SIEMENS

SIMATIC HMI

WinCC
WinCC Runtime Advanced readme

System Manual

Online help printout

12/2017
Online help printout

Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

⚠ DANGER

indicates that death or severe personal injury **will** result if proper precautions are not taken.

⚠ WARNING

indicates that death or severe personal injury **may** result if proper precautions are not taken.

⚠ CAUTION

indicates that minor personal injury can result if proper precautions are not taken.

NOTICE

indicates that property damage can result if proper precautions are not taken.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

⚠ WARNING

Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

Trademarks

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Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

Siemens AG
Division Digital Factory
Postfach 48 48
90026 NÜRNBERG
GERMANY

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Security information

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Security information

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens' products and solutions only form one element of such a concept.

Customer is responsible to prevent unauthorized access to its plants, systems, machines and networks. Systems, machines and components should only be connected to the enterprise network or the internet if and to the extent necessary and with appropriate security measures (e.g. use of firewalls and network segmentation) in place.

Additionally, Siemens' guidance on appropriate security measures should be taken into account. For more information about industrial security, please visit

http://www.siemens.com/industrialsecurity (http://www.industry.siemens.com/topics/global/en/industrial-security/Pages/Default.aspx)

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends to apply product updates as soon as available and to always use the latest product versions. Use of product versions that are no longer supported, and failure to apply latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under

http://www.siemens.com/industrialsecurity

Passwords

Various passwords are set by default in WinCC. For security reasons, you should change these passwords.

- On HMI devices with version V11 or V12, the password "100" is preset for the Sm@rtServer and for the integrated Web server. A default password is not preset for HMI devices with version V13.
- For the user "Administrator", the default password is "administrator".

Integrated Web server

It is always possible on a PC to access HTML pages in Runtime, even though the option"HTML pages" is disabled. Setup always installs the standard pages of the Web Server on the PC. Assign an administrator password to prevent unauthorized access to the pages.

Communication via Ethernet

In Ethernet-based communication, end users themselves are responsible for the security of their data network. The proper functioning of the device cannot be guaranteed in all circumstances; targeted attacks, for example, can lead to overload of the device.

Use of SSL 3.0

For security reasons, the use of the protocol SSL 3.0 is not recommended. The use of the protocol SSL 3.0 is disabled by default on Comfort Panels. If you nevertheless wish to activate the use of SSL 3.0, select the option "Use SSL 3.0" in Internet Explorer or in "Start Center > Settings" under "Internet options > Advanced".

For RT Advanced, the use of SSL 3.0 can be disabled in Internet Explorer or in the Control Panel under "Internet Options > Advanced" by deactivating the "Use SSL 3.0" option.

Network settings

The following tables show the network settings of each product which you need in order to analyze the network security and for the configuration of external firewalls:

WinCC Advanced (without simulation)					
Name	**Port number**	**Transport protocol**	**Direction**	**Function**	**Description**
ALM	4410*	TCP	Inbound, Outbound	License service	This service provides the complete functionality for software licenses and is used by both the Automation License Manager as well as all license-related software products.
HMI Load	1033	TCP	Outbound	HMI Load (RT Basic)	This service is used to transmit images and configuration data to Basic Panels.
HMI Load	2308	TCP	Outbound	HMI Load (RT Advanced)	This service is used to transmit images and configuration data to panels.
* Default port that can be changed by user configuration					

WinCC Simulation for Basic Panels					
Name	**Port number**	**Transport protocol**	**Direction**	**Function**	**Description**
HMI Load	1033	TCP	Inbound	HMI Load (RT Basic)	This service is used to transmit images and configuration data to Basic Panels.
EtherNet/IP	44818	TCP	Outbound	Ethernet/IP channel	The Ethernet/IP protocol is used for connections to Allen Bradley PLCs.
	2222	UDP	Inbound	Ethernet/IP channel	The Ethernet/IP protocol is used for connections to Allen Bradley PLCs.
Modbus TCP	502	TCP	Outbound	Modbus TCP channel	The Modbus TCP protocol is used for connections to Schneider PLCs.
RFC 1006	102	TCP	Outbound	S7 channel	Communication with the S7 controller via Ethernet/PROFINET
Mitsubishi MC	5002	TCP	Outbound	Mitsubishi MC channel	The Mitsubishi protocol is used for connections to Mitsubishi PLCs.

WinCC Simulation for Panels and Runtime Advanced					
Name	**Port number**	**Transport protocol**	**Direction**	**Function**	**Description**
DCP	---	Ethernet	Outbound	PROFINET	The DCP protocol (Discovery and basic Configuration Protocol) is used by PROFINET and provides the basic functionality for locating and configuring PROFINET devices.
LLDP	---	Ethernet	Inbound, Outbound	PROFINET	The LLDP protocol (Link Layer Discover Protocol) is used by PROFINET for topology detection.
SMTP	25	TCP	Outbound	SMTP Communication	This service is used by WinCC Runtime Advanced to send e-mails.
HTTP	80*	TCP	Inbound	Sm@rtServer	The Web server is only available when Sm@rtService is activated. The used port may differ depending on automatically selected settings.
RFC 1006	102	TCP	Outbound	S7 channel	Communication with the S7 controller via Ethernet/PROFINET
NTP	123	UDP	Outbound	Time synchronization	The NTP protocol (Network Time Protocol) is used for time synchronization in IP-based networks.
SNMP	161	UDP	Outbound	PROFINET	The SNMP client functionality is used by STEP 7 to read status information from PROFINET devices.
HMI Load	2308	TCP	Outbound	HMI Load (RT Advanced)	This service is used to transmit images and configuration data to panels.
HTTPS	443*	TCP	Inbound	Sm@rtServer	The Web server with HTTPS protocol is only available when Sm@rtService is activated. The used port may differ depending on automatically selected settings.
VNC server	5900*	TCP	Inbound	Sm@rtServer	This service is only available when Sm@rtService is activated.
	5800*	TCP	Inbound	Sm@rtServer	This service is only available when Sm@rtService is activated.
VNC client	5500	TCP	Outbound	Sm@rtServer	This service is only available when Sm@rtService is activated.
* Default port that can be changed by user configuration					

PROFINET protocols for Panels and Runtime Advanced					
Name	**Port number**	**Transport protocol**	**Direction**	**Function**	**Description**
DCP	---	Ethernet	Outbound	Lifelist, PROFINET Discovery and configuration	The DCP protocol (Discovery and basic Configuration Protocol) is used by PROFINET and provides the basic functionality for locating and configuring PROFINET devices.
LLDP	---	Ethernet	Inbound, Outbound	PROFINET Link Layer Discovery protocol	The LLDP protocol (Link Layer Discover Protocol) is used by PROFINET for topology detection.

PROFINET protocols for Panels and Runtime Advanced					
MRP	---	Ethernet	Outbound	PROFINET medium redundancy	The MRP protocol (Medium redundancy protocol) enables control of redundant transmission paths using a ring topology.
PROFINET IO Data	---	Ethernet	Inbound, Outbound	PROFINET Cyclic IO data transfer	Cyclic data exchange is used by panels for direct keys and LEDs.
NARE	---	Ethernet	Inbound, Outbound	Name Address Resolution	This protocol is used to resolve network names and assign IP addresses.
PROFINET Context Manager	34964	UDP	Inbound, Outbound	PROFINET connection less RPC	The PROFINET Context Manager provides an endpoint mapper in order to establish an application relation (PROFINET AR).

Communication connections for Panels and WinCC Runtime Advanced					
Name	**Port number**	**Transport protocol**	**Direction**	**Function**	**Description**
Telnet	23	TCP	Inbound	Telnet	This service can be used for maintenance.
SMTP	**	TCP	Outbound	SendEMail	This service is used by Windows CE / PC Runtime to send e-mails.
HTTP	80*	TCP	Inbound	Hypertext Transfer Protocol	The HTTP protocol is used for communication with the internal Web server.
RFC 1006	**	TCP	Outbound	S7 channel	Communication with the S7 controller via Ethernet/PROFINET.
HMI Load	102	TCP	Inbound	Transfer	This service is used to transmit images, Runtime, and configuration data to the panel via PN/IE
NTP	**	UDP	Outbound	Time synchronization	The NTP protocol (Network Time Protocol) is used for time synchronization in IP-based networks.
DCOM***	135	TCP	Inbound	OPC server	This service is a component of the Microsoft Windows operating system. Communication via OPC (DA) is based on DCOM. This service is therefore required to initialize OPC (DA) connections.
DCOM***	**	TCP	Outbound	OPC server	The communication via OPC (DA) is based on DCOM and uses unspecified ports assigned by the system. This should be taken into consideration when using OPC (DA) and creating rules for the firewall.
NetBIOS over TCP/IP	**	UDP	Outbound	With the use of Remote File Share	Register / log on to a remote server.
NetBIOS over TCP/IP	**	UDP	Outbound	With the use of Remote File Share	Register / log on to a remote server.
SNMP	161	UDP	Inbound	Simple Network Management Protocol	The SNMP client functionality is used by STEP 7 to read status information from PROFINET devices.

Communication connections for Panels and WinCC Runtime Advanced					
HTTPS	443*	TCP	Inbound	Secure Hypertext Transfer Protocol	The HTTP protocol is used for communication with the panel-internal Web server via Secure Socket Layer (SSL).
Modbus TCP	**	TCP	Outbound	Modbus TCP channel	The Modbus TCP protocol is used for connections to Schneider PLCs.
Mitsubishi MC	**	TCP	Outbound	Mitsubishi MC channel	The Mitsubishi protocol is used for connections to Mitsubishi PLCs.
Printing	**	TCP	Outbound	Printing	Printing on the control panel (via Ethernet).
HMI Load	2308	TCP	Inbound	Transfer	This service is used to transmit images and configuration data to panels. On Comfort Panels, this service has been replaced by DeviceManager and SCS as of V13. This service is used to transmit configuration data to WinCC Runtime Advanced.
HMI Load	50523	TCP	Inbound	Transfer	This port is used if port 2308 is not available. This service is used to transmit images and configuration data to panels. On Comfort Panels, this service has been replaced by DeviceManager and SCS as of V13. This service is used to transmit configuration data to WinCC Runtime Advanced.
ALM	4410*	TCP	Inbound, Outbound	Application License Manager	This service of RT Advanced makes available the complete functionalities for software licenses and is used by the Automation License Manager.
OPC UA	4870*	TCP	Inbound	OPC UA server	This service is required for communication via OPC UA.
HMI Load	5001	TCP	Inbound	Device Manager	This service is used to transmit images and Runtime to panels.
HMI Load	5002	TCP	Inbound	SCS (System Configuration Server)	This service is used to transmit configuration data to panels.
VNC client	5500	TCP	Inbound	Sm@rtServer	Reverse VNC server connection. Receive mode is set for the VNC client.
VNC server	5800*	TCP	Inbound	Sm@rtServer	VNC server connection HTTP
	5900*	TCP	Inbound	Sm@rtServer	VNC server connection
SIMATIC Logon	**	TCP	Outbound	UMAC (User Management to the Access Control)	Register / log on to a remote server.
Allen Bradley Ethernet IP	**	TCP	Outbound	Ethernet/IP channel	The Ethernet/IP protocol is used for connections to Allen Bradley PLCs.
Reserved	49152 ... 65535	TCP/UDP	Outbound		Dynamic port range is used, for example, to connect to the remote file sharing.
* Default port that can be changed by user configuration ** Port is assigned automatically. *** Supported by WinCC Runtime Advanced only.					

Installation

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Contents

Information that could not be included in the online help.

Virus scanners during installation

Virus scanners should be disabled during the installation of WinCC.

Operating system message for SIMATIC USB drivers

An operating system message relating to the SIMATIC USB driver is issued on the operating system Windows Server 2003 R2 StdE SP2.

This message must be acknowledged with "Yes" as soon as possible after the message has been issued. The message may be in the background and therefore not be immediately visible. After a certain period of time, the setup continues with the next component. The SIMATIC USB drivers are then not installed and can not be used.

Runtime 3

3.1 Notes on operation in Runtime

Contents

Information that could not be included in the online help and important information about product features.

Focus in runtime

If you have configured a low-contrast combination of focus color and border color for an HMI device with version 12.0.0 or earlier, the focus may no longer be identifiable in runtime after you change the device version in the TIA Portal. Change one of the two colors.

Language behavior - Layout of on-screen keyboard

The layout of the on-screen keyboard does not change when you switch to a runtime language that is not installed for the keyboard layout.

In this case, the language setting for the keyboard remains set at the most recent valid language or the language setting for the default keyboard layout of Windows is used.

Tag values exceed the maximum length

You enter a character string in a string tag via an I/O field. If the character string exceeds the configured number of tags, the character string will be shortened to the configured length.

Empty alarm texts

Runtime is running with a project. The project is saved on a network drive.

In the event of interruptions to the network drive connection, Runtime may attempt to load alarm texts from the network drive.

In the event of disconnection, the alarm window or the alarm view remains empty.

To avoid this, copy the project to a local drive before the starting the project in Runtime.

Duration of log initialization (Panels, RT Advanced)

Initialization of the logs on some storage media can take up to 5 minutes. The successful completion of initialization is immediately confirmed by a system event. If there is no storage medium for logging when Runtime starts, the appearance of the system event can also take up to 5 minutes.

Large logs delay the ending of Runtime (Basic Panels 2nd Generation)

When very large logs are used, ending Runtime can take a long time. Use segmented logs as an alternative to very large circular logs.

Slow reaction of SmartServer

The following programs may start and respond very slowly with Windows 7:

- HMI TouchInputPC
- SmartServer: <Ctrl+Alt+Del> shortcut in the logon dialog

The delay is caused by the callback for the Internet certificate validation.

Remedy:

You can find the following files
on the product DVD under:
Support\Windows7\CRL_Check or CD_RT\ Support\Windows7\CRL_Check\:

- DisableCRLCheck_LocalSystem.cmd
- DisableCRLCheck_CurrentUser.cmd

1. Run the "DisableCRLCheck_LocalSystem.cmd" file with administrator rights. Select the command "Run as administrator" from the shortcut menu of the file.
2. Reboot the PC.

If the problem persists, follow these steps:

1. Double-click the file and run the "DisableCRLCheck_CurrentUser.cmd" file with user rights.
2. Reboot the PC.

Note

The callback for the certificate validation is disabled for all users or PCs. To restore the original state, perform the following files:

- RestoreDefaults_LocalSystem.cmd
- RestoreDefaults_CurrentUser.cmd

You can find the files in the following directory of the product DVD:

- Support\Windows7\CRL_Check or CD_RT\Support\Windows7\CRL_Check\

Ending screensaver on the Sm@rtServer

When the screensaver is active on the Sm@rtServer on the server HMI device, you require write access to the Sm@rtClient side in order to end the screensaver on the server HMI device.

Avoiding corrupt files during power failure

If a power failure occurs in Windows systems while the WinCC system is active, files may be corrupt or destroyed. Operation with the NTFS file system provides better security.

Secure, continuous operation is only ensured by using an uninterruptible power supply (UPS).

3.2 Notes on operation of Runtime Advanced

Contents

Information that could not be included in the online help and important information about product features.

Starting Runtime

Only WinCC Runtime V15 can be started in TIA Portal V15. WinCC Runtime V11.02, V12, V13, V13 SP1, V14 and V14 SP1 can be simulated in TIA Portal V14 SP1.

Screen saver on computers with Windows 10

On a computer with Windows 10, an activated screen saver is no longer terminated when an alarm of the "error" class is output.

Authorization for starting Runtime (RT Advanced)

On a computer running the 32-bit version of Windows 7, WinCC Runtime Advanced can only be started if a user is a member of the automatically created group "Siemens TIA Engineer".

.Net-Controls in Runtime

If you have incorporated a .Net control in your project as "Custom .Net control", you have to copy the files belonging to these controls to the installation directory of WinCC Runtime, e.g. "C:\ProgramFiles\Siemens\Automation\WinCC RT Advanced". Otherwise, the control cannot be loaded in Runtime.

Disabling automatic checking for software updates

If the Engineering System is installed together with Runtime on a PC, the operator gets notifications above software updates. For the system to run reliably on a multi-user system, the same software version must be installed on all PCs.

It is possible to disable the automatic checking for software updates and to thus improve performance.

To disable the automatic checking for software updates, go to "Settings > General > Software updates" and clear the "Check daily for updates" check box.

3.3 Communication

Contents

Information that could not be included in the online help.

Using "DTL" data type for area pointers

Use the "DTL" data type for configuration of area pointers "Date/time" and "Date/time PLC". The "DTL" data type supports time stamp information in the nanosecond range. Because Basic Panels support time stamp information only down to the millisecond range, you will encounter the following restrictions when using the area pointers:

- Area pointer "Date/time"
  For transmission of time information from a Basic Panel to the PLC, the smallest unit of time is 1 millisecond. The value range from microseconds to nanoseconds of the "DTL" data type will be filled with zeros.
- Area pointer "Date/time PLC"
  For transmission of time information from a PLC to a Basic Panel, the area from microseconds to nanoseconds will be ignored. The time information will be processed on the panel down to milliseconds.

RT Advanced communication via Station Manager (SIMATIC NET) with a SIMATIC S7 1200

The following restrictions apply to the PC that communicates with SIMATIC S7 1200 via router using WinCC RT Advanced or RT Professional:

- Windows 7: Only with installed SIMATIC NET 8.1
- Windows XP: Communication via Station Manager (SIMATIC NET) is not supported

These restrictions also apply if you are using WinAC MP or Station Manager. Connections with the help of the Station Manager of Runtime Advanced are always treated as routed connections.

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