Manual

TF2000 TC3 HMI Server

TwinCAT 3

Version: 1.0
Date: 30.10.2018
Order No.: TF2000

BECKHOFF

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1 Foreword

1.1 Notes on the documentation

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

The EtherCAT Technology is covered, including but not limited to the following patent applications and patents:
EP1590927, EP1789857, DE102004044764, DE102007017835
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The TwinCAT Technology is covered, including but not limited to the following patent applications and patents:
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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

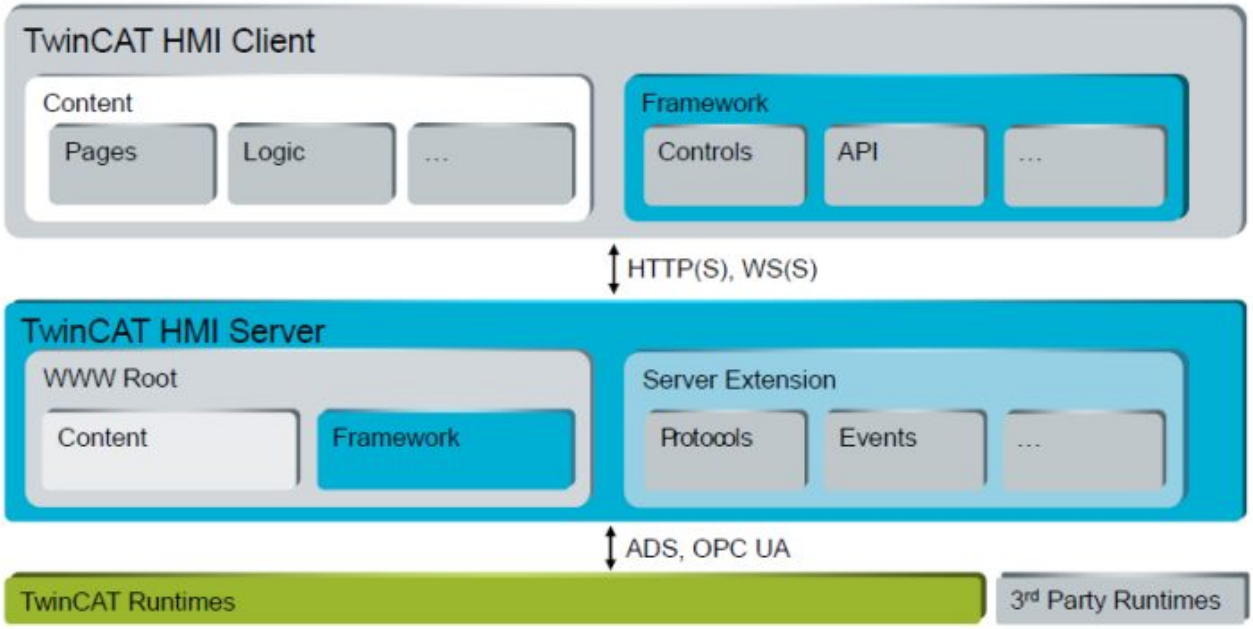
This symbol indicates information that contributes to better understanding.

2 Overview

2.1 Product description

The TwinCAT HMI server is a web server that was developed in-house by Beckhoff. It is platform-independent and not based on any web server functionalities of the operating system. The TwinCAT HMI server has a modular structure. Via server extensions it can provide additional functionalities such as a reporting system or other protocols. This enables customers to develop their own server extensions, so that their business logic can be provided centrally.

The TwinCAT HMI server supports the TwinCAT ADS protocol and can therefore communicate with all TwinCAT devices. Third-party systems can be connected via OPC UA extensions.



3 Installation

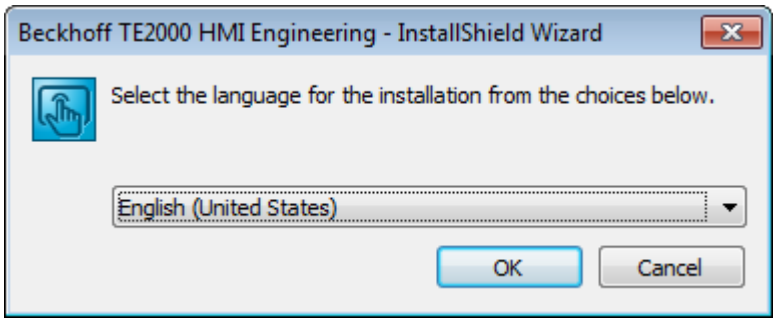
3.1 System requirements

Technical data	TF2000 TC3 HMI server
Min. TwinCAT version	3.1.4022.0
Min. TwinCAT level	TC1000 TC3 | ADS
Operating system	Windows 7/8/10

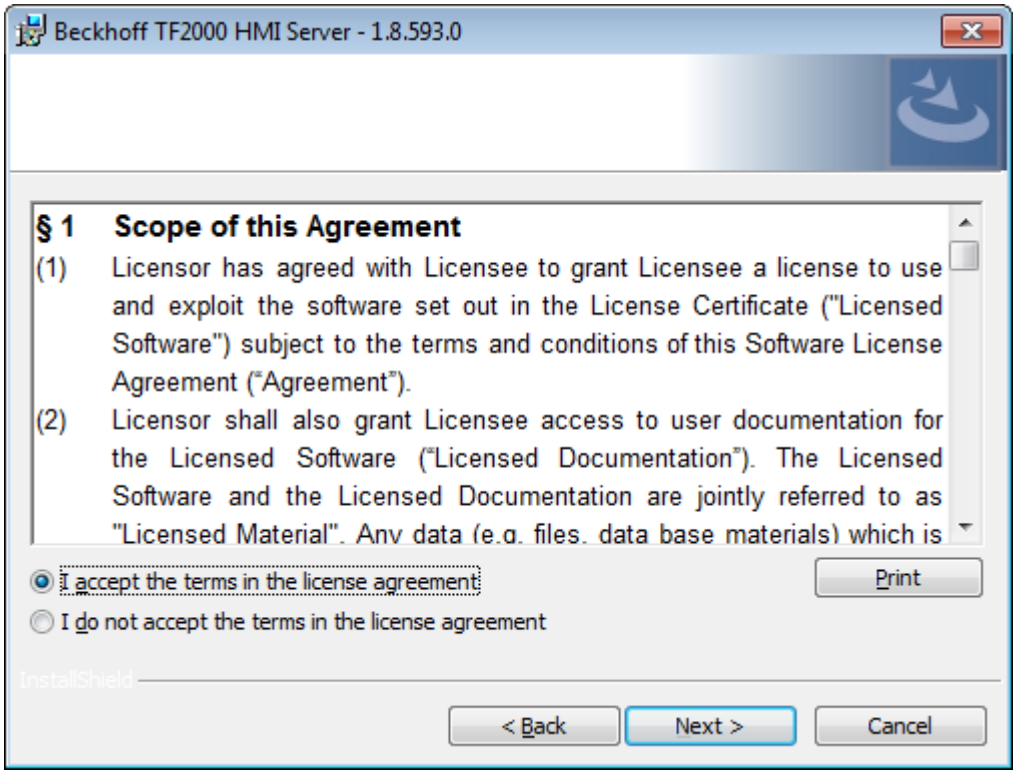
3.2 Installation

Procedure for installing the TwinCAT 3 function for Windows-based operating systems:

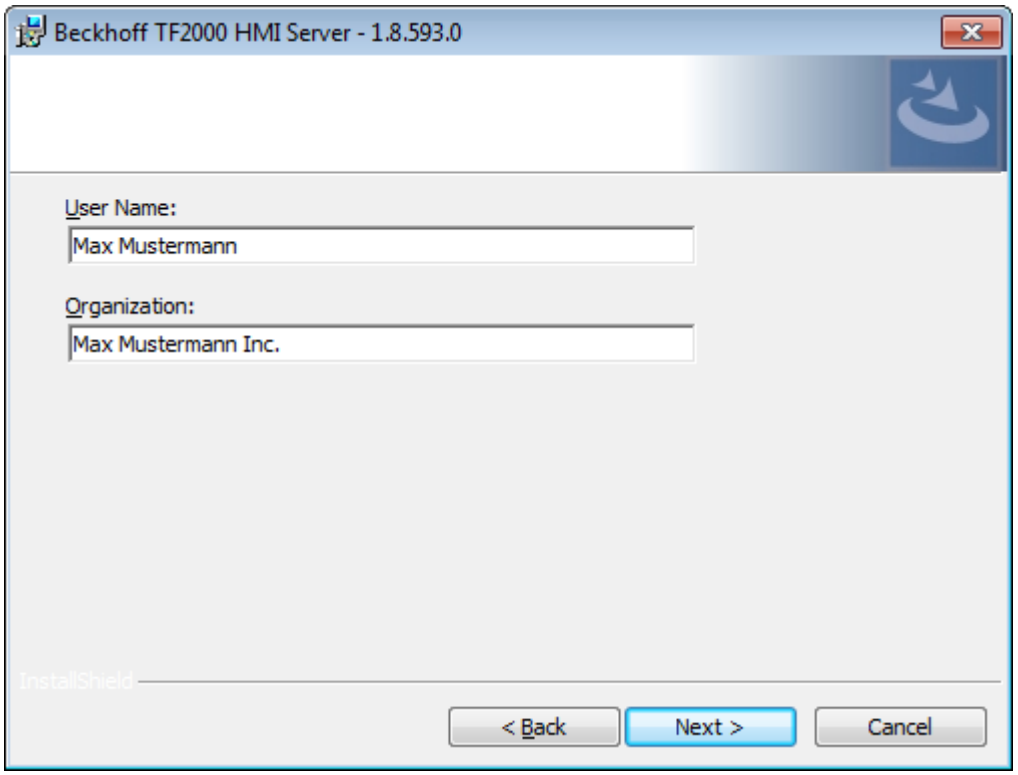
1. For an update installation, close all HMI server instances that may be running.
2. Double-click the downloaded *TF2000 HMI Server* file.
   Start the installation under Windows with **Run As Admin** by right-clicking the setup files and selecting the corresponding option in the context menu.
3. Select the language to guide you through the installation.



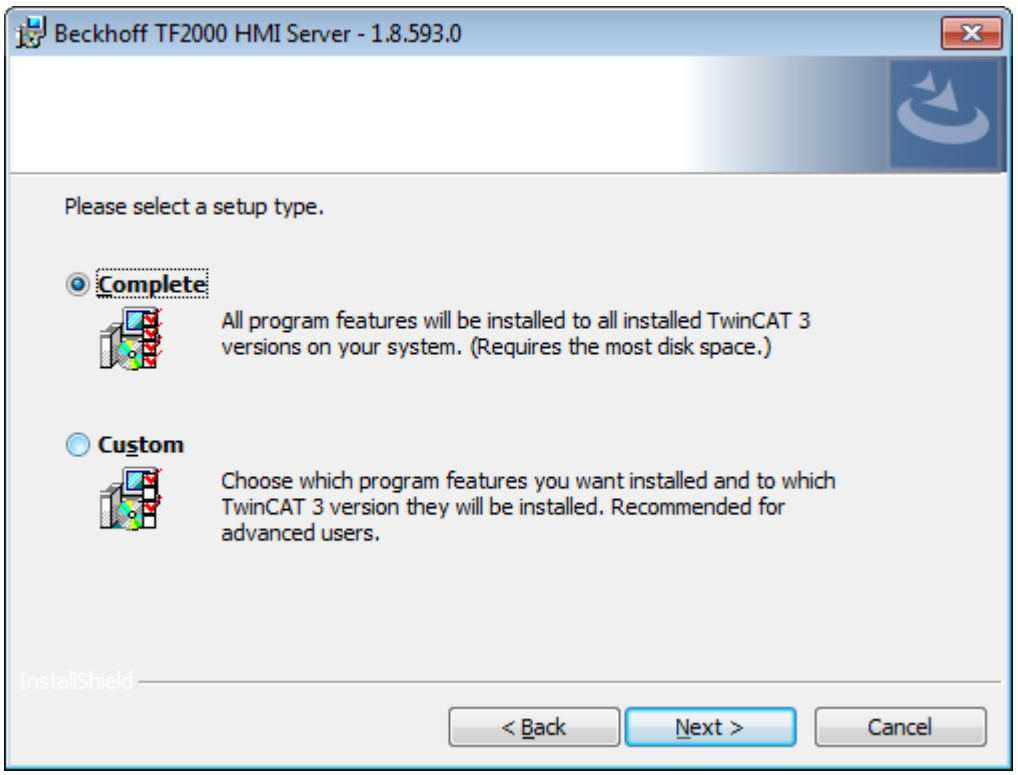
4. Click on **Next** and then accept the end user agreement.



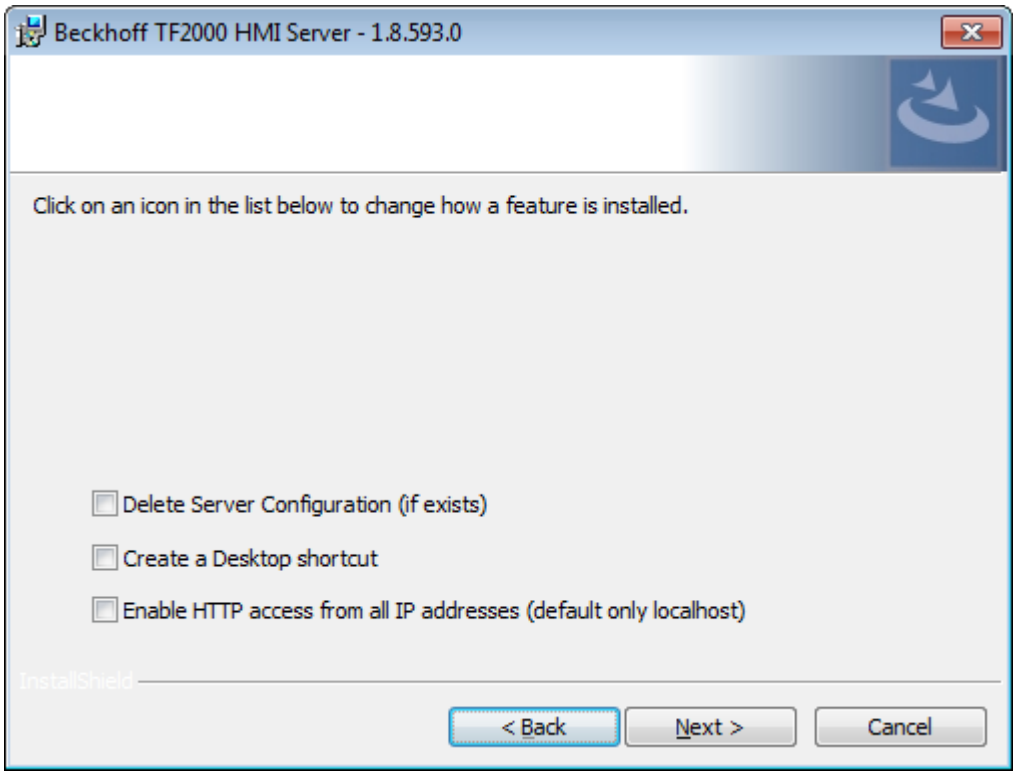
5. Enter your user data.



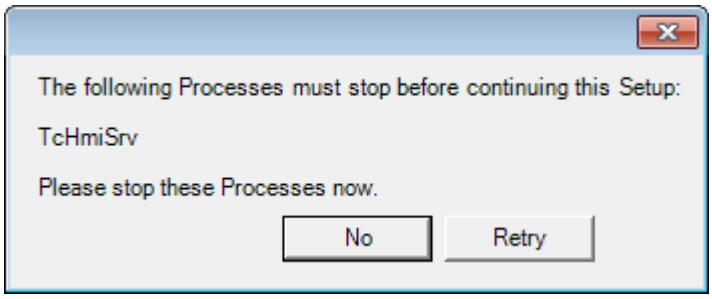
6. You have a choice between complete and user-specific installation. Confirm with **Next**.



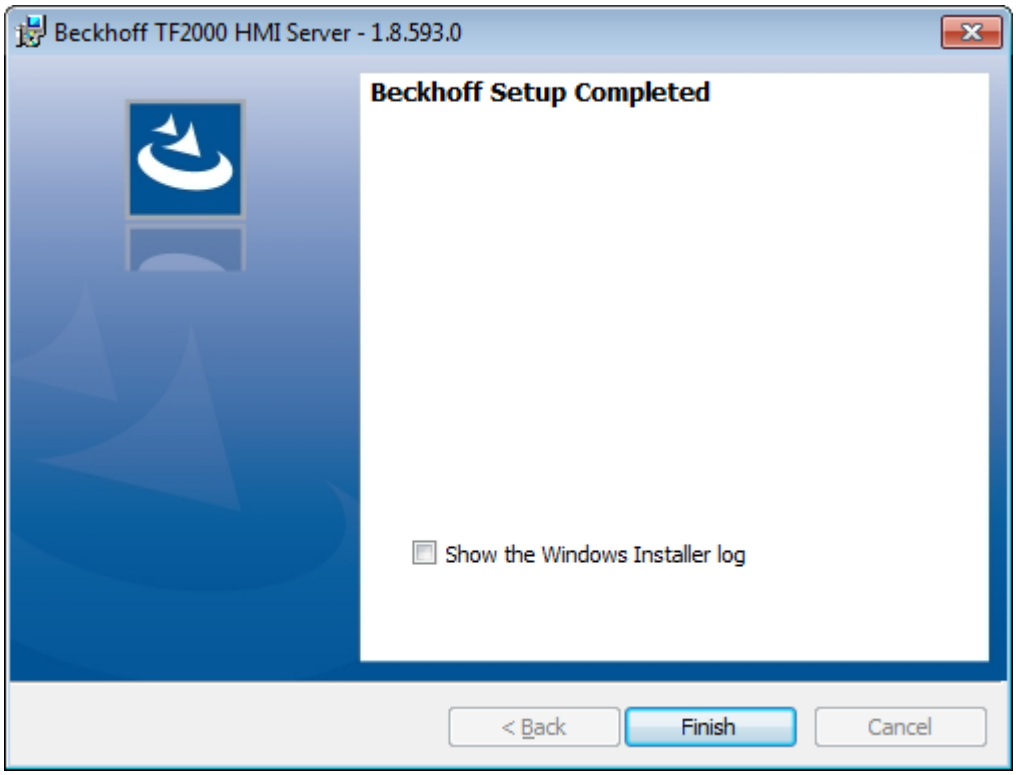
7. The user-specific installation offers the following settings:



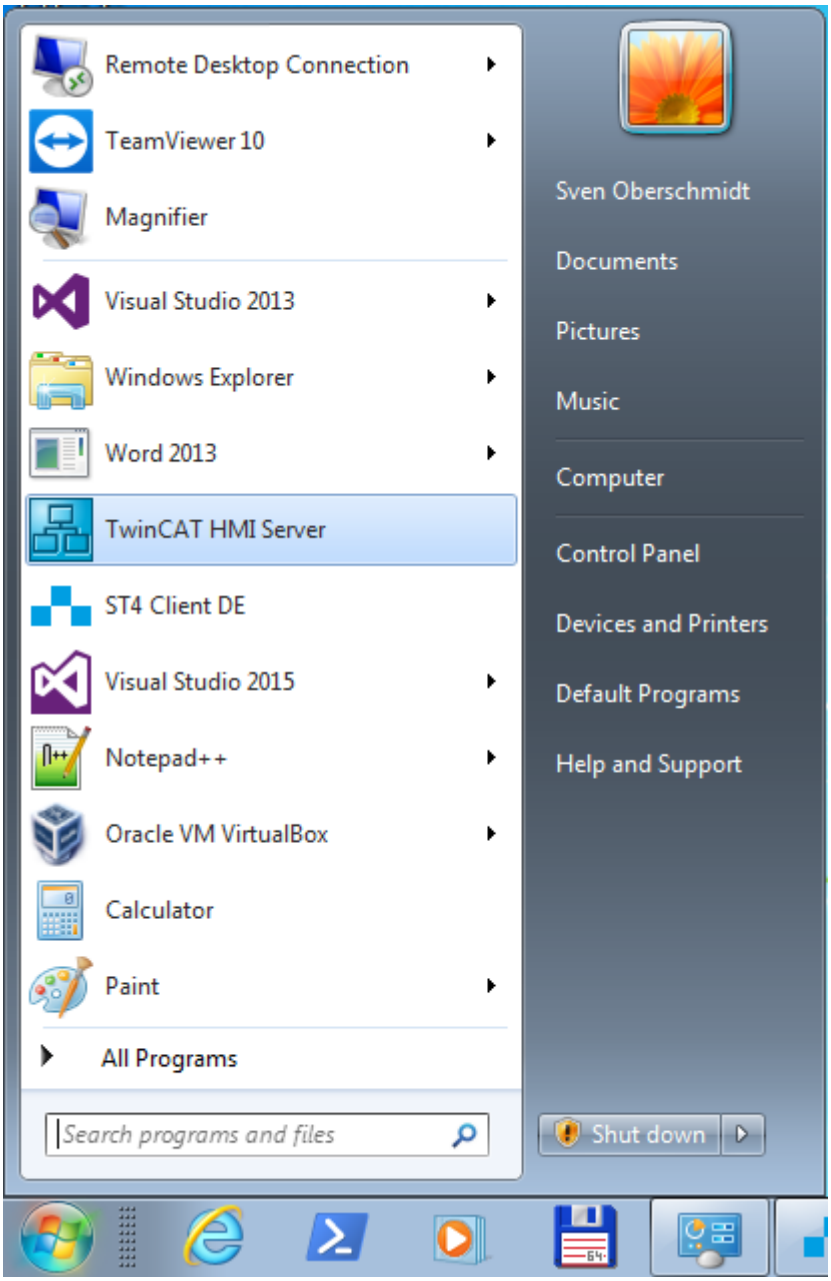
8. If not all HMI server instances are closed, the setup will pause.
9. Close all HMI server instances and click **Retry**.



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



⇨ The installation is complete and you can start the TF2000 HMI server via the optional desktop shortcut or the start menu (Programs/Beckhoff/TF2000 HMI Server).

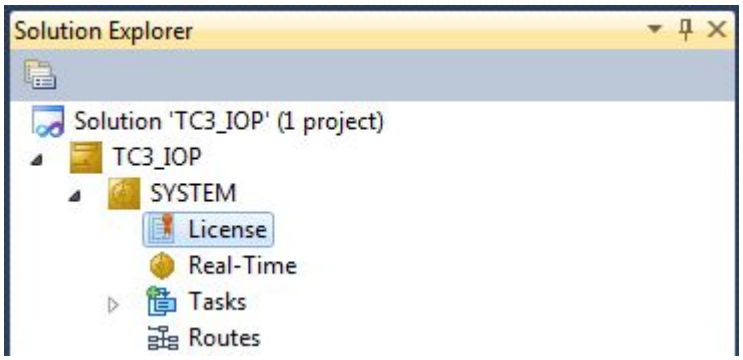


3.3 Licensing

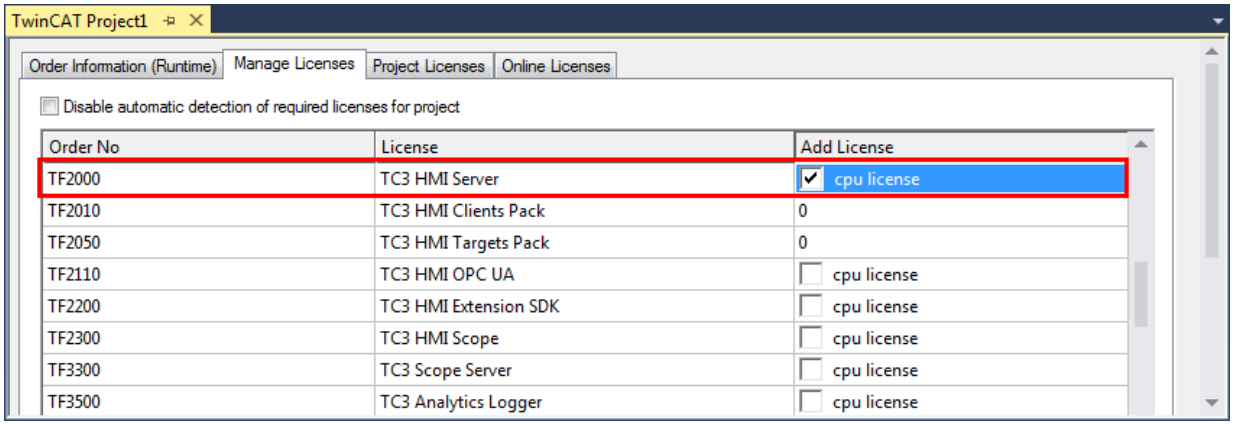
Licensing a full version

1. Start TwinCAT XAE
2. Open an existing TwinCAT 3 project or create a new project

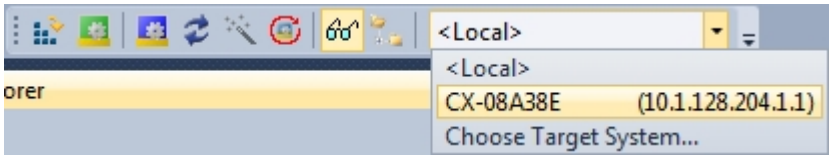
3. In the **Solution Explorer**, navigate to the entry **SYSTEM/License**



4. Open the **Manage Licenses** tab and add a **Runtime License** for your product (in this screenshot **TF2000: TC3 HMI Server**).

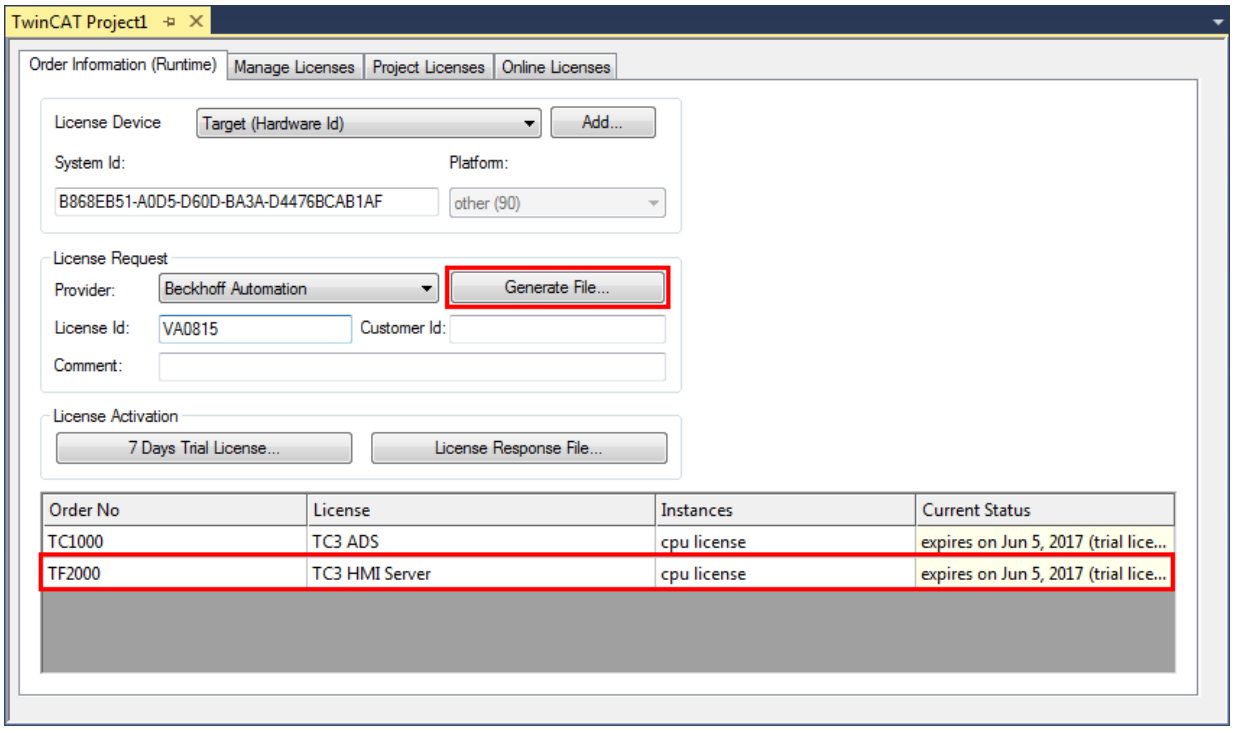


5. **Optional:** If you wish to add the license for a remote device, you must first connect to this device via the TwinCAT XAE toolbar

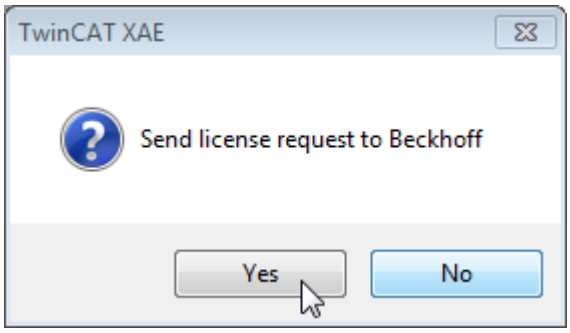


6. Open the **Order Information** tab
   The **System ID** and **HW Platform** fields cannot be changed. They describe the platform to be licensed.
   In general, a TwinCAT 3 license is linked to two parameters:
   The **System ID** identifies your device unambiguously.
   The **HW Platform** is an indicator for the performance of the device.

7. Optionally you can enter your own order number and a comment



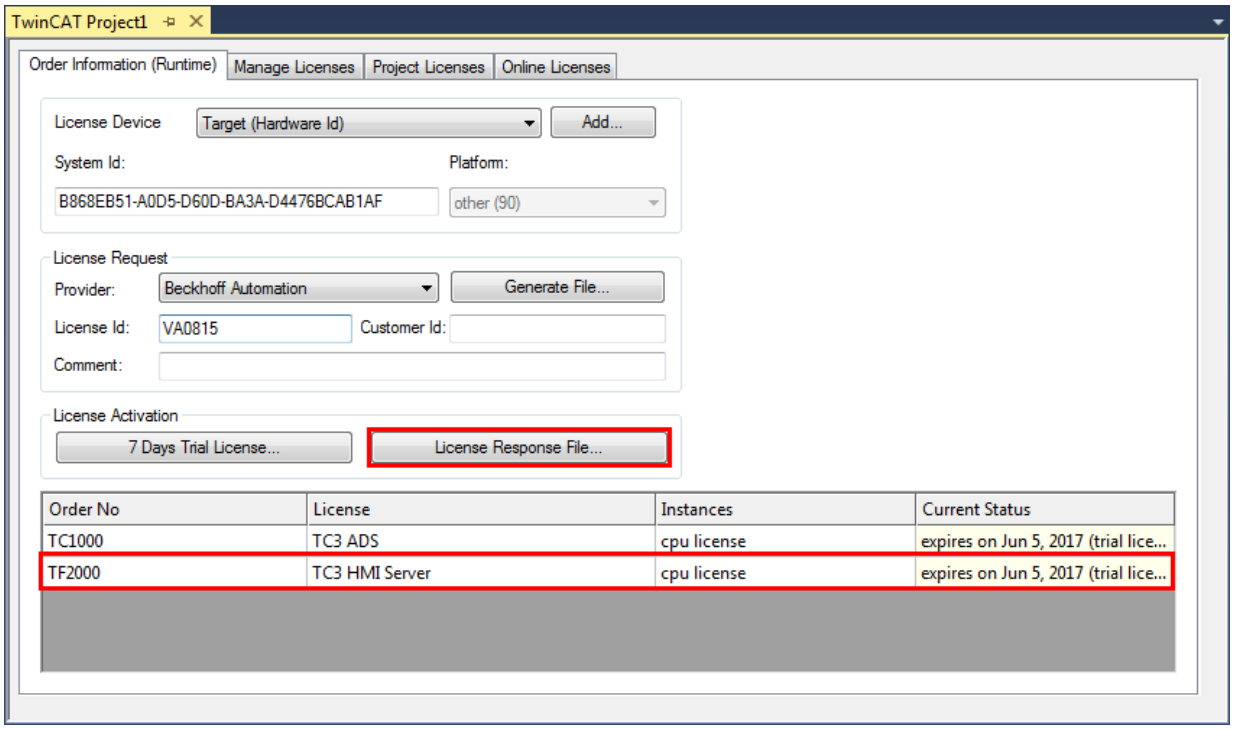
8. On the **Order Information** tab, click the **Generate License Request File...** button to generate a license request file that is validated by a Beckhoff license server (if you do not know your **Beckhoff License ID**, contact your Beckhoff sales representative).
9. After you have saved the License Request File, the system asks whether the file should be sent to the Beckhoff license server by email:



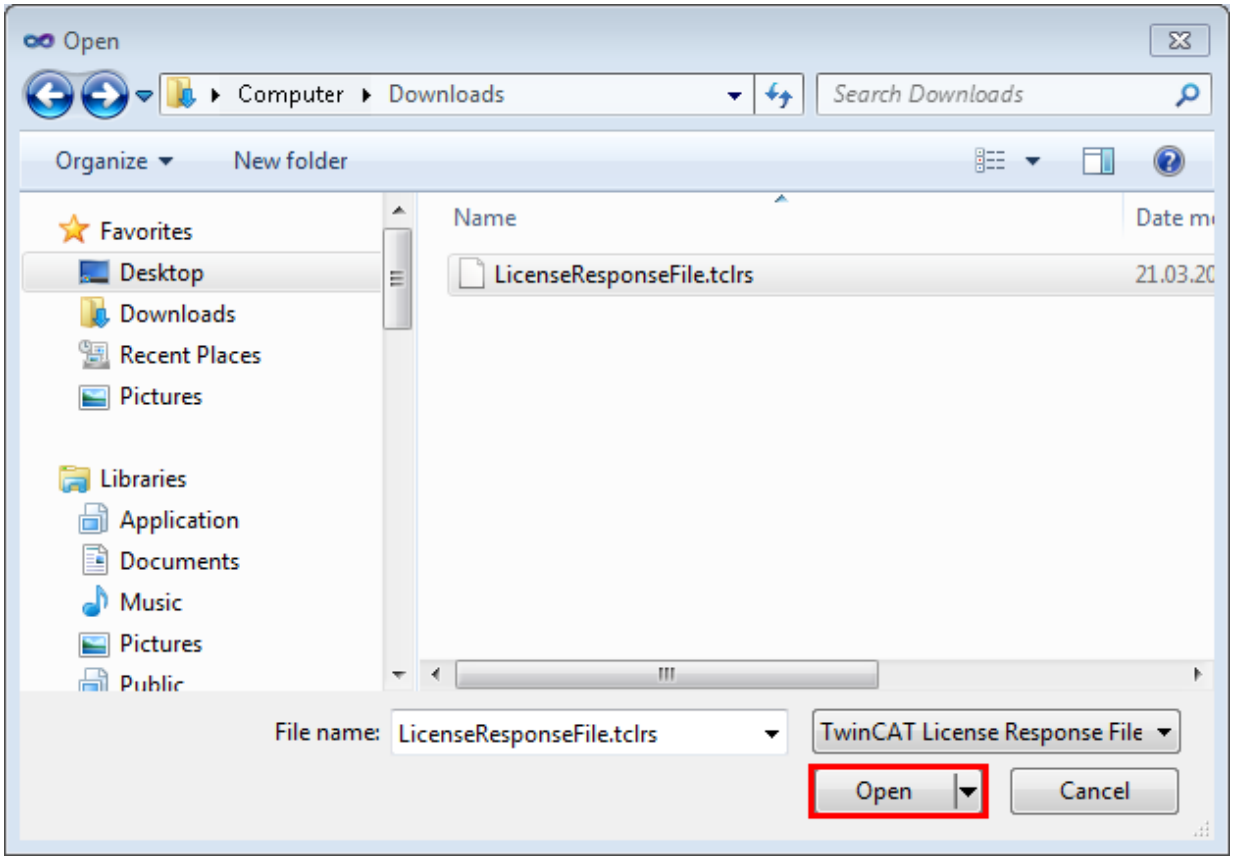
10. If you confirm the dialog with **Yes**, your default email client opens and creates a new email for tclicense@beckhoff.com containing the license request file.
11. Send this activation request to Beckhoff

The License Response File is sent to the same email address that sent the License Request File.

12. Shortly afterwards, you will receive a license file from the Beckhoff license server.
    Import the file via the **Activate License Response File...** button to activate the product

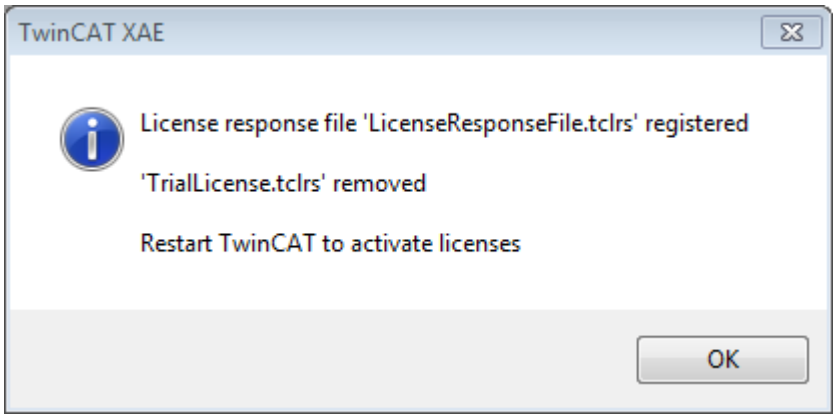


13. Select the **License Response File** you received in your folder system



14. The License Response File is imported and all licenses contained in it are activated. All affected demo licenses are removed

15. Restart TwinCAT to activate the license

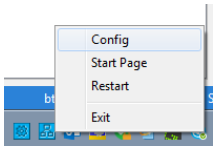


The license file is automatically copied to your local hard disk under ...\TwinCAT\3.1\Target\License.

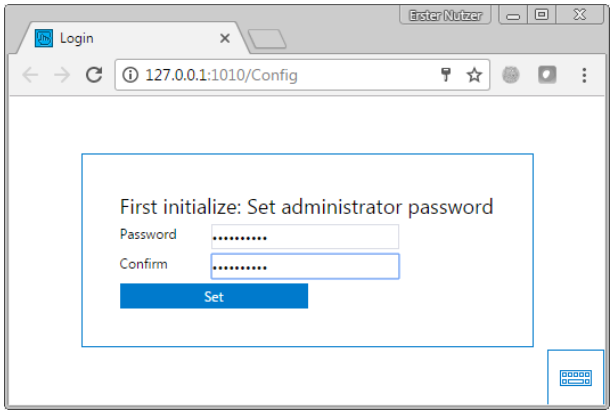
4 Configuration

After the installation, assign a default password for the system administrator so that the HMI server can be configured and the HMI engineering utility can access it.

After starting the server you can use the **system tray**  to call up the configuration page of the server.



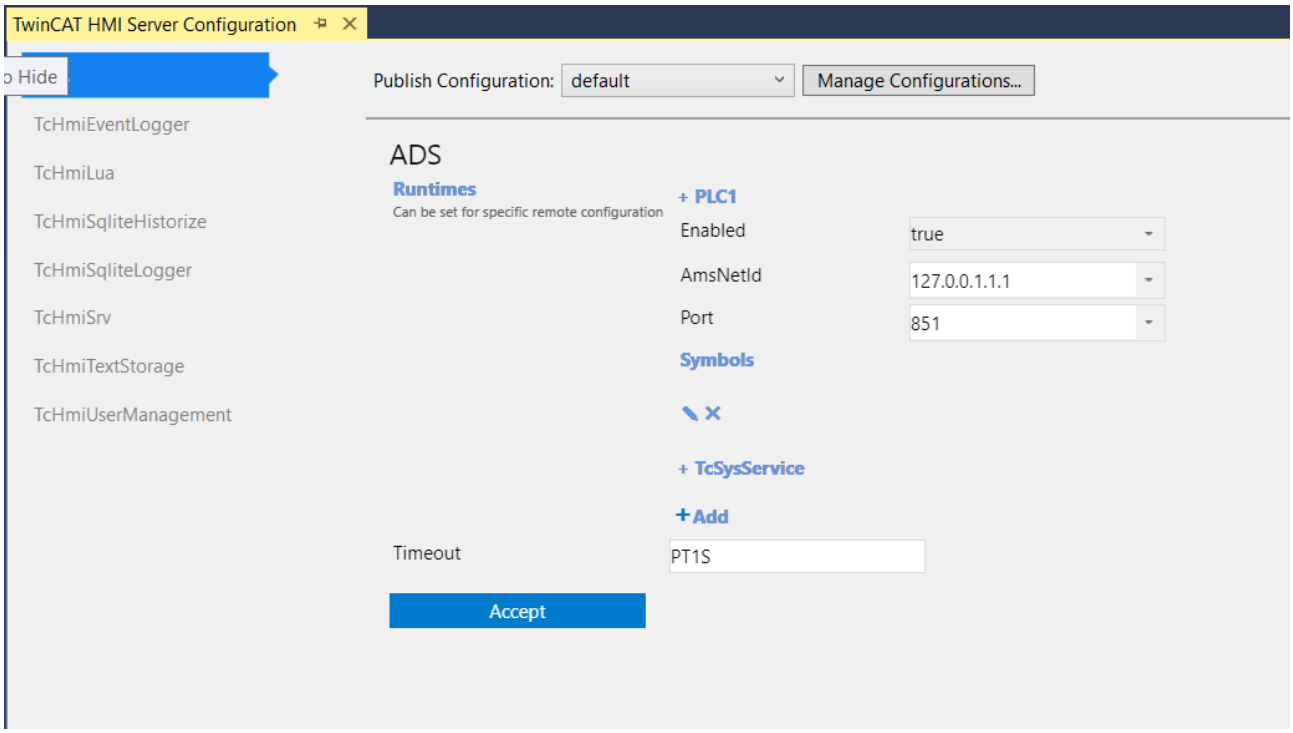
Assign a password for the system administrator when you call up the page for the first time.



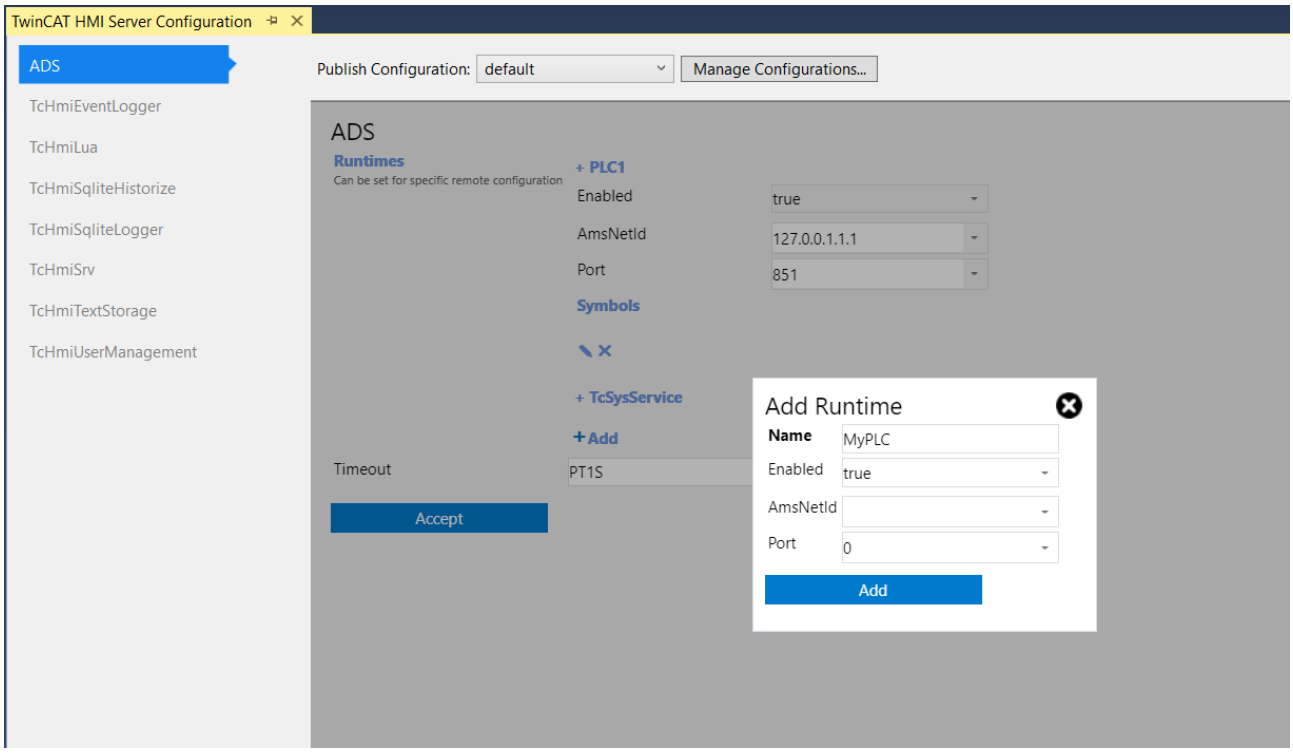
The configuration and the published HMI project can be found under *\ProgramData\Beckhoff\TF2000 TwinCAT 3 HMI Server*. To reset the server, you can delete the directory. To back up or delete the files, stop the server.

4.1 ADS

The ADS server extension displays the configured runtime of the selected publish configuration. You can add further devices.

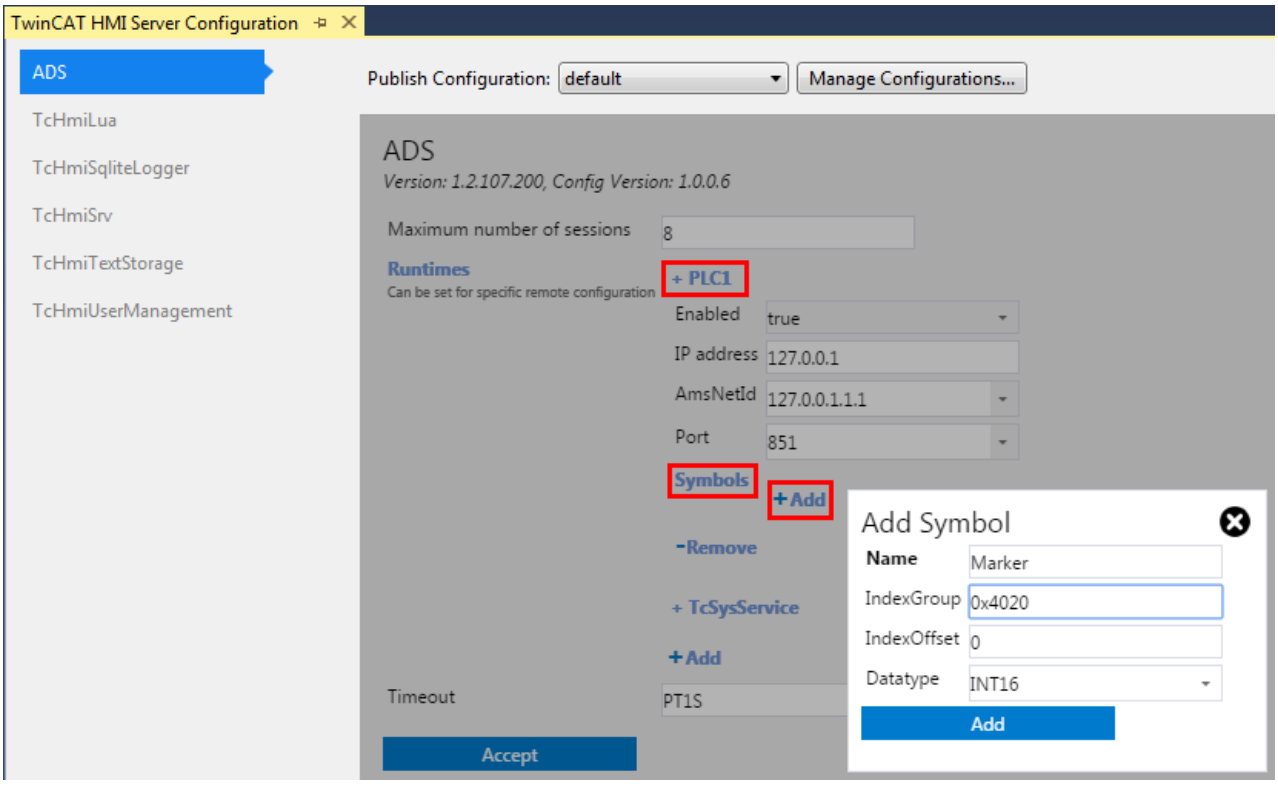


All locally configured routes are displayed with their AmsNetId when adding a runtime. A runtime is added via the AmsNetId.



4.1.1 Access by IndexGroup and Offset

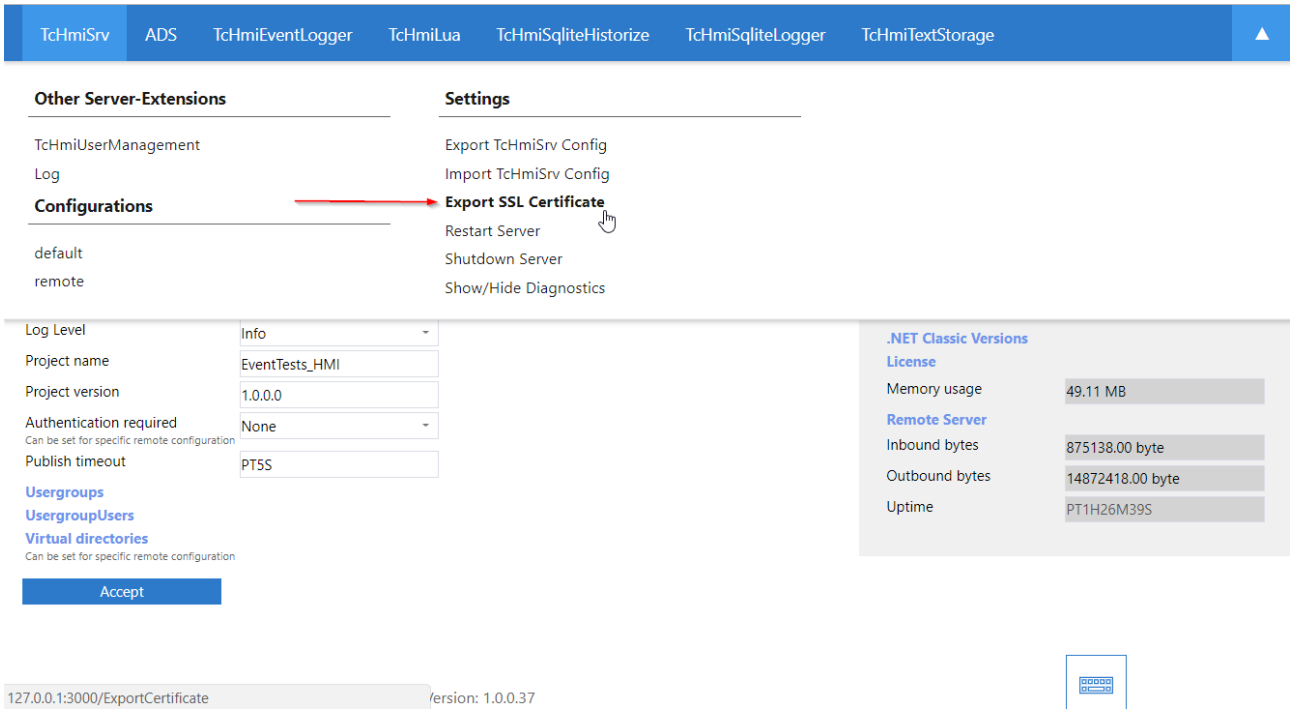
It makes most sense to access PLC variables by symbol name in order to detect changes in the symbolism (e.g. due to an OnlineChange). Small controllers (e.g. BC/BX) that have no symbolism can be addressed directly via IndexGroup and Offset. Via the configured ADS runtime you can add a new symbol that fetches the values by IndexGroup and Offset (hex values are converted to the corresponding decimal values).



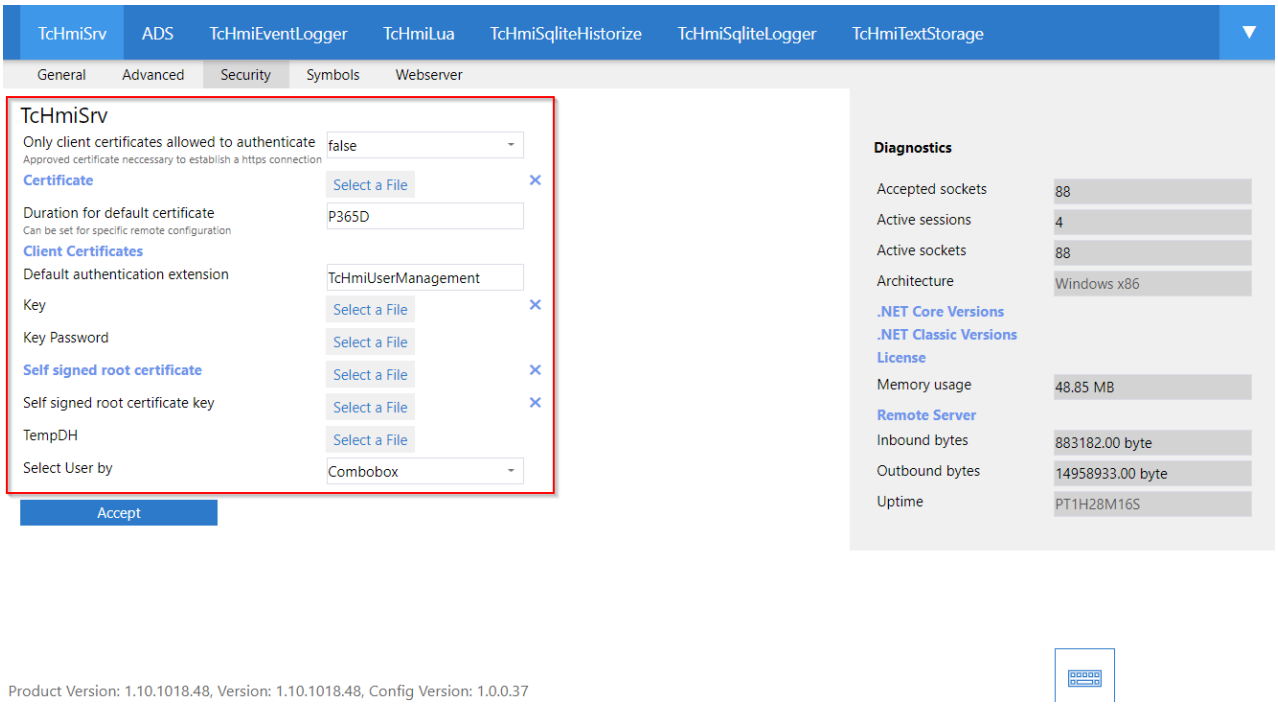
4.2 TcHmiSrv

4.2.1 Configuring certificates

The TwinCAT HMI server offers the option of issuing certificates for a secure connection. To verify the certificates, install them on the respective clients.



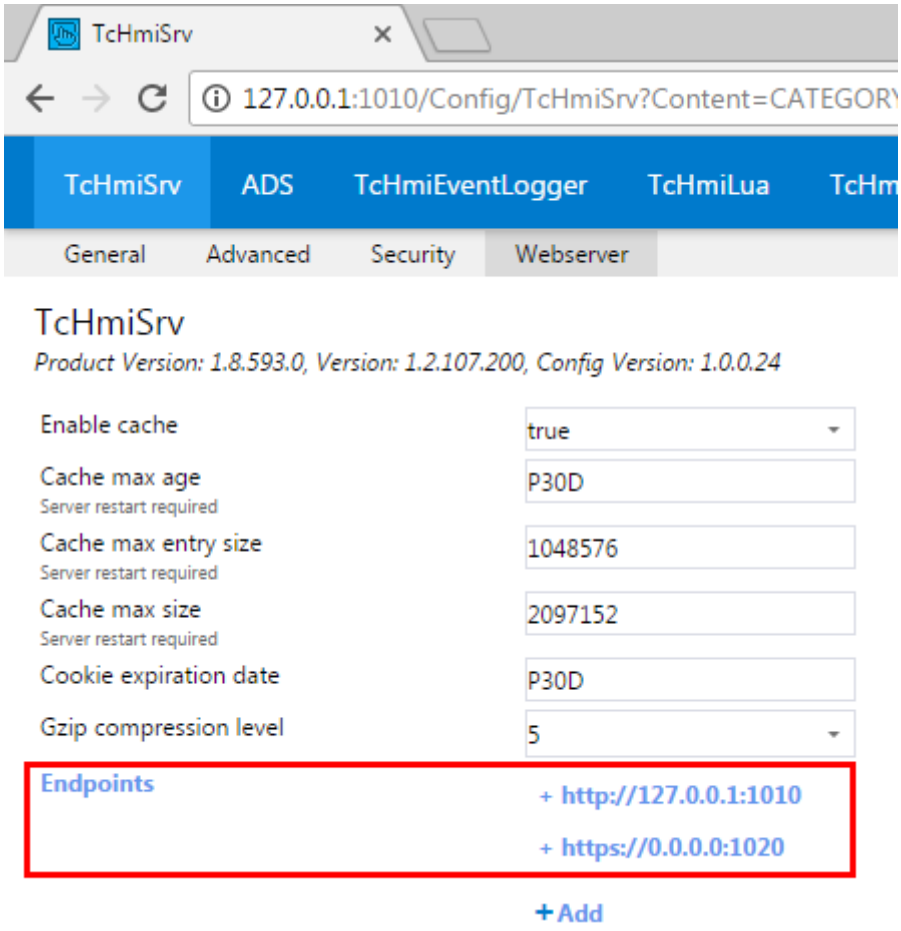
If an officially issued certificate is available, you can upload it on the configuration page of the server under TcHmiSrv/Security/Certificate (.crt). Save the private key in PEM format.



4.2.2 Configuring the network interface card

Under *TcHmiSrv/Webserver/Endpoints* you can configure under which network interface cards, port numbers and protocols the HMI server can be reached.

- Protocols supported: HTTP/HTTPS
- Binding to all network interface cards:
  Static IP address of a network card: Binding to associated cards.
  127.0.0.1: Only local access is allowed, remote connections are rejected.
- Port number: Freely selectable, should not already be accessed by the operating system.



5 Appendix

5.1 Return codes

5.1.1 ADS Return Codes

Error codes: 0x000 [▶ 21]..., 0x500 [▶ 22]..., 0x700 [▶ 23]..., 0x1000 [▶ 25]...

Global Error Codes

Hex	Dec	Description
0x0	0	no error
0x1	1	Internal error
0x2	2	No Rtime
0x3	3	Allocation locked memory error
0x4	4	Insert mailbox error
0x5	5	Wrong receive HMSG
0x6	6	target port not found
0x7	7	target machine not found
0x8	8	Unknown command ID
0x9	9	Bad task ID
0xA	10	No IO
0xB	11	Unknown ADS command
0xC	12	Win 32 error
0xD	13	Port not connected
0xE	14	Invalid ADS length
0xF	15	Invalid ADS Net ID
0x10	16	Low Installation level
0x11	17	No debug available
0x12	18	Port disabled
0x13	19	Port already connected
0x14	20	ADS Sync Win32 error
0x15	21	ADS Sync Timeout
0x16	22	ADS Sync AMS error
0x17	23	ADS Sync no index map
0x18	24	Invalid ADS port
0x19	25	No memory
0x1A	26	TCP send error
0x1B	27	Host unreachable
0x1C	28	Invalid AMS fragment

Router Error Codes

Hex	Dec	Name	Description
0x500	1280	ROUTERERR_NOLOCKEDMEMORY	No locked memory can be allocated
0x501	1281	ROUTERERR_RESIZEMEMORY	The size of the router memory could not be changed
0x502	1282	ROUTERERR_MAILBOXFULL	The mailbox has reached the maximum number of possible messages. The current sent message was rejected
0x503	1283	ROUTERERR_DEBUGBOXFULL	The mailbox has reached the maximum number of possible messages. The sent message will not be displayed in the debug monitor
0x504	1284	ROUTERERR_UNKNOWNPORTTYPE	Unknown port type
0x505	1285	ROUTERERR_NOTINITIALIZED	Router is not initialized
0x506	1286	ROUTERERR_PORTALREADYINUSE	The desired port number is already assigned
0x507	1287	ROUTERERR_NOTREGISTERED	Port not registered
0x508	1288	ROUTERERR_NOMOREQUEUES	The maximum number of Ports reached
0x509	1289	ROUTERERR_INVALIDPORT	Invalid port
0x50A	1290	ROUTERERR_NOTACTIVATED	TwinCAT Router not active

General ADS Error Codes

Hex	Dec	Name	Description
0x700	1792	ADSERR_DEVICE_ERROR	error class <device error>
0x701	1793	ADSERR_DEVICE_SRVNOTSUPP	Service is not supported by server
0x702	1794	ADSERR_DEVICE_INVALIDGRP	invalid index group
0x703	1795	ADSERR_DEVICE_INVALIDOFFSET	invalid index offset
0x704	1796	ADSERR_DEVICE_INVALIDACCESS	reading/writing not permitted
0x705	1797	ADSERR_DEVICE_INVALIDSIZE	parameter size not correct
0x706	1798	ADSERR_DEVICE_INVALIDDATA	invalid parameter value(s)
0x707	1799	ADSERR_DEVICE_NOTREADY	device is not in a ready state
0x708	1800	ADSERR_DEVICE_BUSY	device is busy
0x709	1801	ADSERR_DEVICE_INVALIDCONTEXT	invalid context (must be in Windows)
0x70A	1802	ADSERR_DEVICE_NOMEMORY	out of memory
0x70B	1803	ADSERR_DEVICE_INVALIDPARM	invalid parameter value(s)
0x70C	1804	ADSERR_DEVICE_NOTFOUND	not found (files, ...)
0x70D	1805	ADSERR_DEVICE_SYNTAX	syntax error in command or file
0x70E	1806	ADSERR_DEVICE_INCOMPATIBLE	objects do not match
0x70F	1807	ADSERR_DEVICE_EXISTS	object already exists
0x710	1808	ADSERR_DEVICE_SYMBOLNOTFOUND	symbol not found
0x711	1809	ADSERR_DEVICE_SYMBOLVERSIONINVAL	symbol version invalid
0x712	1810	ADSERR_DEVICE_INVALIDSTATE	server is in invalid state
0x713	1811	ADSERR_DEVICE_TRANSMODENOTSUPP	AdsTransMode not supported
0x714	1812	ADSERR_DEVICE_NOTIFYHNDINVALID	Notification handle is invalid
0x715	1813	ADSERR_DEVICE_CLIENTUNKNOWN	Notification client not registered
0x716	1814	ADSERR_DEVICE_NOMOREHDLS	no more notification handles
0x717	1815	ADSERR_DEVICE_INVALIDWATCHSIZE	size for watch too big
0x718	1816	ADSERR_DEVICE_NOTINIT	device not initialized
0x719	1817	ADSERR_DEVICE_TIMEOUT	device has a timeout
0x71A	1818	ADSERR_DEVICE_NOINTERFACE	query interface failed
0x71B	1819	ADSERR_DEVICE_INVALIDINTERFACE	wrong interface required
0x71C	1820	ADSERR_DEVICE_INVALIDCLSID	class ID is invalid
0x71D	1821	ADSERR_DEVICE_INVALIDOBJID	object ID is invalid
0x71E	1822	ADSERR_DEVICE_PENDING	request is pending
0x71F	1823	ADSERR_DEVICE_ABORTED	request is aborted
0x720	1824	ADSERR_DEVICE_WARNING	signal warning
0x721	1825	ADSERR_DEVICE_INVALIDARRAYIDX	invalid array index
0x722	1826	ADSERR_DEVICE_SYMBOLNOTACTIVE	symbol not active
0x723	1827	ADSERR_DEVICE_ACCESSDENIED	access denied
0x724	1828	ADSERR_DEVICE_LICENSENOTFOUND	missing license
0x725	1829	ADSERR_DEVICE_LICENSEEXPIRED	license expired
0x726	1830	ADSERR_DEVICE_LICENSEEXCEEDED	license exceeded
0x727	1831	ADSERR_DEVICE_LICENSEINVALID	license invalid
0x728	1832	ADSERR_DEVICE_LICENSESYSTEMID	license invalid system id
0x729	1833	ADSERR_DEVICE_LICENSENOTIMELIMIT	license not time limited
0x72A	1834	ADSERR_DEVICE_LICENSEFUTUREISSUE	license issue time in the future
0x72B	1835	ADSERR_DEVICE_LICENSETIMETOLONG	license time period to long
0x72c	1836	ADSERR_DEVICE_EXCEPTION	exception occured during system start
0x72D	1837	ADSERR_DEVICE_LICENSEDUPLICATED	License file read twice
0x72E	1838	ADSERR_DEVICE_SIGNATUREINVALID	invalid signature
0x72F	1839	ADSERR_DEVICE_CERTIFICATEINVALID	public key certificate
0x740	1856	ADSERR_CLIENT_ERROR	Error class <client error>
0x741	1857	ADSERR_CLIENT_INVALIDPARM	invalid parameter at service
0x742	1858	ADSERR_CLIENT_LISTEMPTY	polling list is empty
0x743	1859	ADSERR_CLIENT_VARUSED	var connection already in use
0x744	1860	ADSERR_CLIENT_DUPLINVOKEID	invoke ID in use
0x745	1861	ADSERR_CLIENT_SYNCTIMEOUT	timeout elapsed
0x746	1862	ADSERR_CLIENT_W32ERROR	error in win32 subsystem
0x747	1863	ADSERR_CLIENT_TIMEOUTINVALID	Invalid client timeout value

Hex	Dec	Name	Description
0x748	1864	ADSERR_CLIENT_PORTNOTOPEN	ads-port not opened
0x750	1872	ADSERR_CLIENT_NOAMSADDR	internal error in ads sync
0x751	1873	ADSERR_CLIENT_SYNCINTERNAL	hash table overflow
0x752	1874	ADSERR_CLIENT_ADDHASH	key not found in hash
0x753	1875	ADSERR_CLIENT_REMOVEHASH	no more symbols in cache
0x754	1876	ADSERR_CLIENT_NOMORESYM	invalid response received
0x755	1877	ADSERR_CLIENT_SYNCRESINVALID	sync port is locked

RTime Error Codes

Hex	Dec	Name	Description
0x1000	4096	RTERR_INTERNAL	Internal fatal error in the TwinCAT real-time system
0x1001	4097	RTERR_BADTIMERPERIODS	Timer value not vaild
0x1002	4098	RTERR_INVALIDTASKPTR	Task pointer has the invalid value ZERO
0x1003	4099	RTERR_INVALIDSTACKPTR	Task stack pointer has the invalid value ZERO
0x1004	4100	RTERR_PRIOEXISTS	The demand task priority is already assigned
0x1005	4101	RTERR_NOMORETCB	No more free TCB (Task Control Block) available. Maximum number of TCBs is 64
0x1006	4102	RTERR_NOMORESEMAS	No more free semaphores available. Maximum number of semaphores is 64
0x1007	4103	RTERR_NOMOREQUEUES	No more free queue available. Maximum number of queue is 64
0x100D	4109	RTERR_EXTIRQALREADYDEF	An external synchronization interrupt is already applied
0x100E	4110	RTERR_EXTIRQNOTDEF	No external synchronization interrupt applied
0x100F	4111	RTERR_EXTIRQINSTALLFAILED	The apply of the external synchronization interrupt failed
0x1010	4112	RTERR_IRQLNOTLESSOREQUAL	Call of a service function in the wrong context
0x1017	4119	RTERR_VMXNOTSUPPORTED	Intel VT-x extension is not supported
0x1018	4120	RTERR_VMXDISABLED	Intel VT-x extension is not enabled in system BIOS
0x1019	4121	RTERR_VMXCONTROLSMISSING	Missing function in Intel VT-x extension
0x101A	4122	RTERR_VMXENABLEFAILS	Enabling Intel VT-x fails

TCP Winsock Error Codes

Hex	Dec	Description
0x274d	10061	A connection attempt failed because the connected party did not properly respond after a period of time, or established connection failed because connected host has failed to respond.
0x2751	10065	No connection could be made because the target machine actively refused it. This error normally occurs when you try to connect to a service which is inactive on a different host - a service without a server application.
0x274c	10060	No route to a host. A socket operation was attempted to an unreachable host
		Further Winsock error codes: Win32 Error Codes

5.1.2 HMI_ADS_CONSTANTS Enumeration

Return codes of the TcHmiAds extension.

Namespace: TcHmiAds
Assembly: TcHmiAds (in TcHmiAds.dll) Version: 1.0.0.0 (1.0.0.0)

Members

	Hex	Dec	Member name	Value	Description
	0x0	0	HMI_ADS_SUCCESS	0	No error, everything fine
	0x100000	1048576	HMI_ADS_E_OFFSET	1048576	Offset of TcHmiAds specific error codes
	0x100010	1048592	HMI_ADS_E_TCDIR	1048592	TwinCAT directory not found on local system
	0x100011	1048593	HMI_ADS_E_TCVERSION	1048593	TwinCAT version invalid
	0x100012	1048594	HMI_ADS_E_CONFIGDIR	1048594	TwinCAT configuration directory not found
	0x100013	1048595	HMI_ADS_E_STATE	1048595	TwinCAT Router is in invalid state no port could be opened
	0x100020	1048608	HMI_ADS_E_PARSE_BASETYPES	1048608	Error while parsing ADS base types
	0x100021	1048609	HMI_ADS_E_PARSE_DATA	1048609	Error while parsing ADS data
	0x100022	1048610	HMI_ADS_E_NOT_IMPLEMENTED	1048610	Function not implemented (trying to write a reference value)
	0x100030	1048624	HMI_ADS_E_INVALID_DATA	1048624	Invalid data written to server or an ADS datatype can not be parsed
	0x100031	1048625	HMI_ADS_E_UPLOAD_DATA	1048625	No upload data provided by configured ADS runtime
	0x100032	1048626	HMI_ADS_E_UNEXPECTED	1048626	Should not happen contact support
	0x100033	1048627	HMI_ADS_E_INVALID_RUNTIME	1048627	Runtime name is empty or invalid
	0x100034	1048628	HMI_ADS_E_INVALID_PARAMETER	1048628	A parameter of the requested function is invalid
	0x100035	1048629	HMI_ADS_E_NO_OFFLINE_DATA	1048629	No offline data available
	0x100036	1048630	HMI_ADS_E_INVALID_SYMBOL	1048630	The requested symbol is not available
	0x100037	1048631	HMI_ADS_E_MISSING_PARAMETER	1048631	A parameter is missing in the requested function
	0x100038	1048632	HMI_ADS_E_ADD_ROUTE	1048632	An ADS route could not be added
	0x100039	1048633	HMI_ADS_E_EMPTY	1048633	No ADS symbols found
	0x10003A	1048634	HMI_ADS_E_DISABLED	1048634	The requested runtime is disabled in the HMI configuration
	0x10003B	1048635	HMI_ADS_E_LICENSE	1048635	A license error occurred
	0x10003C	1048636	HMI_ADS_E_INVALID_SYMBOL_TYPE	1048636	A type from ADS could not be interpreted

	Hex	Dec	Member name	Value	Description
	0x10003D	1048637	HMI_ADS_E_INVALID_SYMBOL_HANDLE	1048637	A handle to an ADS symbol has become invalid
	0x10003E	1048638	HMI_ADS_E_ABORTED	1048638	A TCP/IP error occurred

Reference

TcHmiAds Namespace

5.1.3 ErrorValue Enumeration

Namespace: TcHmiSrv
Assembly: TcHmiSrvExtNet (in TcHmiSrvExtNet.dll) Version: 1.0.0.0 (1.0.0.0)

Syntax

C#

```
public enum ErrorValue
```

Members

	Member name	Value	Description
	HMI_SUCCESS	0	
	HMI_FINISHED	1	
	HMI_DISCONNECTED	2	
	HMI_SHUTDOWN	3	
	HMI_RESTART	4	
	HMI_SKIP	5	
	HMI_FIRST_INIT	6	
	HMI_UPGRADE	7	
	HMI_UNCHANGED	8	
	HMI_IGNORE	9	
	HMI_E_SERVER	256	
	HMI_E_FAIL	257	
	HMI_E_UNEXPECTED	258	
	HMI_E_SCRIPT	259	
	HMI_E_REQUIRED_EXTENSION_MISSING	260	
	HMI_E_INIT	261	
	HMI_E_NO_LANGUAGE_FILE	262	
	HMI_E_SYNTAX	263	
	HMI_E_FILE_NOT_FOUND	264	
	HMI_E_FILESYSTEM	265	
	HMI_E_REQUEST_TOO_LARGE	266	
	HMI_E_DATABASE	267	
	HMI_E_INVALID_POINTER	268	
	HMI_E_INVALID_PARAMETER	269	
	HMI_E_INVALID_TYPE	270	
	HMI_E_NOT_REGISTERED	271	
	HMI_E_NOT_IMPLEMENTED	272	
	HMI_E_ID_IN_USE	273	
	HMI_E_SYMBOL_IN_USE	274	
	HMI_E_INTERRUPTED	275	
	HMI_E_FILE_LOCK	276	
	HMI_E_FILE_IN_USE	277	
	HMI_E_FILE_WRITE	278	
	HMI_E_INVALID_PATH	279	
	HMI_E_HANDLE	280	
	HMI_E_ENCODE	281	
	HMI_E_DECODE	282	
	HMI_E_NETWORK	283	
	HMI_E_LANGUAGE	284	
	HMI_E_CACHE	285	
	HMI_E_ENDPOINT_DENIED	286	
	HMI_E_ENDPOINT_BUSY	287	
	HMI_E_ENDPOINT_INVALID	288	
	HMI_E_WEBSERVER_UNEXPECTED	289	
	HMI_E_WEBSOCKET_UNEXPECTED	290	

	Member name	Value	Description
	HMI_E_LUA_EXEC	291	
	HMI_E_ENTRY_NOT_FOUND	292	
	HMI_E_INVALID_SYMBOL	293	
	HMI_E_BLACKLISTED	294	
	HMI_E_UPLOAD_TIMER_EXPIRED	295	
	HMI_E_SERVER_ALREADY_RUNNING	296	
	HMI_E_INVALID_SUBSYMBOL	512	
	HMI_E_SYMBOL_NOT_MAPPED	513	
	HMI_E_SYMBOL_SCHEMA_MISSING	514	
	HMI_E_INVALID_METHOD	515	
	HMI_E_API	768	
	HMI_E_INTERFACE_VERSION	769	
	HMI_E_INTERFACE_POINTER	770	
	HMI_E_CRT_NOT_FOUND	771	
	HMI_E_CRT_INIT	772	
	HMI_E_LICENSE	773	
	HMI_E_LICENSE_CHECK	774	
	HMI_E_LICENSE_ADS	775	
	HMI_E_LICENSE_SERVER	776	
	HMI_E_LICENSE_CLIENT	777	
	HMI_E_LICENSE_TARGET	778	
	HMI_E_LICENSE_EXPIRED	779	
	HMI_E_LICENSE_EXTENSION	780	
	HMI_E_LICENSE_HANDSHAKE	781	
	HMI_E_LICENSE_VERIFY	782	
	HMI_E_LICENSE_EMPTY	783	
	HMI_E_STORAGE	1280	
	HMI_E_STORAGE_WRITE	1281	
	HMI_E_STORAGE_VERSION	1282	
	HMI_E_STORAGE_CREATE	1283	
	HMI_E_STORAGE_STORE	1284	
	HMI_E_STORAGE_LOAD	1285	
	HMI_E_STORAGE_FILE_NOT_FOUND	1286	
	HMI_E_STORAGE_ADD_PARAMETER	1287	
	HMI_E_STORAGE_SCHEMA	1288	
	HMI_E_STORAGE_CONSTRAINT	1289	
	HMI_E_STORAGE_ADD	1290	
	HMI_E_STORAGE_EXTENSION	1291	

	Member name	Value	Description
	HMI_E_STORAGE_PARAMETER	1292	
	HMI_E_STORAGE_TYPE	1293	
	HMI_E_CONNECT	1294	
	HMI_E_STORAGE_BACKUP	1295	
	HMI_E_SCHEMA	1536	
	HMI_E_TYPE_MISMATCH	1537	
	HMI_E_RANGE_MISMATCH	1538	
	HMI_E_INVALID_FIELD	1539	
	HMI_E_REQUIRED_FIELD	1540	
	HMI_E_UNEXPECTED_FIELD	1541	
	HMI_E_ENUM_VALUE_MISMATCH	1542	
	HMI_E_ARRAY_RANGE_MISMATCH	1543	
	HMI_E_STRING_LENGTH_MISMATCH	1544	
	HMI_E_MULTIPLE_MATCHES	1545	
	HMI_E_UNIQUE	1546	
	HMI_E_FORMAT	1547	
	HMI_E_TYPE_MISSING	1548	
	HMI_E_EXCLUDED	1549	
	HMI_E_MIGRATION	1550	
	HMI_E_MIGRATION_RULE	1551	
	HMI_E_MIGRATION_PATH	1552	
	HMI_E_EXTENSION	2048	
	HMI_E_EXTENSION_LOAD	2049	
	HMI_E_INVALID_DOMAIN	2050	
	HMI_E_DOMAIN_ACTIVE	2051	
	HMI_E_LOG_EXTENSION	2052	
	HMI_E_AUTH_EXTENSION	2053	
	HMI_E_EXTENSION_CONFIG	2054	
	HMI_E_EXTENSION_HANDLER	2055	
	HMI_E_UNLOAD_FAILED	2056	
	HMI_E_AUTH_WAIT	2057	
	HMI_E_SESSION	4096	
	HMI_E_INVALID_SESSION	4097	
	HMI_E_AUTH_USER_NOT_FOUND	4098	
	HMI_E_AUTH_FAILED	4099	
	HMI_E_AUTH_GROUP_NOT_FOUND	4100	
	HMI_E_INSUFFICIENT_ACCESS	4101	
	HMI_E_CREATE_SESSION	4102	
	HMI_E_SESSION_NOT_FOUND	4103	
	HMI_E_CERTIFICATE	4104	
	HMI_E_NO_LOGIN_DATA	4105	

	Member name	Value	Description
	HMI_E_ALREADY_LOGGED_IN	4106	
	HMI_E_SESSION_TIMEOUT	4107	
	HMI_E_TOO_MANY_CONNECTIONS	4108	
	HMI_E_CHECKSUM	4608	
	HMI_E_INVALID_CHECKSUM	4609	
	HMI_E_CHECKSUM_UNEXPECTED	4610	
	HMI_E_CHECKSUM_MATCH	4611	
	HMI_E_SIGNATURE	4612	
	HMI_E_SIGNATURE_MISSING	4613	
	HMI_E_SIGNATURE_MISMATCH	4614	
	HMI_E_KEY_MISSING	4615	
	HMI_E_RESTART_REQUIRED	4616	
	HMI_E_INITIALIZE_PASSWORD	4617	

See Also

Reference

TcHmiSrv Namespace

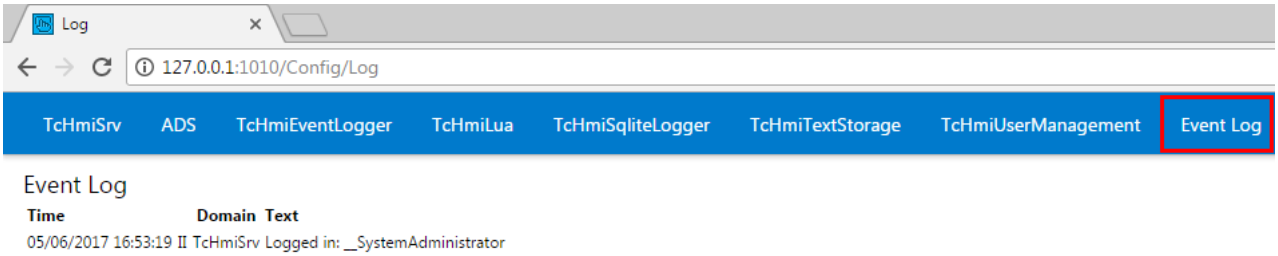
5.2 Troubleshooting

The product version number can be read via the system tray icon  . Additional information is required:

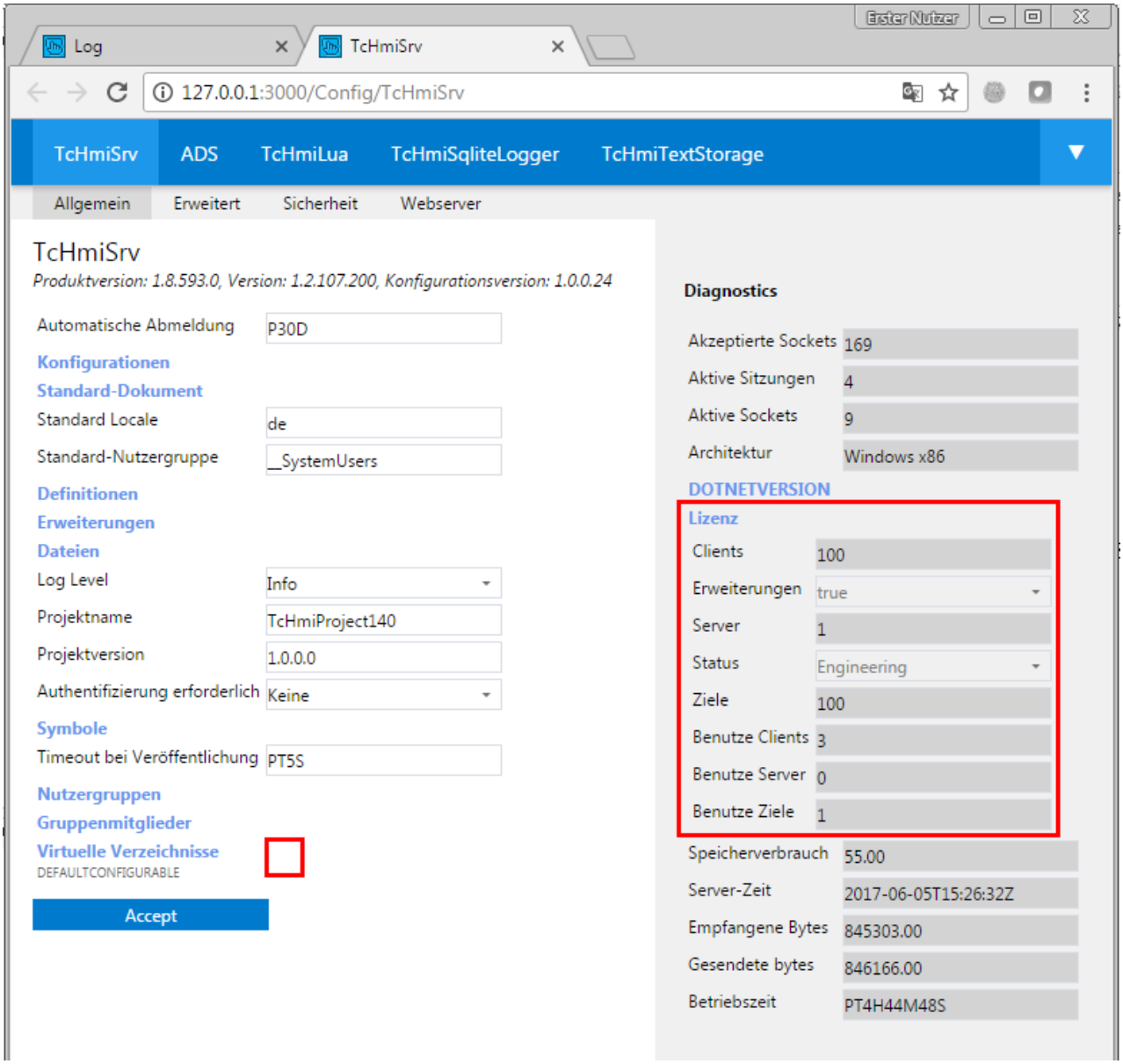
- Operating system
- Event log
- Memory images (if available)

5.2.1 Config page

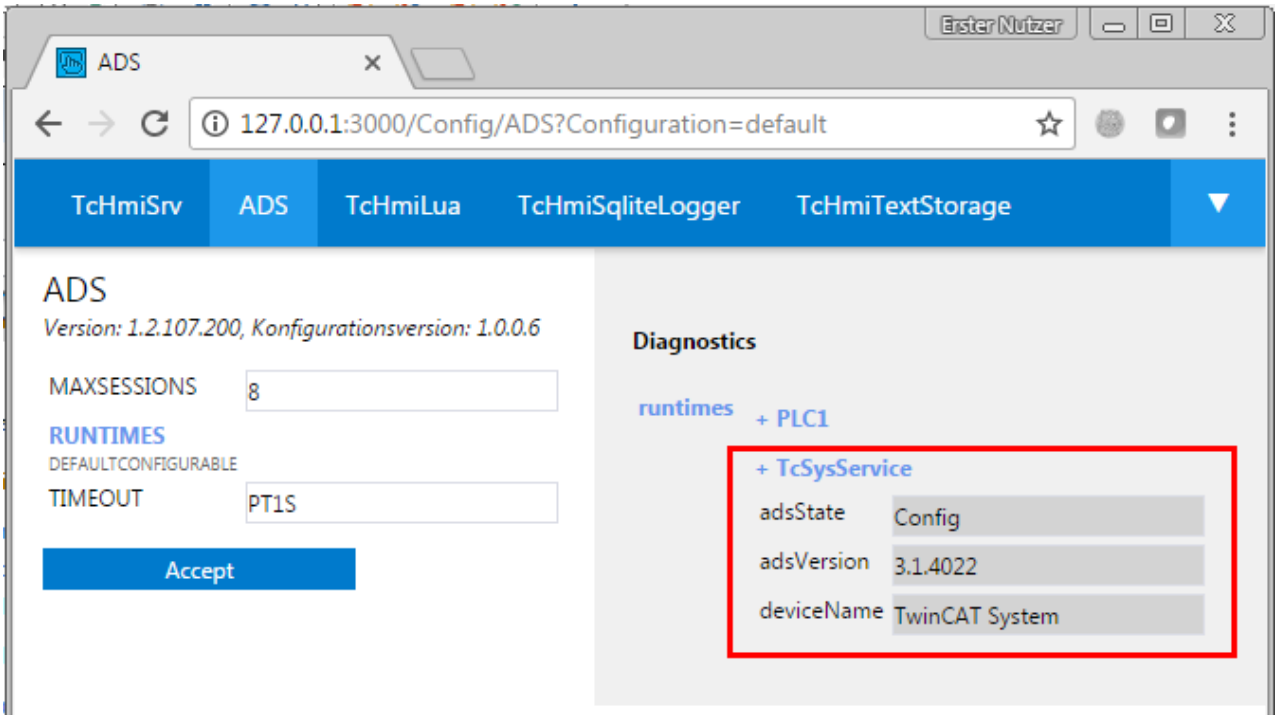
The configuration page of the TwinCAT HMI server provides access to the event log of the server, which can provide important information.



In addition, the page offers further diagnostic information. The **TcHmiSrv** category shows the supported .NET versions and the status of the licenses.



Under the **ADS** category you can read out the status of the configured TwinCAT system.



5.2.2 Crash dumps

If the server crashes, an attempt is made to write an image of the process (TcHmiSrv.exe). This can then be found in the working directory of the server under *Windows: \ProgramData\Beckhoff\TF2000 TwinCAT 3 HMI Server.*

After a server restart the image is compressed (extension .tar.gz). Please send this image to support, including the product version number, the configuration (logger.db and storage.db) and, if possible, a description of the last steps you performed before the crash, so that we can reproduce the malfunction.