BECKHOFF New Automation Technology

Manual | EN TF6010 TwinCAT 3 | ADS Monitor

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1 Foreword

1.1 Notes on the documentation

This description is only intended for the use of trained specialists in control and automation engineering who are familiar with applicable national standards.

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

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

The responsible staff must ensure that the application or use of the products described satisfy all the requirements for safety, including all the relevant laws, regulations, guidelines and standards.

Disclaimer

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

We reserve the right to revise and change the documentation at any time and without prior announcement. No claims for the modification of products that have already been supplied may be made on the basis of the data, diagrams and descriptions in this documentation.

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The EtherCAT Technology is covered, including but not limited to the following patent applications and patents:

EP1590927, EP1789857, EP1456722, EP2137893, DE102015105702 with corresponding applications or registrations in various other countries.

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1.2 Safety instructions

Safety regulations

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

Exclusion of liability

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

Personnel qualification

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

Description of symbols

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

▲ DANGER

Serious risk of injury!

Failure to follow the safety instructions associated with this symbol directly endangers the life and health of persons.

A WARNING

Risk of injury!

Failure to follow the safety instructions associated with this symbol endangers the life and health of persons.

Personal injuries!

Failure to follow the safety instructions associated with this symbol can lead to injuries to persons.

NOTE

Damage to the environment or devices

Failure to follow the instructions associated with this symbol can lead to damage to the environment or equipment.



Tip or pointer

This symbol indicates information that contributes to better understanding.

2 Overview

The TF6010 TC3 ADS Monitor records the ADS communication from the TwinCAT Message Router. This concerns as well the communication of ADS devices among each other, if they are on the local or on a remote system. The TwinCAT ADS Monitor can be downloaded from the <u>Beckhoff FTP Server</u>.

The ADS Monitor integrates into the TC3 XAE development in the Visual Studio Menue of TwinCAT.

Microsoft Visual Studio (Administrator)		
FILE EDIT VIEW PROJECT DEBUG	TWINCAT TWINSAFE TWINCAT HMI PLC TEAM	TOOLS TEST ANALYZE WINDOW
9 - 0 🕆 🖕 🔛 🖓 - 0	🕭 Security Management	Ŧ
	Show Realtime Ethernet Compatible Devices	
	File Handling	
	EtherCAT Devices	
	ADS Monitor	Start ADS Monitor
	Target Browser	Capture
	About TwinCAT	Display •
	-	Connection •
		Analyze 🕨
		File +
		Start ADS Command Test

The toolbar enables to start/stop recording of the ADS communication. By the selection of a recorded message the tool window will be splitted to display the ADS/AMS in clear text and in hex format.

	ADS Monitor 🕆 X							
* <u>*</u> × * Þ	= 🖬 🗔 🛎 🔻 🤅	> 🔤 🔶	ADS Monitor To	olbar				Recorded Messages
Display Filter	:	-	Add Expression	Apply	ADS Monitor Disp	lay Filter		4
No. T	imeStamp	CmdId	Sender	Target	Error	hUser	cbData	Data
27.	03.2018 13:18:19 411 ms	RS Res	10.0.10.40.1.1 (10000)	10.0.10.40.1.1 (33690)	0	0x58C	8	Res 0x0, AS 0xf (CONFIG), DS 0x1
5 27.	03.2018 13:18:19 412 ms	RS Res	5.33.43.220.1.1 (10000)	10.0.10.40.1.1 (33715)	0	0x12D	8	Res 0x0, AS 0xf (CONFIG), DS 0x2
6 27.	03.2018 13:18:19 439 ms	R Req	10.0.10.40.1.1 (33691)	10.0.10.40.1.1 (300)	0	0x2B2	12	IG 0x5000 IO 0x27 Len 4
7 27.	03.2018 13:18:19 439 ms	R Res	10.0.10.40.1.1 (300)	10.0.10.40.1.1 (33691)	0	0x2B2	12	Res 0x0, Len 4 + 00 00 00 00
8 27.	03.2018 13:18:19 440 ms	R Req	10.0.10.40.1.1 (33691)	10.0.10.40.1.1 (300)	0	0x2B3	12	IG 0x5000 IO 0x1 Len 402
g 27.	03.2018 13:18:19 440 ms	R Res	10.0.10.40.1.1 (300)	10.0.10.40.1.1 (33691)	0	0x2B3	10	Res 0x0, Len 2 + 00 00
	I State Response Header etid 10.0.10.40.1.1, Port 10 etid 10.0.10.40.1.1, Port 33 mdId = 4 (0x4) ateFlags = 5 (0x5) ength = 8 (0x8) rorCode = 0 (NO ERROR) vokeId = 1420 (0x58c) kead State Response esult = 0 (0x0) NO ERROR dsState = 15 (0xf) eviceState = 1 (0x1)							AMS/ADS Message
000000000 00000010 00000020		8 00 00	00 00 00 00 00	01 01 10 27(8C 05 00 00	II (I 			Message in HEX

The ADS Monitor connects to the local system when the tool window is opened. It is possible to connect to a remote target, if the ADS Monitor is installed and the TcAmsLog.exe is started on the remote target.

AD)S Monitor +⊨ ×		
+i	¥ ×₩ ▷ = {	a 🛛 🗧 🔺 🖕 🧧	
D	isplay Filter:	•	Add Expres
Ti	meStamp	CmdId Sender	
	*# Connect to [evice	×
	AMS NetID:	10.0.10.40.1.1 (local)	-
	IP Address:	127.0.0.1	
	Port:	48914	
	01	Cancel	

Path to AMS/ADS Logger (TcAmslog.exe)

Windows	C:\TwinCAT\Functions\TF6010-ADS-Monitor\Logger
Windows CE	/Hard Disk/System

The ADS monitor provides to way to filter the messages:

Capture Filter: Allows to filter during recording for AMS information (e.g. NetId, Port)

Set Filter	X
💿 Display all AmsAdsCommar	ıds
 Set Filter 	
Included Addresses	Set
Excluded Addresses	Set
🗖 ADS Messages	
🗖 Response with Error	
	OK Cancel

Display Filter: Allows to filter after recording for AMS and ADS information (e.g. Index-Group/Offset, Data)

Display Filter Expression		×
Property Name:	Relation:	Value:
▷ ams ⊿ ads	 Present Contains 	42
length read	E	
result data		
write readwrite		
readlength writelength	Ŧ	

The ADS monitor provides the possibility to send ADS commands to test ADS devices (e.g. PLC, NC) or custom ADS Servers. The ADS commands can be ordered in a command group and run cyclically.

ADS Command Test 🗢 🗙				
🛍 🔛 🜉 Ams Net Id: 10.0.10.40.1.1 (local) 👻	Ams Port: TcSysSrv (10000) 🔻 Ads Timeout: 500 ms 🧧			
Image: State Request Image: State Request <td< th=""><th>Group Settings</th></td<>	Group Settings			
Read Request	General			
Write Request Read State Request ADS Commands	Name: AdsTest 1			
	Comment			
	Cyclic test of all commands			
	Test by cylces:			
	Test by time (s): 0,01			
	✓ Break on Error			
	Variable Handle of Group: 0			
Configure cyclic tests	Start Test Stop Test			
	Result			

All base ADS commands can be configured and executed separately.

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ADS Command Test 🤕 🗙		
🕆 💾 🔄 属 Ams Net Id: 10.0.10.40.1.1 (local) 🔻	Ams Port: TcSysSrv (10000) 🔻 Ads Timeout: 500 ms	
† 🕂 🥂 Read State Request 🔹 🕂 🗕 🛧 🔹 🤊 🚪	Read State Request General	
▲ AdsTest 1	Read State Request	
Read Request		
Write Request	Transfer	
Read State Request		
	Output	
	5	
	Transfer State: Transfer successful!	\bigcirc
	Ads State: 0xF Con	nfig
	Device State: 1	
	· ·	

3 Installation

3.1 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.
 - \Rightarrow The installation dialog opens.
- 2. Accept the end user licensing agreement and click Next.

🛃 TF4100 Controller Toolbox - 1.00.0000	x
License Agreement Please read the following license agreement carefully.	5
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 each 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 Print I do not accept the terms in the license agreement	
InstallShield < Back Next > Cancel	

3. Enter your user data.

FF4100 Controller Toolbox - 1.00.000	00	
Customer Information		
Please enter your information.		
User Name:		
Max Mustermann		j
Organization:		
Mustermann Inc.		
InstallShield		
	< Back N	ext > Cancel

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**.

FF4100 Control	ller Toolbox - 1.00.0000
Setup Type Choose the set	up 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.
InstallShield	< Back Next > Cancel

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

FF4100 Controller Toolbox - 1.00.0000	x
Ready to Install the Program The wizard is ready to begin installation.	5
Click Install to begin the installation.	
If you want to review or change any of your installation settings, click Back. Click Cancel exit the wizard.	to
InstallShield < Back Install Cance	el

⇒ 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	8)
TwinCAT system has to be stopped before proceeding with installation. Should TwinCAT be stopped?	
Yes No	

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

FF4100 Controller Toolbox -	1.00.0000	×
	Beckhoff Setup Completed	
2	The Beckhoff Setup has successfully installed TF4100 Controller Toolbox. Click Finish to exit the wizard.	
	Show the Windows Installer log	
	< Back Finish Cane	cel

⇒ The TwinCAT 3 Function has been successfully installed and can be licensed (see Licensing [▶ 14]).

3.2 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 "<u>TwinCAT 3 Licensing</u>".

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.

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



- ⇒ 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. "TF6420: TC3 Database Server").

Order Information (R	luntime)	Manage Licenses	Project Licenses	Online Licenses
Disable automatic detection of required licenses for project				
Order No	License			Add License
TF3601	TC3 Co	ndition Monitorin	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 Co	ntroller Toolbox		🔽 cpu license
TF4110	TC3 Temperature-Controller		Cpu license	
TF4500	TC3 Sp	eech		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.

Order Information (Runtime)	Manage Licenses Project L	icenses Online Licenses
License Device Tar	get (Hardware Id)	~ Add
System Id:		Platform:
27A8E382-5115-364F-C	E96-DE17942299A5	other (91) 🗸 🗸
License Request Provider: Beckhoff	Automation ~	Generate File
License Id:	Customer	ld:
Comment:		
License Activation 7 Days Trial Li	cense	License Response File

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

Enter Security Code		
Please type the following 5 characters:	OK	
Kg8T4		
	Cancel	

- 8. Enter the code exactly as it is displayed and confirm the entry.
- 9. Confirm the subsequent dialog, which indicates the successful activation.
- \Rightarrow In the tabular overview of licenses, the license status now indicates the expiry date of the license.
- 10. Restart the TwinCAT system.
- \Rightarrow The 7-day trial version is enabled.

More Information: www.beckhoff.com/tf6010

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