

# SIEMENS

General notes

1

STEP 7 Professional

2

WinCC Readme

3

## Readme

### Programming and Operating Manual

## 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.

|   |
|---|
| <b>⚠ DANGER</b>   |
| indicates that death or severe personal injury <b>will</b> result if proper precautions are not taken.            |
| <b>⚠ WARNING</b>  |
| indicates that death or severe personal injury <b>may</b> result if proper precautions are not taken.             |
| <b>⚠ CAUTION</b>  |
| with a safety alert symbol, indicates that minor personal injury can result if proper precautions are not taken.  |
| <b>CAUTION</b>  |
| without a safety alert symbol, indicates that property damage can result if proper precautions are not taken.     |
| <b>NOTICE</b>   |
| indicates that an unintended result or situation can occur if the relevant information is not taken into account. |

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:

|  |
|--|
| <b>⚠ WARNING</b>   |
| 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

All names identified by ® are registered trademarks of Siemens AG. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

### 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.

# Table of contents

|          |  |           |
|----------|--|-----------|
| <b>1</b> | <b>General notes .....</b>   | <b>5</b>  |
| 1.1      | General notes.....   | 5         |
| 1.2      | Notes on the installation.....   | 10        |
| 1.3      | Use of communications processors.....                                      | 12        |
| <b>2</b> | <b>STEP 7 Professional.....</b>  | <b>15</b> |
| 2.1      | Notes on use .....   | 15        |
| 2.2      | Editing devices and networks .....   | 17        |
| 2.2.1    | General information on devices and networks .....                          | 17        |
| 2.2.2    | Use of modules on the S7-1200 .....  | 17        |
| 2.2.3    | Using clock memories .....   | 18        |
| 2.2.4    | Replacing the ET 200S pulse generator and positioning modules .....        | 19        |
| 2.2.5    | Setting flow control for CM 1241 (RS232) .....                             | 19        |
| 2.2.6    | Removing and plugging Ethernet modules .....                               | 20        |
| 2.2.7    | Notes on online and diagnostics .....                                      | 20        |
| 2.2.8    | Compiling the hardware of a pulse generator .....                          | 21        |
| 2.2.9    | Special feature CP 1616 / CP 1604: Configuration variant "Migration" ..... | 22        |
| 2.2.10   | IO routing with CP 1616 / CP 1604 .....                                    | 23        |
| 2.3      | Programming a PLC .....  | 25        |
| 2.3.1    | General notes on PLC programming .....                                     | 25        |
| 2.3.2    | SCL .....  | 27        |
| 2.3.3    | Instructions .....   | 28        |
| 2.3.4    | Testing the user program .....   | 30        |
| 2.3.4.1  | Testing with the watch table .....   | 30        |
| 2.3.4.2  | Testing with the force table .....   | 31        |
| 2.4      | Technological functions .....  | 32        |
| 2.4.1    | Notes on technological functions (S7-1200) .....                           | 32        |
| 2.4.2    | Notes on technological functions (S7-300/400) .....                        | 32        |
| <b>3</b> | <b>WinCC Readme.....</b>   | <b>35</b> |
| 3.1      | Security information .....   | 35        |
| 3.2      | Notes on use .....   | 36        |
| 3.3      | Migration .....  | 39        |
| 3.4      | Engineering System.....  | 41        |
| 3.4.1    | Screens and Screen Objects.....  | 41        |
| 3.4.2    | Tags and connections.....  | 45        |
| 3.4.3    | Alarm system and alarm displays .....                                      | 47        |
| 3.4.4    | System functions.....  | 47        |
| 3.4.5    | Recipes .....  | 47        |
| 3.4.6    | User administration .....  | 48        |
| 3.4.7    | Communication .....  | 48        |

*Table of contents*

---

|                    |  |           |
|--------------------|--|-----------|
| 3.5                | Compiling and loading.....                   | 52        |
| 3.6                | Runtime.....                                 | 55        |
| 3.6.1              | Notes on operation in Runtime .....          | 55        |
| 3.6.2              | Notes on operation of panels in Runtime..... | 56        |
| 3.7                | HMI devices .....                            | 57        |
| 3.7.1              | Notes on HMI devices .....                   | 57        |
| <b>Index</b> ..... |  | <b>59</b> |

# General notes

## 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.

### Security settings

In order to operate the software packages in the TIA Portal, port 4410 for TCP must be entered as an exception in the Windows firewall during installation.

### 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.

### 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 message "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.

### Changes to keyboard shortcuts for menu commands

To enable country-specific characters to be entered in TIA portal V11, the assignment of keyboard shortcuts to menu commands has been changed as follows (Ctrl+Alt is the same as AltGr):

| Previously   | Now            | Menu command                  |
|--------------|----------------|-------------------------------|
| <Ctrl+Alt+A> | <Ctrl+Shift+P> | Rewire tag                    |
| <Ctrl+Alt+B> | <Ctrl+Shift+M> | Set/delete bookmarks          |
| <Ctrl+Alt+D> | <Ctrl+U>       | Accessible devices            |
| <Ctrl+Alt+F> | <Ctrl+M>       | Cancel online connection      |
| <Ctrl+Alt+G> | <Ctrl+Shift+Q> | Stop CPU                      |
| <Ctrl+Alt+I> | <Ctrl+Shift+I> | Define tag                    |
| <Ctrl+Alt+K> | <Ctrl+Shift+F> | Go to > Next point of use     |
| <Ctrl+Alt+L> | <Ctrl+Shift+G> | Go to > Previous point of use |
| <Ctrl+Alt+N> | <Ctrl+Shift+U> | Rename tag                    |
| <Ctrl+Alt+O> | <Ctrl+K>       | Going online                  |
| <Ctrl+Alt+R> | <Ctrl+Shift+Z> | Start Runtime                 |
| <Ctrl+Alt+T> | <Ctrl+Shift+E> | Start CPU                     |

### 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 initialized by Siemens for use with S7-1200 modules. This format must not be overwritten otherwise the card will no longer be accepted by the S7-1200 modules. Formatting with Windows tools is therefore not permitted.

## Behavior in case of open force job

Note that active force jobs will be 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.

## Issues when shutting down Windows XP or when activating a screen saver

Windows XP uses the ACPI (Advanced Configuration and Power Interface) to shut down the computer or to go to standby mode. It can happen that while the system is processing a newly installed tool that the screen saver is not activated by the ACPI or that after exiting the tool that Windows XP cannot be shut down properly.

If the TIA Portal is running, the Standby function of the computer is deactivated. To put the computer into Standby, you have to first exit the TIA Portal.

The following description shows several optional settings in the "Power Options Properties" you can use to set the Standby mode of the computer with the function "Hibernate":

1. In Windows XP, open the "Power Options Properties" by pointing at "Start > Settings > Control Panel > Power Options" and select the tab "Hibernate". Select the "Enable hibernation" check box.
2. Switch to the "Advanced" tab. In the "Power buttons" dialog, click the drop down list box under "When I close the lid of my portable computer:" and select the option "Hibernate".
3. Then click the drop-down list box under "When I press the power button on my computer:" and select the option "Shut down".
4. Click "Apply" and confirm the settings with "OK".
5. Afterwards, restart the PC.

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.

### 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 > Slider Hardware acceleration" by means of the right mouse button. In this dialog, move the slider "Hardware acceleration" gradually to the left and apply this setting until the contents of the screen are displayed correctly again.

### Tablet PCs

For the TIA Portal V11, tablet PCs are only released with the operating system Windows 7, not with Windows XP.

### SQL Server

During the installation of the SQL Server 2005 or the SQL Server 2005 Express, an error can occur if the product SQL Server 2008 is already installed on your system.

In order to be able to use both varieties of the SQL Server in parallel, the SQL Server 2005 must be installed before the SQL Server 2008. To do this, follow these steps:

1. Remove the SQL Server 2008 version, without deleting the databases.
2. Install WinCC. The SQL Server 2005 is hereby installed and set up on your system.
3. Install the SQL Server 2008 again. Now you can continue to use the databases already created in the SQL Server 2008.



### **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 recognised (entering "1,23" leads to an error). Instead, use the international format ("1.23").

### **FAQs on the TIA Portal**

FAQs on the TIA Portal are available at <http://support.automation.siemens.com> (<http://support.automation.siemens.com/WW/view/en/28919804/133000>).

## 1.2 Notes on the installation

### Contents

Information that could not be included in the online help.

### Target directory of the installation

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

### Installation of STEP 7 Basic V11 and STEP 7 Professional V11 under Windows XP with Turkish Regional and Language Options

Installation of STEP 7 Basic V11 and STEP 7 Professional V11 under Windows XP may be cancelled, 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 V11 and STEP 7 Professional V11.
7. After installation, you can revert the regional and language settings (as described in steps 1 to 4) to Turkish.

### Removing

In rare cases removal of the program can cause the computer to freeze, even when a full version of SQL Server 2005 is installed. In this occurs, disconnect the computer from the network to continue the removal process.

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

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 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.

### **Display of the desktop icon**

If you do not select the standard installation path during the installation of the TIA portal, the desktop icon may not be displayed correctly. This does not affect the functionality of the product.

## 1.3 Use of communications processors

### Contents

Information that could not be included in the online help.

### SIMATIC NET DVD for PC communications processors

The use of the SIMATIC NET DVD versions listed below is recommended for the following communications processors depending on the operating system:

- CP 1613
- CP 1613 A2
- CP 1623
- CP 5613
- CP 5614
- CP 5613 A2
- CP 5614 A2
- CP 5623
- CP 5624

The following versions of the SIMATIC NET DVD should be used with the stated operating systems:

- Windows 7 (Professional, Enterprise, Ultimate), 32- and 64-bit and Windows Server 2008 R2  
"SIMATIC NET PC Software" DVD V8.1 SP1
- Windows XP, Windows Server 2003 and Windows Server 2008, 32-bit.  
"SIMATIC NET, PC Software, Edition 2008 + SP4" CD, version number V7.1.4.

## Operation of communications processors

If both STEP 7 V5.5 and STEP 7 V11 are installed on a computer and STEP 7 V5.5 is removed, the setup repair function of STEP 7 V11 must be executed before the following communications processors can be used as network adapters for loading firmware:

- CP 561x
- CP 5613 A2
- CP 5614 A2
- CP 5623
- CP 5624
- CP 5711

## See also

Service & Support (\*\* NO TRANSLATION IN THIS VERSION! \*\*)  
(<http://support.automation.siemens.com/WW/view/en/12660737>)



# STEP 7 Professional

## 2.1 Notes on use

### Contents

Information that could not be included in the online help.

### Online operation

The simultaneous online operation of STEP 7 V5.5 or earlier and STEP 7 Professional V11 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.

### Parallel use

If the term "Combo" appears in the name or license key of the software after installation, the use of the following products/versions is permitted in accordance with Article 1.6 of the General Terms and Conditions (see also setup text):

- STEP 7 Professional 2010
- STEP 7 Professional 2006

### Configuring and assigning module parameters

For an overview of the modules you can configure and assign with STEP 7 Professional V11 go to <http://support.automation.siemens.com> (<http://support.automation.siemens.com/WW/view/en/28919804/133000>).

### Documentation on S7-PLCSIM

S7-PLCSIM is installed together with STEP 7 Professional. The documentation is saved centrally.

You can find the manuals under: C:\Programs\Siemens\Documentation\Product notes

You can find the readme files under: C:\Programs\Siemens\Documentation\Readme

### 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.

### Deleting a WinAC RTX from a SIMATIC PC

A controller application WinAC RTX with an assigned onboard CP interface in an interface slot (IF) cannot be deleted from a SIMATIC Box PC/Panel PC/Rack PC. If you wish to delete the WinAC RTX, you must first remove the onboard CP interface from the interface slot. To do this, the onboard CP interface must be selected in the network or device view and a different option (for example, "Windows only" or "SIMATIC PC station") must be activated in the inspector window under "CP assignment" instead of the option "SIMATIC WinAC".

### 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 functions are already described in the information system, but are not available in STEP 7 Professional V11.0 SP2:

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



## 2.2 Editing devices and networks

### 2.2.1 General information on devices and networks

#### Contents

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

### 2.2.2 Use of modules on the S7-1200

#### Contents

Information that could not be included in the online help.

#### Use of modules on the S7-1200

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

| Series            | 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  |

| Series  | Module          | Order number   |
|---------|-----------------|--|
| 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 |

### 2.2.3 Using clock memories

#### Contents

Information that could not be included in the online help.

#### Clock memories are deactivated when the CPU is replaced

The clock memory is deactivated after you have replaced a CPU of the S7-300, S7-400 or ET 200 by another CPU by using the "Replace device..." function. If you want to use the clock memory, activate it again in the CPU properties in the inspector window.

## 2.2.4 Replacing the ET 200S pulse generator and positioning modules

### Contents

Information that could not be included in the online help.

### Replacing the ET 200S pulse generator and positioning modules

This information is relevant to the "2 Pulse" pulse generator modules (6ES7 138-4DD00-0AB0) and "1 Step 5V" positioning modules (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:

- Replacing the pulse generator module 6ES7 138-4DD00-0AB0 or the positioning module 6ES7 138-4DC00-0AB0 with their successor modules 6ES7 138-4DD01-0AB0 or 6ES7 138-4DC01-0AB0 by means of a device replacement.
- Updating the module version using the appropriate button in the device properties in the Inspector window.

## 2.2.5 Setting flow control for CM 1241 (RS232)

### Contents

Information that could not be included in the online help.

### Values for XON and XOFF

If flow control is enabled for the CM 1241 (RS-232) communications module and set to "XON/XOFF", you can enter identical values for the XON and XOFF characters. From a technical point of view, however, this configuration is impractical. You should therefore use different values for XON and XOFF.

## 2.2.6 Removing and plugging Ethernet modules

### Contents

Information that could not be included in the online help.

### Removing and plugging Ethernet modules

Ethernet modules, for example USB network cards, must already be plugged and activated at the system start. When Ethernet modules are deactivated or do not exist at the system start or are removed and plugged again during operation, the "Available nodes" functionality does display all the nodes in STEP 7 or NCM PC. This also applies to the change of docking stations when the Ethernet module is not plugged in the notebook but rather in the docking stations.

Activate the deactivated Ethernet modules by using "Control Panel > Network Connection" and reboot the system. Also reboot the system if Ethernet modules were plugged during operation or if the docking station with the Ethernet module was changed during operation.

## 2.2.7 Notes on online and diagnostics

### Contents

Information that could not be included in the online help.

### 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 there are different configurations in the online and diagnostic views, although the MLFBs are identical in the actual CPU and the offline CPU.

### Assigning an IP address

If an IP address is assigned directly to a PLC via the diagnostics and online function with "Functions > Assigning an IP address", this IP address will be set permanently and retained even after a restart or power failure.

## **Creation of the system diagnostics blocks**

The block numbers set for the created system diagnostics blocks must not overlap existing block numbers. Moreover, the numbers must not overlap the numbers of blocks located in libraries.

If problems occur in the generation of blocks, check whether the preset numbers (FB 49, DB 49, FC 49, DB 50) have been changed. If this is the case, try to repeat the generation with the preset block numbers or use numbers which you are certain are not in use elsewhere.

## **2.2.8 Compiling the hardware of a pulse generator**

### **Contents**

Information that could not be included in the online help.

### **Compiling with a disabled pulse generator**

If a pulse generator is deactivated and the following error message nevertheless appears during compilation of the hardware "Pulse generator as: PTO cannot be selected. Associated high speed counter not correctly configured.", follow these steps:

1. Deactivate the high-speed counter.
2. Activate the pulse generator and set the operating mode to "PTO".
3. Deactivate the pulse generator.
4. Recompile the hardware.

## 2.2.9 Special feature CP 1616 / CP 1604: Configuration variant "Migration"

### Contents

Information that could not be included in the online help.

### CP 1616 / CP 1604

You can use the CP 1616 / CP 1604 alternatively as follows:

- Only PROFINET IO Controller
- Only PROFINET IO device
- PROFINET IO device and PROFINET IO controller

### Special feature when using as "Only PROFINET IO device"

Install a suitable GSDML file for the CP and use those components in the catalog **without** the additional designation "(Migration)".

---

#### Note

#### When do you need the component with the additional designation "(Migration)"?

You only need the component with the additional designation "(Migration)" in the following case:

- You use the CP simultaneously as PROFINET IO device and PROFINET IO controller;  
**and**
- You configure the higher-level PROFINET IO\_Controller in a "third-party tool" and have to integrate the CP used as PROFINET IO device into this "third-party tool".

Components with the additional designation "(Migration)" are not required for complete configurations within the TIA portal.

---

## 2.2.10 IO routing with CP 1616 / CP 1604

### Contents

Information that could not be included in the online help.

### CP as PROFINET IO router - what this means in practice

You can operate a PC station with the CP 1616/CP 1604 as PROFINET IO router by employing the relevant CP as PROFINET IO device and PROFINET IO controller simultaneously. This IO routing allows process data to be exchanged between two PROFINET IO systems. If the configuration is set up correctly the CP can, for example, allow certain process level inputs and/or outputs to be accessed at control level.

In a typical configuration the CP then simultaneously satisfies the following functions:

- PROFINET IO Device for a higher-level PROFINET IO controller of the control level
- PROFINET IO controller with connected IO devices for the subordinate process level

### Assign configuration - transfer area "TM" (transfer module mapping)

In the configuration, select the "IO device" option under "Operating mode" .

The additional "I-device communication" configuration area appears, in which you can make the settings for the IO routing. There you specify the type and the size of the transfer area for IO routing to the higher-level IO controller under "Transfer area detail".

The following options are available for the "Transfer area type":

- CD: Controller Device

Select this option to specify a transfer area between the IO controller and IO device. Refer to additional information on this in the online help under "Configuration for PROFINET IO".

- TM: Transfer module mapping

Select this option for the IO router application. An additional configuration area with the name specified appears in the Inspector window under "Operating mode / I-device communication". In this configuration area make the assignment for the transfer module mapping in the mapping table.

### Transfer module mapping

Transfer modules represent the data areas routed from the lower-level IO system into the higher-level IO system.

Enter the IO devices from the lower-level IO system in the mapping table in accordance with your requirements..

The table contains the following columns:

| Parameter            | Meaning   |
|----------------------|---|
| Offset               | Offset in relation to the first bit in the transfer module.<br>The specification has the form <Byte>.<Bit>.<br>Example: 0.5 |
| Device/module (slot) | Specification of the IO device<br>The displayed dialog shows the IO devices configured on the IO system.                    |
| IO type              | Select the IO type via the drop-down list box.<br>The selection options depend on the transfer module type.                 |
| Start                | Start address (offset) in the data area of the IO device.<br>The specification has the form <Byte>.<Bit>.<br>Example: 0.0   |
| End                  | End address (offset) in the data area of the IO device.<br>The specification has the form <Byte>.<Bit>.<br>Example: 8.0     |



## 2.3 Programming a PLC

### 2.3.1 General notes on PLC programming

#### Contents

Information that could not be included in the online help.

#### Downloading 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.

#### Loading data blocks from a device

Please note that the two CPU families handle the values of tags differently when loading blocks from a device.

- S7-1200

CPUs of the S7-1200 series store the start values with which a data block is loaded to the CPU in the load memory. If you load a data block from an S7-1200 CPU, these start values are applied from the load memory to the offline data block again. Even if you have made value changes in the load memory during runtime by means of the "WRIT\_DBL" instruction, the values originally loaded to the device are applied to the offline data block.

In order to apply the current monitored values from the CPU, you can use the function "Snapshot of the monitored values". You can find detailed information on this in the information system, in the section "Programming data blocks".

- S7-300/400

CPUs of the series S7-300/400 also store the start values with which a data block is loaded to the CPU in the load memory. However, they cannot read the values back from the load memory. If you load a data block from a device, the current monitored values are loaded from the CPU and entered in the "Start values" column in the offline data block.

#### Copying overlaying tags

Tags that overlay other tags using the keyword "AT" cannot be copied. In this case, copy the overlaid tag and define the overlay again on the copy.

### Importing organization blocks from external STL/SCL sources

CPUs of the S7-300/400 series accept organization blocks with any name during import. If you import an OB with a standard name (for example, CYCL\_EXC or CYC\_INT5), it is automatically assigned to the correct OB class. If you import an OB with an unknown name, an OB0 is created. You can change this number after the import and hereby assign it to the desired OB class. To change to the OB number, select "Properties" in the shortcut menu.

### Process image of PTO/PWM outputs

Do not use PTO/PWM outputs in the process image (for example, for accesses 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 does not reflect the signal flow.

### Moving system blocks

Moving objects from the "System blocks" folder to the "Program blocks" folder is not permitted in STEP 7 V11.0.

### Conversion of know-how protected blocks from V10.5

After the conversion from V10.5 to V11.0, the program must be compiled. If you use know-how protected blocks, you are prompted to enter the password.

## 2.3.2 SCL

### Contents

Information that could not be included in the online help.

### MUX: Multiplexing

As of V11 SP2, parameter numbering of the MUX instruction no longer begins with IN0 but with IN1.

If you want to import the MUX instruction from a source of a previous version of the TIA portal, please correct the calls by increasing the parameter numbers of each call by 1.

### Implicit data type conversion

The data type DINT is no longer implicitly converted to REAL in SCL. Instead, use the explicit conversion function DINT\_TO\_REAL, for example:

```
"tag_real1" := "tag_real2" + DINT_TO_REAL("tag_dint");
```

### Compatibility of SCL blocks (S7-300/400)

SCL blocks that were created with STEP 7 V11.0 or V11.0 SP1 can be continue to be processed and loaded in V11.0 SP2.

However, SCL blocks that were created with STEP 7 V11 SP2 can no longer be processed or loaded with STEP 7 V11.0 and V11.0 SP1.

### Format for null pointers

The following format is no longer supported for null pointers:

```
MyVar:= NIL;
```

Instead, use the format universally valid for STEP 7:

```
MyVar:= P#P0.0 VOID 0;
```

### No textual input of the instructions CONVERT, T\_CONV and S\_CONV possible

The basic instruction CONVERT and the extended instructions T\_CONV and S\_CONV cannot be input in text form and used in an SCL block. Instead, enter the conversion functions according to the pattern <source type>\_TO\_<target type>.

```
Example: #str := INT_TO_STRING( #value );
```

If, however, you drag and drop the instructions CONVERT, T\_CONV or S\_CONV into the SCL editor, a dialog opens automatically in which you can define the data types to be converted

### 2.3.3 Instructions

#### Contents

Information that could not be included in the online help.

#### MODBUS library

The instruction "MB\_SLAVE" was updated in STEP 7 V10.5 SP2.

If you have already used "MB\_SLAVE" V1.0 in a project that was created with STEP 7 V10.5 SP1, you must manually replace this version with the new version "MB\_SLAVE" V1.1 after the installation of STEP 7 V11.

To do this, follow these steps:

1. Delete "MB\_SLAVE" V1.0 from all blocks in the project.
2. Delete "MB\_SLAVE" V1.0 from the project library.
3. Insert "MB\_SLAVE" V1.1 in all required locations of use.
4. Compile the project.

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

Logic blocks (FBs/FCs) and data blocks (DBs) can be created with different access types ("standard" and "optimized"). In logic 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 logic 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 logic block, which forwards this structure directly or indirectly to one of the blocks mentioned above.
- The reverse scenario, whereby a structure from an optimized logic 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.

#### SCL language harmonization in the TIA portal

As of V11 SP2, parameter numbering of the MUX instruction no longer begins with IN0 but with IN1.

If you want to import the MUX instructions from a source of a previous version of the TIA portal, please correct the calls by incrementing the parameter numbers of each call by 1 accordingly.

**TM\_MAIL and AS\_MAIL instructions - transfer of data for the AUTH-LOGIN authentication process**

The user name (USERNAME parameter) and password (PASSWORD parameter) are each transferred to the mail server unencrypted (BASE64-coded).

## 2.3.4 Testing the user program

### 2.3.4.1 Testing with the watch table

#### Contents

Information that could not be included in the online help.

#### 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.

#### Rounding floating-point numbers

In the watch table, floating-point numbers are stored as binary numbers in IEEE format. Since some floating-point numbers (real, long real) that can be displayed in the user interface cannot be mapped exactly to the IEEE format, it is possible that floating-point numbers will be rounded.

If a floating-point number has been rounded for this reason and it is then copied to another input cell in the watch table, the rounding may result in a slight deviation.

#### Loading data blocks during an active control job

|  |
|--|
| <b>NOTICE</b>  |
| 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.

## **2.3.4.2 Testing with the force table**

### **Contents**

Information that could not be included in the online help.

### **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: IO.0:P, IB0:P, IW0:P and ID0:P.

## 2.4 Technological functions

### 2.4.1 Notes on technological functions (S7-1200)

#### PID\_3Step Variable Retain.Mode

In this documentation, Mode = 7 is described as operating mode "Approach substitute output value with error monitoring" and Mode = 8 as operating mode "Error monitoring".

The correct information is:

- Mode = 7 is the "Error monitoring" operating mode
- Mode = 8 is the "Approach substitute output value with error monitoring" operating mode

#### PID\_Compact V1.0

PID\_Compact V1.0 is out of date. A CPU with firmware V2.0 is required as of PID\_Compact V1.1. Update the CPU firmware and select a newer version from the Task Card "Instructions".

### 2.4.2 Notes on technological functions (S7-300/400)

#### Parameter assignment for the FM x51 and FM x52

In contrast to the information in the Online Help, if you change the measuring system, the previously entered parameter values are not converted to the new measuring system.

#### Programming FM x50-1, FM x51 and FM x52

The "initial values" specified in the parameter tables in the online help regarding the instructions correspond to the "default value" in the software interface of the user programming.

#### FM 355, FM 355-2, FM 455

To commission the modules you have to first establish an online connection and then start the measurement. Contrary to the description, the online connection is not established at the start of the measurement.

#### FM 355-2 multiple instance DBs

If you use multiple instance DBs in your project, you must commission the FM 355-2 via a watch table.



### **PID Self Tuner**

If you call the instructions TUN\_ES and TUN\_EC as multiple instance DB, no commissioning interface is available. In this case, you must commission the controller via a watch table.

### **IM 174 migration**

During the migration of projects with IM 174, the parameter assignment of IM 174 is set to default values. It is absolutely necessary to set parameters for IM 174 again after the migration.



# WinCC Readme

## 3.1 Security information

### Secure operation of a plant

To ensure secure operation of a plant, you have to take suitable security measures, including IT security (network segmentation, for example). More information on Industrial Security is available on the Internet ([www.siemens.com/industrialsecurity](http://www.siemens.com/industrialsecurity)).

| NOTICE   |
|--|
| Various passwords are set by default in WinCC. For security reasons, you should change these passwords. <ul style="list-style-type: none"><li>• For the Sm@rtServer and for the integrated Web server, the default password is "100".</li><li>• For the user "Administrator", the default password is "administrator".</li></ul> |

## 3.2 Notes on use

### Contents

Information that could not be included in the online help.

### Parallel installation in the TIA portal

You will be prevented from starting the TIA portal if you set up a non-permitted parallel installation of STEP 7 and WinCC.

The following parallel installations are permitted in the TIA portal:

- STEP 7 V11 and WinCC V11
- STEP 7 V11 SP1 and WinCC V11 SP1
- STEP 7 V11 SP1 with WinCC V11 SP2
- STEP 7 V11 SP2 and WinCC V11 SP1
- STEP 7 V11 SP2 with WinCC V11 SP2

Both Engineering Systems must always have the same version after an installation.

A dialog opens during installation to inform you of any inconsistencies in your parallel installation.

### Parallel installation of WinCC V11 and WinCC V7

Parallel installation of WinCC V11 Professional or Runtime Professional with WinCC up to V7.0 (including service packs) is not approved.

### 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 will not automatically be connected to an existing PLC with the same name. This statement 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 will have to complete the HMI configuration immediately after the copying step. Proceed as follows:

1. Open the "Devices & Networks" editor.
2. Connect the new HMI device with 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 you create an additional HMI connection to the same PLC. 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 "... will not be supported in the new configuration. It will be removed" will be issued. 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 tabular area of the network view on the "Connections" table.
5. Select the connection marked red.
6. Enter the new interface under "Properties > 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.

### Installing East Asian project languages on a PC without Asian operating system

If you select an East Asian project language on a PC that does not have an Asian operating system installed, the default font will be marked as invalid in the "Runtime settings > Language & font" editor.

To resolve this problem, open the "Regional and Language Options > Languages" dialog in the Control Panel and select the "Install files for East Asian languages" option.

### 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"
```

## 3.3 Migration

### Contents

Information that could not be included in the online help.

---

#### Note

The most efficient way to locate scripting errors in the course of the initial test run after migration is to use an installed Script Debugger and the diagnostics controls.

---

### 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 V11 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.



## 3.4 Engineering System

### 3.4.1 Screens and Screen Objects

#### Contents

Information that could not be included in the online help.

#### 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  |
| 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 V11, the properties of the objects belonging 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 V11 or WinCC V11 SP1, you should check the tab sequence of these screens in WinCC V11 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 "Display format" 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.

## 3.4.2 Tags and connections

### Contents

Information that could not be included in the online help.

### 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.

### 3.4.3 Alarm system and alarm displays

#### Contents

Information that could not be included in the online help.

#### 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 P Gothic, 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

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

### 3.4.4 System functions

#### Contents

Information that could not be included in the online help.

#### The "SimulateTag" system function on Basic Panels

If you use the system function "SimulateTag" with a short cycle time on a Basic Panel, the HMI device may be overloaded.

### 3.4.5 Recipes

#### Contents

Information that could not be included in the online help.

### 3.4.6 User administration

#### Contents

Information that could not be included in the online help.

#### 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.

### 3.4.7 Communication

#### Content

Information that could not be included in the Online Help.

#### Opening projects in WinCC V11 (no service pack) with communication via Modicon Modbus RTU, Modicon TCP/IP, Allen Bradley DF1

The following HMI devices are affected:

- OP 77A
- TP177 A
- Basic Panel

A Modicon Modbus RTU, Modicon Modbus TCP/IP, or Allen Bradley DF1 connection you configured in WinCC for one of the devices mentioned above will be invalid after it has been opened. You need to reassign the protocol in WinCC V11 SP2.

If you reassign the protocol in the "Connections" editor in WinCC, the tag address assignments will possibly get lost.

You can prevent the loss of tag address assignments as follows:

1. Create a new connection with this protocol and the relevant CPU type in the "Connections" editor.
2. Replace the original connection with the new one in the "Tags" editor.
3. Reconfigure the area pointers.
4. Assign the new connection to all functions that you are possible using, e.g. "set connection mode".
5. Delete the original connection in the "Connections" editor.



### 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 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 data type "DTL" 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 will 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 will be 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 will be ignored. The time information will be 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

The communication of connection partners in various subnets can be routed via the following links: 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 must not 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 communication drivers Mitsubishi MC and Mitsubishi FX 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

### Area pointer Coordination in an OPC connection

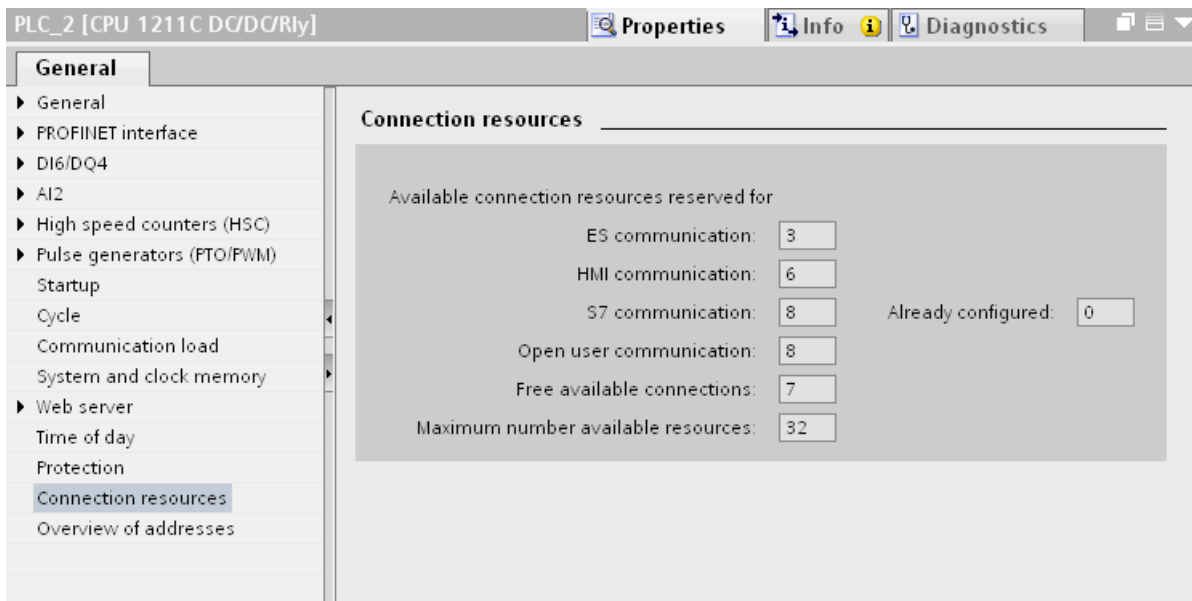
In principle, the area pointer Coordination can be used eight times in an OPC connection. If you have configured an OPC connection and automatically create another OPC connection using "Add", the area pointer Coordination is only displayed once in the newly created connection. In this case, you should 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.



## 3.5 Compiling and loading

### Contents

Information that could not be included in the online help.

### 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 target 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 can 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 navigation. 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.

## 3.6 Runtime

### 3.6.1 Notes on operation in Runtime

#### Contents

Information that could not be included in the online help.

|   |
|---|
|  <b>CAUTION</b>  |
| <b>Ethernet communication</b><br>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. |

#### 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 screen keyboard

The layout of the 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.

## **3.6.2 Notes on operation of panels in Runtime**

### **Contents**

Information that could not be included in the online help.

### **Using the mouse wheel in Runtime**

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



## 3.7 HMI devices

### 3.7.1 Notes on HMI devices

#### Contents

Information that could not be included in the online help.

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.

#### 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.

### **KP400 Basic, TP1500 Comfort, KP1500 Comfort, TP1900 Comfort, TP2200 Comfort**

The devices are already described in the online help, but cannot yet be configured in WinCC. To be able to configure these devices, you have to install the HSP that will be released soon.

### **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.

# Index

## A

- Alarm
  - Inspector window, 42
- Alarm indicator, 41
- Alarm text
  - Output fields, 47
  - Special characters, 47
- Alarm view, 41
- Alarm window, 41
- Area pointer
  - Date/time, 49
  - Date/time PLC, 49
- Array, 45
- Array element
  - Location of use of HMI tag, 45
  - Name, 45
- Array tag
  - Char, 45
- Assigning an IP address, 20
- AT, 25

## B

- Block
  - Compatibility of SCL blocks, 27
- Block folder, 26

## C

- Char
  - Array tag, 45
- Clock memory, 18
- Comfort Panel
  - S7-1200, 53
- communication
  - Via the point-to-point port with MB\_SLAVE, 28
- Communications processor
  - Operation, 13
  - SIMATIC NET DVD, 12
- Communications protocol
  - Overview, 28
- Compile
  - Address parameters, 53
- Compiling

- With disabled pulse generator, 21
- Connection resource
  - SIMATIC S7 1200, 51
- Conversion
  - Implicit, 27
- Copying
  - Alarm indicator, 41
  - Alarm view, 41
  - Alarm window, 41
  - HMI device, 36
- Cross-reference
  - Inspector window, 41

## D

- Data type
  - Conversion, 27
- Decimal places, 9
- Delete
  - WinAC RTX, 16
- Deleting WinAC RTX, 16
- Device
  - Copying, 36
  - Replacing, 18
- Download
  - Extended download to device, 53
- Downloading data to the PLC
  - Error message, 53
- DTL data type
  - Restriction, 49

## E

- Error message
  - Downloading data to the PLC, 53
- ET 200S
  - Positioning module, 19
  - Pulse generator module, 19
- Ethernet module, 20
  - Removal/insertion, 16
- Event
  - Inspector window, 42
- Extended download to device, 53
- External source file
  - Import organization block, 26

## F

- Flow control, 19
- Force job
  - On SD card, 7
- Forcing tags, 31
- Forcing tags for direct I/O access, 31

## G

- Going online
  - multiple TIA portal instances, 15

## H

- Hardware
  - Detection, 20
- Hibernate, 7
- HMI device replacement, 37

## I

- I/O field
  - Decimal format, 44
  - Display format, 44
- Inspector window
  - Cross-reference, 41
  - Event, 42
- Installation
  - ProSave, 52
  - Target directory, 10
- IO routing, 23
- IP address, 8

## K

- Keyboard shortcuts
  - Changes in assignment, 6
- Know-how protection
  - Converting blocks from V10.5, 26

## L

- Language behavior
  - Screen keyboard, 55
- Load
  - from a device, 25
  - SIMATIC PC station, 54

## M

- Maximum length
  - Tag, 55
- MB\_SLAVE, 28
- Memory card
  - Removal/insertion, 16
- Mitsubishi
  - Connection interruption, 49
- Module
  - Configuring and assigning, 15
  - Inserting, 16
  - Removing, 16
- Multiplexing, 27, 28
- MUX, 27, 28

## N

- Name
  - Array element, 45
- Network card, 20
- Network drive, 9
- Null pointer, 27

## O

- Online connection
  - multiple TIA portal instances, 15
- Online operation, 15
- OP73
  - Loading a project, 53
- OP77A
  - Loading a project, 53
- Output fields
  - Multiplex tag, 47
- Overlaying
  - Tag, 25
- Overview window, 37

## P

- Permitted characters
  - User view, 55
- Program resources, 26
- Project library, 38
- ProSave
  - Installation, 52
- Pulse generator
  - Compiling hardware, 21

**R**

- READ\_DBL, 28
- Recipe data record
  - Transferring the project, 57
- Resource
  - SIMATIC S7 1200, 51
- Runtime
  - Mouse wheel, 56

**S**

- S7-1200, 17
- S7-1200 modules, 17
- S7-PLCSIM documentation, 15
- Screen keyboard
  - Language behavior, 55
- Screen saver, 7
- SD card
  - Open force job, 7
- Shutting down Windows XP, 7
- SIMATIC NET DVD for communications processors, 12
- SIMATIC PC station
  - Load, 54
- SIMATIC S7 1200
  - Connection resource, 51
  - Resource, 51
- Simulation, 57
  - PLC connection, 57
- Special characters
  - Alarm text, 47
- Standby Mode, 7
- System block
  - System blocks folder, 26
- System diagnostics blocks, 21

**T**

- Tag
  - Maximum length, 55
- TM, 23
- TP177A
  - Loading a project, 53
- Transfer module mapping, 23
- Transferring the project
  - HMI device, 57
  - Recipe data record, 57
- TS adapter, 57

**U**

- USB network card, 20
- User view
  - Permitted characters, 55

**W**

- Watch table
  - Loading data blocks during an active control job, 30
  - Multiple access to the same CPU, 30
  - Rounding floating-point numbers, 30
- WRIT\_DBL, 28

**X**

- XOFF, 19
- XON, 19

