BECKHOFF New Automation Technology

Manual | EN

TS1800

TwinCAT 2 | PLC HMI

Supplement | System

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BECKHOFF

Version: 1.0

1 Foreword

1.1 Notes on the documentation

This description is only intended for the use of trained specialists in control and automation engineering who are familiar with applicable national standards.
It is essential that the documentation and the following notes and explanations are followed when installing and commissioning the components.
It is the duty of the technical personnel to use the documentation published at the respective time of each installation and commissioning.

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

Disclaimer

The documentation has been prepared with care. The products described are, however, constantly under development.
We reserve the right to revise and change the documentation at any time and without prior announcement.
No claims for the modification of products that have already been supplied may be made on the basis of the data, diagrams and descriptions in this documentation.

Trademarks

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Patent Pending

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.

⚠ WARNING
Risk of injury!
Failure to follow the safety instructions associated with this symbol endangers the life and health of persons.

⚠ CAUTION
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.

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   Overview

TwinCAT PLC HMI is a system needed for the execution of visualizations generated in TwinCAT PLC Control.

If a control program contains associated visualizations these are displayed in full screen mode when the **TwinCAT PLC HMI** is started. The user can operate the control and monitoring functions contained in the underlying project via the mouse or the keyboard. This is possible even if the TwinCAT PLC project file is read-protected. However, the user cannot edit the control program and no menus or toolbars are available, i.e., only pure 'operation' of the visualization elements is available.

The main control and monitoring functions for a project intended for the operator version therefore must be associated with the visualization elements during project creation and operated in online mode. A special input facility is available for this purpose in the configuration dialog for a visualization element.

By seamlessly integrating the development platform for the visualization masks into the PLC programming system **TwinCAT PLC HMI** offers advantages other visualizations simply cannot come up to:

- A tag list of the variables to be used is not needed. It is possible to work directly with the TwinCAT PLC Control variables.
- Variable values in input fields can be modified by expressions (e.g. "Variable1+ Variable2 * 12 + 5")
- A mighty place-holder concept allows the user to create object-oriented masks.
- The TwinCAT functions "Sampling Trace" and "read/write recipe" are also available in **TwinCAT PLC HMI**.

3   Visualization features

It is shown in this table which possibilities the visualisation offers with TwinCAT.

Feature	PLC Control	PLC HMI (TS1800)	PLC HMI Web (TS1810)	PLC HMI CE (TS1800-0030)	Comment
Current test version:	Build 1010	2.10.0.900	1.0.0.7	1.0.9.10	**From TwinCAT 2.10 Build 1334**
Rectangle	✔	✔	✔	✔	
Rounded rectangle	✔	✔	✔	✔	
Ellipse	✔	✔	✔	✔	
Polygon	✔	✔	✔	✔	
Curve	✔	✔	✔	✔	
Pie	✔	✔	✔	✔	
Bitmap	✔	✔	✔	✔	
Visaualisation	✔	✔	✔	✔	
Button	✔	✔	✔	✔	
WMF/JPG File	✔	✔	✔	✔	
Table	✔	✔	✔	✔	
ActiveX element	✔	✔	✘	✘	
Trend	✔	✔	✘	✔ / ✘	HMI CE: Only online trend is available
Alarm table	✔	✔	✘	✘	
Meter	✔	✔	✔	✔	
Bar display	✔	✔	✔	✔	
Histogram	✔	✔	✘	✘	
Invisible elements	✔	✔	✔	✔	
Change color	✔	✔	✔	✔	
Background bitmap	✔	✔	✔	✔	
Button background	✔	✔	✔	✔	
Tooltip	✔	✔	✔	✔	HMI CE: Elements not too near to the edge or tooltip is outside the window

Feature	PLC Control	PLC HMI (TS1800)	PLC HMI Web (TS1810)	PLC HMI CE (TS1800-0030)	Comment
Security	✔	✔	✔	✔	
Placeholder	✔	✔	✔ / ✘	✔ / ✘	Web/HMI CE: Zoom to visu with placeholders in the zoom command is not possible
Print function	✔	✔	✘	✘	
Password change	✔	✔	✔	✔	
Change user level	✔	✔	✔	✔	
Language dialog	✔	✔	✔	✔	
Language automatic change	✔	✔	✔	✔	
Exit	✔	✔	✘	✘	
Trace	✔	✔	✘	✘	
Text input 'Text'	✔	✔	✔	✔	Web: Please don't exceed the maximum string length of your variable HMI CE: The hidden function is not supported
Text input 'Numpad'	✔	✔	✔	✔	HMI CE: The hidden function is not supported
Text input 'Keypad'	✔	✔	✔	✔	Web: Please don't exceed the maximum string length of your variable HMI CE: The hidden function is not supported

3.1   Restrictions

Intern commands

PRINT
Printout of the current visualization is not possible.

EXITPROGRAM
This command is not supported.

TRACE
This command for opening the Sampling Trace window is not supported.

SAVEPROJECT
This command for saving the project is not usable for the Target-Visualization.

Grafic formats

In the Target-Visualization currently only simple bitmaps are supported. Not supported formats: .jpg, .tif, .ico
The format .jpg is supported from version 1.0.9 of the TargetVisu DLL.

Others

Slider in Table
The slider for scrolling is not displayed.

Texts
Texts exceeding the borders of an element currently do not get clipped.

Alarm handling
TheAlarming is not supported.

Trend
The Online Trend is supported from Version 1.0.8 (without history).

Place holder
The delivery of parameter to replace placeholder at the call is not supported.
Example:
<Visuname>(<Placeholder1>:=<Text1>, <Placeholder2>:=<Text2>,..., <Placeholder n>:=<Textn>)

VAR_IN_OUT
It is not possible to use VAR_IN_OUT variables in TwinCAT HMI CE.

Visu-Side
It is not possible to use the scroll bar in the HMI CE on your visualisation side.

4   Installation, Start and Operating

Installation:

TwinCAT PLC HMI is available as supplement and can be installed with the setup. A license is with costs, a time-limited demo version is not available.

Start:

TwinCAT PLC HMI (TCatPlcCtrlHmi.exe) is started by a connection or a command line:

In each case at least the desired TwinCAT PLC Control project must be given. If no further parameters are set there, TwinCAT PLC HMI automatically will start with a visualization POU named **TC_VISU** (if existent in the project) and on that target mode, which was set when the project had been saved last.

Additionally, as well the known command line and command file commands (see User Manual TwinCAT PLC Control) as the following special parameter can be used:

/visu <visualization POU>

If the project contains a visualization POU named TC_VISU, it will start automatically with this one. If another POU should be the entrance, it must be set in the command line with "`/visu <name of visualization POU>`".

Example for a command line:

`C:\TwinCAT\Plc\TCatPlcCtrlHmi.exe D:\PROJECTS\PROJECT.PRO /visu v_firstvisupage`

The project project.pro will start with the visualization POU '`v_firstvisupage`'. If the visualization should be started automatically with TwinCAT PLC Control, this can be done with a connection in TwinCAT StartUp (All Users) to the '`TCatPlcCtrlHmi.exe`' and the named parameters.

Please regard:

Paths containing spaces must be bordered by quotation marks (").

Operating:

The project will start in **full screen mode** with the entrance POU.

TwinCAT PLC HMI can be operated corresponding to the functions of the visualization elements via keyboard and mouse.

If there is no visualization element configured with a corresponding function, TwinCAT PLC HMI at any time can be terminated by pressing **<Alt><F4>**.

More Information:
www.beckhoff.com/ts1800