

SIEMENS

SIMATIC

Embedded Automation SIMATIC IPC427D Bundles, SIMATIC IPC477D Bundles

Operating Manual

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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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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.

Preface

Purpose of the documentation

This documentation describes the special features and the pre-installed system configuration of the SIMATIC Embedded Bundles with SIMATIC IPC427D/IPC477D:

- HMI
- RTX
- HMI/RTX
- RTX F
- HMI/RTX F

Definitions and Naming Conventions

In this documentation, the following terms are used to specify the different pre-installed system configurations of the following SIMATIC Embedded IPCs:

- **SIMATIC Embedded Bundles:** This is a generic term for all bundles and possible pre-installed system configurations.
- **SIMATIC IPC427D Bundles:** This term refers to the SIMATIC IPC427D containing pre-installed system configurations.
- **SIMATIC IPC477D Bundles:** This term refers to the SIMATIC IPC477D containing pre-installed system configurations.
- **Windows Embedded:** This term refers to the "Windows Embedded Standard 7 SP1" operating system.
- **STEP 7:** This term refers to STEP 7 V13 SP1.
- **Distributed I/O:** This is a generic term for PROFIBUS and PROFINET.
- **Mass storage medium:** This term refers to both CFast cards as well as SSDs.

Target group

This documentation addresses engineers, programmers, and maintenance personnel with general knowledge of automation systems and programmable logic controllers.

Knowledge required

To understand this documentation, you need to have general knowledge of automation engineering. You also need basic knowledge of the following topics:

- General knowledge of automation engineering
- An understanding of the SIMATIC industrial automation system
- An understanding of PC-based automation with WinAC RTX
- Proficiency with STEP 7 and WinCC
- Experience in using Microsoft Windows operating systems

Storage location of the documentation

The documentation is available on the Documentation DVD along with additional information on the Internet (<http://support.automation.siemens.com/WW/view/en/42783973/133300>).

Guide

This document consists of instruction sections and a reference section. The documentation covers the following topics:

- Product overview
- Initial startup
- User tasks
- Recovery and Maintenance

Position in the information landscape

For more information, refer to the following documents:

Documentation for	Brief description of relevant contents
<i>WinCC Advanced V13 SP1</i>	This manual provides you with a complete overview of configuration in WinCC. This manual offer you support with regard to the creation of new projects, your configuration tasks, and the transfer of projects to an HMI device. The manual includes information on topics such as runtime and communication. Available on the Internet (http://support.automation.siemens.com/WW/view/en/29157705/133300).
<i>WinAC RTX (F) 2010 - Windows Automation Center (WinAC) RTX</i>	This manual describes the entire functionality of WinAC RTX (F). Available on the Internet (http://support.automation.siemens.com/WW/view/en/43715176).
<i>WinAC Time Synchronization</i>	This manual describes the configuration and operation of WinAC Time Synchronization. Available on the Internet (http://support.automation.siemens.com/WW/view/en/22205381).
<i>SIMATIC Industrial PC - SIMATIC IPC427D</i>	This manual contains information on commissioning and the use of SIMATIC IPC427D. Available on the Documentation DVD and on the Internet (http://support.automation.siemens.com/WW/view/en/37443499/0/en).
<i>SIMATIC Industrial PC - SIMATIC IPC477D</i>	This manual contains information on commissioning and the use of SIMATIC IPC477D. Available on the Documentation DVD and on the Internet (http://support.automation.siemens.com/WW/view/en/67235060/0/en).

Service & Support on the Internet

A guide to the technical documentation offered for the various SIMATIC products and systems is available on the Internet (<http://www.siemens.com/simatic-tech-doku-portal>).

In addition to our documentation pool, we offer our complete online knowledge base on the Internet (<http://www.siemens.com/automation/service&support>). There you will find:

- The newsletter, which is constantly updated to provide you with the latest information about your products
- The right documents via our Search function under Service & Support
- The bulletin board, a worldwide knowledge exchange for users and experts
- Your local representative for Automation & Drives in our representatives database
- Information about on-site services, repairs, spare parts, and lots more

Security information

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, solutions, machines, equipment and/or networks. They are important components in a holistic industrial security concept. With this in mind, Siemens' products and solutions undergo continuous development. Siemens recommends strongly that you regularly check for product updates.

For the secure operation of Siemens products and solutions, it is necessary to take suitable preventive action (e.g. cell protection concept) and integrate each component into a holistic, state-of-the-art industrial security concept. Third-party products that may be in use should also be considered. You can find more information about industrial security on the Internet (<http://www.siemens.com/industrialsecurity>).

To stay informed about product updates as they occur, sign up for a product-specific newsletter. You can find more information on the Internet (<http://support.automation.siemens.com>).

Information about third-party software updates

This product contains third-party software. Siemens accepts liability with respect to updates/patches for the third-party software only when these are distributed by Siemens in the context of a Software Update Service contract or officially approved by Siemens. Otherwise, updates/patches are installed at the user's own risk. You can obtain more information on our software update service under (<http://www.automation.siemens.com/mcms/automation-software/en/software-update-service/Pages/Default.aspx>).

Notes on protecting administrator accounts

A user with administrator rights has extensive access and manipulation possibilities.

Therefore, make sure that the administrator account is adequately protected to prevent unauthorized changes. To do this, set secure passwords and use a standard user account for regular operation. Other measures, such as the use of security policies, should be applied as required.

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Product overview

The SIMATIC Embedded Bundles are hardware configurations with pre-installed software and a USB flash drive with the software license keys.

All software configurations are located on the mass storage medium. The mass storage medium containing the pre-installed software can be used on any SIMATIC IPC of the same device family.

Note

The default user interface for Windows Embedded is in English.

You can change the language with the "Language Management" menu item on the Recovery DVD of the operating system.

Note that only one language can be installed on the SIMATIC IPC at a time.

Initial startup

2.1 Commissioning SIMATIC IPC

The SIMATIC Embedded Bundles contain the hardware and software installation according to your selected configuration. No further installation is necessary.

Note

The initial startup of the system can take longer than usual due to the basic commissioning. Errors and warnings can be displayed in the status bar at the first and second startup during initial commissioning or after a restore procedure. They have no effect on the operation of the device and can be ignored.

Procedure

To commission the SIMATIC IPC for the first time, follows these steps:

1. Connect the device to the power supply.

The SIMATIC IPC performs a self-test. During the self-test, the following message appears: "Press <F2> to enter Setup or <Esc> to show Boot menu".

2. Wait until this message disappears.
3. Follow the subsequent instructions on the screen to configure the SIMATIC IPC.

After you have provided all necessary information and the operating system is configured, the user interface of the Windows Embedded operating system automatically appears.

The "SIMATIC IPC Wizard" makes the final settings for the touch screen.

4. Restart the computer.

Result

Once the SIMATIC IPCs has started again, the Windows Embedded operating system restarts and the SIMATIC IPC is ready for use.

Note**Replacing the mass storage medium**

The mass storage medium is already installed in your SIMATIC IPC. If replacement becomes necessary, the mass storage medium can only be replaced on hardware systems with identical processors.

Additional information

Refer to the SIMATIC IPC documentation for more information on commissioning.

2.2 Preset configurations

2.2.1 General information

The information provided in the following sections relates to examples for preset configurations of the SIMATIC IPC427D/IPC477D Bundles.

Notes on the preset configurations

The following information applies to all preset configurations.

Note

Windows Firewall is enabled. All necessary SIMATIC protocols are registered in the Firewall as exceptions. You can use CP 5622 or the Industrial Ethernet interface to load STEP 7 projects.

You do not have to perform any additional configuration in the PC Station or in WinLC Properties. WinLC RTX submodules communicate in the RTX environment, and the PC Station components communicate in the Windows Embedded environment.

Note

If it becomes necessary for any reason to reconfigure your PC Station using the Station Configuration Editor, you have to select the "IE General" option for the Industrial Ethernet interface.

You can connect other devices such as a mouse, keyboard, or storage device to the hardware platform via the USB ports. You can use the DVI-I interface to connect a monitor. A monitor, USB mouse, and USB keyboard are necessary only for user interaction with the controller or with other software. To use the Restore DVD, you need a USB DVD-ROM drive. You only need a storage device for licensing or restoring your installation, but not for operating WinLC RTX. Alternatively, a bootable USB stick can be generated as a recovery medium using the Restore DVD.

The hardware platform includes NVRAM. You can use this non-volatile RAM for retentive data storage. WinAC RTX is preset for storing up to 128 KB of retentive data in the integrated, battery-backed NVRAM of the hardware platform.

If retentive data exceeds a length of 128 KB, you need to set the "Save to HDD" function in the Data Storage tab on your Panel. A CompactFlash card is used to store files on the hardware platform. Protect your system using an uninterruptible power supply (UPS) in order to prevent the loss of retentive data on power failure.

You will usually require the enhanced write filter (EWF) to protect the C:\ drive of the CompactFlash card. Set up the EWF accordingly if using drive C:\ to store files. The EWF usually remains disabled for drive D:\. It is therefore not necessary to take any particular action for storing data on drive D:\.

For information on the configuration of WinAC Data Storage, refer to the WinAC RTX documentation.

In addition to this documentation, you can find technical specifications and other information in the SIMATIC Embedded Bundles product documentation. For comprehensive information on WinAC RTX and using WinAC RTX for PC-based automation solutions, refer to the attached WinAC RTX documentation.

2.2.2 Preset configuration -HMI PROFIBUS (DP)

The HMI software package includes the Windows Embedded operating system, WinCC RT Advanced and integrated communication interface CP 5622. All software is pre-installed and pre-configured on your hardware platform. No additional installations or configurations are required. However, you can use the "SIMATIC IPC Wizard" to make the settings for the display of the SIMATIC IPC.

-HMI configuration

The HMI software package does not include a configuration for the PC station. You transfer WinCC projects directly from the engineering station to WinCC RT Advanced on the hardware platform. You can perform transfers over the following channels:

- Standard:
 - Serial
- Optionally configurable:
 - MPI
 - USB

You can connect other devices such as a mouse, keyboard, or storage device to the hardware platform via the USB ports. To use the Restore DVD, you need a USB DVD-ROM drive or the generated USB stick.

The hardware platform uses a mass storage medium to store data. You usually use the enhanced write filter (EWF) to protect the C:\ drive when using a mass storage medium. For WinCC RT Advanced, we recommend a D:\ drive on the mass storage medium with disabled EWF.

2.2.3 Pre-configured -RTX, -HMI/RTX PROFINET (PN RT)

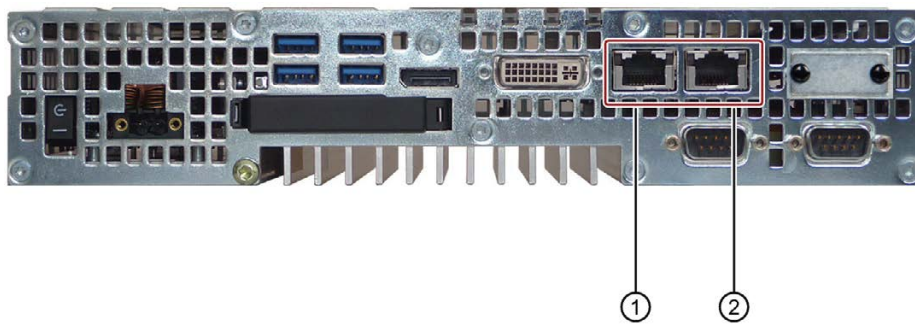
The PN software package includes the Windows Embedded operating system, WinAC RTX, and an integrated IE General. All software is pre-installed on your hardware platform and pre-configured. You do not have to perform any additional installation or configuration.

Software and interface configurations for SIMATIC use

Index	Software	Hardware
1	OPC Server	
2	WinLC RTX *1)	
	IF1	
	IF2	IE General
	IF3	
	IF4	
3	IE General	PN/IND.ETHERNET (LAN) X2 P1
4	WinCC RT Advanced *2)	
5		

*1) also applies to WinLC RTX F

*2) WinCC RT Advanced only for -HMI/RTX and -HMI/RTX F configurations



- ① PN/IND.ETHERNET (LAN) X1 P1
- ② PN/IND.ETHERNET (LAN) X2 P1

Figure 2-1 Connection elements of a SIMATIC IPC427D Bundle

SIMATIC Embedded Bundle Interface default settings

Interface	Configuration	Usage
ETHERNET 1 (IE General, PROFINET)		
IP address	0.0.0.0	Using WinLC RTX: <ul style="list-style-type: none"> • PROFINET IO Controller • CBA • S7 communication • OUC
Subnet mask	255.255.255.0	
ETHERNET 2 (IE General, Windows communication)		
IP address	192.168.1.2	Using Windows: <ul style="list-style-type: none"> • For SIMATIC PG or SIMATIC HMI access • S7 communication • For standard Windows Ethernet communication
Subnet mask	255.255.255.0	

2.2.4 Pre-configured -RTX, -HMI/RTX PROFIBUS (DP)

The RTX DP software package includes the Windows Embedded operating system, the WinAC RTX software package and the integrated CP 5622 and Industrial Ethernet communication interfaces. All software is pre-installed on your hardware platform and pre-configured. You do not have to perform any additional installation or configuration.

Software and Interface configurations for SIMATIC use

Index	Software	Hardware
1	OPC Server	
2	WinLC RTX *1)	
	IF1 CP 5622	MPI/DP X4 (COM X3)
	IF2 IE General	PN/IND.ETHERNET (LAN) X1 P1
	IF3	
	IF4	
3	IE General	PN/IND.ETHERNET (LAN) X2 P1
4	WinCC RT Advanced *2)	
5		

*1) also applies to WinLC RTX F

*2) WinCC RT Advanced only for -HMI/RTX and -HMI/RTX F configurations



- ① PN/IND.ETHERNET (LAN) X1 P1
- ② PN/IND.ETHERNET (LAN) X2 P1
- ③ MPI/DP X4 (COM X3)

Figure 2-2 Connection elements of a SIMATIC HMI IPC477D Bundle

SIMATIC Embedded Bundle Interface default settings

Interface	Configuration	Usage
ETHERNET 1 (IE General, PROFINET)		
IP address	0.0.0.0	Using WinLC RTX: <ul style="list-style-type: none"> • PROFINET IO Controller • CBA • S7 communication • OUC
Subnet mask	255.255.255.0	
ETHERNET 2 (IE General, Windows communication)		
IP address	192.168.1.2	Using Windows: <ul style="list-style-type: none"> • For SIMATIC PG or SIMATIC HMI access • S7 communication • For standard Windows Ethernet communication
Subnet mask	255.255.255.0	
PROFIBUS		
PROFIBUS address	2	Using WinLC RTX: <ul style="list-style-type: none"> • PROFIBUS DP Master • S7 communication
Baud rate	1.5 Mbps	

2.3 Transferring license keys

License key

The license key is located on a USB stick that ships with the product. To transfer the licenses, you need the Automation License Manager (ALM). The ALM is installed on your SIMATIC IPC.

Transferring license key from a central location

Proceed as follows to transfer the license key from a central location:

1. Open the Automation License Manager with the menu command **Start > All Programs > Siemens Automation > Automation License Manager**.

The Automation License Manager opens.

2. To open the "Management" view, select the menu command **View > Management**.
3. Open the storage location from which you want to remove a license key.
4. Select the license key and drag-and-drop it to the location where you want to insert the license key.

Transferring license key from a remote computer

Proceed as follows to transfer a license key from a remote computer (for example, from your engineering PC) via the network:

1. Ensure that the Automation License Manager is installed on both computers.
2. Select the menu command **Start > All Programs > Siemens Automation > Automation License Manager**.
3. Select the menu command **Edit > Connect Computer**.

The "Connect Computer" dialog opens.

4. Enter the name of the computer or the port to which you want to connect.
5. Confirm with "OK".
6. Transfer the license key by dragging it with the mouse.

The license key is transferred.

Additional information

For more information about transferring license keys, refer to the online help of the Automation License Manager.

2.4 Logon for remote desktop access

User for remote access in Windows Embedded

A user has to be created in Windows Embedded when you set up the system for the first time. You can employ this user for remote access to SIMATIC IPC.

User tasks

3.1 Creating a STEP 7 project and configuring the hardware

This topic applies to Bundles RTX, RTX F, HMI/RTX and the HMI/RTX F only. This does not apply to the HMI bundles.

Using a STEP 7 project

To use a STEP 7 project with SIMATIC Embedded Bundle, follow these steps:

1. Create a STEP 7 project.
2. Add a PC Station (-RTX/ -RTX F) or HMI Station (-HMI/RTX, -HMI/RTX F) to the project.
3. Configure the hardware to correspond to the default configuration.
4. Before downloading the program and configuration, comply with the required conditions for program and configuration downloads.
5. Finalize your SIMATIC Embedded Bundle for operation by enabling the Enhanced Write Filter (EWF) and documenting any special settings.

Note

If you work with the RTX, RTX F, HMI/RTX or HMI/RTX F bundles, your hardware configuration must match the default one.

Note

You will find some basic projects for your configurations in the root of the SIMATIC Embedded Bundle Manual Collection DVD.

Hardware configuration

The original configuration of bundles RTX, RTX F, HMI/RTX or HMI/RTX F includes the following components:

-HMI/RTX configuration:

The figures below show the STEP 7 configuration for the -HMI/RTX with PROFIBUS DP and PROFINET communications processors:

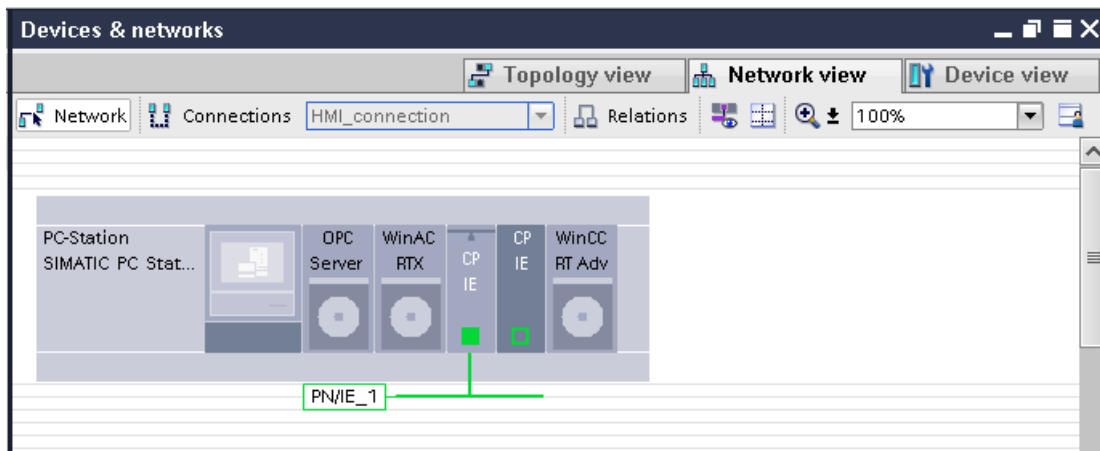


Figure 3-1 -HMI/RTX PN RT STEP 7 configuration

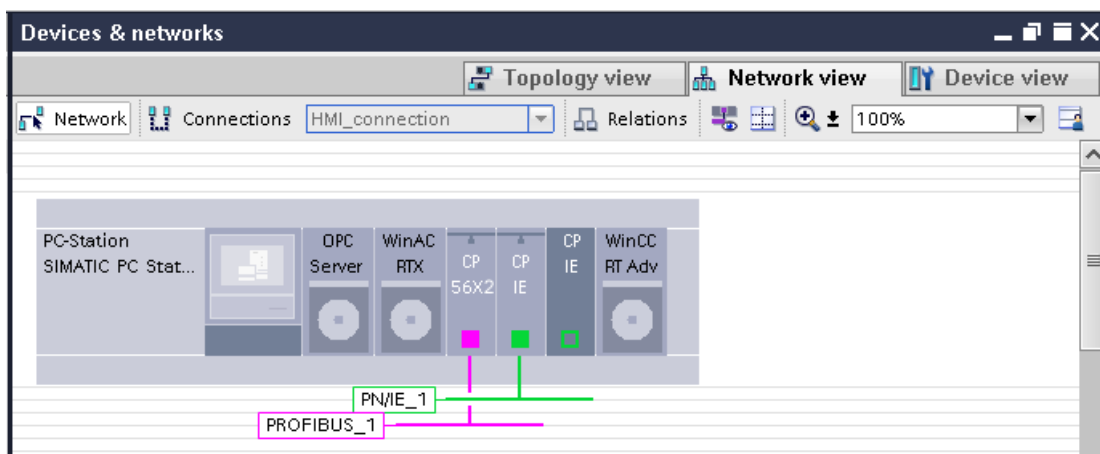


Figure 3-2 -HMI/RTX DP STEP 7 configuration

-RTX Configuration:

The figures below show the STEP 7 configuration for the -RTX with PROFIBUS DP and PROFINET communications processors:

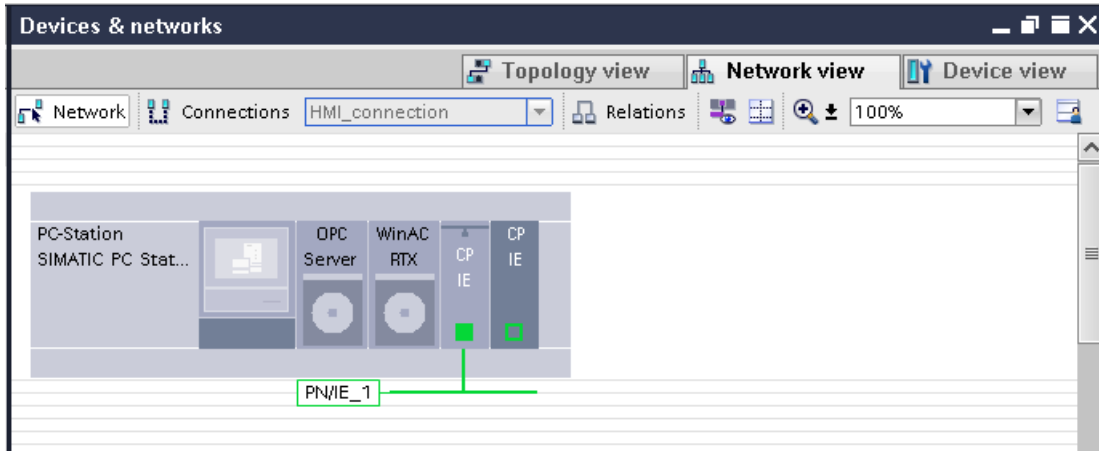


Figure 3-3 -RTX PN RT STEP 7 configuration

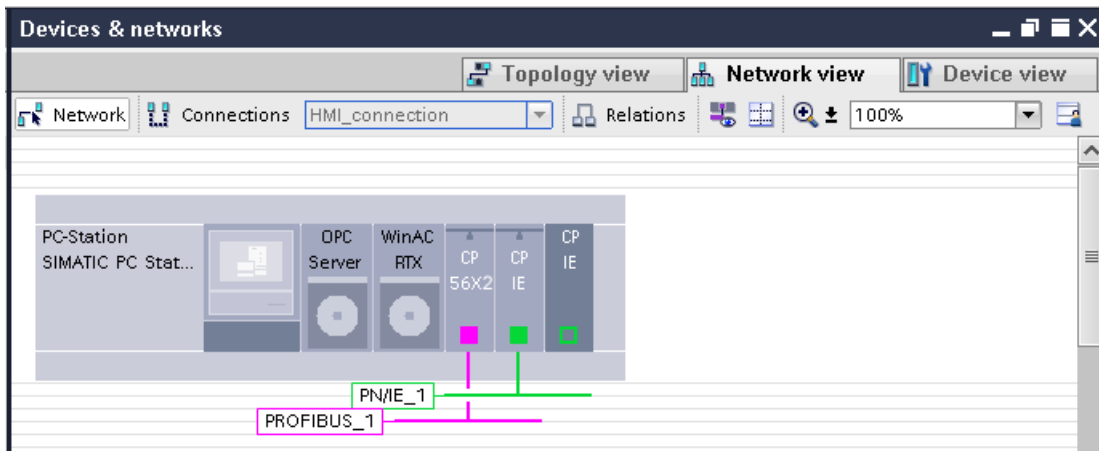


Figure 3-4 -RTX DP STEP 7 configuration

Changing properties

To change the properties of an object on the PC station, follow these steps:

1. Open the network view or device view in your STEP 7 project.
2. Select the respective object.
3. Open the "General" tab in the Inspector window.
4. Make the necessary changes.

Note

Configuring "IE General" in index 3 of the PC station

If you configure the Industrial Ethernet interface "IE General" in Index 3 of the PC Station, make sure that you use the IP address and subnet mask configured in the Windows Control Panel of the SIMATIC IPC target device.

The default IP address is 192.168.1.2 and the default subnet mask is 255.255.255.0. If you use a different IP address, subnet mask, or if you use a gateway, configure these values in both the Windows network configuration and in STEP 7. See the topic "Configuring the Windows Ethernet interface (Page 21)" for more information.

3.2 Configuring the Windows Ethernet interface

This topic applies only to RTX, RTX F, HMI/RTX and HMI/RTX F bundles. It does not apply to HMI bundles. The pre-configuration of the Ethernet connections, however, is the same for all SIMATIC Embedded Bundles.

Specifying the Ethernet address

Note

The Ethernet address and subnet mask of the Ethernet interface used with Windows will not be changed by a download of a STEP 7 project into the PC-Station.

To specify the Ethernet address for the interface used with Windows and SIMATIC-communication, follow these steps:

1. Open the Windows control panel.
2. In the Control Panel, select **Network and Internet > Show network status and tasks > Local Area Connection**.
3. Click the "Properties" button in the "Local Area Connection Status" dialog.
4. Scroll to and double-click the "Internet Protocol (TCP/IP)" connection from the list.

3.2 Configuring the Windows Ethernet interface

5. In the "Internet Protocol (TCP/IP) Properties" dialog, select the option "Use the following IP address" and enter the required IP address and subnet mask (the defaults are "192.168.1.2" for the "IP address" box and "255.255.255.0" for the "Subnet mask" box):

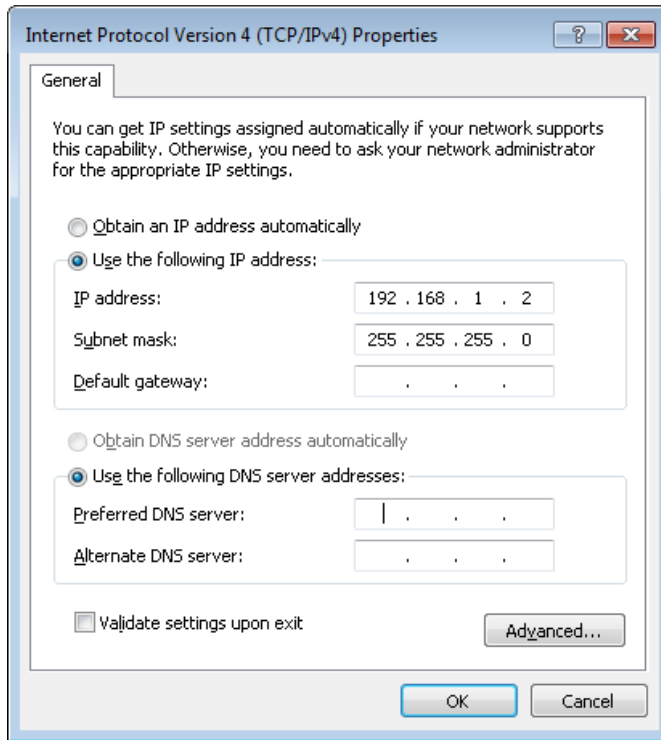


Figure 3-5 Ethernet Control Panel configuration

6. Confirm the dialogs "Internet Protocol (TCP/IP) Properties" and "Local Area Connection Properties" with "OK".
7. Close the remaining dialogs.

Entering the selected IP address in the STEP 7 project

If you use a different IP address, subnet mask or gateway for the Ethernet interface, configure this IP address or the other parameters for the SIMATIC Embedded Bundles and for the "IE General" properties in STEP 7.

To configure the IP address in STEP 7, follow these steps:

1. Open the device view in your STEP 7 project.
2. Select "IE General" in Index 3 of the PC station.
3. Open the "General" tab in the Inspector window.
4. Select the item "PROFINET interfaces > Ethernet addresses".
5. Enter the required properties.

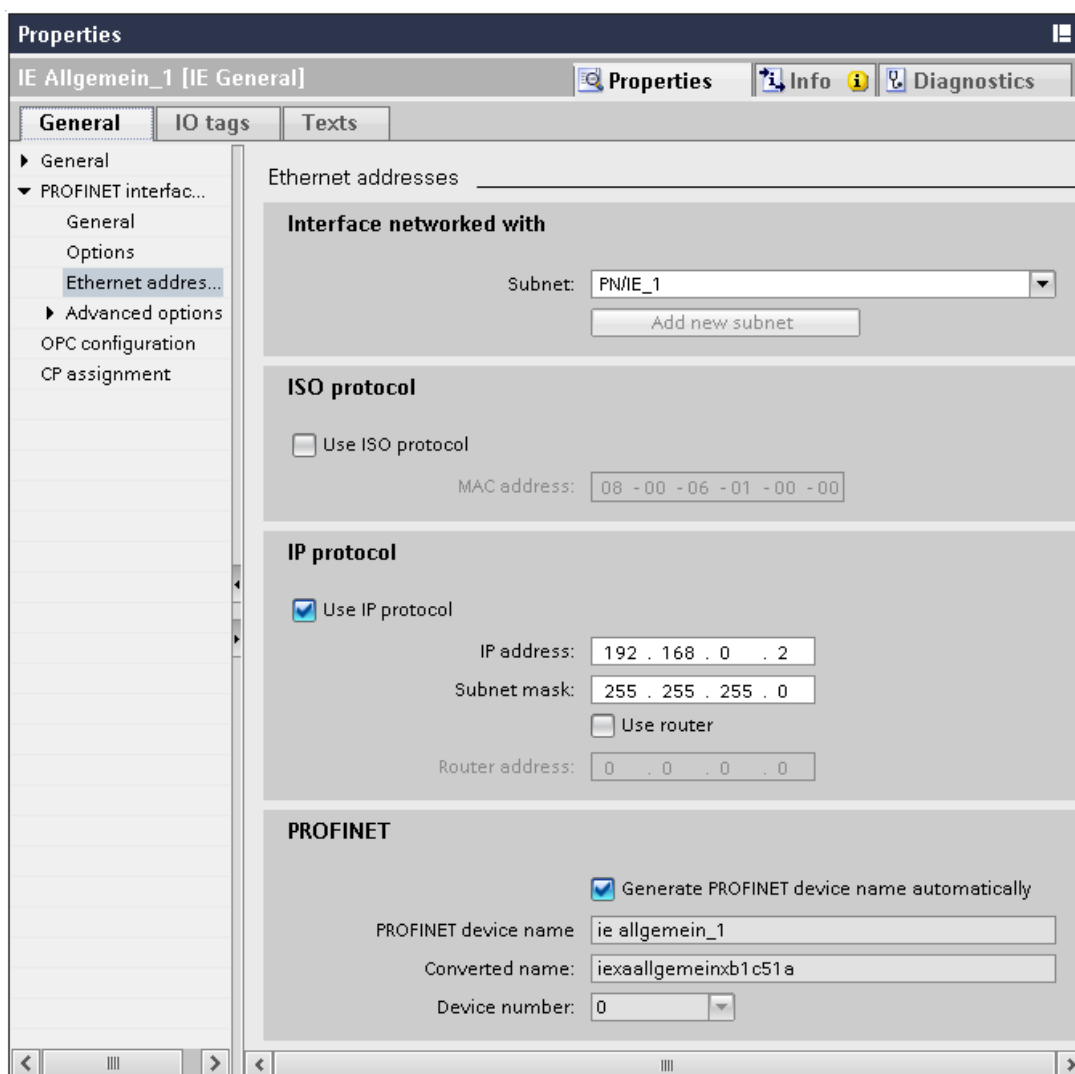


Figure 3-6 IE General properties in STEP 7

3.3 Configuring a WinCC project

The Bundle HMI includes WinCC RT Advanced with recipe and archiving functions.

You need to configure your project with WinCC RT Advanced. You can then transfer the project from the engineering station PC to WinCC RT Advanced to the SIMATIC IPC. WinCC Advanced is a stand-alone product that is not included in the SIMATIC Embedded Bundle product package.

The runtime configuration file settings for the default administrator user ("Administrator") are pre-configured to D:\ locations. If you create a new Windows user on the SIMATIC IPCs, the new user is automatically assigned the same runtime configuration file settings as the default administrator ("Administrator"). You do not need to change the runtime settings for the "Administrator" default user or for a new Windows user. A D:\ drive is required for WinCC RT Advanced on the mass storage medium with disabled Enhanced Write Filter (Page 28) (EWF).

Changing runtime settings

To change the runtime settings for a new Windows user, follow these steps:

1. Log on to the PC with the new Windows user name and password.
2. Select the menu command **Start > Programs > Startup** to change the RT Loader settings.
3. In the Directories group box, change the locations for "Configuration file" and "Configuration backup file" to D:\ drive locations, but do not modify the "Autostart application" location:

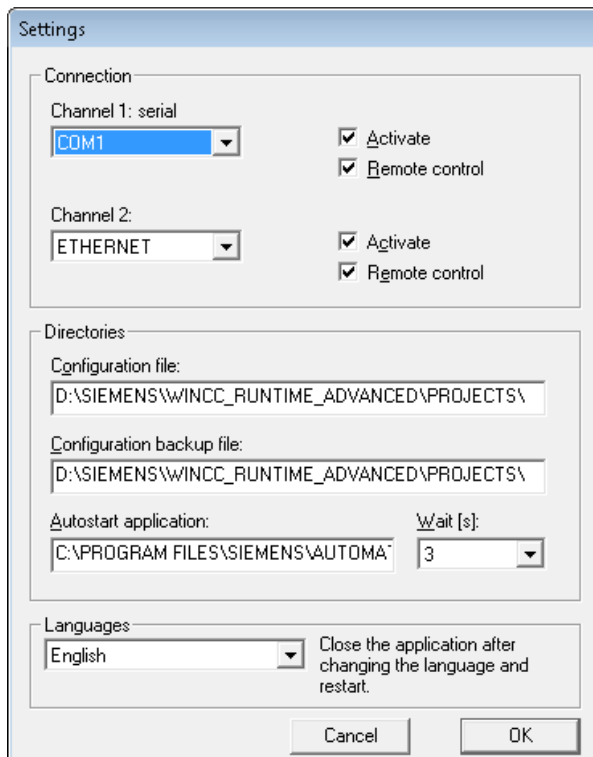


Figure 3-7 WinCC RT Advanced Loader settings

4. Confirm with "OK".

Result

Your runtime settings are now configured to be retained after a reboot.

The default settings for recipes and archives also specify file locations on the D:\ drive. If you use these options, change these default settings to specify file locations on the D:\ drive as well. Refer to the WinCC Advanced documentation for help on configuring recipes and archives.

3.4 Downloading components of the PC station

Required conditions for program and configuration download

Check the following conditions before you download:

Download task	Required conditions
Complete the download of the PC Station.	Make sure that the Enhanced Write filter is in the Disabled state.
Downloading PC Station components	Make sure that you are logged in as an Administrator.
Download the PLC program of WinLC RTX only.	With the standard configuration, you can download the PLC program at any time.
Download configuration data of WinLC RTX and the CP 5622 or CP 1616.	With the standard configuration, you can download the configuration data of WinAC RTX at any time. If any of the configuration data affects configuration information of the entire PC Station (such as changing address and bus settings of the PROFIBUS interface associated with WinAC RTX), perform a complete download of the PC Station.
Download configuration data for the OPC Server or IE General.	The download is only possible if the Write filter is in the Disabled state.

Procedure

If you need to change and download the configuration of the PC Station (for example, if you want to add WinCC RT Advanced to the configuration, or if you want to download the OPC Server configuration), follow these steps:

1. Commit existing data to the flash card and disable the Enhanced Write Filter (EWF) by entering the following command from the command prompt:
ewfmgr c: -commitanddisable
2. Reboot your computer.
3. Click the Enable Station button in the Station Configuration Editor.

If the Station Configuration Editor displays a Disable Station button, then the Station is already enabled.

3.4 Downloading components of the PC station

4. From STEP 7, download the PC Station or PC Station components for your project or add WinCC RT Advanced to the configuration.
5. Re-enable the Enhanced Write Filter by entering the following command from the command prompt:
ewfmgr c: -enable
6. Reboot your computer.

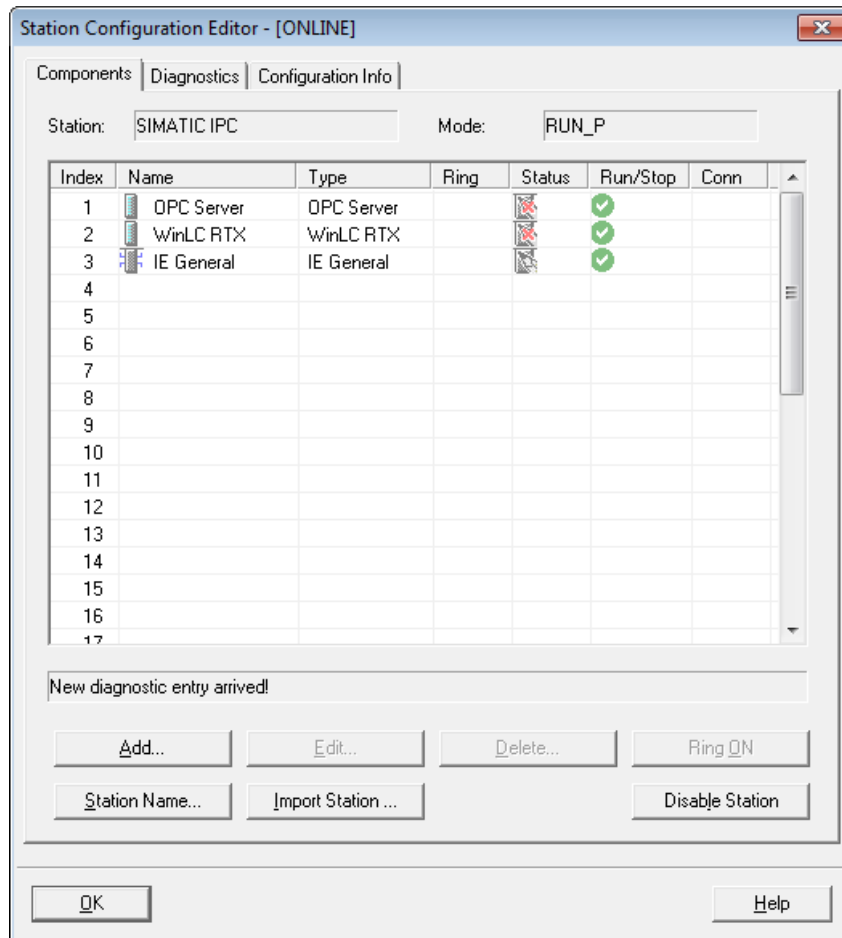


Figure 3-8 Downloading PC Station components

Note

You cannot load WinCC RT Advanced via PROFINET or PROFIBUS if the interfaces are submodules of WinAC RTX. In this case, you must load the WinCC RT Advanced project via a second Ethernet interface or by USB transfer.

Finalizing your SIMATIC Embedded Bundle for operation

To make your SIMATIC IPC ready for operation, follow these steps:

1. Set the Enhanced Write Filter to the "Enabled" state for the C:\ drive.
2. Document any special settings (for example, changes to the IP address) for the SIMATIC Embedded Bundle that you made during your application development.
3. Store them along with your STEP 7 or WinCC RT Advanced project.

Note

Enhanced Write Filter

Leaving the Enhanced Write Filter in the default "Disabled" state may lead to an early failure of the mass storage medium, due to ongoing write access of the operating system. See the topic "Managing the Enhanced Write Filter (Page 28)" for details.

3.5 Setting up the retentive alarm buffer

Setting up the retentive alarm buffer

WinCC RT Advanced provides the "Retentive alarm buffer" function for SIMATIC IPCs. The alarm buffer for WinCC RT Advanced alarms is retentive (protected against voltage failure) and stored on a partition especially reserved for it. This partition has the drive name "WinCCMB". The alarm buffer operates as a circular buffer and stores up to 1024 messages.

The retentive alarm buffer is already set up for SIMATIC Embedded Bundles. The WinCC RT Advanced alarms are automatically stored on the exclusively reserved partition.

Additional information

If the reserved partition no longer exists, you must create it under the Windows operating system.

For more information on the retentive alarm buffer, refer to the readme file on the Restore DVD and the corresponding FAQ on the Internet

(<http://support.automation.siemens.com/WW/view/en/59844876>).

3.6 Managing the Enhanced Write Filter

Definition

The Enhanced Write Filter (EWF) is a Windows Embedded utility.

Most mass storage media only permit a limited number of write operations. The EWF can minimize the write operations to mass storage media. We therefore recommend that you enable the EWF when you use mass storage media. When the EWF is enabled, Windows Embedded does not write data to the mass storage medium. Instead, the file write operations remains in virtual (RAM) memory.

Functionality

The stored file information looks the same, regardless of whether it is actually located on the mass storage medium or in virtual memory. Users do not notice any differences when they look at the file contents. The type of file storage only becomes evident when you reboot the PC or the PC loses power. The data on the mass storage medium is retained. All data in virtual memory is lost and the PC restarts with the file contents of the mass storage medium.

You can configure the EWF to store data that must be retained after a reboot. If you disable the EWF, all files are written to the mass storage medium. This means all data remains available even after a power failure. This greatly reduces the service life of the mass storage medium.

Note

The default setting for EWF is "disabled" for the D:\ and C:\ drives of the SIMATIC Embedded Bundles. To protect the mass storage medium from premature failure, enable the EWF for drive C:\ once all applications and software components have been installed.

Using the EWF

Microsoft provides the command line program "ewfmgr" for operating the EWF. Configuration and status requests are entered exclusively by command line.

Note

After you enter commands, you must reboot the computer for the "ewfmgr" commands to take effect.

To use the command line program, follow these steps:

1. Open a command prompt window.
2. Enter "ewfmgr" followed by a drive designation and a command as illustrated.
3. Reboot the computer for the command to take effect.

Note

Using the EWF with the SIMATIC IPC EWF Manager

Operating the EWF is easier and more convenient with the SIMATIC IPC EWF Manager.

The status of selected partitions can be displayed and monitored in the icon tray of the Windows taskbar. You can also configure the EWF using a graphical user interface.

The available "ewfmgr" commands are shown below for the C:\ drive.

Enable the EWF

Command: ewfmgr c: -enable



Writing data to a mass storage medium:

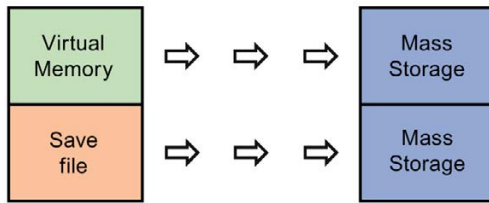
Command: ewfmgr c: -commit



The "commit" EWF command writes all data that has accumulated in virtual memory at that time to the mass storage medium. The EWF is not disabled.

Writing data to a mass storage medium and disabling the EWF:

Command: ewfmgr c: -commitanddisable



The EWF command "commitanddisable" disables the EWF. All data that has accumulated in virtual memory is then written to the mass storage medium. This command is typically followed by an enable command for the EWF to once again protect the drive on the mass storage medium.

Note that the original state of the EWF is "disabled". Following a "commitanddisable" command, use the "enable" command to protect the mass storage medium. All subsequent data writes will go to virtual memory.

File-Based Write Filter (FWBF)

You can use also an FBWF to protect a mass storage medium.

Additional information

Refer to the documentation for your SIMATIC IPC device for more information on the topic of EWF.

You can find additional information on the SIMATIC IPC EWF Manager on the Internet (<http://support.automation.siemens.com/WW/view/en/50867677>).

You can find additional information on the FBWF on the internet ([http://msdn.microsoft.com/en-us/library/aa940926\(WinEmbedded.5\).aspx](http://msdn.microsoft.com/en-us/library/aa940926(WinEmbedded.5).aspx)).

3.7 Creating an image of your system

After you have configured the SIMATIC IPC device for your application, you can create an image of your system using the "SIMATIC IPC Image & Partition Creator". You can use this image later to restore your custom application to your system, if necessary.

This system image on a custom Restore DVD is useful if you need to restore all of the files and registry settings for your application. You can also use the BIOS Manager tool to save BIOS settings if you changed them from the initial settings.

If your system hardware fails, you can then restore your application from this system image (custom Restore DVD), and, if applicable, restore the BIOS settings that you saved.

Note

You cannot restore the pre-installed WinAC RTX license key on the SIMATIC Embedded Bundle using the custom Restore DVD. Uninstall the WinAC RTX license key and all other SIMATIC license keys before you make a custom Restore DVD in the Automation License Manager. Keep in mind that each SIMATIC license key is only valid for one PC, if you want to use the custom Restore DVD for multiple installations.

Basic procedure

To create a system image (custom Restore DVD), follow these steps:

1. Make all user-specific settings for your application. This includes the following tasks:
 - Download a STEP 7 user program
 - Changing the original configuration in the Station Configuration Editor
 - Installation of user-specific software
 - Configuration of WinAC data storage (only bundles with RTX)
 - Transfer of a WinCC Advanced project
2. Uninstall the SIMATIC license.
3. Create the system image, for example, using the "Image and Partition Creator" for SIMATIC IPC.

Note

Information on the Image Creator

The Image Creator is part of the Siemens-supplied tools "SIMATIC IPC Image and Partition Creator" or "SIMATIC IPC Service USB FlashDrive". You can find ordering information for the Image Creator in: Industry Mall (<http://mall.automation.siemens.com/>). Refer to the Image Creator instructions for additional help on making and restoring system images.

Recovery and Maintenance

4.1 Restore the original configuration

The SIMATIC Embedded Bundle product includes a Restore DVD without license key that you can use to restore your system to the original configuration. You can restore from a custom Restore DVD that includes all of your files and registry settings, as described in the section Creating an image of your system (Page 31).

NOTICE

Restore process with an internal and removable mass storage

When restoring a SIMATIC Embedded Bundle with internal and removable mass storage, the operating system is automatically stored on the removable storage media. If you want to store it on the internal mass storage medium, you will need to remove the exchangeable mass storage first.

Effectiveness

Restoring from the Restore DVD removes all applications and existing user data on the selected drive. A restore also erases license keys and reloads the registry with initial values. When a restore is performed, the entire WinAC RTX load memory and the retentive data of the SIMATIC IPC is deleted.

When a DVD drive is not available, a "Restore USB flash drive" can also be created with the Restore DVD. Select the drive to be restored in the Restore menu. All storage media can remain plugged in.

Restore process

To restore your original configuration from the SIMATIC Embedded Bundle Restore DVD, follow these steps:

1. Use the Automation License Manager to transfer the WinCC license key from the SIMATIC Embedded Bundle to a storage medium, for example, a USB stick.
2. Connect a USB DVD-ROM drive to your SIMATIC Embedded Bundle and insert the Restore DVD.
3. Follow the instructions to restore from the Restore DVD.
4. Transfer the license key(s) back from the storage device to the SIMATIC Embedded Bundle.

After the restore is complete, your system consists of the original configuration for the SIMATIC Embedded Bundle.

Additional information

For more information on restoring from a custom Restore DVD, refer to section Creating an image of your system (Page 31).

4.2 Configuring the touch screen

4.2.1 Calibrating the touch screen

Overview

Various drivers are installed when the "SIMATIC IPC Wizard" is run. The wizard automatically detects the type of SIMATIC Embedded Bundle, selects it and automatically calibrates the touch screen. If the touch screen does not react as expected when touched during operation, repeat the calibration procedure.

The following two calibration types are available to recalibrate the touch screen:

- Standard 3-point calibration (Page 34)
- Extended 25-point calibration (Page 35)

Note

Behavior during recalibration

Only touch one point on the touch screen and not several points at a time. Do not touch the screen during the booting process, when plugging or unplugging USB components or while Scandisk is running. Otherwise recalibration will not be performed correctly.

Additional information

Refer to the documentation for SIMATIC IPC477D (<http://support.automation.siemens.com/WW/view/en/67235060/0/en>) for more information on the SIMATIC IPC Wizard.

4.2.2 Standard 3-point calibration

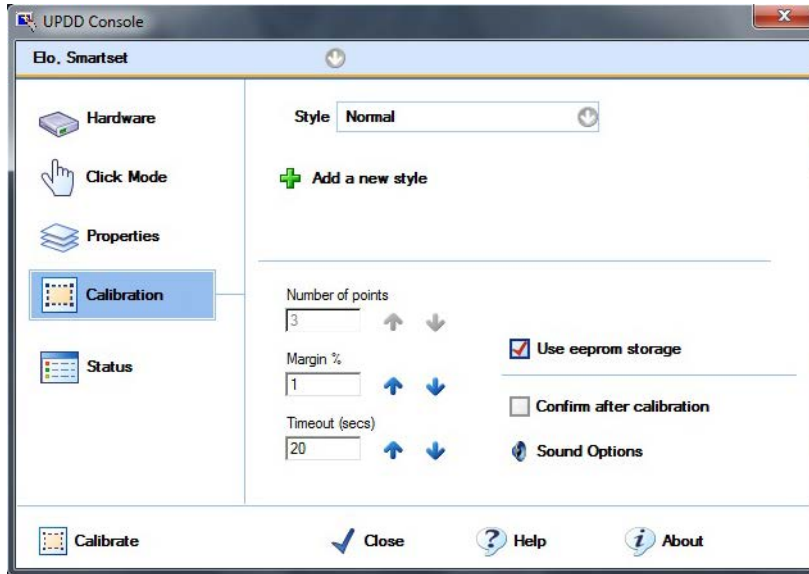
Procedure

To recalibrate the touch screen with three points, follow these steps:

1. Select "Start > Programs > UPDD > Settings".

The "UPDD Console" dialog box opens.

Select the touch controller of the device you want to calibrate in the header of the dialog.



2. Click the "Calibration" tab.
3. Activate the option "Use eeprom storage". For Touch Controllers with EEPROM, the option box is pre-selected.
The option box "Number of points" shows "3-point calibration".
4. Click the button "Calibrate".
The calibration screen is displayed in the selected display.
5. Quickly touch the selections one after the other.
The entry is confirmed by a check mark, the next selection is displayed.
6. Confirm all input prompts (arrows, or crosses in the center) until the complete screen has been calibrated.

Note

If the screen does not respond to touch as expected, check the controller selected under "1." in "UPDD Console" and repeat the calibration. Only an active touch controller can be calibrated. A removed touch controller is displayed in red.

If the accuracy of this 3-point calibration is not sufficient, you can clear the "Use eeprom storage" option box and use the extended 25-point calibration instead.

4.2.3 Extended 25-point calibration

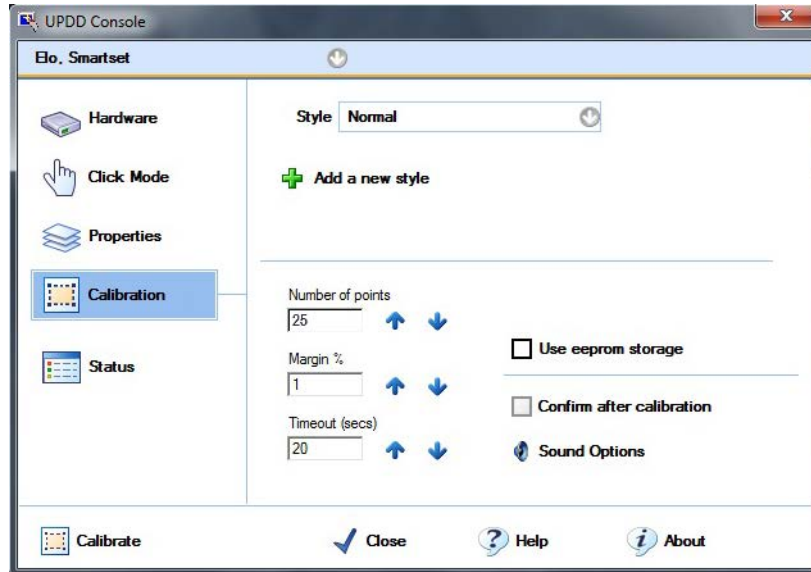
Procedure

To recalibrate the touch screen with 25 points, follow these steps:

1. Select "Start > Programs > UPDD > Settings".

The "UPDD Console" dialog box opens.

Select the touch controller of the device you want to calibrate in the header of the dialog.



2. Click the "Calibration" tab.
3. Deactivate the option "Use eeprom storage".
4. Enter the value "25" under "Number of points".
5. Click the button "Calibrate".
The calibration screen is displayed in the selected display.
6. Touch the selections one after the other.
The entry is confirmed by a check mark, the next selection is displayed.
7. Confirm all input prompts (arrows, or crosses in the center) until the complete screen has been calibrated.
8. Finally, confirm the input prompt "Confirm".

4.3 Having SIMATIC Embedded Bundle repaired

Send in for repair

If you need to send in your SIMATIC IPC for repair, make the following preparations:

1. Move your licenses to an external storage medium, for example, a USB stick or a network drive.
2. Create a backup of your storage medium.
3. Save or make a note of your BIOS settings, if you changed them from the initial settings.

Receive from repair

When your SIMATIC IPC is returned by the repair center, follow these steps to restore it:

1. Set the correct BIOS settings.
2. Recreate your storage medium using the backup copy.
3. Move the licenses from the external storage medium back to the SIMATIC IPC.

4.4 Maintenance of the backup battery

Replace the backup battery at regular intervals

The service life of the battery is about 5 to 8 years depending on the ambient conditions. Replace the backup battery at regular intervals.

Additional information

Refer to the documentation for your SIMATIC IPC for more information on handling the backup battery.

4.5 WinAC Data Storage when executing WinAC ODK programs

Protecting data during power loss

The WinAC Data Storage allows you to configure the integrated NVRAM of the SIMATIC Embedded Bundle for retentive data storage. WinAC ODK programs, however, can interfere with storing retentive data on NVRAM.

If you are executing a WinAC ODK program on a computer that has the "NVRAM Storage" choice available, choose "File Storage" from the WinAC Data Storage tool for the retentive data and use a UPS (Uninterruptible Power Supply). This action protects the data during a power loss.

4.6 Replacing CFast cards

Procedure

If you have configured the WinAC data storage on a SIMATIC IPC to be NVRAM, and you need to replace the CFast card, you can transfer the retentive data from the NVRAM. To do this, you must first create an image of the CFast card using the "SIMATIC IPC Image & Partition Creator".

To replace the CFast card, follow these steps:

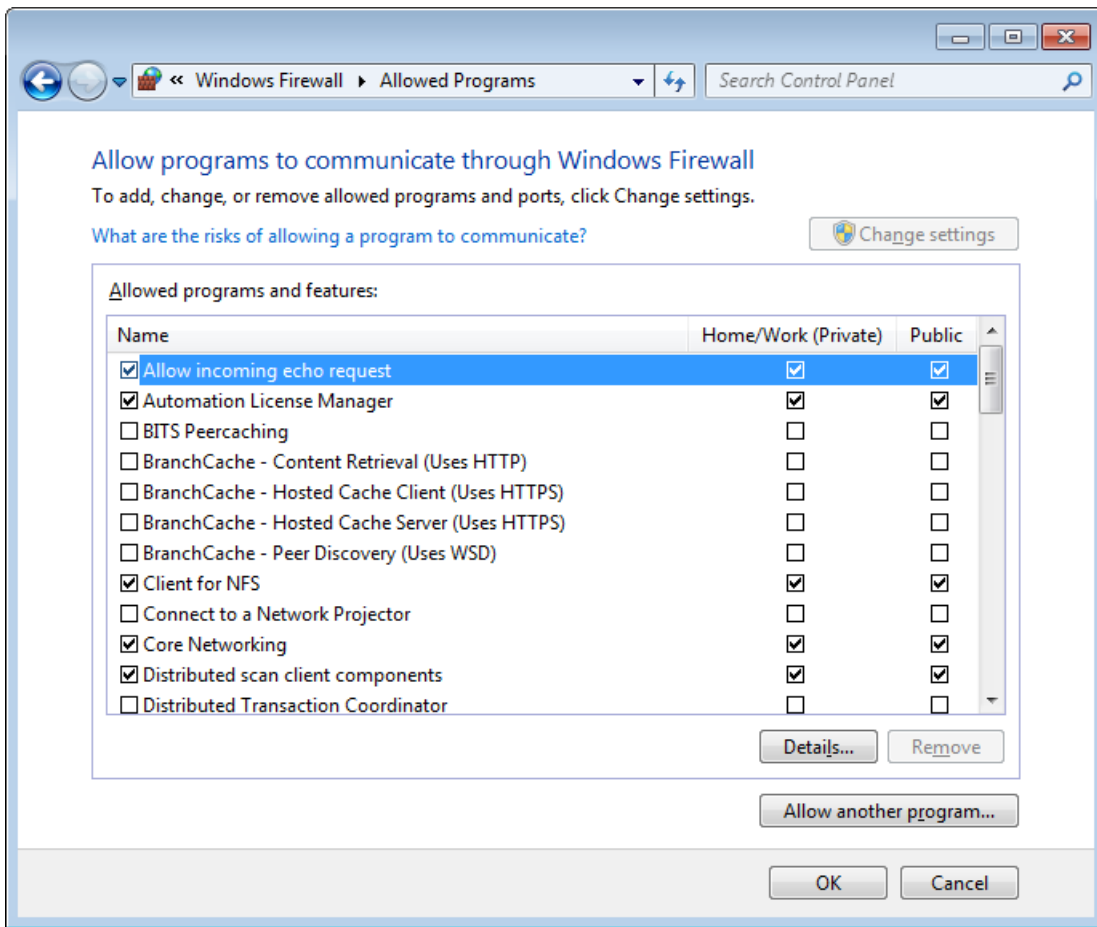
1. Replace the CFast card in the SIMATIC IPC.
2. Transfer the previously created image to the new CFast card.
3. Perform a memory reset (MRES) after you restart WinAC RTX.
4. Reload the user program and the configuration.

4.7 OP/S7 connections of a remote device

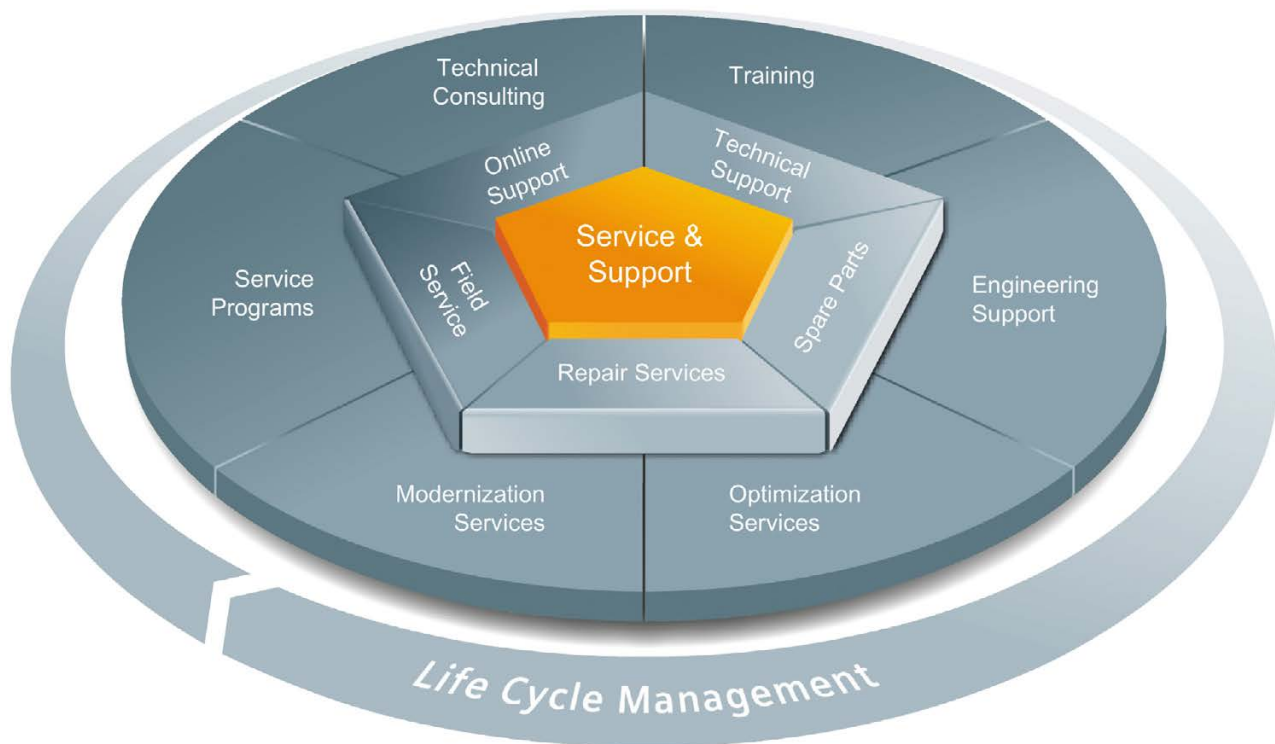
OP/S7 connections do not work

If OP/S7 connections from remote devices do not work, check whether the "Allow incoming echo request" check box is selected in the ICMP Settings dialog.

To do this, select **System and Security > Windows Firewall > Advanced settings > ICMP settings** in the Control Panel.



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