SIEMENS

General notes 1

STEP 7 Basic 2

WinCC Advanced 3

Readme

Programming and Operating Manual

07/2013

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.

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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.

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General notes 1

1.1 General notes

The information in this readme file supersedes statements made in other documents.

Read the following notes carefully because they include important information for installation and use. Read these notes prior to installation.

Functions for S7-1200 as of firmware version V4

In the information system for the TIA Portal V12 SP1, functions are documented for S7-1200 as of firmware version V4 which are not yet available in the software.

Online operation in hibernate mode

We recommend that you do not use the two options "Hibernate" and "Sleep" in online operation; if you do, communication problems could occur. If necessary, adapt the computer's energy options.

Opening a project for the first time in TIA Portal V12 SP1

If you are opening your project for the first time in TIA Portal V12 SP1, right-click on the CPUs used in the project view and then select "Compile > Software (rebuild all blocks)" from the shortcut menu.

Installing new .Net versions or .Net service packs

- Close the TIA Portal before installing a new .Net version or a new .Net service pack on your programming device/PC.
- Restart the TIA Portal only after successful installation of the new .Net version or the new .Net service pack.

Opening a project in TIA Portal V11

When you open a version V11 project in TIA Portal version 12, you can add components that were subsequently supplied for the version V11 within the context of a Hardware Support Package (HSP) to the project. The project is then still compatible with TIA Portal version 11. If you now open this project in TIA Portal version 11, but this TIA Portal application has not been upgraded with the corresponding HSP, the respective component will not be supported in the project.

Notes on handling

- If a project in the list of projects last used is located on a network drive that is not connected, you may experience delays when opening the "Project" menu.
- When you insert a CPU, you may need to wait for some time if the project editor is open at the same time. This generally takes longer when you insert the first CPU in a newly created project. To be able to continue working more quickly, you should close the project editor before inserting a CPU.
- The alarm "Application is not responding" may appear in Windows 7 with functions that take a long time to run (loading the CPU for example). If this occurs, wait until the function has correctly finished.
- If you have installed a Microsoft mouse with IntelliPoint, you may find that it superimposes components over the buttons of the title bar. If this is the case, uninstall the IntelliPoint software from Microsoft.
- Enabling the "Virtual Desktop" options with NVIDIA graphics cards can cause problems. In this case, disable the "nView virtual desktop manager" of your NVIDIA graphics driver.

Using the TIA Portal via a remote desktop

In principle, it is possible to use the TIA Portal via a remote desktop connection. During configuration, you should, however, avoid disconnecting the connection to the desktop client. In rare cases, this can lead to the software user interface being blocked.

If you experience this blockage, follow these steps on the desktop client.

1. Open the Windows Task-Manager and close the "rdpclip.exe" process.
2. Type in "rdpclip.exe" in the command prompt to restart the process.

Note that the current content of the clipboard will be lost. You can, however, then continue configuration as usual. To be on the safe side, you should restart the TIA Portal at the next opportunity.

Opening the TIA Portal multiple times

If you are running several applications of the TIA Portal and they continually become active in turn, you can briefly switch to another application or use the key combination <ALT+Tab> to solve the problem.

Note on SD cards

The SD cards have been formatted and set up by Siemens for use with S7-1200 and S7-1500 modules. This format must not be overwritten; otherwise, the card will no longer be accepted by the modules. Formatting with Windows tools is therefore not permitted.

Behavior in case of open force job

Note that active force jobs is retained even after you have loaded a new project to the SD card. This means you should first delete the active force job before you remove an SD card from the CPU and before you overwrite the card in the PC with a new project. If you use an SD card with unknown content, you should format the SD card before the next download.

Warnings on memory space with Windows XP (32-bit)

When you work with Windows XP (32-bit) for a long time, a memory space warning may appear which prompts you to save the current project and restart the TIA Portal. This can occur frequently in the case of an operating system with integrated graphics hardware. Disabling the graphics hardware acceleration may reduce the number of warnings. You can find the setting for this by clicking on the desktop and selecting "Properties > Settings > Advanced > Troubleshoot" by means of the right mouse button. In this dialog, move the "Hardware acceleration" slider to the far left (setting "None") and apply this setting.

Problems while shutting down Windows XP

If you experience problems shutting down the computer, make sure that the TIA Portal has closed completely.

1. In the shortcut menu, select the Task Manager from the shortcut menu on the Taskbar.
2. If you see the process "Siemens.Automation.ObjectFrame.FileStorage.Server.exe" in the "Processes" tab, wait until this process has closed.
3. Then you can shut down the computer.

Subnet addressing for CP 1613 and CP 1623

CP 1613 and CP 1623 are communication modules with microprocessor. To ensure secure management of communication links, these are processed on the module. The protocol stack in your PC is used for diagnostic purposes (SNMP, DCP). To allow both protocol stacks (i.e. CP 1613/23 Firmware and CP 1613/23 NDIS access) access to the same partners, is recommended to place both stacks of a module in the same subnet.

Editing a device IP address

Do not use the address range from 192.168.x.241 to 192.168.x.250 when editing a device IP address. If necessary, this address range is automatically assigned by the system to a programming device. Depending on the subnet mask, this applies also for all network classes.

Migrating projects with the TIA Portal

After the migration of hardware configurations and program blocks from earlier automation solutions, first check the functionality of the migrated project before you use it in productive operation.

Working with TeleService

The TS Adapter IE Advanced is not available yet at the start of delivery of the TIA Portal V12 SP1. Remote connections can only be configured as VPN connections with the TIA Portal V12 SP1 after the start of delivery of the TS Adapter IE Advanced.

Working with automatically synchronized network drives

Automatic synchronization after a network interruption can result in current (local) project data being stored as a "backup" on the network drive through user interactions. This could cause outdated project data to be loaded from the network drive when opening the project. For this reason, we do not recommend that you store TIA Portal projects on synchronized network drives.

If, however, you do work on synchronized drives, you can continue working locally in the event of a network interruption. In this case, you must always ensure that the TIA Portal application is closed while data is synchronized. The synchronization itself must be implemented in such a way that the current (local) project data replaces the project data on the network drive.

Entry of decimal places

With certain Windows language settings, it may occur that the entry of values with a comma as decimal place is not recognized (entering "1,23" leads to an error). Instead, use the international format ("1.23").

Access protection for memory cards in USB card readers

By improving the security mechanisms for online access and engineering of S7-1500 CPUs, the data storage on memory cards has been changed. For this reason, this version of STEP 7 cannot evaluate the passwords of the configured protection level when reading project data from memory cards that is accessed via a USB card reader. The changed behavior affects the memory cards for CPUs of the S7-1200/1500 series. Therefore, use physical safeguards to protect critical project data on memory cards for these devices.

Note

This restriction is not related to online access to devices or the know-how protection of program blocks.

Screen display

After long periods of work, it can happen in the case of certain computer configurations with Windows XP that parts of the TIA Portal interface are no longer updated. Reducing the graphic hardware acceleration can correct this problem. You can find the setting for this by clicking on the desktop and selecting "Properties > Settings > Advanced > Troubleshoot" by means of the right mouse button. In this dialog, move the "Hardware acceleration" slider to the far left (setting "None") and apply this setting.

Information on the TIA Portal in online support

Overview of the most relevant technical information and solutions for the TIA Portal in the industry online support.

Internet link: Auto-Hotspot

All information on service and support in the industry online support:

Internet link: Auto-Hotspot

Here, you can also subscribe to the newsletter that provides you with latest information relating to your products.

Starting the TIA Portal

When you start the TIA Portal, Windows attempts to update the Certificate Revocation List (CRL) of "windowsupdate.com".

If no Internet connection is available and there are multiple DNS servers, a timeout may occur during the start of the TIA Portal.

FAQs on the TIA Portal

FAQs on the TIA Portal are available at http://support.automation.siemens.com.

1.2 Notes on the installation

Contents

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

Using the same versions of TIA Portal products

The TIA Portal products STEP 7 (incl. PLCSIM), WinCC and Startdrive must be upgraded to the same version (V12 SP1). If the versions are different, you will no longer be able to start the TIA Portal. Even uninstalling a product will not restore an operational status. Please ensure that you have the service packs for these products to hand before you start the installation. You can download the service packs from the Internet under http://support.automation.siemens.com (http://support.automation.siemens.com/WW/llisapi.dll?aktprim=99&lang=en&referer=%2fWW%2f&func=cslib.csinfo2&siteid=csius&extranet=standard&viewreg=WW&groupid=4000002).

Target directory of the installation

Do not use any UNICODE characters (for example, Chinese characters) in the installation path.

Use of antivirus programs

During the installation, read and write access to already installed files is necessary. Some antivirus programs block this access. We therefore recommend that you disable antivirus programs during the installation of the TIA Portal and enable them again afterwards.

Installation of STEP 7 Basic V12 and STEP 7 Professional V12 under Windows XP with Turkish regional and language options

Installation of STEP 7 Basic V12 and STEP 7 Professional V12 under Windows XP may be aborted if the regional and language options are set to Turkish. In this case change the regional and language options from Turkish to English or German.

1. Open the Control Panel under Windows with one of the following commands:
   - "Start > Control Panel" (Start menu under Windows XP)
   - "Start > Settings > Control Panel" (classic start menu)
2. Open the "Regional and Language Options".
3. Select the "Regional Options" tab.
4. Under "Standards and formats" select "German" or "English" in the drop-down list.
5. Click "Apply" and confirm with OK.
6. Restart your PC for the setting to become active. Now you can continue with the installation of STEP 7 Basic V12 and STEP 7 Professional V12.
7. After installation, you can revert the regional and language settings (as described in steps 1 to 4) to Turkish.

Compatibility with V11

An empty V11.0.2.5 project with the name "TIA_Portal_Project_V11.0.2.5.ap11" is installed in the installation directory under ..\Portal V12\SampleProjects in order to allow TIA Portal V12 to be opened in compatibility mode V11. This project must be copied to a local directory with full access before it can be used. For more information on this, refer to FAQ ID 66027369.

Installation of Startdrive V12

A prerequisite for the installation of Startdrive V12 is that STEP 7 V12 is installed beforehand.

Installation of the SIMATIC USB driver under Windows server 2003 R2 StdE SP2

An operating system alarm relating to the SIMATIC USB driver is issued on the operating system Windows Server 2003 R2 StdE SP2. This alarm must be acknowledged with "Yes" as soon as possible after the alarm has been issued. The alarm may be in the background and therefore may 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 cannot be used.

STEP 7 Basic 2

2.1 Security information

Upgrades and updates

Siemens provides automation and drive products with industrial security functions that support the secure operation of plants or machines. They are an important component in a holistic industrial security concept. With this in mind, our products undergo continuous development. We therefore recommend that you keep yourself informed with respect to our product updates. Please find further information and newsletters on this subject at:

http://support.automation.siemens.com (http://support.automation.siemens.com/WW/llisapi.dll?aktprim=99&lang=en&referer=%2fWW%2f&func=cslib.csinfo2&siteid=csius&extranet=standard&viewreg=WW&groupid=4000002)

To ensure the secure operation of a plant or machine it is also necessary to take suitable preventive action (e.g. cell protection concept) and to integrate the automation and drive components into a state-of-the-art holistic industrial security concept for the entire plant or machine. Any third-party products that may be in use must also be taken into account. Please find further information at:

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

Network settings

The following tables show the network settings of each product you need to analyze the network security and to configure external firewalls:

STEP 7 Basic					
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.
RFC 1006	102	TCP	Outbound	S7 communication	Communication to the S7 controller via Ethernet/PROFINET for programming and diagnostic purposes.
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.

STEP 7 Basic					
SNMP	161	UDP	Outbound	PROFINET	The SNMP client functionality is used by STEP 7 to read status information from PROFINET devices.
* Default port that can be changed by user configuration					

WinCC ES Basic (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.
* Default port that can be changed by user configuration					

Simulation RT Basic					
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 to the S7 controller via Ethernet/PROFINET
Mitsubishi MC	5002	TCP	Outbound	Mitsubishi MC channel	The Mitsubishi protocol is used for connections to Mitsubishi PLCs.

2.2 Notes on use

Contents

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

Online operation

The simultaneous online operation of STEP 7 V5.5 or earlier and STEP 7 Basic V12 has not been approved.

Simultaneous online connections on an S7-1200 CPU

It is not possible to establish an online connection from multiple TIA Portal instances simultaneously to the same S7-1200 CPU.

Configuring and assigning module parameters

You will find an overview of the modules that can be configured and assigned parameters with STEP 7 Basic V12 at http://support.automation.siemens.com (http://support.automation.siemens.com/WW/view/en/28919804/133000).

Removing/inserting the memory card

After removing or inserting a memory card, always perform a memory reset on the CPU in order to restore the CPU to a functional condition.

Removing and inserting Ethernet modules

If Ethernet modules are removed and re-inserted during operation, you must boot the PC; otherwise, the "Accessible devices" functionality in STEP 7 or NCM PC will not display all devices. While the PC boots, Ethernet modules must be activated.

Notes on the information system

The following function has already been described in the information system, but is not available in STEP 7 Basic V12 SP1:

- Loading hardware configurations from the target system to the PG/PC.

Comparing project data

The comparison functions (online/offline, offline/offline) currently do not take hardware into consideration.

Loading project data with TIA Portal V11 and V12 (S7-1200)

If you load the project data of an S7-1200 CPU with the TIA Portal V12, you can no longer use TIA Portal V11 to access this data. To do this, first restore the factory settings of the CPU. Read the additional information on this in the online help under "How to reset a CPU to factory settings".

Activating ENO enable output

As of STEP 7 TIA Portal V12.0, the ENO enable output is disabled by default in the programming languages LAD and FBD and the ENO parameter is shown grayed out. If needed, you can activate the enable output and thereby specifically control the instructions for which you want to have error evaluation.

To activate the ENO enable output of an instruction, follow these steps:

1. In your program, right-click the instruction for which you want to activate the ENO enable output.
2. Select the "Generate ENO" command from the shortcut menu.
   The ENO value is generated for the instruction and the color of the ENO parameter changes from gray to black.
   Additional instructions are inserted with the enable output.

Compatibility

The device configuration and program of an S7-1200 CPU must always be configured with the same STEP 7 version. Usually, the TIA Portal makes sure that no version conflicts occur by outputting appropriate notifications during loading to the device.

This automatic verification is not possible with S7-1200 CPUs with firmware version V1.x. In this case, users themselves must ensure that no version conflicts occur.

2.3 Editing devices and networks

2.3.1 General information on devices and networks

Contents

Currently, there is no general information available on devices and networks.

2.3.2 Use of modules on the S7-1200

Contents

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

Use of modules on the S7-1200

The modules listed below are not supported on the S7-1200.

Family	Module	Order number
S7-300 FMs	SM 338	6ES7 338-4BC01-0AB0
	FM 350-1	6ES7 350-1AH03-0AE0
	FM 350-2	6ES7 350-2AH00-0AE0, 6ES7 350-2AH01-0AE0
	FM 351	6ES7 351-1AH01-0AE0, 6ES7 351-1AH02-0AE0
	FM 352	6ES7 352-1AH02-0AE0
	FM 355 S	6ES7 355-1VH10-0AE0
	FM 355 C	6ES7 355-0VH10-0AE0
	FM 355-2 C	6ES7 355-2CH00-0AE0
	FM 355-2 S	6ES7 355-2SH00-0AE0
S7-300 PtP-CP	CP 340	6ES7 340-1AH02-0AE0, 6ES7 340-1BH02-0AE0, 6ES7 340-1CH02-0AE0
	CP 341	6ES7 341-1AH01-0AE0, 6ES7 341-1AH02-0AE0, 6ES7 341-1BH01-0AE0, 6ES7 341-1BH02-0AE0, 6ES7 341-1CH01-0AE0, 6ES7 341-1CH02-0AE0
Network component	Diagnostics repeater	6ES7 972-0AB01-0XA0
ET 200S	1 Count 24 V	6ES7 138-4DA04-0AB0
	1 Count 5 V	6ES7 138-4DE02-0AB0
	1 Step 5 V	6ES7 138-4DC00-0AB0, 6ES7 138-4DC01-0AB0
	2 pulses	6ES7 138-4DD00-0AB0, 6ES7 138-4DD01-0AB0
	1 SI	6ES7 138-4DF01-0AB0
	1 SI Modbus	6ES7 138-4DF11-0AB0
	1 SSI	6ES7 138-4DB02-0AB0, 6ES7 138-4DB03-0AB0
	1 Pos Universal	6ES7 138-4DL00-0AB0
	SIWAREX	7MH4910-0AA01, 7MH4912-0AA01, 7MH4920-0AA01
ET 200M	SIWAREX	7MH4 900-2AA01, 7MH4 900-3AA01, 7MH4 950-1AA01, 7MH4 950-2AA01

2.3.3 Replacing ET 200S positioning modules

Contents

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

Replacing ET 200S positioning modules

This information relates to the positioning module "1 Step 5V" (6ES7 138-4DC00-0AB0) from a project which was created with TIA Portal V11.0. When replacing these modules from the TIA Portal V11.0 with a new version of these modules, the parameter settings are reset to the default values.

This is the case with one of the following procedures:

- Replace the positioning module 6ES7 138-4DC00-0AB0 with its successor module 6ES7 138-4DC01-0AB0 by means of a device exchange.
- Updating the module version using the appropriate button in the device properties in the Inspector window.

2.3.4 CP 343-2 on SIMATIC S7 Embedded Controller EC31-RTX

Contents

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

CP 343-2 on SIMATIC S7 Embedded Controller EC31-RTX

The module AS-Interface CP 343-2 (order no.: 6GK7 343-2AH01) can be inserted in an expansion rack of the SIMATIC S7 Embedded Controller EC31-RTX (order no.: 6ES7 677-1DDxx-0BB0), but the CP 343-2 cannot be operated with the EC31-RTX.

2.3.5 Notes on online and diagnostics

Contents

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

Hardware detection followed by online connection

When the "Online > Hardware detection" command is performed for an unspecified CPU, the online configuration is not loaded from the CPU. If you do not load the configuration resulting from the hardware detection to the CPU, the device and network views will always show a difference between the offline and online configurations. It will appear that there are different configurations in the online and diagnostic views, although the MLFBs are identical in the actual CPU and the offline CPU.

2.3.6 Network components

2.3.6.1 Network components

CP 1242-7

Copying the CP 1242-7 into another project

If you copy a CP 1242-7 from one project into another project, the following parameters in the parameter group "CP identification" are changed on the target station:

- Project number of the CP
- Station number of the CP

Download to device

Only use the "Download to device" function with the CP 1242-7 via a TeleService connection as follows:

1. Select the CP in STEP 7.
2. Select the "Online" > "Download to device" menu.
3. In the "Extended download" dialog that appears, select the TeleService interface.
4. Download the project data from the "Extended download" dialog.

Upload from device

The function "Upload from device" is not supported by the CP 1242-7.

SCALANCE X

SCALANCE XR500 as IO device: "Compile" and "Download to device"

With a SCALANCE XR500 configured as a PROFINET IO device and assigned to an IO controller, the functions "Compile" and "Download to device" only download the data to the switch that can also be configured in Web Based Management (WBM) (layer 2, layer 3, system, security).

If you want to use the "Compile" or "Download to device" functions for the PROFINET IO device data of the XR500, first select the assigned IO controller.

Using a link aggregation in an MSTP instance

If you want to use a link aggregation in an MSTP instance, follow the steps below during configuration:

1. Create a link aggregation in "Layer 2" > "Link Aggregation".
2. Create an MSTP instance in in "Layer 2" > "MSTP" > "MST General".
3. Configure the link aggregation in "Layer 2" > "MSTP" > "MST Port".

Automatic activation of MRP in redundant topologies

If you connect SCALANCE X switches with redundant network structures in the topology view, MRP is activated automatically on the switches involved.

If there is an existing configuration with other redundancy mechanisms, such as MSTP, this is automatically deactivated.

2.4 Programming a PLC

2.4.1 General notes on PLC programming

Contents

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

Loading inconsistent programs to a device

In TIA Portal, it is not possible to download inconsistent programs to a device without a consistency check. During the loading process, all blocks of the program are implicitly checked and are compiled again in the event of inconsistencies. If, however, there are programs on your CPU which were loaded with earlier versions of STEP 7, these programs could demonstrate inconsistencies.

In this case, note the following:

If you load an inconsistent program from a device, you will not be able to load the program unchanged to the device afterwards, because a consistency check always takes place during the loading process and existing inconsistencies are corrected.

Process image of PTO/PWM outputs

Do not use PTO/PWM outputs in the process image (for example, for access in the user program, for online functions or in HMI). The update rate of the process image is much slower than the rate of the signal changes. The display in the process image therefore does not reflect the signal flow.

Monitoring blocks in LAD and FBD

If the start of the current path is outside the visible range, it may not be possible to determine the input value. In this case, the current path is shown grayed out.

Avoid using PLC data types generated by the system in libraries

Some instructions generate their own PLC data types during instancing which are saved in the "PLC data types" project folder. However, you should not use these system-generated PLC data types in any library, because they may be recreated by the system at any time and may result in an unfavorable system behavior.

Using global data blocks in assignments

It is not possible to assign the contents of a global data block to a structurally identical data block, e.g. using a move box.

Conversion of know-how protected blocks from V10.5

The program must be compiled after conversion from previous STEP 7 versions (e.g., STEP 7 V10.5). If you are using know-how protected blocks, you are prompted to enter the password.

2.4.2 Instructions

Contents

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

Use of instructions (S7-1200)

If a parameter-specific error occurs with instructions which represent a system function (SFC) or system function block (SFB), no error code is output at parameter RET_VAL. RET_VAL is invalid in this case. You have a number of different options for responding to these errors, depending on the CPU used.

Instruction "TRCV_C: Receive data via Ethernet"

Contrary to the information provided in the online help, the communication connection is terminated immediately, and not after sending data, when the CONT parameter is set to the value "0".

Instruction "T_CONFIG: Configure interface"

The CPU is restarted after you have executed the "Configure interface" instruction in order to change an IP parameter. The CPU goes to STOP mode, a warm restart is carried out and the CPU starts up again (RUN mode). Make sure that the control process is in a secure operating

mode after the CPU has been restarted following execution of the "Configure interface" instruction. Uncontrolled operation can result in serious material damage or personal injury due to malfunctions or programming errors, for example. Non-retentive data could be lost.

Parameters ERROR and STATUS

ERROR	STATUS (DW#16#..)	ERR_LOC	Explanation
0	00000000	0	After the instruction has been executed successfully, the STATUS parameter "00000000" does not return any value.

Instruction "GET_DIAG: Read diagnostics information"

MODE 3 at the MODE parameter is not supported by the S7-1200 CPU.

Using instructions with parameters of type VARIANT in code blocks with different access types (S7-1200)

Code blocks (FBs/FCs) and data blocks (DBs) can be created with different access types ("standard" and "optimized"). In code blocks, you can call any instructions. Certain instructions (for example, "WRIT_DBL" and "READ_DBL") use pointers of type VARIANT at input and output parameters to address data blocks.

Ensure that you do not use these instructions in programs in which code blocks of different access types are called reciprocally. This could cause the following to occur:

- A structure from a standard data block is directly or indirectly passed to an optimized code block, which forwards this structure directly or indirectly to one of the blocks mentioned above.
- The reverse scenario, whereby a structure from an optimized code block is directly or indirectly passed to a standard data block, which forwards this structure directly or indirectly to one of the blocks mentioned above.

2.4.3 Testing the user program

2.4.3.1 Testing with the watch table

Contents

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

Multiple access to the same CPU

Access to a CPU from a PG/PC is permitted only when a TIA Portal is open. Multiple access to the same CPU is not permitted and can lead to errors.

Loading data blocks during an active control job

Note

Loading changed data blocks during an active control job can result in unforeseen operating states. The control job continues to control the specified address, although the address allocation may have changed in the data block. Complete active control jobs before loading data blocks.

Testing programs converted from STEP 7 V10.5.

To monitor and test a program converted from STEP 7 V10.5, you have to first compile and load with STEP 7 V11.0.

"Enable peripheral outputs" function

In TIA Portal V12.0, the function "Enable peripheral outputs" is not available for CPUs from the S7-1500 series.
This function can only be carried out with an S7-300, S7-400 or S7-1200 CPU in TIA Portal V12.0.

2.4.3.2 Testing with the force table

Contents

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

Forcing tags for direct I/O access

If you use direct I/O access for an S7-300 CPU in your user program, forcing this I/O address is not permitted.

Example

If I/O access to the address "IB0:P" takes place in the user program, it is not permitted to force the following I/O address areas: I0.0:P, IB0:P, IW0:P and ID0:P.

2.5 Technological functions

2.5.1 Notes on technological functions

There are no notes about the technology functions.

WinCC Advanced 3

3.1 Security information

Security information

Siemens provides automation and drive products with industrial security functions that support the secure operation of plants or machines. They are an important component in a holistic industrial security concept. With this in mind, our products undergo continuous development. We therefore recommend that you keep yourself informed with respect to our product updates. Please find further information and newsletters on this subject at:

http://support.automation.siemens.com (http://support.automation.siemens.com)

To ensure the secure operation of a plant or machine it is also necessary to take suitable preventive action (e.g. cell protection concept) and to integrate the automation and drive components into a state-of-the-art holistic industrial security concept for the entire plant or machine. Any third-party products that may be in use must also be taken into account. Please find further information at:

http://www.siemens.com/industrialsecurity (http://support.automation.siemens.com)

Passwords

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

- The default password for the Sm@rtServer and for the integrated Web server is "100".
- 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.

Ending Runtime automatically

If automatic transfer is enabled on the HMI device and a transfer is started on the configuration PC, the running project is automatically stopped.

The HMI device then switches autonomously to "Transfer" mode.

After the commissioning phase, disable the automatic transfer function to prevent the HMI device from switching inadvertently to transfer mode.

Transfer mode can cause undesired reactions in the system.

To block access to the transfer settings and thus avoid unauthorized changes, assign a password in the Control Panel.

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-of-day synchronization	The NTP protocol (Network Time Protocol) is used for time-of-day 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					

See also

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

3.2 Notes on use

Contents

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

Copying HMI devices with HMI connections

If you copy an HMI device with HMI connections to a PLC, the HMI connection in the new HMI device is not automatically connected to an existing PLC with the same name. This applies to copying within a project as well as copying across projects.

To access the PLC tag via HMI tag in the new HMI device, you have to complete the HMI configuration immediately after copying. Proceed as follows:

1. Open the "Devices & Networks" editor.
2. Connect the new HMI device to the desired network.
3. Open the connection table.
4. Select the HMI connection of the new HMI device.
5. Select the desired PLC under "Partner".

If you compile the new HMI device or connect additional PLC tags in between copying the HMI device and completing the connection, there may be some instances in which an additional HMI connection to the same PLC is created. This is especially true if you connect HMI tags with DB array elements.

Device replacement

After an HMI device has been replaced, you should check the appearance of the configured screens. Changing the size of the display may result in changes to the position and appearance of screen objects, e.g. recipe view and alarm view.

Device replacement - communication

If an HMI device is replaced, error messages of the type "... is not supported in the new configuration and will therefore be removed" may be generated. These alarms refer to configured connections of the device and are triggered, for example, if the HMI devices have a different number of interfaces. These connections are marked red after a device replacement. If you would like to continue to use these connections, you have change the configuration of the connection. Proceed as follows:

1. Open the "Devices and Networks" editor.
2. Click "Network" in the toolbar of the network view.
3. Network the interface of the HMI device with the interface of the CPU.
4. Click in the table area of the network view on the "Connections" table.
5. Select the connection marked red.
6. Enter the new interface under "Properties > General > Interface" in the Inspector window.

Specifying the time of modification in the overview window

The times of modification displayed in the overview window only refer to changes to the object itself. Changes to subordinate objects, e.g. screen objects in a screen, do not cause the time of the last change to the screen to change in the overview window.

HMI device wizard

When you create a device with a color display using the HMI device wizard, the graphics of the navigation buttons may be displayed in black and white. This error only occurs, however, if the new device is created with the same name as a device with a monochrome display which has been deleted in the meantime.

You can avoid this error by always deleting the associated graphics in the Graphics collection whenever you delete a device from the project.

Objects with object references in the project library

Two copying methods can be used in WinCC flexible.

- With "simple copy" a WinCC flexible screen including an IO field, for example is copied. Only the object name of a tag configured on the IO field is copied, as this is a reference.
- With "copy", a screen, an IO field contained there and a tag configured on the IO field together with its properties are copied.

These two methods can also be used for storing an object in a library. Project libraries and the objects contained there are migrated during migration and can be used in WinCC.

In WinCC, however, only one copying method is available. With regard to tags, it functions like "simple copy" in WinCC flexible. With regard to graphics, graphics lists and text lists, it functions like "copy" in WinCC flexible.

If you stored objects with references to tags in a library in WinCC flexible, you must reconfigure the referenced objects when using them in WinCC.

Reports with Asian character sets on Windows CE devices

If Asian characters sets are displayed in an illegible manner in a report on a Windows CE device, you must change the character sets for the objects in the report. it is sufficient to change to a different character set and then reset the original character set.

License transfer via S7USB

You always need to run WinCC to transfer a license to a panel via S7USB.

Transferring licenses to a panel on 64-bit operating systems

If you are running a 64-bit operating system and the "Edit > Connect target systems > Connect HMI device" menu command is not available in Automation License Manager, open command line input and run the following command with administrator rights:

"%WINDIR%\system32\RegSvr32.exe" "%CommonProgramFiles%\siemens\AlmPanelPlugin\ALMPanelParam.dll"

Installation sequence for Startdrive

When you install Startdrive on a PC, adhere to the following installation sequence:

- Install STEP7 V12.0.
- Install Startdrive.

SIMOTION

SIMOTION is not supported with WinCC V12 SP1.

Security settings during installation

When you install WinCC V12, security settings are changed in your operating system.

The security settings in question are listed during the installation.

You must confirm the changes to the security settings.

If you make changes to your operating system after the installation, the changes to the security settings made by the installation of the TIA Portal could be changed.

You can restore the changes to the security settings made by the installation of the TIA Portal:

"Start > All Programs > Siemens Automation > Security Controller > Restore settings"

SQL instance of WinCC V12

If you have installed a WinCC V11 product and you wish to install a WinCC V12 product, you must uninstall all WinCC V11 products and the WinCC instance of SQL Server 2005 one after the other before the installation.

A new WinCC SQL 2008 instance is installed with the installation of WinCC V12.

3.3 Migration

Contents

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

Changing the names of alarm classes

In contrast to WinCC flexible, the names of the predefined alarm classes are not dependent on the user interface language currently in use. During migration, the names of the alarm classes are assigned as follows:

WinCC flexible	WinCC
Error	Errors
System	System
Warnings	Warnings

The display names of the alarm classes can be changed as necessary after migration.

Project languages in WinCC

WinCC V12 does not support all project languages that were available in WinCC flexible, such as Arabic. If you receive an empty project as the result of your migration, you may want to check the set editing language. Do not set the project languages that are not supported as editing language in the source project. Proceed as follows:

1. Open the project with WinCC flexible.
2. Change the editing language to English, for example.
3. Save the project.
4. Restart the migration.

Objects with object references in the project library

Two copying methods can be used in WinCC flexible.

- With "simple copy", a WinCC flexible screen including an IO field, for example, is copied. Only the object name of a tag configured on the IO field is copied, as this is a reference.
- With "copy", a screen, an IO field contained there and a tag configured on the IO field together with its properties are copied.

These two methods can also be used for storing an object in a library. Project libraries and the objects contained there are migrated during migration and can be used in WinCC.

In WinCC, however, only one copying method is available. It functions like "simple copy" in WinCC flexible.

If you have stored objects with references to other objects in a library in WinCC flexible, you must reconfigure the referenced objects when using them in WinCC.

Migrating an integrated project with ProTool objects

The "PROTOOL option package(s) missing in STEP 7" error message output during migration of a WinCC flexible project that is integrated in STEP 7 indicates that WinCC flexible 2008 SP3 is installed on your system. Moreover, the project still contains objects that were configured using ProTool. Do not open the project with WinCC flexible 2008 SP3! Proceed as follows to migrate the project:

1. Copy the project to a computer on which WinCC flexible 2008 SP2 and STEP 7 are installed.
2. Open the project in the SIMATIC Manager.
3. Remove all ProTool objects from the project.
4. Execute the "Save as" command in the "File" menu.

5. Activate the option "With reorganization" in the "Save project as" dialog.
6. Click OK.
7. Copy the project back to the original computer.
8. Restart the migration.

Migrating a WinCC V7 project with "Chinese (Taiwan)" Runtime language

If your WinCC is installed with support for the "Chinese" user interface language, the texts and report layouts of the "Chinese (Taiwan)" Runtime language will not be included when you migrate WinCC V7 projects. Migrate such projects using the Migration Tool, or a PC that contains a WinCC setup without "Chinese" user interface language.

Progress bar

As long as the progress bar still shows a value of 100 %, the software is still busy running remaining tasks such as the closing of references. The software will not respond to user input while this status is given.

Principle

When you open a V11 project with a V12 version, it will no longer be possible to open this project with an older version afterwards.

Managing third-party ActiveX controls

The migration also supports third-party ActiveX controls. However, the controls must be registered in the operating system. If an ActiveX control is not registered, migration is canceled.

If you save a project with the migration tool and perform the migration yourself on another PC, the controls must also be registered on this PC.

Language switching in RT

Upgrading the project from V11 to V12 and migration of WinCC V7.0 SP3 to V12:

If you have used a script to program a language change to Chinese (PRC) in V11 or V7.0 SP3 with LCID, language switching to Chinese (PRC) in runtime no longer works after upgrading or migrating.

Change the LCID in script from "1028" to "2052".

Migrating integrated projects with alarm views

An alarm view is enabled with all alarm classes in an integrated project. The alarm classes are disabled during migration of the project.
Once the migration of the project is completed, check the settings in the alarm view.
Enable the require alarm classes in the Inspector window of the alarm view if needed under "Properties > General".

Migrating projects from WinCC V7

We recommend a 64-bit operating system for the migration of extensive projects from WinCC V7.0 SP3.

See also

Object support during migration

3.4 Special considerations for Windows 7

Contents

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

Permission for the starting Runtime

To start WinCC Runtime Professional or WinCC Runtime Advanced, a user must be a member of the automatically created group, "Siemens TIA Engineer".

Working with standard user rights

If you are working with standard user rights in Windows 7, "User Account Control (UAC)" cannot be disabled.

The "User Account Control" is enabled in Windows 7 by default.

For more information on the "User Account Control, refer to the online help for Windows 7.

Slow response from the screen keyboard and SmartServer

The following programs may start and respond very slowly under Windows 7 and Windows 2008 servers:

- Microsoft OSK screen keyboard and 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 product DVD:

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

On-screen keyboard

Once you have opened the TIA Portal, you can no longer call the on-screen keyboard.

To call the on-screen keyboard in Windows, use the following command: "Start > All Programs > Accessories > Ease of access > On-screen keyboard".

3.5 Engineering System

3.5.1 Screens and Screen Objects

Contents

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

Text format of output fields in alarm text

It is not possible to underline tags and text list entries.

Copying display objects between two projects or two devices

In Project_1 configure an alarm window in the Global Screen, for example. You copy the alarm window and paste it in the Global Screen in Project_2.

The enabled alarm classes are partly not enabled in the alarm window after pasting.

This behavior applies to the following display objects:

- Alarm window
- Alarm indicator
- Alarm view

Representation of the cross-references in the Inspector window

The Inspector window displays objects used by a screen object in the "About > Cross-reference" tab.

A screen is open and an object selected. You are using an HMI tag at the object as process tag.

The object and the linked HMI tag are displayed in the cross-references. All locations of use of the object and the HMI tags are listed.

If the HMI tag is interconnected with a PLC tag or a DB tag, then the locations of use of the interconnected PLC tag or DB tag will be displayed.

Event names in case of alarms in the "Info" tab of the Inspector window

In some alarms of the Inspector window the event names in the "Info" tab will deviate from the names in the "Properties" tab.

Name in the "Properties" tab of the Inspector window	Name in the "Info" tab of the Inspector window
Cleared	ClearScreen
Loaded	GenerateScreen
Enable	Activate
Change	Change
When a dialog is opened	ONMODALBEGIN
When a dialog is closed	ONMODALEND
User change	PASSWORD
Screen change	SCREEN
Disable	Deactivate
Press	Press
Outgoing	Going
Incoming	Coming
Limit "high limit error" violated	AboveUpperLimit
Limit "low limit error" violated	BelowLowerLimit
Click	Click
Loop-In-Alarm	LoopInAlarm
Release	Release
Alarm buffer overflow	OVERFLOW
Acknowledge	Acknowledgement
Runtime stop	Shutdown
Press key	KeyDown
Release key	KeyUp

Name in the "Properties" tab of the Inspector window	Name in the "Info" tab of the Inspector window
Switch ON	SwitchOn
Switch OFF	SwitchOff
Value change	Change value

Dynamization of object properties in a group

The dynamization of properties for all objects of the group which have these properties is not possible in a group. In WinCC V12, the properties of the objects belong to a group can only be dynamized for each object itself.

Illegible characters in Runtime Professional

With Runtime Professional, only characters belonging to the language area which is defined with the operating system setting "Language for non-Unicode programs" can be displayed on the target system. Texts with characters from other language areas can, however, also be configured in the project.

Illegible characters may occur in the Engineering System with the objects text field, symbolic I/O field, gauge and slider if the settings in the operating system relating to "Language for non-Unicode programs" do not match the selected editing language and the objects are displayed in a different design than "WinCC Classic". The characters are displayed correctly in the Inspector window and the "Project texts" editor.

Therefore, first check in the Control Panel under "Regional and Language Options > Advanced" whether the setting for "Language for non-Unicode programs" is the same as the editing language. Otherwise, you can check or change the correct texts in the Inspector window or the "Project texts" editor.

Faceplates

Faceplates cannot be rotated or mirrored.

Persistence with display objects in WinCC Runtime Professional

The objects f(t)-trend view, f(x)-trend view, alarm view, recipe view, table view and value table have settings for the persistence of online configurations. If you have configured "Persistence" for "Online configuration" and "Keep changes" for "Reaction to screen change", you can make changes to the configuration dialogs in runtime which will be retained after a screen change and after runtime is exited.

However, online configurations for the settings mentioned cause changes to the configuration of the objects in the Engineering System to only be applied in Runtime if you recompile the device with the command "Compile > Software (rebuild all)".

Basic Panels, OP73, OP77A and TP177A: Displaying texts in runtime

The default font selected in the "Runtime settings > Languages & font" editor has an effect on the display of texts in runtime.

Text entries may be truncated if you selected an unfavorable font size or style.

This setting possibly has an effect on the following text entries:

- Tooltips
- long alarm text
- text in the dialogs

Tab sequence in screens with faceplates

If you configured a tab sequence in screens with faceplates in WinCC V12 or WinCC V12 SP1, you should check the tab sequence of these screens in WinCC V12 SP2. The tab sequence may have been changed in both the screen and the faceplate.

Tag prefix of a screen window in WinCC Runtime Professional

The objects of the "Controls" palette do not support the tag prefix that can be configured for a screen window.

I/O field with "decimal" display format and format pattern without "s" prefix

You have linked a process tag to an I/O field. The I/O field is assigned the "decimal" display format.

You may select a signed or an unsigned display format.

A "Format pattern" setting without "s", e.g. "999" has the following effects:

1. You cannot set negative values using the I/O field in Runtime.
2. If the tag assumes a negative value, the I/O field generates a two's complement and a corrupted positive value is output.

Trend view on Basic Panels

The trend view buttons are not displayed on Basic Panels. You can operate the trend view using the function keys of the HMI device that are assigned corresponding system functions.

Displaying controls in protocols

A project with WinCC V11 SP2 with Update 4 or earlier is upgraded to WinCC V12.

In this process, it may happen that archive data is not displayed in controls for protocols.

The following controls are affected:

- f(t) trend view
- f(x) trend view
- Table view

Remedial measures for f(t) trend view and f(x) trend view

1. In the control, select "Properties > Properties > General > Display > Online".
2. Recompile your project.
3. Load the project onto your HMI device.

Remedial measures for Table view:

1. In the control, select "Properties > Properties > General > Upon opening screen > Start update".
2. Recompile your project.
3. Load the project onto your HMI device.

Grouping of screen objects

When you group screen objects in WinCC, performance problems can arise in WinCC in the case of large nesting depths.

Status/Force

The "Status/Force" screen object is enabled for the following controllers:

- SIMATIC S7-300
- SIMATIC S7-400

ActiveX and .NET controls

ActiveX and .NET controls are always positioned in the foreground in runtime.

The configuration of ActiveX and .NET controls on levels is not supported.

Frame line of rectangles

In a WinCC V7 project, you have configured a rectangle with the settings "Line weight = 1" and "Draw insider border = yes".

You then migrate the WinCC V7 project to WinCC V12. To have the rectangle displayed correctly, proceed as follows.

1. Open the Inspector window of the rectangle.
2. Open the property list.
3. Disable "Widen border line inwards".

Graphics in faceplates

You have added a graphic display in a faceplate and defined the "Graphic" property as the interface of the faceplate. The "Graphic" property can now be made dynamic using the interface of the faceplate instance.
Use the following notation to address the property with a screen via a script:
"..\\..\\screen name".

Assigning dynamic properties to instances of a faceplate type in a group

You can assign dynamic properties to instances of a faceplate type in an object group. The properties of an instance are also displayed as properties of a group. The individual dynamization processes with tags, scripts or animations of a group are not displayed in Runtime.

System diagnostics indicator for RT Advanced

You can find the library object "Diagnostics indicator" in the library "Buttons and Switches > DiagnosticsButtons (Comfort Panels)". The object can also be used for devices with RT Advanced.

Preview in screen window

You use your own designs with shadow for screen objects. The can display the screen objects in a screen window.
The shadows of the screen objects are not displayed in the preview of the screen window. The response occurs only in the Engineering System. It is displayed correctly in Runtime.

3.5.2 Tags and connections

Contents

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

Tag names

HMI tag names may not start with the character @.

Display of deleted array elements at location of use of HMI tags

The locations of use of HMI tags, such as the process value of IO fields, are usually indicated by the tag name. If the element of an array tag is used, then the tag name will be extended by the index of the array element indicated in brackets.

If a used tag is no longer included in the project, then the tag name will still be displayed at the location of use. The field will be displayed with a red background to indicate the missing tag. If a used array element or the array tag is no longer present, then only the index of the array element will be displayed in brackets. The tag name will not be displayed. The field is highlighted in red. You can no longer identify the name of the associated array tag based on the location of use in this instance.

If you do not know which array tag was linked to this location of use, then it may be necessary to link the array element once again.

If a tag or array tag was created based on a reference, then the selected reference will be closed automatically.

If an HMI tag is connected with an array element of a PLC tag and the PLC tag does no longer exist in the project, then the same behavior will take place in the "HMI tags" editor.

Array tags as list entry of multiplex tags

You can use the array tags of the Char data type just like the tags of the String data type.

The use of an array tag of the Char data type as list entry of a multiplex tag in the "HMI tags" editor is not supported.

Multiplexing tags on a Basic Panel

If you multiplex a tag with an external tag on a Basic Panel, the address is read from the PLC in runtime during the first read cycle. The value of the address read is not available until the second read cycle.

Runtime Advanced and Panels: Importing array elements and structure elements

Array tags and structure tags are always imported in full with all elements. The elements of the array tags and structure tags are not filled further during import.

A new tag is created if the name of a tag corresponds to the name of an array or structure element in the import file.

Example:

The import file contains an array tag called "Otto" with 10 array elements. The array elements are then called Otto[1], Otto[2], for example.

If the import file contains a tag called "Otto[1]", the first element of the array tag will not be filled. Instead, a new tag will be created in the Engineering System.

Local ID of HMI connections

You cannot edit the "Local ID" value in the HMI connection properties. You need the local ID, for example, for communication by way of AR_SEND. To enable usage of the "Local ID" for communication, proceed as follows:

1. Open the network view in the "Devices & Networks" editor.
2. Click "Connections".
3. Select an S7 connection.
4. Select the "Add new connection" command in the shortcut menu of the PLC.
5. Click on the interface.
6. Specify the "Local ID (hex)".
7. Click "Add" and then "Close".
8. Select "Properties > General" from the partner area of the Inspector window and enter the IP address of the HMI device for the new connection.
9. Configure the necessary raw data tags for communication in the HMI device.

Tags with the DTL data type

Tags that use the "DTL" data type element by element, can only be used as read-only.

3.5.3 Alarm system and alarm displays

Contents

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

Displaying special characters in alarm texts

When configuring alarm texts, a fixed character set is used in the Engineering System. This character set allows you to use numerous special characters in alarm texts.

Language-dependent fonts are used in runtime to display the texts, for example MS PGothic, SimSun. The fonts used in runtime do not support all special characters. As a result, some special characters are not displayed in runtime.

Use of multiplex tags in output boxes with alarm texts

It is also possible to use multiplex tags in the output boxes of alarm texts in the engineering system. During runtime, this leads to an incorrect display of the alarm, because the use of multiplex tags is not supported by the basic panels.

Parameters in user alarms

Contrary to the information in the online help, it is not possible to configure parameters for user alarms.
The menu command "Properties > Properties > Alarm parameters" is not available in the Inspector window.

3.5.4 System functions and scripts

Contents

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

SmartTag object in user-defined VB functions for Runtime Professional

With the "SmartTags reads values from the cache" setting, values are read from the process image (cache) instead of directly from the controller.

The SmartTag object can also read values directly from the controller. However, you can then expect a substantially higher communication load between the HMI device and the controller.

Runtime error on startup on TP 277 and OP 277

At the start of the runtime on a TP 277 or OP 277, the error "Global unknown error with VBScript: 'Expected statement' in script ..." can be reported.

This error is triggered on devices with the Windows CE 3.0 operating system by user functions of the following type:

```
Sub VBFunction_1()
With HmiRuntime.Screens("Screen_1").ScreenItems("Button_1")
    .backcolor = vbred
    .visible = not .visible
End With
End Sub
```

If the error occurs, you need to re-program the user function as follows:

```
Sub VBFunction_1()
    HmiRuntime.Screens("Screen_1").ScreenItems("Button_1").backcolor = vbred
    HmiRuntime.Screens("Screen_1").ScreenItems("Button_1").visible = not .visible
End Sub
```

Hiding warnings for scripts

Activate "Runtime settings > General > Settings > Also start with faulty scripts".

As a result, Runtime is started irrespective of faulty scripts. In addition, script warnings will not be displayed during a complete compilation

System function "GetPLCMode"

Contrary to the information in the online help, the following description applies to the system function "GetPLCMode".

Description

Evaluates the current mode of the connected PLC.

The system function "GetPLCMode" can only be configured for the following PLCs:

- SIMATIC S7 1200
- SIMATIC S7 1500

Use in the function list

GetPLCMode (connection, mode)

Use in user-defined functions

GetPLCMode (connection, mode)

Parameter

Connection

Connection of PLC and HMI device.

Mode

Evaluates the mode of the connected PLC.
8: RUN = The PLC program is being executed.
4: STOP = The PLC program has been interrupted.
Select a suitable user variable for the evaluation.

Scripts for service projects

Since no interactive user is usually logged in service projects, C scripts and VB scripts lead to problems in the following cases:

- When the scripts require interaction, for example, operator input.
- When the scripts show message boxes.

There is no common data area for C scripting in service mode. Thus, for example, no global C variables can be exchanged between the "Scheduler" and "Screens".

3.5.5 Recipes

Contents

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

Arrays in recipe elements

If you have configured both an array as well as the elements of this array for recipe elements of a recipe, the loading of data records aborts with the following error message: "290055: Import of data records aborted with error"

Use either the array or just the array elements for recipe elements of a single recipe.

3.5.6 User administration

Contents

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

SIMATIC Logon for WinCC Runtime Advanced and Panels

When you use SIMATIC Logon to manage access to a panel or a device with WinCC Runtime Advanced, you must note that the characters [/] and [\] cannot be used in the names of Windows user groups or Windows users.

3.5.7 Communication

Contents

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

Connection interruptions with Mitsubishi PLCs

After multiple connection interruptions, a situation may arise where all the connection resources of the Mitsubishi PLC are in use and the connection can no longer be established. It is recommended to check these connection resources in the PLC program of the PLC and also to enable them again.

Area pointer "Date/time" or "Date/time PLC"

If you use the area pointer "Date/time" or "Date/time PLC" in communication with an S7-1200, you must use "DTL" data type in the configuration of the PLC.

Accuracy of the "DTL" data type

The "DTL" data type supports time information down to the nanosecond range. Because panels only support time information down to the millisecond, you may encounter the following restrictions when using the area pointers:

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

Limited number of possible HMI connections

An error message is displayed during compilation of a device indicating that the configuration of the HMI connection in the "Devices & Networks" editor is invalid. The reason may be that the maximum number of possible connections of the HMI device or PLC has been exceeded.

Check the maximum number of available connections. Consult the device manuals of the devices you are using.

Routed communication with S7 300/400

Communication from connection partners in various different subnets can be routed via the following connections: PROFINET, PROFIBUS, MPI.

Using PROFINET IO with panel HMI devices

When using PROFINET IO to connect the direct keys and LEDs of HMI devices to the PLC, you can define an offset for the address area of the inputs and outputs during configuration in HW Config.

The following restriction applies when you use a PROFINET IO-capable CPU of the 400 series with one of the HMI devices listed below:

The offset for the start of the address area of the inputs cannot be bigger than the offset for the start of the address area of the outputs.

The restriction applies to the following HMI devices:

- OP 177B
- OP 277
- Mobile Panel 177

For the configuration of the address parameters, open the PLC with the CPU of the 400 series in HW Config. Select the HMI device connected via PROFINET IO in the station window of HW Config. A table with the properties of the HMI device is displayed at the bottom of the station window in the detail view. Select the line containing the addresses of the HMI device in the table and open the object properties using the shortcut menu.

Select the "Addresses" tab in the "Object properties" dialog. Configure the offset for the inputs under "Inputs > Start". Configure the offset for the outputs under "Outputs > Start".

Exceeding value ranges with Mitsubishi MC and Mitsubishi FX

With some data types, the Mitsubishi MC and Mitsubishi FX communication drivers do not check whether the value of a recipe tag exceeds the value range of the PLC tags. The data types affected are:

- 4-bit block
- 12-bit block
- 20-bit block
- 24-bit block
- 28-bit block

Coordination area pointer in an OPC connection

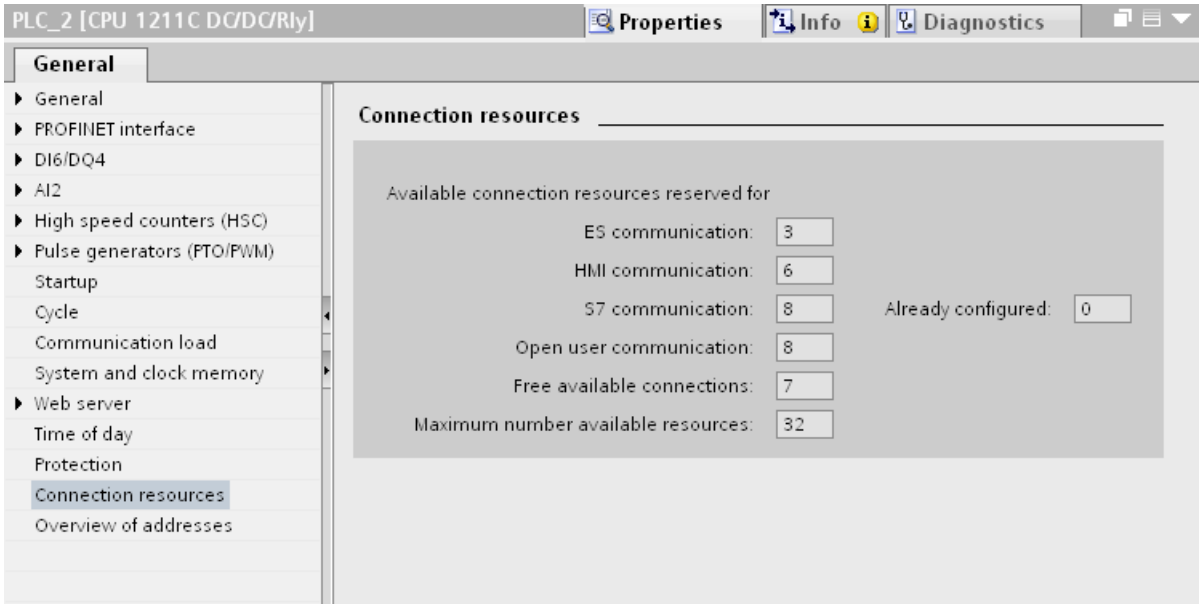
In principle, the coordination area pointer can be used eight times in an OPC connection. If you have configured an OPC connection and automatically create another OPC connection using "Add", the coordination area pointer is only displayed once in the newly created connection. In this case, you should change the communication driver of the connection. If you then set OPC again as the communication driver, the area pointer coordination can again be used eight times.

Communication resources: SIMATIC S7 1200

The SIMATIC S7 1200 controller provides six communication resources for HMI communication.

The number of HMI connections that you can actually configure depends on the HMI devices that you connect with the SIMATIC S7 1200.

- One HMI Panel occupies one communication resource per connection.
- One RT Advanced occupies one communication resource per connection.



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

For routed communication of a SIMATIC S7 1200 with a PC with WinCC RT Advanced, the following restrictions apply for the PC:

- 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.

Communication between S7-1200 and a multi panel

Communication between an S7-1200 and a multi panel with the "WinAC MP" option installed via ProSave is not possible. The HMI devices affected are:

- SIMATIC MP 177 6" Touch
- SIMATIC MP 277 8" Touch
- SIMATIC MP 277 8" Key
- SIMATIC MP 277 10" Touch

- SIMATIC MP 277 10" Key
- SIMATIC MP 377 12" Touch
- SIMATIC MP 377 12" Key
- SIMATIC MP 377 15" Touch
- SIMATIC MP 377 19" Touch

HMI connections in WinCC V12

HMI connections to SIMATIC S7-1200 PLCs with firmware version lower than V2.0 cannot be made in WinCC V12.

Connections via PROFIBUS DP

When a connection between a PLC and an HMI device via PROFIBUS DP is interrupted and then re-established, sporadically all other PROFIBUS DP connections in the communication network are interrupted and re-established.

De-energize the disconnected station before reconnecting it.

"Set the IP suite (address) of the PLC in the Control Panel" with SIMATIC S7-1200 V1

The function "Set the IP suite (address) of the PLC in the Control Panel" has not been approved for the following PLCs:

- SIMATIC S7-1200 V1

Switching a connection

A connection may be interrupted when it is switched from a HMI device control panel to a SIMATIC S7-300/400, SIMATIC S7-1500 or SIMATIC S7-1200.

Note the following settings in the SIMATIC S7 1500 or SIMATIC S7 1200 controllers:

- Absolute addressing of tags
- The "Disable PUT-GET communication" option must be selected
- The "Complete protection" protection level may not be set

3.6 Compiling and loading

Contents

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

Compiling and loading

If internal errors or warnings occur during compiling, compile the complete project using the command "Compile > Software (rebuild all)" in the shortcut menu of the HMI device.

Before you start productive operation with your project, compile the entire project using the "Compile > Software (rebuild all)" command from the shortcut menu of the HMI device.

If you are using HMI tags that are connected to the control tags in your project, compile all modified blocks with the command "Compile > Software" in the shortcut menu before you compile the HMI device.

Saving the WinCC project

If you save a project in WinCC using the "Save As…" command, this has no effect on the name of the Runtime projects generated for the devices. If you do not adapt the destination path of the devices in the "Extended download to device" dialog, the Runtime projects on the target devices will be overwritten.

Settings for update of operating system

If you select the command "Online > HMI device maintenance > Update operating system" from WinCC, you cannot change the settings such as the type of PG/PC interface or baud rate. The settings used during the last download are always used.

To make changes to the settings, open the "Extended download" dialog using the "Online > Extended download to device" command and change the settings. When you click the "Load" button the changed settings are saved.

Alternatively, you can perform an update of the operating system with changed settings with ProSave. You start ProSave via the Windows Start menu "Siemens Automation > Options and Tools > HMI Tools > SIMATIC ProSave".

Incorrect installation of ProSave

If you receive an error message during installation of ProSave when loading data to a target device or maintenance of an HMI device, then you cannot remedy this error using the repair function of setup. Remove ProSave via the Control Panel. Then start setup and install the "ProSave" component again.

Checking the address parameters

During compilation of an HMI device in the project tree with the command "Compile > Software" in the shortcut menu, the address parameters of the HMI device, such as the IP address, will not be checked. If you want to ensure that the address parameters are checked as well, you will have to compile the HMI device in the "Devices & Networks" editor of the toolbar.

Error message when downloading data to the PLC

A panel and a PLC are connected and communicating with other.

If a tag is accessed while downloading data from the panel to the PLC, an error message is displayed on the panel.

Delayed reaction in the "Extended download to device" dialog

If the settings in the "Extended download to device" dialog for "Type of the PG/PC interface" and "PG/PC interface" do not match the settings on the HMI device, this can result in the application not responding for up to a minute.

Extended download with an S7-1200 and a Comfort Panel

An S7-1200 PLC and a Comfort Panel are located in the same physical network as the PG/PC. You open the "Extended download to device" dialog for the Comfort Panel.

If you activate the option "Show all accessible devices", it may occur that the application stops responding.

OP77A, OP73, TP177A: Loading projects

When loading a project to an HMI device, it can happen that Runtime is not automatically ended, even though "Remote Transfers" is activated in the Panel.

If this happens, stop Runtime and manually set the transfer mode on the HMI device.

Loading a SIMATIC HMI application to a PC station

The following circumstances ca n lead to an error message during the first load of a SIMATIC PC station:

- A SIMATIC HMI application is configured in a PC station in the project
  - WinCC Runtime Advanced
  - WinCC Runtime Professional
  - WinCC Standby
  - or WinCC Client
- The property "S7RTM is installed" is activated.

Before you load a SIMATIC PC station for the first time, select the configured device HMI_RT (WinCC...) in the project tree. Open the "Extended download to device" dialog and select the appropriate interface and parameter settings. Click "Load".

You then load the PC station as normal.

Project transfer via USB

If you have connected more than one HMI device via USB to your configuration PC, project transfer is only possible to the last connected device.

Delta download capability

If you make changes to a UDT, is the capability to perform a delta download of the Runtime Professional project lost.

Compile the full project again.

Opening project files

When you run "HmiIRTm.exe", a dialog opens asking if you want to open the project file (.fwc).

The following options are available to you:

- "Yes": A dialog opens allowing you to select a project file (.fwc).
- "No": The dialog closes.

3.7 Runtime

3.7.1 Notes on operation in Runtime

Contents

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

Special characters in the user view

Special characters, such as / " § $ % & ' ?, are not permitted when entering a name or the password in the user view.

Language behavior - Layout of on-screen keyboard

The layout of the on-screen keyboard is not switched when the runtime language changes.

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 message 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 message 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.

Complete download in Service mode

If you need to perform a "complete download" to the OS in Service mode from the engineering station, Runtime automatically stops and then starts again.

The project is then no longer in Service mode.

In this state, the power supply is interrupted and WinCC Runtime no longer starts automatically on the OS.

Remedy:

1. Switch the project manually to Service mode after you have performed the "complete download".
2. Close the project manually.
3. Activate Service mode.
4. Start Runtime again using the surrogate icon in the taskbar.

3.7.2 Notes on operation of panels in Runtime

Contents

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

Using the mouse wheel in Runtime

The use of the mouse wheel in Runtime is not supported on all panels.

Basic Panels: Connections to S7-1200 and S7-1500 with Backup/Restore

If you use the "Backup/Restore" function, a maximum of two connections from Basic Panels to the controllers are possible at any given time.

- SIMATIC S7-1200
- SIMATIC S7-1500

Basic Panels: Backup on the memory card of the PLC

Create the backup file "A.psb" on the memory card of the PLC. An error, for example a connection break, occurs when creating the backup.
This will create a corrupt file on the memory card of the PLC. Such a file has "~$" as prefix. Delete the file with the prefix "~$" if you want to save a backup again under the same name "A.psb".

Basic Panels: Panel Data Storage and S7-1500F

The "Panel Data Storage" PDS function cannot be used on Basic Panels in conjunction with S7-1500F when the password for the protection level "Full access incl. fail-safe" is used.

Upgrading Basic Panels to WinCC V12

Before you upgrade Basic Panels from version V11 to version V12, transfer the image of the V11 SP2 Update 5 or higher to the devices.
In the "SIMATIC ProSave [OS Update]" dialog, select the setting "Reset to factory settings". In this way, you always start a functional update of the image.
Affected devices:

- KP300 Basic mono PN,
- KP400 Basic color PN
- and KTP400 Basic color PN.

3.7.3 Notes on operation of Runtime Advanced

Contents

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

.Net-Controls in Runtime

If you have incorporated a .Net Control in your project as "Specific .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.

3.8 HMI devices

3.8.1 Notes on HMI devices

Contents

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

If the PC goes into standby or hibernate mode while the transfer is in progress, the panel status after interruption of the transfer is not defined.

Multi-key operation

Unintentional actions can be triggered by multi-key operation:

- When you are using a key device, you cannot press more than two function keys at the same time.
- When you are using a touch device, a standard PC or a panel PC, you can only press one function key or button at the same time.

TS Adapter with Ethernet interface

If an HMI device is connected via Ethernet and a TS adapter, it can not be reset to factory settings.

Simulation of the Basic Panels

Use an output field in an alarm text to output an external tag. The content of the output field will always be displayed with "0" during simulation.

Simulation with real PLC connection

The access point used by the simulation is independent from the settings of the Engineering System and can only be altered in the Control Panel with the "Setting PG/PC Interface" tool. If the PLC connection is terminated right after the start of the simulation with alarm 140001, you should check the access point used by the simulation with "Setting PG/PC Interface".

1. Double-click "Setting PG/PC Interface" in the Control Panel. A dialog opens.
2. Select" "S7ONLINE" in the "Access point of application" field as standard for HMI.
3. Select the interface in the "Interface Parameter Assignment Used" area.
4. Exit the dialog "Setting PG/PC Interface" with OK

Loading of projects without recipe data records

You are using recipes in a project. You transfer the project to a Basic Panel without recipe data records.

You may encounter inconsistencies if you have altered the structure of the recipe in the Engineering System and the device already held recipe data records.

Check the consistency of the data records in this case. The device will not issue a note for all structural changes.

Floating point numbers on MP 277, MP 377, TP 177B 4" and CP4

Only floating point numbers in the range from 10^{-293} ... 10^{+307} are displayed correctly on the HMI devices MP 277, MP 377, TP 177B 4" and CP4. If the tag value is outside this range, it is displayed as 0.

USB device driver under Windows XP

If a configuration PC with Windows XP and a Comfort Panel are connected via USB, the S7-USB driver may be reinstalled when the HMI device is restarted. The device settings may in this case not be restored.

Mobile Panels V2

If you use Mobile Panels V2 in a project, it is not possible to open the project with WinCC V11 SP1. This affects projects with the following devices:

- Mobile Panel 277F IWLAN (RFID Tag)
- Mobile Panel 277F IWLAN V2
- Mobile Panel 277 IWLAN V2

"Zone ID/Connection point ID" tag of a Mobile Panel 277 IWLAN V2

The tag used for the "Zone ID/Connection point ID" must be of data type INT for Mobile Panel 277 IWLAN V2 devices. Adapt this data type if necessary when migrating a project.

HMI devices with operating system Windows CE 5.0 or higher

Owing to a modified client-server communication security setting, the time difference between the HMI device (client) and PC (server) must not exceed 1 day. If you back up recipe data from the HMI device on a network drive, for example, make sure that the time is set correctly on the PC (server) and the HMI device (client).

HMI devices with high communication load

S7 Diagnostics should be enabled if a Panel is assigned many connections to PLCs or other HMI devices. Otherwise, you will risk overload on the Panel.

Device replacement in the Engineering System

In the Engineering System, you replace a device with configured LED keys with a device without LED keys. Runtime start fails after you have transferred the project data to the device.

For this reason, delete the LED key configuration before you replace the device.

Restrictions for the HMI device, MP 377 15" Touch daylight readable

The following functions are not supported in WinCC V12 for the MP 377 15" Touch daylight readable HMI device:

- Option: Sm@rtServer
- System function: SetAndGetBrightness
- Direct keys

Upgrading Basic Panels to WinCC V12

Before you upgrade Basic Panels from version V11 to version V12, transfer the image of the V11 SP2 Update 5 or higher to the devices.
In the "SIMATIC ProSave [OS Update]" dialog, select the setting "Reset to factory settings".

In this way, you always start a functional update of the image.

Affected devices:

- KP300 Basic mono PN
- KP400 Basic color PN
- KTP400 Basic color PN

Connection switch in the Control Panel with Basic Panels

If you use the "Override protected connection information" function, the following restriction applies:

You cannot perform a connection switch in the Control Panel of a Basic Panel from a PLC without a protection level to a PLC with a "Complete protection" level.

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