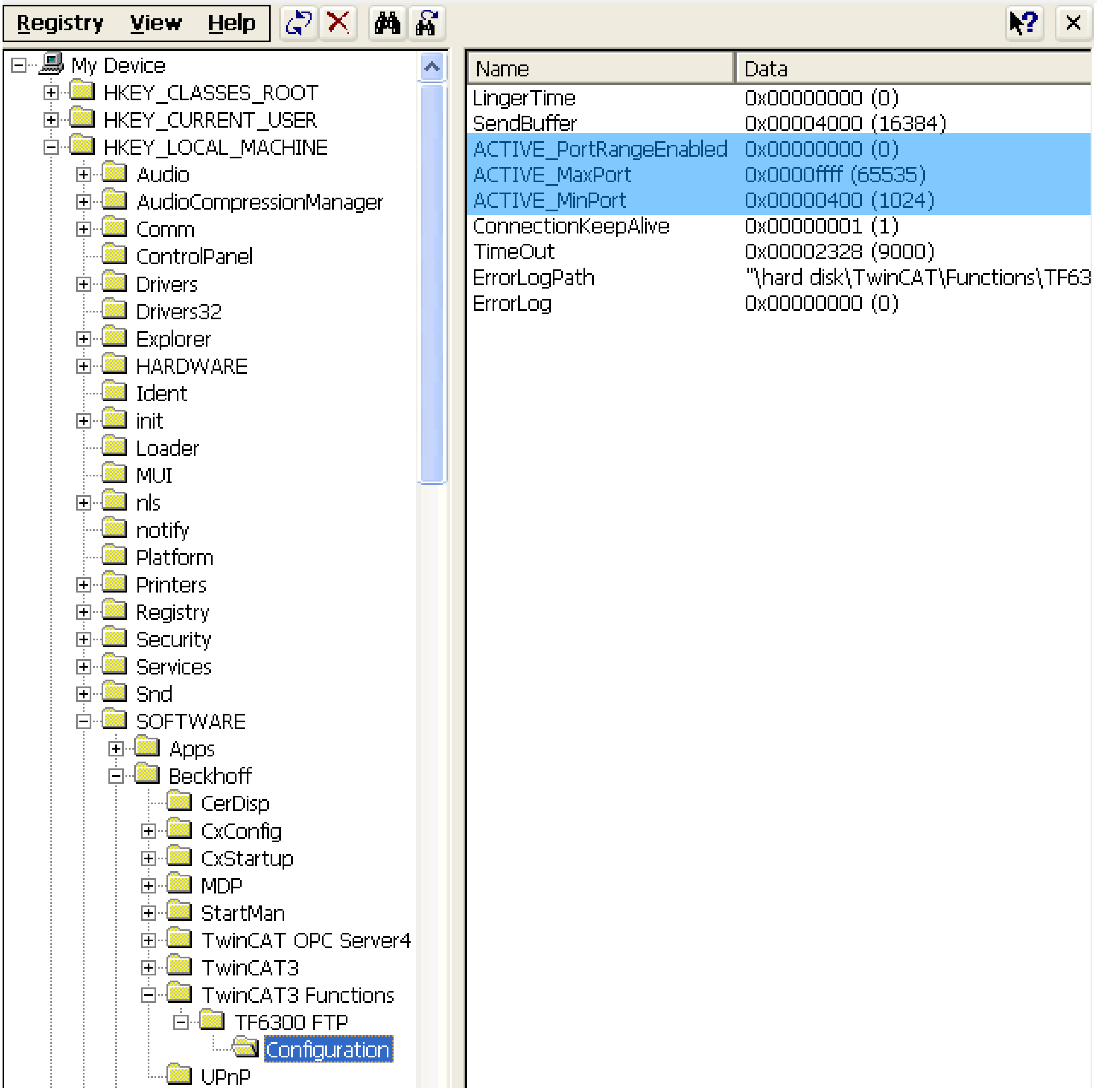
The port range is set using the following three registry keys.

"HKEY_LOCAL_MACHINE\\Software\\Beckhoff\\TwinCAT FTP Client\\Configuration\ACTIVE_PortRangeEnabled"
"HKEY_LOCAL_MACHINE\\Software\\Beckhoff\\TwinCAT FTP Client\\Configuration\ACTIVE_MaxPort"
"HKEY_LOCAL_MACHINE\\Software\\Beckhoff\\TwinCAT FTP Client\\Configuration\ACTIVE_MinPort"

To enable the port range, the registry key "ACTIVE_PortRangeEnabled" must first be set to 1. Otherwise the TwinCAT FTP Client will use any free port to establish the connection.

The registry keys "ACTIVE_MaxPort" and "ACTIVE_MinPort" can be used to define the upper and lower limits of the port range, respectively.

To allow multiple simultaneous FTP connections, the port range must be selected accordingly. Example: If the TwinCAT FTP Client is to connect to three FTP servers simultaneously and start a file transfer via each connection, the port range must contain at least 3 ports.



Name	Data
LingerTime	0x00000000 (0)
SendBuffer	0x00004000 (16384)
ACTIVE_PortRangeEnabled	0x00000000 (0)
ACTIVE_MaxPort	0x0000ffff (65535)
ACTIVE_MinPort	0x00000400 (1024)
ConnectionKeepAlive	0x00000001 (1)
TimeOut	0x00002328 (9000)
ErrorLogPath	"\hard disk\TwinCAT\Functions\TF63
ErrorLog	0x00000000 (0)

Requirements

Development Environment	Target Platform	PLC Libraries to include
TwinCAT v3.0 Build 3102	PC or CX (x86)	Tc2_FTP

4.3 Activating an error logfile

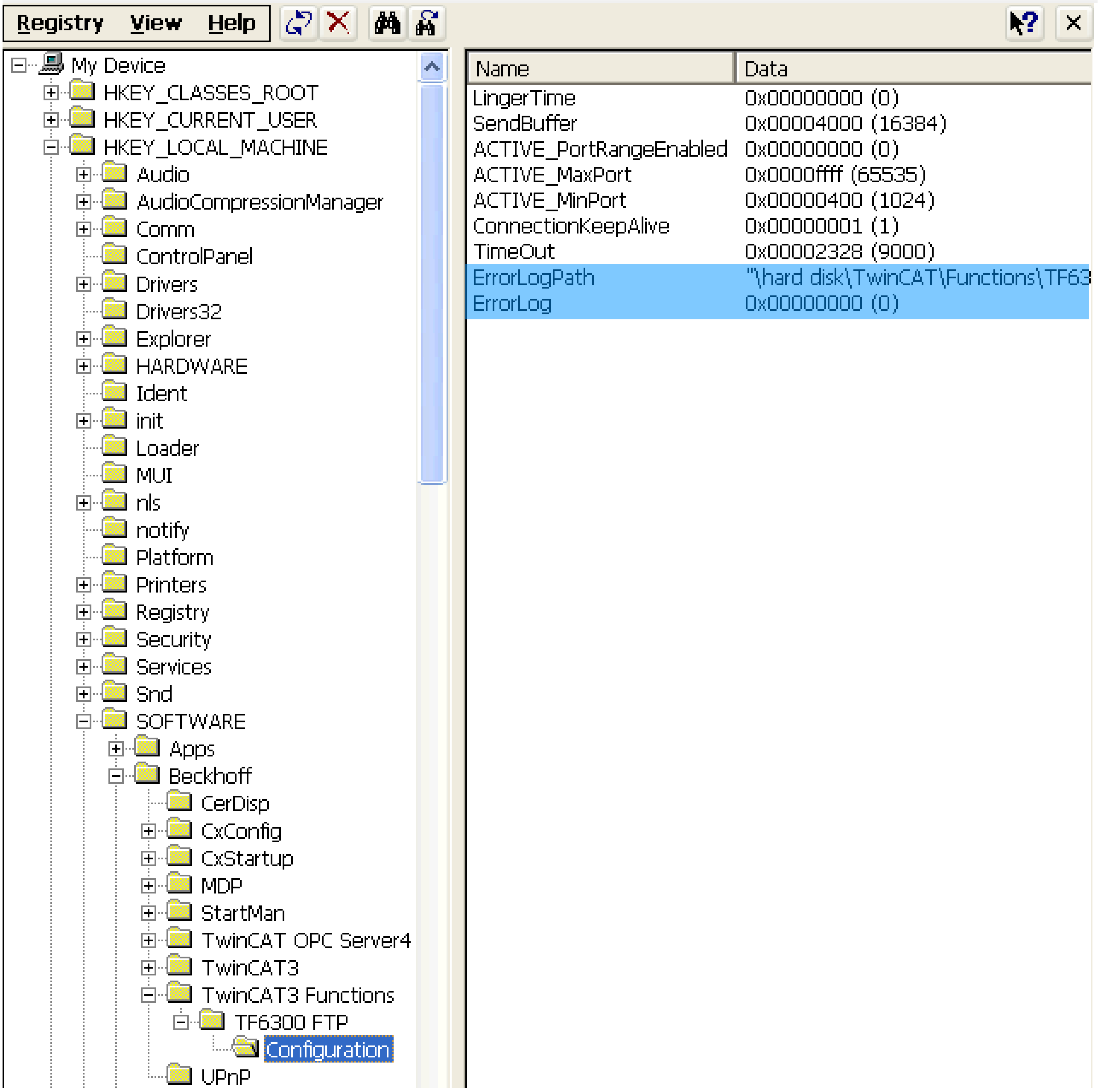
In order to better localize occurring errors and to obtain a better description in the event of an error, the TwinCAT FTP Client offers the option of logging occurring errors in a text file.

The text file with the name **"TcFTPErrorLog.txt"** is always generated in the folder in which the "EXE" of the TwinCAT FTP Client is located.

You can activate this functionality by creating the following registry key:

32-bit: "HKEY_LOCAL_MACHINE\Software\Beckhoff\TwinCAT3 Functions\TF6300 FTP\Configuration\ErrorLog"

64-bit: "HKEY_LOCAL_MACHINE\Software\Wow6432Node\Beckhoff\TwinCAT3 Functions\TF6300 FTP\Configuration\ErrorLog"



```
My Device
  HKEY_CLASSES_ROOT
  HKEY_CURRENT_USER
  HKEY_LOCAL_MACHINE
    Audio
    AudioCompressionManager
    Comm
    ControlPanel
    Drivers
    Drivers32
    Explorer
    HARDWARE
    Ident
    init
    Loader
    MUI
    nls
    notify
    Platform
    Printers
    Registry
    Security
    Services
    Snd
    SOFTWARE
      Apps
      Beckhoff
        CerDisp
        CxConfig
        CxStartup
        MDP
        StartMan
        TwinCAT OPC Server4
        TwinCAT3
        TwinCAT3 Functions
          TF6300 FTP
            Configuration
        UPnP
```

Name	Data
LingerTime	0x00000000 (0)
SendBuffer	0x00004000 (16384)
ACTIVE_PortRangeEnabled	0x00000000 (0)
ACTIVE_MaxPort	0x0000ffff (65535)
ACTIVE_MinPort	0x00000400 (1024)
ConnectionKeepAlive	0x00000001 (1)
TimeOut	0x00002328 (9000)
ErrorLogPath	"\hard disk\TwinCAT\Functions\TF63
ErrorLog	0x00000000 (0)

Fig. 1:

With the value 0, the functionality is stopped after a restart of the TwinCAT system.

With the value 1, the functionality is started after a restart of the TwinCAT system and a simple error logging is performed.

With the value 2, the functionality is started after a restart of the TwinCAT system and extended error logging is performed.

NOTICE

Damage to the flash medium

Cyclic writing to the flash medium can damage it. There is also the possibility that the memory of the flash medium is fully written by cyclic writing.

NOTICE

Damage to the flash medium

Only use the error log when testing!

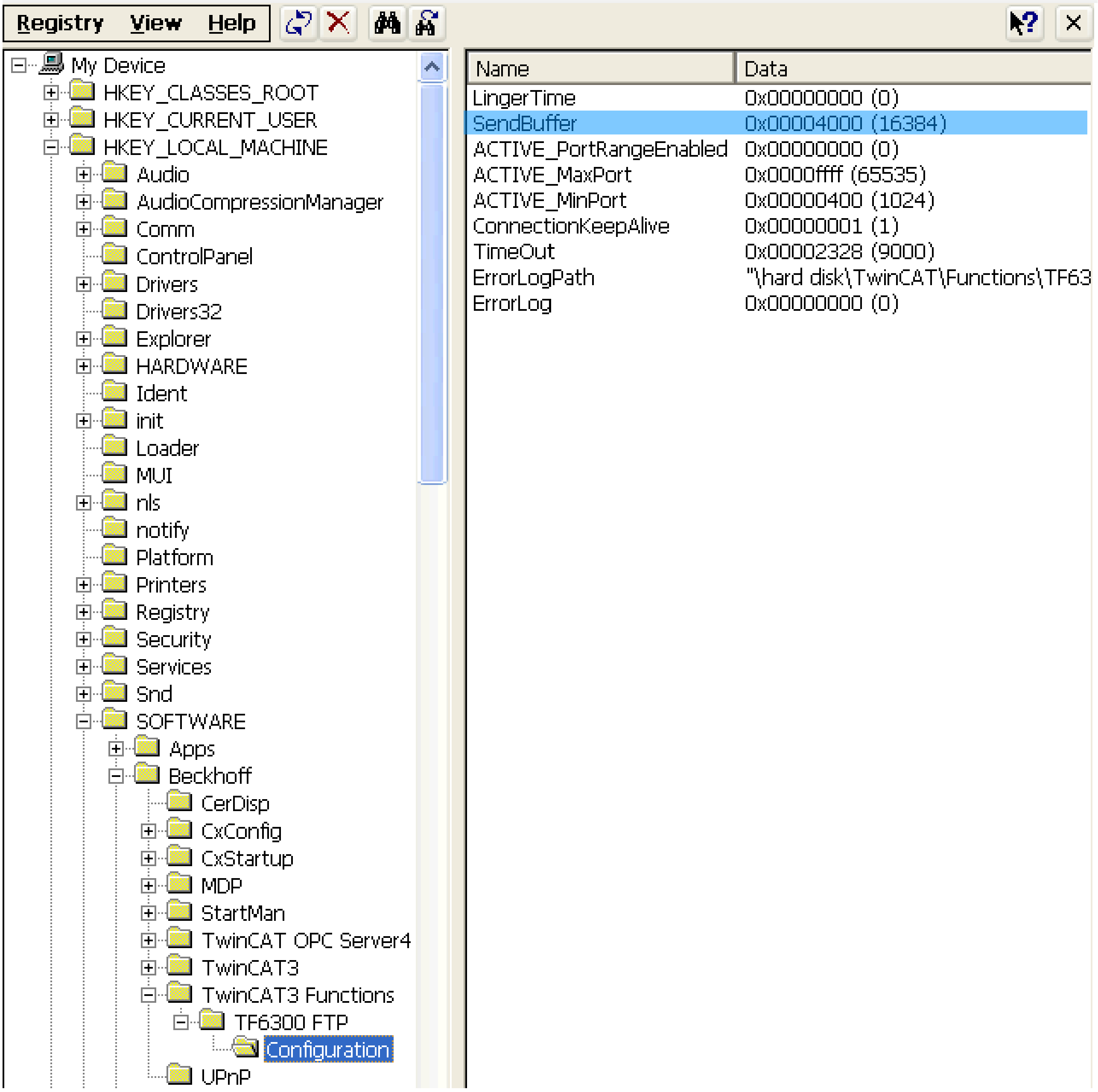
Requirements

Development Environment	Target Platform	PLC Libraries to include
TwinCAT v3.0 Build 3102	PC or CX (x86)	Tc2_FTP

4.4 Setting the transmit buffer

The transmission speed of the TwinCAT FTP Client can be regulated using the transmit buffer. This can be set in the registry under the following key.

"HKEY_LOCAL_MACHINE\Software\Beckhoff\TwinCAT3 Functions\TF6300 FTP\Configuration\SendBuffer"



Name	Data
LingerTime	0x00000000 (0)
SendBuffer	0x00004000 (16384)
ACTIVE_PortRangeEnabled	0x00000000 (0)
ACTIVE_MaxPort	0x0000ffff (65535)
ACTIVE_MinPort	0x00000400 (1024)
ConnectionKeepAlive	0x00000001 (1)
TimeOut	0x00002328 (9000)
ErrorLogPath	"\hard disk\TwinCAT\Functions\TF63
ErrorLog	0x00000000 (0)

Fig. 2:

The value is specified in bytes. The default value is 16 kB.

NOTICE

Main memory load

The larger the value of the transmit buffer is set, the larger the main memory required by the TwinCAT FTP Client process. If the value is too high, this can lead to storage problems with very small devices.

Requirements

Development Environment	Target Platform	PLC Libraries to include
TwinCAT v3.0 Build 3102	PC or CX (x86)	Tc2_FTP

5 PLC libraries

5.1 Tc2_FTP

Overview

The Tc2_FTP library contains function blocks to control and configure the TwinCAT FTP Client.

Function blocks

Name	Description
FB_GetStateTcFTPClient [▸ 39]	Getting state information.
FB_FTP_HostResolve [▸ 23]	Resolves the specified host name and outputs the corresponding IPv4 address
FB_FTP_Open [▸ 24]	Opens a connection to an FTP server (passive)
FB_FTP_OpenEx [▸ 25]	Opens a connection to an FTP server (Passive/ Active)
FB_FTP_Close [▸ 26]	Closes a connection to an FTP server
FB_FTP_CloseAll [▸ 27]	Closes all connections to an FTP server
FB_FTP_Info [▸ 27]	Returns information from the opened connections
FB_FTP_FileUpload [▸ 28]	Copies a source file to an FTP server over an already open connection
FB_FTP_FileUploadEx [▸ 29]	Copies a source file to an FTP server
FB_FTP_FileDownload [▸ 30]	Copies a source file from an FTP server to a target computer over an already open connection
FB_FTP_FileDownloadEx [▸ 31]	Copies a source file from an FTP server
FB_FTP_DirCreate [▸ 32]	Creates a directory on an FTP server
FB_FTP_DirRemove [▸ 33]	Deletes a directory from an FTP server
FB_FTP_FileList [▸ 34]	Reads file and folder names from the FTP server and returns them as an array.
FB_FTP_FileListEx [▸ 35]	Reads file and folder names with additional detail information from the FTP server and returns them as an array.
FB_FTP_FileExist [▸ 37]	Checks if a specific file exists on the FTP server
FB_FTP_FileRemove [▸ 37]	Deletes a file from the FTP server
FB_FTP_FileRename [▸ 38]	Renames a file on the FTP server

Functions

Name	Description
F_GetVersionTcFTPClient	Call version information.

Data Types

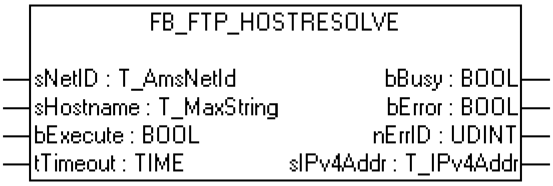
Name	Description
T_HFTP [▶ 40]	Handle of the FTP Server.
ST_FTP_ConnInfo [▶ 41]	Information of existing FTP connections.
ST_FTP_FileDetails [▶ 41]	Returning file information of the FTP "LIST" command
E_FTP_ConnMode [▶ 42]	FTP connection modes (Passiv / Aktiv).

Requirements

Development Environment	Target Platform	PLC Libraries to include
TwinCAT v3.0 Build 3102	PC or CX (x86)	Tc2_FTP

5.2 Function Blocks

5.2.1 FB_FTP_HostResolve



Host names of FTP servers can be resolved with the function block FB_FTP_HostResolve.

Inputs

```
VAR_INPUT
sNetID    : T_AmsNetId := '';
sHostname: T_MaxString:= '';
bExecute : BOOL;
tTimeout : TIME       := T#15s;
END_VAR
```

Name	Type	Description
sNetID	T_AmsNetId	A string containing the AMS network ID of the target device, at which the ADS command is directed.
sHostname	T_MaxString	Host name to resolve to the associated IPv4 address.
bExecute	BOOL	The function block is executed with the rising edge.
tTimeout	TIME	Indicates the timeout period.

Outputs

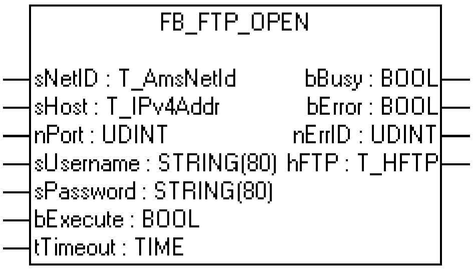
```
VAR_OUTPUT
bBusy     : BOOL;
bError    : BOOL;
nErrID    : UDINT;
sIPv4Addr: T_IPv4Addr;
END_VAR
```

Name	Type	Description
bBusy	BOOL	The command is in the process of being transmitted by ADS. No new command will be accepted as long as "bBusy" remains TRUE.
bError	BOOL	Becomes TRUE, as soon as an error occurs.
nErrID	UDINT	Returns the corresponding error code [▶ 51] in the event of a set bError output.
sIPv4Addr	T_IPv4Addr	Returns the matching IPv4 address to the specified host name.

Requirements

Development Environment	Target Platform	PLC Libraries to include
TwinCAT v3.0 Build 3102	PC or CX (x86)	Tc2_FTP

5.2.2 FB_FTP_Open



With the function block FB_FTP_Open a connection to an FTP server can be established. The handle returned can then be used to perform further actions on the FTP server. The connection type used is Passive FTP.

Inputs

```
VAR_INPUT
sNetID    : T_AmsNetId:= '';
sHost     : T_IPv4Addr:= '127.0.0.1';
nPort     : UDINT      := 21;
sUsername: STRING      := '';
sPassword: STRING      := '';
bExecute : BOOL;
tTimeout : TIME        := T#15s;
END_VAR
```

Name	Type	Description
sNetID	T_AmsNetId	A string containing the AMS network ID of the target device, at which the ADS command is directed.
sHost	T_IPv4Addr	A string containing the IPv4 address of the FTP server.
nPort	UDINT	FTP Port (default 21)
sUsername	STRING	User name for FTP server authentication
sPassword	STRING	Password for FTP server authentication
bExecute	BOOL	The function block is executed with the rising edge.
tTimeout	TIME	Indicates the timeout period.

Outputs

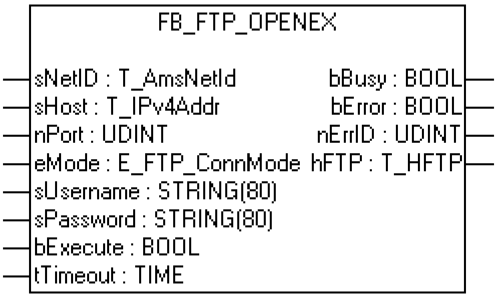
```
VAR_OUTPUT
bBusy   : BOOL;
bError  : BOOL;
nErrID  : UDINT;
hFTP    : T_HFTP;
END_VAR
```

Name	Type	Description
bBusy	BOOL	The command is in the process of being transmitted by ADS. No new command will be accepted as long as "bBusy" remains TRUE.
bError	BOOL	Becomes TRUE, as soon as an error occurs.
nErrID	UDINT	Returns the corresponding error code [▸ 51] in the event of a set bError output.
hFTP	T_HFTP	Handle of the FTP connection

Requirements

Development Environment	Target Platform	PLC Libraries to include
TwinCAT v3.0 Build 3102	PC or CX (x86)	Tc2_FTP

5.2.3 FB_FTP_OpenEX



With the function block FB_FTP_OpenEx a connection to an FTP server can be established. The handle returned can then be used to perform further actions on the FTP server. Additionally, the connection type - Passive or Active FTP - can be selected.

Inputs

```
VAR_INPUT
sNetID    : T_AmsNetId     := '';
sHost     : T_IPv4Addr     := '127.0.0.1';
nPort     : UDINT          := 21;
eMode     : E_FTP_ConnMode := eConnMode_PASSIVE;
sUsername : STRING         := '';
sPassword : STRING         := '';
bExecute  : BOOL;
tTimeout  : TIME           := T#15s;
END_VAR
```

Name	Type	Description
sNetID	T_AmsNetId	A string containing the AMS network ID of the target device, at which the ADS command is directed.
sHost	T_IPv4Addr	A string containing the IPv4 address of the FTP server.
nPort	UDINT	FTP Port (default 21).
eMode	E_FTP_ConnMode [▸ 42]	FTP connection type (Active / Passive).
sUsername	STRING	User name for FTP server authentication
sPassword	STRING	Password for FTP server authentication
bExecute	BOOL	The function block is executed with the rising edge.
tTimeout	TIME	Indicates the timeout period.

Outputs

```
VAR_OUTPUT
bBusy  : BOOL;
bError : BOOL;
```

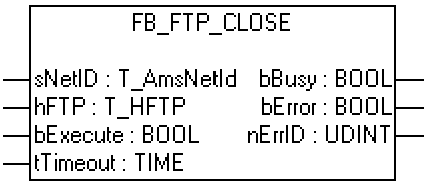
```
nErrID : UDINT;
hFTP   : T_HFTP;
END_VAR
```

Name	Type	Description
bBusy	BOOL	The command is in the process of being transmitted by ADS. No new command will be accepted as long as "bBusy" remains TRUE.
bError	BOOL	Becomes TRUE, as soon as an error occurs.
nErrID	UDINT	Returns the corresponding error code [▸ 51] in the event of a set bError output.
hFTP	T_HFTP	Handle of the FTP connection.

Requirements

Development Environment	Target Platform	PLC Libraries to include
TwinCAT v3.0 Build 3102	PC or CX (x86)	Tc2_FTP

5.2.4 FB_FTP_Close



An existing connection to an FTP server can be closed with the function block FB_FTP_Close.

Inputs

```
VAR_INPUT
sNetID   : T_AmsNetId:= '';
hFTP     : T_HFTP;
bExecute: BOOL;
tTimeout: TIME      := T#15s;
END_VAR
```

Name	Type	Description
sNetID	T_AmsNetId	A string containing the AMS network ID of the target device, at which the ADS command is directed.
hFTP	T_HFTP	Handle of the FTP server.
bExecute	BOOL	The function block is executed with the rising edge.
tTimeout	TIME	Indicates the timeout period.

Outputs

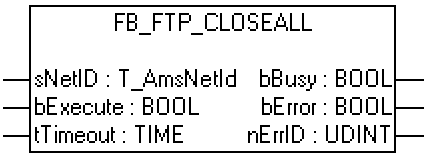
```
VAR_OUTPUT
bBusy  : BOOL;
bError : BOOL;
nErrID : UDINT;
END_VAR
```

Name	Type	Description
bBusy	BOOL	The command is in the process of being transmitted by ADS. No new command will be accepted as long as "bBusy" remains TRUE.
bError	BOOL	Becomes TRUE, as soon as an error occurs.
nErrID	UDINT	Returns the corresponding error code [▸ 51] in the event of a set bError output.

Requirements

Development Environment	Target Platform	PLC Libraries to include
TwinCAT v3.0 Build 3102	PC or CX (x86)	Tc2_FTP

5.2.5 FB_FTP_CloseAll



All existing connections to an FTP server can be closed with the function block FB_FTP_CloseAll.

Inputs

```
VAR_INPUT
sNetID   : T_AmsNetId := '';
bExecute : BOOL;
tTimeout : TIME       := T#15s;
END_VAR
```

Name	Type	Description
sNetID	T_AmsNetId	A string containing the AMS network ID of the target device, at which the ADS command is directed.
bExecute	BOOL	The function block is executed with the rising edge.
tTimeout	TIME	Indicates the timeout period.

Outputs

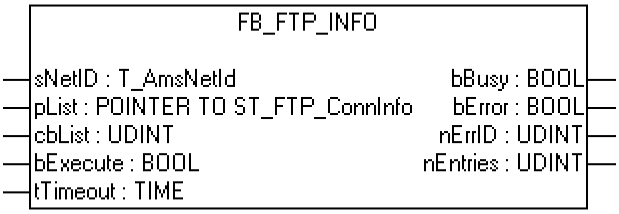
```
VAR_OUTPUT
bBusy  : BOOL;
bError : BOOL;
nErrID : UDINT;
END_VAR
```

Name	Type	Description
bBusy	BOOL	The command is in the process of being transmitted by ADS. No new command will be accepted as long as "bBusy" remains TRUE.
bError	BOOL	Becomes TRUE, as soon as an error occurs.
nErrID	BOOL	Returns the corresponding error code [▶ 51] in the event of a set bError output.

Requirements

Development Environment	Target Platform	PLC Libraries to include
TwinCAT v3.0 Build 3102	PC or CX (x86)	Tc2_FTP

5.2.6 FB_FTP_Info



Information about the created FTP server connections can be retrieved with the function block FB_FTP_Info.

Inputs

```
VAR_INPUT
sNetID   : T_AmsNetId:= '';
pList    : POINTER TO ST_FTP_ConnInfo;
cbList   : UDINT     := 0;
bExecute : BOOL;
tTimeout : TIME      := T#15s;
END_VAR
```

Name	Type	Description
sNetID	T_AmsNetId	A string containing the AMS network ID of the target device, at which the ADS command is directed.
pList	POINTER TO ST_FTP_ConnInfo	Pointer address to a variable of type ST_FTP_ConnInfo. This variable can also be an array of the type ST_FTP_ConnInfo.
cbList	UDINT	Length of the ST_FTP_ConnInfo instance
bExecute	BOOL	The function block is executed with the rising edge.
tTimeout	TIME	Indicates the duration of the timeout.

Outputs

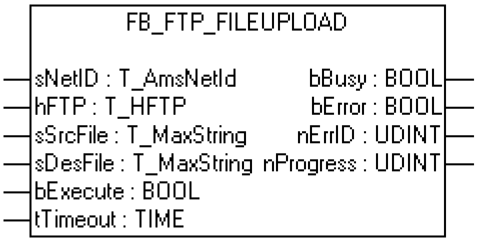
```
VAR_OUTPUT
bBusy    : BOOL;
bError   : BOOL;
nErrID   : UDINT;
nEntries: UDINT;
END_VAR
```

Name	Type	Description
bBusy	BOOL	The command is in the process of being transmitted by ADS. No new command will be accepted as long as "bBusy" remains TRUE.
bError	BOOL	Becomes TRUE, as soon as an error occurs.
nErrID	UDINT	Returns the corresponding error code [▶ 51] in the event of a set bError output.
nEntries	UDINT	Number of existing connections.

Requirements

Development Environment	Target Platform	PLC Libraries to include
TwinCAT v3.0 Build 3102	PC or CX (x86)	Tc2_FTP

5.2.7 FB_FTP_FileUpload



Files can be transferred from the ADS-Device to an FTP server with the function block FB_FTP_FileUpload. This function block uses an already opened connection to an FTP server

Inputs

```
VAR_INPUT
sNetID   : T_AmsNetId := '';
hFTP     : T_HFTP;
```

```
sSrcFile : T_MaxString:= '';
sDesFile : T_MaxString:= '';
bExecute : BOOL;
tTimeout : TIME       := T#15s;
END_VAR
```

Name	Type	Description
sNetID	T_AmsNetId	A string containing the AMS network ID of the target device, at which the ADS command is directed.
hFTP	T_HFTP	Handle of the FTP server.
sSrcFile	T_MaxString	Source file to be copied to the FTP server.
sDesFile	T_MaxString	Destination filename with path specification.
bExecute	BOOL	The function block is executed with the rising edge.
tTimeout	TIME	Indicates the timeout period.

Outputs

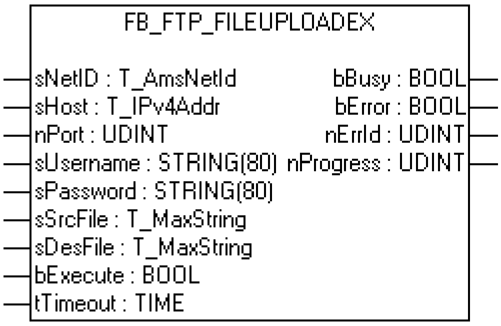
```
VAR_OUTPUT
bBusy     : BOOL;
bError    : BOOL;
nErrID    : UDINT;
nProgress : UDINT;
END_VAR
```

Name	Type	Description
bBusy	BOOL	The command is in the process of being transmitted by ADS. No new command will be accepted as long as "bBusy" remains TRUE.
bError	BOOL	Becomes TRUE, as soon as an error occurs.
nErrID	UDINT	Returns the ADS error code if the bError output is set.
nProgress	UDINT	Displays the current status of the transmission in percent.

Requirements

Development Environment	Target Platform	PLC Libraries to include
TwinCAT v3.0 Build 3102	PC or CX (x86)	Tc2_FTP

5.2.8 FB_FTP_FileUploadEx



Files can be transferred from the ADS-Device to an FTP server with the function block FB_FTP_FileUploadEx. The connection type used is Passive FTP.

Inputs

```
VAR_INPUT
sNetID   : T_AmsNetId  := '';
sHost    : T_IPv4Addr  := '127.0.0.1';
nPort    : UDINT       := 21;
sUsername: STRING      := '';
sPassword: STRING      := '';
sSrcFile : T_MaxString := '';
sDesFile : T_MaxString := '';
```

```
bExecute : BOOL;
tTimeout : TIME        := T#15s;
END_VAR
```

Name	Type	Description
sNetID	T_AmsNetId	A string containing the AMS network ID of the target device, at which the ADS command is directed.
sHost	T_IPv4Addr	A string containing the IPv4 address of the FTP server.
nPort	UDINT	FTP Port (default 21).
sUsername	STRING	User name for FTP server authentication.
sPassword	STRING	Password for FTP server authentication.
sSrcFile	T_MaxString	Source file to be copied to the FTP server.
sDesFile	T_MaxString	Destination filename with path specification.
bExecute	BOOL	The function block is executed with the rising edge.
tTimeout	TIME	Indicates the timeout period.

Outputs

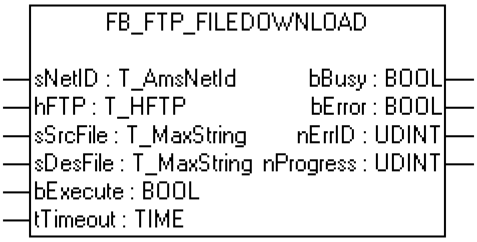
```
VAR_OUTPUT
bBusy    : BOOL;
bError   : BOOL;
nErrID   : UDINT;
nProgress: UDINT;
END_VAR
```

Name	Type	Description
bBusy	BOOL	The command is in the process of being transmitted by ADS. No new command will be accepted as long as "bBusy" remains TRUE.
bError	BOOL	Becomes TRUE, as soon as an error occurs.
nErrID	UDINT	Returns the corresponding error code [▶ 51] in the event of a set bError output.
nProgress	UDINT	Displays the current status of the transmission in percent.

Requirements

Development Environment	Target Platform	PLC Libraries to include
TwinCAT v3.0 Build 3102	PC or CX (x86)	Tc2_FTP

5.2.9 FB_FTP_FileDownload



Files can be transferred from the FTP server to an ADS-Device with the function block FB_FTP_FileDownload. This function block uses an already open connection to an FTP server.

Inputs

```
VAR_INPUT
sNetID   : T_AmsNetId  := '';
hFTP     : T_HFTP
sSrcFile : T_MaxString := '';
sDesFile : T_MaxString := '';
bExecute : BOOL;
tTimeout : TIME        := T#15s;
END_VAR
```

Name	Type	Description
sNetID	T_AmsNetId	A string containing the AMS network ID of the target device, at which the ADS command is directed.
hFTP	T_HFTP	Handle of the FTP server.
sSrcFile	T_MaxString	Source file to be copied from the FTP server.
sDesFile	T_MaxString	Destination filename with path specification.
bExecute	BOOL	The function block is executed with the rising edge.
tTimeout	TIME	Indicates the timeout period.

Outputs

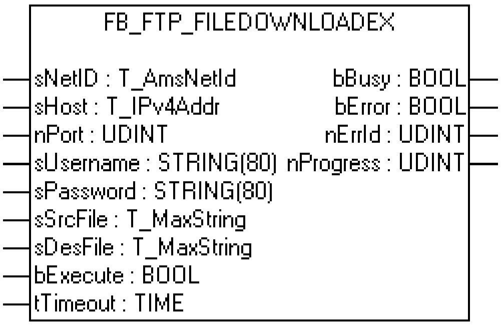
```
VAR_OUTPUT
bBusy     : BOOL;
bError    : BOOL;
nErrID    : UDINT;
nProgress: UDINT;
END_VAR
```

Name	Type	Description
bBusy	BOOL	The command is in the process of being transmitted by ADS. No new command will be accepted as long as "bBusy" remains TRUE.
bError	BOOL	Becomes TRUE, as soon as an error occurs.
nErrID	UDINT	Returns the corresponding error code [▶ 51] in the event of a set bError output.
nProgress	UDINT	Displays the current status of the transmission in percent. With CE FTP server no intermediate values are returned only 0% and 100%.

Requirements

Development Environment	Target Platform	PLC Libraries to include
TwinCAT v3.0 Build 3102	PC or CX (x86)	Tc2_FTP

5.2.10 FB_FTP_FileDownloadEx



Files can be transferred from an FTP server to a ADS-Device with the function block FB_FTP_FileDownloadEx. The connection type used is Passive FTP.

Inputs

```
VAR_INPUT
sNetID     : T_AmsNetId  := '';
sHost      : T_IPv4Addr  := '127.0.0.1';
nPort      : UDINT       := 21;
sUsername  : STRING      := '';
sPassword  : STRING      := '';
sSrcFile   : T_MaxString := '';
sDesFile   : T_MaxString := '';
bExecute   : BOOL;
tTimeout   : TIME        := T#15s;
END_VAR
```

Name	Type	Description
sNetID	T_AmsNetId	A string containing the AMS network ID of the target device, at which the ADS command is directed.
sHost	T_IPv4Addr	A string containing the IPv4 address of the FTP server.
nPort	UDINT	FTP Port (default 21).
sUsername	STRING	User name for FTP server authentication.
sPassword	STRING	Password for FTP server authentication.
sSrcFile	T_MaxString	Source file to be copied from the FTP server.
sDesFile	T_MaxString	Destination filename with path specification.
bExecute	BOOL	The function block is executed with the rising edge.
tTimeout	TIME	Indicates the timeout period.

Outputs

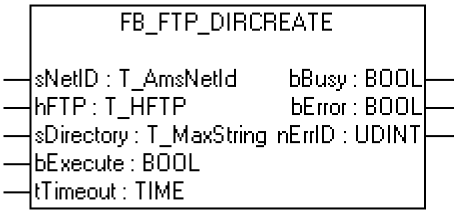
```
VAR_OUTPUT
bBusy     : BOOL;
bError    : BOOL;
nErrID    : UDINT;
nProgress : UDINT;
END_VAR
```

Name	Type	Description
bBusy	BOOL	The command is in the process of being transmitted by ADS. No new command will be accepted as long as "bBusy" remains TRUE.
bError	BOOL	Becomes TRUE, as soon as an error occurs.
nErrID	UDINT	Returns the corresponding error code [▶ 51] in the event of a set bError output.
nProgress	UDINT	Displays the current status of the transmission in percent. With CE FTP server no intermediate values are returned only 0% and 100%.

Requirements

Development Environment	Target Platform	PLC Libraries to include
TwinCAT v3.0 Build 3102	PC or CX (x86)	Tc2_FTP

5.2.11 FB_FTP_DirCreate



Directories can be created on an FTP server with the function block FB_FTP_DirCreate. This function block uses an already open connection to an FTP server.

Inputs

```
VAR_INPUT
sNetID   : T_AmsNetId := '';
hFTP     : T_HFTP     := 0;
sDirName : T_MaxString:= '';
bExecute : BOOL;
tTimeout : TIME       := T#15s;
END_VAR
```

Name	Type	Description
sNetID	T_AmsNetId	A string containing the AMS network ID of the target device, at which the ADS command is directed.
hFTP	T_HFTP	Handle of the FTP server.
sDirectory	T_MaxString	The name of the directory to be created.
bExecute	BOOL	The function block is executed with the rising edge.
tTimeout	TIME	Indicates the timeout period.

Outputs

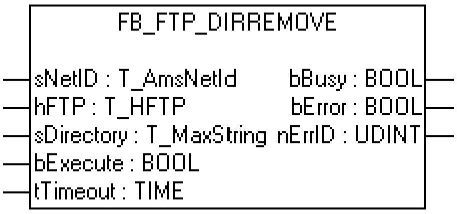
```
VAR_OUTPUT
bBusy  : BOOL;
bError : BOOL;
nErrID : UDINT;
END_VAR
```

Name	Type	Description
bBusy	BOOL	The command is in the process of being transmitted by ADS. No new command will be accepted as long as "bBusy" remains TRUE.
bError	BOOL	Becomes TRUE, as soon as an error occurs.
nErrID	UDINT	Returns the corresponding error code [▸ 51] in the event of a set bError output.

Requirements

Development Environment	Target Platform	PLC Libraries to include
TwinCAT v3.0 Build 3102	PC or CX (x86)	Tc2_FTP

5.2.12 FB_FTP_DirRemove



Directories can be deleted from the FTP server with the function block FB_FTP_DirRemove. This function block uses an already open connection to an FTP server.

Inputs

```
VAR_INPUT
sNetID     : T_AmsNetId := '';
hFTP       : T_HFTP;
sDirectory: T_MaxString:= '';
bExecute   : BOOL;
tTimeout   : TIME       := T#15s;
END_VAR
```

sNetID : Is a string containing the AMS network ID of the target device to which the ADS command is directed.

hFTP : Handle of the FTP server.

sDirectory : The name of the directory to be deleted.

bExecute : The function block is executed with the rising edge.

tTimeout : Specifies the timeout period.

Outputs

```
VAR_OUTPUT
bBusy  : BOOL;
bError : BOOL;
nErrID : UDINT;
END_VAR
```

bBusy : Command is being transmitted via ADS. No new command will be accepted as long as "bBusy" remains TRUE.

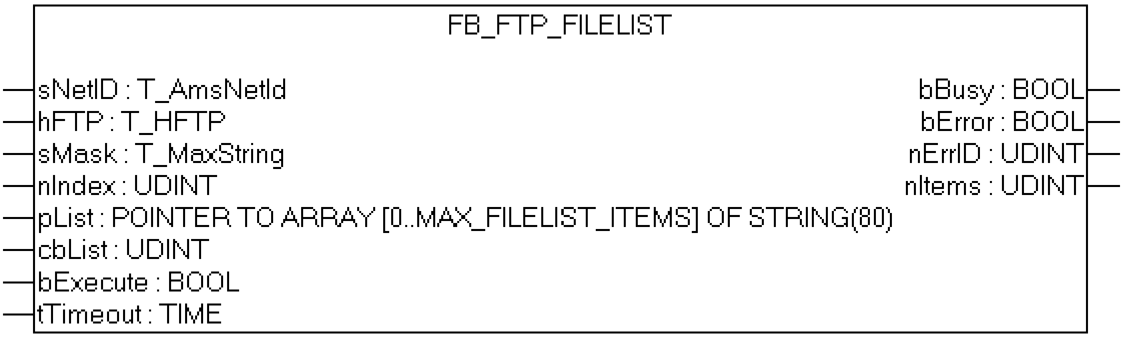
bError: Becomes TRUE, as soon as an error occurs.

nErrID : Returns the associated error code [▶ 51] in the event of a set bError output.

Requirements

Development Environment	Target Platform	PLC Libraries to include
TwinCAT v3.0 Build 3102	PC or CX (x86)	Tc2_FTP

5.2.13 FB_FTP_FileList



File and folder names can be read or searched from the FTP server with the function block FB_FTP_FileList. This function block uses an already opened connection to an FTP server

Inputs

```
VAR_INPUT
sNetID   : T_AmsNetId := '';
hFTP      : T_HFTP;
sMask    : T_MaxString:= '';
nIndex   : UDINT;
pList    : POINTER TO ARRAY [0..MAX_FILELIST_ITEMS] OF STRING(80);
cbList   : UDINT;
bExecute: BOOL;
tTimeout: TIME       := T#20s;
END_VAR
```

Name	Type	Description
sNetID	T_AmsNetId	A string containing the AMS network ID of the target device, at which the ADS command is directed.
hFTP	T_HFTP	Handle of the FTP server.
sMask	T_MaxString	Search mask to filter corresponding files: *.* Reads out all files. * Reads out all files and all folder names. *.txt Reads out all files with the extension "TXT". \Test\*.* Reads out all files from the Test subfolder.
nIndex	UDINT	Specifies the index of the first filename to be read.
pList	POINTER TO ARRAY	Specifies the address of the string array into which the filenames are to be written.
cbList	UDINT	Indicates the size of the string array in bytes.
bExecute	BOOL	The function block is executed with the rising edge.
tTimeout	TIME	Indicates the timeout period.

Outputs

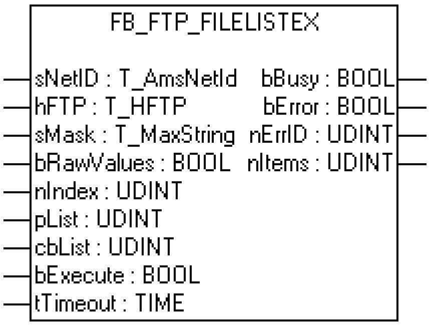
```
VAR_OUTPUT
bBusy : BOOL;
bError: BOOL;
nErrID: UDINT;
nItems: UDINT;
END_VAR
```

Name	Type	Description
bBusy	BOOL	The command is in the process of being transmitted by ADS. No new command will be accepted as long as "bBusy" remains TRUE.
bError	BOOL	Becomes TRUE, as soon as an error occurs.
nErrID	UDINT	Returns the ADS error code if the bError output is set.
nItems	UDINT	Returns the total number of file list entries.

Requirements

Development Environment	Target Platform	PLC Libraries to include
TwinCAT v3.0 Build 3102	PC or CX (x86)	Tc2_FTP

5.2.14 FB_FTP_FileListEx



File and folder names can be read or searched from the FTP server with the function block FB_FTP_FileListEx. This function block uses an already open connection to an FTP server. In contrast to the function block FB_FTP_FileList, details of the files/folders are also returned.

Inputs

```
VAR_INPUT
sNetID     : T_AmsNetId := '';
hFTP       : T_HFTP;
sMask      : T_MaxString:= '';
bRawValues: BOOL;
nIndex     : UDINT;
pList      : UDINT;
cbList     : UDINT;
bExecute   : BOOL;
tTimeout   : TIME       := T#20s;
END_VAR
```

Name	Type	Description
sNetID	T_AmsNetId	A string containing the AMS network ID of the target device, at which the ADS command is directed.
hFTP	T_HFTP	Handle of the FTP server.
sMask	T_MaxString	Search mask to filter corresponding files: *.* Reads out all files. * Reads out all files and all folder names. *.txt Reads out all files with the extension "TXT". \Test\*.* Reads out all files from the Test subfolder.
bRawValues	BOOL	Specifies in which form the file list should be returned: **TRUE:** Information is returned in the form of a T_MaxString array. **FALSE:** Information is returned in the form of a ST_FTP_FileDetails [▶ 41] array. (Not supported by every FTP server).
nIndex	UDINT	Specifies the index of the first file to be read.
pList	UDINT	Specifies the address of the array into which the file list is to be written. Maximum array size 256 elements.
cbList	UDINT	Indicates the size of the array in bytes.
bExecute	BOOL	The function block is executed with the rising edge.
tTimeout	TIME	Indicates the timeout period.

Outputs

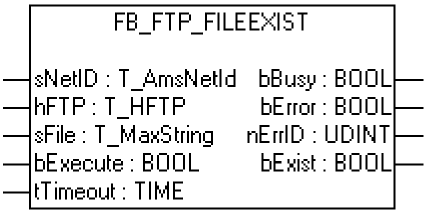
```
VAR_OUTPUT
bBusy : BOOL;
bError: BOOL;
nErrID: UDINT;
nItems: UDINT;
END_VAR
```

Name	Type	Description
bBusy	BOOL	The command is in the process of being transmitted by ADS. No new command will be accepted as long as "bBusy" remains TRUE.
bError	BOOL	Becomes TRUE, as soon as an error occurs.
nErrID	UDINT	Returns the ADS error code if the bError output is set.
nItems	UDINT	Returns the total number of file list entries.

Requirements

Development Environment	Target Platform	PLC Libraries to include
TwinCAT v3.0 Build 3102	PC or CX (x86)	Tc2_FTP

5.2.15 FB_FTP_FileExist



It can be checked whether a certain file exists on the FTP server with the function block FB_FTP_FileExist. This function block uses an already open connection to an FTP server.

Inputs

```
VAR_INPUT
sNetID   : T_AmsNetId := '';
hFTP     : T_HFTP;
sFile    : T_MaxString:= '';
bExecute : BOOL;
tTimeout : TIME       := T#15s;
END_VAR
```

Name	Type	Description
sNetID	T_AmsNetId	A string containing the AMS network ID of the target device, at which the ADS command is directed.
hFTP	T_HFTP	Handle of the FTP server.
sFile	T_MaxString	Filename to be searched.
bExecute	BOOL	The function block is executed with the rising edge.
tTimeout	TIME	Indicates the timeout period.

Outputs

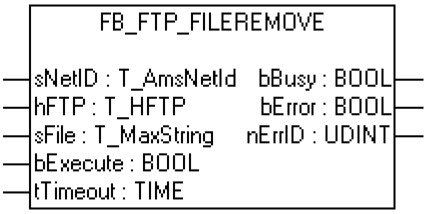
```
VAR_OUTPUT
bBusy : BOOL;
bError: BOOL;
nErrID: UDINT;
bExist: BOOL;
END_VAR
```

Name	Type	Description
bBusy	BOOL	The command is in the process of being transmitted by ADS. No new command will be accepted as long as "bBusy" remains TRUE.
bError	BOOL	Becomes TRUE, as soon as an error occurs.
nErrID	UDINT	Returns the corresponding error code in the event of a set bError output.
bExist	BOOL	Becomes TRUE if the specified file was found.

Requirements

Development Environment	Target Platform	PLC Libraries to include
TwinCAT v3.0 Build 3102	PC or CX (x86)	Tc2_FTP

5.2.16 FB_FTP_FileRemove



Files on an FTP server can be deleted with the function block FB_FTP_FileRemove. This function block uses an already open connection to an FTP server.

Inputs

```
VAR_INPUT
sNetID   : T_AmsNetId := '';
hFT      : T_HFTP;
sFile    : T_MaxString:= '';
bExecute: BOOL;
tTimeout: TIME        := T#15s;
END_VAR
```

Name	Type	Description
sNetID	T_AmsNetId	A string containing the AMS network ID of the target device, at which the ADS command is directed.
hFTP	T_HFTP	Handle of the FTP server.
sFile	T_MaxString	The name of the file to be deleted.
bExecute	BOOL	The function block is executed with the rising edge.
tTimeout	TIME	Indicates the timeout period.

Outputs

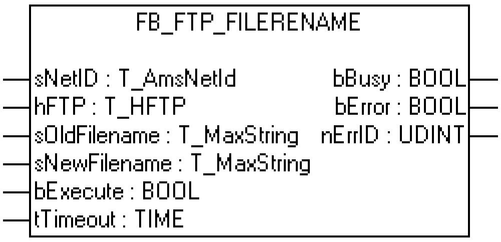
```
VAR_OUTPUT
bBusy : BOOL;
bError: BOOL;
nErrID: UDINT;
END_VAR
```

Name	Type	Description
bBusy	BOOL	The command is in the process of being transmitted by ADS. No new command will be accepted as long as "bBusy" remains TRUE.
bError	BOOL	Becomes TRUE, as soon as an error occurs.
nErrID	UDINT	Returns the corresponding error code [▶ 51] in the event of a set bError output.

Requirements

Development Environment	Target Platform	PLC Libraries to include
TwinCAT v3.0 Build 3102	PC or CX (x86)	Tc2_FTP

5.2.17 FB_FTP_FileRename



Files on an FTP server can be renamed with the function block FB_FTP_FileRename. This function block uses an already open connection to an FTP server.

Inputs

```
VAR_INPUT
sNetID      : T_AmsNetId := '';
hFTP        : T_HFTP;
sOLDFilename: T_MaxString:= '';
sNEWFilename: T_MaxString:= '';
```

```
bExecute     : BOOL;
tTimeout     : TIME        := T#15s;
END_VAR
```

Name	Type	Description
sNetID	T_AmsNetId	A string containing the AMS network ID of the target device, at which the ADS command is directed.
hFTP	T_HFTP	Handle of the FTP server.
sOLDFilename	T_MaxString	The old filename of the file to be changed.
sNEWFilename	T_MaxString	The new filename.
bExecute	BOOL	The function block is executed with the rising edge.
tTimeout	TIME	Indicates the timeout period.

Outputs

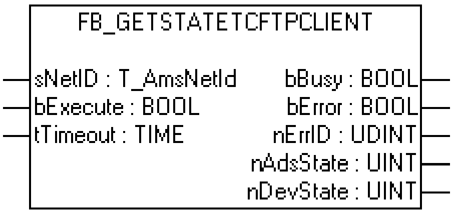
```
VAR_OUTPUT
bBusy : BOOL;
bError: BOOL;
nErrID: UDINT;
END_VAR
```

Name	Type	Description
bBusy	BOOL	The command is in the process of being transmitted by ADS. No new command will be accepted as long as "bBusy" remains TRUE.
bError	BOOL	Becomes TRUE, as soon as an error occurs.
nErrID	UDINT	Returns the corresponding error code [▶ 51] in the event of a set bError output.

Requirements

Development Environment	Target Platform	PLC Libraries to include
TwinCAT v3.0 Build 3102	PC or CX (x86)	Tc2_FTP

5.2.18 FB_GetStateTcFTPClient



The current state of the FTP client can be queried with the function block FB_GetStateTcFTPClient.

Inputs

```
VAR_INPUT
sNetID   : T_AmsNetID;
bExecute: BOOL;
tTimeout: TIME;
END_VAR
```

Name	Type	Description
sNetID	T_AmsNetID	A string containing the AMS network ID of the target device, at which the ADS command is directed.
bExecute	BOOL	The command is executed with the rising edge.
tTimeout	TIME	Indicates the duration of the timeout.

Outputs

```
VAR_OUTPUT
bBusy     : BOOL;
bError    : BOOL;
nErrID    : UDINT;
nAdsState: UINT;
nDevState: UINT;
END_VAR
```

Name	Type	Description
bBusy	BOOL	The command is in the process of being transmitted by ADS. No new command will be accepted as long as "bBusy" remains TRUE.
bError	BOOL	Becomes TRUE, as soon as an error occurs.
nErrID	UDINT	Returns the corresponding error code [▶ 51] in the event of a set bError output.

nAdsState	UINT	Contains the state identification code of the ADS target device. The codes returned here are specified for all ADS servers:
		ADSSTATE_INVALID =0 ;
		ADSSTATE_IDLE =1 ;
		ADSSTATE_RESET =2 ;
		ADSSTATE_INIT =3 ;
		ADSSTATE_START =4 ;
		ADSSTATE_RUN =5 ;
		ADSSTATE_STOP =6 ;
		ADSSTATE_SAVECFG =7 ;
		ADSSTATE_LOADCFG =8 ;
		ADSSTATE_POWERFAILURE =9 ;
		ADSSTATE_POWERGOOD =10 ;
		ADSSTATE_ERROR =11;

nDevState	UINT	Contains the specific state identification code of the ADS target device. The codes returned here are supplementary information specific to the ADS device. 1 = TwinCAT FTP Client started

Requirements

Development Environment	Target Platform	PLC Libraries to include
TwinCAT v3.0 Build 3102	PC or CX (x86)	Tc2_FTP

5.3 Data Types

5.3.1 T_HFTP

Syntax

```
TYPE T_HFTP :
STRUCT
hClient:UDINT;
END_STRUCT
END_TYPE
```

Parameter

Name	Type	Description
hClient	UDINT	Specifies the handle of the FTP connection.

Requirements

Development Environment	Target Platform	PLC Libraries to include
TwinCAT v3.0 Build 3102	PC or CX (x86)	Tc2_FTP

5.3.2 ST_FTP_ConnInfo

Syntax

```
TYPE ST_FTP_ConnInfo :
STRUCT
sHost     : T_IPv4Addr;
nPort     : UDINT;
hFTP      : T_HFTP;
sUsername: STRING;
END_STRUCT
END_TYPE
```

Parameter

Name	Type	Description
sHost	T_IPv4Addr	Specifies the IP address of the FTP server.
nPort	UDINT	Specifies the port for the FTP connection.
hFTP	T_HFTP	Specifies the handle of the FTP connection.
sUsername	STRING	Specifies the name of the logged-in user.

Requirements

Development Environment	Target Platform	PLC Libraries to include
TwinCAT v3.0 Build 3102	PC or CX (x86)	Tc2_FTP

5.3.3 ST_FTP_FileDetails

Syntax

```
TYPE ST_FTP_FileDetails:
STRUCT
bDir        : BOOL;
sPermission: STRING(10);
nSize       : UDINT;
nFilecode   : UDINT;
tTimestamp : DT;
sOwner      : STRING(79);
sGroup      : STRING(79);
sFilename   : STRING(79);
END_STRUCT
END_TYPE
```

Parameter

Name	Type	Description
bDir	BOOL	Specifies whether it is a file or a directory (not supported by every FTP server).
sPermission	STRING	Specifies the permission parameters of the file/directory (not supported by every FTP server).
nSize	UDINT	Specifies the size of the file.
nFilecode	UDINT	Returns the file code (not supported by every FTP server).
tTimstamp	DT	Specifies the timestamp of the file.
sOwner	STRING	Returns the user (not supported by every FTP server).
sGroup	STRING	Specifies the associated group (not supported by every FTP server).
sFilename	STRING	Specifies the name of the file/directory.

Requirements

Development Environment	Target Platform	PLC Libraries to include
TwinCAT v3.0 Build 3102	PC or CX (x86)	Tc2_FTP

5.3.4 E_FTP_ConnMode

Syntax

```
TYPE E_FTP_ConnMode:(
eConnMode_PASSIVE  := 0,
eConnMode_ACTIVE   := 1
);
END_TYPE
```

Values

Name	Description
eConnMode_PASSIVE	In this mode, the FTP server creates a port and waits for the FTP client to connect. (Firewall is configured on the server side)
eConnMode_ACTIVE	In this mode, the FTP client creates a port and the FTP server connects to the client. (Firewall is configured on the client side)

Requirements

Development Environment	Target Platform	PLC Libraries to include
TwinCAT v3.0 Build 3102	PC or CX (x86)	Tc2_FTP

5.4 Constants

5.4.1 Konstanten

Syntax

```
AMSPORT_FTPADSSRV       : UINT:= 10900;

FTPADS_IGR_CONNOPEN     : UDINT:= 16#100;
FTPADS_IGR_RESOLVEDNS   : UDINT:= 16#101;
FTPADS_IGR_CONNCLOSE    : UDINT:= 16#200;
FTPADS_IGR_CONNCLOSEALL: UDINT:= 16#201;

FTPADS_IGR_CONNINFO     : UDINT:= 16#300;

FTPADS_IGR_FILEUPLOAD   : UDINT:= 16#10000;
FTPADS_IGR_FILEDOWNLOAD: UDINT:= 16#20000;

FTPADS_IGR_DIRREMOV     : UDINT:= 16#30000;
FTPADS_IGR_DIRCREATE    : UDINT:= 16#30001;

FTPADS_IGR_FILEEXIST    : UDINT:= 16#40000;
FTPADS_IGR_FILERENAME   : UDINT:= 16#40001;
FTPADS_IGR_FILEREMOVE   : UDINT:= 16#40002;
FTPADS_IGR_FILELIST     : UDINT:= 16#40003;
FTPADS_IGR_FILELISTEX   : UDINT:= 16#40004;

MAX_FTP_CONNECTIONS     : UDINT:= 25;
MAX_FILELIST_ITEMS      : UDINT:= 255;

DEFAULT_FTP_PORT        : UDINT:= 21;
```

Values

Name	Type	Description
AMSPORT_FTPADSSRV	UINT	The port of the FTP client ADS server.
FTPADS_IGR_CONNOPEN	UDINT	The ADS server uses the index group to distinguish the commands coming in via ADS.
FTPADS_IGR_RESOLVEDNS	UDINT	The ADS server uses the index group to distinguish the commands coming in via ADS.
FTPADS_IGR_CONNCLOSE	UDINT	The ADS server uses the index group to distinguish the commands coming in via ADS.
FTPADS_IGR_CONNCLOSEALL	UDINT	The ADS server uses the index group to distinguish the commands coming in via ADS.
FTPADS_IGR_CONNINFO	UDINT	The ADS server uses the index group to distinguish the commands coming in via ADS.
FTPADS_IGR_FILEUPLOAD	UDINT	The ADS server uses the index group to distinguish the commands coming in via ADS.
FTPADS_IGR_FILEDOWNLOAD	UDINT	The ADS server uses the index group to distinguish the commands coming in via ADS.
FTPADS_IGR_DIRREMOV	UDINT	The ADS server uses the index group to distinguish the commands coming in via ADS.
FTPADS_IGR_DIRCREATE	UDINT	The ADS server uses the index group to distinguish the commands coming in via ADS.
FTPADS_IGR_FILEEXIST	UDINT	The ADS server uses the index group to distinguish the commands coming in via ADS.
FTPADS_IGR_FILERENAME	UDINT	The ADS server uses the index group to distinguish the commands coming in via ADS.
FTPADS_IGR_FILEREMOVE	UDINT	The ADS server uses the index group to distinguish the commands coming in via ADS.
FTPADS_IGR_FILELIST	UDINT	The ADS server uses the index group to distinguish the commands coming in via ADS.
FTPADS_IGR_FILELISTEX	UDINT	The ADS server uses the index group to distinguish the commands coming in via ADS.
MAX_FTP_CONNECTIONS	UDINT	The maximum number of simultaneous FTP connections.
MAX_FILELIST_ITEMS	UDINT	The maximum number of elements contained in a Filelist.
DEFAULT_FTP_PORT	UDINT	The FTP default port

Requirements

Development Environment	Target Platform	PLC Libraries to include
TwinCAT v3.0 Build 3102	PC or CX (x86)	Tc2_FTP

6 Samples

6.1 Samples

The following table provides an overview of all available samples.

No.	Sample
1	Uploading a file to an FTP server [▸ 44]
2	Downloading a file from an FTP server [▸ 45]
3	Reading connection information [▸ 49]
4	Deleting a file from an FTP server [▸ 46]
5	Reading a file list [▸ 48]

The samples are additionally available as download in a TwinCAT 3 Solution. The following table provides download links to this solution, depending on the TwinCAT 3 version used.

TwinCAT version	Sample download
3.0	Download
3.1	Download

Requirements

Development Environment	Target Platform	PLC Libraries to include
TwinCAT v3.0 Build 3102	PC or CX (x86)	Tc2_FTP

6.2 TwinCAT FTP Client: Upload of a file to a FTP Server

This sample will illustrate uploading a file from an ADS device to a FTP Server.

To execute this sample you have to create a user with the username "TestUser" and the password "TestPwd123" on the FTP Server.
If you set a rising edge at the input variable "bExecute" with the help of the variable "startstop", the file "\Program Files\TestFile1.txt" from the ADS device will be copied to the FTP Server. On the FTP Server the name of the file will be set to "\TestFolder\File1.txt". The folder "TestFolder" will be created if it isn't available.

Notice that the user "TestUser" has rights for reading and writing.

Variable declaration

```
PROGRAM MAIN
VAR
FB_FTPFileUpload1 : FB_FTP_FileUploadEx;
startstop : BOOL;
busy : BOOL;
err : BOOL;
errid : UDINT;
progress : UDINT;
END_VAR
```

SPS Programm

```
FB_FTPFileUpload1(
sNetID:= ,
sHost:= '172.16.235.100',
nPort:= DEFAULT_FTP_PORT,
sUsername:= 'TestUser',
sPassword:= 'TestPwd123',
sSrcFile:= '\Program Files\TestFile1.txt',
sDesFile:= '\TestFolder\File1.txt',
bExecute:= startstop,
tTimeout:= T#15s,
bBusy=> busy,
bError=> err,
nErrId=> errid,
nProgress=> progress);
```

The following PLC libraries need to be referenced for this sample: **Tc2_FTP**, Tc2_System, Tc2_Standard, Tc3_Interfaces, Tc3_Modules.

Requirements

Development Environment	Target Platform	PLC Libraries to include
TwinCAT v3.0 Build 3102	PC or CX (x86)	Tc2_FTP

6.3 TwinCAT FTP Client: Downloading a file from a FTP Server to an ADS device

This sample will illustrate the downloading of files from a FTP Server.

To execute this sample you have to create a user with the username "TestUser" and the password "TestPwd123" on the FTP Server. If you set a rising edge at the variable "startstop", the downloading will be started. At first a connection to a FTP Server will be opened with the function block FB_FTP_Open. After that the given file "\TestFolder\File1.txt" from the FTP Server will be downloaded with the function block FB_FTP_FileDownload. The following path "\Program Files\TestFile1.txt" is the place where the file will be stored on the ADS device. At the end the connection to the FTP Server will be closed with the function block FB_FTP_Close.

Notice that the user "TestUser" has rights for reading and writing.

Variable declaration

```
PROGRAM MAIN
VAR
RisingEdge : R_TRIG;
startstop : BOOL;
state : BYTE;
FB_FTP_Open1 : FB_FTP_Open;
FB_FTP_FileDownload1 : FB_FTP_FileDownload;
FB_FTP_Close1 : FB_FTP_Close;
busy : BOOL;
err : BOOL;
errid : UDINT;
handle : T_HFTP;
progress : UDINT;
END_VAR
```

PLC Program

```
RisingEdge(CLK:= startstop);
IF RisingEdge.Q THEN
state := 1;
END_IF

CASE state OF
0:
;

1:
FB_FTP_Open1(
sNetID:= '5.0.252.142.1.1',
sHost:= '172.16.9.223',
nPort:= 21,
sUsername:= 'TestUser',
sPassword:= 'TestPwd123',
bExecute:= TRUE,
tTimeout:= T#15s,
bBusy=> busy,
bError=> err,
nErrId=> errid,
hFTP=> handle);

IF NOT busy AND NOT err THEN
FB_FTP_Open1(bExecute:= FALSE);
state := 2;
END_IF

2:
FB_FTP_FileDownload1(
sNetID:= '5.0.252.142.1.1',
hFTP:= handle,
sSrcFile:= '\TestFolder\File1.txt',
sDesFile:= '\Program Files\TestFile1.txt',
bExecute:= TRUE,
tTimeout:= T#15s,
bBusy => busy,
bError => err,
nErrId => errid,
nProgress => progress);

IF NOT busy AND NOT err THEN
FB_FTP_FileDownload1(bExecute:= FALSE);
state := 3;
END_IF

3:
FB_FTP_Close1(
sNetID:= '5.0.252.142.1.1',
hFTP:= handle,
bExecute:= TRUE,
tTimeout:= T#15s,
bBusy => busy,
bError => err,
nErrId => errid);

IF NOT busy AND NOT err THEN
FB_FTP_Close1(bExecute:= FALSE);
state := 0;
END_IF

END_CASE
```

The following PLC libraries need to be referenced for this sample: **Tc2_FTP**, Tc2_System, Tc2_Standard, Tc3_Interfaces, Tc3_Modules.

Requirements

Development Environment	Target Platform	PLC Libraries to include
TwinCAT v3.0 Build 3102	PC or CX (x86)	Tc2_FTP

6.4 TwinCAT FTP Client: Removing a file from the FTP Server

This sample illustrates the removing of an existing file from the FTP Server.

At first a connection to the FTP Server will be created with the function block FB_FTP_Open. After that the function block FB_FTP_FileExist checks if the file "\TestFolder\File1.txt" is available on the FTP Server. The function block FB_FTP_FileRemove deletes the specified file. At the end the connection to the FTP Server will be closed with the function block FB_FTP_Close.

You can start the sample with a rising edge at the variable "startstop".

Variable declaration

```
PROGRAM MAIN
VAR
RisingEdge : R_TRIG;
startstop : BOOL;
state : BYTE;
FB_FTP_Open1 : FB_FTP_Open;
FB_FTP_FileExist1 : FB_FTP_FileExist;
FB_FTP_FileRemove1 : FB_FTP_FileRemove;
FB_FTP_Close1 : FB_FTP_Close;
busy : BOOL;
err : BOOL;
errid : UDINT;
handle : T_HFTP;
exist : BOOL;
END_VAR
```

PLC Program

```
RisingEdge(CLK:=startstop);
IF RisingEdge.Q THEN
state := 1;
END_IF

CASE state OF
0:
;
1:
FB_FTP_Open1(
sNetID:= ,
sHost:= '172.16.9.223',
nPort:= DEFAULT_FTP_PORT,
sUsername:= 'TestUser',
sPassword:= 'TestPwd123',
bExecute:= TRUE,
tTimeout:= T#15s,
bBusy=> busy,
bError=> err,
nErrID=> errid,
hFTP=> handle);

IF NOT busy AND NOT err THEN
state := 2;
FB_FTP_Open1(bExecute:=FALSE);
END_IF

2:
FB_FTP_FileExist1(
sNetID:= ,
hFTP:= handle,
sFile:= '\TestFolder\File1.txt',
bExecute:= TRUE,
tTimeout:= T#15s,
bBusy=> busy,
bError=> err,
nErrID=> errid,
bExist=> exist);

IF NOT busy AND NOT err THEN
IF exist THEN
state := 3;
ELSE
state := 4;
END_IF
FB_FTP_FileExist1(bExecute:= FALSE);
END_IF
3:
FB_FTP_FileRemove1(
sNetID:= ,
hFTP:= handle,
sFile:= '\TestFolder\File1.txt',
bExecute:= TRUE,
tTimeout:= T#15s,
bBusy=> busy,
bError=> err,
nErrID=> errid);

IF NOT busy AND NOT err THEN
state := 4;
```

```
FB_FTP_FileRemove1(bExecute:=FALSE);
END_IF
4:
FB_FTP_Close1(
sNetID:= ,
hFTP:= handle,
bExecute:= TRUE,
tTimeout:= T#15s,
bBusy=> busy,
bError=> err,
nErrID=> errid);

IF NOT busy AND NOT err THEN
state := 0;
FB_FTP_Close1(bExecute:=FALSE);
END_IF
END_CASE
```

The following PLC libraries need to be referenced for this sample: **Tc2_FTP**, Tc2_System, Tc2_Standard, Tc3_Interfaces, Tc3_Modules.

Requirements

Development Environment	Target Platform	PLC Libraries to include
TwinCAT v3.0 Build 3102	PC or CX (x86)	Tc2_FTP

6.5 TwinCAT FTP Client: Reading of a filelist from the FTP Server

This sample illustrates the reading of a filelist from the FTP Server.

At first a connection to the FTP Server will be created with the function block FB_FTP_Open. After that the function block FB_FTP_FileList will read all files and folders which pass the searchmask from the FTP Server. At the end the connection to the FTP Server will be closed with the function block FB_FTP_Close.

You can start the sample with a rising edge at the variable "startstop".

Variable declaration

```
PROGRAM MAIN
VAR
RisingEdge : R_TRIG;
startstop : BOOL;
state : BYTE;
FB_FTP_Open1 : FB_FTP_Open;
FB_FTP_FileList1 : FB_FTP_FileList;
FB_FTP_Close1 : FB_FTP_Close;
busy : BOOL;
err : BOOL;
errid : UDINT;
handle : T_HFTP;
FileList : ARRAY [0..MAX_FILELIST_ITEMS] OF STRING;
Items : UDINT;
END_VAR
```

PLC Program

```
RisingEdge(CLK:= startstop);
IF RisingEdge.Q THEN
state := 1;
END_IF

CASE state OF
0:
;

1:
FB_FTP_Open1(
sNetID:= ,
sHost:= '172.16.9.223',
nPort:= 21,
sUsername:= 'TestUser',
sPassword:= 'TestPwd123',
bExecute:= TRUE,
tTimeout:= T#15s,
bBusy=> busy,
bError=> err,
nErrId=> errid,
hFTP=> handle);

IF NOT busy AND NOT err THEN
FB_FTP_Open1(bExecute:= FALSE);
state := 2;
END_IF

2:
FB_FTP_FileList1(
sNetID:= ,
hFTP:= handle,
sMask:= '*.txt',
nIndex:= 0,
pList:= ADR(FileList),
cbList:= SIZEOF(FileList),
bExecute:= TRUE,
tTimeout:= T#15s,
bBusy=> busy,
bError=> err,
nErrID=> errid,
nItems=> Items);

IF NOT busy AND NOT err THEN
FB_FTP_FileList1(bExecute:= FALSE);
state := 3;
END_IF

3:
FB_FTP_Close1(
sNetID:= ,
hFTP:= handle,
bExecute:= TRUE,
tTimeout:= T#15s,
bBusy => busy,
bError => err,
nErrId => errid);

IF NOT busy AND NOT err THEN
FB_FTP_Close1(bExecute:= FALSE);
state := 0;
END_IF

END_CASE
```

The following PLC libraries need to be referenced for this sample: **Tc2_FTP**, Tc2_System, Tc2_Standard, Tc3_Interfaces, Tc3_Modules.

Requirements

Development Environment	Target Platform	PLC Libraries to include
TwinCAT v3.0 Build 3102	PC or CX (x86)	Tc2_FTP

6.6 TwinCAT FTP Client: Getting connection information with the FB_FTP_Info

This sample illustrates the using of the function block FB_FTP_Info.

Variable declaration

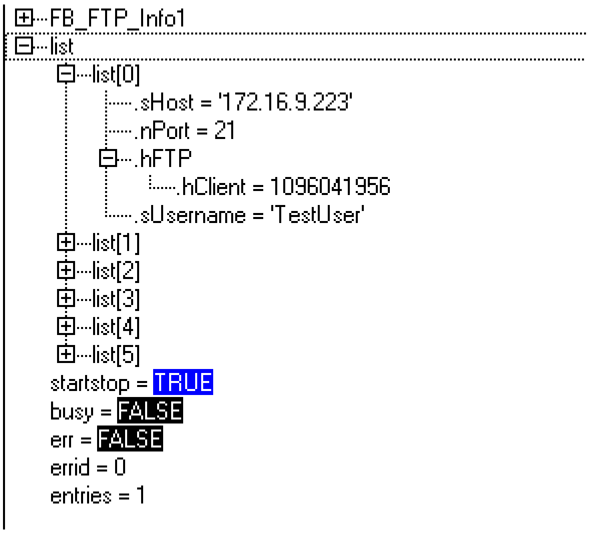
```
PROGRAM MAIN
VAR
FB_FTP_Info1 : FB_FTP_Info;
list : ARRAY [0..5] OF ST_FTP_ConnInfo;
startstop : BOOL;
busy : BOOL;
err : BOOL;
errid : UDINT;
entries : UDINT;
END_VAR
```

PLC program

```
FB_FTP_Info1(
sNetID:= ,
pList:= ADR(list),
cbList:= SIZEOF(list),
bExecute:= startstop,
tTimeout:= T#15s,
bBusy=> busy,
bError=> err,
nErrID=> errid,
nEntries=> entries);
```

The following libraries must be included for this sample: **Tc2_FTP**, Tc2_System, Tc2_Standard, Tc3_Interfaces, Tc3_Modules.

In the following image you can see a possible output:



```
⊞FB_FTP_Info1
⊟list
  ⊟list[0]
     .sHost = '172.16.9.223'
     .nPort = 21
    ⊟.hFTP
       .hClient = 1096041956
     .sUsername = 'TestUser'
  ⊞list[1]
  ⊞list[2]
  ⊞list[3]
  ⊞list[4]
  ⊞list[5]
startstop = TRUE
busy = FALSE
err = FALSE
errid = 0
entries = 1
```

Requirements

Development Environment	Target Platform	PLC Libraries to include
TwinCAT v3.0 Build 3102	PC or CX (x86)	Tc2_FTP

7 Appendix

7.1 Return Codes

7.1.1 Overview of the TwinCAT FTP Client Error Codes

Offset + Error Code	Range	Description
0x00000000 + TwinCAT System Errors	0x00000000-0x00007800	TwinCAT System Errors (ADS-Error codes inclusive)
0x00008000 + Internal TwinCAT FTP Client Errors [▸ 56]	0x00008000-0x000081C4	Internal Errors of TwinCAT FTP Clients

Requirements

Development Environment	Target Platform	PLC Libraries to include
TwinCAT v3.0 Build 3102	PC or CX (x86)	Tc2_FTP

7.1.2 ADS Return Codes

Grouping of error codes:
Global error codes: ADS Return Codes [▸ 51]... (0x9811_0000 ...)
Router error codes: ADS Return Codes [▸ 52]... (0x9811_0500 ...)
General ADS errors: ADS Return Codes [▸ 52]... (0x9811_0700 ...)
RTime error codes: ADS Return Codes [▸ 54]... (0x9811_1000 ...)

Global error codes

Hex	Dec	HRESULT	Name	Description
0x0	0	0x98110000	ERR_NOERROR	No error.
0x1	1	0x98110001	ERR_INTERNAL	Internal error.
0x2	2	0x98110002	ERR_NORTIME	No real time.
0x3	3	0x98110003	ERR_ALLOCLOCKEDMEM	Allocation locked – memory error.
0x4	4	0x98110004	ERR_INSERTMAILBOX	Mailbox full – the ADS message could not be sent. Reducing the number of ADS messages per cycle will help.
0x5	5	0x98110005	ERR_WRONGRECEIVEHMSG	Wrong HMSG.
0x6	6	0x98110006	ERR_TARGETPORTNOTFOUND	Target port not found – ADS server is not started or is not reachable.
0x7	7	0x98110007	ERR_TARGETMACHINENOTFOUND	Target computer not found – AMS route was not found.
0x8	8	0x98110008	ERR_UNKNOWNCMDID	Unknown command ID.
0x9	9	0x98110009	ERR_BADTASKID	Invalid task ID.
0xA	10	0x9811000A	ERR_NOIO	No IO.
0xB	11	0x9811000B	ERR_UNKNOWNAMSCMD	Unknown AMS command.
0xC	12	0x9811000C	ERR_WIN32ERROR	Win32 error.
0xD	13	0x9811000D	ERR_PORTNOTCONNECTED	Port not connected.
0xE	14	0x9811000E	ERR_INVALIDAMSLENGTH	Invalid AMS length.
0xF	15	0x9811000F	ERR_INVALIDAMSNETID	Invalid AMS Net ID.
0x10	16	0x98110010	ERR_LOWINSTLEVEL	Installation level is too low –TwinCAT 2 license error.
0x11	17	0x98110011	ERR_NODEBUGINTAVAILABLE	No debugging available.
0x12	18	0x98110012	ERR_PORTDISABLED	Port disabled – TwinCAT system service not started.
0x13	19	0x98110013	ERR_PORTALREADYCONNECTED	Port already connected.
0x14	20	0x98110014	ERR_AMSSYNC_W32ERROR	AMS Sync Win32 error.
0x15	21	0x98110015	ERR_AMSSYNC_TIMEOUT	AMS Sync Timeout.
0x16	22	0x98110016	ERR_AMSSYNC_AMSERROR	AMS Sync error.
0x17	23	0x98110017	ERR_AMSSYNC_NOINDEXINMAP	No index map for AMS Sync available.
0x18	24	0x98110018	ERR_INVALIDAMSPORT	Invalid AMS port.
0x19	25	0x98110019	ERR_NOMEMORY	No memory.
0x1A	26	0x9811001A	ERR_TCPSEND	TCP send error.
0x1B	27	0x9811001B	ERR_HOSTUNREACHABLE	Host unreachable.
0x1C	28	0x9811001C	ERR_INVALIDAMSFRAGMENT	Invalid AMS fragment.
0x1D	29	0x9811001D	ERR_TLSSEND	TLS send error – secure ADS connection failed.
0x1E	30	0x9811001E	ERR_ACCESSDENIED	Access denied – secure ADS access denied.

Router error codes

Hex	Dec	HRESULT	Name	Description
0x500	1280	0x98110500	ROUTERERR_NOLOCKEDMEMORY	Locked memory cannot be allocated.
0x501	1281	0x98110501	ROUTERERR_RESIZEMEMORY	The router memory size could not be changed.
0x502	1282	0x98110502	ROUTERERR_MAILBOXFULL	The mailbox has reached the maximum number of possible messages.
0x503	1283	0x98110503	ROUTERERR_DEBUGBOXFULL	The Debug mailbox has reached the maximum number of possible messages.
0x504	1284	0x98110504	ROUTERERR_UNKNOWNPORTTYPE	The port type is unknown.
0x505	1285	0x98110505	ROUTERERR_NOTINITIALIZED	The router is not initialized.
0x506	1286	0x98110506	ROUTERERR_PORTALREADYINUSE	The port number is already assigned.
0x507	1287	0x98110507	ROUTERERR_NOTREGISTERED	The port is not registered.
0x508	1288	0x98110508	ROUTERERR_NOMOREQUEUES	The maximum number of ports has been reached.
0x509	1289	0x98110509	ROUTERERR_INVALIDPORT	The port is invalid.
0x50A	1290	0x9811050A	ROUTERERR_NOTACTIVATED	The router is not active.
0x50B	1291	0x9811050B	ROUTERERR_FRAGMENTBOXFULL	The mailbox has reached the maximum number for fragmented messages.
0x50C	1292	0x9811050C	ROUTERERR_FRAGMENTTIMEOUT	A fragment timeout has occurred.
0x50D	1293	0x9811050D	ROUTERERR_TOBEREMOVED	The port is removed.

General ADS error codes

Hex	Dec	HRESULT	Name	Description
0x700	1792	0x98110700	ADSERR_DEVICE_ERROR	General device error.
0x701	1793	0x98110701	ADSERR_DEVICE_SRVNOTSUPP	Service is not supported by the server.
0x702	1794	0x98110702	ADSERR_DEVICE_INVALIDGRP	Invalid index group.
0x703	1795	0x98110703	ADSERR_DEVICE_INVALIDOFFSET	Invalid index offset.
0x704	1796	0x98110704	ADSERR_DEVICE_INVALIDACCESS	Reading or writing not permitted.
0x705	1797	0x98110705	ADSERR_DEVICE_INVALIDSIZE	Parameter size not correct.
0x706	1798	0x98110706	ADSERR_DEVICE_INVALIDDATA	Invalid data values.
0x707	1799	0x98110707	ADSERR_DEVICE_NOTREADY	Device is not ready to operate.
0x708	1800	0x98110708	ADSERR_DEVICE_BUSY	Device is busy.
0x709	1801	0x98110709	ADSERR_DEVICE_INVALIDCONTEXT	Invalid operating system context. This can result from use of ADS blocks in different tasks. It may be possible to resolve this through multitasking synchronization in the PLC.
0x70A	1802	0x9811070A	ADSERR_DEVICE_NOMEMORY	Insufficient memory.
0x70B	1803	0x9811070B	ADSERR_DEVICE_INVALIDPARM	Invalid parameter values.
0x70C	1804	0x9811070C	ADSERR_DEVICE_NOTFOUND	Not found (files, ...).
0x70D	1805	0x9811070D	ADSERR_DEVICE_SYNTAX	Syntax error in file or command.
0x70E	1806	0x9811070E	ADSERR_DEVICE_INCOMPATIBLE	Objects do not match.
0x70F	1807	0x9811070F	ADSERR_DEVICE_EXISTS	Object already exists.
0x710	1808	0x98110710	ADSERR_DEVICE_SYMBOLNOTFOUND	Symbol not found.
0x711	1809	0x98110711	ADSERR_DEVICE_SYMBOLVERSIONINVALID	Invalid symbol version. This can occur due to an online change. Create a new handle.
0x712	1810	0x98110712	ADSERR_DEVICE_INVALIDSTATE	Device (server) is in invalid state.
0x713	1811	0x98110713	ADSERR_DEVICE_TRANSMODENOTSUPP	AdsTransMode not supported.
0x714	1812	0x98110714	ADSERR_DEVICE_NOTIFYHNDINVALID	Notification handle is invalid.
0x715	1813	0x98110715	ADSERR_DEVICE_CLIENTUNKNOWN	Notification client not registered.
0x716	1814	0x98110716	ADSERR_DEVICE_NOMOREHDLS	No further handle available.
0x717	1815	0x98110717	ADSERR_DEVICE_INVALIDWATCHSIZE	Notification size too large.
0x718	1816	0x98110718	ADSERR_DEVICE_NOTINIT	Device not initialized.
0x719	1817	0x98110719	ADSERR_DEVICE_TIMEOUT	Device has a timeout.
0x71A	1818	0x9811071A	ADSERR_DEVICE_NOINTERFACE	Interface query failed.
0x71B	1819	0x9811071B	ADSERR_DEVICE_INVALIDINTERFACE	Wrong interface requested.
0x71C	1820	0x9811071C	ADSERR_DEVICE_INVALIDCLSID	Class ID is invalid.
0x71D	1821	0x9811071D	ADSERR_DEVICE_INVALIDOBJID	Object ID is invalid.
0x71E	1822	0x9811071E	ADSERR_DEVICE_PENDING	Request pending.
0x71F	1823	0x9811071F	ADSERR_DEVICE_ABORTED	Request is aborted.
0x720	1824	0x98110720	ADSERR_DEVICE_WARNING	Signal warning.
0x721	1825	0x98110721	ADSERR_DEVICE_INVALIDARRAYIDX	Invalid array index.
0x722	1826	0x98110722	ADSERR_DEVICE_SYMBOLNOTACTIVE	Symbol not active.
0x723	1827	0x98110723	ADSERR_DEVICE_ACCESSDENIED	Access denied.
0x724	1828	0x98110724	ADSERR_DEVICE_LICENSENOTFOUND	Missing license.
0x725	1829	0x98110725	ADSERR_DEVICE_LICENSEEXPIRED	License expired.
0x726	1830	0x98110726	ADSERR_DEVICE_LICENSEEXCEEDED	License exceeded.
0x727	1831	0x98110727	ADSERR_DEVICE_LICENSEINVALID	Invalid license.
0x728	1832	0x98110728	ADSERR_DEVICE_LICENSESYSTEMID	License problem: System ID is invalid.
0x729	1833	0x98110729	ADSERR_DEVICE_LICENSENOTIMELIMIT	License not limited in time.
0x72A	1834	0x9811072A	ADSERR_DEVICE_LICENSEFUTUREISSUE	Licensing problem: time in the future.
0x72B	1835	0x9811072B	ADSERR_DEVICE_LICENSETIMETOLONG	License period too long.
0x72C	1836	0x9811072C	ADSERR_DEVICE_EXCEPTION	Exception at system startup.
0x72D	1837	0x9811072D	ADSERR_DEVICE_LICENSEDUPLICATED	License file read twice.
0x72E	1838	0x9811072E	ADSERR_DEVICE_SIGNATUREINVALID	Invalid signature.
0x72F	1839	0x9811072F	ADSERR_DEVICE_CERTIFICATEINVALID	Invalid certificate.
0x730	1840	0x98110730	ADSERR_DEVICE_LICENSEOEMNOTFOUND	Public key not known from OEM.
0x731	1841	0x98110731	ADSERR_DEVICE_LICENSERESTRICTED	License not valid for this system ID.
0x732	1842	0x98110732	ADSERR_DEVICE_LICENSEDEMODENIED	Demo license prohibited.
0x733	1843	0x98110733	ADSERR_DEVICE_INVALIDFNCID	Invalid function ID.
0x734	1844	0x98110734	ADSERR_DEVICE_OUTOFRANGE	Outside the valid range.
0x735	1845	0x98110735	ADSERR_DEVICE_INVALIDALIGNMENT	Invalid alignment.
0x736	1846	0x98110736	ADSERR_DEVICE_LICENSEPLATFORM	Invalid platform level.

Hex	Dec	HRESULT	Name	Description
0x737	1847	0x98110737	ADSERR_DEVICE_FORWARD_PL	Context – forward to passive level.
0x738	1848	0x98110738	ADSERR_DEVICE_FORWARD_DL	Context – forward to dispatch level.
0x739	1849	0x98110739	ADSERR_DEVICE_FORWARD_RT	Context – forward to real time.
0x740	1856	0x98110740	ADSERR_CLIENT_ERROR	Client error.
0x741	1857	0x98110741	ADSERR_CLIENT_INVALIDPARM	Service contains an invalid parameter.
0x742	1858	0x98110742	ADSERR_CLIENT_LISTEMPTY	Polling list is empty.
0x743	1859	0x98110743	ADSERR_CLIENT_VARUSED	Var connection already in use.
0x744	1860	0x98110744	ADSERR_CLIENT_DUPLINVOKEID	The called ID is already in use.
0x745	1861	0x98110745	ADSERR_CLIENT_SYNCTIMEOUT	Timeout has occurred – the remote terminal is not responding in the specified ADS timeout. The route setting of the remote terminal may be configured incorrectly.
0x746	1862	0x98110746	ADSERR_CLIENT_W32ERROR	Error in Win32 subsystem.
0x747	1863	0x98110747	ADSERR_CLIENT_TIMEOUTINVALID	Invalid client timeout value.
0x748	1864	0x98110748	ADSERR_CLIENT_PORTNOTOPEN	Port not open.
0x749	1865	0x98110749	ADSERR_CLIENT_NOAMSADDR	No AMS address.
0x750	1872	0x98110750	ADSERR_CLIENT_SYNCINTERNAL	Internal error in Ads sync.
0x751	1873	0x98110751	ADSERR_CLIENT_ADDHASH	Hash table overflow.
0x752	1874	0x98110752	ADSERR_CLIENT_REMOVEHASH	Key not found in the table.
0x753	1875	0x98110753	ADSERR_CLIENT_NOMORESYM	No symbols in the cache.
0x754	1876	0x98110754	ADSERR_CLIENT_SYNCRESINVALID	Invalid response received.
0x755	1877	0x98110755	ADSERR_CLIENT_SYNCPORTLOCKED	Sync Port is locked.
0x756	1878	0x98110756	ADSERR_CLIENT_REQUESTCANCELLED	The request was cancelled.

RTime error codes

Hex	Dec	HRESULT	Name	Description
0x1000	4096	0x98111000	RTERR_INTERNAL	Internal error in the real-time system.
0x1001	4097	0x98111001	RTERR_BADTIMERPERIODS	Timer value is not valid.
0x1002	4098	0x98111002	RTERR_INVALIDTASKPTR	Task pointer has the invalid value 0 (zero).
0x1003	4099	0x98111003	RTERR_INVALIDSTACKPTR	Stack pointer has the invalid value 0 (zero).
0x1004	4100	0x98111004	RTERR_PRIOEXISTS	The request task priority is already assigned.
0x1005	4101	0x98111005	RTERR_NOMORETCB	No free TCB (Task Control Block) available. The maximum number of TCBs is 64.
0x1006	4102	0x98111006	RTERR_NOMORESEMAS	No free semaphores available. The maximum number of semaphores is 64.
0x1007	4103	0x98111007	RTERR_NOMOREQUEUES	No free space available in the queue. The maximum number of positions in the queue is 64.
0x100D	4109	0x9811100D	RTERR_EXTIRQALREADYDEF	An external synchronization interrupt is already applied.
0x100E	4110	0x9811100E	RTERR_EXTIRQNOTDEF	No external sync interrupt applied.
0x100F	4111	0x9811100F	RTERR_EXTIRQINSTALLFAILED	Application of the external synchronization interrupt has failed.
0x1010	4112	0x98111010	RTERR_IRQLNOTLESSOREQUAL	Call of a service function in the wrong context
0x1017	4119	0x98111017	RTERR_VMXNOTSUPPORTED	Intel VT-x extension is not supported.
0x1018	4120	0x98111018	RTERR_VMXDISABLED	Intel VT-x extension is not enabled in the BIOS.
0x1019	4121	0x98111019	RTERR_VMXCONTROLSMISSING	Missing function in Intel VT-x extension.
0x101A	4122	0x9811101A	RTERR_VMXENABLEFAILS	Activation of Intel VT-x fails.

Specific positive HRESULT Return Codes:

HRESULT	Name	Description
0x0000_0000	S_OK	No error.
0x0000_0001	S_FALSE	No error. Example: successful processing, but with a negative or incomplete result.
0x0000_0203	S_PENDING	No error. Example: successful processing, but no result is available yet.
0x0000_0256	S_WATCHDOG_TIMEOUT	No error. Example: successful processing, but a timeout occurred.

TCP Winsock error codes

Hex	Dec	Name	Description
0x274C	10060	WSAETIMEDOUT	A connection timeout has occurred - error while establishing the connection, because the remote terminal did not respond properly after a certain period of time, or the established connection could not be maintained because the connected host did not respond.
0x274D	10061	WSAECONNREFUSED	Connection refused - no connection could be established because the target computer has explicitly rejected it. This error usually results from an attempt to connect to a service that is inactive on the external host, that is, a service for which no server application is running.
0x2751	10065	WSAEHOSTUNREACH	No route to host - a socket operation referred to an unavailable host.
More Winsock error codes: Win32 error codes			

7.1.3 FTP Client Return Codes

Hex	Dez	Description
0x00008001	32768 + 1 := 32769	Internal Error TwinCAT FTP Client.
0x00008002	32768 + 2 := 32770	File Error (e.g. File not found, Access denied)
0x00008003	32768 + 3 := 32771	Transmission Error (e.g. Connection broken)
0x00008004	32768 + 4 := 32772	Connecting Error. Couldn't create connection to a FTP Server.
0x00008005	32768 + 5 := 32773	Connection Error. No respond received from the FTP Server.
0x000081F4	32768 + 500 = 33268	Syntax error, command unrecognized. This may include errors such as command line too long.
0x000081F5	32768 + 501 = 33269	Syntax error in parameters or arguments.
0x000081F6	32768 + 502 = 33270	Command not implemented.
0x000081F7	32768 + 503 = 33271	Bad sequence of commands.
0x000081F8	32768 + 504 = 33272	Command not implemented for that parameter.
0x00008212	32768 + 530 = 33298	Not logged in.
0x00008214	32768 + 532 = 33300	Need account for storing files.
0x00008226	32768 + 550 = 33318	Requested action not taken. File unavailable (e.g., file not found, no access).
0x00008227	32768 + 551 = 33319	Requested action aborted. Page type unknown.
0x00008228	32768 + 552 = 33320	Requested file action aborted. Exceeded storage allocation (for current directory or dataset).
0x00008229	32768 + 553 = 33321	Requested action not taken. File name not allowed.
0x000081A5	32768 + 421 = 33189	Service not available, closing control connection. This may be a reply to any command if the service knows it must shut down.
0x000081A9	32768 + 425 = 33193	Can't open data connection.
0x000081AA	32768 + 426 = 33194	Connection closed; transfer aborted.
0x000081C2	32768 + 450 = 33218	Requested file action not taken.
0x000081C3	32768 + 451 = 33219	Requested action aborted. Local error in processing.
0x000081C4	32768 + 452 = 33220	Requested action not taken. Insufficient storage space in system.File unavailable (e.g., file busy).

Requirements

Development Environment	Target Platform	PLC Libraries to include
TwinCAT v3.0 Build 3102	PC or CX (x86)	Tc2_FTP

7.2 Troubleshooting

7.2.1 Troubleshooting

The following list provides some basic help in case any errors should occur and should be read before contacting our support department. Please also consult our list of error codes [▶ 51].

- **One of the PLC function blocks returns error 0x6: Target port not found**

  Please make sure that the process TcFtpClient.exe is running by checking the Windows Task Manager. If it isn't running, please reinstall the product TF6300 FTP.

- **One of the PLC function blocks returns error 0x00008005: No response from FTP-Server**
- Please make sure that the FTP-Server is available and that no firewall blocks access to the FTP ports. Please also consult our introduction to FTP [▶ 16] for more information about FTP ports.

Should the steps mentioned above don't help, please contact our support department [▶ 57].

7.2.2 Contact Beckhoff Support

7.2.2.1 Contact Beckhoff Support

If the troubleshooting checklist does not help, please contact our support department and provide the following information:

Type	Description
General information [▶ 57]	Shows which general system information needs to be forwarded to our Support department
Product-related information [▶ 58]	Shows which product-related information needs to be forwarded to our Support department

7.2.2.2 General system information

- What kind of hardware is being used on the computer running TF6300 FTP?
  - Beckhoff Industrial PC: Which product number does the IPC have?
  - Beckhoff Embedded PC: Which product number does the Embedded PC have?
  - Which Operating System image version [▶ 60] is currently installed on that computer?
- What kind of Operating System has been installed on the computer running TF6300 FTP?
  - Windows CE5, Windows CE6, Windows CE7?
  - Windows XP, Windows 7, Windows Embedded?
- Which version of TwinCAT [▶ 58] is being used in conjunction with TF6300 FTP?

    - Are there multiple TwinCAT versions installed on that computer? (For example: TwinCAT 2 and TwinCAT 3 installed in parallel)
- Please provide an exact description of the issue

7.2.2.3 Product-related system information

- Which version of TF6300 FTP is being used?
- Which function blocks of the Tc2_Ftp library are being used in the PLC program?
- Which FTP-Server software is being used?
    - Microsoft Internet Information Service (which version?)
    - FileZilla FTP-Server
    - Linux/Unix NcFtpd
    - ...
- Please provide an exact description of the environment in which the product TF6300 FTP is being used
    - Where is the computer running TF6300 FTP located?
    - Where is the FTP-Server located? (Local network, Internet)
    - What are the IP settings of the FTP-Server and the computer running TF6300 FTP? (IP address, subnet mask, gateway, DNS)
    - In case that there is a firewall between both computers:

What kind of Firewall system is being used (please provide vendor information)?

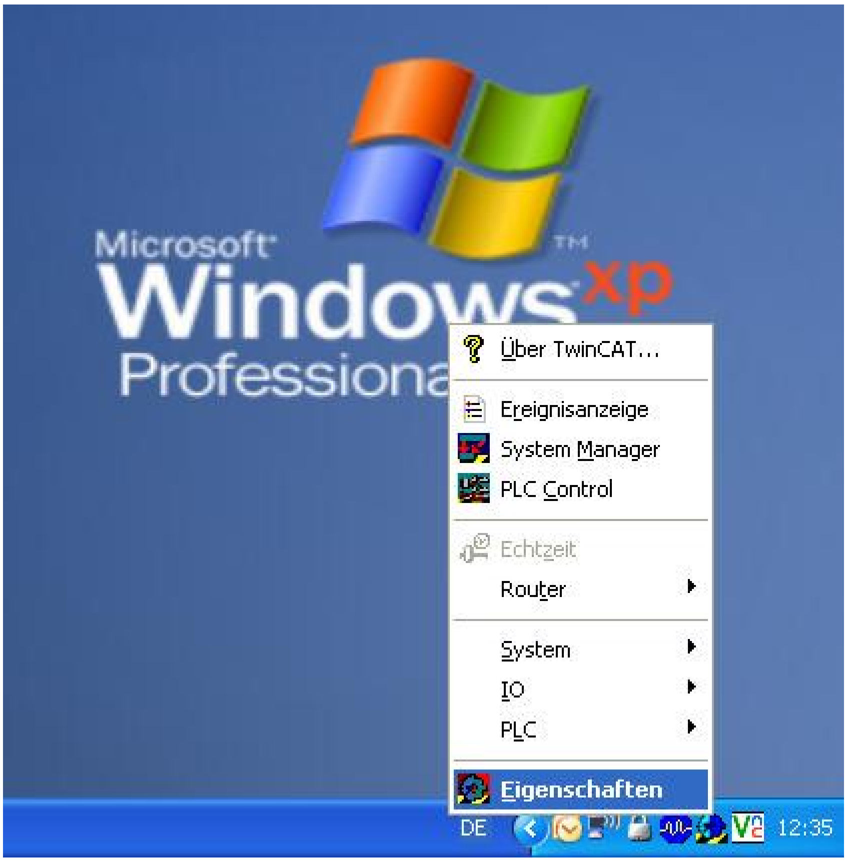
Has the Firewall been configured to allow FTP connections?

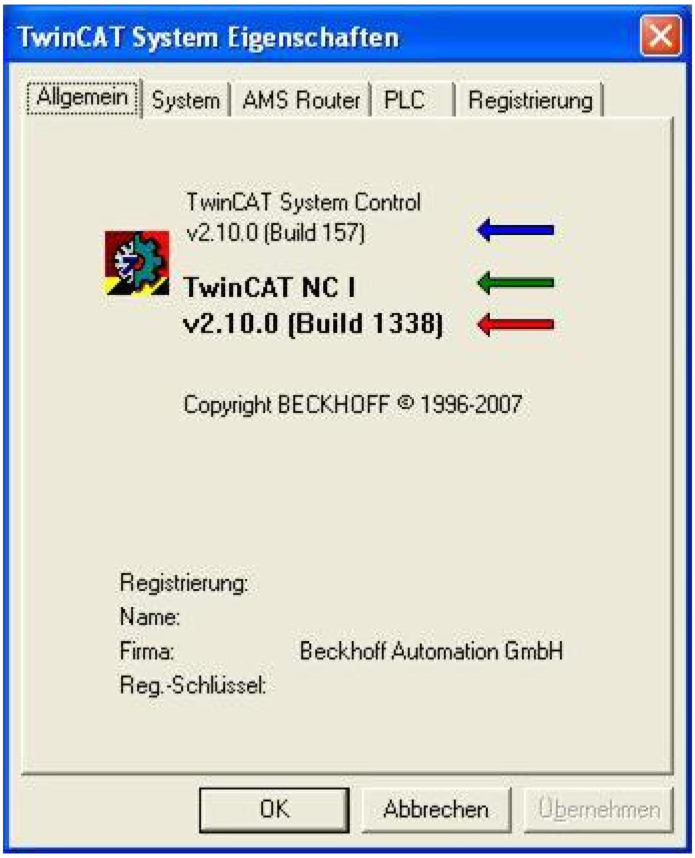
7.2.2.4 How to determine TwinCAT version

This article describes how you can determine the currently used version of TwinCAT.

Windows XP, Windows 7

You can find the TwinCAT version under the **TwinCAT icon on the taskbar**.





TwinCAT System Control
v2.10.0 (Build 157)

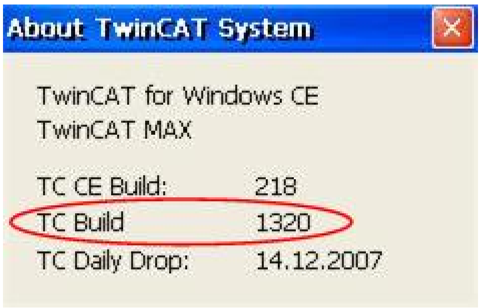
TwinCAT NC I
v2.10.0 (Build 1338)

Copyright BECKHOFF © 1996-2007

Registrierung:
Name:
Firma: Beckhoff Automation GmbH
Reg.-Schlüssel:

Windows CE

You can find the TwinCAT version under the **TwinCAT icon on the taskbar**.



About TwinCAT System

TwinCAT for Windows CE
TwinCAT MAX

TC CE Build: 218
TC Build 1320
TC Daily Drop: 14.12.2007

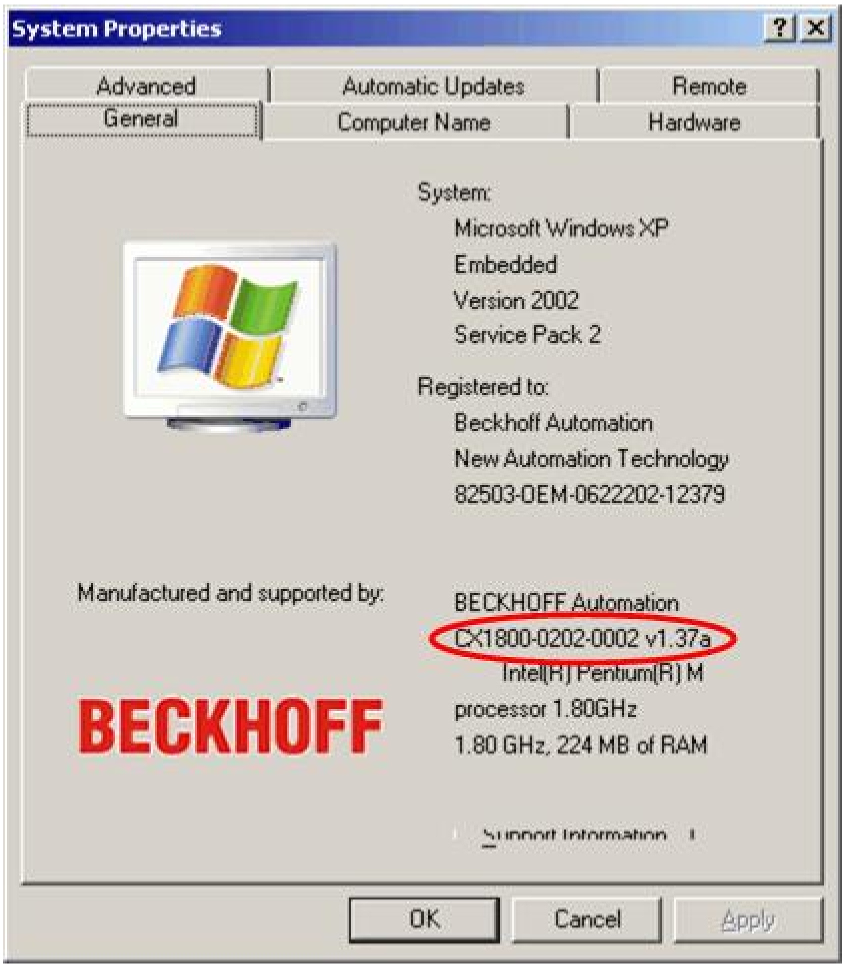
7.2.2.5 How to determine Operating System image version

This article describes - in case a Beckhoff IPC/EPC is being used - how you can determine the currently used version of the Operating System image.

Windows XP, Windows 7

You can find the image version in the **System Properties** window. Please execute the following steps on the Beckhoff IPC/EPC:

- Open the Windows Control Panel
- Double-click on "System"



System Properties

System:
Microsoft Windows XP
Embedded
Version 2002
Service Pack 2

Registered to:
Beckhoff Automation
New Automation Technology
82503-OEM-0622202-12379

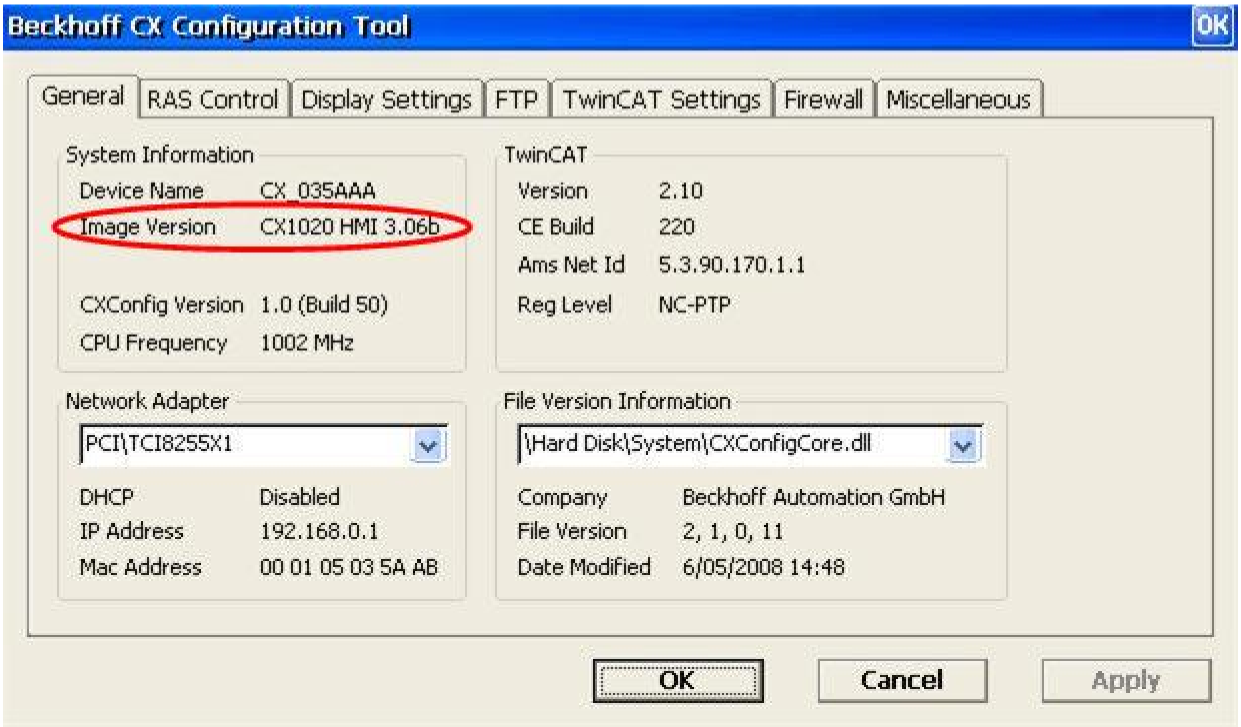
Manufactured and supported by:

BECKHOFF Automation
CX1800-0202-0002 v1.37a
Intel(R) Pentium(R) M
processor 1.80GHz
1.80 GHz, 224 MB of RAM

Windows CE

At **CX Configuration Tool** you will find the image version. Please execute the following steps on the Beckhoff IPC/EPC:

- Open the Windows Control Panel
- Double-click on "CX Configuration Tool



System Information

Device Name CX_035AAA

Image Version CX1020 HMI 3.06b

CXConfig Version 1.0 (Build 50)

CPU Frequency 1002 MHz

TwinCAT

Version 2.10

CE Build 220

Ams Net Id 5.3.90.170.1.1

Reg Level NC-PTP

Network Adapter

PCI\TCI8255X1

DHCP Disabled

IP Address 192.168.0.1

Mac Address 00 01 05 03 5A AB

File Version Information

\Hard Disk\System\CXConfigCore.dll

Company Beckhoff Automation GmbH

File Version 2, 1, 0, 11

Date Modified 6/05/2008 14:48

More Information:
www.beckhoff.com/tf6300

Beckhoff Automation GmbH & Co. KG
Hülshorstweg 20
33415 Verl
Germany
Phone: +49 5246 9630
info@beckhoff.com
www.beckhoff.com