

SIEMENS

SIMATIC

Embedded Automation

Microbox 427B-HMI/ -RTX/ -HMI/RTX
Panel PC 477B-HMI/ -RTX/ -HMI/RTX

Manual

Preface

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This documentation is part of the SIMATIC Embedded PC package.

Legal information

Warning notice system

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

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

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Qualified Personnel

The device/system may only be set up and used in conjunction with this documentation. Commissioning and operation of a device/system may only be performed by **qualified personnel**. Within the context of the safety notes in this documentation qualified persons are defined as persons who are authorized to commission, ground and label devices, systems and circuits in accordance with established safety practices and standards.

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 adhered to. The information in the relevant documentation must be observed.

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Disclaimer of Liability

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

Preface

Purpose of the Documentation

This documentation describes the unique features and pre-installed system configuration of the following SIMATIC Embedded PCs:

- Microbox 427B-HMI
- Microbox 427B-RTX
- Microbox 427B-HMI/RTX
- Panel PC 477B-HMI
- Panel PC 477B-RTX
- Panel PC 477B-HMI/RTX

This documentation also describes the following:

- Differences between WinAC RTX as described in the WinAC RTX documentation and the pre-installed, pre-configured WinAC RTX that executes on the Microbox 427B-RTX/ -HMI/RTX and Panel PC 477B-RTX/ -HMI/RTX.
- Differences between WinCC flexible as described in the WinCC flexible documentation and the pre-installed, pre-configured WinCC flexible that executes on the Microbox 427B-HMI/ -HMI/RTX and Panel PC 477B-HMI/ -HMI/RTX.

Prerequisites

This documentation is intended for engineers, programmers, and maintenance personnel who have a general knowledge of programmable logic controllers. Persons using this documentation also need knowledge of Windows XP / Windows XP Embedded operating systems, STEP 7 programming, and PC-based automation with WinAC RTX.

Scope

This document describes the features and the operation of the Microbox 427B-HMI/ -RTX/ -HMI/RTX and Panel PC 477B-HMI/ -RTX/ -HMI/RTX products. These products are sometimes referred to as SIMATIC Embedded PCs in this document, and the terms are interchangeable.

Changes Compared to the Previous Version

The topic "What's New?" in the Product Overview enumerates the new features of Microbox 427B-HMI/ -RTX/ -HMI/RTX and Panel PC 477B-HMI/ -RTX/ -HMI/RTX products.

Location of Documentation

The Microbox 427B-HMI/ -RTX/ -HMI/RTX and Panel PC 477B-HMI/ -RTX/ -HMI/RTX products documentation resides on the Documentation CD. The documentation does not reside on fixed storage media.

Other Manuals

You can find additional information in the following documents:

- WinCC flexible 2008 Runtime: This manual describes the complete functionality of WinCC flexible RT 2008. WinCC flexible RT 2008 is pre-installed and pre-configured on the Microbox 427B-HMI/ -HMI/RTX and Panel PC 477B-HMI/ -HMI/RTX.
- WinCC flexible 2008 Communication, Part 1 and Part 2: These manuals describe communication between WinCC flexible RT 2008 and controllers.
- WinCC flexible 2008 Compact / Standard / Advanced: This manual provides you with a complete overview of configuring with WinCC flexible. The manual supports you in creating new projects, in the procedure used during configuration, and in transferring a project to an HMI device.
- Windows Automation Center RTX (WinAC) - WinAC RTX 2008: This manual describes the complete functionality of WinAC RTX. WinAC RTX is pre-installed and pre-configured on the Microbox 427B-RTX/ -HMI/RTX and Panel PC 477B-RTX/ -HMI/RTX.
- WinAC Time Synchronization: This manual describes the configuration and operation of WinAC Time Synchronization. Microbox 427B-RTX/ -HMI/RTX and Panel PC 477B-RTX/ -HMI/RTX includes WinAC Time Synchronization and the corresponding documentation.
- Windows Automation Center (WinAC) RTX 2008 - Readme: The readme file contains important information for the installation and use of WinAC RTX 2008.
- SIMATIC NET 2007 Manual Collection: This set of manuals provides you with information about SIMATIC NET and industrial communications.
- SIMATIC Industrial PC - SIMATIC Microbox PC 427B: This manual contains information for commissioning and using the SIMATIC Microbox PC 427B.
- SIMATIC Industrial PC - SIMATIC Panel PC 477B: This manual contains information for commissioning and using the SIMATIC Panel PC 477B.
- Ardence RTX Runtime Release Notes: These release notes include the system requirements for RTX and further information about RTX.
- Ardence RTX Runtime Runtime: This is the online help system for the Ardence RTX Runtime. RTX Runtime consists of a collection of utilities and tools that allow you to control RTSS processes, measure performance for applications, modify the behavior of RTSS applications, and manage devices controlled by RTX.
- Ardence RTX Help: The online help provides information on using RTX Runtime and RTX Tools.
- Ardence RTX Tools: This online document explains the tools and utilities that help you control RTSS processes, measure performance for applications, and modify the behavior of RTSS applications.
- *PROFINET System Description*: This manual explains installation, commissioning and operation of a PROFINET system, as well as instructions and examples for programming diagnostics for I/O devices. The manual can be found on our support page (<http://support.automation.siemens.com/WW/view/en/19292127>) on the Internet.
- *From PROFIBUS DP to PROFINET IO*: This manual explains differences between PROFIBUS DP and PROFINET IO and provides assistance in migrating from PROFIBUS DP to PROFINET IO. The manual can be found on our support page (<http://support.automation.siemens.com/WW/view/en/19289930>) on the Internet.
- *PROFINET Getting Started Collection*: This manual collection includes information about configuring specific PROFINET interfaces and specific PROFINET IO devices. The

manual can be found on our support page (<http://support.automation.siemens.com/WW/view/en/19290251>) on the Internet.

- *SIMATIC Communication*: This manual provides a general overview of communication networks and communication technologies used in the automation field with an emphasis on SIMATIC products. The manual can be found on our support page (<http://support.automation.siemens.com/WW/view/en/25074283>) on the Internet.
- *SIMATIC Industrial PC System Tool XPembedded*: This manual describes the System Tool XPembedded, an easy-to-use graphical user interface for managing the Enhanced Write Filter (EWF) and Logon functions.
- *STEP 7 - Programming with STEP 7*: This manual provides basic information on how to design and program a STEP 7 user program. This manual is available on a computer with STEP 7.
- *STEP 7 - System and Standard Functions for S7-300 and S7-400*: This manual provides you with descriptions of the system functions, organization blocks, and loadable standard functions that are available for programming a STEP 7 user program. This manual is available on a computer with STEP 7.
- *STEP 7 - Working with STEP 7*: This manual explains the usage and the functions of the STEP 7 automation software. This manual describes how to configure controllers and networks. It also explains the organization and development of STEP 7 user programs. This manual is available on a computer with STEP 7.
- *STEP 7 - Statement List for S7-300 and S7-400*: This manual provides you with a complete list of instructions that are applicable for the WinAC controllers. It also provides address information and performance data. This manual is available on a computer with STEP 7.

To find the SIMATIC STEP 7 manuals, select the **Start > Simatic > Documentation** menu command from the Start menu of the computer where the SIMATIC software is installed. The other manuals and online help systems listed above are on the documentation CD.

Further Support

If you have any technical questions, please get in touch with your Siemens representative or agent.

You can find your contact person at the Local Partners Worldwide.
<http://www.siemens.com/automation/partner>

You can find a guide to the technical documentation offered for the individual SIMATIC Products and Systems here at the SIMATIC Manuals Guide.
<http://www.siemens.com/simatic-tech-doku-portal>

The online catalog and order system is found at the A&D Mall.
<http://mall.automation.siemens.com/>

For additional assistance in answering technical questions, for training on this product, or for ordering, contact your Siemens distributor or sales office.

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Telephone: +1 (800) 333-7421	Telephone: +49 (0) 180 5050 222	Telephone: +86 10 64 75 75 75
Fax: +1 (423) 262-2200	Fax: +49 (0) 180 5050 223	Fax: +86 10 64 74 74 74
North America and South America Internet Support Request: www.siemens.com/automation/support-request	Europe and Africa Email Address: adsupport@siemens.com	Asia and Pacific Email Address: adsupport.asia@siemens.com
For information about Ardence Real-Time Extensions (RTX): Internet: http://www.Ardence.com		

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Product Overview

1.1 What's new

The Microbox 427B-HMI/ -RTX/ -HMI/RTX and Panel PC 477B-HMI/ -RTX/ -HMI/RTX introduce new hardware combinations and deliver pre-installation of all software and software license keys.

New hardware

This release offers new configurations of processors and CompactFlash cards. All configurations include a PROFINET or PROFIBUS interface.

New software

This release uses the new Windows XP Embedded SP2 with UPR1, WinAC RTX 2008, and WinCC flexible 2008 software packages.

New for WinAC RTX 2008

The following new WinAC RTX 2008 features are of special interest:

- Support of PROFINET IO in addition to PROFIBUS DP for communication with distributed I/O
- Support of Open User Communication blocks using Industrial Ethernet communication interfaces
- Support of PROFINET CBA
- Support of NTP time synchronization
- Maintenance LED on the WinLC RTX controller panel
- Configuration of WinAC Data Storage and usage of PLC Operating Mode LEDs from the controller panel options
- PC load display on tuning panel
- Support for SIMATIC Software Redundancy

The section "What's New" of the Product Overview chapter of the WinAC RTX documentation describes these features.

New for WinCC flexible RT 2008

WinCC flexible RT 2008 will now support 4096 PowerTags; however, to use 4096 PowerTags with Microbox 427B-HMI/ -HMI/RTX and Panel PC 477B-HMI/ -HMI/RTX, you need a PowerPack.

1.2 Hardware/software combinations

The Microbox 427B-HMI/ -RTX/ -HMI/RTX and Panel PC 477B-HMI/ -RTX/ -HMI/RTX offers several hardware/software combinations.

Microbox 427B-HMI/ -RTX/ -HMI/RTX

The Microbox PC 427B is available in the following processor and RAM sizes:

- PROFIBUS hardware package: Microbox PC 427B (processors with 900MHz and 512 MB RAM (only for -RTX Bundles) / 1 GHz with 1 GB RAM/ 1.4 GHz with 1 GB RAM; all variants have an integrated PROFIBUS (CP 5611)).
- PROFINET hardware package: Microbox PC 427B (processors with 1 GHz and 1 GB RAM/ 1.4 GHz with 1 GB RAM; all variants have an integrated PROFINET (CP 1616)).

Note

WinAC RTX 2008 in combination with PROFINET requires a minimum of 1 GB RAM. The Microbox PC 427B variant with a 900MHz processor and 512 MB RAM can only operate with PROFIBUS.

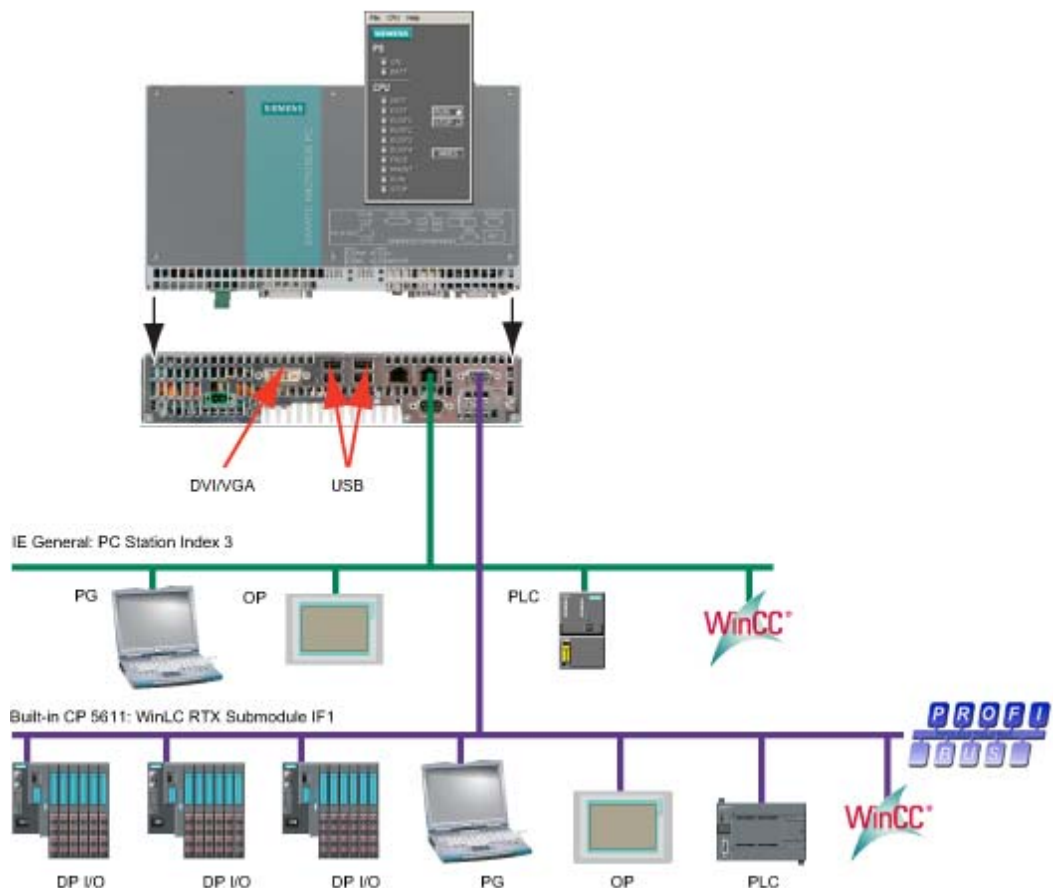


Figure 1-1 Microbox PC 427B PROFIBUS Overview

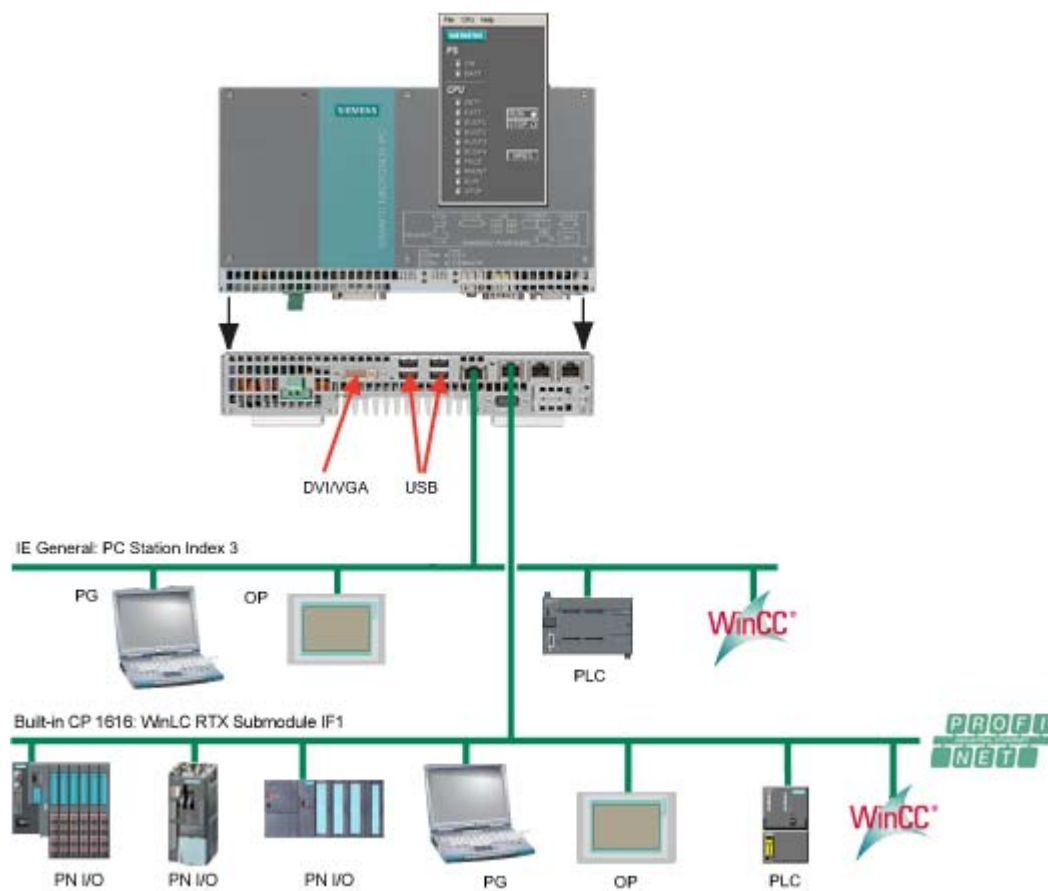


Figure 1-2 Microbox PC 427B PROFINET Overview

Panel PC 477B-HMI/ -RTX/ -HMI/RTX

The Panel PC 477B is available the following processor and RAM sizes:

- PROFIBUS hardware package: Panel PC 477B (1 GHz processor with 1 GB/ 2GB RAM or 1.4 GHz processor with 1 GB/2GB RAM; all variants have an integrated PROFIBUS (CP 5611))
- PROFINET hardware package: Panel PC 477B (1 GHz processor with 1 GB/2GB RAM or 1.4 GHz processor with 1 GB/2GB RAM; all variants have an integrated PROFINET (CP 1616)).

The Panel PC 477B is available in the following monitor sizes:

- 12" Touch
- 12" Key
- 15" Touch

- 15" Key
- 19" Touch

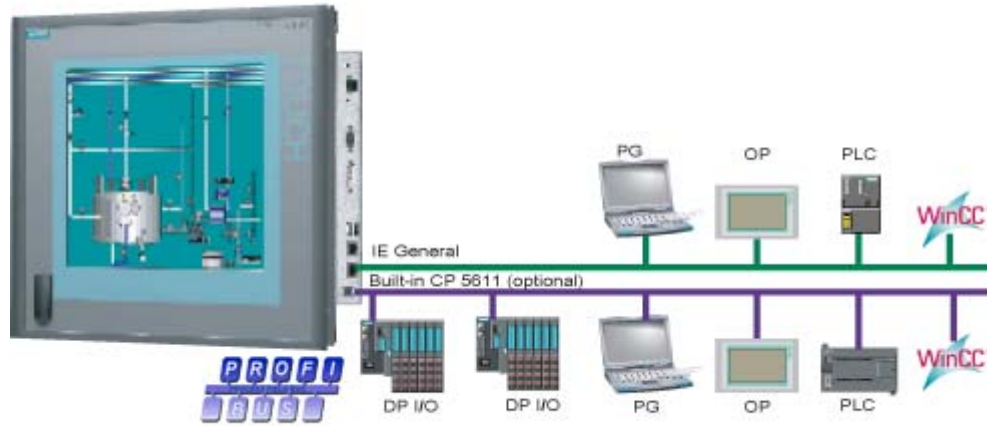


Figure 1-3 Panel PC 477B PROFIBUS Overview

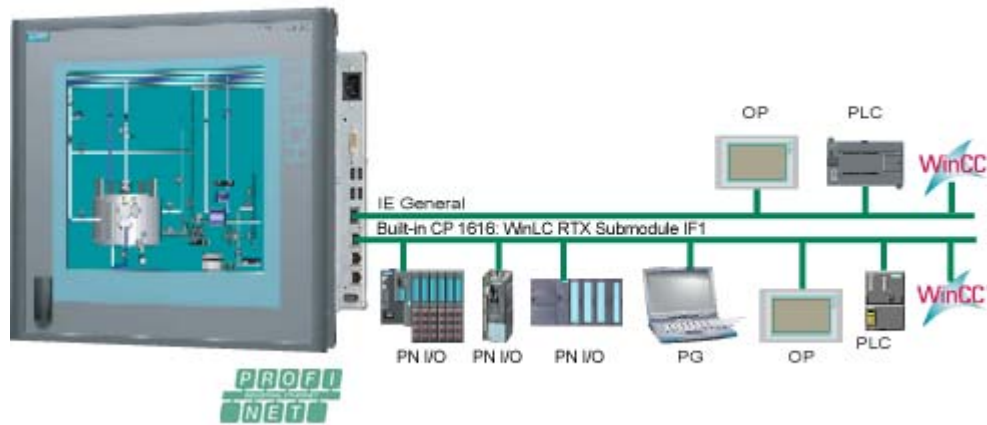


Figure 1-4 Panel PC 477B PROFINET Overview

Software bundle combinations

The Microbox 427B-HMI/ -RTX/ -HMI/RTX and Panel PC 477B-HMI/ -RTX/ -HMI/RTX software combinations offer the capability for PROFINET or PROFIBUS communication:

- -HMI PN/DP (Page 14)
- -RTX DP (Page 15)
- -HMI/RTX DP (Page 18)
- -RTX PN (Page 21)
- -HMI/RTX PN (Page 24)

All software combinations are on CompactFlash cards. You can use the CompactFlash cards with pre-installed software on the Microbox PC 427B or Panel PC 477B hardware.

The "Getting Started" chapter of the WinAC RTX documentation describes PROFINET and PROFIBUS communication.

1.3 Pre-configured -HMI PROFINET/PROFIBUS (PN/DP)

The -HMI PN/DP software package includes the Windows XP Embedded operating system, WinCC flexible RT 2008, and integrated CP 5611 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; however, you can use the SIMATIC Microbox PC or SIMATIC PC Wizard to adjust your PC display preferences.

-HMI PN/DP Configuration

The -HMI PN/DP software package does not include a PC Station configuration. You transfer WinCC flexible projects directly from the engineering station to the WinCC flexible RT 2008 on the hardware platform. You can perform transfers over the following channels:

- Default:
 - Serial
 - Industrial Ethernet
- Optionally configurable:
 - MPI
 - USB

You can connect other devices such as a mouse, keyboard, or storage device to the hardware platform through the USB ports. To use the restore CD (Page 51), you need a USB CD-ROM drive. You do not need these USB devices for general operation.

The hardware platform uses a CompactFlash card for data storage. Typically, you use the Enhanced Write Filter (EWF) to protect the C:\ drive of the CompactFlash card; however, you must take care to manage the EWF (Page 46) if you use the C:\ drive for any file storage. For WinCC flexible RT, a D:\ drive on the CompactFlash card with the EWF disabled is recommended.

In addition to this documentation, you can find technical specifications and other information in the SIMATIC Microbox PC 427B and Panel PC 477B product documentation. Refer to the preface (Page 3) for a summary of other documentation that can be useful.

1.4 Pre-configured -RTX PROFIBUS (DP)

The -RTX DP software package includes the Windows XP Embedded operating system, WinAC RTX 2008, and integrated CP 5611 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.

-RTX DP Configuration

The initial configuration of -RTX DP, as shown below, includes the following components:

- "OPC Server" in index 1 of the PC station
- "WinLC RTX" (Windows Logic Controller of WinAC RTX 2008) in index 2 of the PC station
- Integrated "CP 5611," configured as a WinLC RTX submodule in IF1, available for PROFIBUS DP communication
- Second integrated Industrial Ethernet interface ("Ethernet 2"), configured as "IE_General" in index 3 of the PC Station

NOTICE
The Windows Firewall is enabled. All necessary SIMATIC protocols are registered as exceptions. You can use the CP 5611 card or the Industrial Ethernet interface to download STEP 7 projects.

You do not have to install the -RTX DP configuration; 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 XPe environment.

The initial configuration as represented in the Station Configuration Editor and WinLC Properties appears below:

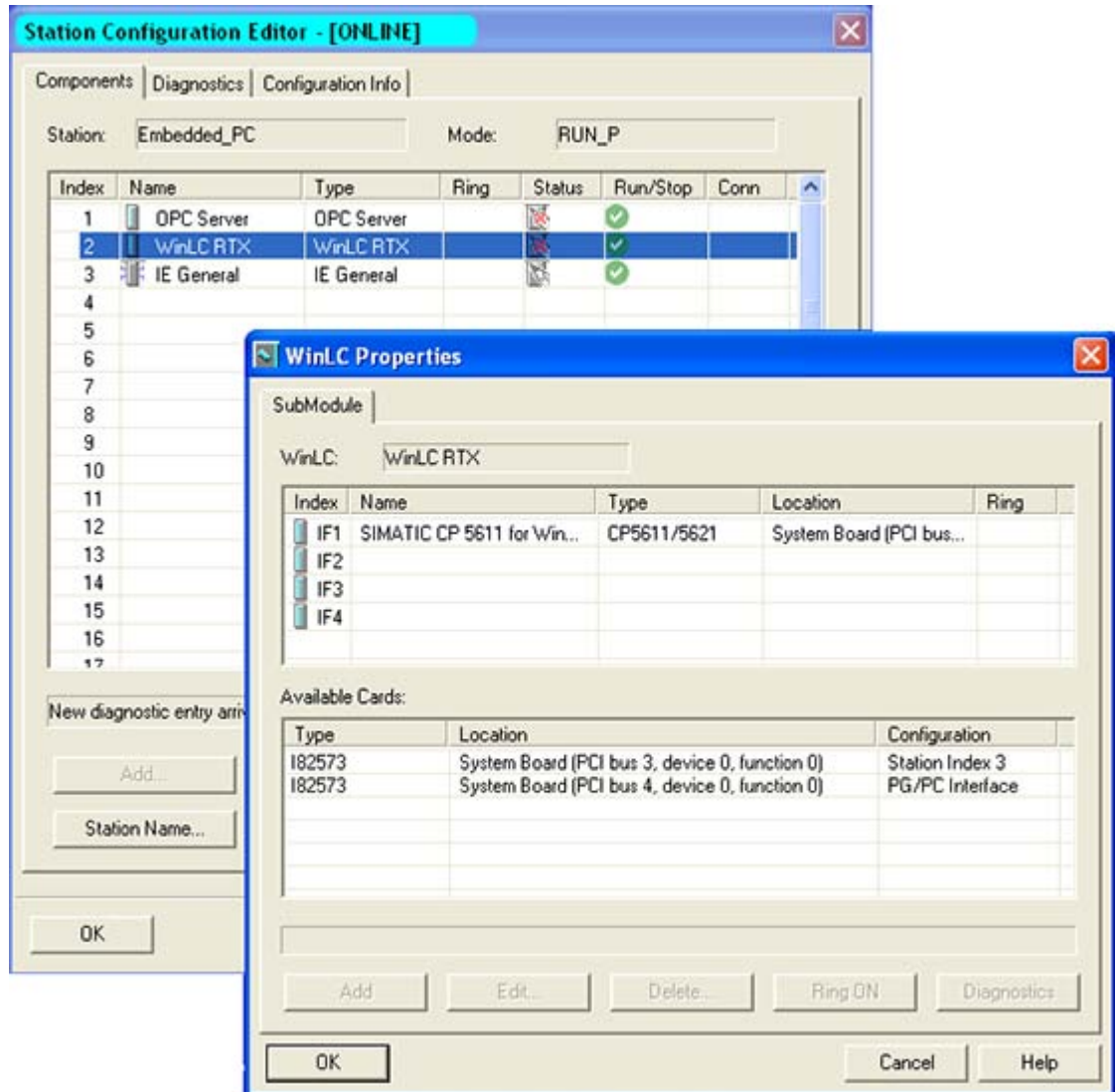


Figure 1-5 Station Configuration Editor: -RTX DP

NOTICE

If for any reason you need to re-configure your PC Station with the Station Configuration Editor, you must choose "IE General" for the Industrial Ethernet interface.

You can connect other devices such as a mouse, keyboard, or storage device to the hardware platform through the USB ports. You can connect a monitor through the DVI-I interface. A monitor, USB mouse, and USB keyboard are necessary only for user interaction with the controller or with other software. To use the restore CD (Page 51) , you need a USB CD-ROM drive. You do not need a storage device for WinLC RTX operation other than to restore your installation.

The hardware platform contains SRAM (static RAM) that is non-volatile. You can use this non-volatile RAM (NVRAM) for retentive data storage. WinAC RTX is pre-configured to store up to 128 Kbytes of retentive data in this integrated, battery-buffered SRAM of the HW platform.

If the retentive data is greater than 128 Kbytes, you must select "File storage" for WinAC data storage. The hardware platform uses a CompactFlash card for file storage. In order to save retentive data in a power loss situation, protect your system with an Uninterruptible Power Supply (UPS).

Typically, you use the Enhanced Write Filter (EWF) to protect the C:\ drive of the CompactFlash card; however, you must take care to manage the EWF (Page 46) if you use the C:\ drive for any file storage. Typically, you leave the EWF disabled for the D:\ drive. File storage on the D:\ drive thus requires no special handling.

Refer to the WinAC RTX documentation for information on configuring WinAC data storage.

In addition to this documentation, you can find technical specifications and other information in the SIMATIC Microbox PC 427B and Panel PC 477B product documentation. Refer to the accompanying WinAC RTX documentation for a complete description of WinAC RTX and how to use it for PC-based automation solutions. The preface (Page 3) of this documentation lists other manuals that can be useful.

1.5 Pre-configured -HMI/RTX PROFIBUS (DP)

The -HMI/RTX DP software package includes the Windows XP Embedded operating system, WinCC flexible RT 2008, WinAC RTX 2008, and integrated CP 5611 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.

-HMI/RTX DP configuration

The initial configuration of -HMI/RTX DP, as shown below, includes the following components:

- "OPC Server" in index 1 of the PC station
- "WinLC RTX" (Windows Logic Controller of WinAC RTX 2008) in index 2 of the PC station
- Integrated "CP 5611," configured as a WinLC RTX submodule in IF1, available for PROFIBUS DP communication
- Second integrated Industrial Ethernet interface ("Ethernet 2"), configured as "IE_General" in index 3 of the PC Station
- "WinCC flexible RT" in index 4 of the PC Station

NOTICE
The Windows Firewall is enabled. All necessary SIMATIC protocols are registered as exceptions. You can use the CP 5611 card or the Industrial Ethernet interface to download STEP 7 projects.

You do not have to install the -HMI/RTX DP configuration; 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 XPe environment.

The initial configuration as represented in the Station Configuration Editor and WinLC Properties appears below:

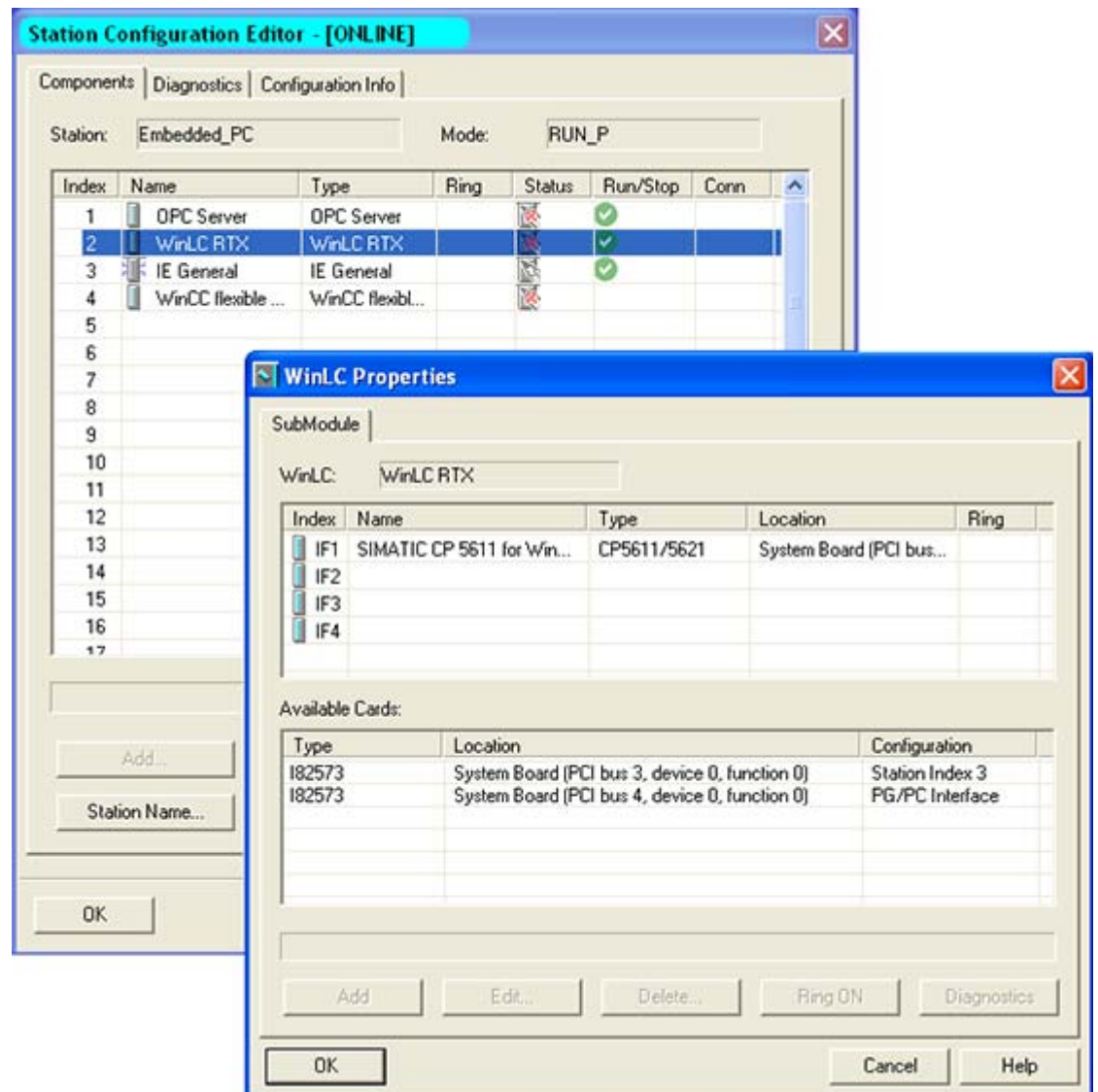


Figure 1-6 Station Configuration Editor: -HMI/RTX DP

NOTICE

If for any reason you need to re-configure your PC Station with the Station Configuration Editor, you must choose "IE General" for the Industrial Ethernet interface.

You can connect other devices such as a mouse, keyboard, or storage device to the hardware platform through the USB ports. You can connect a monitor through the DVI-I interface. A monitor, USB mouse, and USB keyboard are necessary only for user interaction with the controller or with other software. To use the restore CD (Page 51), you need a USB CD-ROM drive. You do not need a storage device for WinLC RTX operation other than to restore your installation.

The hardware platform contains SRAM (static RAM) that is non-volatile. You can use this non-volatile RAM (NVRAM) for retentive data storage. WinAC RTX is pre-configured to store up to 128 Kbytes of retentive data in this integrated, battery-buffered SRAM of the HW platform.

If the retentive data is greater than 128 Kbytes, you must select "File storage" for WinAC data storage. The hardware platform uses a CompactFlash card for file storage. In order to save retentive data in a power loss situation, protect your system with an Uninterruptable Power Supply (UPS).

Typically, you use the Enhanced Write Filter (EWF) to protect the C:\ drive of the CompactFlash card; however, you must take care to manage the EWF (Page 46) if you use the C:\ drive for any file storage. For WinCC flexible RT, a D:\ drive on the CompactFlash card with the EWF disabled is recommended.

Refer to the WinAC RTX documentation for information on configuring WinAC data storage.

In addition to this documentation, you can find technical specifications and other information in the SIMATIC Microbox PC 427B and Panel PC 477B product documentation. Refer to the accompanying WinAC RTX documentation for a complete description of WinAC RTX and how to use it for PC-based automation solutions. The preface (Page 3) of this documentation lists other manuals that can be useful.

1.6 Pre-configured -RTX PROFINET (PN)

The -RTX PN software package includes the Windows XP Embedded operating system, WinAC RTX 2008, and integrated CP 1616 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.

-RTX PN Configuration

The initial configuration of -RTX PN, as shown below, includes the following components:

- "OPC Server" in index 1 of the PC station
- "WinLC RTX" (Windows Logic Controller of WinAC RTX 2008) in index 2 of the PC station
- Integrated "CP 1616," configured as a WinLC RTX submodule in IF1, available for PROFINET communication
- Second integrated Industrial Ethernet interface ("Ethernet 2"), configured as "IE_General" in index 3 of the PC Station

NOTICE
The Windows Firewall is enabled. All necessary SIMATIC protocols are registered as exceptions. You can use the CP 1616 card or the Industrial Ethernet interface to download STEP 7 projects.

You do not have to install the -RTX PN configuration; 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 XPe environment.

The initial configuration as represented in the Station Configuration Editor and WinLC Properties appears below:

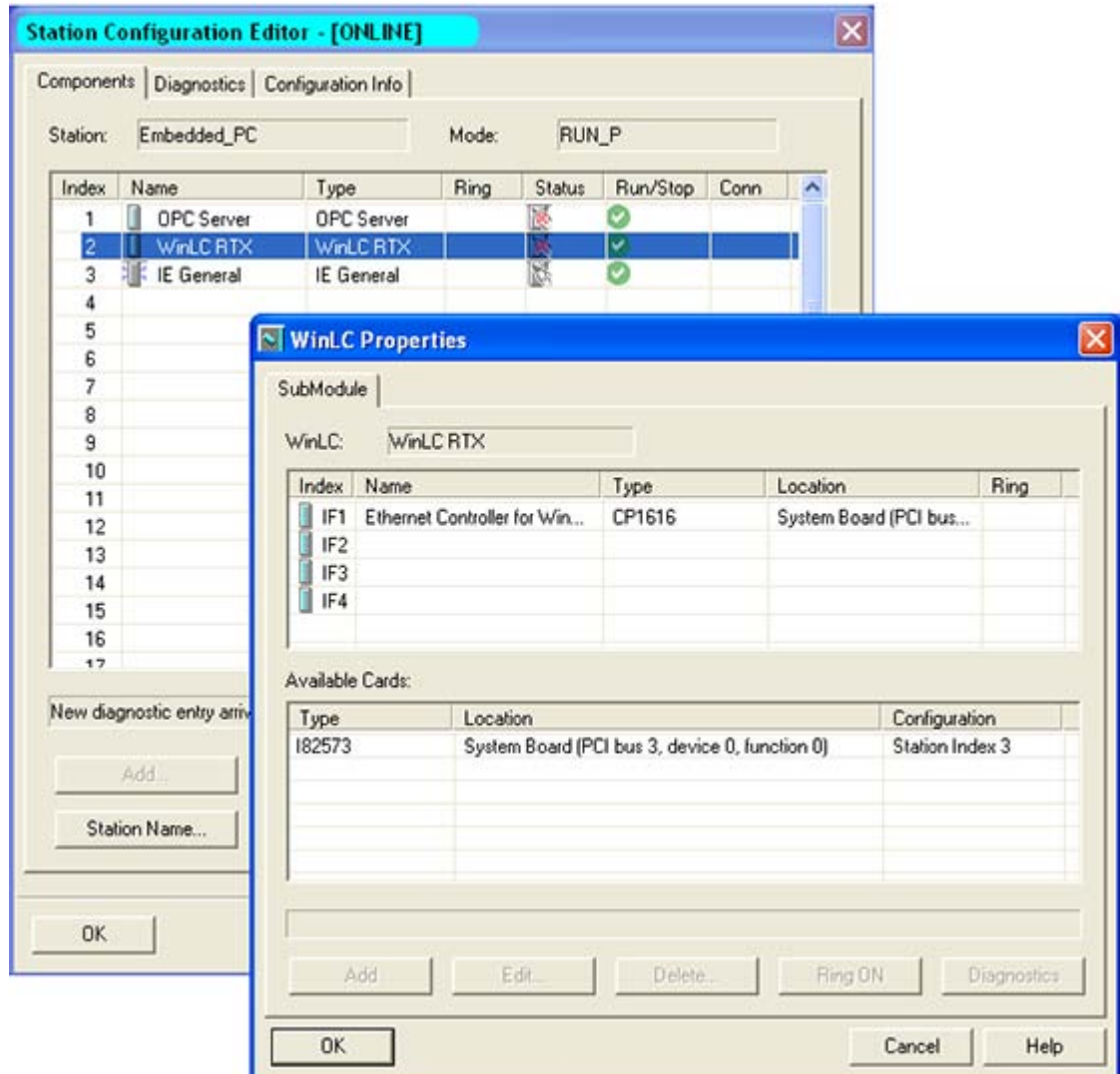


Figure 1-7 Station Configuration Editor: -RTX PN

NOTICE

If for any reason you need to re-configure your PC Station with the Station Configuration Editor, you must choose "IE General" for the Industrial Ethernet interface.

You can connect other devices such as a mouse, keyboard, or storage device to the hardware platform through the USB ports. You can connect a monitor through the DVI-I interface. A monitor, USB mouse, and USB keyboard are necessary only for user interaction with the controller or with other software. To use the restore CD (Page 51) , you need a USB CD-ROM drive. You do not need a storage device for WinLC RTX operation other than to restore your installation.

The hardware platform contains SRAM (static RAM) that is non-volatile. You can use this non-volatile RAM (NVRAM) for retentive data storage. WinAC RTX is pre-configured to store up to 128 Kbytes of retentive data in this integrated, battery-buffered SRAM of the HW platform.

If the retentive data is greater than 128 Kbytes, you must select "File storage" for WinAC data storage. The hardware platform uses a CompactFlash card for file storage. In order to save retentive data in a power loss situation, protect your system with an Uninterruptable Power Supply (UPS).

Typically, you use the Enhanced Write Filter (EWF) to protect the C:\ drive of the CompactFlash card; however, you must take care to manage the EWF (Page 46) if you use the C:\ drive for any file storage. Typically, you leave the EWF disabled for the D:\ drive. File storage on the D:\ drive thus requires no special handling.

Refer to the WinAC RTX documentation for information on configuring WinAC data storage.

In addition to this documentation, you can find technical specifications and other information in the SIMATIC Microbox PC 427B and Panel PC 477B product documentation. Refer to the accompanying WinAC RTX documentation for a complete description of WinAC RTX and how to use it for PC-based automation solutions. The preface (Page 3) of this documentation lists other manuals that can be useful.

1.7 Pre-configured -HMI/RTX PROFINET (PN)

The -HMI/RTX PN software package includes the Windows XP Embedded operating system, WinCC flexible RT 2008, WinAC RTX 2008, and integrated CP 1616 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.

-HMI/RTX PN configuration

The initial configuration of -HMI/RTX PN, as shown below, includes the following components:

- "OPC Server" in index 1 of the PC station
- "WinLC RTX" (Windows Logic Controller of WinAC RTX 2008) in index 2 of the PC station
- Integrated "CP 1616," configured as a WinLC RTX submodule in IF1, available for PROFINET communication
- Second integrated Industrial Ethernet interface ("Ethernet 2"), configured as "IE_General" in index 3 of the PC Station
- "WinCC flexible RT" in index 4 of the PC Station

NOTICE
The Windows Firewall is enabled. All necessary SIMATIC protocols are registered as exceptions. You can use the CP1616 card or the Industrial Ethernet interface to download STEP 7 projects.

You do not have to install the -HMI/RTX PN configuration; 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 XPe environment.

The initial configuration as represented in the Station Configuration Editor and WinLC Properties appears below:

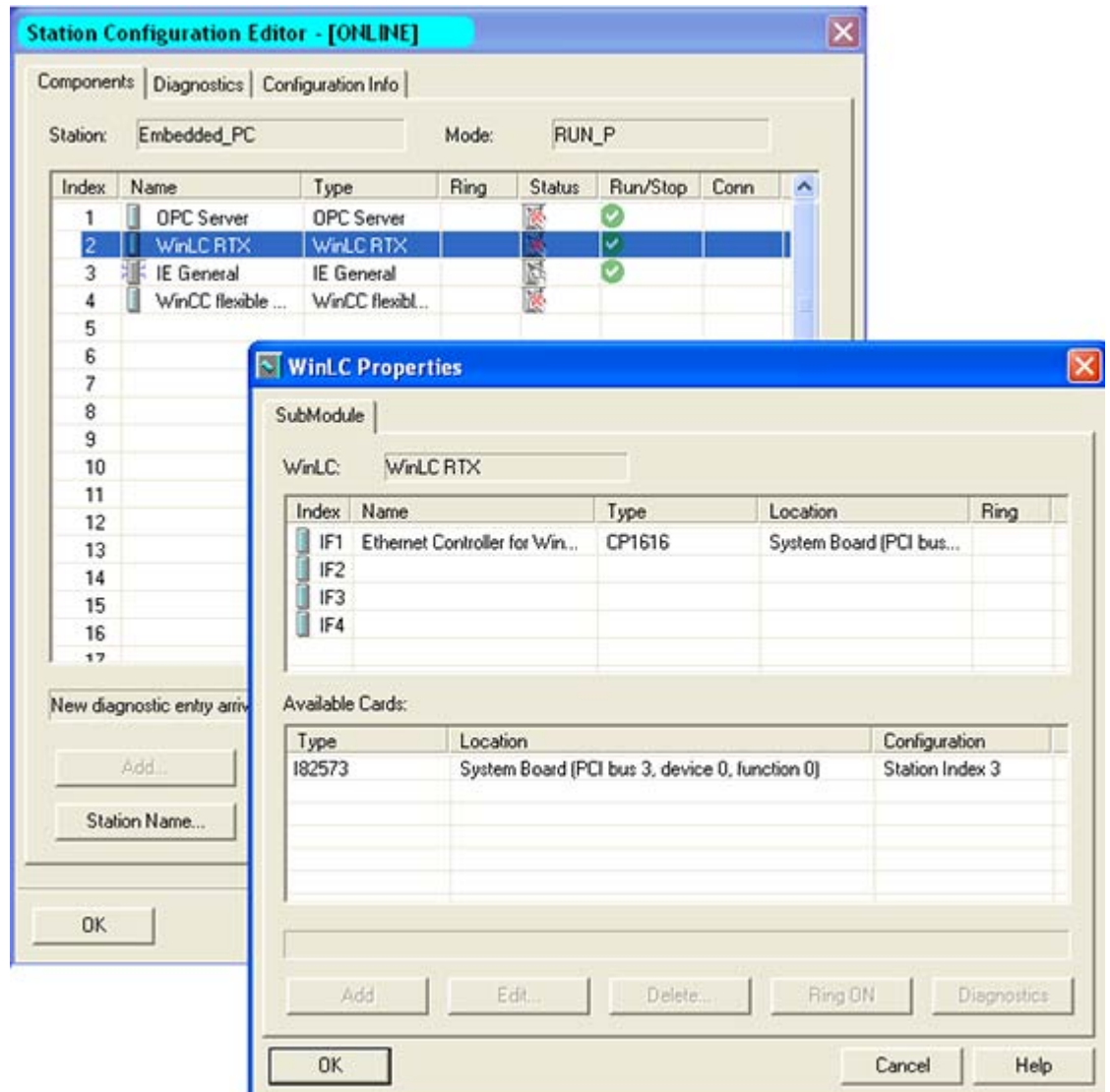


Figure 1-8 Station Configuration Editor: -HMI/RTX PN

NOTICE

If for any reason you need to re-configure your PC Station with the Station Configuration Editor, you must choose "IE General" for the Industrial Ethernet interface.

You can connect other devices such as a mouse, keyboard, or storage device to the hardware platform through the USB ports. You can connect a monitor through the DVI-I interface. A monitor, USB mouse, and USB keyboard are necessary only for user interaction with the controller or with other software. To use the restore CD (Page 51), you need a USB CD-ROM drive. You do not need a storage device for WinLC RTX operation other than to restore your installation.

The hardware platform contains SRAM (static RAM) that is non-volatile. You can use this non-volatile RAM (NVRAM) for retentive data storage. WinAC RTX is pre-configured to store up to 128 Kbytes of retentive data in this integrated, battery-buffered SRAM of the HW platform.

If the retentive data is greater than 128 Kbytes, you must select "File storage" for WinAC data storage. The hardware platform uses a CompactFlash card for file storage. In order to save retentive data in a power loss situation, protect your system with an Uninterruptable Power Supply (UPS).

Typically, you use the Enhanced Write Filter (EWF) to protect the C:\ drive of the CompactFlash card; however, you must take care to manage the EWF (Page 46) if you use the C:\ drive for any file storage. For WinCC flexible RT, a D:\ drive on the CompactFlash card with the EWF disabled is recommended.

Refer to the WinAC RTX documentation for information on configuring WinAC data storage.

In addition to this documentation, you can find technical specifications and other information in the SIMATIC Microbox PC 427B and Panel PC 477B product documentation. Refer to the accompanying WinAC RTX documentation for a complete description of WinAC RTX and how to use it for PC-based automation solutions. The preface (Page 3) of this documentation lists other manuals that can be useful.

1.8 Additional information about WinAC RTX

This topic applies only to the Microbox 427B-RTX/ -HMI/RTX and Panel PC 477B-RTX/ -HMI/RTX and is not applicable for the Microbox 427B-HMI and Panel PC 477B-HMI.

The PC-based controller, WinLC RTX, that executes on Microbox 427B-RTX/ -HMI/RTX and Panel PC 477B-RTX/ -HMI/RTX, is the same WinLC RTX controller that executes on standard PCs. The internal software is the same. Some differences exist, however, in how you install and license WinAC RTX, and how WinLC RTX interacts with the operating system and hardware. The documentation for WinAC RTX that you have with your Microbox 427B-RTX/ -HMI/RTX and Panel PC 477B-RTX/ -HMI/RTX products describes the functionality of the standard WinAC RTX product that executes on a Windows XP / Windows XP Embedded computer.

Differences between WinLC RTX use in WinAC RTX and SIMATIC Embedded PC

The behavior is mostly the same, but with the following notable differences:

Table 1- 1 Differences between WinLC RTX use in WinAC RTX and SIMATIC Embedded PC

SIMATIC Embedded PC	WinAC RTX
Installation	
<p>Microbox 427B-RTX/ -HMI/RTX and Panel PC 477B-RTX/ -HMI/RTX include the WinAC RTX installation. No further installation is necessary. The First Boot Agent of Windows XP embedded runs the first time you start the PC and finalizes the installation. You do not have to perform any additional configuration. After the First Boot Agent completes, the PC requests a reboot.</p> <p>The Installation chapter of the WinAC RTX documentation is not applicable for Microbox 427B-RTX/ -HMI/RTX and Panel PC 477B-RTX/ -HMI/RTX.</p>	<p>WinAC RTX is distributed as a software-only product. You must install WinAC RTX on a PC as described in the Installation chapter of the WinAC RTX documentation.</p>
Licensing	
<p>You do not have to install the WinAC RTX license keys on Microbox 427B-RTX/ -HMI/RTX and Panel PC 477B-RTX/ -HMI/RTX. You will need to use the Automation License Manager (ALM) to:</p> <ul style="list-style-type: none"> • Remove the WinAC RTX license key, prior to making a custom restore CD • Remove the WinAC RTX license key, prior to restoring an image with a custom restore CD • Move license keys for other reasons 	<p>You use the Automation License Manager to license WinAC RTX as described in the "Licensing the WinAC RTX Software" topic of the Installation chapter of the WinAC RTX documentation.</p>

1.8 Additional information about WinAC RTX

Station Configuration	
<p>The -RTX DP (Page 15) , -HMI/RTX DP (Page 18) , -RTX PN (Page 21) , and -HMI/RTX PN (Page 24) software packages include an initial configuration for all components. No configuration in the Station Configuration Editor or WinLC Properties is necessary, unless you have a requirement to change the configuration or use other SIMATIC software components, such as SIMATIC WinCC flexible. See the topic "Downloading PC Station Components (Page 52)" for more information.</p> <p>The tasks described in the "Configuring Communication Interfaces" section of the Getting Started chapter of the WinAC RTX documentation are not necessary for Microbox 427B-RTX/ -HMI/RTX and Panel PC 477B-RTX/ -HMI/RTX.</p>	<p>The setup installs WinLC RTX in index 2 of the Station Configuration Editor. You use the Station Configuration Editor to configure any other components of the PC Station that you require for your application. For DP I/O, you must configure the submodules of WinLC RTX with the Station Configuration Editor and the WinLC Properties dialog.</p> <p>The Getting Started chapter of the WinAC RTX documentation describes this configuration process.</p>

1.9 Additional information about WinCC flexible RT

This topic applies only to the Microbox 427B-HMI/ -HMI/RTX and Panel PC 477B-HMI/ -HMI/RTX and is not applicable for the Microbox 427B-RTX and Panel PC 477B-RTX.

WinCC flexible RT that executes on Microbox 427B-HMI/ -HMI/RTX and Panel PC 477B-HMI/ -HMI/RTX is the same WinCC flexible RT that executes on standard PCs. The internal software is the same. Some differences exist, however, in how you install and license WinCC flexible RT, and how WinCC flexible RT interacts with the operating system and hardware. The documentation for WinCC flexible RT that you have with your Microbox 427B-HMI/ -HMI/RTX and Panel PC 477B-HMI/ -HMI/RTX products describes the functionality of the standard WinCC flexible RT product that executes on a Windows XP / Windows XP Embedded computer.

Differences between WinCC flexible RT use in an SIMATIC Embedded PC and in a PC

The behavior is mostly the same, but with the following notable differences:

Table 1- 2 Differences between WinCC flexible RT use in an SIMATIC Embedded PC and a PC

WinCC flexible RT in a SIMATIC Embedded PC	WinCC flexible RT in a PC
Installation	
<p>Microbox 427B-HMI/ -HMI/RTX and Panel PC 477B-HMI/ -HMI/RTX include the WinCC flexible RT installation. No further installation is necessary. The First Boot Agent of Windows XP embedded runs the first time you start the PC and finalizes the installation. You do not have to perform any additional configuration. After the First Boot Agent completes, the PC requests a reboot.</p> <p>The Installation chapter of the WinCC flexible RT documentation is not applicable for Microbox 427B-HMI/ -HMI/RTX and Panel PC 477B-HMI/ -HMI/RTX.</p>	<p>WinCC flexible RT is distributed as a software-only product. You must install WinCC flexible RT on a PC as described in the Installation chapter of the WinCC flexible RT documentation.</p>

Note

The -HMI PN/DP software package does not include the CP 1616 driver. You may obtain the CP 1616 driver from the Panel PC 477B Documentation and Driver CD; however, this driver is not installed on the Microbox PC 427B Documentation and Driver CD.

1.9 Additional information about WinCC flexible RT

Licensing	
<p>You do not have to install the WinCC flexible RT license key on Microbox 427B-HMI/ -HMI/RTX and Panel PC 477B-HMI/ -HMI/RTX. You will need to use the Automation License Manager (ALM) to:</p> <ul style="list-style-type: none"> • Remove the WinCC flexible RT license key, prior to making a custom restore CD • Remove the WinCC flexible RT license key, prior to restoring an image with a custom restore CD • Move license keys for other reasons 	<p>You use the Automation License Manager to license WinCC flexible RT. WinCC flexible Advanced must be used to configure WinCC flexible RT (PC-RT).</p>

Station Configuration	
<p>The -HMI PN/DP (Page 14) , -HMI/RTX DP (Page 18) , and -HMI/RTX PN (Page 24) software packages include an initial configuration for all components. No configuration in the Station Configuration Editor is necessary, unless you have a requirement to change the configuration or use other SIMATIC software components. See the topic "Downloading PC Station Components (Page 52)" for more information.</p> <p>The tasks described in the <i>WinCC flexible Communication 2008, Part 1 and Part 2 User's Manuals</i> are not necessary for Microbox 427B-HMI/ -HMI/RTX and Panel PC 477B-HMI/ -HMI/RTX.</p>	<p>WinCC flexible RT will not be inserted automatically into the Station Configuration Editor. A Station Configuration Editor is not necessary for WinCC flexible RT.</p> <p>The <i>WinCC flexible Communication 2008, Part 1 and Part 2 User's Manuals</i> describe this configuration process.</p>

Main Memory Handling	
<p>WinCC flexible RT requires a D:\ drive on the CompactFlash card with the EWF disabled. This requirement is necessary because WinCC flexible RT uses a Datafile on the D:\ drive to store registry-inputs and systemvariables.</p>	<p>A PC with a hard drive disk as main memory does not require this configuration.</p>

User Tasks

2.1 Overview

In User Tasks, the following topics are covered:

- "Creating the STEP 7 project and configuring the hardware" (Page 32): This topic describes how to create a project, add a PC Station (-RTX) or HMI Station (-HMI/RTX) to it, and configure the hardware configuration to correspond to the default configuration of the SIMATIC Embedded PC.
- "Configuring the Windows Ethernet Interface" (Page 37): This topic explains the locations of the Ethernet connections and how to configure the IP addresses for those connections.
- "Configuring the WinCC flexible Project" (Page 43): You must configure your WinCC flexible project with the WinCC flexible ES (engineering station) software, and transfer this project from the engineering station computer to WinCC flexible RT 2008 on the SIMATIC Embedded PC. This topic relates how to change the WinCC flexible RT settings on the SIMATIC Embedded PC after this transfer is complete.
- "Managing the Enhanced Write Filter" (Page 46): The Enhanced Write Filter (EWF) is a Windows XP embedded utility for protecting a CompactFlash card. CompactFlash cards allow a limited number of write accesses. This topic describes how to use the EWF manager.
- "Creating a System Image" (Page 48): After you have configured the SIMATIC Embedded PC for your application, you can create an image of your system. You can later use this image to restore your custom application to your system, if necessary. This topic explains how to perform this task.
- "Restoring the Initial Configuration" (Page 51): The SIMATIC Embedded PC product release includes a restore CD without license key that you can use to restore your system to the initial configuration. This topic describes this restore process.
- "Downloading PC Station components" (Page 52): This topic explains what to do if you need to change and download the configuration of the PC Station (for example, if you want to add WinCC flexible to the configuration, or if you want to download the OPC-Server Configuration).

2.2 Creating the STEP 7 project and configuring the hardware

This topic applies only to the Microbox 427B-RTX/ -HMI/RTX and Panel PC 477B-RTX/ -HMI/RTX and is not applicable for the Microbox 427B-HMI and Panel PC 477B-HMI.

The following tasks are required to use a STEP 7 project in your SIMATIC Embedded PC:

1. Create a STEP 7 project.
2. Add a PC Station (-RTX) or HMI Station (-HMI/RTX) 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 download.
5. Finalize your SIMATIC Embedded PC for operation by enabling the Enhanced Write Filter (EWF) and documenting any special settings.

Note

When using Microbox 427B-RTX/ -HMI/RTX or Panel PC 477B-RTX/ -HMI/RTX, you must configure the hardware to correspond to the default configuration. You do not need to configure hardware in STEP 7 for the Microbox 427B-HMI and Panel PC 477B-HMI.

NOTICE

You can find some basic projects for your -RTX, -HMI and -HMI/RTX configurations in the root of the SIMATIC Embedded PC Manual Collection CD.

To use the project, import the file "Embedded" in the SIMATIC Manager, by selecting from the main menu: File > Retrieve

Hardware configuration

The initial configuration of the Microbox 427B-RTX/ -HMI/RTX and Panel PC 477B-RTX/ -HMI/RTX, as shown below, includes the following components:

-HMI/RTX configuration:

- "OPC Server" in index 1 of the PC station
- "WinLC RTX" (Windows Logic Controller of WinAC RTX 2008) in index 2 of the PC station
- WinLC RTX submodule in IF1 using one of the following communications processors:
 - Integrated "CP 5611," available for PROFIBUS DP communication
 - Integrated "CP 1616," available for PROFINET communication
- Second integrated Industrial Ethernet interface ("Ethernet 2"), configured as "IE_General" in index 3 of the PC Station
- "WinCC flexible RT" in index 4 of the PC station

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

2.2 Creating the STEP 7 project and configuring the hardware

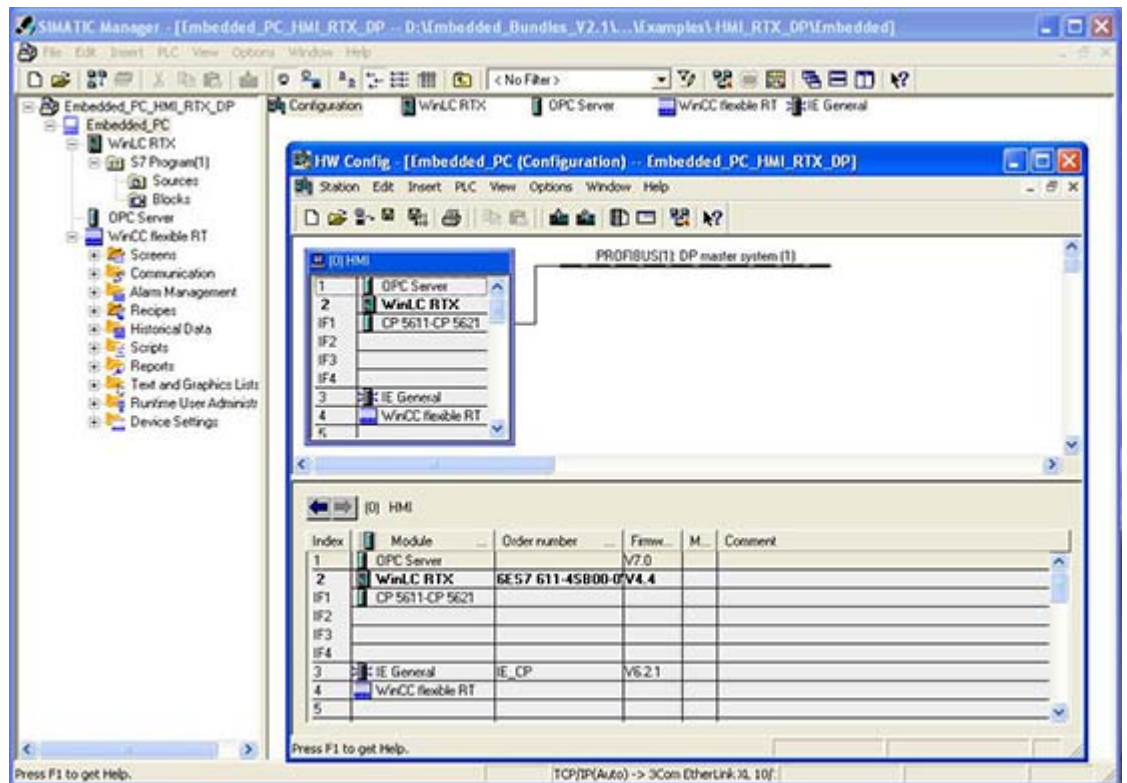


Figure 2-1 -HMI/RTX DP STEP 7 Configuration

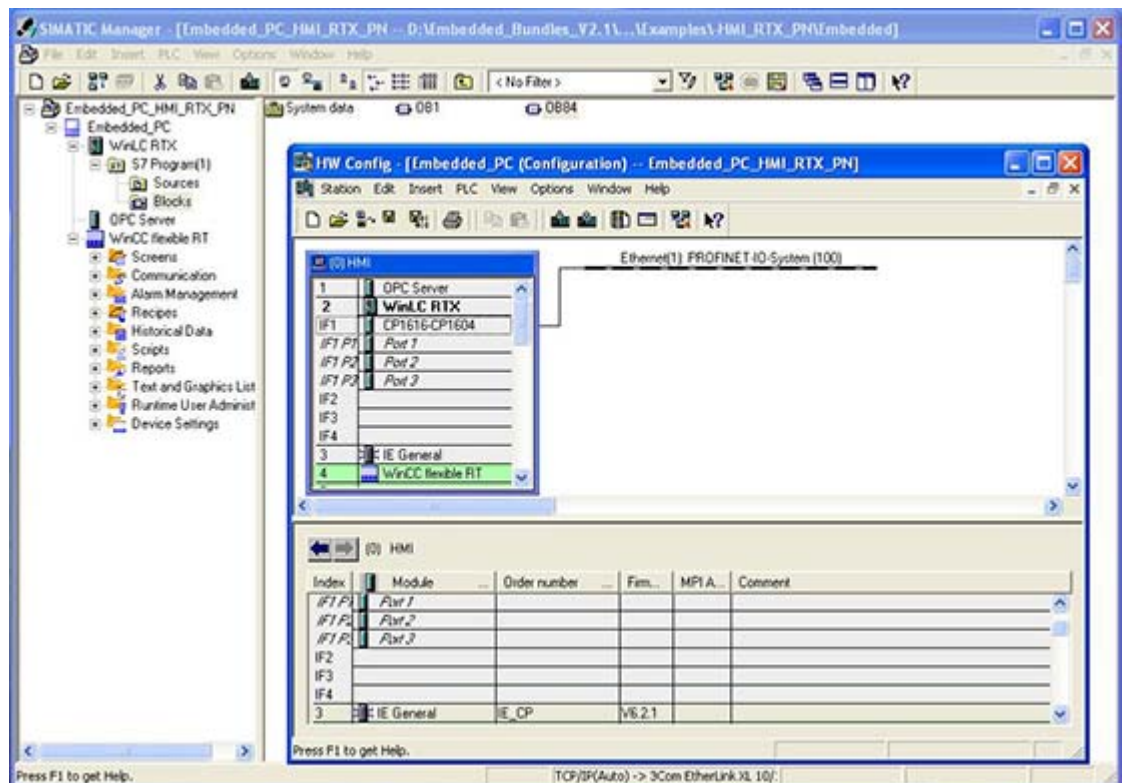


Figure 2-2 -HMI/RTX PN STEP 7 Configuration

-RTX Configuration:

- "OPC Server" in index 1 of the PC station
- "WinLC RTX" (Windows Logic Controller of WinAC RTX 2008) in index 2 of the PC station
- WinLC RTX submodule in IF1 using one of the following communications processors:
 - Integrated "CP 5611," available for PROFIBUS DP communication
 - Integrated "CP 1616," available for PROFINET communication
- Second integrated Industrial Ethernet interface ("Ethernet 2"), configured as "IE_General" in index 3 of the PC Station

The picture below shows the STEP 7 configuration for the -RTX with PROFIBUS DP and PROFINET communications processors, respectively:

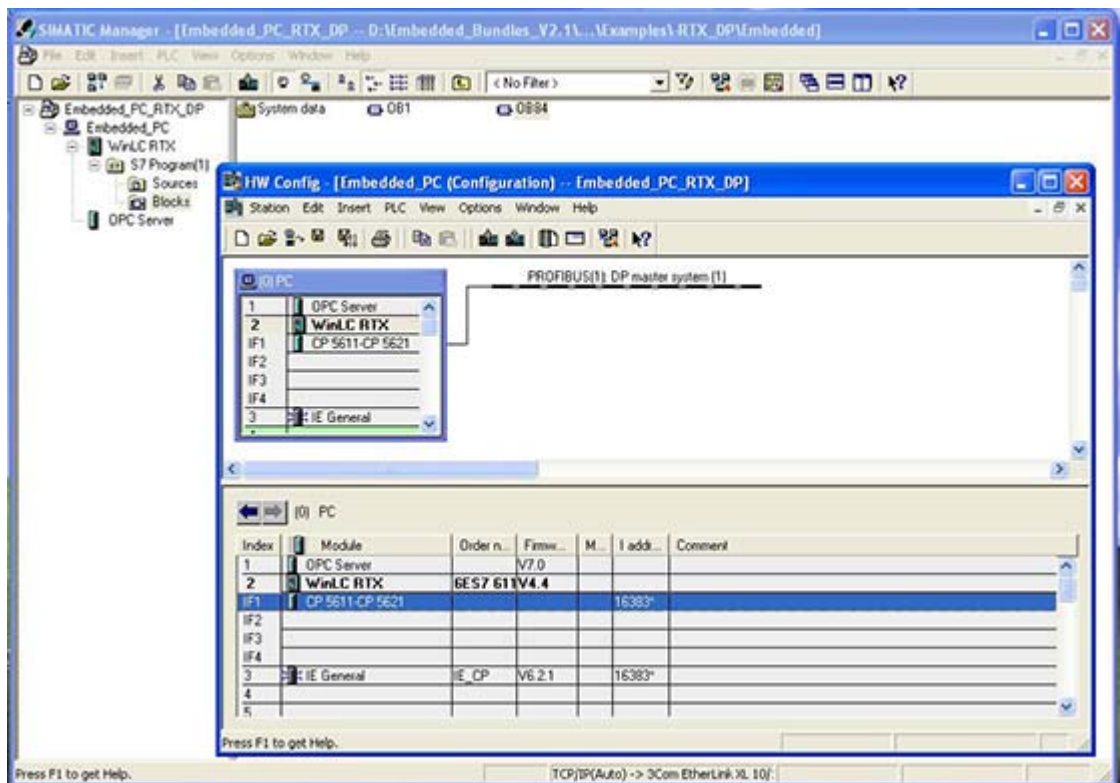


Figure 2-3 -RTX DP STEP 7 Configuration

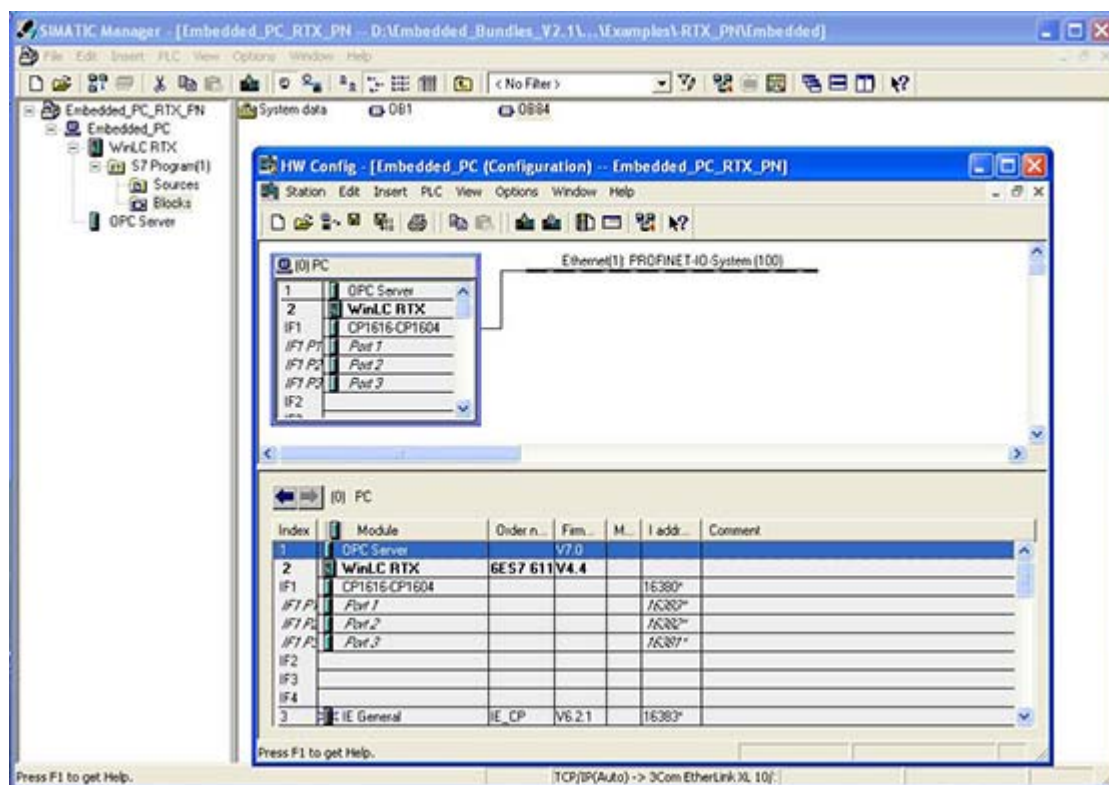


Figure 2-4 -RTX PN STEP 7 Configuration

To change property settings for any object in the PC Station, right-click the object in the PC Station, and select the "Object Properties" menu command. STEP 7 displays a properties dialog from which you can make any necessary changes.

When you configure the Industrial Ethernet interface in the PC Station, make sure that you use the IP address and subnet mask configured in the Windows Control Panel of the target Microbox 427B-RTX/ -HMI/RTX or Panel PC 477B-RTX/ -HMI/RTX product. 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 37)" for more information.

Creating programs for WinLC RTX (WinAC RTX)

In the SIMATIC Manager, you create the PLC programs for WinLC RTX in the same way that you create PLC programs for any other SIMATIC controller.

Downloading the program and configuration

Next, you download the program and configuration. Check the following conditions before you download:

Table 2- 1 Required Conditions for Program and Configuration Download

Download Task	Required Conditions
Complete the download of the PC Station	Make sure that the Enhanced Write filter is in the "Disabled" state. See the topic "Downloading PC Station Components (Page 52)" for details.
Download 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 5611 or CP 1616	With the standard configuration, you can download the configuration data of WinAC RTX at any time. If some of the configuration data may affect configuration information of the complete 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. See the topic "Downloading PC Station Components (Page 52)" for details.

Finalizing your SIMATIC Embedded PC for operation

To finalize your Microbox 427B-RTX/ -HMI/RTX or Panel PC 477B-RTX/ -HMI/RTX for operation, the following steps are recommended:

- Set the Enhanced Write Filter to the "Enabled" state for the C:\ drive. See the topic "Managing the Enhanced Write Filter (Page 46)" for details.
- Document any special settings (for example, changes to the IP address) for the Embedded Bundle, which you made through your application development. Store them together with your STEP 7 or WinCC flexible project.

NOTICE
Leaving the Enhanced Write Filter in the default "Disabled" state may lead to an early failure of the CompactFlash card, due to ongoing write access of the operating system. See the topic "Managing the Enhanced Write Filter" for details.

2.3 Configuring the Windows Ethernet Interface

This topic applies only to the Microbox 427B-RTX/ -HMI/RTX and Panel PC 477B-RTX/ -HMI/RTX and is not applicable for the Microbox 427B-HMI and Panel PC 477B-HMI. The physical locations of the Ethernet connections differ between the Microbox PC 427B and Panel PC 477B. Pre-configuration of the Ethernet connections, however, is identical for both PCs.

Microbox PC 427B

The Microbox PC 427B has two integrated Industrial Ethernet interfaces. The following pre-configurations specify that the rightmost Ethernet connection "Ethernet 2" is associated with the IE_General of the PC Station in index 3 and is pre-configured for Industrial Ethernet communication:

- -RTX DP (Page 15)
- -HMI/RTX DP (Page 18)
- -RTX PN (Page 21)
- -HMI/RTX PN (Page 24)

You must configure the IP address of the Industrial Ethernet interface in Windows XPe as configured in the STEP 7 project.

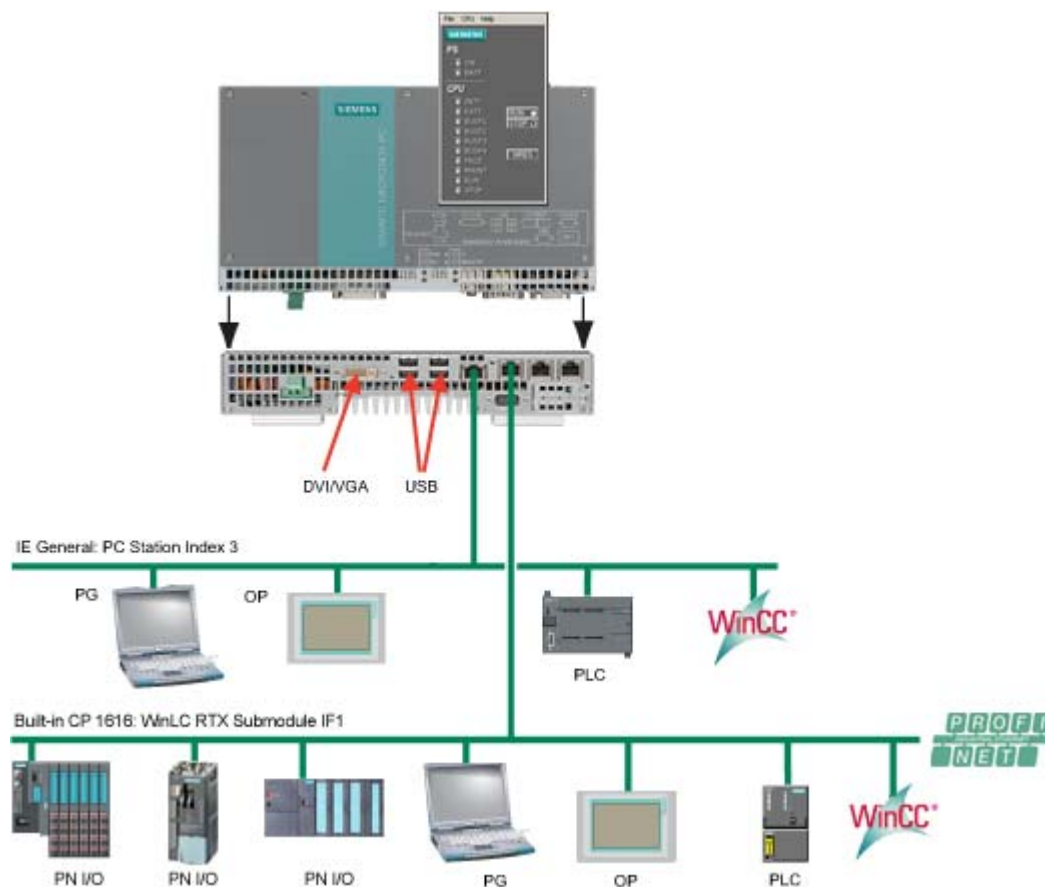


Figure 2-5 Microbox PC 427B Ethernet Connection

Panel PC 477B

The Panel PC 477B has two integrated Industrial Ethernet interfaces. The following pre-configurations specify that the lower Ethernet connection "Ethernet 2" is associated with the IE_General of the PC Station in index 3 and is pre-configured for Industrial Ethernet communication:

- -RTX DP (Page 15)
- -HMI/RTX DP (Page 18)
- -RTX PN (Page 21)
- -HMI/RTX PN (Page 24)

You must configure the IP address of the Industrial Ethernet interface in Windows XPe as configured in the STEP 7 project.

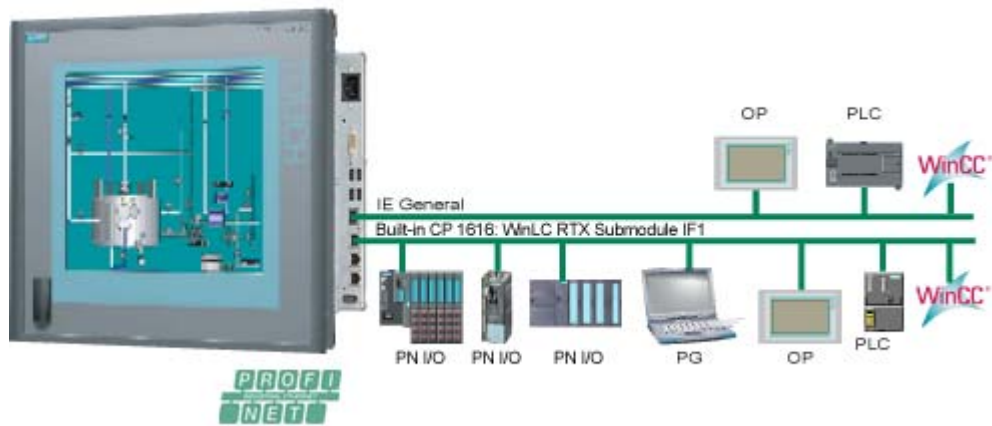


Figure 2-6 Panel PC 477B Ethernet Connection

Configuring the SIMATIC Embedded PC IP Addresses

Table 2- 2 SIMATIC Embedded PC IP Addresses

Ethernet Interface	Configuration		Usage
IE General			
1	IP address	192.168.2.1	For standard Windows Ethernet communication; the IE General on port 1 can be configured as a submodule of the WinAC RTX 2008 for PROFINET communication.
	Subnet mask	255.255.255.0	
	SIMATIC communications	Not used	
2	IP address	192.168.1.2	<ul style="list-style-type: none"> For SIMATIC PG or SIMATIC HMI access For standard Windows Ethernet communication
	Subnet mask	255.255.255.0	
	SIMATIC communications		
PROFINET			
1	IP address	0.0.0.0	The PROFINET CP1616 is configured as a submodule of the WinAC RTX.
	Subnet mask	255.255.255.0	
	SIMATIC communications	Not used	
2	IP address	192.168.1.2	<ul style="list-style-type: none"> For SIMATIC PG or SIMATIC HMI access For standard Windows Ethernet communication
	Subnet mask	255.255.255.0	
	SIMATIC communications		

Note

The user interface for Windows XP embedded is English. The control panel and all other dialogs are always in English.

2.3 Configuring the Windows Ethernet Interface

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

1. Open the Windows control panel.
2. From the control panel, open: **Network Connections > Local Area Network**
3. Click the Properties button on the "Local Area Connection Status" dialog.
4. Scroll to and double-click the "Internet Protocol (TCP/IP)" connection from the list.
5. On the "Internet Protocol (TCP/IP) Properties" dialog, select the radio button for "Use the following IP address," and enter the required IP address and subnet mask (the default values are "192.168.1.2" for the field "IP address" and "255.255.255.0" for the field "Subnet mask"):

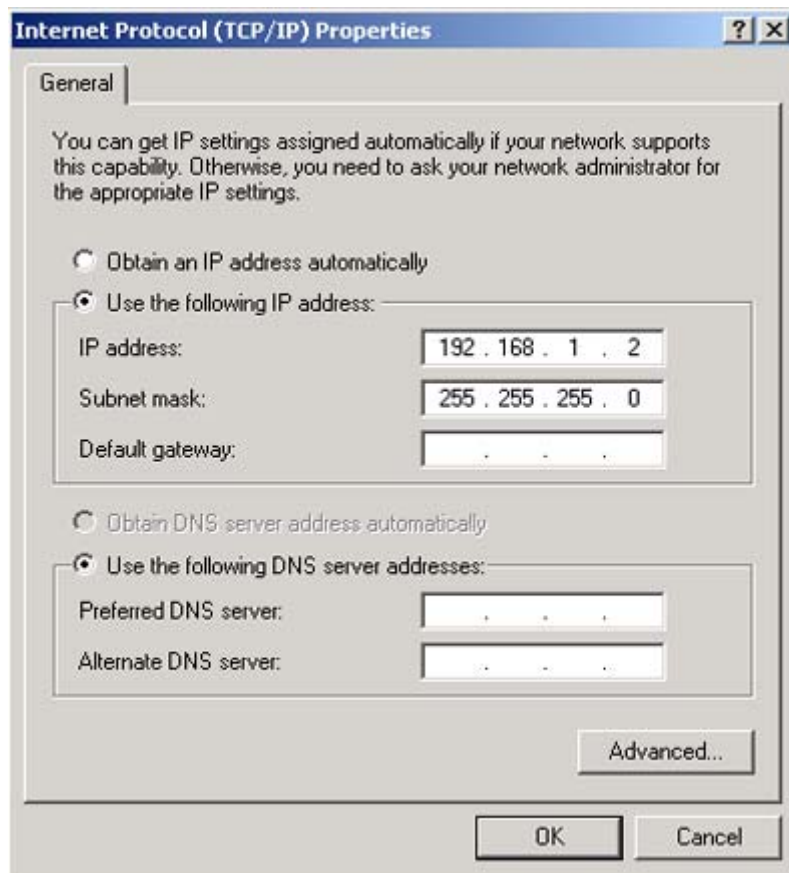


Figure 2-7 Ethernet Control Panel Configuration

6. Click OK on the "Internet Protocol (TCP/IP) Properties" and "Local Area Connection Properties" dialog, and close the remaining dialogs.

Entering the Selected IP Address in Your STEP 7 Project

If you choose a different IP address, subnet mask, or gateway for the Ethernet interface, you must configure this IP address or other parameters for both of the SIMATIC Embedded PCs and for the IE General properties in STEP 7. To configure the IP address in STEP 7, follow these steps:

1. Right-click the IE General in PC Station index 3 in the hardware configuration of your STEP 7 project.
2. Select Object Properties from the context menu.
3. Click the Properties button from the General tab of the Properties - IE General dialog.
4. Enter the IP address from the Parameters tab of the "Properties - Ethernet interface IE General" dialog. You can also specify a subnet mask or gateway address from this dialog:

-HMI/RTX IE Settings

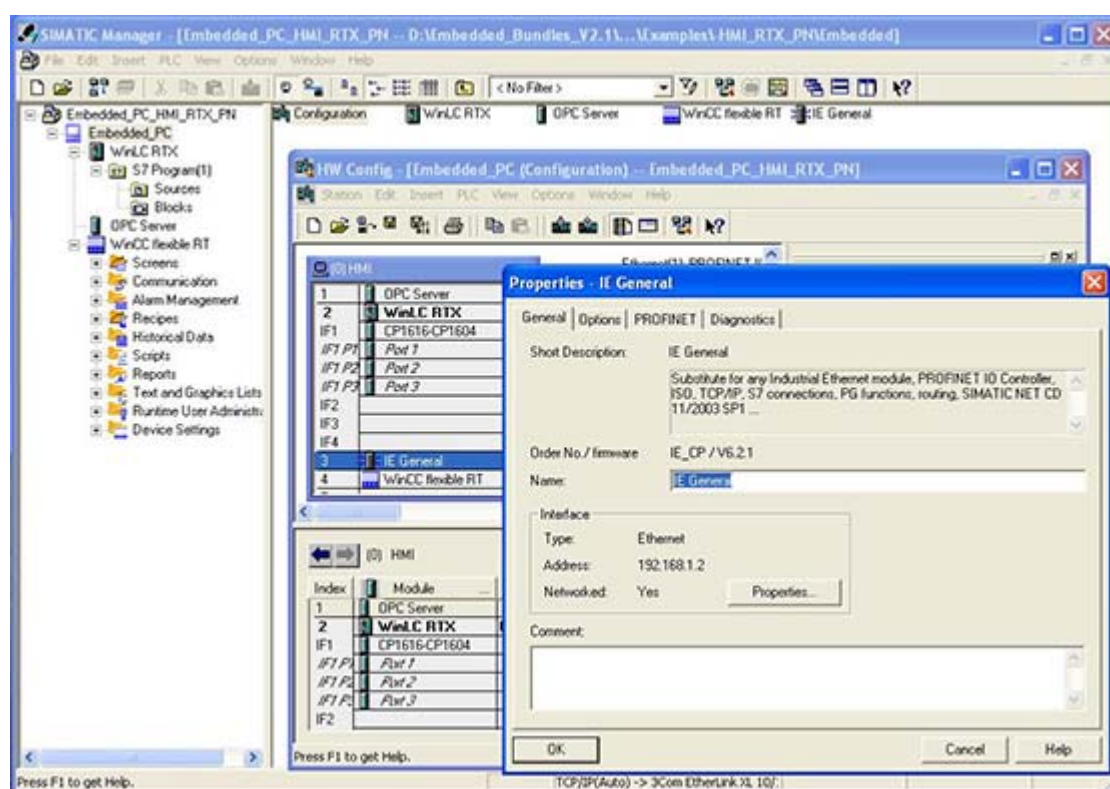


Figure 2-8 STEP 7 IP Address: -HMI/RTX IE Settings

-HMI/RTX PN Settings

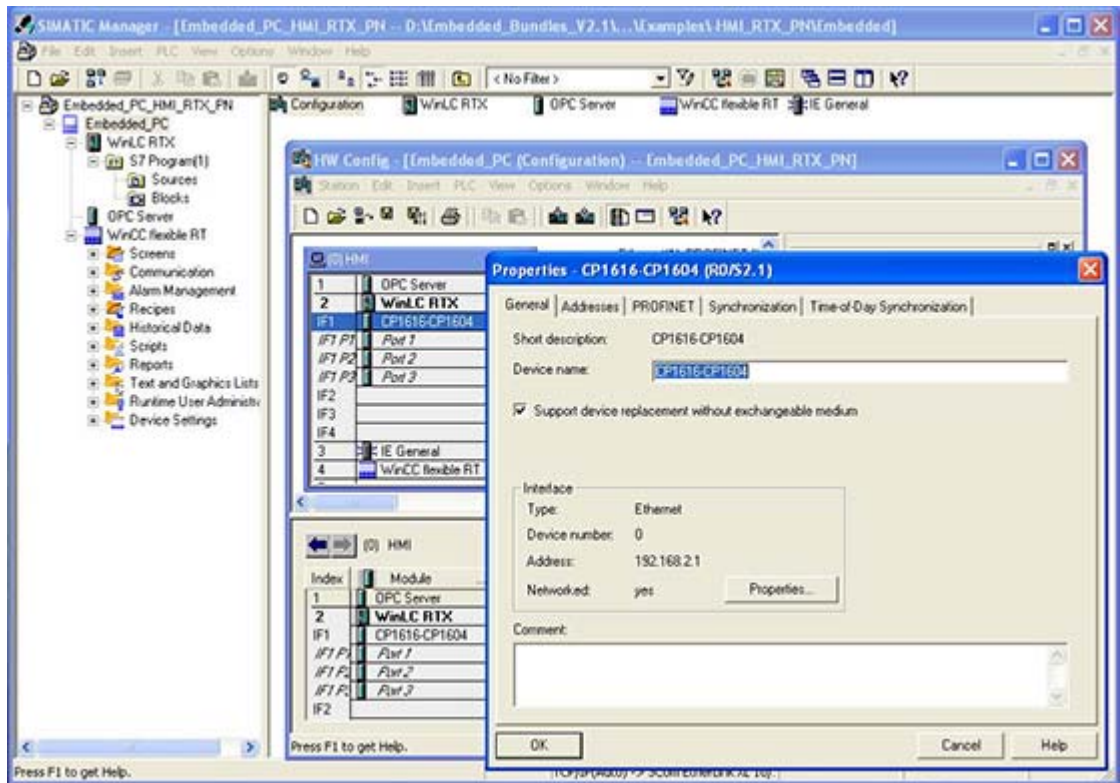


Figure 2-9 STEP 7 IP Address: -HMI/RTX PN Settings

2.4 Configuring the WinCC flexible project

The Microbox 427B-HMI/ -HMI/RTX and Panel PC 477B-HMI/ -HMI/RTX include WinCC flexible Runtime (RT) 2008, with the Recipe and Archive options. The license key for the other WinCC flexible RT options is also included.

You must configure your WinCC flexible project with the WinCC flexible ES (engineering station) software, and transfer this project from the engineering station computer to WinCC flexible RT 2008 on the Microbox PC 427B or Panel PC 477B. WinCC flexible ES is a separate product and is not included with the Microbox 427B-HMI/ -HMI/RTX or Panel PC 477B-HMI/ -HMI/RTX.

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 Microbox PC 427B or Panel PC 477B, the new user will automatically receive the same runtime configuration file settings as the default administrator user ("Administrator"). You do not need to change the runtime settings for the "Administrator" default user or for a new Windows user. For WinCC flexible RT, a D:\ drive on the CompactFlash card with the Enhanced Write Filter (Page 46) (EWF) disabled is required.

Changing the WinCC flexible runtime settings

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

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

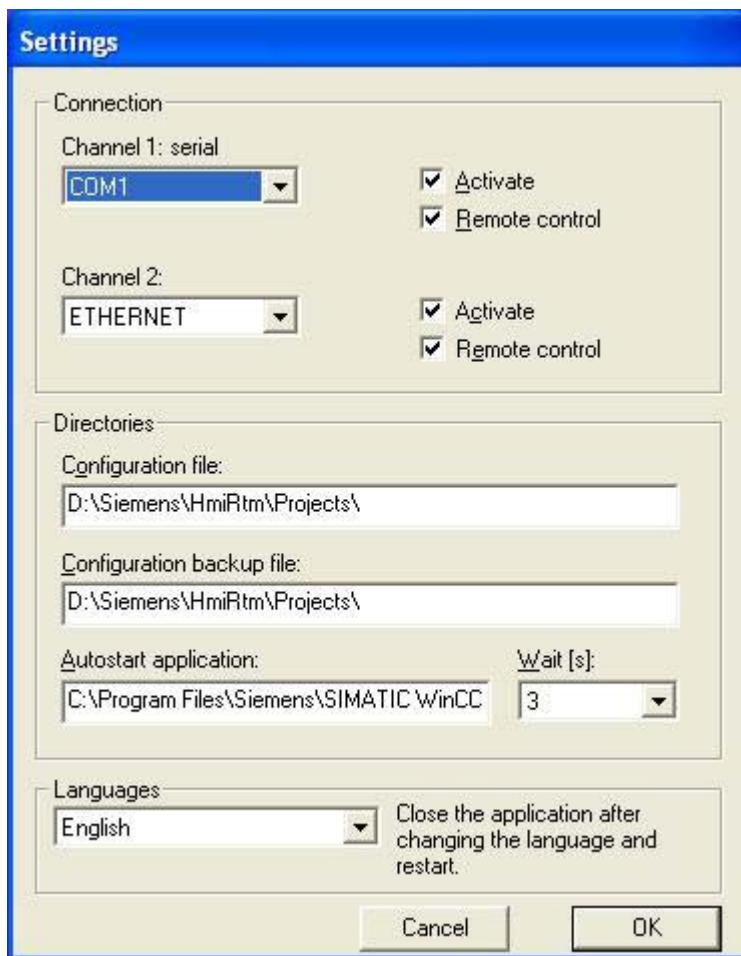


Figure 2-10 WinCC flexible 2008 RT Loader Settings

4. Click OK. Your runtime settings are now configured to persist after a reboot.

NOTICE

If you ever restore your Microbox 427B-HMI/ -HMI/RTX or Panel PC 477B-HMI/ -HMI/RTX from a custom system image CD (Page 48) or from the restore CD (Page 51) and subsequently create a new Windows user, you must again change the runtime settings to D:\ drive locations.

In addition, the default settings for recipes and archives also specify file locations on the C:\ drive. If you use these options, change these default settings to specify file locations on the D:\ drive also. Refer to the WinCC flexible Engineering Station documentation for help with configuring recipes and archives.

2.5 Managing the Enhanced Write Filter

The Enhanced Write Filter (EWF) is a Windows XP embedded utility for protecting a CompactFlash card. CompactFlash cards allow a limited number of write accesses. When the Enhanced Write Filter is enabled, Windows XP embedded writes no data to the CompactFlash card. Instead, the file writes are kept in virtual memory. No difference is apparent to you when you view file contents. File information appears the same whether it actually resides on the CompactFlash card or in virtual memory. The difference in file storage is evident when you reboot the computer or it loses power. All data in virtual memory is lost, and the computer restarts with the file contents of the CompactFlash card.

You can manage the EWF to maintain data that must persist after a reboot. If you disable the EWF, all file writes go to the CompactFlash card. This does result in the persistence of all data after a power loss; however, it causes the most stress over time to the CompactFlash card.

NOTICE

The Enhanced Write Filter default setting of the D:\ and C:\ drive on the Microbox PCs and Panel PCs is "Disabled". To protect the CompactFlash card from early failure due to continuous writes, enable the EWF for the C:\ drive after you have finished the development of applications on the C:\ drive.

You can also commit all data that is stored in virtual memory to the CompactFlash card at any point in time, using one of the following commands:

- **commit:** The "commit" EWF command writes all data that has accumulated in virtual memory at that moment in time to the CompactFlash card. The CompactFlash card is not disabled.
- **commitanddisable:** The "commitanddisable" EWF command disables the EWF and then writes all data that has accumulated in virtual memory to the CompactFlash card. Typically, this command is followed by an enable command to once again protect the CompactFlash card.

To use the enhanced write filter manager, 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 to make the command take effect.

NOTICE

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

The ewfmgr commands that are applicable appear below, as applied to the C:\ drive:

Enable the EWF:

Command: ewfmgr c: -enable



Commit Data to CompactFlash:

Command: ewfmgr c: -commit



Commit Data to CompactFlash and Disable the EWF:

Command: ewfmgr c: -commitanddisable



Note that the initial state of the Enhanced Write Filter is "disabled". Following a "commitanddisable" command, use the "enable" command to protect the CompactFlash card. All subsequent data writes will go to virtual memory.

Note

If the Enhanced Write Filter was shut down before downloading to WinLC RTX, you must click the button "Enable/Disable Station" in the Station Configuration Editor.

Replacing the CompactFlash card

In order to ensure a correct restart of WinLC RTX on a Microbox or Panel PC after replacing the CompactFlash card, perform one of the following steps:

- Disable the EWF for the CompactFlash drive before replacing the CompactFlash card and enable it after the first start of WinLC RTX.
- Store the WAF file (retentive data) on a drive on which the EWF is disabled.

Otherwise the next time you start WinAC RTX, it will start with an unbuffered startup.

2.6 Creating a system image

After you have configured Microbox 427B-HMI/ -RTX/ -HMI/RTX or Panel PC 477B-HMI/ -RTX/ -HMI/RTX for your application, you can create an image of your system. You can later use this image to restore your custom application to your system, if necessary.

Make the system image (custom restore CD) after you have performed any customization tasks required by your application, such as those listed below:

- Download of a STEP 7 user program and configuration of WinAC RTX (Microbox 427B-RTX/ -HMI/RTX or Panel PC 477B-RTX/ -HMI/RTX only)
- Transfer of a WinCC flexible project
- Configuration of WinAC Data Storage (Microbox 427B-RTX/ -HMI/RTX or Panel PC 477B-RTX/ -HMI/RTX only)
- Modification of the initial configuration from the Station Configuration Editor
- Installation of any custom software or data files

NOTICE

You cannot recover the pre-installed WinAC RTX license key on the Microbox PC 427B or Panel PC 477B from the custom restore CD. Use the Automation License Manager to remove the WinAC RTX license key, as well as any other SIMATIC license keys, prior to making a custom restore CD. Also note that if you plan to use the custom restore CD for more than one installation, each SIMATIC license key is applicable for one and only one computer.

Use the Image Creator to make your system image. The Image Creator is part of the tool "SIMATIC PC/PG Image and Partition Creator" available from Siemens. You can find ordering information for the Image Creator at the A&D Mall. (<http://mall.automation.siemens.com/>) Refer to the Image Creator instructions for additional help on making and restoring system images.

Example of making an -RTX restore CD using a Microbox PC 427B

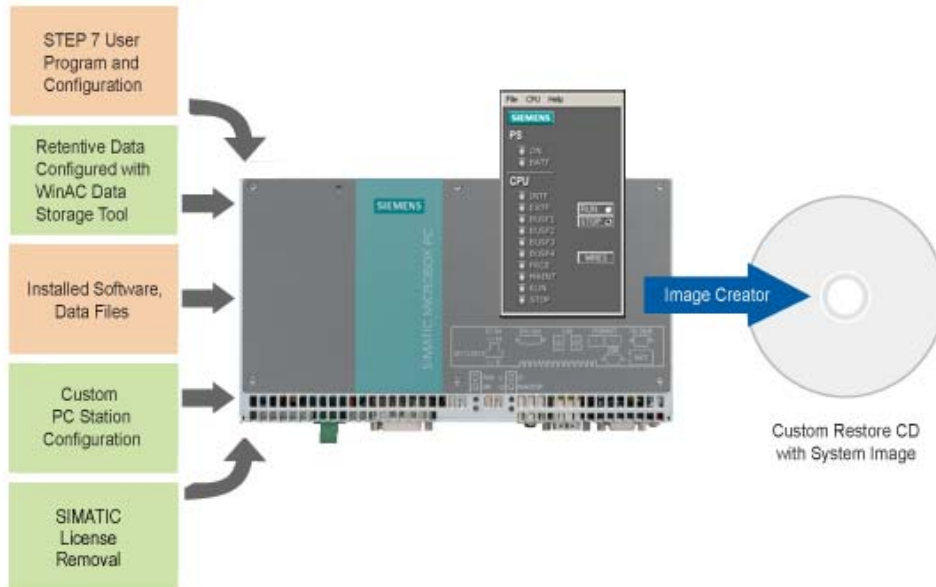


Figure 2-11 Example of Making a -RTX Restore CD Using a Microbox PC 427B

Example of making an -HMI/RTX restore CD using a Panel PC 477B

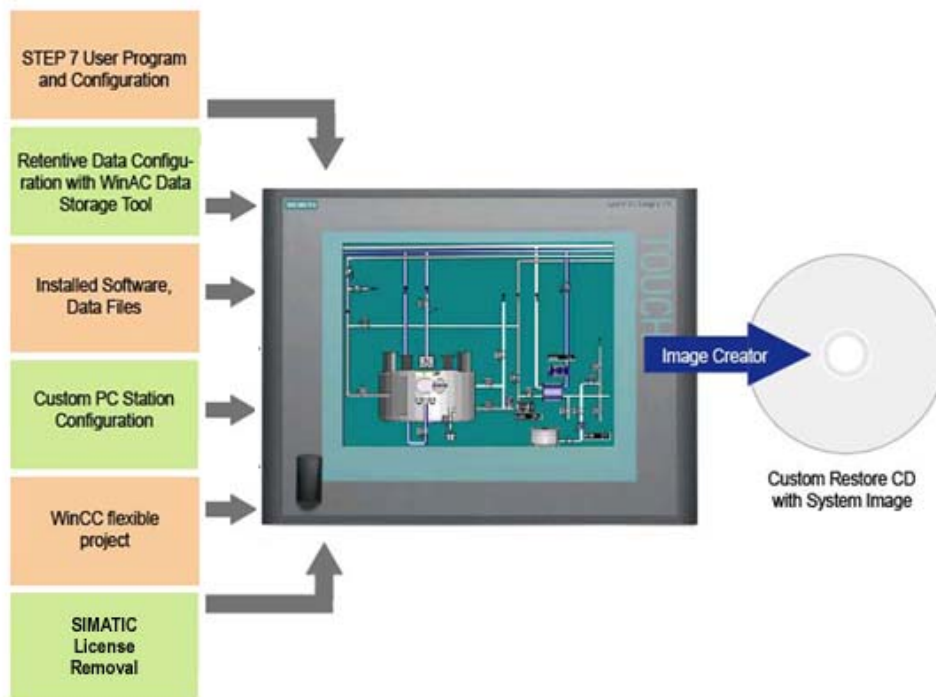


Figure 2-12 Example of Making a -HMI/RTX Restore CD Using a Panel PC 477B

2.6 Creating a system image

This system image on a custom restore CD 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 CD), and, if applicable, restore the BIOS settings that you saved.

2.7 Restoring the initial configuration

The SIMATIC Embedded PC product release includes a restore CD without license key that you can use to restore your system to the initial configuration.

NOTICE

Restoring from the restore CD removes any applications or data files stored on the Microbox PC 427B or Panel PC 477B. A restore also eradicates license keys and reloads the registry with initial values. A restore also clears all WinAC RTX load memory and retentive data from the Microbox 427B-RTX/ -HMI/RTX or Panel PC 477B-RTX/ -HMI/RTX.

You can restore from a custom restore CD that includes all of your files and registry settings, as described in the topic "Creating a System Image (Page 48)". Otherwise, the restore CD included with the Microbox 427B-HMI/ -RTX/ -HMI/RTX or Panel PC 477B-HMI/ -RTX/ -HMI/RTX restores the system to the initial configuration.

Restore Process

To restore your initial configuration from the Microbox 427B-HMI/ -RTX/ -HMI/RTX or Panel PC 477B-HMI/ -RTX/ -HMI/RTX restore CD, follow these steps:

1. Use the Automation License Manager to transfer your WinCC flexible license key from the Microbox 427B-HMI/ -HMI/RTX or Panel PC 477B-HMI/ -HMI/RTX to a storage device, for example, a USB stick. For the Microbox 427B-RTX/ -HMI/RTX or Panel PC 477B-RTX/ -HMI/RTX, also transfer the WinAC RTX license.
2. Connect a USB CD-ROM drive to your Microbox PC 427B or Panel PC 477B, and insert the restore CD.
3. Follow the instructions to restore from the restore CD.
4. Transfer the license key(s) from the storage device to the Microbox PC 427B or Panel PC 477B.

After the restore process completes, your system consists of the initial configuration of the Microbox 427B-HMI/ -RTX/ -HMI/RTX or Panel PC 477B-HMI/ -RTX/ -HMI/RTX.

2.8 Downloading PC Station components

If you need to change and download the configuration of the PC Station (for example, if you want to add WinCC flexible 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 a 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.)
4. From STEP 7, download the PC Station or PC Station components for your project or add WinCC flexible RT to the configuration.
5. Re-enable the Enhanced Write Filter (EWF) by entering the following command from a command prompt:
ewfmgr c: -enable
6. Reboot your computer.

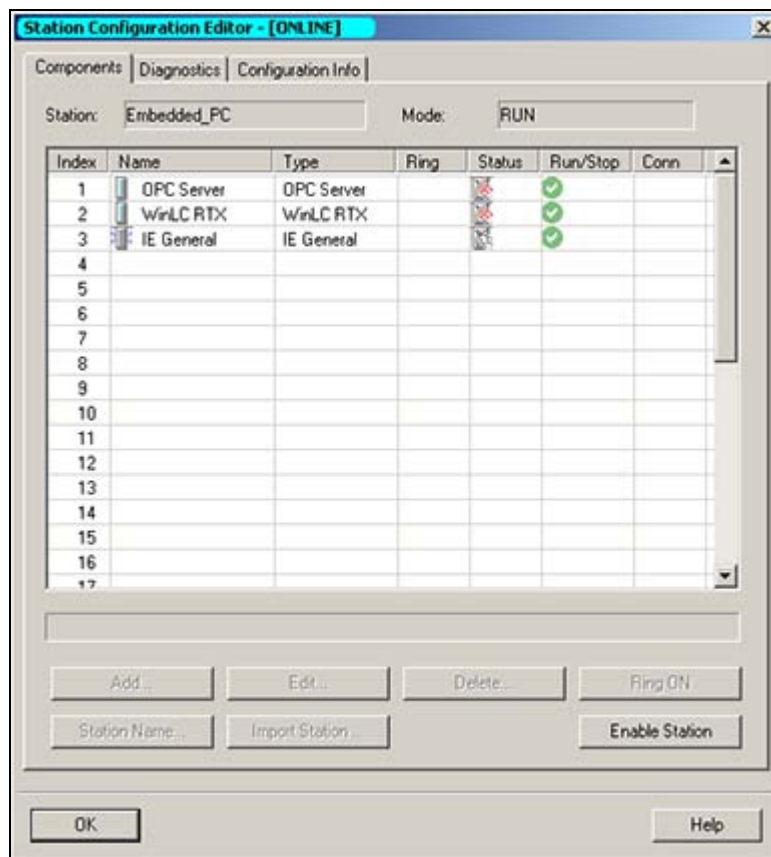


Figure 2-13 Downloading PC Station Components

Note

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

Tools

3.1 Using the System Tool XPembedded

The System Tool XPembedded is an easy-to-use graphical user interface for managing the Enhanced Write Filter (EWF) and Logon functions. This tool, along with accompanying documentation, is located in the Tools folder of the Doku_CD.

For the EWF, the System Tool XPembedded is an alternative to using the ewfmgr commands from the Windows command prompt. See the System Tool XPembedded user manual for a description of the functionality and for usage instructions.

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