SIEMENS

SIMATIC

WinAC MP 2008

Operating Instructions

03/2009
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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.

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 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.

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Table of contents

Preface

1

Purpose of this documentation

This documentation provides you with detailed information on the **Wi**ndows **A**utomation **C**enter 2008 for **M**ulti **P**anel or simply WinAC MP 2008.

Tip

In the following pages WINAC MP 2008 will be referred to as WINAC MP.

WinAC MP is an S7 software PLC for the MP 177, MP 277 and MP 377 Multi Panels. WinAC MP runs under Windows CE.

WinAC MP can be operated on the following Multi Panel HMI device types:

- MP 177 6" Touch
- MP 277 8" Touch and Key
- MP 277 10" Touch and Key
- MP 377 12" Touch and Key
- MP 377 15" Touch
- MP 377 19" Touch

Required basic knowledge

General knowledge about automation engineering and process communication is needed to understand this documentation.

In addition, the following knowledge is required:

- Comprehensive knowledge of WinCC flexible
- Comprehensive knowledge of STEP 7

Validity of the documentation

This documentation is valid for WinAC MP 2008.

Requirement for installation

WinCC flexible 2008 SP1 should be installed.

Location of documentation

When you install WinAC MP, the documentation is stored on the configuration PC.

The PDF file: You can open the WinAC_MP_en.pdf file on the configuration PC with the menu command: **Start > SIMATIC > Documentation > English > WinAC MP 2008**

Upgrade from WinAC MP 2007 to WinAC MP 2008

If you already have WinAC MP 2007 you can download a free upgrade from the Internet.

To confirm that you are authorized to download this free upgrade, please state the license number of your original WIN MP 2007 (customs and shipping costs may arise outside the EU). For details of the license number valid for your product, please refer to your software product certificate.

For additional information about this upgrade, refer to Internet (http://support.automation.siemens.com/WW/view/en/31929448):

Getting Started Video with image and sound, duration: approx. 6 minutes (D/E)

The Getting Started Video shows:

- the advantages of the WinAC MP software PLC
- how easy it is to configure WinAC MP

You will find the Getting Started Video on the Internet (http://support.automation.siemens.com/WW/view/en/32010673)

Conventions

Configuration and runtime software have different names as follows:

- "WinCC flexible 2008 SP1" denotes the configuration software.

  The term "WinCC flexible" is used in a general context. The full name, for example, "WinCC flexible 2008 SP1", is always used when it is necessary to differentiate between different versions of the configuration software.
- "WinCC flexible Runtime" refers to the runtime software that can run on the HMI device.

Please observe notes labeled as follows:

Note

Notes contain important information concerning the product, its use or a specific section of the documentation to which you should pay particular attention.

- "WinAC MP" is the name of a software PLC that can run on the Multi Panel HMI device types listed above along with WinCC flexible 2008 SP1.

Registered trademarks

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- SIMATIC®
- STEP 7®
- WinAC®
- HMI®
- SIMATIC HMI®
- SIMATIC ProTool®
- SIMATIC WinCC®
- SIMATIC WinCC flexible®
- SIMATIC MP 177®
- SIMATIC MP 277®
- SIMATIC MP 377®
- SIMATIC Multi Panel®

Standards

WinAC MP complies with the requirements and criteria of IEC 61131-3.

Position in the information landscape

This documentation is part of the SIMATIC and SIMATIC HMI documentation. This documentation describes all the information specifically relating to WinAC MP. You will find more information in the following manuals:

- STEP 7 - Programming with STEP 7

  Provides basic information on designing and programming a STEP 7 user program. This manual is available on a PC with STEP 7.
- STEP 7 - System and Standard Functions for S7-300 and S7-400

  Describes the system functions, organization blocks and loadable standard functions available for programming a STEP 7 user program. This manual is available on a PC with STEP 7.
- STEP 7 - Getting Started with STEP 7

  Explains the use and functions of the STEP 7 automation software, the procedures during configuration and the development of STEP 7 user programs. This manual is available on a PC with STEP 7.
- STEP 7 - Statement List for S7-300 and S7-400

  Provides a full list of the statements that can be used for WinAC MP. This manual is available on a PC with STEP 7.
- Operating instructions for SIMATIC HMI devices
  - MP 177
  - MP 277
  - MP 377
- WinCC flexible Compact/Standard/Advanced User's Manual

  Describes basic principles of configuration using the WinCC flexible Compact /WinCC flexible Standard/WinCC flexible Advanced engineering systems.
- WinCC flexible Runtime User Manual

  Describes how to commission and operate your runtime project on a PC.
- WinCC flexible Migration User's Manual
  - Describes how to convert an existing ProTool project to WinCC flexible.
  - Describes how to convert an existing WinCC project to WinCC flexible.
  - Describes how to convert an existing ProTool project including a change of HMI device, for example, from OP3 to OP 73.
  - Describes how to convert an existing ProTool project including a change from a graphics device to a Windows CE device.
- Communication User's Manual
  - Communication Part 1 describes the connection of the HMI device to SIMATIC PLCs.
  - Communication Part 2 describes the connection of the HMI device to third-party PLCs.
- Getting started
  - WinCC flexible, Getting Started - First Time User

    Based on an example project, this is a step-by-step introduction to the basics of configuring screens, alarms, recipes and screen navigation.
  - WinCC flexible, Getting Started - Power User

    Based on an example project, this is a step-by-step introduction to the basics of configuring logs, project reports, scripts, user management, multilingual projects and integration in STEP 7.
  - WinCC flexible, Getting Started - Options

    Based on an example project, this is a step-by-step introduction to the basics of configuring the WinCC flexible Sm@rtService, Sm@rtAccess and OPC server options.

Guide to the manual

This documentation contains the following aids that will allow you to find the specific information you need quickly:

- At the beginning of the documentation you will find a full table of contents.
- Following the appendix, you will find a glossary with definitions of the most important terminology.
- At the end of the documentation, there is a comprehensive index with which you can locate the information you are looking for.

Additional support

If you have any questions about the products described in this manual, please contact your Siemens representative.

You will find your contact person (http://www.siemens.com/automation/partner) here.

You will find a guide to the technical documents for the various SIMATIC products and systems (http://www.siemens.com/simatic-tech-doku-portal) on the Internet.

Here, you will find the online catalog and the online ordering system (https://mall.automation.siemens.com/en/guest/).

Training center

We offer various courses for newcomers to the SIMATIC S7 automation system. Contact your regional Training Center, or the central Training Center in D-90327 Nuremberg, Germany.

- Additional information can be found on the Internet (http://www.sitrain.com)

Technical support

You can contact Technical Support for all A&D products by means of the Web form (http://www.siemens.com/automation/service)

You can find more information on our technical support (http://www.siemens.com/automation/service) on the Internet.

Service & Support on the Internet

In addition to our documentation, we offer our complete knowledge base at the Internet address (http://www.siemens.com/automation/service&support).

There you can find:

- Our newsletter containing up-to-date information on your products.
- The documents you need via our Search function in Service & Support.
- A forum for global information exchange by users and specialists.
- Your local Automation & Drives representative.
- Information about on-site service, repairs, spare parts, and more.

Product overview

2

2.1 Product overview

Definition of embedded

An embedded system:

- is a combination of hardware and software providing the flexibility of software with the performance of rugged hardware.
- has precisely defined tasks; it forms a functional software and hardware unit that only performs predefined tasks.

Embedded automation with WinAC MP

SIMATIC Embedded Automation combines SIMATIC control technology (WinAC MP) and WinCC flexible visualization on the Multi Panels.
These are based on Windows CE and have no hard disks, making them extremely rugged platforms.

The Multi Panels have an operating system intended for embedded applications that needs little user memory and meets real-time and deterministic demands.

- WinAC MP is the cost-effective solution for small and medium-sized applications and automation tasks
- The Multi Panels are ideal for use in harsh industrial environments thanks to their ruggedness and compact design.

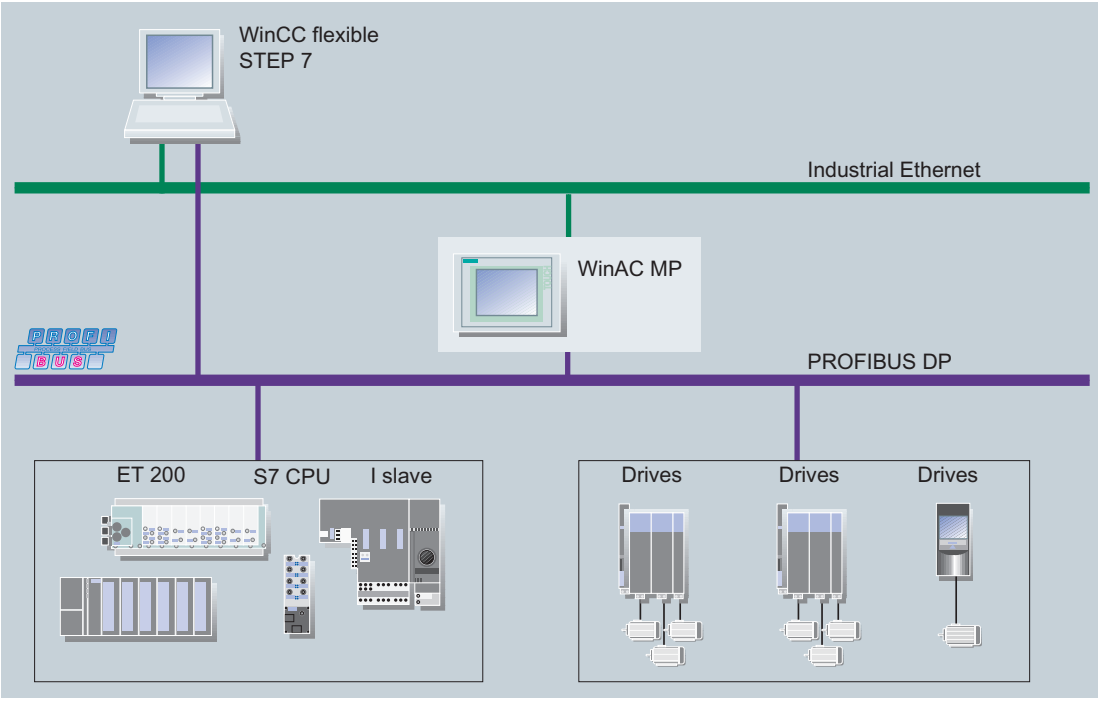


Figure 2-1 Embedded automation with WinAC MP 2008

Programming

WinAC MP is programmed and configured with STEP 7 and the SIMATIC engineering tools for production engineering. This means that all SIMATIC programming languages are also available for WinAC MP.

Note

Program modules programmed for SIMATIC S7 controllers can be reused for WinAC MP without any changes being necessary, provided they have not been tailored to specific properties of a SIMATIC S7 CPU.

Visualization with WinCC flexible

WinCC flexible projects for the Multi Panels are edited with WinCC flexible integrated in STEP 7. In integrated projects, you access the configuration data of STEP 7 and can use the SIMATIC Manager as the central coordinator for creating, editing and managing WinAC in the SIMATIC HMI station and the WinCC Flexible projects for the Multi Panels.

Communication

Communication with the I/O is handled via the integrated PROFIBUS-DP master that allows the connection of DP slaves.

Information from the automation level is acquired over the PROFIBUS-DP interface and forwarded by WinAC MP 2008 via the Industrial Ethernet interface integrated in the HMI device. Data are transferred via Industrial Ethernet and S7 communication to a central PC, for example, to WinCC, WinCC flexible, or to the SIMATIC NET OPC server.

Released FM modules for communication on the PROFIBUS

The following FM modules are released, in addition to standard I/O modules, on PROFIBUS on an ET 200M.

- FM 350-1 function module
- FM 350-2, 8-channel counter module
- FM 351 positioning module
- FM 352 electronic cam controller
- FM 353 positioning module - stepdrive
- FM 354 positioning module - servodrive
- FM 355 control module - PID controller
- FM 355-2 temperature controller
- FM 352-5 boolean processor

2.2 Scope of delivery

Overview of the components supplied

The following components ship with the product:

- CD with:
  - WinAC MP 2008
  - Electronic operating instructions in PDF format

    Languages: German, English, French
- USB stick with:
  - Single license for WinAC MP 2008
- Software Product (Certificate of License)

WinCC flexible System Library

The WinAC MP scope of delivery includes a WinCC flexible system library that contains two screens. These screens are taken over during the installation in the WinCC flexible system library and are available for use there.

The WinCC flexible system library includes the following Screens:

- Home Screen
- Tuning Screen

Further Information

The following sections of the manual provide you with a detailed description of the screens:

- Description of the Home Screen (Page 59)
- Description of the Tuning Screen (Page 61)

2.3 Essential system characteristics of WinAC MP 2008

- New software PLC WinAC MP 177 for MP 177 6" Touch
- Improved time behavior through conversion to "HMI Enable Time"
- With WinAC MP, you can configure retentive data for bit memory, S7 timers, S7 counters and data blocks.

  Even if there is a power down while WinAC MP is running, the current values of the retentive DBs or bit memory, timers and counters are not lost. When you restart WinAC MP again, you can access the last saved values of these retentive memory bits, timers, counters and DBs.
- B-Send / B-Receive now available in WinAC MP 2008.
- The performance during online monitoring via PROFINET has been improved for WinAC MP 2008.
- New screen forms integrated into WinCC flexible system library.
- A new parameter has been added in WinAC MP 2008 to specify the file path for system functions Archive and Restore.
- WinAC MP supports time synchronization between the HMI device and the WinAC MP installed on it.
- Routing with S7 communication is possible with WinAC MP.
- You configure WinAC MP in STEP 7 as an HMI station and not as a PC station.
- WinAC MP supports only the OB 35 as cyclic interrupt.
- Expansion of the IO address area from 2k to 4k for MP 277
- SCL / CFC programming

Additional technical specifications are available in the in the section "Technical specifications (Page 93)" in the operating instructions for WinAC MP 2008.

Steps for installing and removing

3

3.1 Requirements for installation

Installing and working with WinAC MP

Before you can use WinAC MP, there are several installation and development steps you need to work through on the configuration PC prior to transferring the required components to the HMI device. You will need to perform the following tasks:

Step	Task	For more information, refer to the section ...
1	Check that your HMI and configuration device meets the system requirements.	Hardware and software requirements (Page 16)
2	Install WinAC MP on the configuration PC.	Installing WinAC MP (Page 18)
3	Transfer the WinAC MP Runtime files from the configuration PC to the HMI device with ProSave.	Transferring WinAC MP to the HMI device (Page 26)
4	Transfer the License Key to the HMI device.	Licensing WinAC MP on the HMI device (Page 27)
5	Develop a STEP 7 user program to control your process with WinAC MP on the HMI device.	Creating a STEP 7 project for WinAC MP (Page 34)
6	Develop a WinCC flexible project so that the HMI device is available as the interface to WinAC MP and to your process. You have the following options: • Use the supplied WinCC flexible System Library • Create your own WinCC flexible sample project for your application.	Working with WinCC flexible (Page 79)

You will find information on using the functions of WinAC MP with WinCC flexible in the section WinAC MP functions (Page 80).

See also

Setting the communication functions for the configuration PC (Page 47)

Integrating the WinAC MP System Library (Page 57)

3.2 Hardware and software requirements

Installation sequence

To be able to use WinAC MP on the HMI device, it is **mandatory** that you keep to the following sequence during installation on the configuration PC:

1. Install STEP 7 V5.4 SP 4 or higher
2. Install WinCC flexible 2008 SP1
3. Install WinAC MP 2008

Tip

If older versions of STEP7, WinCC flexible and WinAC MP have already been installed, you will have to uninstall them first.

Once the programs have been uninstalled, you will have to observe the installation sequence listed above.

HMI device hardware requirements

WinAC MP is installed on a reserved area of the flash memory. The memory area reserved for HMI applications is not reduced by this.

WinAC MP runs on the following HMI devices:

- SIMATIC MP 177 6" Touch (6AV6 642-0EA01-3AX0)
- SIMATIC MP 277 8" Touch (6AV6 643-0CB01-1AX1)
- SIMATIC MP 277 8" Key (6AV6 643-0DB01-1AX1)
- SIMATIC MP 277 10" Touch (6AV6 643-0CD01-1AX1)
- SIMATIC MP 277 10" Key (6AV6 643-0DD01-1AX1)
- SIMATIC MP 377 12" Touch (6AV6 644-0AA01-2AX0)
- SIMATIC MP 377 12" Key (6AV6 644-0BA01-2AX0)
- SIMATIC MP 377 15" Touch (6AV6 644-0AB01-2AX0)
- SIMATIC MP 377 19" Touch (6AV6 644-0AC01-2AX0)

To find out if successor Multi Panels are supported, refer to the Internet (http://www.siemens.com/automation/service&support).

HMI device software requirements

To install WinAC MP 2008 on the HMI device, you require:

- WinCC flexible runtime 2008 SP1
- current image of the HMI device from WinCC flexible 2008 SP1

  Notes on updating the HMI device image are available in the respective documentation.

Configuration PC hardware requirements

To install WinAC MP on the configuration PC, you require

- At least 40 MB of free space on the hard disk
- The requirements of STEP 7 and WinCC flexible must also be supported

Configuration PC software requirements

To install WinAC MP on the configuration PC, you require

- Microsoft Windows XP Professional, Service Pack 2 or higher
- STEP 7 V 5.4 with Service Pack 4 or higher
- WinCC flexible 2008 SP1

And...

You need:

- An Ethernet or PROFIBUS connection between the configuration PC and HMI device
- or a Serial RS232/PPI Multi Master cable for serial transfer (for example to load the MP 177 and MP 277 the first time) between the configuration PC and HMI device (order no. of the cable: 6ES7 9013CB30-0XA0).
- SIMATIC NET if you want to use Ethernet communication (SIMATIC NET CD V7.0 or V7.1).
- Devices necessary for process control connected to your HMI device using PROFIBUS DP (for example, ET 200).
- The Adobe Reader, to read the supplied electronic manuals. You can obtain the latest version of Acrobat Reader at www .Adobe.com.

3.3 Installation steps

3.3.1 Installing WinAC MP

Requirements

Prior to installing WinAC MP, read the requirements in the section: Hardware and software requirements (Page 16)

Note

You must first uninstall any already installed WinAC MP version.

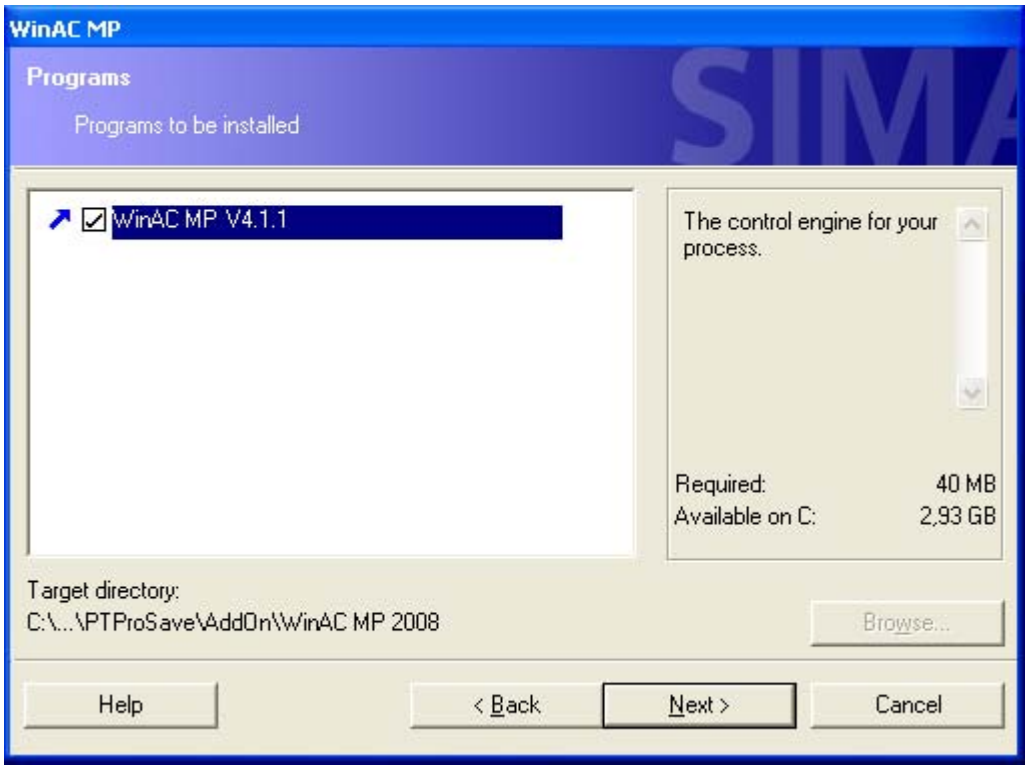
Installing WinAC MP on the configuration PC

The WinAC MP software includes a setup program that automatically performs the installation.

The installation program leads you step by step through the installation operation. You can go to the next step or back to the previous step at any time.

To start the installation program, proceed as follows:

1. Insert the CD "WinAC MP 2008" in the CD drive of the configuration PC.
2. Double-click on the "setup.exe" file in the "\WinAC" folder.
3. Follow the instructions that appear on the next screen.



4. Confirm the dialog and follow the instructions on the screen.
   Result: A message is displayed when the installation is completed successfully.
5. You should restart your computer after installation has completed.

Installing WinAC MP on the HMI device

1. Installing the options by means of ProSave.
2. Installing the product-specific license (License Key) using Automation Single License Manager.

Further installation

Install SIMATIC NET if you want to use Industrial Ethernet communication.

See also

Hardware and software requirements (Page 16)

3.3.2 Connecting the configuration computer to the HMI device

3.3.2.1 Basics of transfers

Transfer

Transfer is the process of sending the installation and project files between the configuration PC and the HMI device.

The HMI devices must be connected to the configuration PC to transfer the installation and project files.

Basic procedure

There are several ways in which you can transfer installation and project files:

- Transfer over Industrial Ethernet (direct or networked connection)
- Transfer via PROFIBUS DP
- Transfer over USB (no STEP 7 user program)

Note

USB connection parameters

To use the USB connection, you require a master-master cable. Install the supplied "BULK driver" and not "Standard".

You will find information on installing the "BULK driver" under the entry ID (http://support.automation.siemens.com/WW/view/en/19142034)

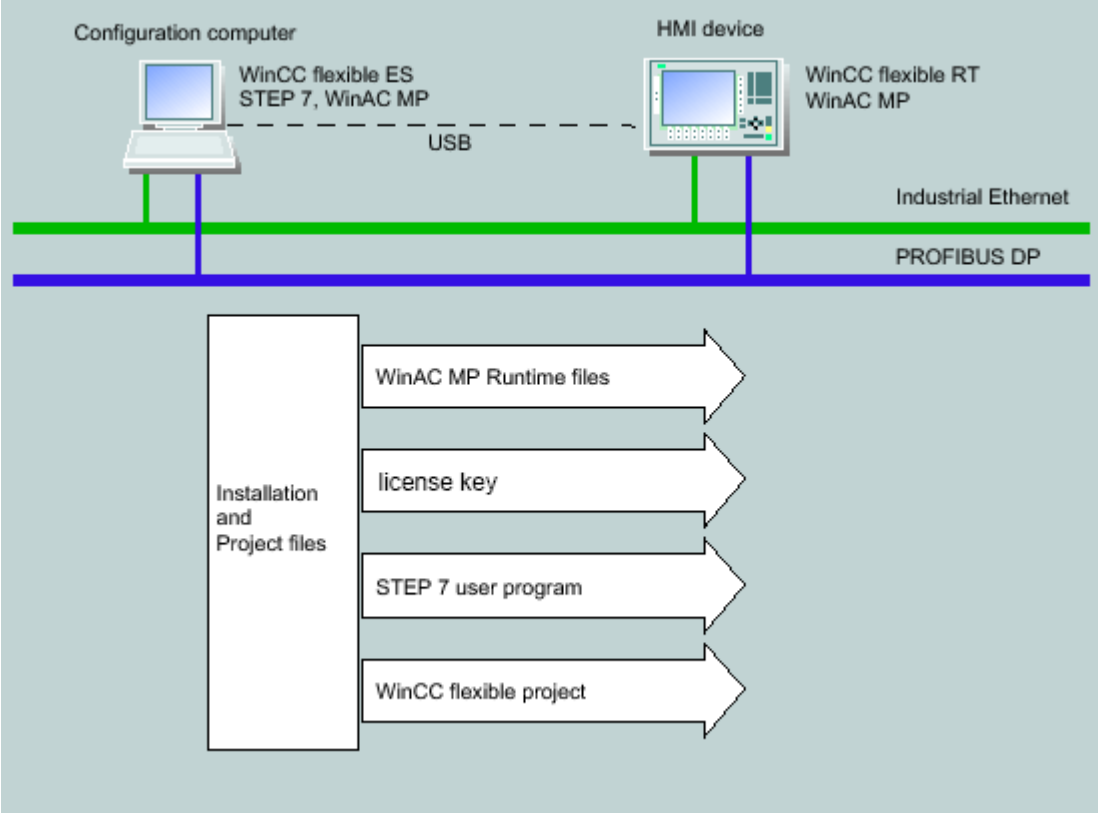


Figure 3-1 WinAC MP transfer

3.3.2.2 Transfer over Industrial Ethernet

Connection over Industrial Ethernet

Direct connection: Connect the configuration PC to the HMI device using a crossover cable.

Networked connection over LAN: Connect the configuration PC and the HMI device to the LAN with a 1:1 or direct cable.

Settings on the HMI device

1. Open the Control Panel to set the network configuration. You can open the Control Panel either in the Loader or with **Start > Settings > Control Panel**.
2. Double-click "Network and Dial-up Connections".
3. Double-click on:

- LAN9115 for MP 177
- LAN90001 for MP 277
- ERTEC400 for MP 377

Enter the IP address and, if necessary, the subnet mask of the HMI device. Confirm with "OK".

Note

Specifying a gateway address

If you need to specify a gateway address, contact your network administrator.

1. Then double-click "Transfer".
2. Under Channel 2, select the "Ethernet" option in the list box, select "Enable Channel" and confirm with "OK".

⚠ WARNING

Entering a static IP address

Do not use DHCP (Dynamic Host Configuration Protocol) to assign the TCP/IP address on the HMI device.

With DHCP, there is no guarantee that the same IP address will always be assigned when a node is turned on. If the IP address is changed, nodes in Industrial Ethernet may lose their connection or be connected to the wrong node. This can result in unexpected process and machine behavior that can cause death, serious injury and/or damage to equipment.

Always enter a static IP address for the HMI device or if you use DHCP, make sure that there are at least lease reservations. Contact your network administrator when assigning addresses.

Setting on the configuration PC

Take the following steps on the configuration PC either in ProSave or in WinCC flexible:

Step	Connecting ProSave	Connecting WinCC flexible
1	Open the "General" tab in ProSave.	Open the project you want to transfer in WinCC flexible.
2	Select your HMI device from the "Device type" list box.	Select your HMI device via **Project > Change Device Type**.
3	--	Change to **Project > Transfer > Transfer Settings** in WinCC flexible.
4	Select the "Ethernet" option in the "Connection" list box.	Select the "Ethernet" option in the "Mode" list box.
5	In "Connection Parameters", enter the IP address or the computer name of the HMI device.	Under "Computer Name" or "IP Address", enter the computer name or the IP address of the HMI device.
6	--	Confirm your entries with "Apply".
7	Close ProSave **or** change to the "Options" tab to transfer the WinAC MP runtime files. Please make sure that the correct path is set.	Change to **Project > Transfer > Options** in WinCC flexible to transfer the WinAC MP runtime files. Please make sure that the correct path is set.
8	Click the ">>" button.	Click the ">>" button.

3.3.2.3 Transfer over PROFIBUS

Connection over PROFIBUS

The configuration PC must have a PROFIBUS port, such as a CP 5611, and the relevant drivers must already be installed.

Connect the configuration PC with the HMI device over the DP interface using a PROFIBUS cable.

Requirements

WinAC MP must be running when you transfer data over PROFIBUS to WinCC flexible Runtime.

Settings on the HMI device

1. Open the Control Panel in the Loader.
2. Double-click "Transfer".
3. Go to "Channel 2", select "MPI/PROFIBUS/S7 Ethernet" and select "Enable Channel".
4. Click "OK" to close the "Transfer Settings" dialog.

Note

You set the PROFIBUS address of the HMI device in STEP 7 HW Config and not on the HMI device! The default PROFIBUS address after installing WinAC is 2.

Setting on the configuration PC

Take the following steps on the configuration PC either in ProSave or in WinCC flexible:

Step	Connecting ProSave	Connecting WinCC flexible
1	Open the "General" tab in ProSave.	Open the project you want to transfer in WinCC flexible.
2	Select your HMI device from the "Device type" list box.	Select your HMI device via **Project > Change Device Type**.
3	--	Change to **Project > Transfer > Transfer Settings** in WinCC flexible.
4	Select the "MPI / PROFIBUS-DP" option in the "Connection" list box.	Select the "MPI/DP" option in the "Mode" list box.
5	In "Connection Parameters", enter the OP address of the HMI device. (The OP address is the PROFIBUS address of the HMI device).	Enter the station address of the HMI device. (The OP address is the PROFIBUS address of the HMI device).
6	--	Confirm your entries with "Apply".
7	Close ProSave **or** change to the "Options" tab to transfer the WinAC MP runtime files. Please make sure that the correct path is set.	Change to **Project > Transfer > Options** in WinCC flexible to transfer the WinAC MP runtime files. Make sure that the correct path is set.
8	Click the ">>" button.	Click the ">>" button.

3.3.2.4 Transfer via USB

Connecting over USB

Connect the USB port of the configuration PC with the USB port of the HMI device using a USB cable.

Note

USB connection parameters

To use the USB connection, you require a master-master cable. Install the included "BULK driver" and not "Standard".

You will find information on installing the "BULK driver" under the entry ID (http://support.automation.siemens.com/WW/view/en/19142034)

Settings on the HMI device

1. Open the Control Panel in the Loader.
2. Double-click "Transfer".
3. Under Channel 2, select "USB", select "Enable Channel" and confirm with "OK".

Setting on the configuration PC

Take the following steps on the configuration PC either in ProSave or in WinCC flexible:

Step	Connecting ProSave	Connecting WinCC flexible
1	Open the "General" tab in ProSave.	Open the project you want to transfer in WinCC flexible.
2	Select your HMI device from the "Device type" list box.	Select your HMI device by selecting **Project > Change Device Type**.
3	--	Change to **Project > Transfer > Transfer Settings** in WinCC flexible.
4	Select the "USB" option in the "Connection" list box.	Select the "USB" option in the "Mode" list box.
5	--	Confirm your entries with "Apply".
6	Close ProSave **or** change to the "Options" tab to transfer the WinAC MP Runtime files. Make sure that the correct path is set.	Change to **Project > Transfer > Options** in WinCC flexible to transfer the WinAC MP Runtime files. Make sure that the correct path is set.
7	Click the ">>" button.	Click the ">>" button.

3.3.2.5 Transfer using automatic transfer detection

Application

Using automatic transfer detection, you can transfer projects from the configuration computer to the HMI device without needing to change the HMI device to transfer mode. Automatic transfer detection is useful when the configuration computer and the HMI device are located at some distance apart.

⚠ WARNING

Death, serious injury and/or damage to equipment possible

If you select "Automatic transfer detection", you transfer the files while WinAC MP is operating!

If WinAC MP is connected to inputs/outputs, an interruption in the operation of WinAC MP can lead to death, serious injury and/or damage to equipment.

Make sure of the following when transferring:

- Only qualified personnel have access to the configuration computer!
- All devices must be in a safe state before the transfer is started.
- Always install an EMERGENCY STOP circuit for your machine or process.

Prerequisites for automatic transfer detection

- WinCC flexible Runtime must be running on the HMI device. The HMI device cannot automatically toggle to "automatic transfer detection" if WinCC flexible Runtime is not running.
- All dialogs on the HMI device must be closed.

Settings on the HMI device

Make the following settings in the Control Panel on the HMI device:

Step	Settings in the Transfer
1	Select "Channel 2", the type of connection, and then select "Enable Channel" and "Remote Control".
2	Confirm with "OK" and start WinCC flexible Runtime on the HMI device.
3	Start the transfer with WinCC flexible on the configuration computer. Once the transfer has started, WinCC flexible Runtime is automatically closed on the HMI device and then restarted.

Further Information

For more information on working with the functions in WinCC flexible, refer to the documentation on WinCC flexible.

3.3.3 Transferring WinAC MP to the HMI device

Transferring WinAC MP Runtime files

To be able to operate WinAC MP on the HMI device, you will need to download the WinAC MP option from the configuration PC to the HMI device.

To do so, follow these steps:

1. Boot your HMI device and press the "Transfer" button in the Loader.

   Result: The message "Connecting to host" appears on the HMI device.

   NOTICE

   In the Control Panel, make sure that you have enabled the transfer for the interface you intend to use.
   This is explained step-by-step in the sections:
   - Transfer over Industrial Ethernet (Page 21)
   - Transfer over PROFIBUS (Page 23)
   - Transfer via USB (Page 24)
   - Transfer using automatic transfer detection (Page 25)

2. Open ProSave on **the configuration PC**.
3. Select the type of HMI device in the "General" tab in ProSave.
4. In the "Connection" list box, select the connection type:
   – Ethernet
   – MPI/PROFIBUS-DP
   – USB
5. Enter the connection parameters:
   – Ethernet: IP address or computer name; recommendation: as the fastest and most flexible connection
   – PROFIBUS: OP address (same as the PROFIBUS address)
   – USB

   Note
   USB connection parameters
   To use the USB connection, you require a master-master cable. Install the included "BULK driver" and not "Standard".
   You will find information on installing the "BULK driver" under the entry ID (http://support.automation.siemens.com/WW/view/en/19142034)

6. Go to the "Options" tab and click "Device status".
   Result: The communication connection is checked.
   – If "WinAC MP" is not shown in the box with the available options, check the path in "Selection".
   You will find the application in:
   ...\Programs\Mutual Files\Siemens\PTProSave\AddOn\WinAC MP 2008
7. Select the required folder.
8. Click the download button ">>" to transfer the option to the HMI device (you will see any options that are already installed in the "Installed Options" box).
9. After the transfer was completed, a dialog opens on the HMI device requesting you to reboot. Reboot the HMI device.
   Result: WinAC MP is now installed on the HMI device.

To obtain an operator interface to the HMI device, you still need to download (transfer) a WinCC flexible project.

See also

Basics of transfers (Page 20)

3.3.4 Licensing WinAC MP on the HMI device

Software license

WinAC MP requires a product-specific License Key that you install with Automation License Manager.

Note

The product-specific License Key of WinAC MP 2007 V4.0 is compatible with WinAC MP 2008 V4.1.

Transferring a License Key

With the Automation License Manager, you can transfer a License Key from a computer to an HMI device.

When transferring License Keys between different locations (media), you have the following options:

- Transferring the license from the configuration PC to the HMI device with the Automation License Manager
- using drag-and-drop
- Cut and paste
- The **License Key > Transfer** menu command.

Transferring the license from the configuration PC to the HMI device with the Automation License Manager

1. Open the Automation License Manager with **Start > SIMATIC > License Management > Automation License Manager**.
   Result: The Automation License Manager opens.
2. Select **Edit > Connect Target Systems > Connect HMI Device** to open the "Connect Target System" dialog. Select the HMI device and the type of connection.
3. In the Automation License Manager, select the license you want to transfer and select "Transfer..." with the right mouse button.
4. Select the HMI device to which you want to transfer the license as the target computer.

   Result: The license for WinAC MP is on the HMI device

Transferring a License Key with drag-and-drop

1. Select the view with the **View > Manage** menu command.
2. Open the storage location on your own computer or on a connected computer from which you want to remove the License Key.
3. Select the License Key, hold down the left mouse button and drag the License Key to the target location.

   Result: The License Key is transferred.

Transferring the License Key with cut and paste

1. Select the view with the **View > Manage** menu command.
2. Open the storage location on your own computer or on a connected computer from which you want to remove the License Key.
3. Select the License Key you want to transfer.
4. Select **Edit > Cut**.
5. Open the storage location on your own computer or on a connected computer to which you want to transfer the License Key.
6. Select the **Edit > Paste** menu command.

   Result: The License Key is transferred.

Transferring the License Key with the License Key > Transfer menu command:

1. Select the License Key you want to transfer to another storage location.
2. Open the "Transfer License Key" dialog with the **License Key > Transfer** menu command.
3. Select the target drive from the drop-down list box.
4. Click "OK" to confirm the selection.
5. Click the "Network..." button if the target drive is on another connected computer.

   The "Connect Computer" dialog opens.
6. Enter the computer name or select the required computer from the drop-down list box or
   - Click the "Browse..." button to access the "Find Computer" dialog.
   - Click "Entire Network" and then "Microsoft Windows Network".
   - If the computer is in a domain, select the domain.
   - Then select the required computer and click "OK" to confirm your selection. Please remember that the Automation License Manager must also be installed on the computer you select.

Note

The backup function saves all data of the panel to the specified external storage medium. The data in retentive memory is excluded.

Further Information

For more information on this, please refer to the following Online Help:

- Automation License Manager
- ProSave

3.4 Steps when removing

3.4.1 Retransferring license keys

Transferring a License Key

With the Automation License Manager, you can transfer a License Key from a computer to an HMI device.

To transfer License Keys between different locations (media), you have the following options:

- using drag-and-drop
- Cut and paste
- The **License Key > Transfer** menu command.

Transferring a License Key with drag-and-drop

1. Select the view with the **View > Manage** menu command.
2. Open the storage location on your own computer or on a connected computer from which you want to remove the License Key.
3. Select the License Key, hold down the left mouse button and drag the License Key to the target location.

   Result: The License Key is transferred.

Transferring the License Key with cut and paste

1. Select the view using the **View > Manage** menu command.
2. Open the storage location on your own or on the connected computer from which you want to remove the License Key.
3. Select the License Key you want to transfer.
4. Select **Edit > Cut**.
5. Open the storage location on your own computer or on a connected computer to which you want to transfer the License Key.
6. Select the **Edit > Paste** menu command.

   Result: The License Key is transferred.

Transferring the License Key using the License Key > Transfer menu command:

1. Select the License Key you want to transfer to another storage location.
2. Open the "Transfer License Key" dialog by selecting the **License Key > Transfer** menu command.
3. Select the target drive from the drop-down list box.
4. Click "OK" to confirm the selection.
5. Click the "Network..." button if the target drive is on another connected computer.

   The "Connect Computer" dialog opens.
6. Enter the computer name or select the required computer from the drop-down list box
   - Or click the "Browse..." button to access the "Find Computer" dialog.
   - Click "Entire Network" and then "Microsoft Windows Network".
   - If the computer is in a domain, select the domain.
   - Select the required computer and click "OK" to confirm your selection. Please remember that the Automation License Manager must also be installed on the computer you select.
7. Click "OK" to confirm your selection and to close the dialogs.

Retrieving the License Key if the hard disk is defective

If a fault has occurred on the hard disk or the USB containing your License Key file, contact your Siemens representative (http://support.automation.siemens.com). Make sure you have your license certificate to hand when you contact this representative.

3.4.2 Uninstalling WinAC MP on the HMI device

Notes on removing

After having removed WinAC MP, you must reboot the HMI device.

Removing

To uninstall WinAC MP Runtime files on the HMI device, follow the steps below:

1. Exit WinCC flexible Runtime.
2. Select transfer mode in the "Loader" dialog box on the HMI device.
3. Open the "Options" tab in ProSave on the configuration PC.
4. Select the "Device Status" button in the "Options" tab to read the WinAC MP Runtime files on the HMI device. The Runtime files are displayed in the right-hand pane "Installed Options".
5. In the right-hand pane "Available Options", select the WinAC MP option and click the "<<" button to remove the WinAC MP Runtime files from the installed options for the HMI device. The WinAC MP Runtime files are then deleted on the HMI device.
6. Answer the prompt to restart on the HMI device (select "Yes" if you want to restart immediately, select "No" if you want to restart later).

Once you have uninstalled the WinAC MP Runtime files on the HMI device, you can exit ProSave.

Note

WinAC MP cannot be removed from the HMI device via PROFIBUS.

3.4.3 Uninstalling WinAC MP on the configuration PC

Removing

To uninstall WinAC MP on the configuration PC, follow these steps:

1. Open the Control Panel with **Start > Settings > Control Panel** in the Start menu of the configuration PC.
2. Double-click on "Add or Remove Programs" in the detailed view.
3. Select the "SIMATIC WinAC MP 2008 V4.1.1" entry.
4. Click the "Remove" button.
5. Confirm that you want to uninstall by clicking "Yes".
6. Click "OK when the software has been uninstalled.

Result: WinAC MP has been uninstalled on the configuration PC.

4 STEP 7 configuration and communication options

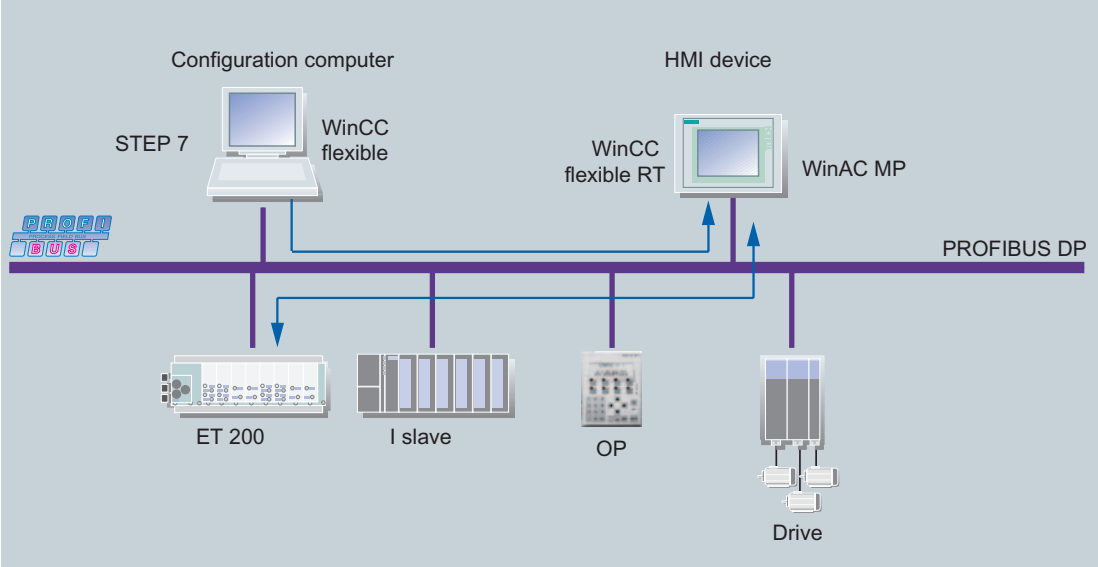
4.1 Standard procedure for communication with WinAC MP

Overview

The section below shows how to configure WinAC MP in a SIMATIC HMI station using a configuration PC on which STEP 7 and WinCC flexible are installed.

The configuration PC and WinAC MP in a SIMATIC HMI station are interconnected via PROFIBUS DP. Configuration via Ethernet is also possible. You will find the description of the procedure in the section Configuring an Ethernet connection for routing functionality over the HMI device (Page 47).

You can integrate DP slaves for WinAC MP in the STEP 7 project as shown in the figure.



Procedure

The basic steps are as follows:

1. Configuring WinAC MP in STEP 7
2. Creating a connection between WinAC MP and WinCC flexible Runtime
3. In STEP 7, download the configuration to the WinAC MP
4. Configuring (visualization) HMI objects with WinCC flexible.
5. Download the visualization configuration (for example, visualization with histogram) from WinCC flexible to the HMI device.

See also

Setting the communication functions for the configuration PC (Page 47)

4.2 Creating a STEP 7 project for WinAC MP

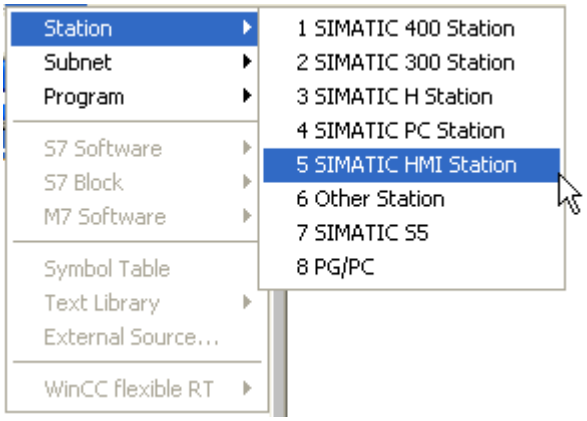
4.2.1 Configuring the SIMATIC HMI station and the PROFIBUS-DP network

To see how easy it is to configure WinAC MP, view the short info film on the Internet (http://support.automation.siemens.com/WW/view/en/32010673).

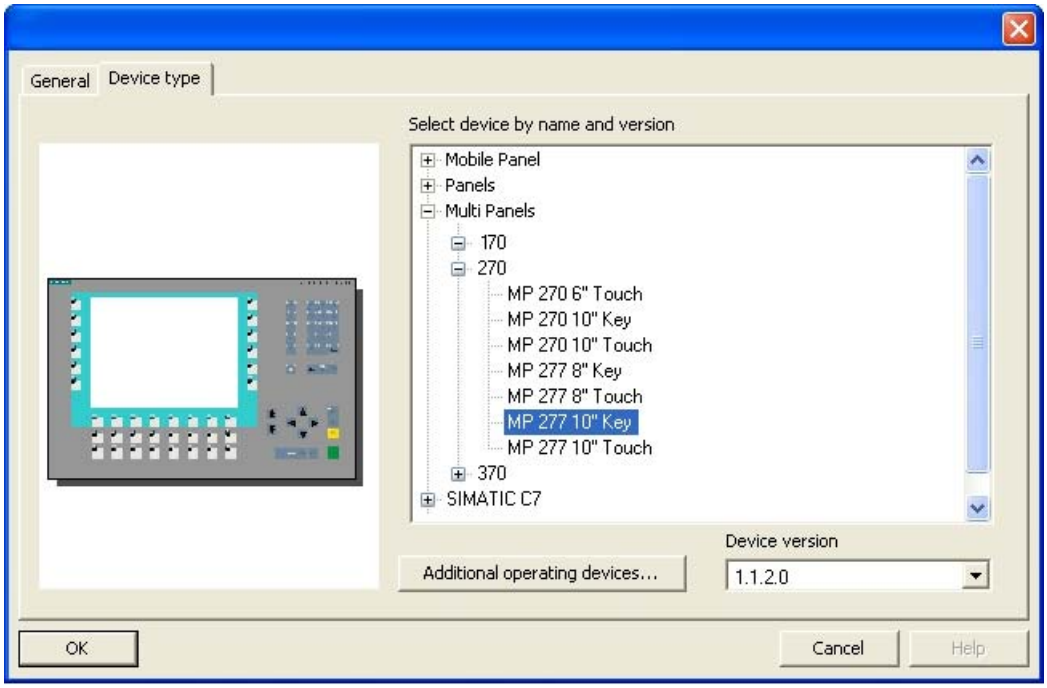
Configuring a SIMATIC HMI station

To create a new project for WinAC MP, proceed as follows:

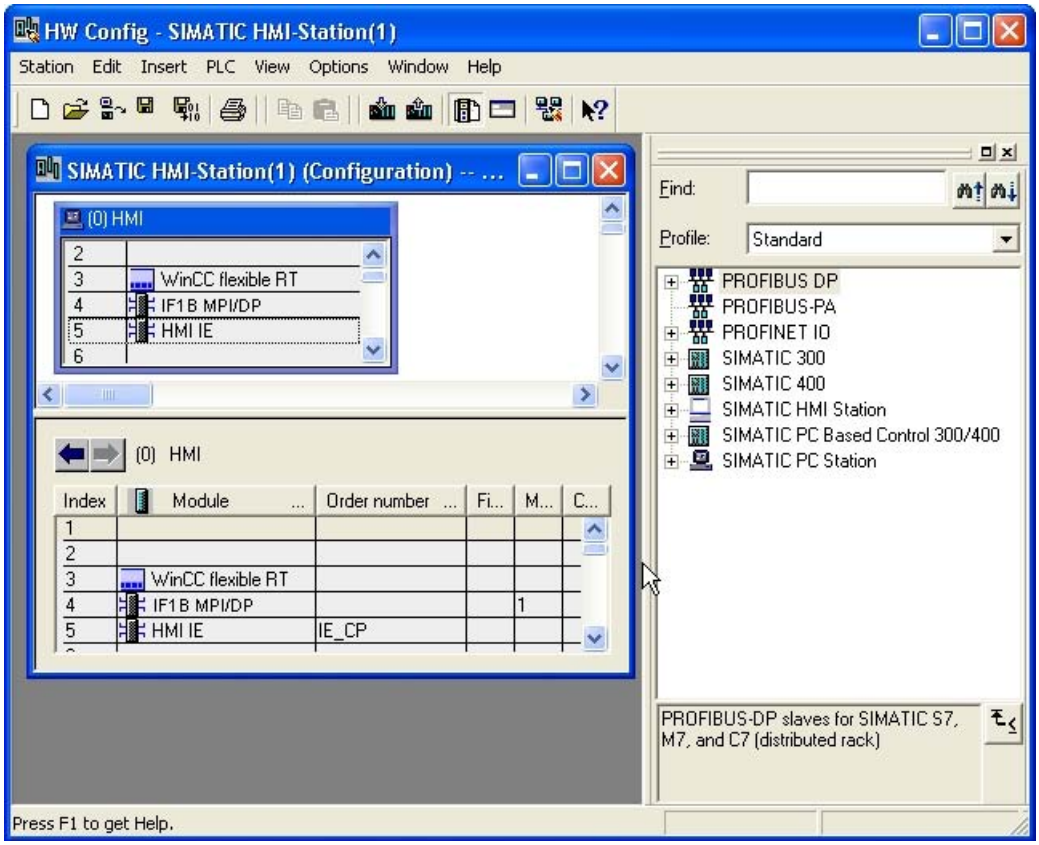
1. Select **File > New** in the SIMATIC Manager and enter a project name.
2. Select your project and create an HMI station with **Insert > Station > SIMATIC HMI Station**.



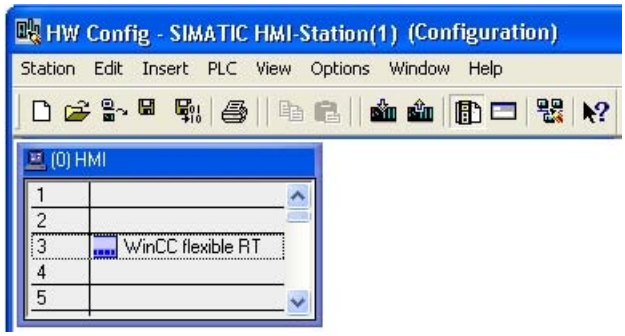
3. In the "Properties - WinCC flexible RT" dialog box that then opens, select the Multi Panel you are using and confirm with "OK".



4. Double-click the SIMATIC HMI station in the SIMATIC Manager. The configuration is then displayed in the right-hand pane.
5. Double-click "Configuration". Result: HW Config opens.



6. Delete "HMI IE" and "IF1B MPI/DP".

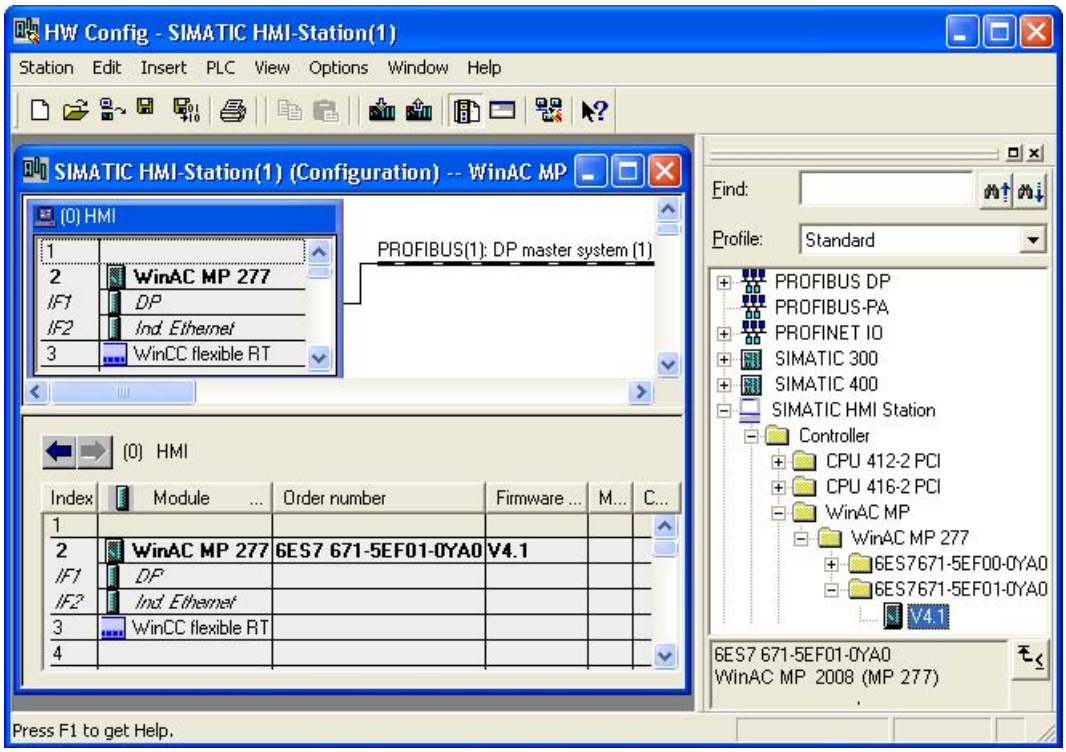


7. In the hardware catalog, go to the SIMATIC HMI Station > Controller > WinAC MP folder and, depending on the Multi Panel selected under item 3, select:
   - WinAC MP 177->6ES7 671-4EE00-0YA0->V4.1 for WinAC MP 177, or
   - WinAC MP 277->6ES7 671-5EF01-0YA0->V4.1 for WinAC MP 277, or
   - WinAC MP 377->6ES7 671-7EG01-0YA0->V4.1 for WinAC MP 377
8. Drag WinAC MP to slot 2.

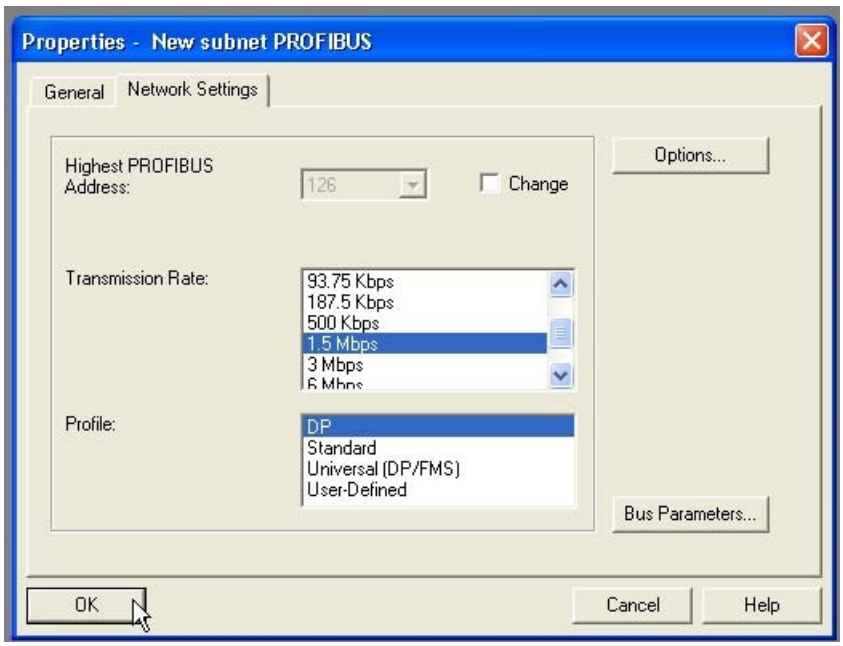
   Result: The "Properties - Ethernet Interface" dialog opens.

9. Enter the IP address and subnet mask.
10. Create a new subnet and close the dialogs.

    Result: The "Properties – PROFIBUS interface DP" dialog opens.
11. If necessary, change the PROFIBUS address of WinAC MP and create a new subnet.



12. Set the transmission speed in the network settings. Close the dialogs.



13. Save in HW Config with **Station > Save and Compile**.

14. Close HW Config.

You have now created the SIMATIC HMI station with WinAC MP in your STEP 7 project.

See also

Communication options with WinAC MP (Page 53)

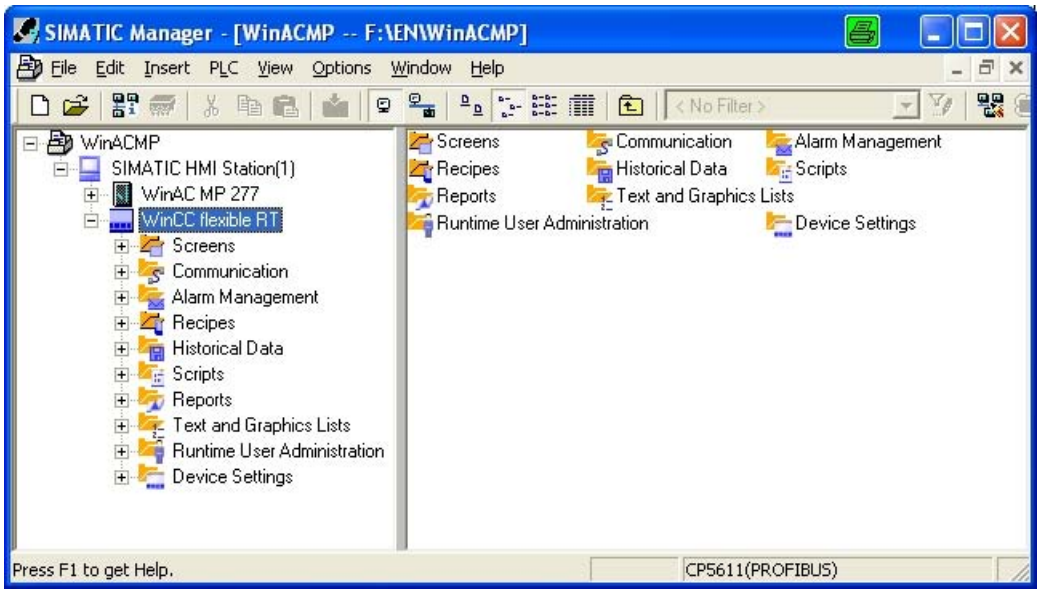
4.2.2 Creating a connection between WinAC MP and WinCC flexible Runtime on the HMI device

Creating a connection between WinAC MP and WinCC flexible RT

Follow the steps outlined below to create a connection between WinAC MP and WinCC flexible Runtime:

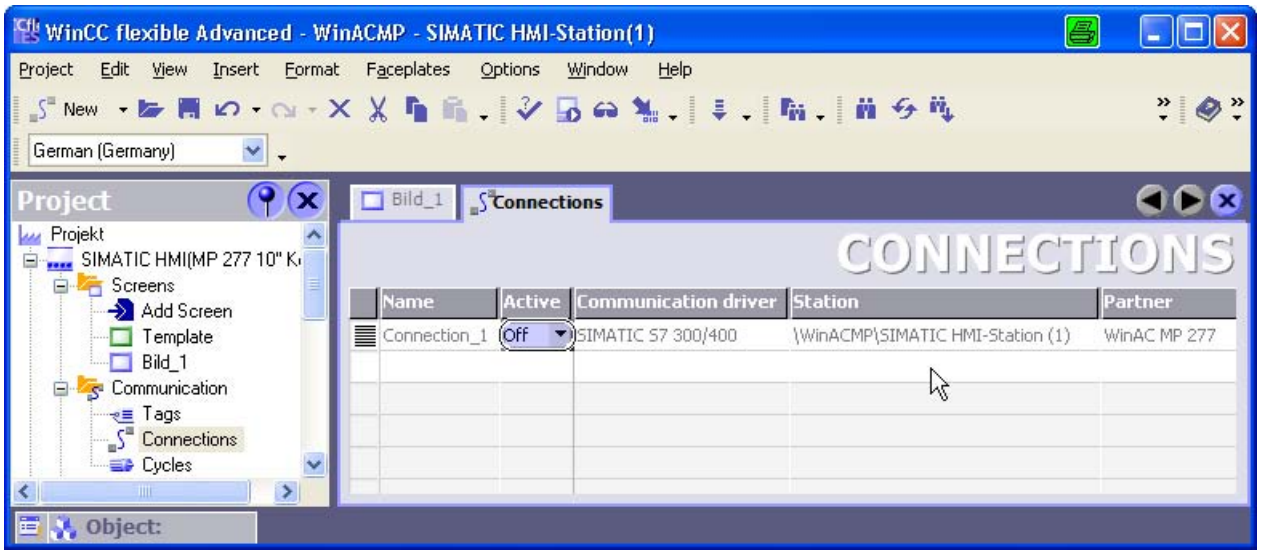
1. Right-click WinCC flexible RT in SIMATIC Manager and select: **Object > Open**

   Result: WinCC flexible opens.



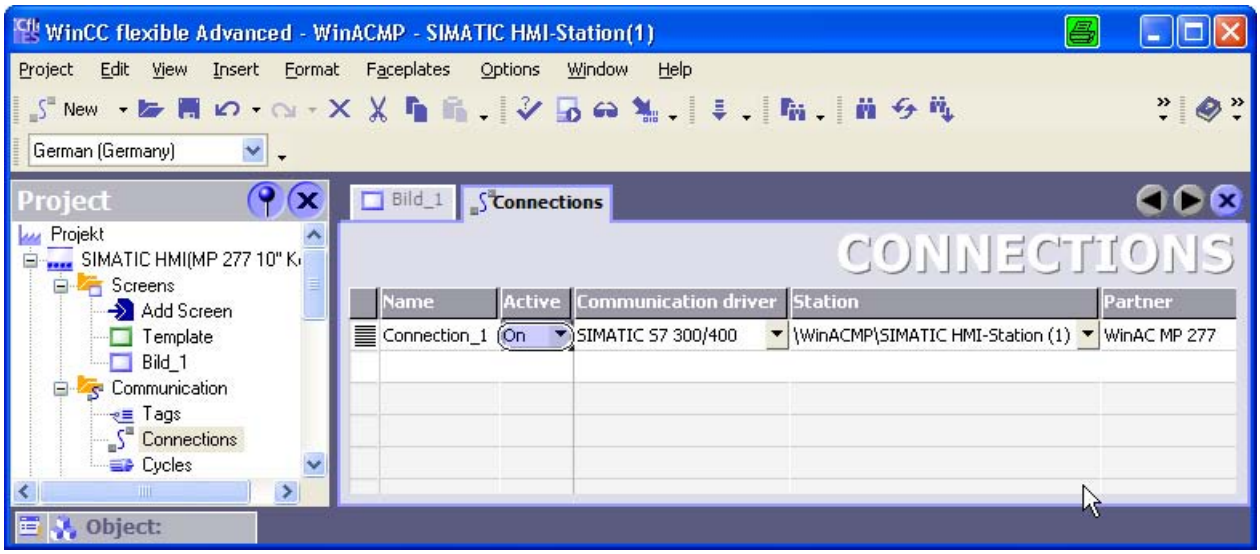
2. Double-click "Connections" in the WinCC flexible project window.

   Result: The "Connections" editor opens.



3. Change the value to "On" in the "Active" column.

   Result: A local connection between WinCC flexible RT and WinAC MP is created.



4. Save and compile the WinCC flexible project. Close WinCC flexible.

Note

Always configure the connections (local and routing) between WinCC flexible RT and WinAC MP or other controllers (e.g. S7-300/400) in the "Connections" editor of WinCC flexible.

Connections between WinAC MP and other controllers (e.g. S7-300/400) are always configured in NetPro of SIMATIC Manager.

See also

Transferring WinAC MP to the HMI device (Page 26)

Licensing WinAC MP on the HMI device (Page 27)

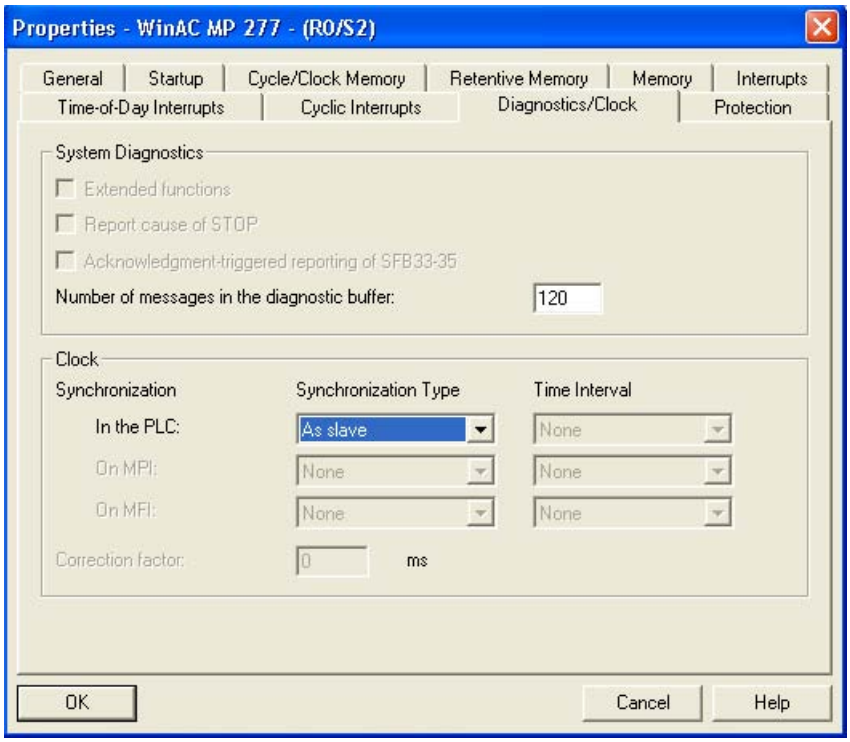
4.2.3 Time synchronization WinAC MP

Time synchronization

You can synchronize the WinAC MP time with the operating system of the HMI device.

How to set time synchronization in HW Config:

1. Select WinAC MP x77 in the SIMATIC HMI station.
2. Open the object properties with the right mouse button.
3. Go to the "Diagnostics/Clock" tab.
4. To synchronize the WinAC MP time with the HMI device, set the synchronization mode on the AS to "As slave".
5. Confirm with "OK".



Note

When synchronization is enabled, the time is compared at a fixed interval of one second. If the difference between the Panel time and the WinAC MP time is more than 0.5 seconds, WinAC MP takes the time of the Panel.

Further Information

For more information on the tabs, refer to the STEP 7 online help and the documentation on the standard CPUs.

4.2.4 Configuring retentive data

Retentive data

Data is kept in retentive memory following POWER OFF and restart or a warm restart.
You can set the retentivity of bit memory, timers, counters and data blocks. The next time you start WinAC MP or following a power outage on the HMI device, the buffered data is available again.

Behavior following image update

After an OS update or backup/restore on the MP 177, MP 277, or MP 377 with WinAC MP installed, the retentive data areas of WinAC MP are completely deleted.

Configuring retentivity for memory bytes, S7 timers, S7 counters

Note

With MP 177, MP 277 and MP 377, all bit memories, timers and counters can be saved retentively.

Follow the steps below to configure the retentive data for WinAC MP:

1. Select WinAC MP x77 in the SIMATIC HMI station.
2. Open the object properties with the right mouse button.
3. Go to the "Retentive Memory" tab.
4. Enter the number of memory bytes starting at MB 0, S7 timers starting at T0 and S7 counters starting at C0 that you want to be retentive.
5. Confirm with "OK".

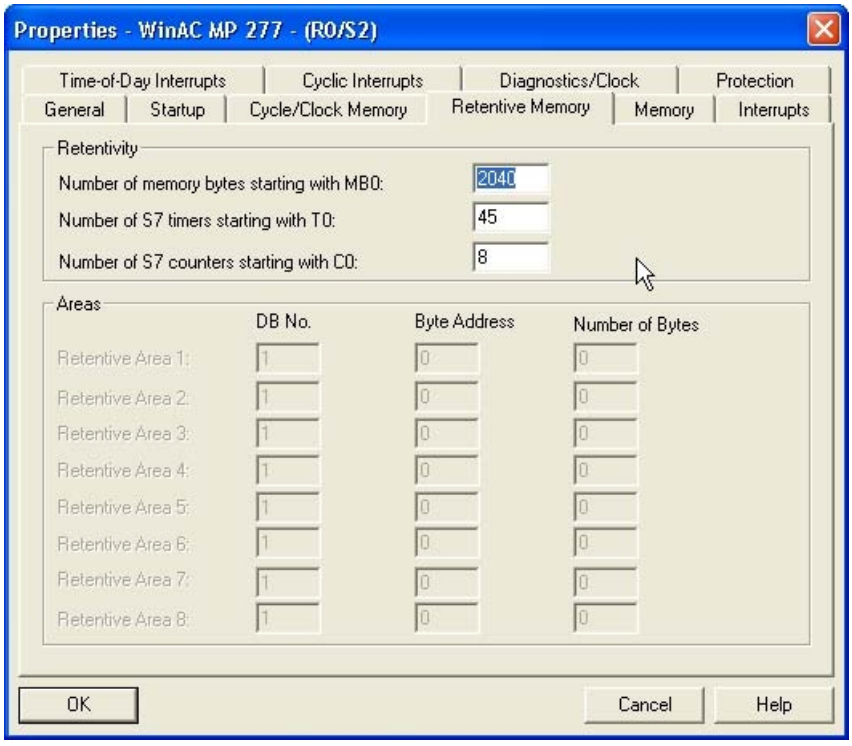


Figure 4-1 Properties of memory bytes, S7 timers, S7 counters

Configuring retentivity for data blocks

Note

With MP 177, MP 277 and MP 377, you have the following memory available for retentive DBs:

- MP 177: 64 KB
- MP 277: 128 KB
- MP 377: 256 KB

The content of data blocks is always retentive unless it was created with SFC 85.

You can change the retentivity in the properties of the data block in STEP 7 using the "Non-Retain" check box. A data block with the "Non-Retain" property is not stored in the retentive memory and is therefore reset to the initial load values following every power cycle and cold or warm restart and following every change from STOP to RUN.

A data block with the "Non-Retain" property occupies work memory as usual but takes up no retentive memory.

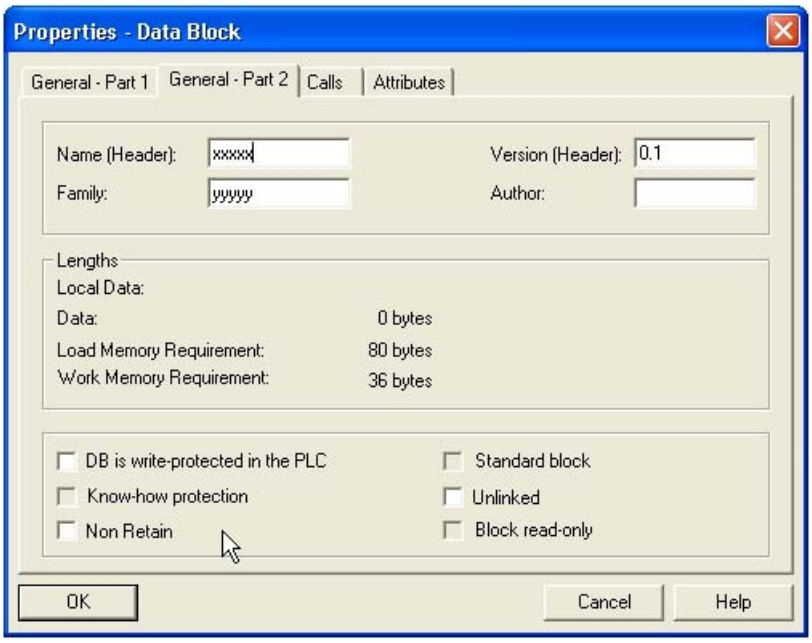


Figure 4-2 Data block properties

Further Information

For more information on the tabs, refer to the STEP 7 online help and the documentation on the standard CPUs.

4.2.5 WinCC flexible direct keys in WinAC MP

Definition

Direct keys on the HMI device are used to set bits in the I/O area of the controller.

WinCC flexible direct keys in WinAC MP 2008

WinCC flexible supports:

- Direct keys for key input, required, for example for inching mode
- LED displays with short reaction times

It is not necessary to configure the direct keys for WinAC MP.

The direct key bits are always available through I/O direct accesses to the I/O area, beginning with address 4000_H or 16384_D.

The following table lists the direct key ranges:

	Input range Hexadecimal	Input range decimal	Output range Hexadecimal	Output range decimal
MP 177 6"Touch	4000_H – 4003_H	16384 - 16387	--	--
MP 277 8" Key	4000_H – 4004_H	16384 - 16388	4000_H – 4004_H	16384 - 16388
MP 277 8" Touch	4000_H – 4004_H	16384 - 16388	--	--
MP 277 10" Key	4000_H – 4004_H	16384 - 16388	4000_H – 4004_H	16384 - 16388
MP 277 10" Touch	4000_H – 4004_H	16384 - 16388	--	--
MP 377 12" Key	4000_H – 4004_H	16384 - 16388	4000_H – 4004_H	16384 - 16388
MP 377 12" Touch	4000_H – 4004_H	16384 - 16388	--	--
MP 377 15" Touch	4000_H – 4004_H	16384 - 16388	--	--
MP 377 19" Touch	4000_H – 4004_H	16384 - 16388	--	--

Input/output assignment for MP 277-8" (key)

Direct keys assignment

	7	6	5	4	3	2	1	0
Keys	F8	F7	F6	F5	F4	F3	F2	F1
	F16	F15	F14	F13	F12	F11	F10	F9
	K4	K3	K2	K1			F18	F17
					K8	K7	K6	K5
	ACK	ALT	CTRL	SHIFT				

LED

Byte	7	6	5	4	3	2	1	0
16384	F8	F7	F6	F5	F4	F3	F2	F1
16385							F10	F9
16386	K4	K3	K2	K1				
16387					K8	K7	K6	K5
16388	ACK	A-Z left	A-Z right	HELP				

Input/output assignment for MP 277-10" (key)

Direct key assignment

	7	6	5	4	3	2	1	0
Keys	F8	F7	F6	F5	F4	F3	F2	F1
	F16	F15	F14	F13	F12	F11	F10	F9
	K4	K3	K2	K1	F20	F19	F18	F17
	K12	K11	K10	K9	K8	K7	K6	K5
	ACK	ALT	CTRL	SHIFT	K16	K15	K14	K13

LED

Byte	7	6	5	4	3	2	1	0
16384	F8	F7	F6	F5	F4	F3	F2	F1
16385					F12	F11	F10	F9
16386	K4	K3	K2	K1				
16387	K12	K11	K10	K9	K8	K7	K6	K5
16388	ACK	A-Z left	A-Z right	HELP	K16	K15	K14	K13

Input/output assignment for MP 377 (key)

Direct keys assignment

	7	6	5	4	3	2	1	0
Keys	S8	S7	S6	S5	S4	S3	S2	S1
	S16	S15	S14	S13	S12	S11	S10	S9
	F8	F7	F6	F5	F4	F3	F2	F1
	F16	F15	F14	F13	F12	F11	F10	F9
	ACK	ALT	CTRL	SHIFT	F20	F19	F18	F17

LED

Byte	7	6	5	4	3	2	1	0
16384	S8	S7	S6	S5	S4	S3	S2	S1
16385	S16	S15	S14	S13	S12	S11	S10	S9
16386	F8	F7	F6	F5	F4	F3	F2	F1
16387	F16	F15	F14	F13	F12	F11	F10	F9
16388	ACK	A-Z left	A-Z right	INFO	F20	F19	F18	F17

Input/output assignment for MP 177 6" Touch

Direct keys assignment

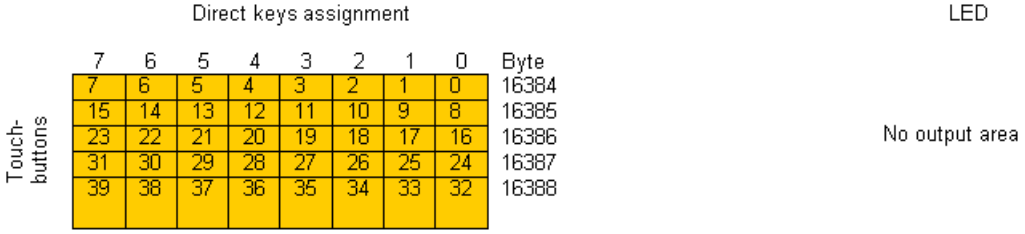
	7	6	5	4	3	2	1	0
Touch-buttons	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
	23	22	21	20	19	18	17	16
	31	30	29	28	27	26	25	24

Byte
16384
16385
16386
16387

LED

No output area

Input/output assignment for MP 277 8" touch, MP 277 10" touch, MP 377 touch



WARNING

Triggering the system function "DirectKey" by mistake leads to the endangerment of persons or damage to the machine.

In order to avoid this danger, the following must be observed:

When configuring the process screen, the button with the system function "DirectKey" must not be covered by a screen object.

The dynamic positioning or display (enable) of a screen object dependent on process values must not lead to the button with the system function "DirectKey" being overlapped in runtime.

Please observe this guideline during configuration. Check also existing configurations and adjust them immediately.

WARNING

If you set the connection to WinAC MP "offline" using the "SetConnectionMode" system function, the communication connection to WinAC MP is disconnected. The DP direct keys are still active in this case. If you press a key with the "DirectKey" system function in "offline" mode or press the direct key on a key device, the corresponding bit is set in WinAC MP.

Further Information

Further information:

- You can find more information in the *Operating Instructions* of the MP 177, MP 277 and MP 377 HMI devices in the section: Bit assignment of the direct keys
- in the *User Manual Communication Part 1*
- in the STEP 7 online help

4.3 Configuring an Ethernet connection for routing functionality over the HMI device

4.3.1 Setting the communication functions for the configuration PC

Communication settings

You have the following communication options for connecting STEP 7 on the configuration computer with the HMI device:

- Industrial Ethernet
- PROFIBUS

No serial communication or USB communication is possible with STEP 7.

See also

Transfer over Industrial Ethernet (Page 21)

Transfer over PROFIBUS (Page 23)

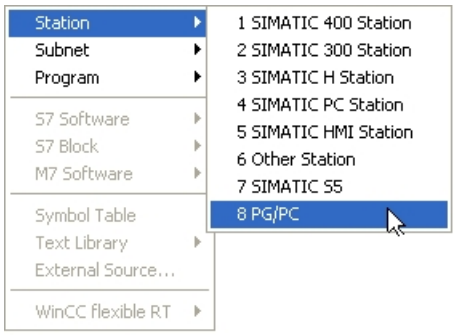
The following settings are necessary if you want to use routing.

Configuring hardware

If you work with an Ethernet connection (TCP/IP), you will need to take additional steps in HW Config. Follow the steps below to set a static IP address for TCP/IP communication between STEP 7 and the HMI device:

1. Click on your project in the SIMATIC Manager and select **Insert > Station > PG/PC**.

   Result: A new PG/PC station is inserted.



2. Double-click on "PG/PC".

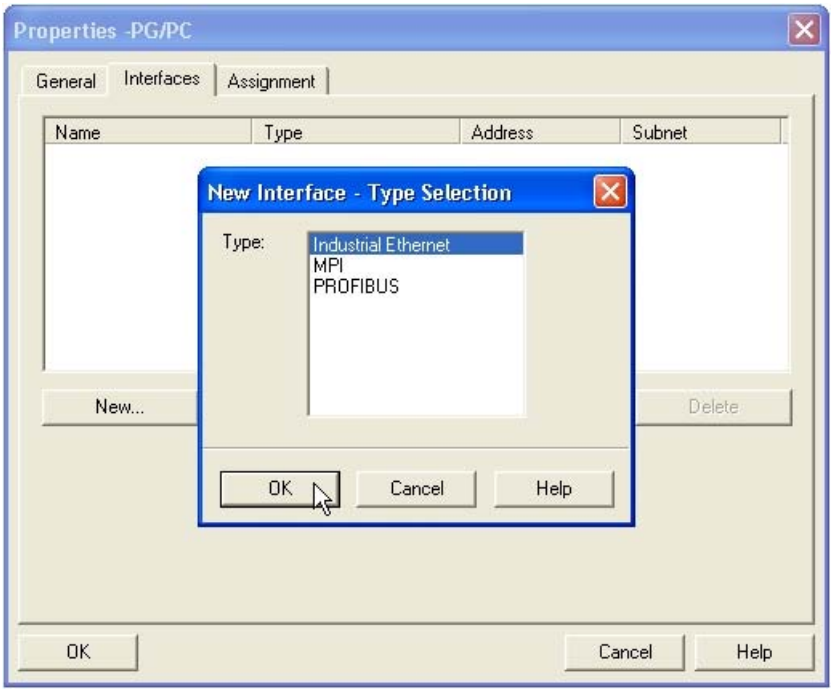
   Result: The "Properties PG/PC" dialog opens.

3. Click the "Interface" tab to open it and click on "New".

   Result: The "New Interface - Type Selection" dialog opens.

4. In the "New Interface - Type Selection" dialog, select the type "Industrial Ethernet" and confirm with "OK".

   Result: The "Properties - Ethernet Interface" dialog is displayed.

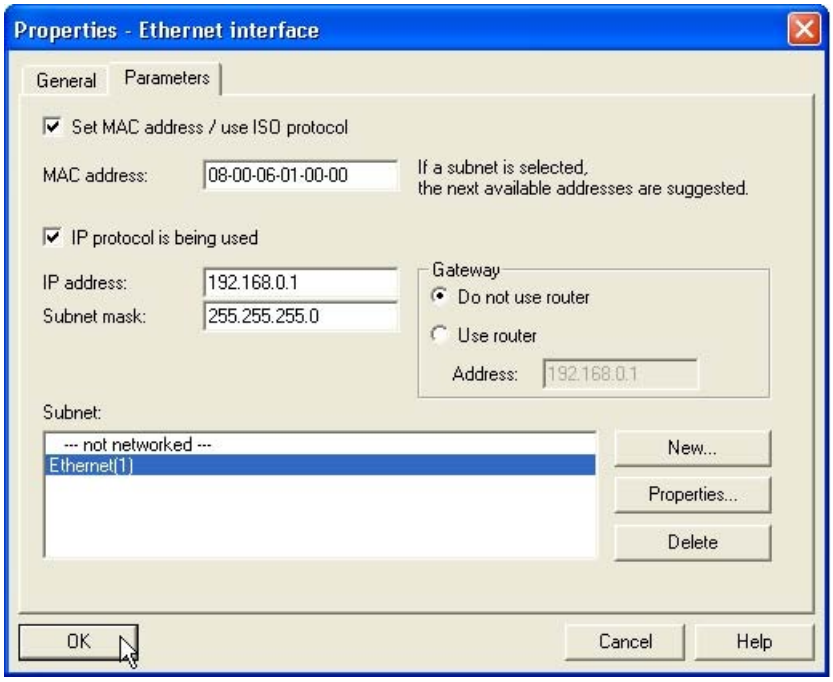


5. Enter the IP address of the configuration PC in the "IP address" box.
6. Select an Ethernet subnet as the subnet. If this does not already exist, select "New". The "Properties - New subnet Industrial Ethernet" dialog box opens. Select "OK". A new Ethernet subnet is created.
7. Select "OK" to complete the configuration of the Ethernet interface.

   Result: The subnet is now selected in the "Properties - Ethernet Interface" dialog.

8. Confirm with "OK".

   Result: The "Properties - PG/PC" dialog appears again.



9. Click "OK" to close the "Properties PG/PC" dialog.

Further Information

For more information on Ethernet communication and setting up Ethernet networks, refer to the *SIMATIC NET Ethernet* User Manual.

4.4 Checking and downloading a STEP 7 project to WinAC MP

4.4.1 Checking the WinAC MP online connection

Checking the connection with STEP 7

Once you have completed the network configuration, check whether the connection between STEP 7 and WinAC MP is functioning. You can do this by selecting **View > Online** or **PLC > Display Accessible Nodes** in the SIMATIC Manager.

If the network configuration is not online, review the network configuration steps described in the sections above and correct any errors you may have made.

4.4.2 Downloading the configurations

Downloading hardware configuration

To download the hardware configuration to WinAC MP, you first set the PG/PC interface for the connection on the configuration PC:
PROFIBUS or Ethernet (TCP/IP).

Setting the PG/PC interface

Follow the steps outlined below to set the PG/PC interface:

1. In the SIMATIC Manager, select **Options > Set PG/PC Interface** from the menu.
2. Check that the required type of connection is entered in the "Interface parameter assignment used" box. If necessary, select the required interface from the list box. You can choose between the TCP/IP option or a CP with a PROFIBUS DP bus profile (for example CP5611).
3. Set the properties for the interface parameter assignment to match your type of connection:
   - Industrial Ethernet (TCP/IP): Recommendation: the fastest and most flexible connection
   - PROFIBUS: Set the transmission rate for the first download to 1.5 Mbps and use a DP interface. This is the default for the HMI device.
4. Confirm the setting with "OK".

   Check the following points before you download the configuration:
   - Make sure that WinAC MP has started on the HMI device. Start WinCC flexible Runtime and WinAC MP.

Setting up a subnet for Industrial Ethernet

Before WinAC MP can communicate over Industrial Ethernet, you will need to set up a subnet.
You do this by configuring the SIMATIC HMI station, as follows:

1. In the "Parameters" tab of the "Properties - PROFIBUS Ind. Ethernet" dialog, enter the IP address. The subnet mask is preset.

   Note

   Closed "Properties - Ind. Ethernet" dialog

   If this dialog is closed, double-click the "Ind. Ethernet" field in the SIMATIC station. Click the "Properties" button to open the "Properties Ethernet Interface" dialog box.
2. Click "New" in the "Parameters" tab.
3. Click "OK" three times to confirm.

Setting up a subnet for PROFIBUS DP

To allow WinAC MP to communicate with the distributed I/O, you will need to set up a PROFIBUS/DP subnet. Configure the SIMATIC HMI station as a DP master:

1. In the "Parameters" tab of the "Properties - PROFIBUS Interface DP" dialog, enter the node address for WinAC MP. The default address for the DP master is 2. Each node in the network must have a unique node address between 1 and 126.

   Note

   Closed "Properties - PROFIBUS Interface DP" dialog

   STEP 7 displayed the "Properties - PROFIBUS interface DP" dialog when you dragged WinAC MP to slot 2.

   If this dialog is closed, double-click the "DP" field in the SIMATIC station. Click the "Properties" button to open the "Properties DP" dialog box.

2. Click "New" in the "Parameters" tab.
3. Open the "Network Settings" tab. Check the following settings and make any changes necessary:
   - Highest PROFIBUS address: This can be set lower to increase the query rate if you are sure that you will not exceed a certain number of stations.
   - Transmission rate: The default is 1.5 Mbps, but up to 12 Mbps are possible depending on the requirements and application.
   - Profile: The default is DP.
4. Click "OK" three times to confirm.

Downloading WinAC MP

To download the WinAC MP configuration to the HMI device, follow these steps:

1. Select **PLC > Download to Module** in HW Config on the configuration PC to download the configuration of the STEP 7 project.
2. In the "Select target module" dialog box, select WinAC MP x77 and confirm with "OK".
3. Select the station address.
4. When using PROFIBUS connections, enter the node address of the HMI device: The default address of the HMI device is PROFIBUS 2.

   If you are using Ethernet connections, make sure that the IP address of the HMI device is correct and confirm with "OK".
   Result: STEP 7 downloads the hardware configuration to WinAC MP and sets PROFIBUS DP on the HMI device for the PROFIBUS interface. A dialog box is displayed indicating whether or not the download was successful.

If you have used an Industrial Ethernet connection to the HMI device, you can continue to download to the HMI device over Ethernet and do not need to make any changes in "Set PG/PC interface" in STEP 7.

Downloading WinCC flexible Runtime

To download the WinCC flexible runtime configuration to the HMI device, follow the steps below:

1. Click on your project in WinCC flexible.
2. Select **Project > Transfer > Transfer Settings**.
3. Select the target and communication connection and confirm with "Transfer".

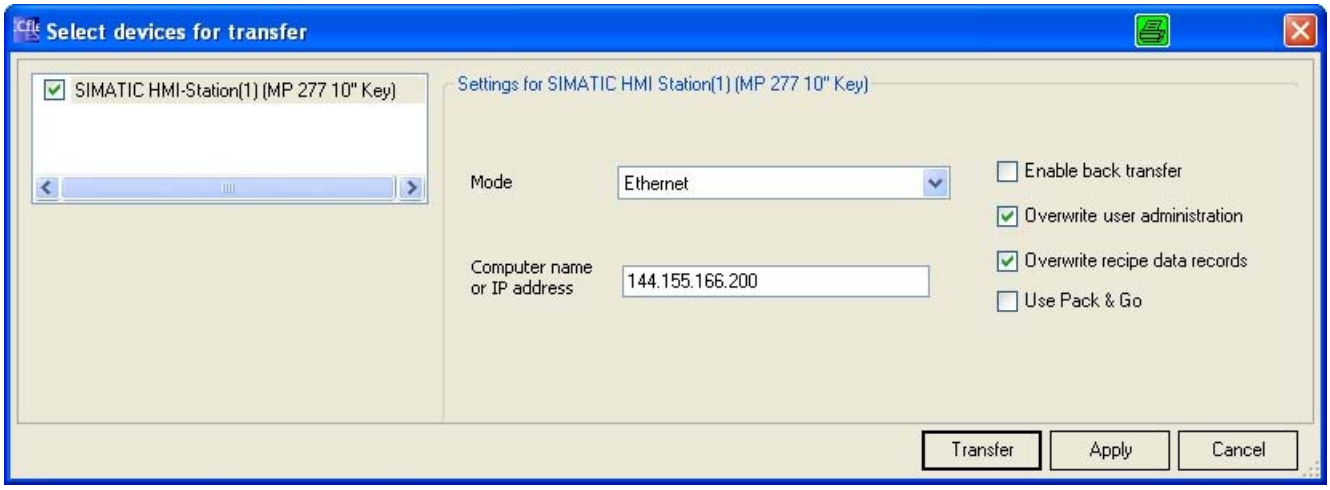


Figure 4-3 Selecting transfer

Further Information

For more information on PROFIBUS communication and setting up PROFIBUS networks, refer to the *SIMATIC NET PROFIBUS User Manual*.

4.5 Communication options with WinAC MP

Definition of routing

If there are stations in an automation system that are not connected to the same bus, these stations cannot be accessed directly online. To establish a connection to these devices, a router must be included between them.

An MP x77 HMI device with WinAC MP can function as the router. As a router, it connects the Ethernet and PROFIBUS networks.

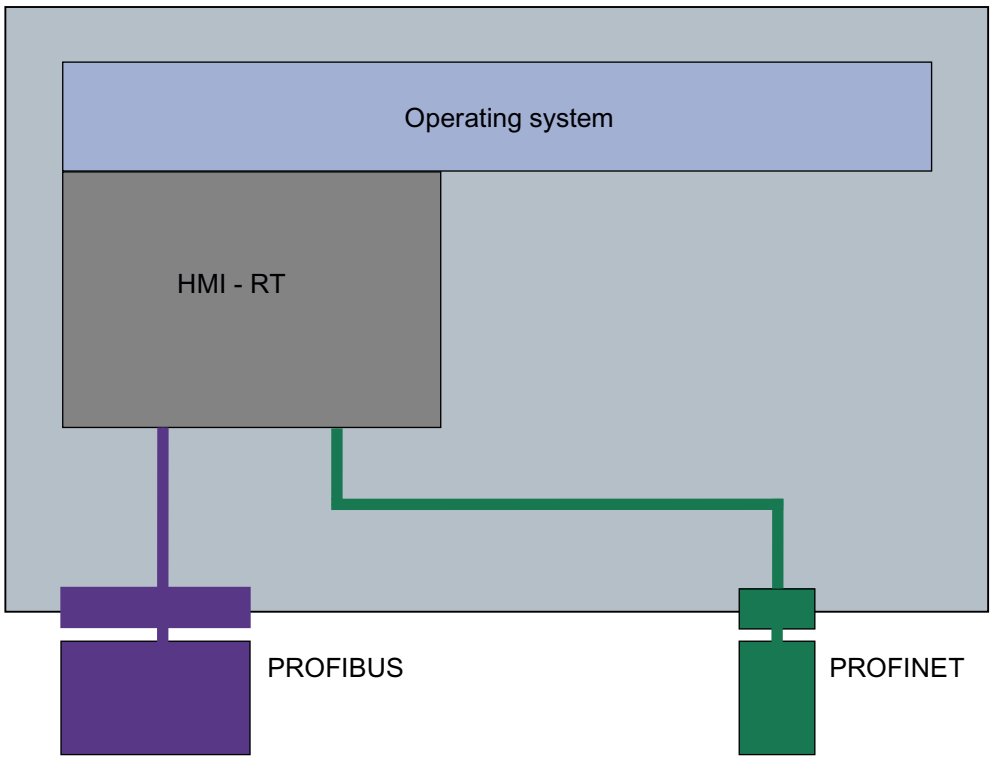
You can use routing, for example, to do the following:

- Download STEP 7 user programs
- Download a hardware configuration
- Run debugging and diagnostic functions.

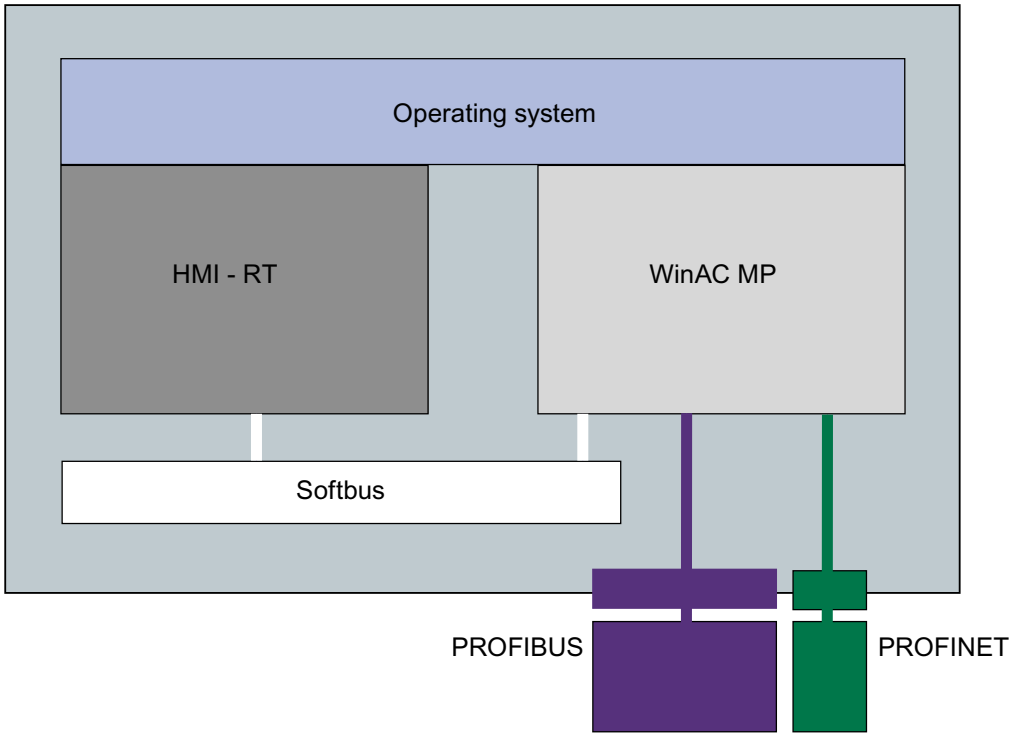
Definition: Softbus

Virtual bus that allows a data exchange between WinCC flexible runtime and WinAC MP. This bus is installed when you install WinCC flexible. After installing WinAC MP, S7 connections from WinCC flexible Runtime to external stations on PROFIBUS or Ethernet are routed over Softbus.

Prior to installation of WinAC MP (without Softbus)



After installation of WinAC MP (with Softbus)



Routing from Ethernet to PROFIBUS DP with WinAC MP

With STEP 7 on Industrial Ethernet, you can access all nodes on PROFIBUS DP from the HMI device.

With WinCC flexible, you can access the HMI device but not the nodes connected over PROFIBUS DP.

If the configuration PC is not connected directly to PROFIBUS DP, the nodes on PROFIBUS can nevertheless be reached because the MP x77 HMI device serves as a router.

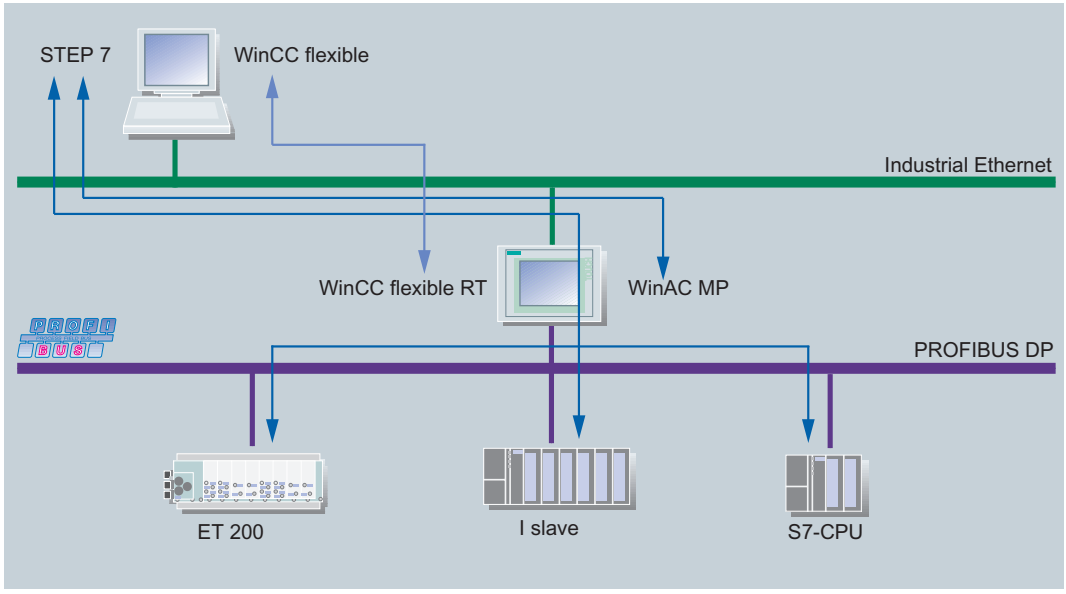


Figure 4-4 Routing from Ethernet to PROFIBUS DP with WinAC MP

Routing from PROFIBUS DP to Ethernet with WinAC MP

With STEP 7 on PROFIBUS DP, you can access all nodes on Industrial Ethernet from the HMI device. With WinCC flexible on PROFIBUS DP, you have access to the HMI device and to OPs connected over PROFIBUS DP.

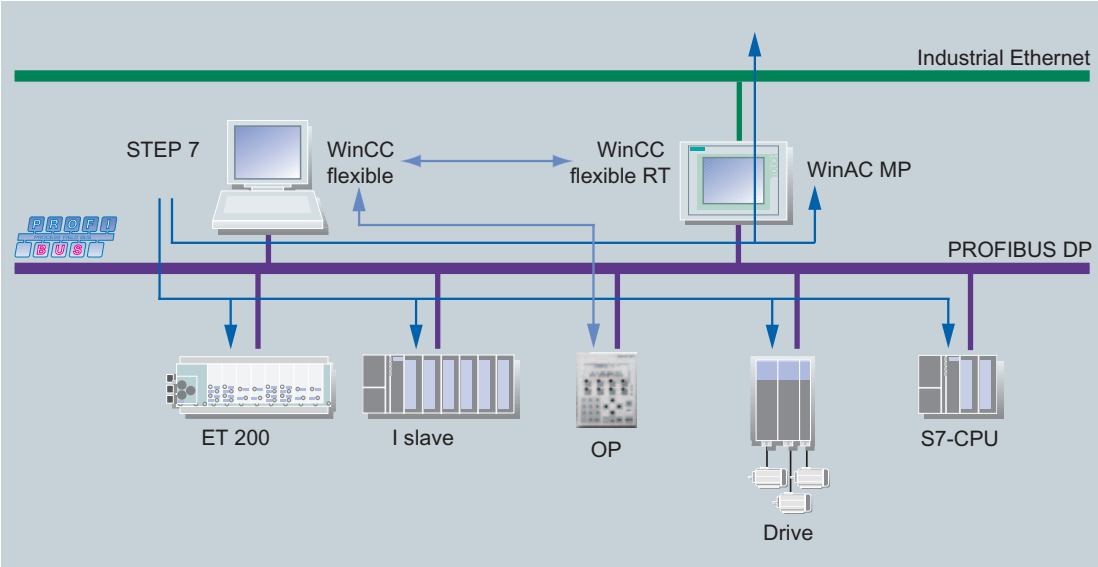


Figure 4-5 Routing with WinAC MP over PROFIBUS

Visualization over WinAC MP

Visualization over the HMI device between Industrial Ethernet and PROFIBUS DP is possible with WinCC flexible.

It is not necessary to program the communication links. A PC serves as the visualization platform.

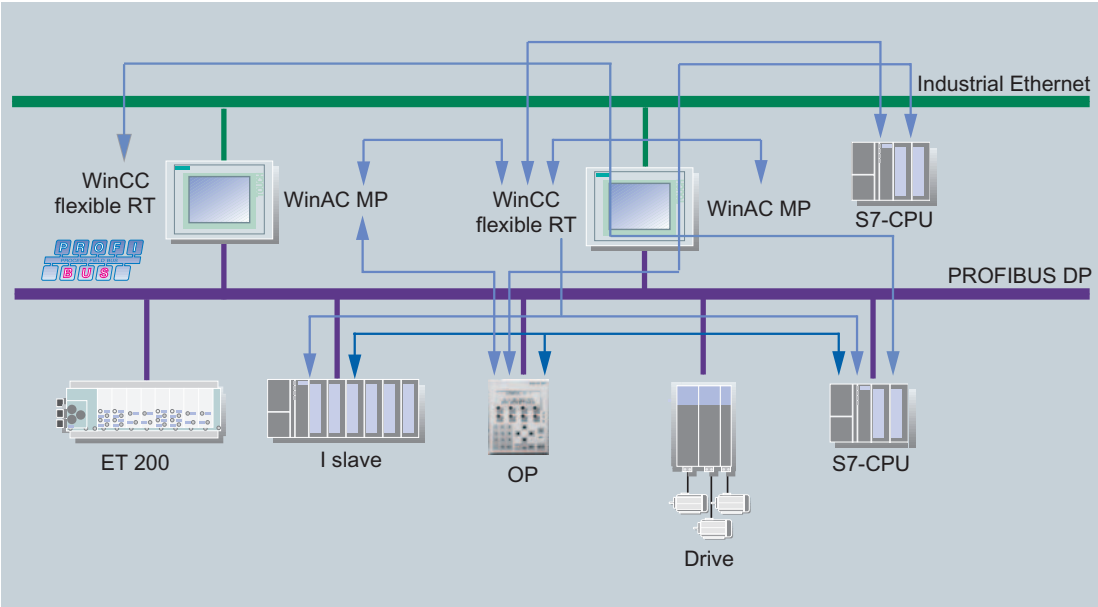


Figure 4-6 Visualization over WinAC MP

CPU-CPU communication over WinAC MP

CPU-CPU communication is possible with the HMI device.

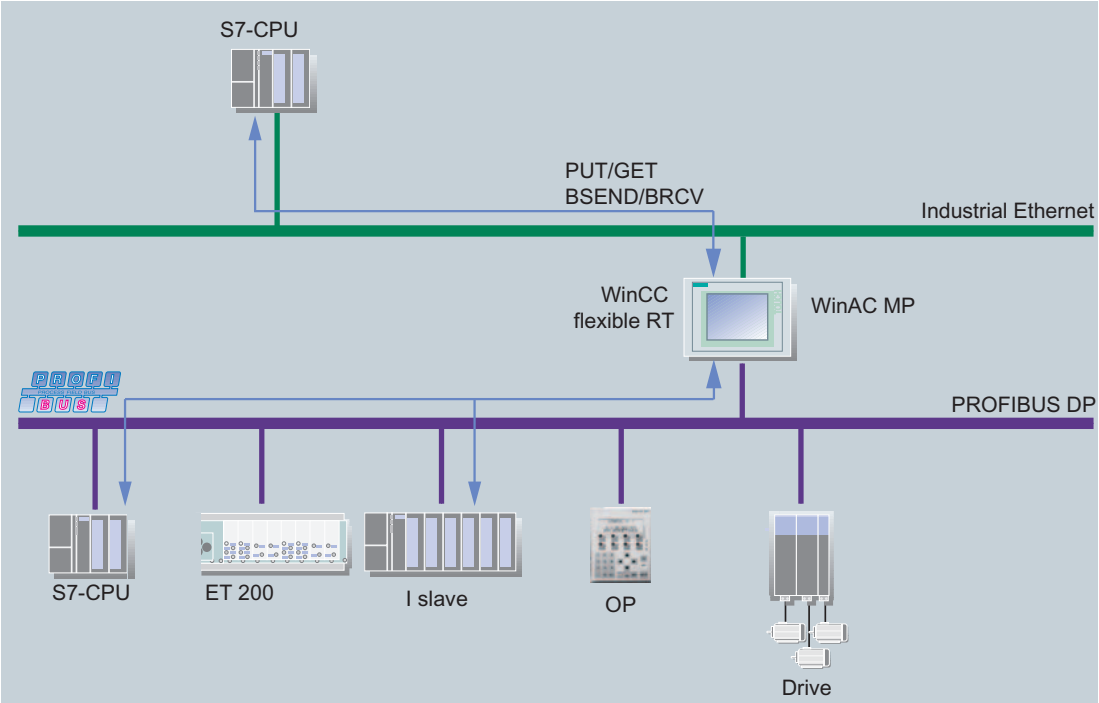


Figure 4-7 CPU-CPU communication over WinAC MP

See also

Configuring the SIMATIC HMI station and the PROFIBUS-DP network (Page 34)

Controlling a process with WinAC MP

5

5.1 Integrating the WinAC MP System Library

Note

The screens from the system library are optimized for 6" displays with a resolution of 320 x 240. If using a display with a different size you can adjust the screens accordingly in WinCC flexible.

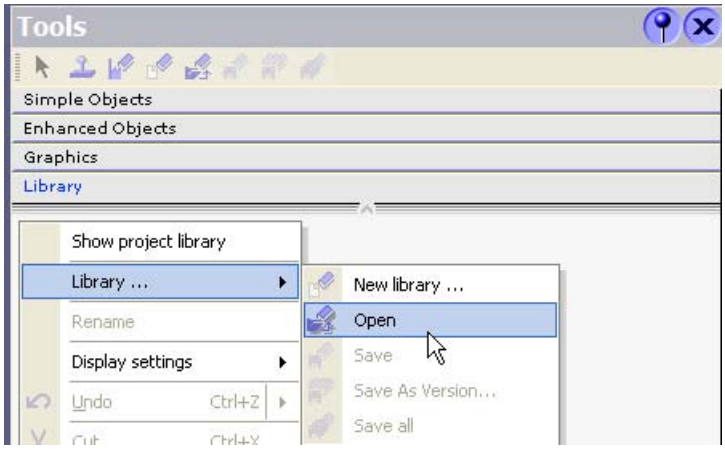
Integrating the new WinAC System Library

To create a WinACMP project with the help of WinAC MP System Library you must take the following steps:

1. Configure the SIMATIC HMI station and the PROFIBUS-DP network.

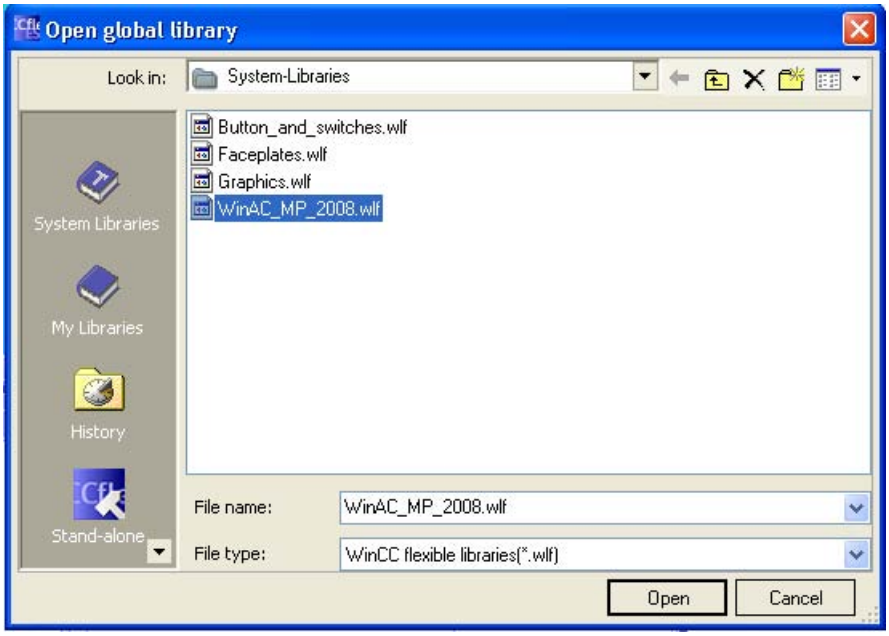
   Corresponding procedures is described in chapter: Configuring the SIMATIC HMI station and the PROFIBUS-DP network (Page 34)

2. Open the project in STEP 7 by selecting **File > Open**
3. To open WinCC flexible, go to SIMATIC Manager, select "WinCC flexible RT" and right-click "Open Object".
4. Open **Tools > Library**.
5. In the work space of the library window, right-click: **Library... > Open**



6. The "Open global library" dialog box opens.

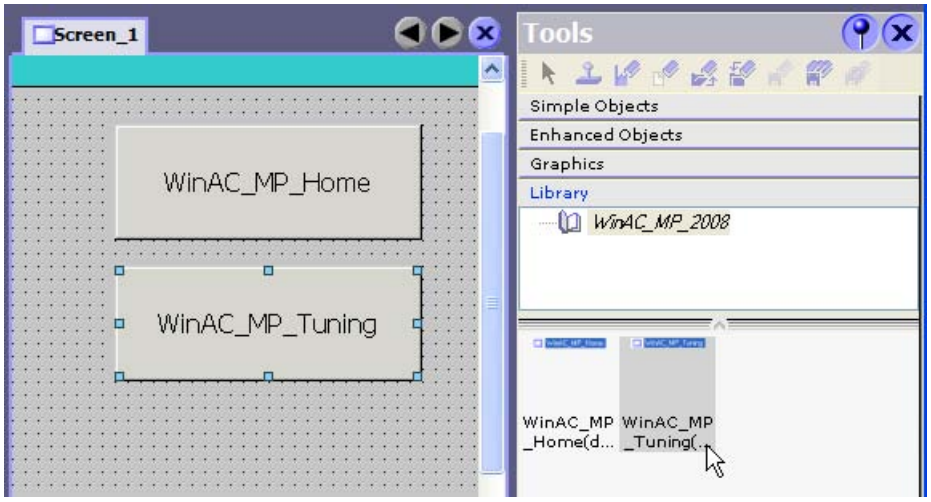
7. Navigate to the following path:
   C:\Programs\SIEMENS\SIMATIC WinCC flexible\WinCC flexible Support\Libraries\
   system libraries or click the system libraries icon on the left side in order to access the directory.



8. Select the WinCC flexible library "WinAC_MP_2008.wlf".

   Result: The library objects "WinAC_MP_Home" and WinAC_MP_Tuning" were created within **Library -> View tools**.

9. Drag the library object from the work space of the library window to the position where you want to insert it in the work space.



10. To open the screen for editing, go to the WinCC flexible project window.
11. Select a project: **Project > Screens > WinAC_MP_Home** or **Project > Screens > WinAC_MP_Tuning**
12. Double-click the screen or select "**Open editor**" from the shortcut menu.

    Result: The screen is opened for editing in the work space.

5.2 Description of the Home Screen and the Tuning Screen

5.2.1 Description of the Home screen

Display of the Home Screens

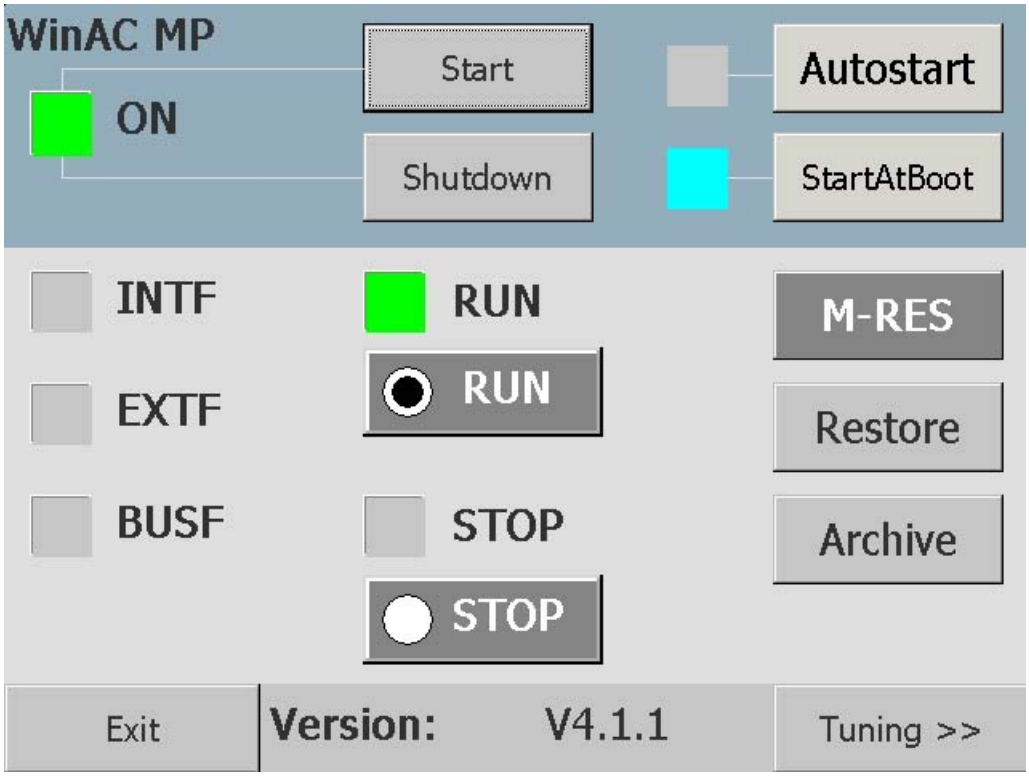


Figure 5-1 Home Screen

The Home Screen contains the following elements:

- Buttons for the operating functions of the WinAC MP
  - Start: Start
  - Shutdown: Closing and exiting
  - Autostart: if the autostart function is enabled, WinAC MP changes after startup (e.g. the start-up of the HMI device) to the RUN or STOP mode where it was prior to closing
  - StartAtBoot: autostart at the startup of the MP device
  - Restore: Restore
  - Archive: archiving the STEP 7 user program and WinAC MP system configuration
- Buttons for functions
  - Tuning >>: Changing to the Tuning screen
  - Exit: is freely configurable with WinCC flexible functions (e.g. hotkeys), e.g. return to start screen
- Mode selector switch (RUN, STOP)
- Status indicators for WinAC MP
- MRES button for CPU memory reset
- Display of the WinAC MP version

Multi Panel variants

- MP x77 Touch: You work in the screen by pressing the buttons in the display.
- MP x77 Key: Each function key can be configured with a hotkey.

Further information

For more detailed information on the buttons, refer to the Assignment of the function keys (Page 63) section

For information on how to configure the **Hotkeys** for WINAC MP, refer to the Operating WinAC MP with hotkeys (Page 63) section.

5.2.2 Description of the Tuning screen

Tuning Screen

You can find histogram information on the cycle time of WinAC MP in the Tuning Screen screen. The histogram shows the percentage distribution of the measured cycle times. To acquire these values, WinAC MP measures the cycle time after each cycle and counts the frequency with which the individual values occur. Each measured cycle time is displayed as a percentage relative to the total number of measured cycle times. The range around the average cycle time is always displayed.

Based on the histogram, you can see the extent of the jitter. Multiple bars mean high jitter and indicate unsuitable settings for the HMI Enable Time. A bar with 100% is ideal.

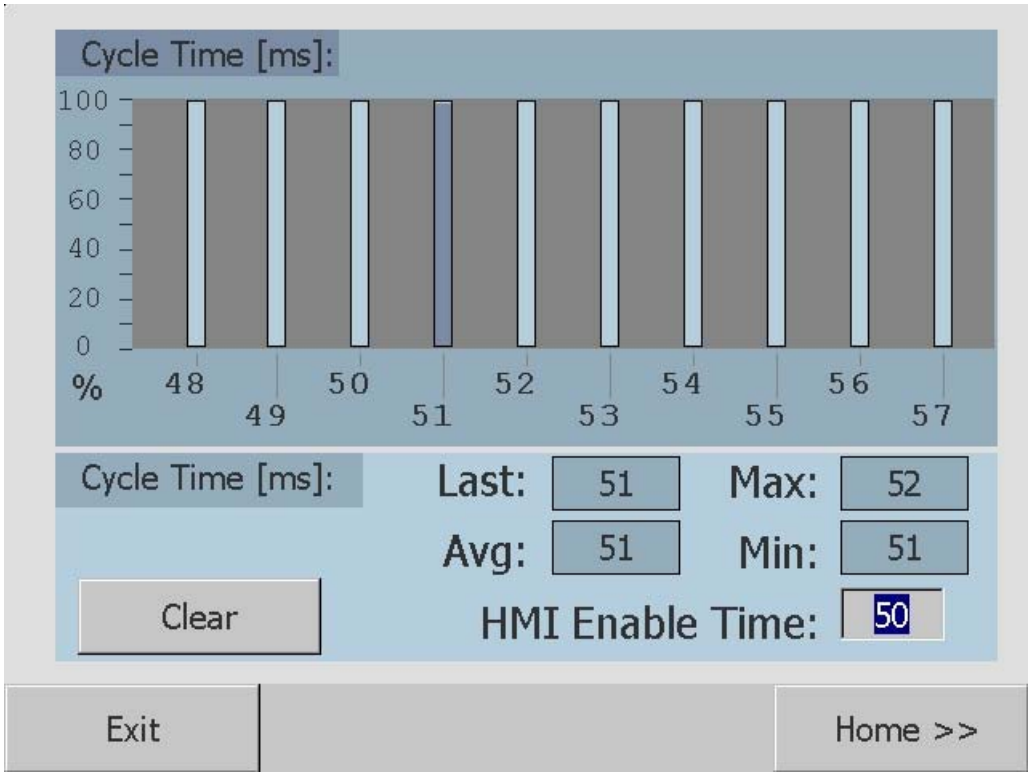


Figure 5-2 Tuning Screen

Tuning screen

The Tuning Screen contains the following elements:

- Buttons for the operating functions of WinAC MP
  - Clear: the recording of the cycle times is restarted
- Buttons for functions
  - Home >>: Changing to the Home screen
  - Exit: freely configurable with WinCC flexible functions (e.g. hotkeys), e.g. return to start screen
- Setting the HMI Enable Time in ms for the HMI device - HMI Enable Time

  Default setting: 50 ms
- Display of the cycle time - Cycle Time [ms]
  - Last: Last cycle time
  - Avg: Average cycle time
  - Max: Maximum cycle time
  - Min: Minimum cycle time
- Cycle time information (histogram)

Further information

For information on how to configure the **Hotkeys** for WINAC MP, refer to the Operating WinAC MP with hotkeys (Page 63) section.

See also

Composition of the cycle time (Page 72)

Setting the "HMI enable time" (Page 73)

5.3 Function key assignment based on the WinAC system library

5.3.1 Operating the WinAC MP with hotkeys

Introduction

A hotkey specifies a key or key combination that can be used to actuate the button.
You can assign different functions to the hotkeys for each one of the screens. This assignment applies **only** to the screen in which you have defined the button.

NOTICE
If a screen of an alarm view or an alarm window is overlapped, then the function keys are still active in runtime.

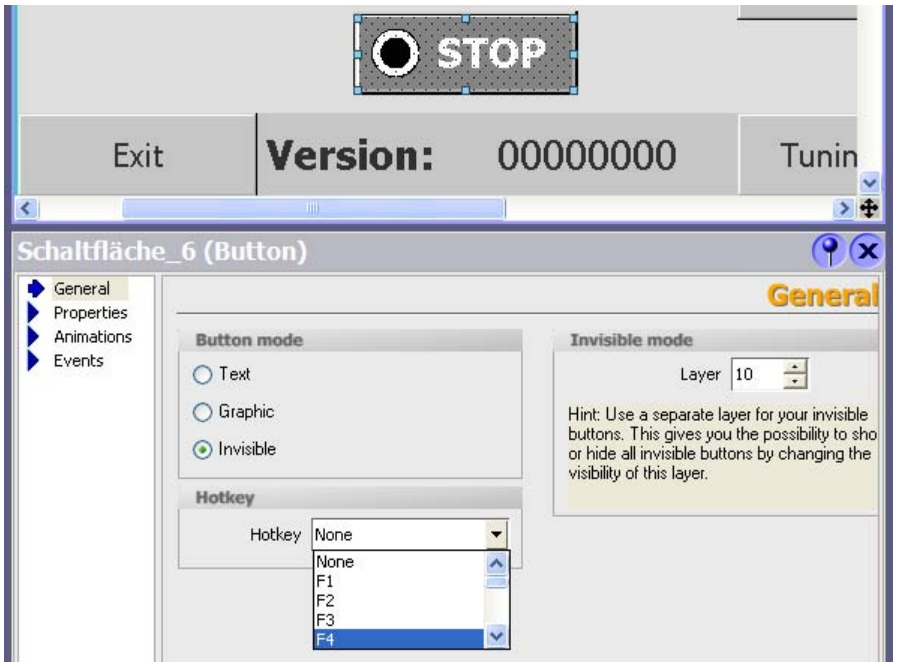
Requirement

- The screen in which you want to assign a button is open.
- The Properties window in WinCC flexible is open.

Specify hotkey

To do so, follow these steps:

1. Select the desired button, for example STOP.
2. Click on the "General" group in the Properties window.
3. In the selection list in the "Hotkey" area, select a key or key combination for the hotkey with which the button will be actuated.



4. If necessary, configure the button in the Properties window:

Result: The button is assigned accordingly in the selected screen.

5.3.2 Starting WinAC MP - Start

Requirements

The following conditions must be met to start WinAC MP on the HMI device:

- You have transferred the WinCC flexible Runtime project from the configuration PC to the HMI device and the project contains the two screens from the WinAC MP system library.
- You have the option of transferring WinAC MP and the License Key from the configuration PC to the HMI device.

Starting WinCC flexible Runtime on the HMI device

1. Check that the HMI device is turned on.
2. Press "Start" in the Loader.

   Result: WinCC flexible Runtime opens with the Home Screen on the HMI device.

Starting WinAC MP

The "StartAtBoot" function is enabled by default for WinAC MP and WinAC MP starts automatically after startup of the HMI device.

If the "StartAtBoot" function is not selected, start WinAC MP as follows:

1. To start WinAC MP, press "Start".

   Result: WinAC MP is running.

5.3.3 Automatic WinAC MP startup - Autostart

WinAC MP provides you with an Autostart function. When this is enabled, it allows the controller to be started in the same mode it was in before it was shut down:

- Autostart = blue: Function activated: After WinAC MP starts up, WinAC MP changes to mode it was in before it was shut down.
- Autostart = gray: Function not activated: WinAC MP remains in STOP when it starts up.

WinAC MP mode on shut down	Autostart	Mode after starting
STOP	No (gray)	STOP
	Yes (blue)	STOP
RUN	No (gray)	STOP
	Yes (blue)	RUN

5.3.4 Automatic WinAC MP start when the HMI device boots - StartAtBoot

Sequence from switching on the HMI device until WinAC MP changes to RUN

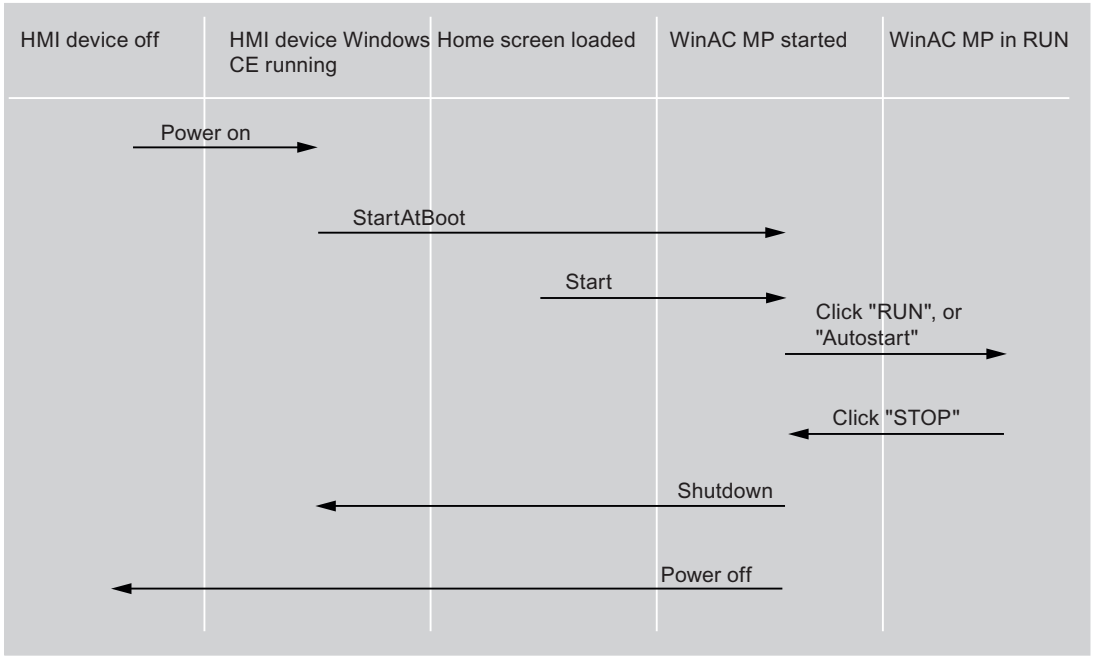
The following screens show the sequence between power on of the HMI device and WinAC MP entering the RUN state.

Note

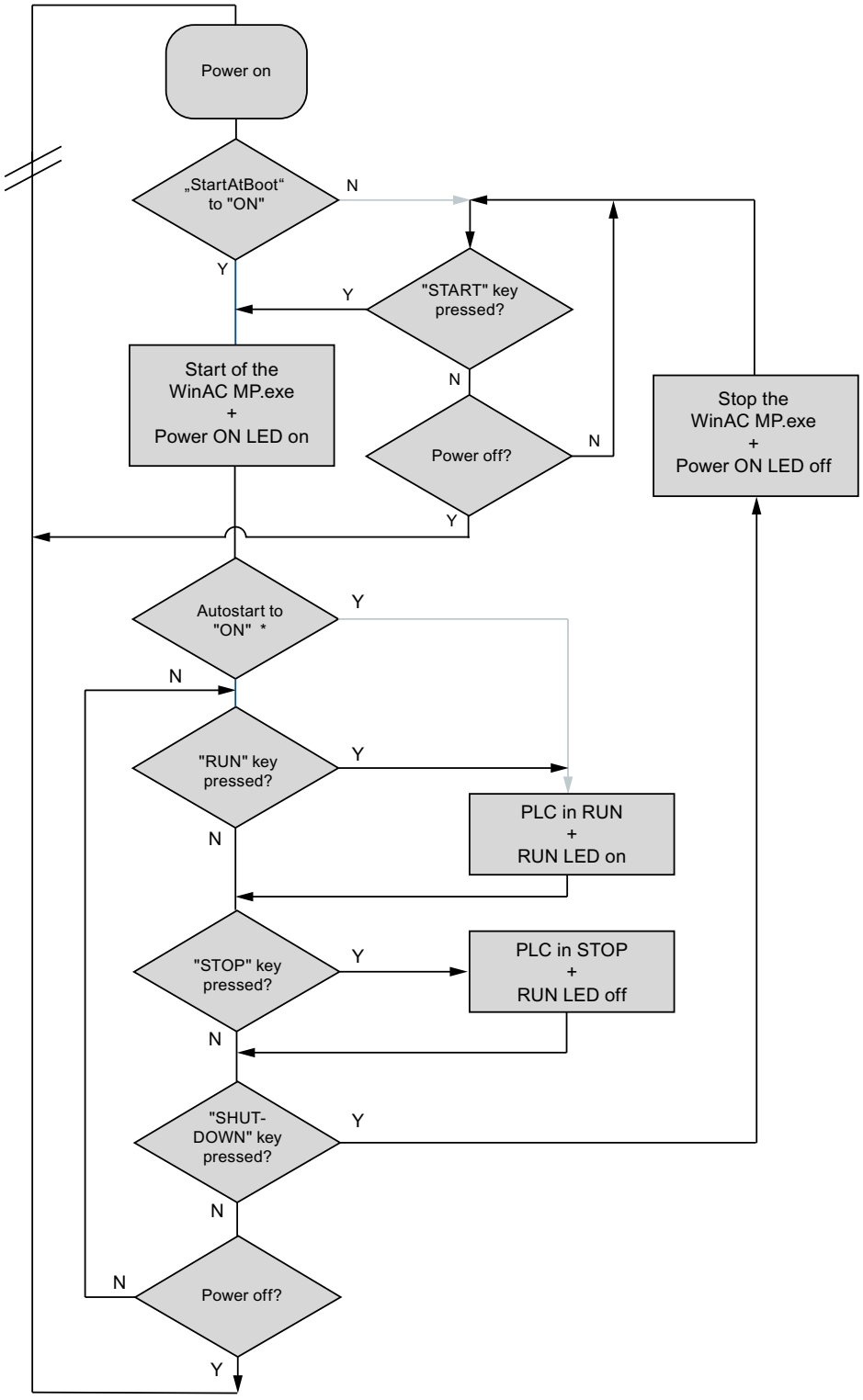
Note on the "Autostart" function for the successive screen

If autostart is enabled WinAC MP changes after startup either to RUN, or to STOP mode, wherever it was prior to closing.

Basic sequence after turning on the HMI device



Detailed sequence after turning on the HMI device



* Prerequisite: PLC was in RUN before closing

Automatic WinAC MP start when the HMI device boots (StartAtBoot)

You can configure WinAC MP so that it starts automatically once the HMI device has booted. To do this, click StartAtBoot.

- StartAtBoot = blue: WinAC MP is started automatically when the HMI device boots
- StartAtBoot = gray: WinAC MP is **not** started automatically when the HMI device boots

  To start WinAC MP manually, you first start the WinCC flexible project on the HMI device so that the Home Screenopens. Then click "Start" to confirm.

See also

Automatic WinAC MP startup - Autostart (Page 64)

5.3.5 RUN and STOP modes

Mode selectorh

You can switch operating modes as follows using the mode selector:

- RUN
- STOP

The mode selector switch on the WinAC MP Home Screen works similar to the manual mode selector switch on an S7 hardware controller.

Control operating mode

The mode describes the state of the CPU at any point of time.

To control the operating mode, you have the following options:

- Mode selector switch
- Operation using STEP 7

Note

Status indicator shows a different mode than the mode selector switch

Just as with a hardware CPU, the status indicators RUN and STOP show the current mode of WinAC MP.

Permissible functions during RUN or STOP

The following table shows which functions are permitted during RUN or STOP:

Switch setting	
RUN	• Downloading a STEP 7 user program to WinAC MP • Downloading individual blocks to WinAC MP. • Using STEP 7 to modify program variables. • Changing the operating state using STEP 7. • Memory reset using the Home Screen or using STEP 7 (if you reset WinAC MP memory, WinAC MP automatically changes to STOP).
STOP	• Downloading a STEP 7 user program to WinAC MP • Downloading individual blocks to WinAC MP. • Using STEP 7 to modify program variables. • Memory reset using the Home Screen or using STEP 7. • Archiving and restoring a STEP 7 user program.

Prohibited functions during RUN or STOP

The following table shows which functions are prohibited during RUN or STOP:

Switch setting	
RUN	• Archiving and restoring a STEP 7 user program.
STOP	• It is not possible to change the operating mode with STEP 7. The mode selector switch has highest priority.

NOTICE
Priority of the operating modes If the mode selector switch has been used to change the mode to "STOP", **you cannot** use STEP 7 to change the mode to "RUN". ⇒ The mode selector switch in "STOP" has highest priority. If the mode selector switch has been used to change the mode to "RUN", **you can** use STEP 7 to change the mode to "STOP". ⇒ The "STOP" mode has highest priority.

5.3.6 Memory reset with MRES

How a memory reset works

MRES works in the same way as a memory reset of a hardware CPU - all the WinAC MP settings are reset to the defaults:

- The STEP 7 user program is deleted in the work memory and the load memory (OBs, DBs, FCs, FBs and system data).
- The content of the memory areas (I, Q, M, T, and C) is reset to 0.
- System settings are reset to their default values (for example, the size of process image areas and the size of the diagnostic buffer).
- Deletes all active communications jobs and all open communications.
- All online connections are disconnected, for example, STEP 7, WinCC, WinCC flexible, PROFIBUS or S7 communication.

When do you need to reset memory?

You should reset WinAC MP memory before you download a new STEP 7 user program to WinAC MP.

You **must** perform a memory reset if the STOP indicator in the Home Screen is flashing.

Possible causes are:

- Errors have been detected in the work memory, for example, the size of the STEP 7 user program exceeds that of the work memory.
- WinAC MP was turned off and on again as a result of an error.

How do I reset memory?

There are several ways of resetting WinAC MP memory:

- In the "Home Screen", press the "MRES" button .

  Note

  After having pressed the MRES button on the HMI device, you are requested confirm the CPU memory reset. Confirm this dialog.

- Reset memory from the SIMATIC Manager of STEP 7.

The STOP display flashes during the memory reset.

Result: WinAC MP has been reset to its initial status.

5.3.7 Status indicators

Meaning of the status indicators

The status displays on the Home Screen indicate the current operating state and support troubleshooting. These status indicators correspond to the LED displays on an S7 hardware PLC.

You cannot change the status of WinAC MP by touching the status indicators.

Status indicators

Display	Description
ON	Lit when WinAC MP has started up (Start). Not lit if WinAC MP was switched off (Shutdown).
INTF	Internal error This display lights up when an error condition occurs in WinAC MP, for example, a programming error, arithmetic error, timer error or counter error. If the STEP 7 user program handles the error by executing OB 80 or OB 121, the INTF indicator goes off after 3 seconds if there is no follow-on error condition.
EXTF	External fault. This display lights up when a fault or error condition occurs outside of WinAC MP, for example, a hardware fault, parameter error, communication error or I/O fault. If the STEP 7 user program handles the error by executing OB 122, the EXTF indicator goes off after 3 seconds if there is no follow-on error condition.
BUSF	Bus fault This indicator flashes if there is an error in communication with the distributed PROFIBUS I/O.
RUN	Lights up according to the operating mode (RUN or STOP).
STOP	When RUN is flashing and STOP is lit (steady), the control program has reached a breakpoint (RUN flashes) or the control is starting up. **Note:** The displays RUN and STOP show the actual operating mode of the controller. The RUN and STOP mode selector positions show the selected mode (similar to the mode selector position on an S7 CPU front panel). This can differ from the current operating mode. Example: Changing the operating mode with STEP 7 causes the status indicators to change, but the mode selector does not change.

Flashing RUN and STOP status indicators

Display		Description
RUN	**STOP**	
Flashes	Flashes	WinAC MP is in DEFECT mode. All status indicators flash (see next paragraph)
Flashes	On	• The STEP 7 user program has stopped at a breakpoint. • A warm restart or cold restart is in progress. RUN flashes until startup has been completed. The time required for the restart operation depends on the time required to execute the startup OB.
OFF	Flashes	• WinAC MP memory reset is required (MRES button). • A WinAC MP memory reset is active.

All status indicators flash

If all the status indicators flash at the same time, WinAC MP is in an error status that cannot be eliminated by resetting memory with MRES.

To recover from this condition, you must perform the following steps:

1. Turn off WinAC MP (Shutdown)
2. Restart WinAC MP (Start).

   Result: The STOP status indicator flashes, RUN is off.
3. Reset WinAC MP memory by pressing the MRES button.
4. Download the hardware configuration with STEP 7 and the STEP 7 user program or restore an archived user STEP 7 user program.

If the problem is not eliminated by turning WinAC MP off and on again, restart the HMI device.

5.3.8 Composition of the cycle time

Composition of the cycle time

The cycle time is comprised of the following execution times:

- OB1 execution time
- HMI Enable Time
  - HMI runtime
  - Communication
  - Options

The OB1 execution time is executed with highest priority. When the execution has been completed, a configurable "HMI Enable Time" is available to the HMI device. You can use this to control how much HMI runtime execution time is available to the communication and the options.

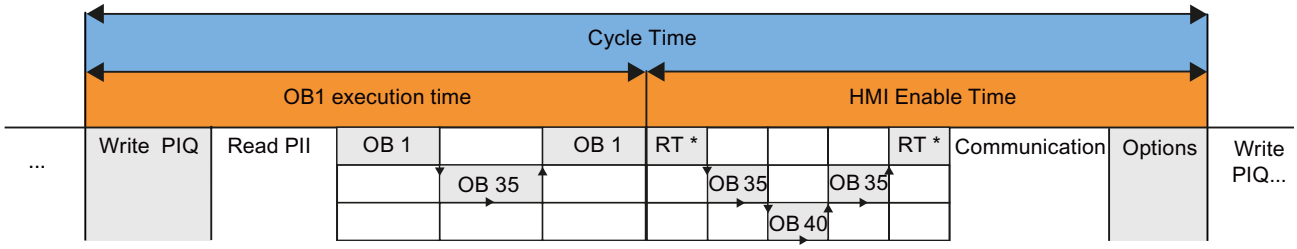
Time data on configurable "HMI Enable Time":

- Default setting: 50 ms
- Minimum: 1 ms

Time-critical applications

When they occur, interrupt OBs (OB 35 and OB 40) interrupt the execution of the OB 1 or the HMI Enable Time.

The following screen shows an example of the events triggering interrupt OB 35 and OB 40.



RT * : HMI runtime

How the "HMI Enable Time" influences the cycle time

A small "HMI Enable Time" shortens the cycle time The next call OB 1 takes less time.

Note

"Selecting a sufficiently large HMI Enable Time"

Long interruptions of the HMI Enable Time reduce performance of the HMI device. The execution times of the interrupt OBs reduce the HMI Enable Time(1:1). For this reason you have to select a sufficiently large "HMI Enable Time".

5.3.9 Setting the "HMI enable time"

Options for setting the "HMI Enable Time"

1. Using the supplied user interface in the figure "Tuning Screen" to set the HMI enable time:

   You can set the HMI Enable Time in the range from 1 ms to 5999 ms in the "HMI Enable Time" input field of the tuning screen. The default is 50 ms.

2. Configuring the "HMI Enable Time" with a system function:

   The "HMI Enable Time" can be configured in WinCC flexible using the "SetHMIEnableTime" system function.

3. For additional information, refer to the chapters: Examples of configuring objects (Page 83) and WinAC MP functions (Page 80)

Note

Selecting a sufficiently large HMI Enable Time

Set an appropriate HMI Enable Time at the beginning of your configuration and commissioning phase. Observe the screen change and refresh times during operation of the panel.

Reduce the HMI Enable Time in small steps and continue to observe the screen change and refresh times. If the screen change and refresh times deteriorate, increase the HMI Enable Time again. Application-related time interrupts (e.g. 0B35) or block calls can lead to other negative effects which can be corrected by extending the HMI Enable Time .

5.4 Archiving and restoring STEP 7 user programs

5.4.1 Conditions for archiving and restoring

Definition: Archive file

The archive for WINAC MP functions like a S7-CPU micro memory card.

You use an archive file to archive the STEP 7 user program of WinAC MP or to restore the STEP 7 user program after a WinAC MP memory reset.

WinAC MP uses two types of archive file:

- The archive file has the ending **.wld**. The file is created generated using the "Archive" call and restored with "Restore". The path name of the file is specified as a parameter at both calls.

  The actual values of the project in Runtime are saved to the archive file:

  – Current STEP 7 user program

  – Current system configuration

  – Current values of the DBs

- WinAC MP saves the current user program, including the initial values and configuration data, to a file with the ending **.waf** .

  The file is saved with device backup and restored with "restore":

  – with ProSave on the configuration PC

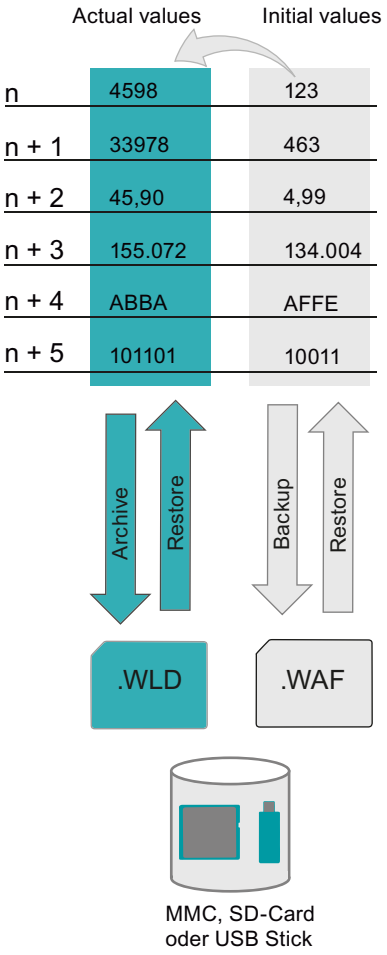
  – with backup/restore in the Control Panel on the HMI device

  Note

  WinAC is closed automatically for the backup. After backup it is necessary to restart WinAC, e.g. with reboot.

Additional information

For more information about the backup and restore functions, refer to the Multi Panels MPx77 and WinCC flexible manuals.



Requirements

The following constraints apply to WLD archive files:

- The WinAC MP system functions "Archive"" and "Restore" can only be used with S7 user programs requiring up to a specific size of load memory.
- To archive or restore an archive file, WinAC MP must be in STOP mode.
- An archive file works similar to the memory card of an S7-CPU.
  Only exception: After a memory reset, WinAC MP does not load the archive file automatically and must be loaded manually.

For information about the sizes of the various characteristics, refer to section Technical specifications (Page 94).

Note

Retentive data are not archived.

5.4.2 Creating an archive file - Archive

Requirement

The Archive system function is assigned a valid file name and storage location for the archive file at the "FilePath:" parameter.

Optional storage locations for the archive file

- MP 177: internal Flash memory, Storage Card MMC, Storage Card USB and Network
- MP 277: internal Flash memory, Storage Card MMC, Storage Card USB and Network
- MP 377: internal Flash memory, Storage Card MMC, Storage Card USB, Storage Card CF and Network

Creating an archive file on the HMI device

1. Press STOP to set WinAC MP to STOP mode.
2. Press the Archive button.

Result: The archive file is set up with the default name Default.wld in the default path: \Flash\AddOn\WinACMP\.

Creating an archive file in SIMATIC Manager

As an alternative, you can also create the archive file in SIMATIC Manager in STEP 7:

1. Select **File > Memory Card File > New** in SIMATIC Manager.
2. Enter a name for the archive file.
3. Select the storage location for the archive file and confirm with "OK":

Result: The archive file is created with the *.wld extension.

5.4.3 Restoring an archive file - Restore

Requirements

- The storage medium (MMC, USB, ...) with the archive file is plugged in.
- The Restore system function is assigned a valid file name and storage location for the archive file at the "FilePath:" parameter.

Restoring configuration data from WLD archive file

1. Press the "STOP" button to change WinAC MP to STOP mode.
2. Press the Restore button.
3. Wait until the archive file "Restore" has been restored.
4. Switch WinAC MP to RUN to start the STEP 7 user program.

Result

WinAC MP starts with the new project data at the next RUN command.

5.5 Exit WinAC MP on the HMI device - Shutdown

Exiting WinAC MP

To exit WinAC MP, press the "Shutdown WinAC MP" button.

Result: WinAC MP is closed and all status indicators are reset. WinCC flexible Runtime remains active.

Setting up WinAC MP for your application

6

6.1 Working with WinCC flexible

WinCC flexible

The WinCC flexible configuration software is used to create your configuration on the configuration PC (PC or PG) operating on a Windows platform.

WinCC flexible Runtime

WinCC flexible Runtime is an easy-to-use, high-performance software for the visualization of processes in projects you created with the WinCC flexible configuration software.

WinCC flexible Runtime is designed for visualization and control of machines and small plants. The Runtime software has a window-based pixel-graphics user interface. Due to its short response times, the software features secure process operation, jogging at the machine and secure data acquisition.

WinAC MP system library

Tip

To use all the functions of WinAC MP, make sure that the WinAC MP option is installed on the configuration PC.

The WinAC system library for the Multi Panels are included in the scope of delivery of WinAC MP. The library contains the follows screens: Home Screen and Tuning Screen.

You can use the screens without needing to make any changes. You can, however, also adapt the screens to your needs in WinCC flexible or create a new project.

When you install WinAC MP, all WinAC MP functions are integrated in WinCC flexible. In WinCC flexible, you can copy pictures and picture objects to other projects.

Open WinCC flexible with **Start > SIMATIC > WinCC flexible 2008 > WinCC flexible**.

Further information

For information on **Integrating a WinAC system library**, refer to the WinAC system library (Page 57) section.

For more information on creating pictures and working with the functions in WinCC flexible, refer to the documentation on WinCC flexible.

6.2 WinAC MP functions

The following table shows all functions and objects with which functions can be configured that are available for visualization of WinAC MP in WinCC flexible.

System functions WinCC flexible

Use the following system functions in WinCC flexible:

- UpdateTags, to read or update values
- SetValue, to set or change values in WinAC MP

Overview of Objects

The objects whose functions can be parameterized are organized as follows:

Abbreviation	Object	Event
Variable	Variable	Changed value, High limit violation, Low limit violation
Screen	Screen	Loaded, Cleared
Scr obj	Screen object	Press, Release, Click, Change, Switch on, Switch off, Activate, Deactivate
Function	Function key global/local	Press, Release
System	System key global/local	Press, Release
Script *	Usable in the script	
* Abbreviation "Script" is not available for the configuring for MP 177		

Overview of the additional objects for WinAC MP 2008

Function name	Description	Parameters	Action	Abbreviation
SetHMIEnableTime	Sets the value of the HMIEnableTimeof WinAC MP (in ms).	HMIEnableTime : (input)	-	Variable Scr obj Function System
UpdateHMIEnableTime *)	Updates the value of the HMIEnableTime of WinAC MP (in ms)	HMIEnableTime : (output)	Switch off Switch on	Screen

*) For explanation, see the end of the next table.

Overview of Objects

Function name	Description	Parameters	Action	Abbreviation
Archive	Stores the current STEP 7 user program, the current system configuration and the current values of the DBs in an archive file.	File path:	-	Scr obj Function System
ClearCycleTimeBuffer	Deletes the cycle time data of the histogram.	-	-	Variable Scr obj Function System
ControlWinACMP	Starts or closes WinAC MP.	WinAC : (input) 0 = Shutdown WinACMP 1 = Start WinACMP	-	Variable Scr obj Function System
GetWinACMPStartMode *)	Reads the WinAC MP 'desired' operating mode after the HMI device has started up.	StartMode: (output)	Switch off Switch on	Variable Screen Scr obj Function System
GetWinACMPVersion *)	Reads the value of the version number from WinAC MP.	Version : (output)	Switch off Switch on	Variable Screen Scr obj Function System Script
Restore	Loads the STEP 7 user program, system configuration and DBs from an archive file.	File path:	-	Scr obj Function System
SetKeySwitch	Sets the mode selector switch to RUN or STOP and is also used for memory reset.	Key Switch : (input) 0 = MRES 1 = STOP 3 = RUN	-	Variable Scr obj Function System
SetRestartMethod	Sets the restart mode, either cold restart (CRST) or warm start (WRST)	Action : (input) 0 = WarmRestart 1= ColdRestart		Variable Scr obj Function System
SetSleepTime	Sets the value of the HMIEnableTimeof WinAC MP (in ms).	SleepTime : (input)	-	Variable Scr obj Function System
SetWinACStartAtBoot	Sets whether WinAC MP starts automatically after the HMI device boots.	StartAtBoot : (input) 0 = StartAtBootOff 1 = StartAtBootOn	-	Variable Scr obj Function System Script
SetWinACMPStartMode	Sets WinAC MP to the 'desired' operating mode after the HMI device has started up.	Action : (input) 0 = AutoStartOff 1 = AutoStartOn		Variable Scr obj Function System Script
StartHistogramm *)	Starts the cyclic sending of histogram values. (this function is called in WinCC flexible with **Events > Loaded**)	Percent[n]: (output) CycleTime[n]: (output) Y-Axis bounds[n]: (output) RegisterID[n]: (output)	Switch off Switch on	Screen Scr obj Function System

Function name	Description	Parameters	Action	Abbreviation
StopHistogramm	Stops the cyclic sending of histogram data (this function is called in WinCC flexible with **Events > Cleared**)	RegisterID: (input)	-	Screen Scr obj Function System
UpdateAverageCycleTime *)	Updates the display of the average cycle time (in ms).	CycleTime : (output)	Switch off Switch on	Screen
UpdateAverageExecTime *)	Updates the display of the average OB 1 execution time (in ms).	CycleTime : (output)	Switch off Switch on	Screen
UpdateBUSF1LEDVariable *)	Updates the status indicator of the LED variable BUSF1.	BUSF1 : (output)	Switch off Switch on	Screen
UpdateBUSF2LEDVariable *) No function in WinAC MP V4.0/4.1.1	Updates the status indicator of the LED variable BUSF2.	BUSF2 : (output)	Switch off Switch on	Screen
UpdateControllerForStartAtBoot *)	Reads whether WinAC MP has started automatically after the HMI device booted.	StartAtBoot : (output)	Switch off Switch on	Screen
UpdateEXTFLEDVariable *)	Updates the status indicator of the LED variable EXTF.	EXTF : (output)	Switch off Switch on	Screen
UpdateINTFLEDVariable *)	Updates the status indicator of the LED variable INTF.	INTF : (output)	Switch off Switch on	Screen
UpdateKeySwitchSetting *)	Updates the status indicator for the position of the mode selector switch.	KeySwitch : (output) 0= MRES 1 = STOP 2 = RUN	Switch off Switch on	Screen
UpdateLastCycleTime *)	Updates the display of the last cycle time (in ms).	CycleTime : (output)	Switch off Switch on	Screen
UpdateMaximumCycleTime *)	Updates the display of the longest cycle time (in ms).	CycleTime : (output)	Switch off Switch on	Screen
UpdateMinimumCycleTime *)	Updates the display of the shortest cycle time (in ms).	CycleTime : (output)	Switch off Switch on	Screen
UpdatePowerLEDVariable *)	Updates the status indicator of the LED variable ON.	Power : (output)	Switch off Switch on	Screen
UpdateRUNLEDVariable *)	Updates the status indicator of the LED variable RUN.	Run : (output)	Switch off Switch on	Screen
UpdateSleep Time *)	Updates the value of the HMIEnableTime of WinAC MP (in ms)	SleepTime : (output)	Switch off Switch on	Screen
UpdateSTOPLEDVariable *)	Updates the status indicator of the LED variable STOP.	STOP : (output)	Switch off Switch on	Screen

*) The configuration of all WinAC MP update functions is permitted only once per screen.

The WinAC MP update function must be configured for the "Screen loaded" event with the Action parameter "SwitchOn". The WinAC MP update function must be configured for the "Screen unloaded" event with the Action parameter "SwitchOff". If a function is called more than once with different variables in one screen, only the variable activated last is updated. You should therefore only use identical variables as parameters of the functions within a screen.

Examples of configuring objects

7

7.1 Configuration of the RUN button with corresponding LED display using WinCC flexible

Introduction

The following example shows you how to configure a RUN button with integrated LED indicator.

Objective:

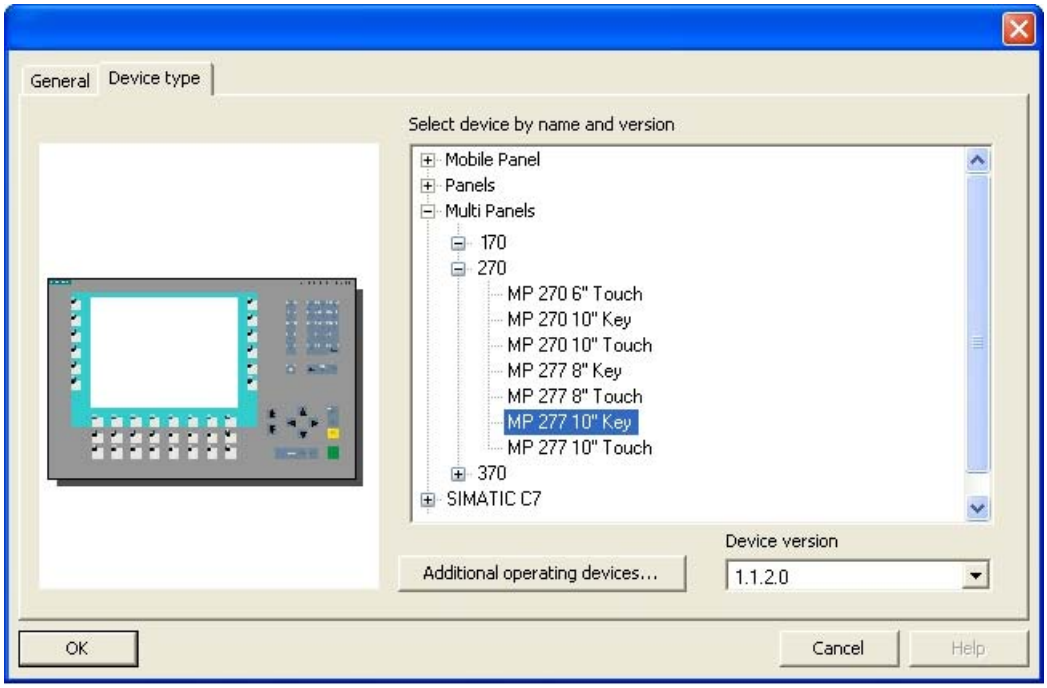
The button "RUN" will change WinAC MP to RUN mode. The vector graphic shows an "LED". The color will always represent the current mode RUN or STOP.

Basic design

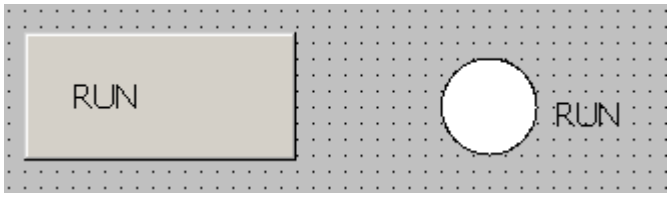
Step 1	Click Events > "SetKeySwitch" function, "KeySwitch" parameter. RUN > RUN WinAC MP
Step 2	Internal variable "RUNLED" data type INT < UpdateRUNLEDVariable function, Action: Switch ON < events loaded (screen object) < feedback: Value 3 = RUN ; Value 0 = STOP
Step 3	UpdateRUNLEDVariable function, Action: Switch OFF < events cleared (screen object)
Step 4	Internal variable "RUNLED" data type INT > Animations background color Value 3 = Green; Value 0 = Red

Configuration

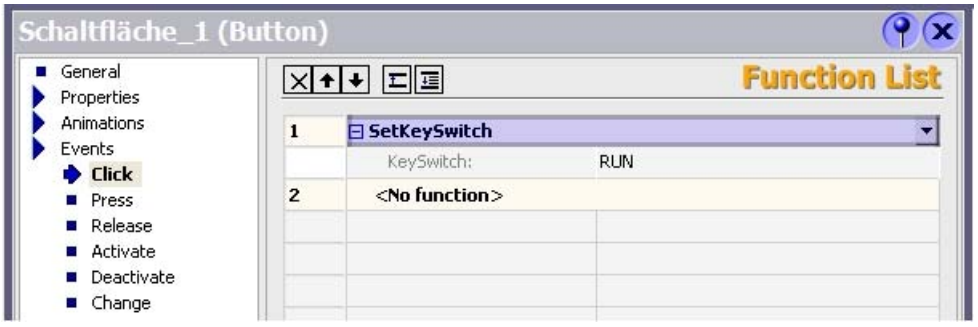
1. Create a new project in WinCC flexible with the option **Create an empty project**.
2. In the next dialog "Device selection", select the Multi Panel you are using. In our example, we are using the MP 277 10" Key. Confirm with "OK".



3. Open **Toolbox > Simple Objects** and design the "RUN" button and LED as a "circle" vector graphic as shown in the figure below.

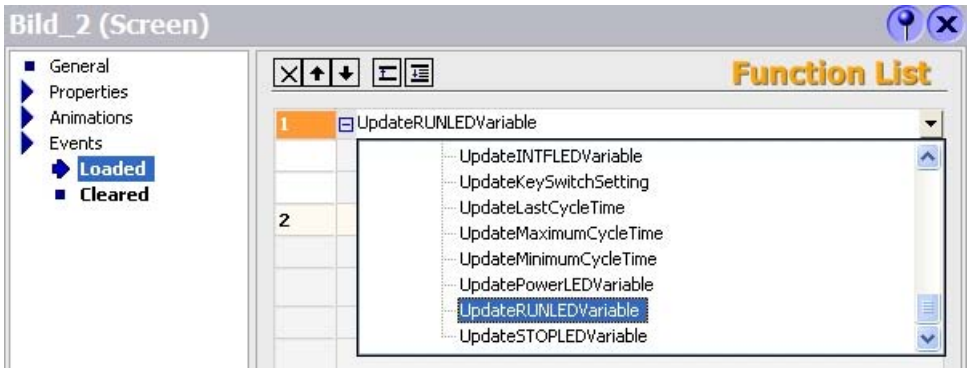


4. Assign a switching function to the RUN button: Select the RUN button and click on **Events > Click** in the lower area of WinCC flexible.
5. Configure **System Functions > WinAC MP > SetKeySwitch**.
6. Select "RUN" as the function for "KeySwitch".

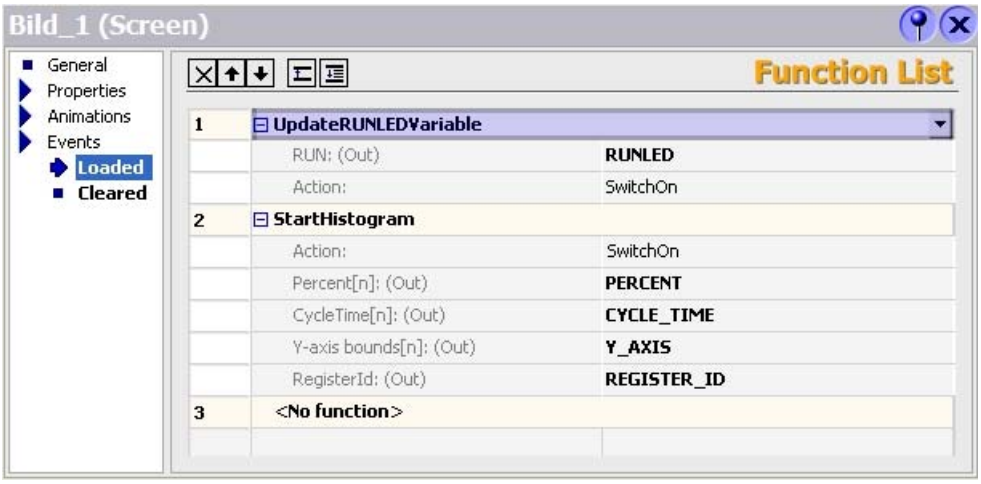


7. Click on an empty position in the screen object.

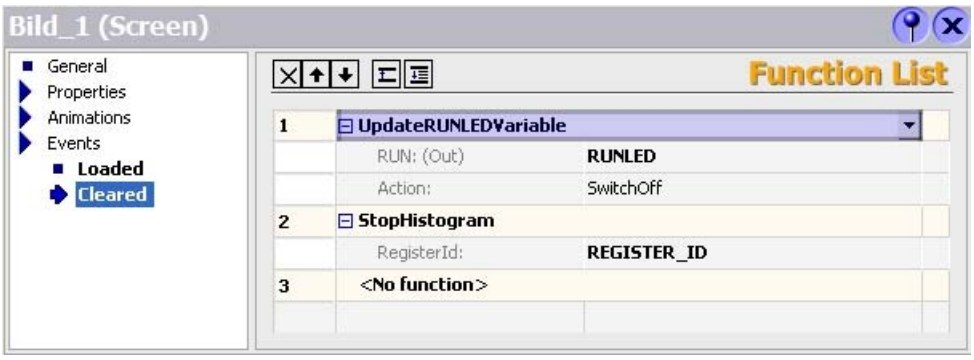
8. Select the events **> Loaded > UpdateRUNLEDVariable**



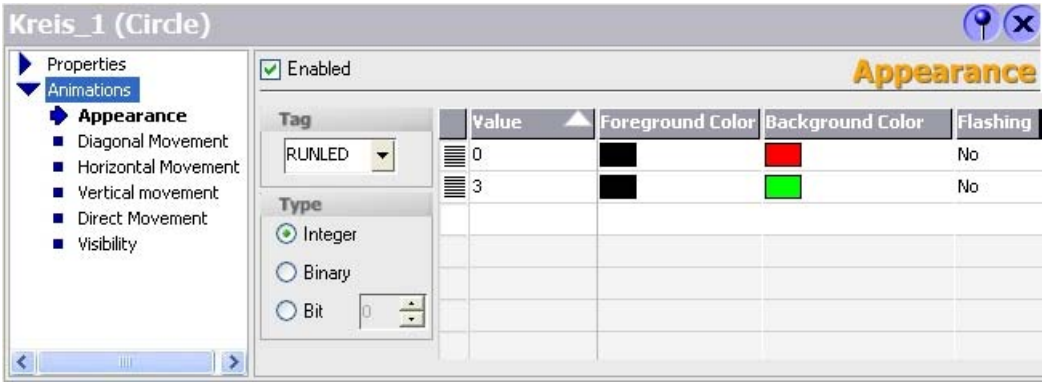
9. For the parameter "RUN: (output)" of the "UpdateRUNLEDVariable" function, configure the internal variable "RUNLED" of the data type INT.
10. For the "Action" parameter of the "UpdateRUNLEDVariable" function, select the value "Switch On".



11. Click on an empty position in the screen object.
12. Select **Events > Cleared > UpdateRUNLEDVariable.**
13. For the parameter "RUN: (output)" of the "UpdateRUNLEDVariable" function, configure the internal variable "RUNLED" of the data type INT.
14. For the "Action" parameter of the "UpdateRUNLEDVariable" function, select the value "Switch OFF".



15. Configure the variable with the "circle" vector graphic in **Animations > Appearance**.

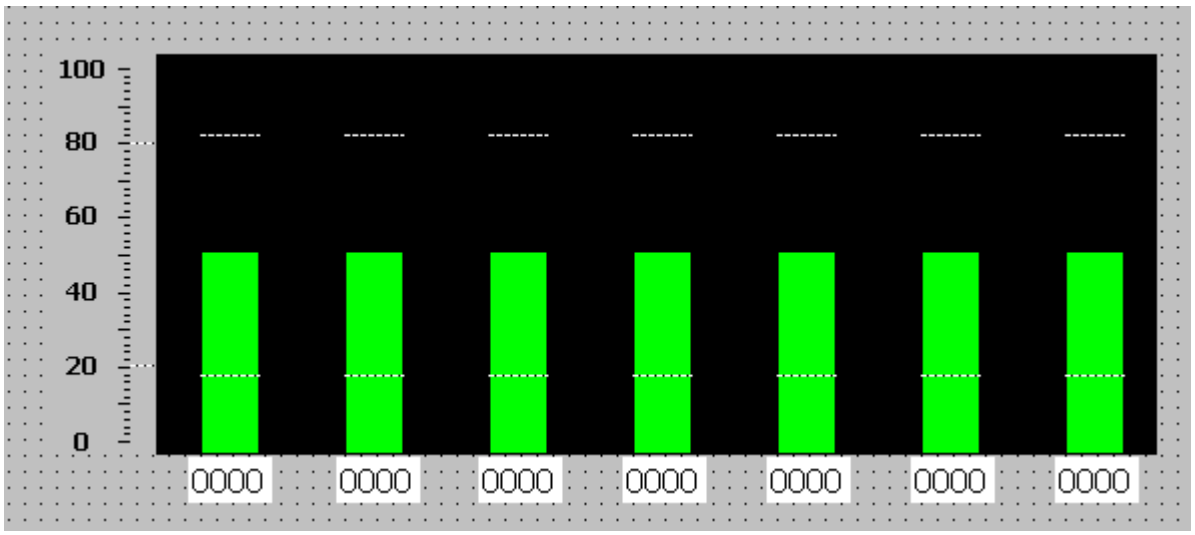


16. Save your project with **Project > Save**.
17. Download your project to the Multi Panel with **Project > Transfer**.

7.2 Configuring a histogram

Introduction

The following example shows you how to configure a histogram:

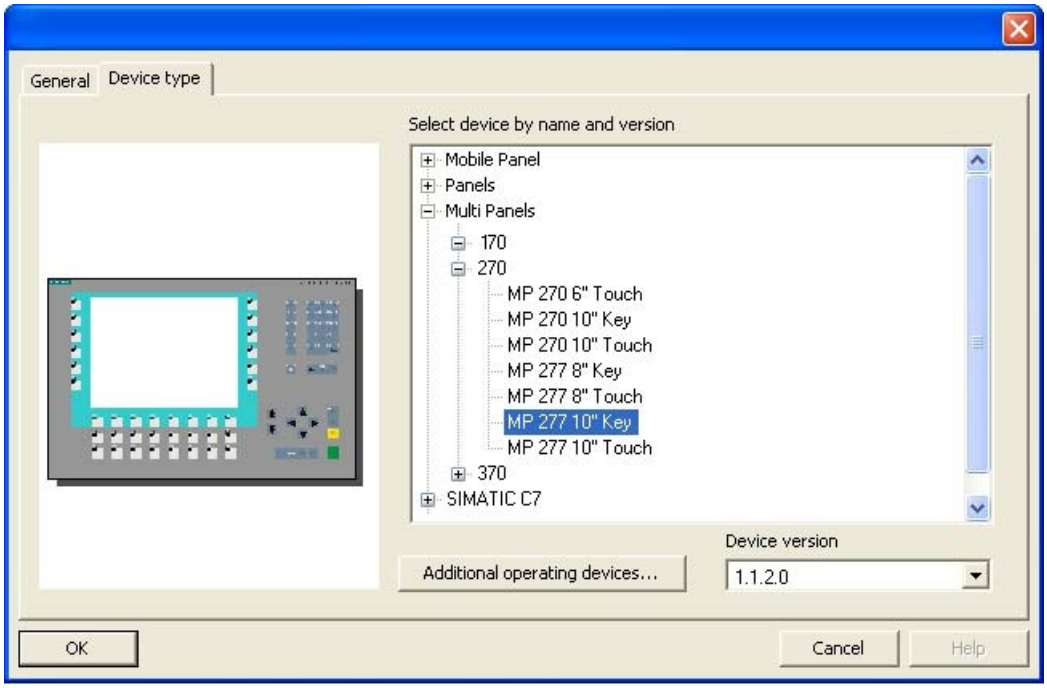


Basic design

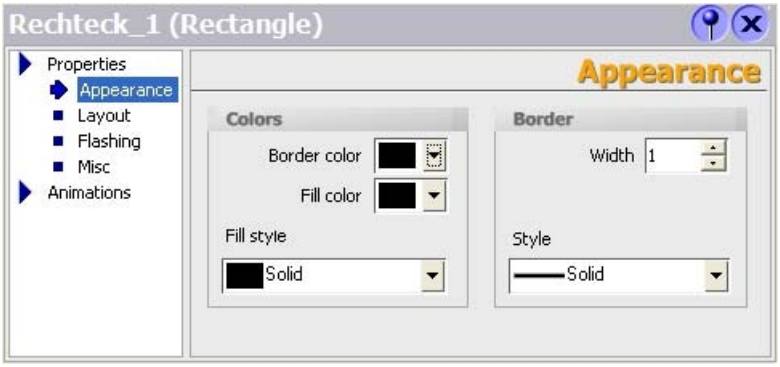
Step 1	Events loaded (screen object) > "StartHistogramm" function with parameter Action: SwitchON > WinAC MP supplies histogram data
Step 2	Internal array variable PERCENT, CYCLE_TIME, Y_AXIS and REGISTER_ID < feedback
Step 3	StopHistogramm parameter "RegisterID" < events cleared (screen object)
Step 4	Internal array variable CYCLE_TIME[0] to [6] > IO field_1 to IO field_7> Process > Variable
Step 5	Internal array variable Y_AXIS[1] > Bar_1 > maximum value > variable and internal array variable PERCENT[0] > Bar_1 > Process > Variable
Step 6	Internal array variable Y_AXIS[0] > Bar_2 to Bar_8 > maximum value > variable and internal array variable PERCENT[0] to [6] > Bar_2 to Bar_8 > Process > Variable

Creating the objects

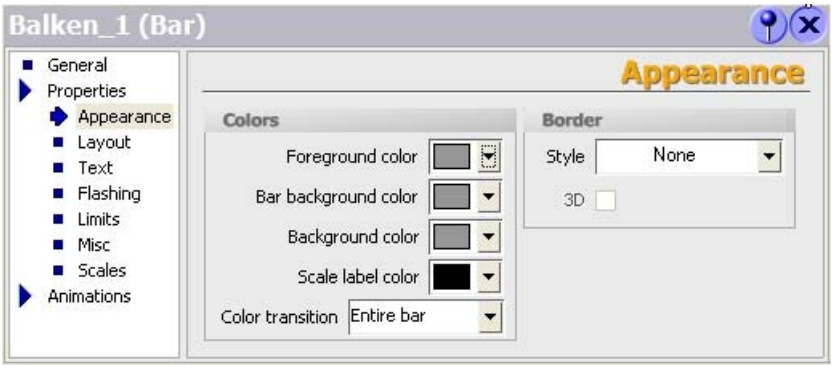
1. Create a new project in WinCC flexible with Create an empty project.
2. In the next dialog "Device selection", select the Multi Panel you are using. In our example, we are using the MP 277 10" Key. Confirm with "OK".



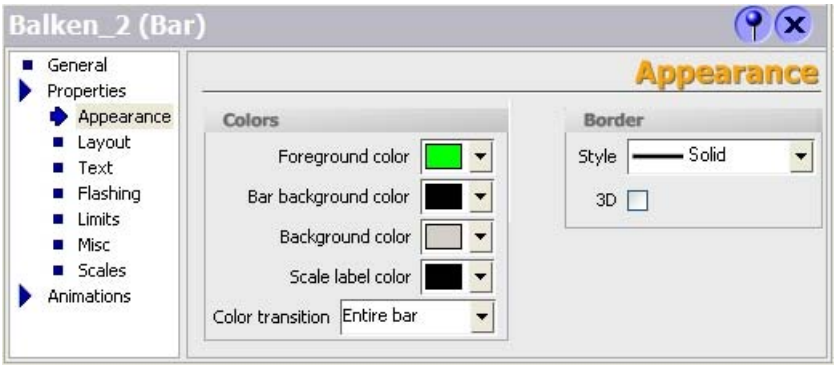
3. Open **Toolbox > Simple Objects** and define the area using a rectangle.



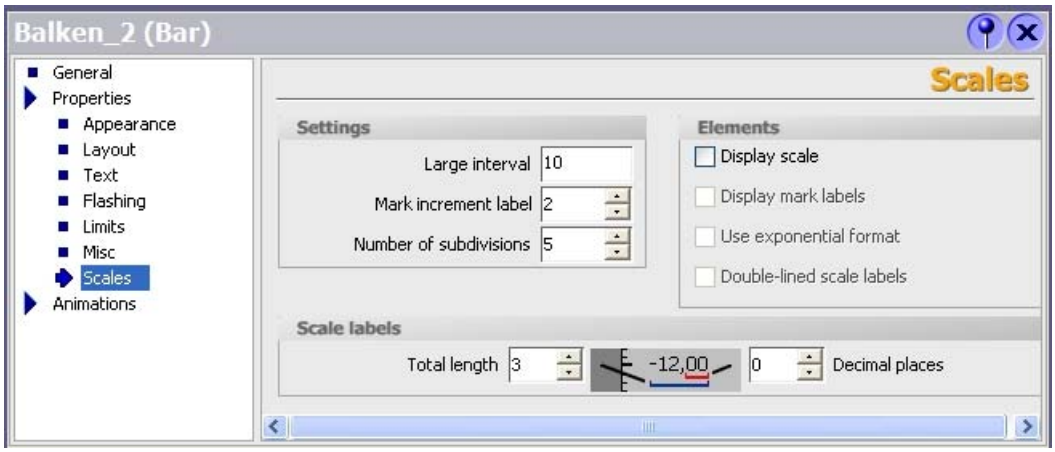
4. You create the Y axis with a bar (Bar_1) from the simple objects:



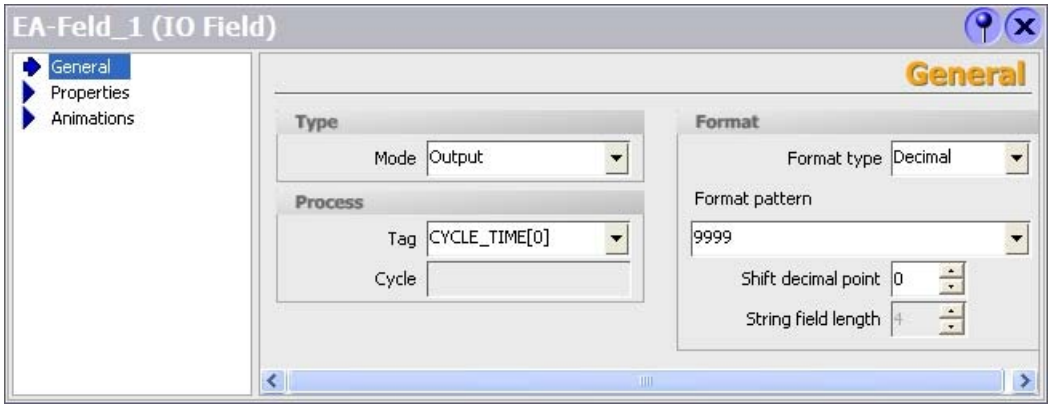
5. You create the bars (Bar_2 to Bar_8) in the histogram display with a total of 7 bars from the simple objects:



6. Disable the "Display scale" property for the seven bars.

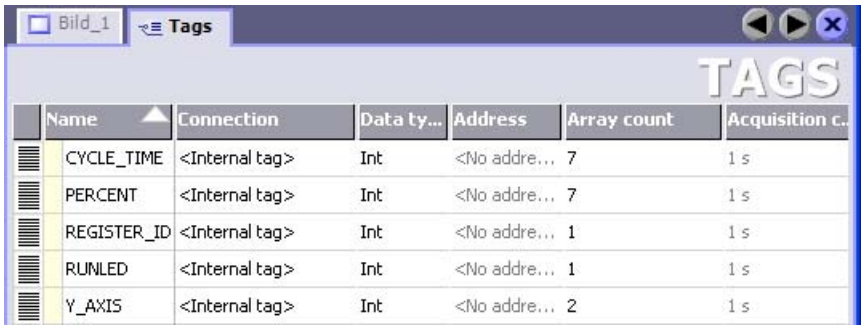


7. Below the 7 bars, configure an IO field with the "Output" property.



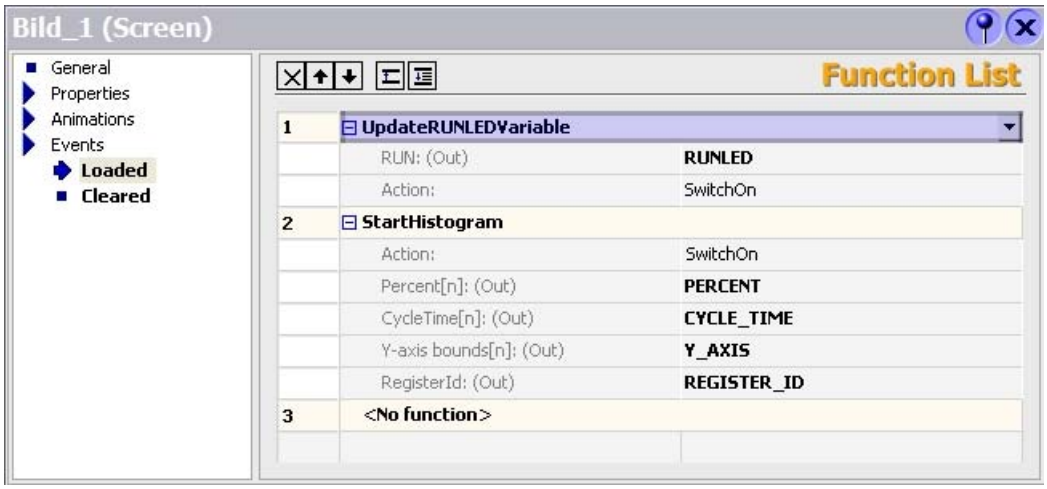
Assigning the tags

1. In WinCC flexible, click on **Project >HMI Station > Communication > Tags**.
2. Create the tags based on the figure below using the right mouse button and "Add Tag".

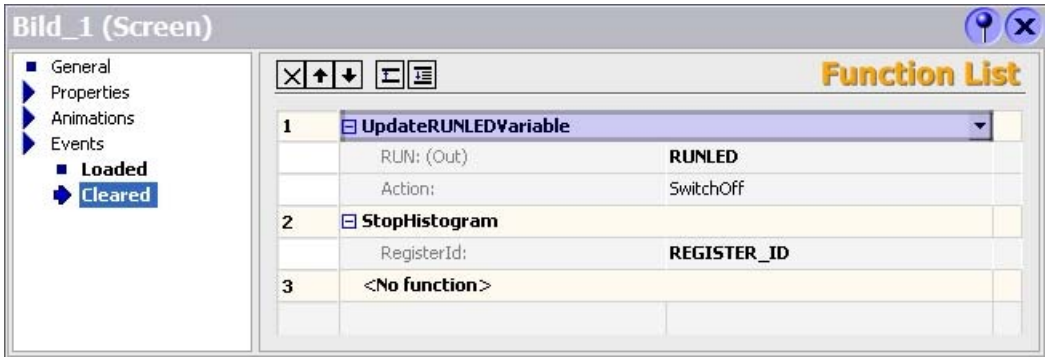


Assigning the events

1. In WinCC flexible, click on **Project >HMI Station > Screens > Bild_1**.
2. Complete the function list for **Events > Loaded** based on the following figure:

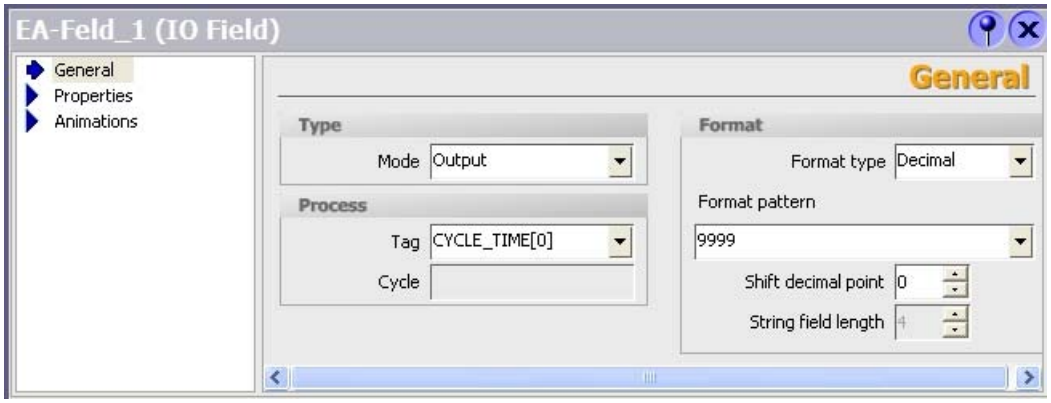


3. Complete the function list for **Events > Cleared** based on the following figure:

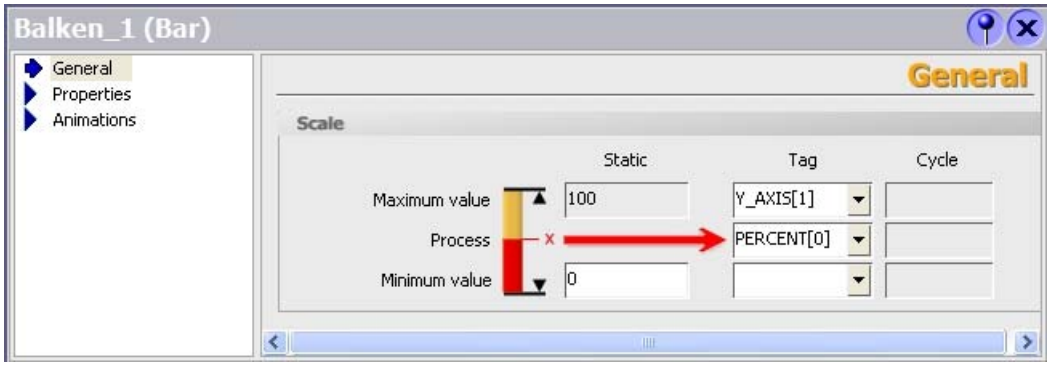


Assign limits and tags to the X axis, Y axis and bars

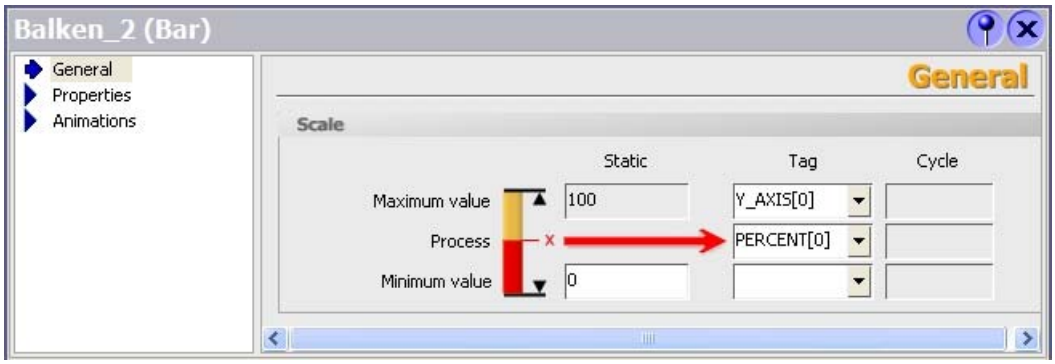
1. Click on the first I/O field on the X axis and assign the tags based on the following figure:



2. In the same way, assign the elements of the array variable CYCLE_TIME to the remaining 6 IO fields. Make sure that the CYCLE_TIME variable is incremented by 1 in each case.
   – Process variable = CYCLE_TIME [n]; n = 0 ...
3. Click on the Y axis and assign the variables based on the following figure:



4. Click on the first bar in the histogram (Bar_2) and assign the variables based on the following figure:
   - Maximum value variable = Y_AXIS[0]
   - Process variable = PERCENT[n]; n = 0 ...



5. In the same way, assign the tags to the remaining 6 bars. Make sure that each element of the PERCENT array variable is incremented by the count of 1.

Saving and transferring a project

1. Save your project with **Project > Save**.
2. Download your project to the Multi Panel with **Project > Transfer**.

Performance features and technical specifications

A

A.1 Performance features

Summary of the performance features of WinAC MP

Below, you will find a brief outline of the main performance features of WinAC MP:

- 4 accumulators (accumulator 1 to 4)
- Communication as PROFIBUS-DP master complying with DPV1
- Only distributed I/O - no integrated inputs and outputs

  WinAC MP communicates with the distributed I/O as a PROFIBUS-DP master. As a DP master, WinAC MP can communicate with up to 32 DP slaves.

A.2 Specifications

A.2.1 Order numbers

Order numbers

WinAC MP 177: 6ES7 671-4EE00-0YA0

WinAC MP 277: 6ES7 671-5EF01-0YA0

WinAC MP 377: 6ES7 671-7EG01-0YA0

A.2.2 Technical specifications

Technical specifications

	WinAC MP 177	WinAC MP 277	WinAC MP 377
MLFB	6ES7671-4EE00-0YA0	6ES7671-5EF01-0YA0	6ES7671-7EG01-0YA0
Associated programming package	STEP 7 V 5.4 + SP4	STEP 7 V 5.4 + SP4	STEP 7 V 5.4 + SP4
Firmware version	V4.1.1	V4.1.1	V4.1.1
Memory			
Working memory			
• Integrated	128 KB	256 KB	512 KB
• Expandable	No	No	No
Blocks			
DB			
• Number, max.	512 (FBs+FCs+DBs=512)	1024 (FBs+FCs+DBs=1024)	2048 (FBs+FCs+DBs=2048)
• Size, max.	64 KB	64 KB	64 KB
FB			
• Number, max.	512 (FBs+FCs+DBs=512)	1024 (FBs+FCs+DBs=1024)	2048 (FBs+FCs+DBs=2048)
• Size, max.	64 KB	64 KB	64 KB
FC			
• Number, max.	512 (FBs+FCs+DBs=512)	1024 (FBs+FCs+DBs=1024)	2048 (FBs+FCs+DBs=2048)
• Size, max.	64 KB	64 KB	64 KB
OB			
• Number, max.	18	18	18
• Size, max.	64 KB	64 KB	64 KB
Nesting depth			
• Per Priority Class	8	8	16
• Error OBs	2	2	2
Timers /counters / retentivity:			
S7 counters			
• Number	128	256	512
• Retentivity			
• - configurable	Yes	Yes	Yes
• - Preset	8	8	8
• Counting range			
• - Lower Limit	0	0	0
• - Upper Limit	999	999	999

	WinAC MP 177	WinAC MP 277	WinAC MP 377
IEC counters			
• Included	Yes (SFB 0, SFB 1, SFB 2)	Yes (SFB 0, SFB 1, SFB 2)	Yes (SFB 0, SFB 1, SFB 2)
S7 timers			
• Number	128	256	512
• Retentivity			
• - configurable	Yes	Yes	Yes
• - default	0	0	0
• Time range			
• - Lower Limit	10 ms	10 ms	10 ms
• - Upper Limit	9990 s	9990 s	9990 s
IEC timers			
• Included	Yes (SFB 3, SFB 4, SFB 5)	Yes (SFB 3, SFB 4, SFB 5)	Yes (SFB 3, SFB 4, SFB 5)
Retentivity			
Retentivity total	64 KB	128 KB	256 KB
Bit memories			
• Number, max.	2 KB	2 KB	4 KB
• Retentivitiy present	Yes	Yes	Yes
Data blocks			
• Number, max.	512	1024	2048
• Size, max.	64 KB	64 KB	64 KB
• Retentivity configurable	Yes (max. 64 KB)	Yes (max. 128 KB)	Yes (max. 256 KB)
Local data			
• per priority class, max.	configurable, 16384 bytes for all execution levels	configurable, 16384 bytes for all execution levels	configurable, 16384 bytes for all execution levels
Address area			
I/O address area			
• Inputs	2 KB	4 KB	8 KB
• Outputs	2 KB	4 KB	8 KB
• Distributed of this			
• - Inputs	2 KB	4 KB	8 KB
• - Outputs	2 KB	4 KB	8 KB
Process image			
• Inputs	1 KB	2 KB	2 KB
• Outputs	1 KB	2 KB	2 KB
• Inputs, adjustable	1 KB	2 KB	2 KB
• Outputs, adjustable	1 KB	2 KB	2 KB
• Inputs, preset	512 bytes	512 bytes	512 bytes

	WinAC MP 177	WinAC MP 277	WinAC MP 377
• Outputs, preset	512 bytes	512 bytes	512 bytes
• Consistent Data, max.	32 bytes	32 bytes	32 bytes
Hardware Configuration			
Number of DP masters			
• Integrated	1	1	1
Time			
Operating Hours Counter			
• Number	8	8	8
• Number range	0 to 7	0 to 7	0 to 7
S7 message functions			
Process diagnostics messages	Yes	Yes	Yes
Test and startup functions			
Status/control			
• Status/modify variable	Yes (status blocks, single step, breakpoint)	Yes (status blocks, single step, breakpoint)	Yes (status blocks, single step, breakpoint)
Force			
• Force	No	No	No
Diagnostic buffer			
• Included	Yes	Yes	Yes
• No. of entries, max.	1000	1000	1000
• Number of entries, preset	120	120	120
• Configurable	Yes	Yes	Yes
Communications functions			
Number of logical connections	8	16	32
PG/OP communication	Yes	Yes	Yes
Routing	Yes	Yes	Yes
Global data communication			
• supported	No	No	No
S7 basic communication			
• supported	No	No	No
S7 Communication			
• supported	Yes (PUT/GET, BSEND/BRCV, USEND/URCV)	Yes (PUT/GET, BSEND/BRCV, USEND/URCV)	Yes (PUT/GET, BSEND/BRCV, USEND/URCV)
• As server	Yes	Yes	Yes
• As client	Yes	Yes	Yes
• User data per job, max.	480 bytes	480 bytes	480 bytes
Number of connections			
• Total	8 (DP max. 4, remainder PROFINET)	16 (DP max. 8, remainder PROFINET)	32 (DP max. 8, remainder PROFINET)

	WinAC MP 177	WinAC MP 277	WinAC MP 377
• Reserved for PG communication	1	1	1
• Reserved for OP communication	1	1	1
• Usable for routing	6	14	30
1st interface			
DP master			
• Maximum number of connections	4	8	8
• Services			
• - PG/OP Communication	Yes	Yes	Yes
• - Routing	Yes	Yes	Yes
• - Global Data Communication	No	No	No
• - S7 basic communication	No	No	No
• - S7 Communication	Yes	Yes	Yes
• - Equidistant Mode Support	No	No	No
• - SYNC / FREEZE	Yes	Yes	Yes
• - Activation/deactivation of DP slaves	Yes	Yes	Yes
• - DPV1	Yes	Yes	Yes
• Transmission rates, max.	12 Mbit/s	12 Mbit/s	12 Mbit/s
• Number of DP slaves, max.	32	32	32
• Address area			
• - Inputs, max.	2 KB	4 KB	8 KB
• - Outputs, max.	2 KB	4 KB	8 KB
CPU/Programming			
Configuration software			
• WinCC flexible Compact	Yes	No	No
• WinCC flexible Standard	Yes	Yes	Yes
• WinCC flexible Advanced	Yes	Yes	Yes
Programming language			
• LAD	Yes	Yes	Yes
• FBD	Yes	Yes	Yes
• STL	Yes	Yes	Yes
• SCL	Yes	Yes	Yes
• CFC	Yes	Yes	Yes
Operating systems			
• Windows CE	Yes (version 5.0 or higher)	Yes (version 5.0 or higher)	Yes (version 5.0 or higher)
Online language			
Number	1 (English)	1 (English)	1 (English)

A.3 Supported OBs

A.3.1 OBs for the main cycle of the program and for cold and warm restarts

OB 1

WinAC MP executes OB 1 at cyclic intervals: When OB1 has been executed, the HMI Enable Time starts. The operating system then starts to execute OB 1 again. Cyclic execution of OB 1 starts when startup is complete. You can call function blocks (FBs, SFBs) or functions (FCs, SFCs) in OB 1.

Definition: Warm restart

WinAC MP executes OB 100 before the free cycle (OB 1) is started. A warm restart clears the inputs of the distributed I/O (PII) and sets the outputs of the distributed I/O (PIQ) to a predefined safe state (default setting is 0). A warm restart retains the current values of the retentive memory areas of bit memories (M), timers (T), counters (C), and data blocks (DBs). All non-retentive memory areas are then set to "0".

Definition: Cold restart

WinAC MP executes OB 102 before the free cycle (OB 1) is started. Like a warm restart, a cold restart resets the inputs of the distributed I/O (PII) and sets the outputs of the distributed I/O (POI) to a pre-defined safe state (default is 0). A cold restart resets the retentive memory (M, T, and C) or sets it to its default setting (DB). All non-retentive memory areas are then also set to "0".

A.3.2 Supported organization blocks (OBs)

Organization blocks (OBs) supported by WinAC MP 2008

OB	Description	Priority class
OB 1	Cyclic program	1
OB 10	Time-of-day interrupt	2 to 24
OB 20	Time-delay interrupt	2 to 24
OB 35	Cyclic interrupt	2 to 24
OB 40	Hardware interrupt	2 to 24
OB 55	Status interrupt	2 to 24
OB 56	Update interrupt	2 to 24
OB 57	Manufacturer-specific interrupt	2 to 24
OB 80	Time error	26
OB 82	Diagnostic interrupt	24 to 26 (or 28)*
OB 83	Insert/remove interrupt	24 to 26 (or 28)*
OB 85	Program execution error	24 to 26 (or 28)*
OB 86	Rack failure	24 to 26 (or 28)*
OB 88	Processing interrupt	28
OB 100	Warm restart	27
OB 102	Cold restart	27
OB 121	Programming error	Priority class of the OB causing the error
OB 122	I/O access error	Priority class of the OB that was interrupted
* Priority classes 27 and 28 are valid in the priority class model of the startup.		

For detailed information, refer to the STEP 7 Online Help.

A.4 Supported SFCs

Definition of system function (SFC)

A system function (SFC) is a function that is integrated in the operating system of the CPU and can be called in the STEP 7 user program, when necessary.

System functions (SFCs)

WinAC MP supports the following SFCs:

SFC	Name	Description
SFC0	SET_CLK	Sets the system clock.
SFC1	READ_CLK	Reads the system clock.
SFC2	SET_RTM	Sets the runtime meter.
SFC3	CTRL_RTM	Starts or stops the runtime meter.
SFC 4	READ_RTM	Reads the runtime meter.
SFC 5	GADR_LGC	Queries the logical address of a channel.
SFC 6	RD_SINFO	Reads the start information of an OB.
SFC 9	EN_MSG	Enables block-related and symbol-related messages as well as group status messages.
SFC 11	DPSYC_FR	Synchronizes groups of DP slaves.
SFC 12	D_ACT_DP	Deactivates and activates DP slaves.
SFC 13	DPNRM_DG	Reads the diagnostic data of a DP slave. Tested DP configuration: One ET 200M slave with one 8-input/8-output module and one 16-output module.
SFC 14	DPRD_DAT	Reads the consistent data from a DP slave.
SFC 15	DPWR_DAT	Writes the consistent data to a DP slave.
SFC 17	ALARM_SQ	Generates a block-related message that can be acknowledged.
SFC 18	ALARM_S	Generates a block-related message that can be permanently acknowledged.
SFC 19	ALARM_SC	Queries the acknowledgement status for the last message (SFC 17 or SFC 18).
SFC 20	BLKMOV	Copies memory areas.
SFC 21	FILL	Initializes a memory area. 1 word 50 words 100 words
SFC 22	CREAT_DB	Creates a retentive data block in the work memory. The current values of the DB are saved after a warm restart.
SFC 23	DEL_DB	Deletes a data block. WinAC MP allows an application to delete a non-sequence-relevant data block.
SFC 24	TEST_DB	Provides information about a data block. In WinAC MP, SFC 24 can return the DB length and write-protection flags for non-sequence-relevant data blocks, although it returns error code 80B2 for non-sequence-relevant data blocks.
SFC 26	UPDAT_PI	Updates the process input image.
SFC 27	UPDAT_PO	Updates the process output image.
SFC 28	SET_TINT	Sets the time-of-day interrupt (OB 10).

SFC	Name	Description
SFC 29	CAN_TINT	Cancels the time-of-day interrupt (OB 10).
SFC 30	ACT_TINT	Activates the time-of-day interrupt (OB 10).
SFC 31	QRY_TINT	Queries the time-of-day interrupt (OB 10).
SFC 32	SRT_DINT	Starts the time-delay interrupt (OB 20).
SFC 33	CAN_DINT	Cancels the time-delay interrupt (OB 20).
SFC 34	QRY_DINT	Queries the time-delay interrupt (OB 20).
SFC 36	MSK_FLT	Masks synchronous errors.
SFC 37	DMSK_FLT	Unmasks synchronous errors.
SFC 38	READ_ERR	Reads the error register.
SFC 39	DIS_IRT	Disables the processing of new interrupt events.
SFC 40	EN_IRT	Enables the processing of new interrupt events.
SFC 41	DIS_AIRT	Delays higher priority interrupts and asynchronous errors.
SFC 42	EN_AIRT	Enables the processing of new interrupt events with higher priority than the current OB.
SFC 43	RE_TRIGR	Retriggers cycle time monitoring.
SFC 44	REPL_VAL	Transfers a substitute value to ACCU1 (Accumulator 1).
SFC 46	STP	Changes the operating mode to STOP mode.
SFC 47	WAIT	Delays the execution of the STEP 7 user program by the specified number of microseconds, rounded up to the next millisecond.
SFC 49	LGC_GADR	Queries the module slot belonging to a logical address.
SFC 50	RD_LGADR	Queries all of the logical addresses of a module.
SFC 51	RDSYSST	Reads all or part of a system status list.
SFC 52	WR_USMSG	Writes a user-defined diagnostic event to the diagnostics buffer.
SFC 54	RD_DPARM	Reads the defined parameter.
SFC 55	WR_PARM	Writes the dynamic parameters.
SFC 56	WR_DPARM	Writes the default parameters.
SFC 57	PARM_MOD	Assigns the parameters to a module.
SFC 58	WR_REC	Writes a data record.
SFC 59	RD_REC	Reads a data record.
SFC 62	CONTROL	Checks the connection status of an SFB instance.
SFC 64	TIME_TCK	Reads the system time.
SFC 78	OB_RT	Reports OB runtime information with a resolution to the nearest microsecond.
SFC 79	SET	Sets a range of outputs.
SFC 80	RESET	Resets a range of outputs.
SFC 82	CREA_DBL	Creates a data block in the load memory.
SFC 83	READ_DBL	Copies data from a block in the load memory.
SFC 84	WRIT_DBL	Writes to a load memory block, so that the data are stored immediately. Load memory blocks that are used to recover from an abnormal termination can be updated while the program is running. Use SFC 84 only for larger segments of a database, not for frequent variable processing.
SFC 85	CREA_DB	Creates a retentive or non-retentive DB, depending on the input parameter: If retentive, the current values of the DB are retained after a warm restart (OB100). If non-retentive, the current values of the DB are reset to their initial values after a warm restart (OB100).
SFC 87	C_DIAG	Determines the current status of all S7 connections.

Running asynchronous SFCs concurrently

WinAC MP 2008 restricts the number of asynchronous OBs that can be running concurrently according to the following rules:

- A maximum of 5 instances of the asynchronous system function SFC 51 (index B1, B3) may run in WinAC MP 2008.
- A maximum of 20 asynchronous SFCs of the following SFCs may run in WinAC MP 2008: SFC 11, SFC 13, SFC 55, SFC 56, SFC 57, SFC 58 and SFC 59.
- A maximum of 32 asynchronous SFCs in any combination from the following SFCs may run in WinAC MP 2008: SFC 82, SFC 83 and SFC 84.

SFCs that can cause the cycle time to vary (jitter)

The following SFCs can cause the cycle time to vary (jitter):

- SFC 22 (CREAT_DB)
- SFC 23 (DEL_DB)
- SFC 52 (WR_USMG)
- SFC 85 (CREA_DB)

Considerations for SFC 82, SFC 83 and SFC 84

WinAC MP 2008 supports a synchronous interface for SFC 82, SFC 83 and SFC 84 during startup. WinAC MP 2008 allows both the first call (with REQ = 1) and the second call (with REQ = 0) in STARTUP so that the action can be completed during STARTUP.

The normal STEP 7 error codes are valid for SFC 82, SFC 83 and SFC 84. The error code 80C3 is also returned. These SFCs return the error code 80C3, if WinAC MP 2008 exceeds the limit of 32 outstanding SFC 82, SFC 83 and SFC 84 jobs.

Further Information

Detailed information on the SFCs can be found in the STEP 7 online help or in the *STEP 7 System Software for S7-300 and S7-400 System and Standard Functions* Reference Manual.

A.5 Supported SFBs

Definition of system function block (SFB)

System function blocks (SFB) are integrated in the CPU operating system and can be called in the STEP 7 user program.

System function blocks (SFBs)

WinAC MP supports the following SFBs:

SFB	Name	Description
SFB 0	CTU	Counts up.
SFB 1	CTD	Counts down.
SFB 2	CTUD	Counts up/down.
SFB 3	TP	Generates a pulse.
SFB 4	TON	Generates an ON delay.
SFB 5	TOF	Generates an OFF delay.
SFB 8	USEND	Sends a data packet of CPU-specific length (two-way), uncoordinated with receiving partner.
SFB 9	URCV	Asynchronously receives a data packet of CPU-specific length (two-way).
SFB 12	BSEND	Sends a segmented data block of up to 64 Kbytes (two-way).
SFB 13	BRCV	Receives a segmented data block of up to 64 Kbytes (two-way).
SFB 14	GET	Reads data up to a CPU-specific maximum length (one-way) from a remote CPU.
SFB 15	PUT	Writes data up to a CPU-specific maximum length (one-way) to a remote CPU.
SFB 22	STATUS	Queries the status of a remote device.
SFB 23	USTATUS	Receives the status of a remote device.
SFB 32	DRUM	Implements a sequencer.
SFB 52	RDREC	Reads a data record.
SFB 53	WRREC	Writes a data record.
SFB 54	RALRM	Receives alarm data for a DP slave.

Further Information

Detailed information on the SFBs can be found in the STEP 7 online help or in the STEP 7 System Software for S7-300/400 System and Standard Functions Reference Manual.

A.6 System status list (SSL)

Using SFC 51 to read the system status list (SSL)

STEP 7 stores read-only information about WinAC in the system status list (SSL) as a set of sublists.

You use SFC 51 (RDSYSST) to access the entries in the SSL. You supply the input parameters SSL_ID and Index to access the data records in the sublist. SFC 51 returns a two-word header and a sublist or partial sublist.

The header provides the following information for the sublist:

- The first word defines the length (in bytes) of a data record for the sublist.
- The second word defines the number of data records in the sublist.

The requested information follows the header. The size of the sublist (in bytes) is the data record length multiplied by the number of data records.

Note

Representation of the values in the SSL

The SSL_ID and Index values are represented as hexadecimal (16#) numbers.

SSL_ID 0x11 (module identification)

SSL_ID	Sublist	Index and contents of the data record
W#16#0111	Module-specific information	0001: Order number, module type and version 0007: Firmware version

SSL_ID 0x12 (CPU characteristics)

SSL_ID	Sublist	Index and contents of the data record
W#16#0012	All characteristics	MC7 processor unit, time system, system response and MC7 language description
W#16#0112	Specific group of characteristics	0000: MC7 processor 0100: Time system 0200: System response 0300: MC7 language description
W#16#0F12	Header information only	

SSL_ID 0x13 (memory areas)

SSL_ID	Sublist	Index and contents of the data record
W#16#0113	Specific memory area	0001: User memory 0002: Load memory integrated 0003: Load memory inserted 0004: Maximum insertable load memory 0005: Size of backup memory 0006: Peer-to-peer memory (shadow memory)

SSL_ID 0x14 (system areas)

SSL_ID	Sublist	Index and contents of the data record
W#16#0014	All system areas	
W#16#0F14	Header information only	

SSL_ID 0x15 (block types)

SSL_ID	Sublist	Index and contents of the data record
W#16#0015	All block types	

SSL_ID 0x19 (LED status)

SSL_ID	Sublist	Index and contents of the data record
W#16#0019	All LEDs	
W#16#0F19	Header information only	

SSL_ID 0x1C (component identification)

SSL_ID	Sublist	Index and contents of the data record
W#16#001C	All information of a component	
W#16#011C	Specific elements for the component	0001: Name of the controller 0002: Name of the module 0003: Module tag 0004: Copyright entry 0005: Serial number 0007: Module type 0009: Manufacturer and profile identification 000B: Location designation (LID) of a module
W#16#0F1C	Header information only	

SSL_ID 0x22 (interrupt status)

SSL_ID	Sublist	Index and contents of the data record
W#16#0222	Start event for a specific OB	OB number: Start event and time for the requested OB

SSL_ID 0x25 (process image partition)

SSL_ID	Sublist	Index and contents of the data record
W#16#25	All process image partitions	Process image partitions for all OBs that have been loaded into the module
W#16#125	Process image partition of a specific OB	Partition number: for the partition of the configured OB
W#16#0225	OBs that have been assigned to a specific process image partition	OB number: Partition that has been assigned to the OB
W#16#0F25	Header information only	

SSL_ID 0x32 (communications status)

SSL_ID	Sublist	Index and contents of the data record
W#16#0132	Parameters of the specified communication types	0005: Diagnostics 0008: Time system
W#16#0232	Parameters of a redundant system (H-CPU)	0004: Protection level and position of the operator switch settings

SSL_ID 0x74 (LED status)

SSL_ID	Sublist	Index and contents of the data record
W#16#0174	Specific LED	0002: INTF internal error 0003: EXTF external error 0004: RUN 0005: STOP 0006: Point-to-point status data 0008: Time system 000B: BUSF1 bus fault

SSL_ID 0x90 (DP master system)

SSL_ID	Sublist	Index and contents of the data record
W#16#0090	All DP masters configured on the network and downloaded to the module	DP master identifier, address and attributes for all DP masters
W#16#0190	Specific DP master	DP master identifier, address and attributes
W#16#0F90	Header information only	

SSL_ID 0x91 (module status)

SSL_ID	Sublist	Index and contents of the data record
W#16#0591	Module status information of all submodules of the host module	INDEX is irrelevant
W#16#0991	Module status information of a DP master system	Rack or DP master system ID
W#16#0C91	Specific module, identified by the logical base address	Logical base address: Functions and parameters of the specified module
W#16#0D91	Specific station, identified either by the rack/station, by DP master identifier or the DP master identifier with station number	Station identifier: Features and parameters for all the modules of the specified station
W#16#0E91	Module status information of all configured modules (central, distributed, PROFIBUS DP or PROFINET IO)	INDEX is irrelevant

SSL_ID 0x92 (rack and station status)

SSL_ID	Sublist	Index and contents of the data record
W#16#0092	Expected status of stations in a DP master system	0: Local DP master DP master identifier: Specific DP master
W#16#0192	Activation status of the stations of an ID of a DP master system	0: Local DP master DP master identifier: Specific DP master
W#16#0292	Actual status of the stations of a DP master	0: Local DP master DP master identifier: Specific DP master
W#16#0692	OK status of the stations of a DP master	0: Local DP master DP master identifier: Specific DP master

SSL_ID 0x95 (expanded DP master system)

SSL_ID	Sublist	Index and contents of the data record
W#16#0195	Specific DP master	DP master identifier: Properties of the stations of the specified DP master (for example, DP mode, equidistant mode and cycle, clock synchronization and transmission rate)
W#16#0F95	Header information only	

SSL_ID 0xA0 (diagnostic buffer)

SSL_ID	Sublist	Index and contents of the data record
W#16#00A0	All entries in the diagnostic buffer	Event information for all events listed in the diagnostic buffer
W#16#01A0	Most recent entries in the diagnostic buffer	Number: Event information for the specified number of entries in the diagnostic buffer
W#16#0FA0	Header information only	

SSL_ID 00B1, 00B3, 00B4 (module diagnostics)

SSL_ID	Sublist	Index and contents of the data record
W#16#00B1	Diagnostic information (4 bytes) for a specific module identified by the logical base address	Logical base address: First 4 bytes of the diagnostic information
W#16#00B3	All diagnostic information for a specific module identified by the logical base address	Logical base address: Complete diagnostic information
W#16#00B4	Specific DP slave identified by the configured diagnostic address	Diagnostic address: Standard diagnostic information for a DP station

Further Information

You will find detailed information on the system status lists:

- In the STEP 7 online help
- In the *System and Standard Functions for S7-300/400* reference manual

  If you want to call up the manual on a PC on which STEP 7 is installed, select **Start > SIMATIC > Documentation > English** and double-click "STEP 7 - System and standard functions for S7-300 and S7-400".

Glossary

"Transfer" mode

"Transfer" mode is the operating mode of the HMI device in which a run-capable project is transferred from the configuration PC to an HMI device.

Automation system

An automation system is a controller of the SIMATIC S7 series, such as a SIMATIC S7-300

Bit memories

Bit memory is part of the CPU system memory. It is used to store interim results. Bit-, byte-, word-, or double word-access of bit memory is possible

Boot loader

The boot loader is used to start the operating system and is automatically started when the HMI device is switched on. After the operating system has been loaded, the Loader opens.

Bootstrapping

Bootstrapping is a function used, for example, when updating the operating system. When a functional operating system is available, updates can be performed without bootstrapping. Otherwise, updating with bootstrapping is necessary. In this case, the configuration PC communicates with the HMI device by means of the HMI device bootloader.

Cold restart

The controller executes OB 102 before the free cycle (OB 1) is started. Like a warm restart, a cold restart resets the process input image (PII) and places the process output image (PIQ) into a pre-defined safe state (default is 0). However, retentive memory (M, T, C, or DB) is reset to defaults during a cold restart.

Configuration

Configuration refers to the combination of individual modules to form an automation system.

Configuration PC

A configuration PC is a programming device or PC on which plant projects are created using configuration software.

Control Panel

In the Control Panel, you can make settings on the HMI device.

Controller

A controller is a general term for devices and systems with which the HMI device communicates, such as SIMATIC S7.

Counter

Counters are part of the CPU system memory. The content of "counter cells" can be modified by STEP 7 instructions (for example, count up/down).

CP

Communications processor: Communication processors are modules used for point-to-point and bus topologies.

CPU

A central processing unit is the main processing unit of the automation system with a processor, arithmetic unit, memory, operating system, and interface for the programming device.

Cycle

The cycle includes writing to the outputs, reading the inputs, executing OB 1 and all other OBs, and satisfying the sleep time requirement.

Cycle time

The cycle time includes the OB 1 execution time (S7 user program) and the HMI Enable Time.

Data Block

Data blocks (DBs) are parts of the user program that contain user data. Global data blocks can be accessed by all logic blocks while instance data blocks are assigned to a specific FB call.

Default setting

The default setting is a sensible basic setting that is used whenever no other value is specified (assigned).

DPV1

The designation DPV1 means extension of the functionality of the acyclical services (to include new interrupts, for example) provided by the DP protocol. The DPV1 functionality has been incorporated into IEC 61158/EN 50170, volume 2, PROFIBUS.

Engineering software

The configuration software is used to create projects for process visualization. WinCC flexible is an example of configuring software.

Flash memory

Flash memory is non-volatile memory with EEPROM chips, used as a mobile storage medium or as a memory module installed permanently on the motherboard.

Function block

According to IEC 1131-3, a function block (FB) is a logic block containing static data. An FB allows the user program to pass parameters. Function blocks are therefore suitable for programming frequently recurring, complex functions, e.g., closed-loop controls, mode selection.

Function key

A function key is a key on the HMI device that supports user-specific functions. A function is assigned to the key in the configuration. The assignment of the function keys can vary according to the displayed screen or be independent of the displayed screen.

Histogram

Graphic representation of the cycle time behavior of WinAC MP.

HMI device

An HMI device is a device used for the operation and monitoring of machines and plants. The statuses of the machine or plant are indicated by means of graphic elements or by indicator lamps on the HMI device. The operator controls of the HMI device allow the operator to intervene in the processes of the machine or plant.

HMI Enable Time

Die HMI Enable Time is a component of the cycle time on WinAC MP.

It includes the execution times for:

- HMI runtime
- Communication
- Options
- OBs that are higher priority than OB 1

HMI station

Representation of a software-based virtual rack that defines a PC-based automation system.

Home screen

The Home Screen provides the same options as the front panel of an S7 hardware CPU. The Home Screen includes the following elements for operator control and for status functions:

- Buttons for operator control of the WinAC MP (for example, starting and exiting WinAC MP, automatic startup when booting, autostart and archiving/restoring)
- Buttons for functions (changing to the Tuning Screen, returning to the start screen)
- Mode selector switch (RUN, STOP)
- Status indicators for WinAC MP
- MRES button for memory reset

Hotkey

A hotkey specifies a key or key combination that can be used to actuate the button.

Index

In the context of hardware configuration: A numbered slot in the HMI station or virtual rack that represents a PC-based automation system. The controller occupies one index. Other components can occupy other index slots.

Industrial Ethernet

Physical communications layer for communication with STEP 7, S7 CPUs, PGs, OPs and S7 applications.

Interface, multi-point

MPI

Jitter

Jitter occurs when there is a delay starting or ending the OB. Example: The execution time can vary in the millisecond range from cycle to cycle or the start of an interrupt OB can be delayed.

Load memory

The load memory is part of the CPU and is the memory area (RAM) for all blocks downloaded from STEP 7 except for the symbol table and comments.

Loader

Transfer, Start, Control Panel and Taskbar can be called in the Loader on the HMI device.

Mains

In terms of communication, a network is the interconnection of several CPUs and other end devices -- for example, a programming device -- by means of connecting cables. Data exchange is performed between the connected devices over the network.

Mode

SIMATIC S7 automation systems can adopt the following operating modes: STOP, STARTUP, RUN, memory reset and STOP.

Mode selector

The mode selector switch is used to set the mode you require on the CPU.

MP

Multi Panel

MPI

Multi-Point Interface is the programming device interface of SIMATIC S7. It allows multiple-node operation (PGs, text-based displays, OPs) on one or several CPUs. Each station is identified by its unique (MPI) address.

Nesting depth

A block can be called from another by means of a block call. Nesting depth means the number of simultaneously called logic blocks.

Node address

The node number represents the "number" of a CPU, the programming device, or other intelligent I/O module if they communicate with one another over a network. The node address is assigned with the STEP 7 software.

Object

An object is a component of a project, e.g., a screen or message. Objects are used to view or enter texts and values on the HMI device.

OP

Operator Panel

Organization block (OB)

Interface between the operating system and the STEP 7 user program. They are called from the operating system and control cyclic and interrupt-triggered program execution, the restart behavior of the controller and error handling.

PG/OP communication

Communication between the controller and other S7 applications such as programming devices, operator panels, and S7 automation systems. WinAC MP supports PROFIBUS and Industrial Ethernet for PG/OP communication.

Process image

At the start of a cycle, the signal states at the input modules are written to the process input image. At the end of the cycle, the process image of the outputs is transferred as a signal state to the output modules.

Process visualization

Process visualization is the display of technical processes by means of text and graphic elements. Configured plant screens allow operators to intervene in active plant processes by inputting and outputting information.

PROFIBUS

Physical communications layer for PROFIBUS-DP communication with inputs/outputs or for S7 communication with STEP 7, S7 CPUs and S7 applications.

PROFIBUS-DP

Protocol for the communication with the distributed IOs in the network. PROFIBUS-DP complies with EN 50 170 Volume 2, PROFIBUS.

Programmable (logic) controller

Programmable logic controllers (PLCs) are electronic controllers whose function is saved as a program in the control unit. Therefore, the configuration and wiring of the device does not depend on the controller function. The programmable logic controller has the structure of a computer; it consists of a CPU with memory, I/O modules and an internal bus system. The I/O and the programming language are oriented to control engineering needs.

Programming device (PG)

Basically speaking, programming devices are compact, portable PCs suitable for industrial applications. Their distinguishing feature is the special hardware and software for SIMATIC programmable logic controllers.

Project

A project is the result of a configuration using configuring software. The project normally contains several screens with embedded system-specific objects, basic settings and alarms. The project file of a project configured in WinCC flexible is saved under the file name extension *.hmi.

You need to distinguish between the project on a configuration PC and the run-capable project on an HMI device. A project may be available in more languages on the configuration PC than can be managed on the HMI device. The project on the configuration PC can also be set up for different HMI devices. However, only the run-capable project that has been generated for the respective HMI device can be transferred to it.

Project file

A project file is a file generated from the executable file for use on the HMI device. The project file is normally not transferred and remains on the configuration PC.

The file name extension of a project file is *.hmi.

ProSave

The ProSave service tool ships with WinCC flexible. It provides all the functions needed to transfer data between the configuration PC and HMI device. These include:

- Backing up data
- Restoring data
- Updating the operating system
- Load / delete options
- Load / delete UCL keys

Restart method

The restart method determines which startup OB is executed whenever the controller changes from STOP mode to RUN mode. The startup OB allows you to initialize your STEP 7 user program and variables. The restart methods are: Cold restart (OB 102) and warm restart (OB 100).

Retentive data

This retentive data is not lost even if the power supply to the HMI device fails. With STEP 7, you can decide which areas should be retentive. The amount of retentive data is limited for WinAC MP!

Runtime software

WinCC flexible Runtime refers to the runtime software that can run on the HMI device.

S7 Communication

Communication between hardware and software controllers on the network using the S7 communication functions.

S7 routing

Communication between S7 automation systems, S7 applications or PC stations in various subnets using one or more network nodes that act as router. The configuration is created in NetPro.

Shared data

Shared data can be addressed from any logic block (FC, FB, OB). Specifically, these are bit memories (M), inputs (I), outputs (Q), timers (T), counters (C) and data blocks (DB). Shared data can be accessed via absolute or symbolic addressing.

Softbus

Virtual bus that allows a data exchange between WinCC flexible runtime and WinAC MP. This bus is installed when you install WinAC MP. After installing WinAC MP, S7 connections from WinCC flexible Runtime to external stations on PROFIBUS or Ethernet are routed over Softbus.

STARTUP

A STARTUP routine is executed at the transition from STOP to RUN mode. It can be initiated by the mode selector switch, after a Power On, or through an operator input on the programming device.

STEP 7 user program

Application program created with STEP 7 and downloaded to the controller for execution. It includes all organization blocks (e.g., OB 1 or OB 35) and the other logic blocks that are called, including functions (FCs), system functions (SFCs), function blocks (FBs) and system function blocks (SFBs).

STEP 7

STEP 7 is the programming software for the SIMATIC S7, SIMATIC C7 and SIMATIC WinAC controllers.

System function (SFC)

A system function (SFC) is a function that is integrated in the operating system of the CPU and can be called in the STEP 7 user program, when necessary.

System function block (SFB)

Function block integrated as part of the operating system of the controller and not loaded as part of the STEP 7 user program. Like a function block (FB), an SFB is a block "with memory". You must also create an instance data block (DB) for the SFB. The instance DB is then loaded as part of the STEP 7 user program into the controller.

System memory

The system memory is integrated on the CPU and implemented as RAM. System memory contains the address areas (for example, timers, counters, bit memories) and data areas that are required internally by the operating system (for example, communication buffers).

Timer

See Timers

Timers

Timers are part of the CPU system memory. The content of timer cells is automatically updated by the operating system, asynchronously to the user program. STEP 7 instructions are used to define the precise function of the timer cell (for example, ON delay) and to initiate its execution (for example, Start).

Transfer

Transfer of a run-capable project from the configuration PC to the HMI device.

Tuning screen

In the Tuning screen, you will find histogram information on the cycle time of WinAC MP.

Variable

A tag is a defined memory area for read and write access to values. This access can occur from the controller or via the HMI device. Based on whether or not the tag is interconnected with the controller, we distinguish between external tags (process tags) and internal tags.

Warm restart

When the CPU starts up (for example, after changing the mode selector switch from STOP to RUN or after a Power ON), organization block OB 100 (warm restart) is executed before cyclic program processing (OB 1). On a warm restart, the process input image is read in and the STEP 7 user program is executed, starting at the first command in OB 1.

Type of restart where the controller executes OB 100 before the free cycle (OB 1) is started. A warm restart resets the process input image (PII) and places the process output image (PIQ) into a predefined safe state (default is 0). During a warm restart, the current values of the retentive memory areas for the bit memory (M), timers (T), counters (C), and data blocks (DBs) are retained.

Working memory

Memory area (RAM) allocated for the blocks used at runtime.

Index

G

H

I

L

M

N

O

P

R

S

T

U

V

W