Procedure

Proceed as follows:

1. If you wish the HMI device to load the PROFIsafe address set in the Control Panel, enter a value between 1 and 65,534 in the "Address:" text box.

2. If you wish the HMI device to load the PROFIsafe address set in the project, enter a value between the invalid PROFIsafe address 65,535 in the "Address:" text box.
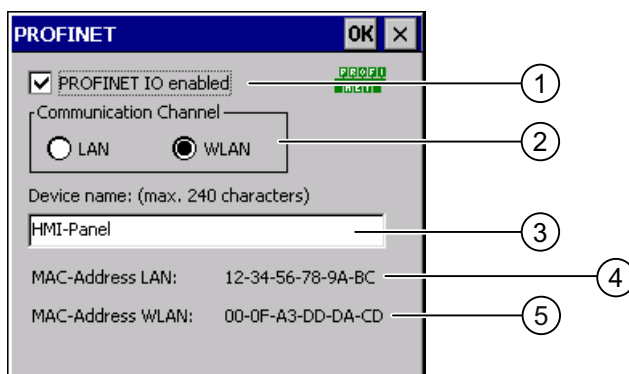
Result

The PROFIsafe address is set.

6.10   Enabling PROFINET IO

PROFINET IO

Function keys or buttons can be configured as PROFINET IO direct keys. If PROFINET IO direct keys are used in the project, they must be enabled.

Requirements

You have opened the "PROFINET" dialog with the "PROFINET" icon.

①	Check box to enable or block PROFINET IO direct keys
②	Group for communications link
③	Text box for the device name

④   MAC address of the LAN interface

⑤   MAC address of the WLAN interface

Procedure

1. To enable PROFINET IO direct keys, select the "PROFINET IO enabled" check box.

2. Select the communications link.

Note

Select "LAN" for service purposes only. If you select "LAN", the HMI device is connected directly to the network via the RJ45 interface.

If you connect the configuring PC directly to the HMI device through the RJ45 interface, you must open the connection compartment. If the connection bay is open, degree of protection IP 65 is not fulfilled.

---

1. Enter the device name of the HMI device.

   The device name can have a maximum of 240 characters.

NOTICE
Addressing error of PROFINET IO device
The device name does not correspond to the computer name in Windows CE.
The device name must match the device name entered in the HW Config of STEP 7.

1. Confirm your entries.

   The dialog closes.

2. Reboot the HMI device after saving the settings.

Result

The PROFINET IO direct keys are enabled.

See also

Restarting the HMI device (Page 156)

Direct keys (Page 234)

Required properties of the WLAN connection (Page 57)

6.11 Configuring network operation

6.11.1 Overview of network operation

Introduction

You connect the HMI device to a PROFINET network.

The connection to a network offers, for example, the following options:

- Printing via a network printer
- Saving, exporting and importing of recipe data records on or from a server
- Setting up of message and data archives
- Transferring a project
- Saving data

NOTICE
The HMI device can only be used in PROFINET networks.
The HMI device only has client functionality in the PC network. This means that users can access files of a node with TCP/IP server functionality from the HMI device via the network. However, you cannot, for example, access data on the HMI device from a PC via the network.

Note

Information on communication using SIMATIC S7 via PROFINET is provided in the "WinCC flexible communication" user manual.

Addressing

Within a PROFINET network, computers are usually addressed using device names. These device names are translated from a DNS or WINS server to TCP/IP addresses.

The corresponding servers are generally available in PROFINET networks.

Note

The use of TCP/IP addresses to address PCs is not supported by the HMI device's operating system.

So to address the HMI device using device names in a PROFINET network, you need a DNS or WINS server.

Consult your network administrator if you have questions in this regard

Printing via a network printer

The HMI device's operating system does not support line by line alarm logging via a network printer. All other printing functions, for example hardcopy or logs are available without restriction via the network.

Preparation

Before beginning the configuration, request the following network parameters from your network administrator.

- Does the network use DHCP for dynamic assignment of network addresses?

  If not, get a new TCP/IP network address for the HMI device.

- Which TCP/IP address does the default gateway have?

- If a DNS network is used, what are the addresses of the name server?

- If a WINS network is used, what are the addresses of the name server?

General procedure for configuring the network

The HMI device must be configured prior to network operation. The configuration is basically divided into the following steps:

Proceed as follows:

1. Enter the device name of the HMI device.

2. Configure the network address.

3. Set the logon information.
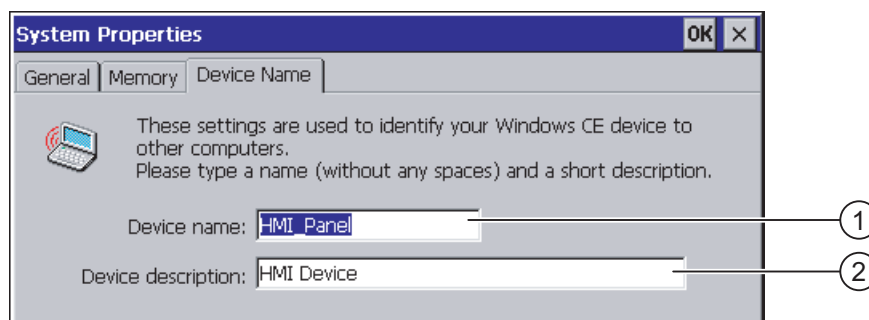
4. Save the settings.

6.11.2   Setting the device name of the HMI device

Introduction

The HMI device uses the device name to identify itself in the network.

Requirements

You have opened the "System Properties" dialog with the "System" icon.

①   Device name of the HMI device

②   Description for the HMI device (optional)

Note

To activate the network functions, enter a unique device name in the Device name text box.

Procedure

Proceed as follows:

1. Enter the device name for the HMI device in the "Device name:" text box.

2. If necessary, enter a description for the HMI device in the "Device description:" text box.

3. Confirm your entries.

   The dialog closes.

Result

The device name for the HMI device is now set.

See also

Overview of network operation (Page 167)

6.11.3   Changing the network configuration

Introduction

You can change the network settings for the WLAN and LAN connection under "Network and Dial-Up Connections".

Requirements for changing WLAN or LAN connection settings

You have opened the following display by touching the "Network and Dial-Up Connections" icon.
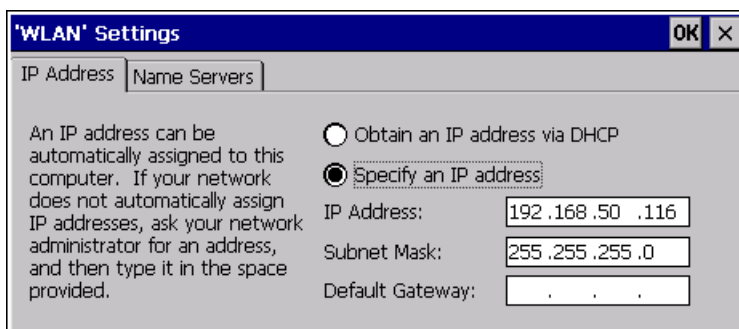
You can enter the connection parameters for the WLAN and LAN connection. The parameterization is identical.

**Procedure for setting the connection parameters**

The following procedure shows how to set the connection parameters using the WLAN connection.

Proceed as follows:

1. Open the "WLAN" entry.

   – The ""WLAN' Settings" dialog box opens.

1. Select either automatic address assignment via DHCP or manual address assignment.

2. If you assign the address manually, enter the corresponding addresses in the text boxes for "IP Address", "Subnet Mask" and, if used, "Default Gateway".

3. If a name server is used in the network, change to the "Name Servers" tab.
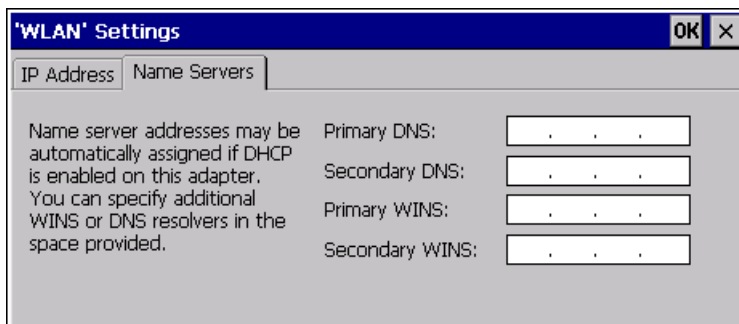
1. Enter the appropriate addresses.

2. Confirm your entries.

   The dialog closes.

3. Close the "Network and Dial-Up Connections" display.

   The Control Panel is displayed again.

Result

The WLAN / LAN connection parameters for the HMI device have been set.

See also

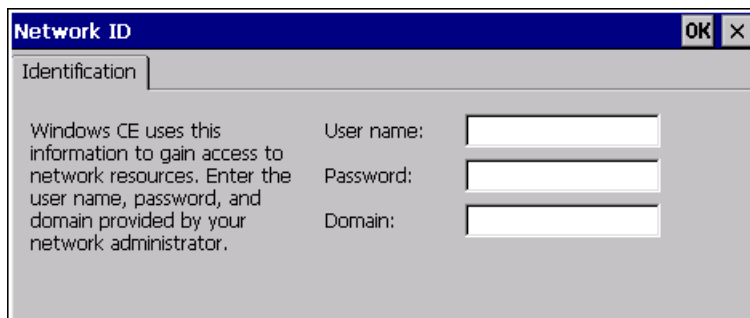Overview of network operation (Page 167)

6.11.4 Changing the logon data

Introduction

In order to access certain network resources you need to log on to the network as a user. Your administrator will issue you with a user name and password and the name of the domain.

Requirements

You have opened the "Network ID" dialog with the "Network ID" icon.

Procedure

Proceed as follows:

1. Enter the user name in the "User name" text box.

2. Enter your password in the "Password" text box.

3. Enter the domain name in the "Domain" text box.

4. Confirm your entries.

   The dialog closes.

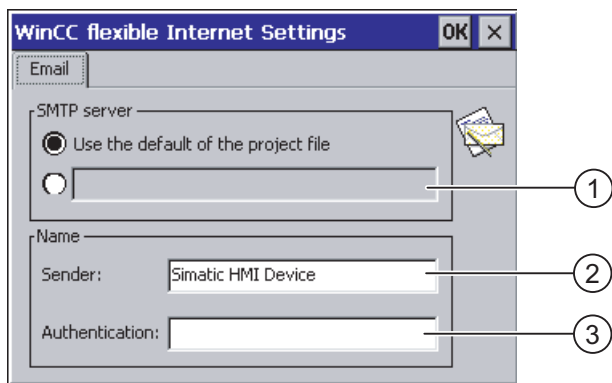**Result**

The logon data has now been set.

See also

Overview of network operation (Page 167)

6.11.5 Changing e-mail settings

Requirements

You have opened the "WinCC flexible Internet Settings" dialog with the "WinCC Internet Settings" icon.

①	Setting the SMTP server
②	Name for the sender
③	E-mail account

Note

Options

Additional tabs may appear in the "WinCC flexible Internet Settings" dialog. This depends on the options that have been enabled for network operation in the project.

Procedure for changing e-mail settings

Proceed as follows:

1. Specify the SMTP server.

   – Select the "Use the default of the project file" option button if you want to use the SMTP server configured in the project.

   – Clear the "Use the default of the project file" option button if you do not want to use the SMTP server configured in the project. Specify the required SMTP server.

2. Enter the name for the sender in the "Sender" text box.

3. Enter the e-mail account for your e-mail in the "Authentication:" text box.

   Some e-mail providers only allow you to send mail if you specify the e-mail account. The "Authentication:" text box can remain empty if your e-mail provider allows you to send mail without checking the account.

4. Confirm your entries.

   The dialog closes.

Result
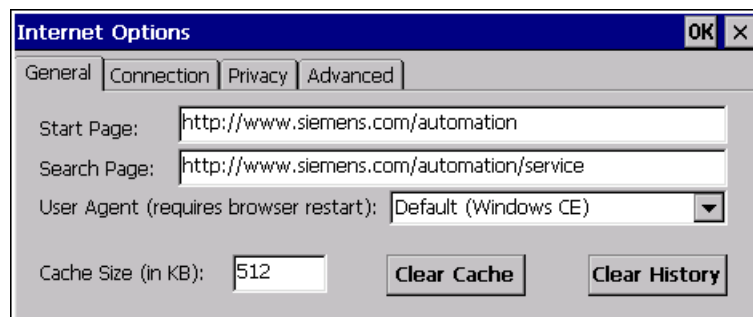
The e-mail settings have been changed.

See also

Overview of network operation (Page 167)

6.12 Changing internet settings

6.12.1 Changing internet settings

Requirements

You have opened the "Internet Options" dialog box, "General" tab, by touching the "Internet Options" icon.

Note

Do not change the settings in the "User Agent" box.

Procedure

Proceed as follows:

1. Enter the homepage for the Internet browser in the "Start Page" text box.

2. Enter the address of the required search engine in the "Search Page" text box.

3. Enter the required cache memory size in the "Cache" text box.

4. If you want to delete the cache memory, press the "Clear Cache" button.

5. If you want to delete the history, press the "Clear History" button.

6. Confirm your entries.

   The dialog closes.

Result

The general parameters for the Internet browser have been set.

6.12.2   Setting the proxy server

Requirements

You have opened the "Internet Options" dialog box, "Connection" tab, by touching the "Internet Options" icon.

Procedure

Proceed as follows:

1. Select the "Use LAN (no autodial)" check box.

2. If you are using a proxy server, in the "Network" group, select the "Access the Internet using a proxy server" check box.

    Specify the address of the proxy server and the interface.

3. If you want to bypass the proxy server for local addresses, select the "Bypass proxy server for local addresses" check box.

4. Confirm your entries.

    The dialog closes.

6.12.3   Changing data protection settings

Cookies and encryption

Cookies are pieces of information sent by a web server to a browser. In the event of subsequent access to the web server, the cookies are sent back. This enables information to be stored between the accesses.

In order to ensure a high level of privacy, data are sent via the Internet in encrypted form. Common encryption protocols include SSL and TLS. You can activate or deactivate the usage of encryption protocols.

The required settings can be obtained from your network administrator.

Requirements

You have opened the "Internet Options" dialog box, "Privacy" tab, by touching the "Internet Options" icon.
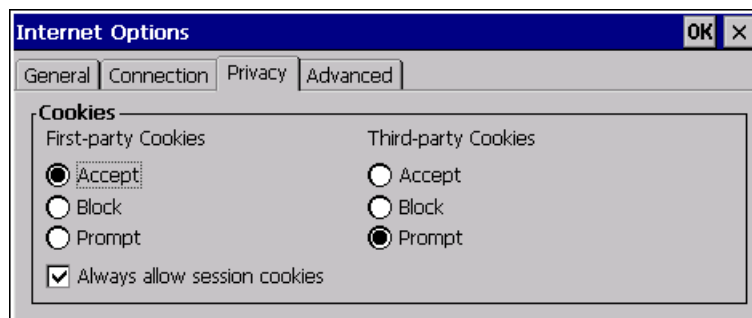
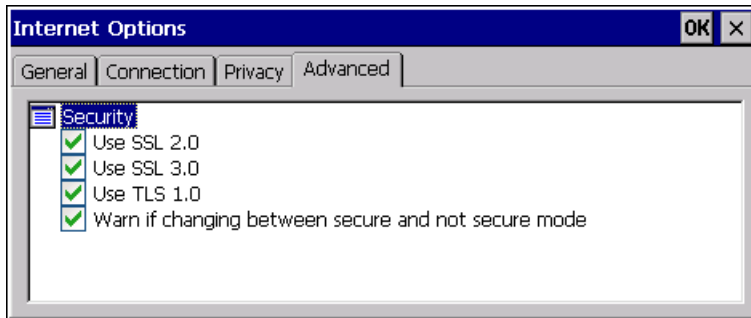### Procedure

Proceed as follows:

1. Select the required cookie behavior by means of the radio buttons.

    – "Accept"

       Cookies are stored without request.

    – "Block"

Cookies will not be stored.

– "Prompt"

Cookies will be stored on request.

2. If you want allow cookies which are restricted to a single session, select the "Always allow session cookies" check box.

3. Change to the "Advanced" tab.

1. Activate the required encryption protocol.

2. Confirm your entries.

The dialog closes.

Result

The safety settings have now been set.

6.12.4   Importing and deleting certificates

Overview

You can import, view and delete certificates. The certificates differ in the following ways:

- Certificates that you trust
- Own certificates
- Other certificates

The required settings can be obtained from your network administrator.

Requirements

You have opened the "Certificates" dialog with the "Certificates" icon.

Procedure

Proceed as follows:

1. Select the type of certificate from the selection box:
   – "Trusted Authorities"
   – "My Certificates"
   – "Other Certificates"

2. If required, start the importing process with the "Import.." button.

   A dialog with source details will open.

3. If required, delete the certificate.
   – Mark the desired certificate.
   – Delete the selected certificate using the "Remove" button.

4. The "View.." button enables you to list the properties of the selected certificate.

5. Close the dialog.

Result

The changes to the certificates have been carried out.

6.13 Backing up and restoring with an external memory medium

Backup

During a backup, the following data is copied from the HMI device's internal flash memory to an external memory medium.

- Operating system
- Applications
- Data

The following external storage devices are possible:

- Memory card
- USB memory stick

CAUTION
IP65 degree of protection not fulfilled
To insert or remove the memory card, you must open the HMI device's connection compartment. If the connection bay is open, degree of protection IP 65 is not fulfilled.
It is preferable to back up onto a USB memory stick.

Requirements for backup

- The current project and all other applications are closed, except Control Panel.
- The HMI device features an external storage device with sufficient free space.

  The size of the internal flash memory is displayed with information about the HMI device. If the available space on the external memory medium is insufficient, a warning is displayed and backup is aborted.

You have opened the "Backup/Restore" dialog with the "Backup/Restore" icon.
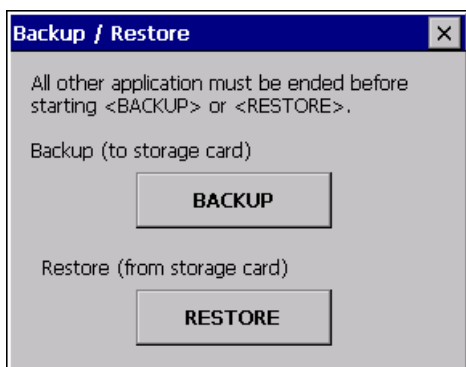
Procedure for backup

Proceed as follows:

1. Select "BACKUP" to start Backup.

   The HMI device checks the external memory.

   The HMI device issues messages in the following situations:

   – More than one external memory is available:

     Select the desired memory.

   – The external memory is not available or is defective:

     Acknowledge the displayed messages.

     The Control Panel is displayed again.

     Replace the external memory. Start the backup process again.

    – Data is already stored on the external memory.

2. Follow the instructions of the HMI device.

    The following messages are displayed in sequence during backup:

    – "Checking Registry"

    – "Backup Progress"

    – "Saving CE-Image"

    A progress bar shows the status of the backup process.

    If backup was successful, the following message is displayed:

    "Backup successfully completed. Press OK and remove your storage card."

3. Click "OK" button to acknowledge the message.

    Remove the external memory medium.

Result

The HMI device data is now saved on the external memory.

Requirements for restoring

The HMI device features an external memory medium that stores the backup.

Procedure for restoring

NOTICE
Deleting the flash memory
A restore operation deletes the old data from flash memory of the HMI device on confirmation. The data stored on the external memory is then copied to the internal flash memory. Existing license keys are deleted following your confirmation.

The restore process involves the following steps:

● The Windows CE image is restored.

● The HMI device starts.

● All other data is restored.

NOTICE
Cancel restore
If the external memory is removed during the restore process, the process is canceled.
Ensure that the external memory is not removed at any point during the restore process.

Proceed as follows:

1. Select "RESTORE" to start Restore.

The HMI device checks the external memory.

The HMI device issues messages in the following situations:

– The external memory is not available or is defective:

Acknowledge the displayed messages.

The Control Panel is displayed again.

Replace the external memory.

– More than one external memory with valid backup is available:

Remove all external memories with backups that are not needed.

If necessary, you can check the available external memories using the "REFRESH" button.

2. If necessary, start the restore process with the "RESTORE" button.

The data to be restored is checked.

When the check is complete, one of the following prompts is displayed:

– "You are starting RESTORE now. All files (except files on storage cards) and the registry will be erased. Are you sure?"

At this point you can cancel the restore using the "No" button to prevent the data on the HMI device from being deleted.

– You are now starting RESTORE. All files on the panel and the licenses listed below as well as the registry will be erased. Are you sure?

This query is displayed when license keys are available both on the HMI device and in the backup data. If necessary, cancel the restore process with the "No" button and first back up the HMI device's license keys. Then restart the restore process.

3. Start to restore the data by selecting "Yes".

A progress bar shows the status of the restoration of the Windows CE image.

When restore is completed, the following message is displayed:

"Restore succesfully finished. Press ok, remove your storage card and reboot your device."

4. Remove the external memory.

5. Acknowledge this message.

The HMI device starts.

Result

The backed-up data has been restored to the HMI device.

Note

Calibrating the touch screen

After the restore, you may have to re-calibrate the touch screen.

See also

Displaying information about the HMI device (Page 157)

Using a memory card with the HMI device (Page 113)

6.14 Displaying battery status

Introduction

You can check the charging status and the temperature of the main battery and the bridging battery.

NOTICE
Battery cannot be charged
To charge the batteries, the ambient temperature / battery temperature must not exceed 40 °C The higher the temperature, the longer it will take for the battery to charge.
Find a place with a cool ambient temperature for the charging station. If necessary, allow the battery to cool first.

Requirements

You have opened the "OP Properties" dialog box, "Battery" tab, by touching the "OP" icon.
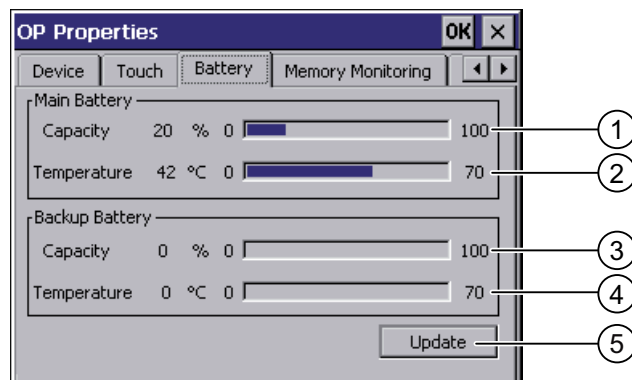
①	Charging status of main battery
②	Temperature of main battery
③	Charging status of bridging battery
④	Temperature of bridging battery
⑤	Button to update the display

Procedure

Proceed as follows:

1. Update the display if required by pressing the "Update" button.

2. Close the dialog.

## 6.15 Activate memory management

Memory management

Provided the memory management is activated, the HMI device will automatically close the project if the memory needs reorganizing during an active project.

The project is shut down and the HMI device will display a message. You have to restart the project.

NOTICE
Memory management
If you do not activate memory management, undefined states can occur during the runtime of the project. Select memory management in the "OP Properties" dialog box.

Requirements

You have opened the "OP Properties" dialog box, "Memory Monitoring" tab, by touching the "OP" icon.
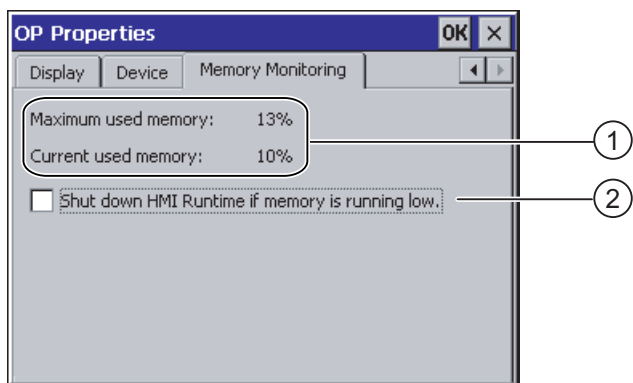
① The maximum used memory since last power on of the HMI device and the current used memory in percent.

② Check box for selecting memory management

Procedure

Proceed as follows:

1. In order to start memory management, select the check box.

2. Confirm your entries.

   The dialog closes.

Result

Memory management is activated.

Commissioning the HMI device 7

7.1 Overview

Operating the HMI device

The HMI device is operated in the system as follows:

- As mobile device, with a battery
- As stationary device, in the charging station

For transfer and testing purposes, you can operate the HMI device in an office environment as follows:

- As mobile device, with a battery
- As stationary device, with a tabletop power supply unit
- As stationary device, in the charging station

HMI device commissioning requirements

You must take the following steps before commissioning a project on the HMI device:

1. Install and connect up charging station

   Alternatively, connect the HMI device to the tabletop power supply unit.

2. Charging the battery and inserting it in the HMI device

   To charge the battery, you have the following possibilities:

   – In the charging compartment of the charging station

   – In the HMI device, in the charging station

   – In the HMI device when connected to the tabletop power supply unit

3. Switch on the HMI device with the ON/OFF button

4. Commission and test WLAN

5. Define the settings for the transfer in the Control Panel.

6. Transfer project to the HMI device

Commissioning

Start the project once you have transferred it to the HMI device.

Note

If the project contains effective ranges, you must perform an acceptance test for the effective ranges and transponders.

You can only start the project on the HMI device once the acceptance test is complete.

- If necessary: Testing zones

See also

Mounting the charging station (Page 66)

Connection of the charging station to the power supply (Page 70)

Programming the data channel (Page 160)

Acceptance of the system (Page 196)

7.2 Operating modes

Operating modes

The HMI device may be in the following operating modes:

- Offline
- Online
- Transfer

"Offline mode" and "Online mode" can be set on both the configuring PC and the HMI device. To set these modes on the HMI device, use a corresponding operating element of the project.

Changing the operating mode

The configuration engineer must have configured an appropriate operating element to allow a change of the operating mode on the HMI device during ongoing operation.

Please refer to your system documentation to check whether additional information on this subject is available there.

"Offline" operating mode

In this operating mode, the HMI device and the PLC do not communicate via the connections configured in the WinCC flexible project. You can operate the current project on the HMI device, but the project data will not be transferred.

Note

Emergency stop button active

In "Offline" mode, the emergency stop button is active when the following requirements are met:

- The HMI device is in an area with sufficient WLAN coverage.
- The HMI device is integrated in the safety program of the CPU.

"Online" operating mode

In this mode, the HMI device and PLC communicate. You can operate the plant on the HMI device according to your system configuration.

"Transfer" mode

In this mode, you can transfer a project from the configuring PC to the HMI device or backup and restore HMI device data, for example.

The following options are available for setting "Transfer" mode on the HMI device:

- When the HMI device starts up

  Start "Transfer" mode manually in the HMI device Loader.

- During ongoing operation

  Start the "Transfer" mode manually within the project using an operating element. With automatic transfer, following a prompt the HMI device toggles to "Transfer" mode when a transfer is initiated on the configuring PC.

7.3   Using existing projects

Note

Safety-related operator controls

The behavior and possible fields of application of the enabling button and emergency stop button on the Mobile Panel 277F IWLAN are different from those of its predecessors, which do not have Safety Integrated functions.

In this respect, you cannot reuse existing control programs.

For additional information on the safety-related operator controls, refer to the section titled "Particular features of fail-safe operation" and the Function manual "Fail-safe operation of the Mobile Panel 277F IWLAN".

You can reuse WinCC flexible projects for the following HMI devices:

- Mobile Panel 177 PN
- Mobile Panel 177 DP

● Mobile Panel 277

Carry out an HMI device switch in WinCC flexible.

Adaptations

You must adapt the following aspects of the WinCC flexible project:

● Communication via WLAN

● Zone recognition and point recognition

  – If you have used point detection with box ID in an existing project, you have the following option:

    Instead of using the connection box, use a zone consisting of at least one transponder and set the previous box ID as the ID in this zone.

  – If you are using zone recognition, you will need one or more transponders for one zone.

    In WinCC flexible, you can parameterize zones in "Device settings".

    You can use zones to configure an easy way of selecting a zone-specific screen.

    In this case you may also need to modify the control program from previous devices.

Additional information on this subject can be found in the WinCC flexible online help or in the "WinCC flexible migration" user manual.

7.4   Data transmission options

Overview

The following table shows the options for data transfer between Mobile Panel 277 Wireless and a configuring PC.

The Ethernet data channel is used for communication via WLAN and LAN (RJ45).

Type	Data channel	Mobile Panel 277 Wireless
Backup	USB	Yes
	Ethernet	Yes
Restoring	USB	Yes
	Ethernet	Yes
Updating the operating system	USB	Yes
	Ethernet	Yes
Updating the operating system with reset to factory settings	USB	No
	Ethernet via the RJ 45 interface	Yes
Transferring a project	USB	Yes
	Ethernet	Yes
Installing or removing an option	USB	Yes

Type	Data channel	Mobile Panel 277 Wireless
	Ethernet	Yes
License key transferring or transferring back	USB	Yes
	Ethernet	Yes

7.5 Preparing and backing up a project

7.5.1 Overview

Introduction

In order to operate the system with the HMI device, you must transfer the WinCC flexible project to the HMI device.

Transferring the project to the HMI device

You can transfer a project to an HMI device as follows:

- Transfer from the configuring PC
- Restore from a PC using ProSave

  In this case, an archived project is transferred from a PC to the HMI device.

  WinCC flexible need not be installed on this PC.

Commissioning and recommissioning

- When the HMI device is commissioned there is no project at first.

  The HMI device is also in this state after the operating system has been updated.

- When recommissioning, any project already on the HMI device is replaced.

See also

Operating modes (Page 186)

7.5.2 Transfer

7.5.2.1 Overview

Transfer

At the end of the configuration phase, transfer the executable project from the configuring PC to the HMI device.

You can start the "Transfer" mode manually or automatically on the HMI device.

Transferred data is written directly to the internal flash memory on the HMI device. For the transfer, you use a data channel which you have to configure before starting a transfer.

Backtransfer

You have the option to transfer the compressed project file together with the runtime project to the HMI device. If necessary, the compressed project file can be transferred back to the configuring PC and edited.

The HMI device must be equipped with an external memory to which the compressed project file can be saved.

NOTICE
No checking of the project files
WinCC flexible does not check whether the compressed project file stored on the HMI device corresponds to the existing runtime project.

7.5.2.2 Starting manual transfer

Introduction

You can manually switch the HMI device to "Transfer" mode as follows:

- With a configured operating element during ongoing operation
- In the Loader of the HMI device

Requirements

- The project "*.hmi" that you want to transfer is open in WinCC flexible on the configuring PC
- The HMI device is connected to this configuring PC
- The data channel is programmed on the HMI device
- The HMI device is in "Transfer" mode

Procedure

Proceed as follows:

1. On the configuring PC, select the "Transfer settings" command in the menu "Project > Transfer" in WinCC flexible.

   The "Select devices for transfer" dialog opens.

2. Select the HMI device in the left area of the dialog.

3. Select the type of connection between the HMI device and the configuring PC.

4. Set the connection parameters.

5. Set the transfer parameters in the right area of the dialog.

6. If you wish to transfer the compressed project file together with the executable project to the HMI device:

   Select the "Enable backtransfer" check box.

7. Start transfer in WinCC flexible with "Transfer".

   The configuring PC checks the connection to the HMI device. The project is transferred to the HMI device. If the connection is not available or is defective, an error message is displayed on the configuring PC.

Result

When the transfer is completed successfully, the project can be found on the HMI device. The transferred project is then started automatically.

See also

Operating modes (Page 186)

Data transmission options (Page 188)

Programming the data channel (Page 160)

7.5.2.3 Starting automatic transfer

Introduction

If automatic transfer is selected, the HMI device automatically switches to "Transfer" mode during operation as soon as a transfer is initiated on the connected configuring PC.

Note

The HMI device only switches to "Transfer" mode in the current project.

Automatic transfer is particularly suited for the test phase of a new project since transfer is completed without interfering with the HMI device.

NOTICE
Undesired system responses
If automatic transfer has been selected on the HMI device and a transfer is then initiated on the configuring PC, the current project is automatically terminated following a prompt.
The HMI device then automatically switches to "Transfer" mode. The transfer mode can trigger undesired responses in the system.
After the commissioning phase, deactivate the automatic transfer so that the HMI device cannot be inadvertently switched to transfer mode.
You can issue a password in the Control Panel to restrict access to the transfer settings and thus avoid unauthorized modifications.

Requirements

- The project "*.hmi" that you want to transfer is open in WinCC flexible on the configuring PC
- The HMI device is connected to this configuring PC
- The data channel is programmed on the HMI device
- The automatic transfer is activated in the data channel for the transfer
- The project is started on the HMI device

Procedure

Proceed as follows:

1. On the configuring PC, select the "Transfer settings" command in the menu "Project > Transfer" in WinCC flexible.

   The "Select devices for transfer" dialog opens.

2. Select the HMI device in the left area of the dialog.

3. Select the type of connection between the HMI device and the configuring PC.

4. Set the connection parameters.

5. Set the transfer parameters in the right area of the dialog.

6. If you wish to transfer the compressed project file together with the executable project to the HMI device:

   Select the "Enable backtransfer" check box.

7. Start transfer in WinCC flexible with "Transfer".

   The configuring PC checks the connection to the HMI device.

   If the HMI device is integrated, it displays the "Start removal" dialog box.

8. Press one of the enabling buttons to confirm the dialog box.

   The HMI device is removed. The current project is terminated. The HMI device then automatically switches to transfer mode. The project is transferred to the HMI device. If

the connection is not available or is defective, an error message is displayed on the configuring PC.

Result

When the transfer is completed successfully, the project can be found on the HMI device. The transferred project is then started automatically.

See also

Operating modes (Page 186)

Data transmission options (Page 188)

Programming the data channel (Page 160)

7.5.2.4 Starting backtransfer

Requirements

- No project is open on the configuring PC in WinCC flexible
- The HMI device is connected to this configuring PC
- The data channel is programmed on the HMI device
- The HMI device is in "Transfer" mode
- The memory card containing the compressed project file is inserted into the HMI device

Procedure

Proceed as follows:

1. On the configuring PC, select the "Communication settings" command in the menu "Project > Transfer" in WinCC flexible.

   The "Communication settings" dialog box opens.

2. Select the type of HMI device.

3. Select the type of connection between the HMI device and the configuring PC.

4. Set the connection parameters.

5. Close the dialog with "OK".

6. Select the "Transfer" > "Backtransfer" command in the "Project" menu.

   The "Backtransfer" dialog opens.

7. Click "OK" to start the backtransfer process.

   The configuring PC checks the connection to the HMI device. The compressed project file is transferred back from the HMI device to the configuring PC. If the connection is not available or is defective, an error message is displayed on the configuring PC.

Result

After successful backtransfer, the project is opened on the configuring PC in WinCC flexible.

See also

Operating modes (Page 186)

Data transmission options (Page 188)

Programming the data channel (Page 160)

7.5.3   Testing a project

Introduction

There are two options to test a project:

- Test the project on the configuring PC

    You can test a project at a configuring PC, using a simulator. For detailed information, refer to the "WinCC flexible" user manual and to the WinCC flexible online help.

- Offline testing of the project on the HMI device

    Offline testing means that communication between the HMI device and PLC connections, which have been configured in WinCC flexible, is down while the test is being carried out. The PROFIsafe connection between the HMI device and PLC is also available in "Offline" mode.

- Online testing of the project on the HMI device

    Online testing means that the HMI device and PLC communicate with each other during testing.

Perform the tests, starting with the "Offline test", followed by the "Online test".

Note

You should always test the project on the HMI device on which the project will be used.

Check the following:

1. WLAN coverage
2. Zone recognition, if zones have been configured
3. Check the correct layout of the screens
4. Check the screen navigation
5. Check the input objects
6. Enter the tag values

The test increases the certainty that the project will run error-free on the HMI device.

Note

Test without effective ranges

Perform the test without effective ranges.

A system acceptance test must be performed as soon as you have configured effective ranges in your project. The effective ranges and assigned transponders will be tested as part of the acceptance test.

Test the effective ranges separately.

Requirements for offline testing

- The project has been transferred to the HMI device
- The HMI device is in "Offline" mode.

Procedure

In "Offline" mode, you can test individual project functions on the HMI device without them being affected by the PLC. PLC tags, therefore, are not updated.

Test the operating elements and visualization of the project as far as possible without connecting to the PLC.

Requirements for online testing

- The project has been transferred to the HMI device
- The HMI device is in "Online" mode

Procedure

In "Online" mode, you can test individual project functions on the HMI device without them being affected by the PLC. PLC tags are updated in this case.

You have the option to test all communication-dependent functions, for example alarms, etc.

Test the operating elements and views of the project.

See also

Acceptance of the system (Page 196)

Testing zones (Page 200)

7.5.4 Acceptance of the system

7.5.4.1 Overview

Introduction

The acceptance of the system includes the following areas:

- Configuring the F CPU and fail-safe I/O
- Safety program
- Effective ranges and transponders

Acceptance steps that you must execute in order to operate the Mobile Panel 277F IWLAN HMI device in a system with effective ranges are described in detail in these operating instructions.

The following manuals contain more detailed notes on acceptance of the system:

- Function manual "Fail-safe operation of the Mobile Panel 277F IWLAN"
- Manual "S7 distributed safety, configuring and programming", Chapter "System acceptance test".

Acceptance of the effective ranges and transponders

For acceptance of the effective ranges and transponders you must determine a CRC checksum in the plant and enter it in the project. After subsequent project transfer to the HMI device you can operate the plant with the HMI device.

Note

If you change transponders in the plant you must execute another acceptance of the plant.

When executing an acceptance test of the system, all of the relevant application-specific standards must be observed.

7.5.4.2 Accepting effective ranges and transponders

Introduction

For safe operation, the project of the HMI device must precisely match the plant.

For this reason when first starting a project in the plant, you must verify all effective ranges with all transponders. The result of the verification is a CRC checksum that you must enter in the project. Then you must transfer the project to the HMI device again.

Note

Transponders that are exclusively assigned to one zone are not considered in this verification.

Acceptance if there are changes

If you change the configuration of transponders and effective ranges in the system, then you must adjust the configuration. Then you must accept the effective ranges and transponders again.

Requirements

- In the project:
  - Effective ranges and transponders must be configured in the project.
  - The project has been transferred to the HMI device.
- In the plant:
  - The transponders must be mounted in the plant in such a manner that the effective ranges stored in the project are formed.
  - Batteries must be inserted in the transponders. The ID must be set on the transponders that is stored in the project for these transponders.
  - The IDs of the effective ranges must be marked in the plant.
  - The quality of the WLAN range must be sufficient.

Procedure

Proceed as follows:

1. Switch on the HMI device.

   The Windows CE desktop with Loader is displayed.

2. If the project does not start automatically, start the project.

   The "Transponder test" dialog box opens.
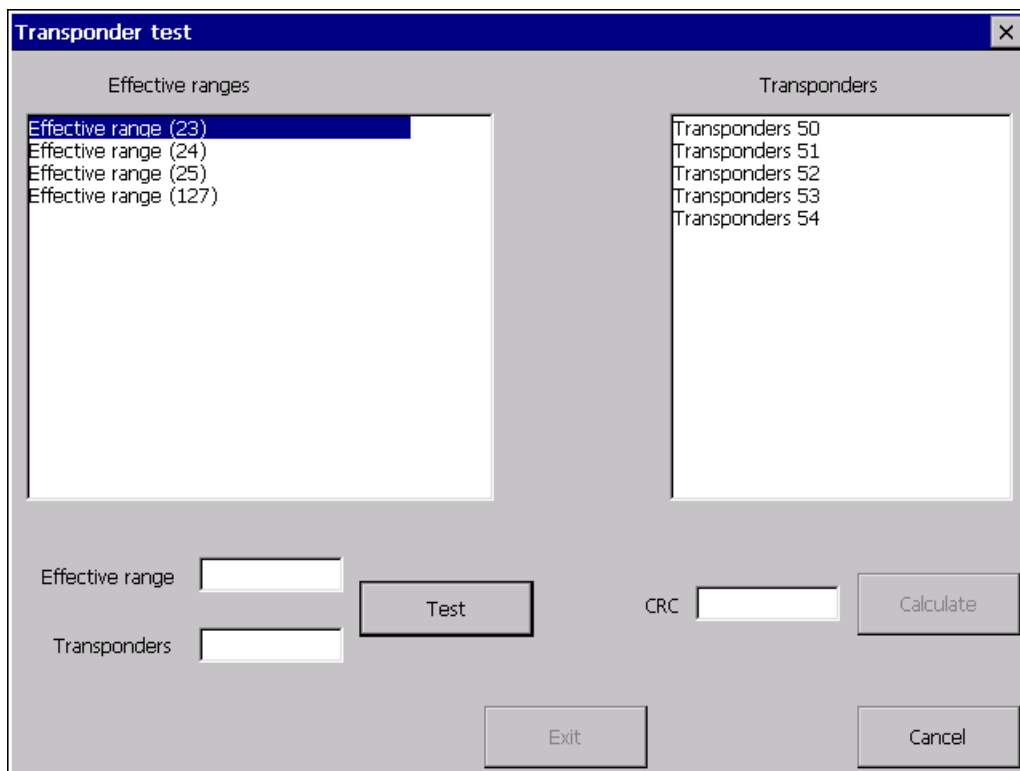
To the left you will see the list with the names of all configured effective ranges.

3. In the "Effective ranges" list highlight the first effective range that you want to verify.

   In the "Transponder" list on the right, the names of the transponders are displayed that are assigned to the effective range in the project.

4. Go to the first transponder that you want to verify in the "Transponder" list.

5. In the system, read the ID of the highlighted effective range and enter this ID in the "Effective range" box.

6. Enter the ID of the transponder where you are located in the "Transponder" box.

7. Verify the entered ID with the "Test" button.

   When the HMI device receives the signal of the transponder specified, that transponder is considered to be checked. The transponder will be marked with a check mark in the list.

8. Repeat steps 4 to 7 for all transponders of this effective range.

   If you have successfully checked all transponders of an effective range, that effective range will be indicated with a check mark in the list.

9. Select the next effective range in the list.

10. Repeat steps 4 to 7 for all transponders assigned to this effective range.

11. Verify all additional effective ranges in the list to the left.

12. When you have successfully verified all effective ranges, touch the "Calculate" button.

    The HMI device calculates the CRC checksum. The CRC checksum is displayed in the "CRC" box.
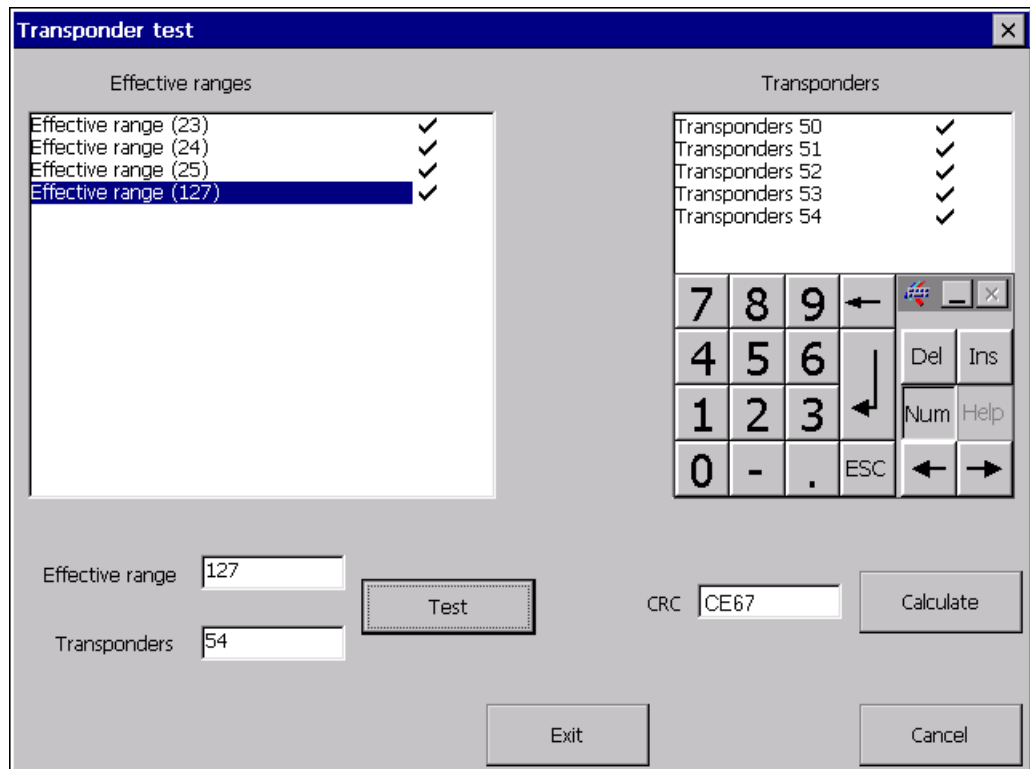
13. Open the project in WinCC flexible ES.

14. Enter the checksum in the "Effective ranges" editor.

15. Transfer the project to the HMI device again.

Result

The HMI device can now be used for operating and monitoring the system.

7.5.4.3 Testing effective ranges

After successful verification of the transponders and effective ranges you must test in the plant whether the expansion of the configured effective ranges corresponds to the planning. If the operating elements "Effective range name" and "Effective range quality" are available in the project, you can check the effective ranges on the HMI device.

In particular, check the following cases:

● Do the limits of the effective range run as planned?

  Note particularly that machine operations from excessive distances are not permitted.

● Does the indicator that belongs to the effective range show whether an HMI device is logged on at the effective range?

● Are moving machine parts influencing the reception of the transponders? Check also the extreme positions of moving machine parts.

● Is WLAN coverage ensured everywhere in the effective range?

7.5.5   Testing zones

If zones are present in the system, you need to test whether the HMI device is detecting them.

Note

The following requirements must be fulfilled in order to test zones:
- The project has been transferred to the HMI device and started
- The HMI device is in online mode
- The transponders have been fitted and the transponder IDs are set

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If the operating elements "Zone label" and "Zone quality" are present in the project, you can check the zones on the HMI device.

In particular, check the following cases:

- Are the zone limits operating as planned?

  Are moving machine parts influencing the reception of the transponders? Check also the extreme positions of moving machine parts.

- Is WLAN coverage ensured in all parts of the zone?

7.5.6   Backup and restore

7.5.6.1   Overview

Backup and restore

You can back up and restore the following data found in the internal flash memory of the HMI device with a PC:

- Project and HMI device image

- Password list

- Recipe data

- License keys

Use one of the following tools for backup and restore:

- WinCC flexible

- ProSave

Note

Alternatively, use the Control Panel to back up to an external memory device.

General information

NOTICE
Resetting to factory defaults required
If a complete restore operation is interrupted due to power failure on the HMI device, the operating system of the HMI device may be deleted! In this case, you have to reset the HMI device to its factory settings.
Compatibility conflict
If a message is output on the HMI device warning of a compatibility conflict during the restore operation, the operating system must be updated.

7.5.6.2 Backup and restore using WinCC flexible

Requirements

- No project is open on the configuring PC in WinCC flexible
- The HMI device is connected to this configuring PC
- The data channel is programmed on the HMI device

Procedure for backup

Proceed as follows:

1. On the configuring PC, select the "Communication settings" command in the menu "Project > Transfer" in WinCC flexible.

   The "Communication settings" dialog box opens.

2. Select the type of HMI device.

3. Select the type of connection between the HMI device and the configuring PC.

4. Set the connection parameters.

5. Close the dialog with "OK".

6. Select the "Backup" command in the menu "Project > Transfer" in WinCC flexible.

   The "Backup settings" dialog opens.

7. Select the data to be backed up.

8. Select a destination folder and a file name for the "*.psb" backup file.

9. Set "Transfer" mode on the HMI device.

10. Start the backup operation in WinCC flexible with "OK" on the configuring PC.

    If automatic transfer has been selected on the HMI device, following a prompt the HMI device automatically switches to "Transfer" mode when a backup is initiated.

11. Follow the instructions in WinCC flexible.

A status view opens to indicate the progress of the operation.

Result

The system outputs a message when the backup is completed.

The relevant data is now backed up on the configuring PC.

Procedure for restoring

Proceed as follows:

1. On the configuring PC, select the "Communication settings" command in the menu "Project > Transfer" in WinCC flexible.

   The "Communication settings" dialog box opens.

2. Select the type of HMI device.

3. Select the type of connection between the HMI device and the configuring PC.

   Set the connection parameters.

4. Close the dialog with "OK".

5. Select the "Restore" command in the menu "Project > Transfer" in WinCC flexible.

   The "Restore settings" dialog opens.

6. Select the "*.psb" backup file to be restored from the "Open" field.

   You can see the HMI device for which the backup file was created and the type of backup data the file contains.

7. Set "Transfer" mode on the HMI device.

   If automatic transfer has been selected on the HMI device, following a prompt the HMI device automatically switches to "Transfer" mode when a restore operation is initiated.

8. Start the restore operation in WinCC flexible with "OK" on the configuring PC.

   If there are license keys both on the HMI device and in the backup, a dialog box will appear. Use this dialog to establish whether you want to overwrite the license keys or abort the restore process.

   – If necessary, abort the backup and first back up the HMI device's license keys.

   – Then restart the restore process.

   Follow the instructions in WinCC flexible.

   A status view opens to indicate the progress of the operation.

Result

When the restore is successfully completed, the data backed up on the configuring PC is now on the HMI device.

See also

Operating modes (Page 186)

Data transmission options (Page 188)

Programming the data channel (Page 160)

Overview (Page 200)

7.5.6.3 Backup and restore using ProSave

Requirements

- The HMI device is connected to a PC on which ProSave is installed
- The data channel is programmed on the HMI device

Procedure for backup

Proceed as follows:

1. From the Windows Start menu, start ProSave on the PC.
2. Select the HMI device type in the "General" tab.
3. Select the type of connection between the HMI device and the PC.
4. Set the connection parameters.
5. Select the data to be backed up in the "Backup" tab.
6. Select a destination folder and a file name for the "*.psb" backup file.
7. Set "Transfer" mode on the HMI device.

   If automatic transfer has been selected on the HMI device, following a prompt the HMI device automatically switches to "Transfer" mode when a backup is initiated.
8. Start the backup operation in ProSave with "Start Backup".
9. Follow the instructions in ProSave.

   A status view opens to indicate the progress of the operation.

Result

The system outputs a message when the backup is completed.

The relevant data is now backed up on the PC.

Procedure for restoring

Proceed as follows:

1. From the Windows Start menu, start ProSave on the PC.
2. Select the HMI device type in the "General" tab.
3. Select the type of connection between the HMI device and the PC.
4. Set the connection parameters.
5. Select the "*.psb" backup file to be restored from the "Restore" tab.

You can see the HMI device for which the backup file was created and the type of backup data the file contains.

6. Set "Transfer" mode on the HMI device.

   If automatic transfer has been selected on the HMI device, following a prompt the HMI device automatically switches to "Transfer" mode when a restore operation is initiated.

7. Start the restore operation in ProSave on the PC with "Start Restore".

   If there are license keys both on the HMI device and in the backup, a dialog box will appear. Use this dialog to establish whether you want to overwrite the license keys or abort the restore process.

   – If necessary, abort the restore and first back up the HMI device's license keys.

   – Then restart the restore process.

8. Follow the instructions in ProSave.

   A status view opens to indicate the progress of the operation.

Result

When the restore is successfully completed, the data backed up on the PC is now on the HMI device.

See also

Operating modes (Page 186)

Data transmission options (Page 188)

Programming the data channel (Page 160)

Overview (Page 200)

7.5.7 Updating the operating system

7.5.7.1 Overview

Updating the operating system

A compatibility conflict may occur when transferring a project to the HMI device. This is caused by different versions of the configuration software used and the HMI device image available on the HMI device. If there are different versions, the transfer is aborted. A message indicating a compatibility conflict is displayed on the configuring PC.

There are two ways to match the versions:

- Update the HMI device image if the project was created with the most recent version of the configuration software

- Transfer a matching version of the HMI device image if you do not want to adapt the project for the HMI device to the most recent version of the configuration software for the project

General information

NOTICE
Resetting to factory defaults required
If the update of the HMI device image is interrupted due to a power failure on the HMI device, the operating system of the HMI device may be deleted. In this case, you have to reset the HMI device to its factory settings.

NOTICE
Data loss
All data on the HMI device, such as the project and passwords, will be deleted when you update the operating system.

Note
Calibrating the touch screen

After updating the operating system, you may have to recalibrate the touch screen.

Resetting to factory settings

In ProSave or WinCC flexible, you can update the operating system with or without resetting to factory settings.

CAUTION
IP65 degree of protection not fulfilled
To update the operating system and reset to factory settings, you need an Ethernet connection over the RJ45 interface.
If you connect the configuring PC directly to the HMI device through the RJ45 interface, you must open the connection compartment. If the connection bay is open, degree of protection IP 65 is not fulfilled.

- Updating the operating system without resetting to factory settings

  First, switch into "Transfer" mode on the HMI device or use the automatic transfer function if the project is active. Then start the operating system update in ProSave or WinCC flexible.

- Updating the operating system with reset to factory setting

NOTICE
Loss of license keys
The license keys on the HMI device will be deleted when resetting to factory settings. The license keys on the HMI device will be retained when updating the operating system without resetting to factory settings.

NOTICE
Data channels
When resetting to factory settings, all data channel parameters are reset. The transfer can only be started following reconfiguration of the data channels.

Note

You have to perform an operating system update with reset to factory settings if the HMI device does not yet have an operating system or if the operating system of the HMI device is corrupt.

First, start the operating system update in ProSave or WinCC flexible and switch the power on the HMI device off and on again when prompted.

7.5.7.2 Updating the operating system using WinCC flexible

Requirements

- No project is open on the configuring PC in WinCC flexible
- The HMI device is connected to this configuring PC
- The data channel is programmed on the HMI device

Procedure

Proceed as follows:

1. On the configuring PC, select the "Communication settings" command in the menu "Project > Transfer" in WinCC flexible.

   The "Communication settings" dialog box opens.

2. Select the type of HMI device.

3. Select the type of connection between the HMI device and the configuring PC.

4. Set the connection parameters.

5. Close the dialog with "OK".

6. In WinCC flexible, select the command "Update OS" in the "Project > Transfer" menu.

7. In "Image path", select the HMI device image file "*.img".

   The HMI device image files are available under "WinCC flexible Images" in the WinCC flexible installation folder or on the WinCC flexible installation CD.

   In the output area, you are provided information on the version of the HMI device image file after it is opened.

8. Set "Transfer" mode on the HMI device.

   If automatic transfer has been activated on the HMI device, following a prompt the HMI device automatically switches to "Transfer" mode when an update is initiated.

9. In WinCC flexible, select "Update OS" on the configuring PC to run the operating system update.

10. Follow the instructions in WinCC flexible.

   During the operating system update a status view opens to indicate progress.

Result

A message is displayed when the operating system update is successfully completed.

This operation has deleted the project data from the HMI device.

See also

7.5.7.3 Updating the operating system using ProSave

Requirements

- The HMI device is connected to a PC on which ProSave is installed
- The data channel is programmed on the HMI device

Procedure

Proceed as follows:

1. From the Windows Start menu, start ProSave on the PC.
2. Select the HMI device type in the "General" tab.
3. Select the type of connection between the HMI device and the PC.
4. Set the connection parameters.
5. Select the "OS Update" tab.
6. In "Image path", select the HMI device image file "*.img".

   The HMI device image files are available under "WinCC flexible Images" in the WinCC flexible installation folder or on the WinCC flexible installation CD.

   In the output area, you are provided information on the version of the HMI device image file after it is opened.

7. Set "Transfer" mode on the HMI device.

   If automatic transfer has been activated on the HMI device, following a prompt the HMI device automatically switches to "Transfer" mode when an update is initiated.

8. Select "Update OS" on the PC to run the operating system update.
9. Follow the instructions in ProSave.

   During the operating system update a status view opens to indicate progress.

Result

A message is displayed when the operating system update is successfully completed.

This operation has deleted the project data from the HMI device.

See also

7.5.7.4   Resetting to factory settings with WinCC flexible

Requirements

- No project is open on the configuring PC in WinCC flexible
- The HMI device is connected to this configuring PC over the Ethernet
- Have the MAC address of your HMI device's Ethernet interface to hand.
  - The MAC address is displayed briefly when the HMI device is turned on.
  - The MAC address is displayed in the "PROFINET" dialog in the Control Panel.

Procedure for setting the PC interface

1. Select "Start > Control Panel > Set PG/PC interface".
2. Select "S7ONLINE (STEP7) -> TCP/IP" from the "Application access point" area.
3. Select the interface which is connected to the HMI device from the "Interface parameterization used" area.
4. Confirm your entries.

Procedure for resetting to factory settings

Proceed as follows:

1. Turn off the power supply to the HMI device.
2. On the configuring PC, select the "Communication settings" command in the menu "Project > Transfer" in WinCC flexible.

   The "Communication settings" dialog box opens.
3. Select the HMI device type from the "General" tab, and select "Ethernet" from the "Connection" area.
4. Enter an IP address.

Note

Possible address conflicts with incorrect IP address

Do not use a dynamic IP configuration for "Reset factory settings".

Define an IP address which the HMI device is going to receive from the configuration station during the update process.

If the HMI device has already been used with WinCC flexible or ProSave you can use the existing IP address for "Reset factory settings".

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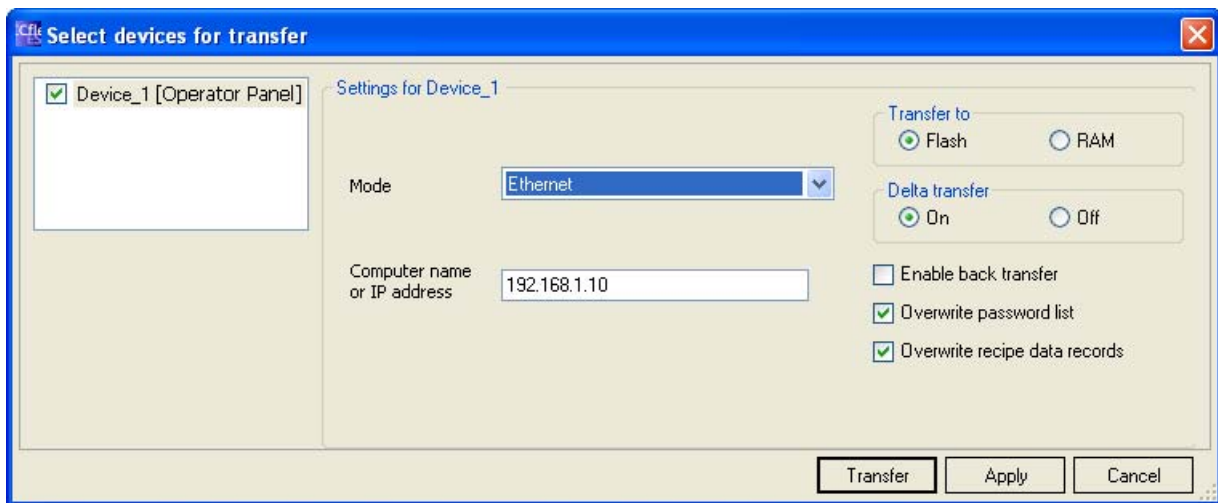
1. Confirm your entries.
2. In WinCC flexible, select the command "Update OS" in the "Project > Transfer" menu.
3. Select the "Reset factory settings" check box.

   A text box opens where you can enter the MAC address.
4. Enter the HMI device's MAC address in the text box.
5. In "Image path", select the HMI device image file "*.img".

   The HMI device image files are available under "WinCC flexible Images" in the WinCC flexible installation folder or on the WinCC flexible installation CD.

   In the output area, you are provided information on the version of the HMI device image file after it is opened.
6. In WinCC flexible, select "Update OS" on the configuring PC to run the operating system update.
7. Follow the instructions in WinCC flexible.

   During the operating system update a status view opens to indicate progress.

Result

A message is displayed when the operating system update is successfully completed.

This operation has deleted the project data from the HMI device. The factory settings are reset.

Note

Calibrating the touch screen

After the restore, you may have to re-calibrate the touch screen.

See also

Operating modes (Page 186)

Data transmission options (Page 188)

Programming the data channel (Page 160)

Overview (Page 204)

7.5.7.5 Resetting to factory settings with ProSave

Requirements

- The HMI device is connected over the Ethernet to a PC on which ProSave is installed
- When updating the operating system with reset to factory setting only:

  Have the MAC address of your HMI device's Ethernet interface to hand.

  – The MAC address is displayed briefly when the HMI device is turned on.

  – The MAC address is displayed in the "PROFINET" dialog in the Control Panel.

Procedure for setting the PC interface

1. Select "Start > Control Panel > Set PG/PC interface".

2. Select "S7ONLINE (STEP7) -> TCP/IP" from the "Application access point" area.

3. Select the interface which is connected to the HMI device from the "Interface parameterization used" area.

4. Confirm your entries.

Procedure for resetting factory settings

Proceed as follows:

1. Turn off the power supply to the HMI device.

2. From the Windows Start menu, start ProSave on the PC.

3. Select the HMI device type from the "General" tab, and select "Ethernet" from the "Connection" area.

4. Enter an IP address.

Note

Possible address conflicts with incorrect IP address

Do not use a dynamic IP configuration for "Reset factory settings".

Define an IP address which the HMI device is going to receive from the configuration station during the update process.

If the HMI device has already been used with WinCC flexible or ProSave you can use the existing IP address for "Reset factory settings".
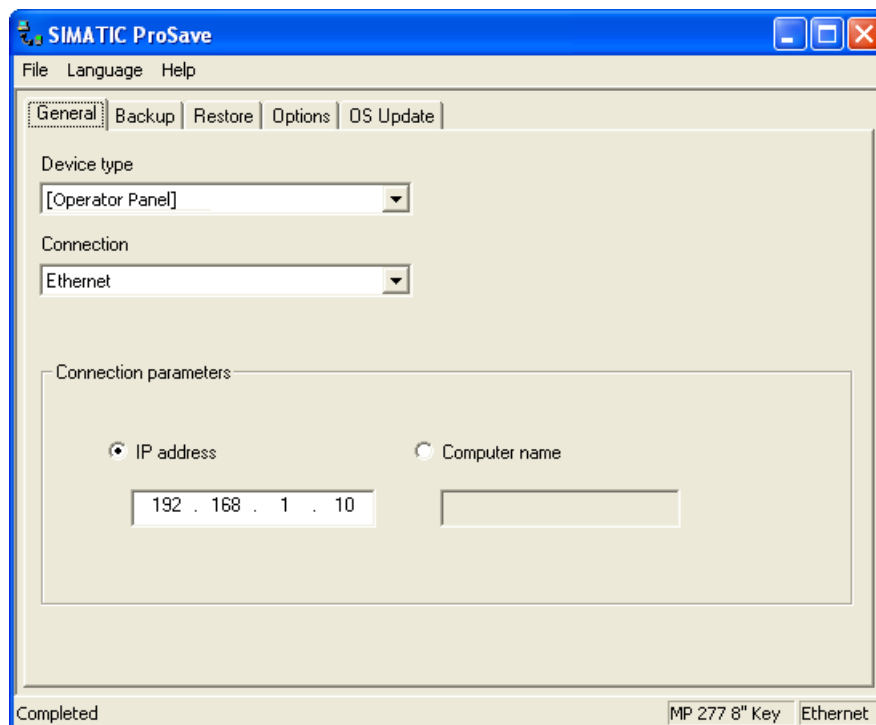
1. Change to the "OS Update" tab.

2. Select the "Reset factory settings" check box.

    A text box opens where you can enter the MAC address.

3. Enter the MAC address of the HMI device

4. In "Image path", select the HMI device image file "*.img".

    The HMI device image files are available under "WinCC flexible Images" in the WinCC flexible installation folder or on the WinCC flexible installation CD.

    In the output area, you are provided information on the version of the HMI device image file after it is opened.

5. Select "Update OS" on the PC to run the operating system update.

6. Follow the instructions in ProSave.

    During the operating system update a status view opens to indicate progress.

Result

A message is displayed when the operating system update is successfully completed.

This operation has deleted the project data from the HMI device. The factory settings are reset.

Note

Calibrating the touch screen

After the restore, you may have to re-calibrate the touch screen.

See also

Operating modes (Page 186)

Data transmission options (Page 188)

Programming the data channel (Page 160)

Overview (Page 204)

7.5.8 Installing and removing options

7.5.8.1 Overview

Installing and removing options

You can install options on the HMI device, for example, additional programs developed especially for the HMI device.

You can also remove the option from the HMI device again.

Note

License key

A license key may be needed to run an option. The license key unlocks the option for use.

7.5.8.2 Installing and removing options using WinCC flexible

Requirements

- No project is open on the configuring PC in WinCC flexible
- The HMI device is connected to this configuring PC
- The data channel is programmed on the HMI device

Procedure for installing an option

Proceed as follows:

1. On the configuring PC, select the "Communication settings" command in the menu "Project > Transfer" in WinCC flexible.

   The "Communication settings" dialog box opens.

2. Select the type of HMI device.

3. Select the type of connection between the HMI device and the configuring PC.

4. Set the connection parameters.

5. Close the dialog with "OK".

6. Select the "Options" command in the menu "Project > Transfer" in WinCC flexible.

7. Select the desired option under "Available options".

8. Set "Transfer" mode on the HMI device.

   If automatic transfer is activated on the HMI device, following a prompt the HMI device automatically switches to "Transfer" mode when the installation of an option is initiated.

9. Start the installation of the option in WinCC flexible on the configuring PC with the ">>" button.

10. Follow the instructions in WinCC flexible.

    A status display appears indicating the progress of the installation.

Result

The option has now been installed on the HMI device.

Procedure for removing an option

Proceed as follows:

1. On the configuring PC, select the "Communication settings" command in the menu "Project > Transfer" in WinCC flexible.

   The "Communication settings" dialog box opens.

2. Select the type of HMI device.

3. Select the type of connection between the HMI device and the configuring PC.

4. Set the connection parameters.

5. Close the dialog with "OK".

6. Select the "Options" command in the menu "Project > Transfer" in WinCC flexible.

7. Press the "Device status" button to update the display.

8. Select the desired option under "Installed options".

9. Set "Transfer" mode on the HMI device.

   If automatic transfer is activated on the HMI device, following a prompt the HMI device automatically switches to "Transfer" mode when the removal of an option is initiated.

10. Start the removal of the option in WinCC flexible on the configuring PC with the "<<" button.

11. Follow the instructions in WinCC flexible.

   A status display appears indicating the progress of the removal.

Result

The option has now been removed on the HMI device.

See also

Operating modes (Page 186)

Data transmission options (Page 188)

Programming the data channel (Page 160)

Overview (Page 212)

7.5.8.3 Installing and removing options using ProSave

Requirements

- The HMI device is connected to a PC on which ProSave is installed
- The data channel is programmed on the HMI device

Procedure for installing an option

Proceed as follows:

1. From the Windows Start menu, start ProSave on the PC.

2. Select the HMI device type in the "General" tab.

3. Select the type of connection between the HMI device and the PC.

4. Set the connection parameters.

5. Select the "Options" tab.

6. Select the desired option under "Available options".

7. Set "Transfer" mode on the HMI device.

   If automatic transfer is activated on the HMI device, following a prompt the HMI device automatically switches to "Transfer" mode when the installation of an option is initiated.

8. Start the installation of the option in ProSave with the ">>" button.

9. Follow the instructions in ProSave.

   A status display appears indicating the progress of the installation.

Result

The option has now been installed on the HMI device.

Procedure for removing an option

Proceed as follows:

1. From the Windows Start menu, start ProSave on the PC.

2. Select the HMI device type in the "General" tab.

3. Select the type of connection between the HMI device and the PC.

4. Set the connection parameters.

5. Select the "Options" tab.

6. Press the "Device status" button to update the display.

7. Select the desired option under "Installed options".

8. Set "Transfer" mode on the HMI device.

   If automatic transfer is activated on the HMI device, following a prompt the HMI device automatically switches to "Transfer" mode when the removal of an option is initiated.

9. Start the removal of the option in ProSave with the "<<" button.

10. Follow the instructions in ProSave.

    A status display appears indicating the progress of the removal.

Result

The option has now been removed on the HMI device.

See also

Operating modes (Page 186)

Data transmission options (Page 188)

Programming the data channel (Page 160)

Overview (Page 212)

7.5.9   Transferring and transferring back license keys

7.5.9.1   Overview

Transferring and transferring back license keys

With the purchase of an optional package, you obtain a specific user license with an associated license key. Once you have installed an option, transfer a license key to the HMI device. The license key unlocks an option for use.

You can also transfer back the license key from the HMI device to the storage location.

Note

You only transfer license keys with the Automation License Manager or WinCC flexible.

7.5.9.2 Transferring and transferring back license keys

Requirements

- When transferring or transferring back using WinCC flexible:

  No project is open on the configuring PC in WinCC flexible

- The HMI device is connected to this configuring PC

- The data channel is programmed on the HMI device

- The storage location and the license key awaiting transfer are ready

Procedure for transferring a license key

Proceed as follows:

1. Switch to "Transfer" mode on the HMI device.

2. When transferring using WinCC flexible:

   Select the "License Keys" command in the menu "Project > Transfer". The Automation License Manager opens.

   When transferring using the Automation License Manager:

   Start the Automation License Manager via the Windows Start menu.

3. In the Automation License Manager, select the command "Connect HMI device" in the menu "Edit > Connect target system".

   The "Connect target system" dialog opens.

4. Under "Device type", select the appropriate HMI device type.

5. Select the type of connection from the "Connection" box.

6. Set the connection parameters.

7. Select "OK".

   The connection to the HMI device is established. The connected HMI device is displayed in the left window of the Automation License Manager.

8. In the left window, select the source drive.

   The right window displays the available license keys.

9. Drag one or more license keys from the right window and drop them on the HMI device in the left window.

   The license keys are then transferred to the HMI device.

Result

The license key is transferred from the storage location to the HMI device.

Procedure for transferring back a license key

Proceed as follows:

1. Switch to "Transfer" mode on the HMI device.

2. When transferring back using WinCC flexible:

   Select the "License Keys" command in the menu "Project > Transfer". The Automation License Manager opens.

   When transferring back using the Automation License Manager:

   Start the Automation License Manager via the Windows Start menu.

3. In the Automation License Manager, select the command "Connect HMI device" in the menu "Edit > Connect target system".

   The "Connect target system" dialog opens.

4. Under "Device type", select the appropriate HMI device type.

5. Select the type of connection from the "Connection" box.

6. Set the connection parameters.

7. Select "OK".

   The connection to the HMI device is established. The connected HMI device is displayed in the left window of the Automation License Manager.

8. In the left window, select the HMI device.

   The right window displays the available license keys.

9. Drag one or more license keys from the right-hand window and drop them on the target drive in the left-hand window.

   The license keys are transferred back to the storage location.

Result

The license key is transferred back from the HMI device to the storage location.

See also

Operating modes (Page 186)

Programming the data channel (Page 160)

Fail-safe mode

<div style="text-align: right; font-size: 2em;">8</div>

8.1 Organizational measures

The HMI device should only be operated in the system with a battery or in the charging station.

To ensure fail-safe operation of the HMI device the organizational measures described below must be complied with.

Storing the HMI device

> **⚠ WARNING**
>
> **Non-functional emergency stop button**
>
> If the HMI device is not integrated, the emergency stop button does not function.
>
> To avoid confusion between effective and non-effective emergency stop buttons, only one integrated HMI device should be freely accessible.

If the HMI device is not in use, it must be stored in a locked area.

Handling the HMI device during operation

> **CAUTION**
>
> **Shutdown or rampdown of the system due to empty battery**
>
> An integrated HMI device with flat battery triggers a communication error. This results in the following reaction of the F CPU:
> - If the HMI device is logged on at the effective range: Shutdown
> - If the HMI device is not logged on at the effective range: Global rampdown
>
> Check the charge status of the battery of the ready-for-operation device via the "BAT" LED.
> - Recharge the HMI device in good time.
>
>   To charge the batteries, the ambient temperature / battery temperature must not exceed 40 °C The higher the temperature, the longer it will take for the battery to charge.
>
>   Find a place with a cool ambient temperature for the charging station. If necessary, allow the battery to cool first. You can check the battery temperature in the "OP" dialog box, "Battery" tab in the Control Panel.
>
>   Alternatively, change the main battery.

The following must be noted when working with the Mobile Panel 277F IWLAN:

- Pay attention to the "SAFE" LED.

  If the HMI device is integrated in fail-safe communication, the "SAFE" lights up and the emergency stop button is active.

- Pay attention to the "COM" LED.

  If you leave the area with sufficient WLAN coverage, the "COM" LED will flash. Communication between the HMI device and PLC is down. You can no longer operate the system with the HMI device.

- Check the "RNG" LED when the HMI device is logged onto the effective range.

  The "RNG" LED indicates when the HMI device is logged onto the effective range. Logging onto the effective range is required for the enabling button to be active.

CAUTION

Unauthorized operation possible

It is not permitted to leave the effective range without an HMI device while the HMI device is logged on to the effective range.

8.2 Switch-off behavior

Introduction

Different switch-off behavior is possible depending on the situation in the plant:

- Emergency stop
- Shutdown
- Local rampdown
- Global rampdown

Plant switch-off differs in its triggers and effects.

⚠ DANGER

No triggering of safety states

The switch-off behavior described is only triggered in the system if the F CPU has been programmed accordingly.

Emergency stop

Press the emergency stop button to trigger the emergency stop. The emergency stop depends on the effective ranges. If the emergency stop button is pressed, the F CPU triggers an immediate stop of the machines assigned to it.

The emergency stop button is always active if there is PROFIsafe communication between HMI device and F CPU, i.e. if the HMI device is integrated in the PROFIsafe communication. If PROFIsafe communication is present the "SAFE" LED lights up.

Shutdown

Shutdown is triggered by the F CPU. The shutdown is specific to the effective range. If the F CPU detects a communication error for an HMI device logged on in the effective range, it triggers the emergency stop of the machines that belong to the effective range.

Local rampdown

Local rampdown is triggered if the HMI device is logged on at the effective range and if it leaves the effective range for longer than 30 seconds. Local rampdown is specific to the effective range.

Local rampdown triggers a defined slow stop of the machines of the effective range.

Global rampdown

Global rampdown is triggered by the F CPU. Global rampdown is independent of the effective ranges.

For global rampdown the following response must be programmed in the safety program of the F CPU: If the F CPU detects a communication error for an HMI device integrated in the PROFIsafe communication, it triggers a defined slow stop of the machines subordinate to it.

Fact

Trigger

Switch-off behavior can be triggered by the following:

- The emergency stop button is pressed.
- A communication error occurs.
- Timeout: The HMI device is logged onto the effective range and the operator leaves the effective range with the HMI device for longer than 30 seconds.

Triggering the switch off

The following table shows the effect of the different triggers depending on the operating situation:

Operating situation			Trigger		
			Emergency stop pressed	Communication error	Timeout
HMI not integrated			---	---	---
HMI integrated	HMI device logged on at the	HMI device is in the effective range	Emergency stop	Shutdown	---

			Trigger		
	effective range	HMI device is outside of the effective range for less than 30 seconds	Emergency stop	Shutdown	---
		HMI device is outside of the effective range for longer than 30 seconds	Emergency stop	Shutdown	Local rampdown
	HMI device is logged off from the effective range		Emergency stop	Global rampdown	---

8.3 Integrating the HMI device

Introduction

During fail-safe operation, a safety program runs in the F CPU. This safety program communicates with the HMI device. The F CPU monitors the communication for errors and evaluates the signals. The terms "integrate" and "remove" refer to integrating the HMI device in and removing it from the safety program of the F CPU.

Integrating

If the HMI device is configured for the safety program, it is automatically integrated in the safety program when the project is started. The "SAFE" LED lights up to indicate that integration is complete.

The emergency stop button becomes active as soon as the HMI device is integrated.

Requirements

- WLAN communication is established.
- The Loader is displayed on the HMI device.
- Effective ranges and transponders are accepted.

Procedure

Proceed as follows:

1. If the project does not start automatically, start it in the Loader.

   PROFIsafe communication is established. While the connection is being established, the "Establishing secure connection" dialog box is displayed. The HMI device is integrated in the safety program of the F CPU.

   The "Test enabling button" dialog box opens.

2. Fully press both enabling buttons.

Result

>The project start screen appears. The "SAFE" LED lights up.

8.4 Removing the HMI device

Removing

>This concept refers to intentionally removing the HMI device from the safety program.
>
>You have the following options for removing the HMI device:
>
>● Close the project.
>
>● Press and hold the ON/OFF button for at least 4 seconds. After it has been removed, the HMI device switches off.
>
>No side effects (such as a global rampdown) occur as a result of the operator removing the HMI device. Once the removal procedure is complete, the "SAFE" LED goes out and the emergency stop button is no longer active.

>| ⚠ WARNING |
>| --- |
>| **Non-functional emergency stop button** |
>| If the HMI device is not integrated, the emergency stop button does not function. |
>| To avoid confusion between effective and non-effective emergency stop buttons, only one integrated HMI device should be freely accessible. |

>If the HMI device is not in use, it must be stored in a locked cabinet.

Requirements

>● The project is started.
>
>● The HMI device is integrated in the safety program of the F CPU.

Procedure

>Proceed as follows:
>
>1. To close the project, use the operating element designed for this purpose. Alternatively, press and hold the ON/OFF button for at least 4 seconds.
>
>   Following a prompt, the "Confirm removal" dialog box is displayed.
>
>2. Press the enabling button to confirm the dialog box.

Result

>The "SAFE" LED on the HMI device goes out as soon as you have pressed the enabling button to confirm the removal.

PROFIsafe communication is terminated. The HMI device is removed from the safety program of the F CPU. The project is terminated. If you have pressed the ON/OFF button, the HMI device switches off.

Removal in the event of a communication error

In the event of a communication error, the F CPU removes the HMI device and initiates a global rampdown.

The "SAFE" LED on the HMI device goes out. The project is terminated.

8.5 Logging onto and off from the effective range

Introduction

An effective range is the range in which sections of the system, for example a machine, can be operated with the enabling buttons of the HMI device. As soon as you are in an effective range with the HMI device, you can log the device onto the effective range. Fail-safe operation of the system section delimited by the effective range is only possible after the HMI device has been successfully logged on.

Note

Before leaving the effective range with the HMI device, you must log it off from the effective range.

Requirements for logging on

- The HMI device is integrated. The "SAFE" LED lights up.
- The ID of the effective range is marked in the system.
- The HMI device is located within the effective range.
- No other HMI devices are logged onto this effective range.
- The "Effective range name" operating element is configured and displayed as follows:

  Rangename.

  "Rangename" indicates the name in the case of any effective range.

Procedure for logging on

1. Touch the "Effective range name" operating element.

   The "Effective range logon" dialog box opens.

2. Read the ID of the effective range from the machine or system to be operated.

3. Enter the ID of the effective range.

4. Confirm your entries.

The dialog closes.

Result

- If the ID entered matches the ID configured for the effective range, the HMI device is logged onto the effective range.

- No other HMI device can log onto this effective range. The "RNG" LED lights up.

- You can use the enabling buttons to operate the machine in the effective range.

- The "Effective range name" operating element is displayed as follows:

  Rangename .

Behavior in the effective range following successful logging on

CAUTION
Shutdown
If the HMI device is in a state where it is constantly ready for operation, the battery will lose its charge. A flat battery will result in a communication error. The F CPU initiates a shutdown. Under no circumstances should the effective range be left without an HMI device while the HMI device is logged onto the effective range.

CAUTION
Rampdown
If you leave the effective range without logging off, or the HMI device no longer recognizes the transponder, the following steps are carried out: • After 5 seconds, the "Effective range left without logging off" dialog box appears. If you do not return to the effective range within 25 seconds, the HMI devices initiates a local rampdown and begins logging off from the effective range. The HMI device is logged off from the effective range once logging off has been confirmed. This means that other HMI devices are free to log onto the effective range. Return to the effective range in good time. Always align the HMI device so that it is possible to measure the distance between the HMI device and the transponder.

Note the displays of the HMI device LEDs; in particular, the "RNG" and "BAT" LEDs.

The HMI device will trigger the vibration alarm under the following circumstances (if configured):

- The charging status of the battery is < 10%.

- You leave the effective range with the HMI device without logging the HMI device off from the effective range.

Requirements for logging off

- The HMI device is logged onto the effective range. The "RNG" LED lights up.

- The "Effective range name" operating element is configured and displayed as follows:
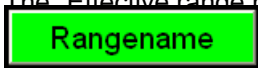
  Rangename

Procedure for logging off

Before leaving the effective range or project, you must log off from the effective range.

1. Touch the "Effective range name" operating element.

   The "Effective range logoff" dialog box opens.

2. Confirm logging off with the "OK" button.

Result

- The HMI device is no longer logged onto the effective range. The "RNG" LED goes out.

- Other HMI devices can now log onto this effective range.

- The "Effective range name" operating element may be displayed as either of the following:

  Rangename or

See also

Distance measurement between HMI device and transponder (Page 61)

Displaying the effective range name (Page 247)

8.6 "Override" mode

Introduction

The effective range functionality of the HMI device can be extended with the "Override" mode.

"Override" mode can be used in the following cases:

- Application of existing protective measures instead of the effective range functionality

  If there are already safety measurements in your system, e.g. safety gates, they can be integrated into the safety concept with the "Override" mode.

- When sections of the system that are not covered by transponders (inside a robot cell, for example) are to be operated with the enabling buttons.

  In this case the system area must be secured by additional safety measurements, with a safety gate for example.

"Override" mode must only be used in defined system zones that are secured by additional protective measures, such as a safety gate.

The switch for activating "Override" mode must be inside the protective device, and in an effective range.

Sample configuration:
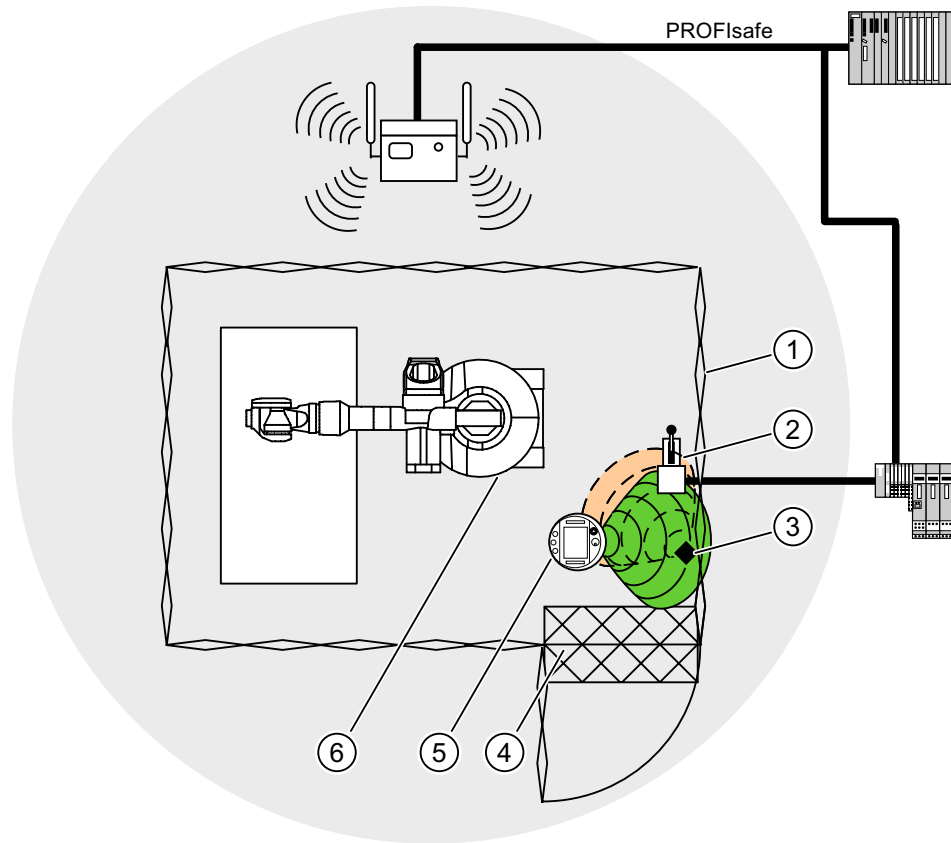
①	Safety gate
②	Switch for activating "Override" mode
③	Transponder for logging onto the effective range
④	Foot grating for access monitoring
⑤	HMI device
⑥	Machine to be operated

For additional notes on this subject, refer to the System manual "Safety Integrated" and the Function manual "Fail-safe operation of the Mobile Panel 277F IWLAN".

Requirements for activating "Override" mode

- The system has the protective devices specified for "Override" mode.
- The HMI device is integrated. The "SAFE" LED lights up.

- The HMI device is logged onto the same effective range in which the override switch located. The "RNG" LED lights up.

NOTICE
If "Override" mode is activated and you leave the defined system area, "Override" mode will be automatically deactivated. You must reactivate the override switch when you return to the defined system area.

Procedure for activating "Override" mode

1. Enter the protection zone.

   The protective device is thereby activated.

2. Activate the override switch.

Result

"Override" mode is active.

The "Effective range quality" screen object is displayed entirely in green.

The transponders are not evaluated when forming the effective range. Use the HMI device to operate the machine as though you were in the middle of the effective range. This approach applies for the entire override range.

No other HMI device can log onto the effective range.

Requirements for deactivating "Override" mode

"Override" mode is activated.

NOTICE
It is only possible to log back onto this effective range once you have performed the following actions:
• You have deactivated "Override" mode using the override switch.
• You have logged the HMI device off from the effective range.
The "RNG" LED is off.

Procedure for deactivating "Override" mode

1. Use the override switch to deactivate "Override" mode.

Result

"Override" mode is deactivated. The HMI device is still logged onto the effective range.

See also

Operating a project

9

9.1 Starting the project

Requirements

In order to switch on the Mobile Panel 277F IWLAN and start the project, the following requirements must be met:

- The batteries have been charged and inserted in the HMI device

  If the batteries are not available, place the HMI device in the charging station
- The project has been transferred to the HMI device.
- The WLAN quality is sufficient
- Transponders, if effective ranges/zones are configured:
  - The transponders are installed
  - The batteries are fitted in the transponders
  - A unique ID has been set in the transponders that matches the project parameterization

Switching on the HMI device

Press the ON/OFF button.

The HMI device performs the following steps:

1. The HMI device starts.
2. The "PWR" LED lights up.
3. The "BAT" LED shows the charging status of the inserted main battery.
4. If effective ranges are configured in the project, you will need to perform an acceptance test when the project is started for the first time.
5. The WLAN connection is established.

Establishing the WLAN connection

SSIDs for up to 3 WLAN networks can be stored in the project.

The WLAN networks stored in the project must be parameterized on the HMI device and must be included in the list of preferred networks on the HMI device.

The WLAN connection is established as follows:

1. If one of the 3 WLAN networks is available when the HMI device is started, the HMI device connects automatically.

    The "COM" LED will flash as long as the WLAN connection is established.

    The configured sequence of SSIDs determines the order in which the HMI device will attempt to connect to the WLAN networks.

2. If the HMI device cannot establish a connection with any of the 3 configured WLAN networks, the HMI device will attempt to connect to other WLAN networks.

    For this to happen, connection to other WLAN networks must be authorized in the project.

3. Once the HMI device has established the WLAN connection, the "COM" LED lights up.

4. If the HMI device was unable to establish a connection with any of the WLAN networks, Not Connected is displayed in the status line of the dialog box. The project cannot be started.

Operation

Note

Notes on fail-safe operation

It is imperative that you observe the chapter titled "Fail-safe operation", and in particular the Organizational measures (Page 219).

Starting the project

When the HMI device is in the Loader, the project can either be started manually using the "Start" button, or will start automatically, depending on how the project has been configured. An automatic start occurs either immediately or after a configured delay time.

The following steps are carried out when the project is starting:

1. The HMI device is integrated.

2. The emergency stop button becomes active.

3. The HMI device will show the project start screen or the zone-specific screen.

See also

Acceptance of the system (Page 196)

Integrating the HMI device (Page 222)

9.2 Error cases

During fail-safe operation, you must be aware that the following error cases may arise:

Leaving the HMI device logged onto the effective range

CAUTION
Shutdown
Under no circumstances should the effective range be left without an HMI device while the HMI device is logged onto the effective range.
If the HMI device is in a state where it is constantly ready for operation, the battery will lose its charge. A flat battery will result in a communication error. The F CPU initiates a shutdown. • Log the HMI device off from the effective range. • Switch off the HMI device if it is not needed. Alternatively, hook the HMI device into the charging station.

Internal error

If an internal error occurs on the HMI device, the "SAFE" and "RNG" LEDs go out, and the project is terminated immediately. The HMI device shows a red error display.

Safety functions are no longer available.

Contact the SIEMENS hotline.

Communication error

If a communication error occurs on the HMI device, the "SAFE" LED goes out. Safety functions are no longer available.

- If the HMI device is logged onto the effective range:

  The F CPU initiates a shutdown. The F CPU stops the section of the system that belongs to the effective range.

- If the HMI device is not logged on to the effective range:

  The F CPU initiates a global rampdown.

- If communication is reestablished within 60 seconds:

  The emergency stop button becomes active again. The "SAFE" LED lights up again.

  Acknowledge the communication error.

  If it was logged onto the effective range, the HMI device is logged off. The "RNG" LED goes out.

- If communication remains interrupted for more than 60 seconds:

  The HMI device terminates the project. The "RNG" LED goes out.

9.3 Direct keys

Introduction

Direct keys on the HMI device are used to set bits in the I/O area of a SIMATIC S7.

Direct keys enable operations with short reaction times, that are, for example, a jog mode requirement.

NOTICE

PLC stop

Please note that leaving the WLAN area will cause the PROFINET IO device to fail and will therefore result in a PLC stop.

Determine suitable programming measures in the PLC, in order to prevent a PLC stop.

Please refer to your system documentation to check whether additional information on this subject is available there.

NOTICE

Effectiveness of direct keys in offline mode

Direct keys are active when both of the following conditions are satisfied:

- The HMI device is in an area with sufficient WLAN coverage.
- The HMI device is in "Offline" mode.

NOTICE

If you operate a function key with direct key functionality in a running project, the direct key function is always executed, independent of the current screen contents.

Direct keys

The following objects can be configured as a direct key:

- Buttons
- Function keys
- Screen numbers
- Handwheel
- Illuminated pushbutton
- Key-operated switch

Note

Direct keys result in additional basic load on the HMI device.

Additional information about direct keys is available in the system manual "WinCC flexible communication".

9.4 Operator input options

Once the project is transferred to the HMI device, current processes can be operated and monitored in the process control phase. You have the following options for operating the HMI device:

● Touch screen

The HMI device is operated by means of the touch screen. The operating elements shown in the dialogs are touch-sensitive. Touch objects are basically operated in the same way as mechanical keys. You activate operating elements by touching them with your finger. To double-click them, touch an operating element twice in succession.

> **⚠ CAUTION**
>
> Do not use any pointed or sharp objects when operating the touch screen. Otherwise this may damage the plastic membrane of the touch screen.

● External input devices

The following operator controls can be connected externally:

– Keyboard, connected via USB

– Mouse, connected via USB

The use of external input devices is recommended for commissioning.

Operating a project with an external keyboard

An external keyboard can be used to operate a project in exactly the same way as with the HMI keyboard or screen keyboard.

> **Note**
>
> The function keys of the external keyboard are disabled.

Use other keys on the external keyboard, which correspond to the HMI device keys.

Operating a project with an external mouse

An external mouse can be used to operate a project in exactly the same way as with the HMI touch screen. Click the described operating elements with the mouse.

Unintentional actions

> ### ⚠ CAUTION
>
> Do not carry out several operations simultaneously. You may otherwise trigger unintentional actions.
>
> - With touch control:
>
>   Always touch only one operating element on the screen
> - With key operation via an external keyboard:
>
>   Do not press more than two keys simultaneously

Observing the plant documentation

Some operations with the project may require in-depth knowledge about the specific plant on the part of the operator. Proceed with caution, for example, when you use jog mode. Please refer to your system documentation to check whether additional information on this subject is available there.

Operation feedback from operating elements

The HMI device provides optical feedback as soon as it detects that an operating elements has been selected. The operating element receives the focus and is selected. This selection is independent of any communication with the PLC. Therefore this selection does not indicate whether the relevant action is actually executed or not.

The configuration engineer can also configure the selection of an operating element so that it deviates from the standard. Please refer to your system documentation to check whether additional information on this subject is available there.

Optical feedback from operating elements

The type of optical feedback depends on the operating element:

- Buttons

  The HMI device outputs different views of the "Pressed" and "Unpressed" states, provided the configuration engineer has configured a 3D effect:

  – "Pressed" state:
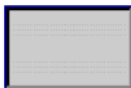
  A"Unpressed" state:

The configuration engineer determines the appearance of a marked field, for example, line width and color for the focus.

- Invisible buttons

  By default, invisible buttons are not displayed as pressed when they are touched. No optical operation feedback is provided in this case.

  The configuration engineer may, however, configure invisible buttons so that their outline appears as lines when touched. This outline remains visible until you select another operating element.

- I/O fields

  When you select an I/O field, the content of the I/O field is displayed against a colored background. With touch operation, a screen keyboard is displayed for the entering of values.

9.5   Function keys

Function keys

Function key assignment is defined during configuration. The configuration engineer can assign function keys globally and locally.

Function keys with global function assignment

A globally assigned function key always triggers the same action on the HMI device or in the PLC irrespective of the screen displayed. Such an action could be, for example, the activation of a screen or the closure of an alarm window.

Function keys with local function assignment

A function key with local function assignment is screen-specific and is therefore only effective within the active screen.

The function assigned locally to a function key can vary from screen to screen.

The function key of a screen can be assigned one function only, either a global or local one. The local assignment function takes priority over the global setting.

The configuration engineer can assign function keys in such a way that you can operate operating elements with function keys, for example, the alarm view, trend view, recipe view or status / PLC.

Multi-key operation

Unwanted actions may be triggered, if the operator unintentionally actuates a key combination.

> ⚠ **CAUTION**
>
> **Unintentional actions**
>
> In "Online" mode, simultaneous operation of more than two keys may cause unintentional actions in the plant.
>
> Do not press more than two keys simultaneously.

9.6   Setting the project language

Introduction

The HMI device supports multilingual projects. You must have configured a corresponding operating element which lets you change the language setting on the HMI device during runtime.

The project always starts with the language set in the previous session.

Requirements

- The required language for the project must be available on the HMI device
- The language switching function must be logically linked to a configured operating element such as a button

Selecting a language

You can change project languages at any time. Language-specific objects are immediately output to the screen in the new language when you switch languages.

The following options are available for switching the language:

- A configured operating element switches from one language to the next in a list
- A configured operating element directly sets the desired language

Please refer to your system documentation to check whether additional information on this subject is available there.

9.7 Input

9.7.1 Overview

Screen keyboard

When you touch an operating element requiring entry on the HMI device touch screen, a screen keyboard appears. The screen keyboard is displayed in the following cases:

● An I/O field is selected for input

● A password must be entered for accessing a password-protected function

The screen keyboard is automatically hidden again when input is complete.

Based on the configuration of the operating element, the system displays different screen keyboards for entering numerical or alphanumerical values.

Note

The screen keyboard display is independent of the configured project language.

General procedure

The operating elements of a screen are operated by touching the touch screen.

Proceed as follows:

1. Touch the desired operating element within the screen.

2. Depending on the operating element, perform further actions. Detailed descriptions can be found under the respective operating element.

   Examples:

   – I/O field: Enter numerical, alphanumerical or symbolic values in the I/O field

   – Symbolic I/O field: Select an entry from the drop down list box

   – Slider control: Move the slider control

Procedure for text boxes

Values are entered in the project text boxes. Based on your configuration, the values are saved to tags and transferred, for example, to the PLC.

Proceed as follows:

1. Touch the desired text box within the screen.

   The screen keyboard opens.

   Depending on your configuration, you can enter values in the text box in the following manner:

   – Numerical values, for example decimal numbers, hexadecimal numbers, binary values

– Alphanumerical values, for example digits and letters

– Date/time

2. Enter the value.

3. Confirm your entry with [⬅] or discard your entry with the button [ESC].

9.7.2 Entering and editing numerical values

Numerical screen keyboard

When you touch an operating element for numerical input on the HMI-device touch screen, the numerical screen keyboard appears. This is the case, for example, for a text box. The screen keyboard is automatically hidden again when input is complete.

Figure 9-1   Numerical screen keyboard

Note

Opened screen keyboard

When the screen keyboard is open, PLC job 51, "Select screen" has no function.

Formats for numerical values

You can enter values in numerical text boxes based on the following formats:

● Decimal

● Binary

● Hexadecimal

Note

Entry of hexadecimal values

When you enter values in hexadecimal format, the alphanumerical screen keyboard opens.

Limit value test of numerical values

Tags can be assigned limit values. If you enter a value that lies outside of this limit, it will not be accepted, for example, 80 with a limit value of 78. In this case the HMI device will deliver a system alarm, if an alarm window is configured. The original value is displayed again.

Decimal places for numerical values

The configuration engineer can define the number of decimal places for a numerical text box. The number of decimal places is checked when you enter a value in this type of I/O field.

- Decimal places in excess of the limit are ignored
- Empty decimal places are filled with "0"

Procedure

Numerical values can be entered character-by-character via the buttons on the numerical screen keyboard.

Proceed as follows:

1. Touch the desired operating element within the screen.

   The numerical screen keyboard opens. The existing value is displayed in the screen keyboard and is selected.

2. Enter the value.

   When entering hexadecimal values, the keys with letters "G" to "Z" are operable, but the characters will not be entered.

   You have the following options to enter a value:

   – The selected value is deleted when you enter the first character. Completely reenter the value.
   – Use the [←] and [→] keys to move the cursor within the current value. You can now edit the characters of the current value or add characters.

     Use the [←] key to delete the character to the left of the cursor. If the value is selected, use this key to delete the selected part of the value.

     The [Del] key deletes the character positioned to the right of the cursor. If the value is selected, use this key to delete the selected part of the value.

   – Use the [Help] key to display the infotext of the I/O field.

     This key is only enabled if infotext has been configured for the input object or the current screen.

3. Use the [⏎] key to confirm your entry or cancel it with [ESC]. Either action closes the screen keyboard.

Result

You have changed the numerical value or entered a new one.

9.7.3 Entering and editing alphanumerical values

Alphanumerical screen keyboard

When you touch an operating element for numerical input on the HMI-device touch screen, the alphanumerical screen keyboard appears. This is the case, for example, for a text box. The screen keyboard is automatically hidden again when input is complete.

Figure 9-2   Alphanumerical screen keyboard, normal level

Note

Opened screen keyboard

When the screen keyboard is open, PLC job 51, "Select screen" has no function.

Language change

Language change in the project has no influence on the alphanumerical screen keyboard. The entry of Cyrillic or Asian chracters is therefore not possible.

Keyboard levels

The alphanumerical screen keyboard has various levels.

- Normal level

- Shift level

If you change the levels with key ⇧ , the key assignments change.

Procedure

Alphanumerical values can be entered character-by-character via the buttons on the alphanumerical screen keyboard.

Proceed as follows:

1. Touch the desired operating element within the screen.

   The alphanumerical screen keyboard opens. The existing value is displayed in the screen keyboard and is selected.

2. Enter the value.

   You have the following options to enter a value:

– The selected value is deleted when you enter the first character. Completely reenter the value.

– Use the ⬅ and ➡ keys to move the cursor within the current value. You can now edit the characters of the current value or add characters.

Use the ⬅ key to delete the character to the left of the cursor. If the value is selected, use this key to delete the selected part of the value.

The Del key deletes the character positioned to the right of the cursor. If the value is selected, use this key to delete the selected part of the value.

– Using key ⬆ it is possible to switch between the keyboard levels of the screen keyboard. On switchover, the key assignments of the screen keyboard change.

– Use the Help key to display the infotext of the I/O field.

This key is only enabled if infotext has been configured for the input object or the current screen.

3. Use the ⬅⏎ key to confirm your entry or cancel it with ESC. Either action closes the screen keyboard.

Result

You have changed the alphanumeric value or entered a new one.

9.7.4 Entering the date and time

Entering the date and time

Enter the date and time in the same way you enter alphanumerical values.

Note

When entering the date and time, please note that the format is determined by the configured project language.

See also

Entering and editing alphanumerical values (Page 242)

Setting the project language (Page 238)

9.7.5   Entering symbolic values

Drop down list box

Operating elements for entering symbolic values offer you a list from which you can select the input values. When you touch a symbolic I/O field on the HMI device touch screen, the following drop down list box opens.
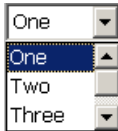
Figure 9-3   Symbolic I/O field after touch, example

Procedure

Proceed as follows:

1. Touch the required operating element.

   The drop down list box of the operating element opens. Select ▼ and ▲ to scroll in the drop down list box.

2. Touch the required entry in the drop down list box.

   The selected entry is accepted as an entry.

Result

You have changed the symbolic value or entered a new one.

9.8   Displaying infotext

Purpose

The configuration engineer uses infotext to provide additional information and operating instructions. The configuration engineer can configure infotext on screens and operating elements.

The infotext of an I/O field may contain, for example, information on the value to be entered.
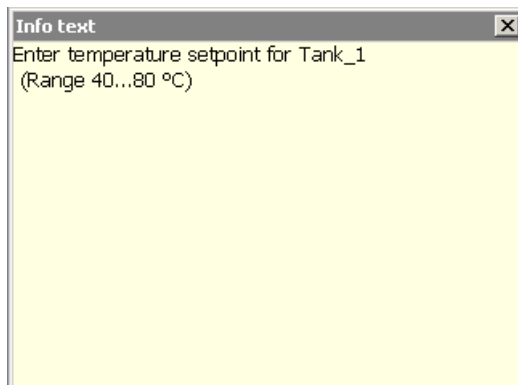
Figure 9-4   Infotext for an I/O field, example

Opening infotext for operating elements

1. Touch the required operating element.

   The screen keyboard opens. You can see from the appearance of the `Help` key whether infotext has been configured for the operating element or the current screen.

2. Touch the `Help` key on the screen keyboard.

   The infotext for the operating element is displayed. If there is no infotext for the selected screen object, the infotext for the current screen is displayed, if it has been configured.

   You can scroll through the contents of long infotext with ▾ and ▴.

Note

Switching between displayed infotext

The configuration engineer can configure infotext for an I/O field and the associated screen. You can switch between two infotexts by touching the infotext window.

---

1. Close the displayed infotext by pressing ⊠.

Alternative procedure

Depending on your configuration, infotext can also be called via a configured operating element.

Please refer to your system documentation to check whether additional information on this subject is available there.

9.9 Device-specific displays

9.9.1 Displaying battery status

Application

The "Battery" object indicates the charging status of the main battery. Charge the battery in good time. Alternatively, change the main battery.

Layout

Symbol	Color	Meaning	Charging status
	Green	The battery is sufficiently charged.	>20 %
	Yellow	The battery is weak. The battery must be charged. Alternatively, insert a charged spare battery.	10 % to 20 %
	Red	Battery is very weak. The battery must be charged. Alternatively, insert a charged spare battery.	<10 %

Operation

The object is for display only and cannot be operated.

9.9.2 Displaying WLAN quality

Application

The "WLAN quality" object displays the signal strength of the WLAN wireless connection. The HMI device measures the signal strength and indicates the quality using 5 bars.

Layout

Symbol	Meaning	Signal strength
	No wireless connection	No signal
	Very poor wireless connection	≤20 %
	Poor wireless connection	≤40 % >20 %
	Wireless connection OK	≤60 % >40 %
	Good wireless connection	≤80 % >60 %
	Very good wireless connection	>80 %

Operation

The "WLAN quality" object is purely for display purposes. You cannot operate the "WLAN quality" object.
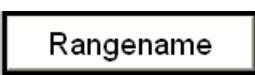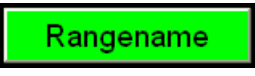
9.9.3 Displaying the effective range name

Application

The "Effective range name" object indicates the following:

● Name of the effective range in which the HMI device is currently located.

● Logon status

Layout

Symbol	Description	Logon
Rangename	The HMI device is within the effective range shown. The HMI device is not logged onto the effective range. The enabling button is not active.	It is possible to log onto the effective range.
Rangename	The HMI device is within the effective range shown and is logged onto the effective range. Using the enabling buttons, safe operation in the effective range is possible .	The HMI device is logged onto the effective range.
Rangename	The HMI device is within the effective range shown. The enabling button is not active.	Logon to the effective range is rejected because a different HMI device is already logged on. Note: When using the "Override" mode: Although no other HMI device is still logged on to the effective range, logon is rejected because the override switch is still set.
	The HMI device is outside all of the effective ranges. The enabling button is not active.	It is not possible to log onto the effective range. Note: You can only log on within the effective range

See also

Logging onto and off from the effective range (Page 224)

9.9.4 Displaying the effective range quality

Application

The "Effective range quality" object indicates how accurately the Mobile Panel 277F IWLAN is still within an effective range. In contrast to the "WLAN quality" object, the HMI device does not measure signal strength. The HMI device calculates the effective range quality on the basis of the distance between it and the assigned transponders.

The "Effective range quality" is then also updated if the HMI device is not logged onto the effective range.

Layout

Symbol	Meaning	Quality
	The HMI device is in the middle of the effective range.	>15 %
	The HMI device is at the limits of an effective range.	1% to 15%
	The HMI device is not within the effective range.	0 %
	"Override" mode is active. The distance of the HMI device to the transponders is not evaluated. "Override" mode (Page 226)	–

The "Effective range name" object indicates which effective range this concerns.

Calculating the quality

The quality within an effective range depends on the measured distance to the transponder, as shown below:

- In the center of the effective range the quality is 100%.
- The quality decreases as you approach the limits of the effective range.
- On the transponder and on the border of the effective range, the quality is 0%.

Operation
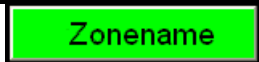
The object is for display only and cannot be operated.

9.9.5 Displaying zone names

Application

The "Zone name" object shows the names of the zone in which the HMI device is currently located.

Layout

Symbol	Meaning
Zonename	The HMI device is within the indicated zone.

Symbol	Meaning
	The HMI device is not inside any zone.

Operation

The "Zone name" object is purely for display purposes. You cannot operate the "Zone name" object.

9.9.6 Displaying zone quality

Application

The "Zone quality" object shows how close the HMI device is to the limits of a zone. Unlike with "WLAN quality", the HMI device does not measure signal strength. The HMI device calculates the zone quality from the distance between it and the assigned transponders.

Layout

Symbol	Meaning	Quality
	The HMI device is within a zone.	>15 %
	The HMI device is at the limits of a zone.	1% to 15%
	The HMI device is not within any zone.	0 %

The "Zone quality" object indicates which zone this concerns.

Calculating the quality

The quality within a zone depends on the measured distance to the transponder:

- In the center of the zone the quality is 100%
- The quality decreases as you approach the limits of the zone
- On the transponder and on the border of the zone, the quality is 0%

Operation

The "Zone quality" object is purely for display purposes. You cannot operate the "Zone quality" object.

9.10 Bar and gauge

Bar

The bar is a dynamic display object. The bar displays a value from the PLC as a rectangular area. The bar allows you to recognize the following at a glance:

● The distance of the current value from the configured limit values

● Whether a set point value has been reached

The bar can display values such as fill levels or batch counts.
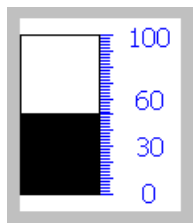
Layout

The layout of the bar depends on the configuration:

● The bar may feature a scale of values

● The configured limit values can be indicated by lines

● Color changes can signal when a limit value has been exceeded or has not been reached

Gauge

The gauge is a dynamic display object. The gauge displays numerical values in analog form by means of a pointer. This enables an operator at the HMI device to see at a glance if the boiler pressure is in the normal range, for example.
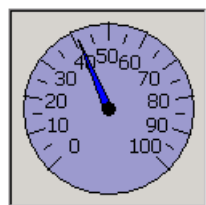
Layout

The layout of the gauge depends on the configuration:

- A trailing pointer can display the maximum value reached so far on the scale. The trailing pointer is reset when the screen is reloaded

- The label on the scale can show the measured variable, for example boiler pressure and the physical unit, for example bar

Operation

The bar and the gauge are for display only. Both objects cannot be controlled by the operator.

9.11 Operating the slider control

Introduction

The slider control can be used to monitor and change process values within a defined range. The slider control can also be configured without a slider. In this case, you cannot enter a value. The slider control is then only used for displaying values.
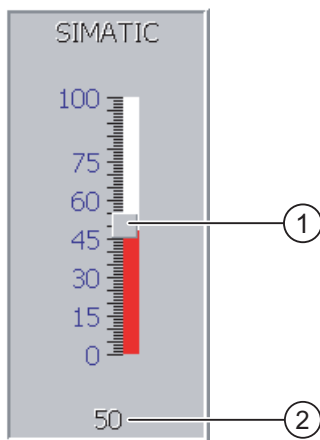
Figure 9-5   Slider control – example

①   Slider control for entering values
②   Value display with current value

Layout

The layout of the slider control depends on the configuration:

- The slider control can contain a label and a setting range

- The current value can be displayed below the area of the slider control

Procedure

Proceed as follows:

1. Touch the slider of the desired slider control.

2. Move the slider to the required value.

   If a value display has been configured, you can check the exact value that has been set.

3. Release the slider.

Result

The set value is applied.

9.12   Operating the switch

Introduction

The switch is an operating element and display object with two predefined switching states, for example "On" and "Off". Switches can signalize the state of a plant section, for example if a motor is running or not. At the same time, you can use the switch to change the state of the corresponding plant section via the HMI device, for example from "On" to "Off".

Layout

The layout of the switch depends on the configuration:

● Switch with slider

   The two states are displayed by the position of the slider
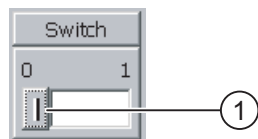
①   Slider

● Switch with text or graphic

   The two states are displayed by the label on the slider

   Depending on the switching state, the switch is labeled with one of two texts or one of two graphics.

   Examples:

   "Backward" or "Forward"

 or
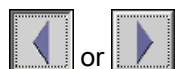
Procedure

- Switch with slider

  Proceed as follows:

  Move the slider to the other position or double-click the slider area

- Switch with text or graphic

  Proceed as follows:

  Touch the switch

Result

The switch changes its appearance. The associated value is switched.

9.13 Operating the trend view

Trends

Trends continuously display the current process data or process data from a log.

Trend view

Trends are displayed in the trend view. A trend view can display several trends simultaneously.
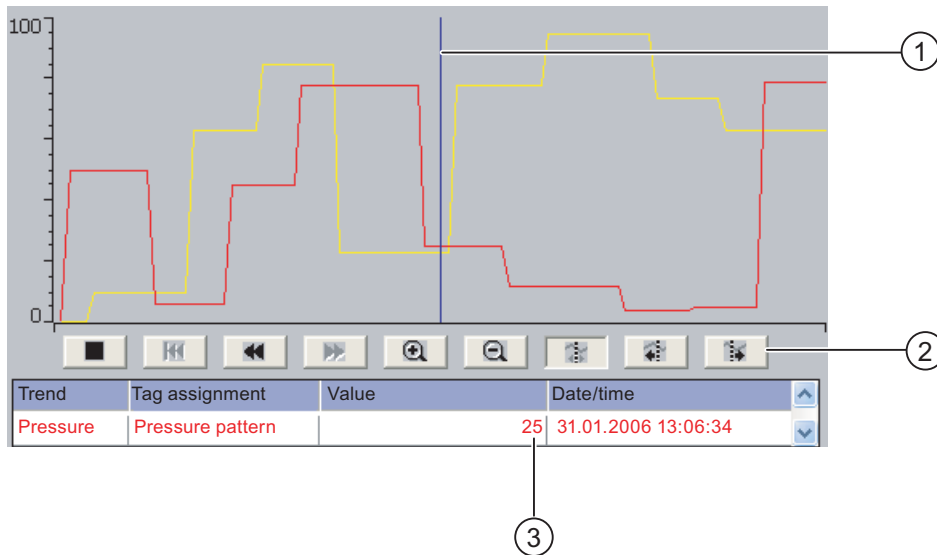
Figure 9-6   Trend view, example

①   Ruler

②   Buttons for trend operation

③   Trend value in the value table

Layout and operation

The layout and operation of the trend view depends on the configuration. The configuration engineer determines, for example, the following:

- Appearance of the trend view, the axes, value ranges and labels
- Operating options of the trend view
- Limit values for the trend values
- The change of color of the trend in the event of limit violation

Please refer to your system documentation to check whether additional information on this subject is available there.

Value table

The trend values can be read from the value table if this is configured:

- When the ruler is displayed, the trend values are shown at a position of the ruler in the value table
- When the ruler is hidden, the latest trend values are displayed in the value table

Ruler

When configured, a ruler is available to provide an exact reading of the trend values in the value table.

You can move the ruler to the desired position of the trend view.

Operation

The trend view can be operated as follows:

- Enlarge or reduce the time interval displayed
- Scroll forward or back by one display width
- Stop and resume trend recording
- Move the ruler
- Hide and display the ruler

The following table shows the trend view buttons:

Buttons	Functions
■	Stops or continues trend recording.
⊕	Enlarges the displayed time section.
⊖	Reduces the displayed time section.
◀◀	Scrolls one display width backwards (to the left)
▶▶	Scrolls one display width forwards (to the right)

Buttons	Functions
	Scrolls back to the beginning of the trend recording. The start values of the trend recording are displayed there.
	Moves the ruler backwards (to the left)
	Moves the ruler forwards (to the right)
	Shows or hides the ruler.

In addition, the configuration engineer can configure function keys or operating elements with which you can control trend views.

Please refer to your system documentation to check whether additional information on this subject is available there.

Touch operation

Touch the required button in the trend view.

The position of the ruler can also be changed by means of touching and dragging the ruler on the touch screen.

Procedure using the keys

Proceed as follows:

1. Using the key [TAB] select the desired button within the trend view.

2. Confirm your entry by pressing the key [ENTER].

9.14 Operating the Status Force

9.14.1 Overview

Application

You read or write access values of the connected PLC directly with Status Force. Status force allows you to monitor or change addresses of the PLC program, etc. You don't need to connect an additional programming device or additional PC to the PLC.

Note

Status force can only be used in combination with SIMATIC S7.

Layout

The layout of Status Force depends on the configuration.

The figure shows the general layout of Status Force. A value can be monitored or controlled on every line.

Connection	Type	Offset	Format	Control Value	
PLC_1	M	120	DEC	33	
PLC_1	T	40	T	24,00	
PLC_1	O	50	DEC	0	
PLC_1	O	50	HEX	0A0D	

Figure 9-7   Status Force, example

The configuration engineer specifies which columns appear in Status Force.

The table shows the significance of all configurable columns.

Column	Functions
"Connection"	The PLC whose address ranges must be displayed.
"Type", "DB Number", "Offset", "Bit"	The address range of the value
"Data type", "Format"	The data type of the value
"Status value"	The value read from the specified address.
"Control value"	The value to be written to the specified address.

Please refer to your system documentation to check whether additional information on this subject is available there.

Operator controls

Depending on your configuration, you can operate the trend view using the following buttons:

Buttons	Functions
👓	"Read" button
	Updates the display in the "Status value" column.
	This button engages when it is pressed. You cannot operate any text boxes until the button is actuated again and the refresh is stopped.
↙↗	"Write" button
	Applies the new value in the "Control value" column. The control value is written to the PLC.

9.14.2   Operation

Operator input options

Status Force can be operated as follows:

- Change the column sequence
- Read the status values of the connected PLC
- Enter values and transfer them to the PLC

Change column sequence

Depending on the configuration, you can change the column sequence of Status Force.

Proceed as follows:

1. Touch the column header which you wish to exchange with a different column header
2. Keeping the touch screen pressed, move the column heading to the column heading you wish to exchange it with

Result

The columns are displayed in the modified sequence.

Procedure for reading the status value

Proceed as follows:

1. Enter the address and the desired format of a value for each line. Touch the respective columns to display the screen keyboard.
2. Once you have entered all of the desired values, touch the [𝟨𝟨] button.

Result

All values are read cyclically by the PLC and entered in the "Status value" column until the [𝟨𝟨] button is touched again.

Requirements for forcing

The following requirements must be fulfilled in order to force values:

- The "Control value" column must be available
- The "Write" button must be available

Procedure for forcing a value

Proceed as follows:

1. Enter the address of a value for each line. Enter the desired value in the "Control value" column. Touch the respective columns to display the screen keyboard.

2. Once you have entered all of the desired values, touch the [⇲] button.

Result

The values from the "Control value" column are transferred once to the PLC.

9.15 Operating the Sm@rtClient view

9.15.1 Overview

Application

The Sm@rtClient view enables you to monitor and remotely operate the current project of a remote HMI device. With the correct configuration, several equal priority HMI devices can access a remote HMI device.

Note

If another HMI device accesses your HMI device via the Sm@rtClient view, this leads to an additional load on your HMI device.

Layout

In the Sm@rtClient view, the remote HMI is displayed with the complete layout.

Depending on the configuration, you can monitor and also operate this screen.

You can also operate the function keys like buttons on an HMI device with a touch screen.

Monitoring mode

On a Sm@rtClient view which is configured for monitoring mode, you can only monitor the remote HMI device. You cannot control its operation.

Operation

Note

It is not possible to operate the direct keys of the remote HMI device from the local HMI device.

The available operator controls depend on the HMI devices used:

- Same type of HMI devices

You can operate the project of the remote HMI device with the operator controls of your HMI device

- Operate keys from a local touch screen

  All the keys of the remote HMI device are displayed as buttons on the touch screen. You can also touch them to operate them

- Touch operation from a local HMI device using keys

  You operate the buttons in the usual manner.

9.15.2   Operation

Operator input options

The Sm@rtClient view can be operated as follows:

- Starting remote control
- Forcing permission
- Ending remote control

Procedure for starting remote control

Proceed as follows:

1. On the HMI device change to the screen with the Sm@rtClient view.

   The following options are available for establishing the connection to the remote HMI device:

   – The connection is established automatically.

   – The connection must be established by touching the appropriate button.

     Depending on the configuration, you may be required to enter the address of the remote HMI device and a password.

2. The current screen of the project running on the remote device is displayed on the screen of your HMI device.

3. You can now monitor and control this screen depending on your configuration.

   Scroll bars are displayed if the screen of the remote HMI device is larger than that of the current HMI device.

Procedure for forcing permission

If several HMI devices have access to a HMI device, only one HMI device has operating permission at any one time.

Two cases must be distinguished for this case:

- If another HMI device is already controlling the remote HMI device, if configured accordingly, you can force operating permission for the remote HMI device

  – You are trying to operate the remote HMI device

- A dialog appears in which you are prompted to enter the appropriate password for forcing remote control

- You are now authorized to operate the remote HMI device

- If another HMI device is accessing your HMI device via the Sm@rtClient view, you can force local operating permission for your HMI device

- Touch the screen of your HMI device five times consecutively

- You are given permission to operate your local HMI device

Procedure for ending remote control

You can end monitoring and control of a remote HMI device with one of the following methods depending on the configuration:

- Touch a button configured for this action

- Exit the screen containing the Sm@rtClient view

- If configured, a menu is displayed after you have touched an empty space over a longer period. Select the "Close" menu item.

Please refer to your system documentation to check whether additional information on this subject is available there.

9.16   Project security

9.16.1   Overview

Design of the security system

The configuration engineer can protect the operation of a project by implementing a security system.

The security system is based on authorizations, user groups and users.

If operating elements protected by a password are pressed, the HMI device first requests that you log on. A logon screen is displayed in which you enter your user name and password. After logging on, you can press the operating elements for which you have the necessary authorizations.

The logon dialog can be set up by the configuration engineer via an individual operating element.

In the same way, the configuration engineer can set up an operating element to log off. After logging off, objects assigned password protection can no longer be operated; to do so, log on again.

Please refer to your system documentation to check whether additional information on this subject is available there.

Central user administration using SIMATIC Logon

Users, user groups and authorizations can be stored on a central server.

If user administration cannot contact the server, an error message is displayed. If this is the case, you can only log on locally. Check whether additional information is available in your plant documentation.

The operation of SIMATIC Logon differs as follows:

- The simple user display is not supported
- Users cannot be deleted
- You cannot change your logout time
- When changing the password, you must enter it twice for security reasons
- The domain name is also indicated in the "User" field

User groups and authorizations

Project-specific user groups are created by the configuration engineer. The "Administrators" and "PLC User" groups are included in all projects by default. User groups are assigned authorizations. Authorization required for an operation is specifically defined for each individual object and function in the project.

Users and passwords

Each user is assigned to exactly one user group.

The following persons are allowed to create users and assign them passwords:

- The configuration engineer during configuration
- The administrator on the HMI device
- A user with user management authorization on the HMI device

Irrespective of the user group, each user is allowed to change his own password.

Logoff times

A logoff time is specified in the system for each user. If the time between any two user actions, such as entering a value or changing screens, exceeds this logoff time, the user is automatically logged off. The user must then log on again to continue to operate objects assigned password protection.

Backup and restore

Note

Backup and restore is not available to central user administration with SIMATIC Logon.

The user data is encrypted and saved on the HMI device to protect it from loss due to power failure.

The users, passwords, group assignments and logoff times set up on the HMI device can be backed up and restored. This prevents you having to enter all of the data again on another HMI device.

NOTICE

The currently valid user data is overwritten in the following cases:

- Depending on the transfer settings, when the project is transferred again
- Upon restore of a backed-up project
- Upon import of the user administration via an operating element. Please refer to your system documentation to check whether additional information on this subject is available there.

The retransferred or restored user data and passwords are valid with immediate effect.

Limits for user, password and user view

	Number of characters
Length of user name, maximum	40
Length of password, minimum	3
Length of password, maximum	24
Entries in user view, maximum	50

9.16.2   User view

Application

The user view is used to display the users on the HMI device:

- All users on the HMI device are displayed in the user view to the administrator or to a user with administrator authorizations
- If you are a user without user management authorization, you can only see your personal user entry

The authorizations of a user after logging on depends on the user group to which the user is assigned.

Please refer to your system documentation to check whether additional information on this subject is available there.

Layout

The configuration engineer can implement a simple or extended user view.

The two user views offer the same functions. They differ only in the display of information.

Simple user view

If you are not logged on to the HMI device, the only entry contained in the simple user view is "<ENTER>".

If you are logged on to the HMI device, the simple user view only displays the user name and user group.

Admin	Group (9)
PLC User	Group (1)
User 1	Group (1)
<New user>	

Extended user view

The extended user view displays information about the users.

User	Password	Group	Logoff time
Admin	********	Group (9)	5
PLC User	********	Group (1)	5
User 1	********	Group (1)	5

The extended user view contains the following columns:

- Users
- Password
- Group
- Logoff time

The passwords are encrypted by appearing as asterisks.

9.16.3   User logon

Logon dialog

Use the logon dialog to log on to the security system of the HMI device. Enter your user name and password in the logon dialog.
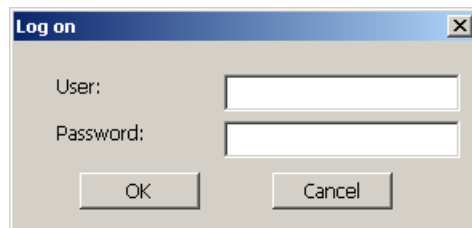
The logon dialog opens in the following cases:

- You press an operating element with password protection
- You press an operating element that was configured for displaying the logon dialog
- Select the "<ENTER>" entry in the simple user view
- Select a blank entry in the extended user view
- The logon dialog will be automatically displayed when the project is started, depending on the configuration

Please refer to your system documentation to check whether additional information on this subject is available there.

Requirements

The logon dialog is open.

Procedure using the touch screen

Proceed as follows:

1. Enter the user name and password.

   Touch the corresponding text box. The alphanumerical screen keyboard is displayed.

2. Select "OK" to confirm logon.

Procedure using the keys

Proceed as follows:

1. Using the key TAB select the "User" text box within the logon dialog.
2. Enter the user name using the system keys.

   To enter letters, switch the numerical keypad to letter assignment using the key A-Z.
3. Using the key TAB select the "Password" text box.
4. Enter the password using the system keys.
5. Touch the "OK" button to confirm your entries.

Note

The user name is not case-sensitive.

The password is case-sensitive.

Result

After successful logon to the security system, you can execute password-protected functions on the HMI device for which you have authorizations.

If you enter a wrong password, an error message is displayed when an alarm window has been configured.

9.16.4 User logoff

Requirements

You have logged into the security system of the HMI device.

Procedure

You have the following options for logging off:

● You press an operating element that was configured for logoff

● You will be logged off automatically if you are not operating the project and if the logoff time has been exceeded

You will also be automatically logged off if you enter an incorrect password.

Result

You are no longer logged into the project. In order to activate an operating element with password protection, you must first log on again.

9.16.5 Creating users

Requirements

You have opened a screen containing the user view.

You have user management authorization or you are the administrator.
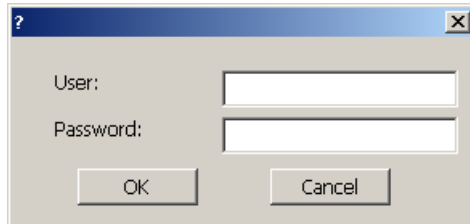
NOTICE
The following characters cannot be used in passwords: ● Blank   ● Special characters * ? . % / \ ' "

Procedure for creating a user in the simple user view

Proceed as follows:

1. Touch the "<New User>" entry in the user view.

   The following dialog opens:
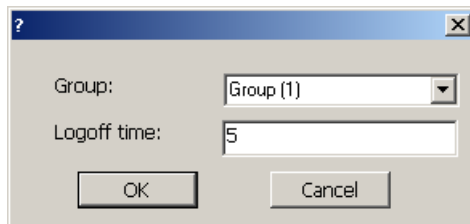
1. Enter the desired user name and password.

   Touch the corresponding text box. The alphanumerical screen keyboard is displayed.

2. Touch the "OK" button.

   The following dialog opens:

1. Assign the user to a group.

   In order to do so, open the "Group" drop down list box by means of the ⏷ button. Select ⏶ and ⏷ to scroll in the drop down list box.

2. Touch the required entry in the drop down list box.

   The selected entry is then accepted as input.

3. Touch the text box "Logoff time". The screen keyboard is displayed.

4. Enter a value between 0 and 60 for the logoff time in minutes. The value 0 stands for "no automatic logoff."

5. Touch the "OK" button to confirm your entries.

Procedure for creating a user in the extended user view

Proceed as follows:

1. Double-click the desired field in the blank line of the user view.

   The appropriate screen keyboard is displayed.

2. Enter the respective user data in the field:

   – Assign the user to one of the groups from the drop down list box.

   – Enter a value between 0 and 60 for the logoff time in minutes. The value 0 stands for "no automatic logoff."

Result

> The new user is created.

9.16.6   Changing user data

Requirements

> You have opened a screen containing the user view.
>
> Which data you are allowed to change depends on your authorization:
>
> * You are an administrator or a user with user management authorization. In these cases you are allowed to change the data for all the users on the HMI device in the user view:
>   – User name
>   – Group assignment
>   – Password
>   – Logoff time
> * You are a user without user management authorization. In this case you are only allowed to change your personal user data:
>   – Password
>   – Logoff time, if configured
>
> **Note**
>
> You can only change the logoff time and password for the "Admin" user.
>
> You can only change the logoff time for the "PLC_User". This user is used for logging on via the PLC

Procedure for changing user data in the simple user view

> Proceed as follows:
>
> 1. In the user view, touch the user whose user data you want to change
> 2. When entering the data, use exactly the same procedure as for creating a user

Procedure for changing user data in the extended user view

> Proceed as follows:
>
> 1. In the user view, touch the user whose user data you want to change
> 2. When entering the data, use exactly the same procedure as for creating a user

Result

> The user data for the user is changed.

9.16.7 Deleting users

Requirements

You have opened a screen containing the user view.

To delete a user, you must be an administrator or have user management authorization.

Note

The "Admin" and "PLC_User" users exist by default. These users cannot be deleted.

Procedure

To delete a user, delete the user name entered.

Result

The user has been deleted and may no longer log onto the project.

9.17 Closing the project

Procedure

Proceed as follows:

1. If "Override" mode has been activated, deactivate it.

2. If you are logged onto the effective range, log off from it.

3. Use the corresponding operating element object to close the project. Alternatively, press and hold the ON/OFF button for at least 4 seconds.

   The "Confirm removal" dialog box is displayed.

4. Press the enabling button to confirm the dialog box.

   The HMI device is removed.

   Wait for the Loader to open after you closed the project.

Result

The project is terminated.

Operating alarms

<div style="text-align: right; font-size: 3em;">10</div>

10.1 Overview

Alarms

Alarms indicate events and states on the HMI device which have occurred in the system, in the process or on the HMI device itself. A status is reported when it is received.

An alarm could trigger one of the following alarm events:

* Incoming
* Outgoing
* Acknowledge

The configuration engineer defines which alarms must be acknowledged by the user.

An alarm may contain the following information:

* Date
* Time
* Alarm text
* Location of fault
* State
* Alarm class
* Alarm number
* Alarm group
* Diagnostics capability

Alarm classes

Alarms are assigned to various alarm classes:

* Error

  Alarms in this class must always be acknowledged. Error alarms normally indicate critical errors within the plant such as "Motor temperature too high"

* Operation

  Warning alarms usually indicate states of a plant such as "Motor switched on"

* System

System alarms indicate states or events which occur on the HMI device

- SIMATIC diagnostic alarms

  SIMATIC diagnostic alarms show states and events of the SIMATIC S7 or SIMOTION PLCs

- User-specific alarm classes

  The properties of this alarm class must be defined in the configuration

Please refer to your system documentation to check whether additional information on this subject is available there.

Alarm groups

The configuration engineer can group alarms into alarm groups. When you acknowledge an individual alarm of an alarm group, you acknowledge all alarms which belong to the same alarm group.

Alarm buffer

The alarm events are stored in an internal buffer. The size of this alarm buffer depends on the HMI device type.

Alarm report

The configuration engineer can activate alarm reporting on the project. In this case, alarm events are output directly on the connected printer.

The configuration engineer can define whether each individual alarm is logged. An alarm of this type is printed when the alarm events "Incoming" and "Outgoing" occur.

If you want to print alarms of the "System" alarm class, you have to print the contents of the associated alarm buffer. For this case the configuration engineer has to configure an operating element for printing the alarm buffer.

Alarm log

Alarm events are stored in an alarm log, provided this log file is configured. The capacity of the log file is limited by the storage medium and system limits.

10.2 Recognizing pending alarms

You can recognize pending alarms that must be acknowledged by means of the alarm indicator.

The alarm indicator is a graphic symbol indicating pending alarms or alarms requiring acknowledgment, depending on the configuration. The configuration determines whether an alarm has to be acknowledged or not. This is also defined by the alarm class which an alarm belongs to.

Figure 10-1   Alarm indicator with three pending alarms

The alarm indicator flashes as long as alarms are pending for acknowledgment. The number displayed indicates the number of pending alarms. The configuration engineer can assign functions to be executed when the alarm indicator is operated.

Usually, the alarm indicator is only used for error alarms. Please refer to your system documentation to check whether additional information on this subject is available there.

10.3   Displaying alarms

Displaying alarms

Alarms are displayed in the alarm view or in the alarm window on the HMI device.

Alarm view

Depending on the configuration, the alarm view is displayed as follows:

- As a single line. Alarm numbers and alarm texts are displayed as single lines
- As simple alarm view
- As extended alarm view

In the simple or extended alarm views the configuration engineer specifies the alarm information to be displayed.

Depending on the configuration, alarms from alarm logs are also displayed in the alarm view.

Simple alarm view
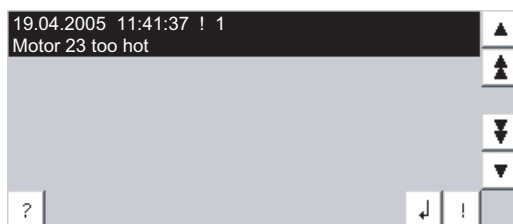
The buttons have the following functions:

Buttons	Functions
?	Displaying infotext for an alarm.
↵	Process alarm.

Buttons		Functions
!		Acknowledge alarm.
▼	▲	Select the next or previous alarm in the list.
⬇	⬆	Scroll one page up or down.

Extended alarm view
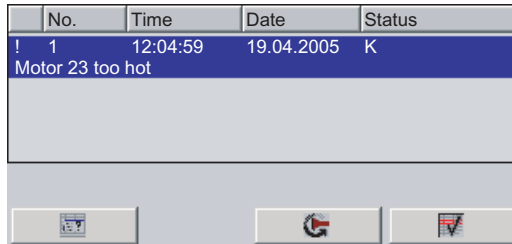
	No.	Time	Date	Status
!	1	12:04:59	19.04.2005	K
Motor 23 too hot				

The buttons have the following functions:

Buttons		Functions
🔲		Displaying infotext for an alarm.
🔲		Process alarm.
🔲		Acknowledge alarm.

Changing the column sequence and sorting in the extended alarm view

Depending on the configuration, you can change the column sequence and sorting order on HMI devices with touch operation.

* Change column sequence

    – Touch the column header which you wish to exchange with a different column header

    – Keeping the touch screen pressed, move the column heading to the column heading you wish to exchange it with

* Change sorting order

    To change the sorting order of the alarms, touch the respective column header on the touch screen

Alarm class layout

The various alarm classes are identified in order to distinguish between them in the alarm view.

Symbol	Alarm class
!	Error
Without a symbol	Operation
Symbol depending on the configuration	User-defined alarm classes
S7	SIMATIC or SIMOTION diagnostic alarms

Symbol	Alarm class
$	System

The configuration engineer can change the symbols for the alarm classes. Please refer to your system documentation to check whether additional information on this subject is available there.

Alarm window

The alarm window is independent of the process screen. Depending on the configuration, the alarm window opens automatically as soon as a new alarm is pending for acknowledgment. The alarm window can be configured so that it only closes after all the alarms have been acknowledged.

The layout and the operation of the alarm window are the same as for the alarm view.

Please refer to your system documentation to check whether additional information on this subject is available there.

10.4 Display infotexts for an alarm

Displaying infotext

The configuration engineer can also provide infotext for alarms.

Procedure

Proceed as follows:

1. Touch the desired alarm in the alarm view or the alarm window.

   The alarm is selected.

2. Touch the ? button in the simple alarm view or 🖳 in the extended alarm view.

   If configured, the infotext assigned to this alarm is displayed.

3. Close the screen for displaying the infotext by means of the ✕ button.

See also

10.5 Acknowledge alarm

Requirements

The alarm to be acknowledged is displayed in the alarm window or the alarm view.

Procedure

Proceed as follows:

1. Touch the desired alarm in the alarm view or the alarm window.

   The alarm is selected.

2. Touch the ⏸ button in the simple alarm view or   ▼   in the extended alarm view.

Alternative operation

Depending on the configuration, you can also acknowledge an alarm with a function key.

Result

The alarm is acknowledged. If the alarm belongs to an alarm group, all the alarms of the associated group are acknowledged.

Please refer to your system documentation to check whether additional information on acknowledgment and available alarm groups is available there.

10.6　Edit alarm

Introduction

The configuration engineer can assign additional functions to each alarm. These functions are executed when the alarm is processed.

Note

When you edit an unacknowledged alarm, it is acknowledged automatically.

Requirements

The alarm to be edited is displayed in the alarm window or the alarm view.

Procedure

Proceed as follows:

1. Touch the desired alarm in the alarm view or the alarm window. The alarm is selected.

2. Touch the ↵ button in the simple alarm view or   ↻   in the extended alarm view.

Result

The system executes the additional functions of the alarm. Please refer to your system documentation to check whether additional information on this subject is available there.

Operating recipes

11

11.1 Overview

Introduction

Recipes are used when different variants of a product are manufactured with the same process. In this case, the product variants differ in terms of their type and quantity of the components, but not in terms of the manufacturing process sequence. The configuration engineer can store the combination of each individual product variant in a recipe.

Field of application

Recipes can be used everywhere the same product components are used in variable combinations to create different product variants.

Examples:

- Beverage industry
- Food processing industry
- Pharmaceutical industry
- Paint industry
- Building materials industry
- Steel industry

11.2 Structure of a recipe

Recipes

The recipe collection for the production of a product family can be compared to a file cabinet. A recipe which is used to manufacture a product corresponds to a drawer in a file cabinet.

Example:

In a plant for producing fruit juice, recipes are required for different flavors. There is a recipe, for example, for the flavors orange, grape, apple and cherry.
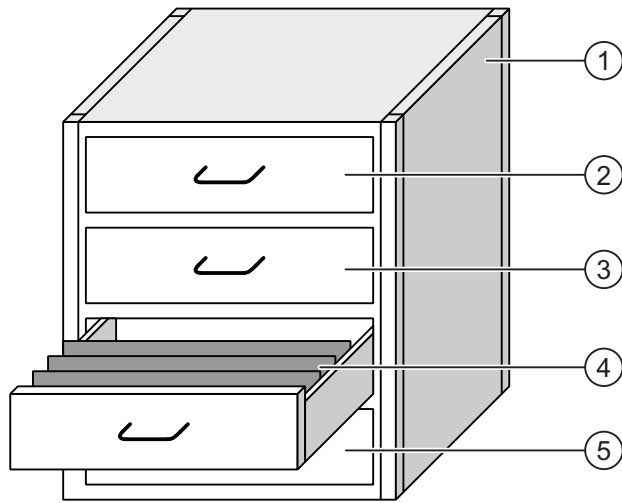
①	File cabinet	Recipe collection	Recipes for a fruit juice plant
②	Drawer	Recipe	Orange flavored drinks
③	Drawer	Recipe	Grape flavored drinks
④	Drawer	Recipe	Apple flavored drinks
⑤	Drawer	Recipe	Cherry flavored drinks

Recipe data records

The drawers of the file cabinet are filled with suspension folders. The suspension folders in the drawers represent records required for manufacturing various product variants.

Example:

Product variants of the flavor apple might be a soft drink, a juice or nectar, for example.
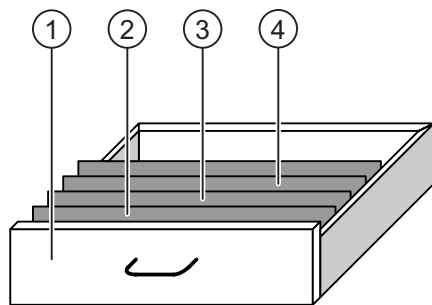
①	Drawer	Recipe	Product variants of apple flavored drinks
②	Suspension folder	Recipe data record	Apple drink
③	Suspension folder	Recipe data record	Apple nectar

④	Suspension folder	Recipe data record	Apple juice

Elements

In the figure showing the file cabinet, each suspension folder contains the same number of sheets. Each sheet in the suspension folder corresponds to an element of the recipe data record. All the records of a recipe contain the same elements. The records differ, however, in the value of the individual elements.

Example:

All drinks contain the same components: water, concentrate, sugar and flavoring. The records for soft drink, fruit juice or nectar differ, however, in the quantity of sugar used in production.

11.3 Recipes in the project

Overview

If recipes are used in a project, the following components interact:

- Recipe view / recipe screen

  On the HMI device, recipes are displayed and edited in the recipe view or in a recipe screen.

  - The recipe data records from the internal memory of the HMI device are displayed and edited in the recipe view.

  - The values of the recipe tags are displayed and edited in the recipe screen.

  Depending on the configuration, the values displayed in the recipe view are synchronized with the values of recipe tags.

- HMI device recipe memory

  Recipes are saved in the form of data records in the HMI device recipe memory.

  The recipe data can also be saved in recipe tags.

- Recipe tags

  The recipe tags contain recipe data. When you edit recipes in a recipe screen, the recipe values are stored in recipe tags. Depending on the configuration, the values of the recipe tags are exchanged with the PLC.

  The recipe tags can be synchronized with the recipe data records so that the same values are saved in both.

- Memory card

  The memory card is an external storage medium for recipe data records. The recipe data records are exported from the HMI device recipe memory and are saved on the memory card in a *.csv file. The records can be reimported from the memory card to the recipe memory.

Data flow

The following figure shows the data flow in a project with recipes.
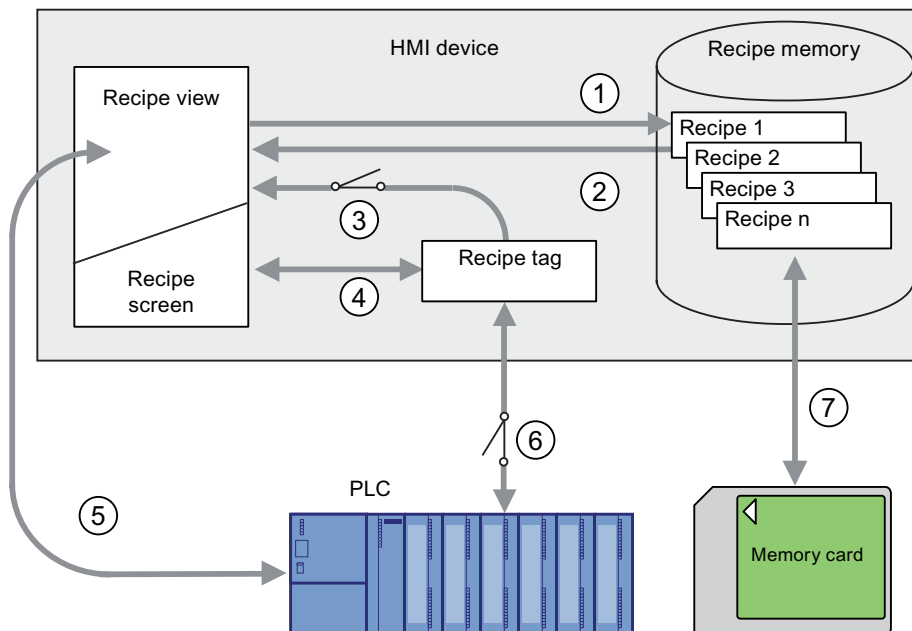
①   Editing, saving or deleting a recipe data record

②   Display recipe data record

③   Synchronize or do not synchronize recipe tags

④   Display and edit recipe tags in the recipe screen

⑤   Write records from the recipe view to the PLC or read records from the PLC and
display them in the recipe view

⑥   Recipe tags are sent to the PLC online or offline

⑦   Export or import recipe data record to memory card

11.4   Recipe displays

Displaying recipes

You can display and edit recipes on the HMI device with a recipe view or recipe screen.

Recipe view

A recipe view is a screen object used to manage recipe data records. The recipe view shows
recipe data records in tabular form.

Depending on the configuration, the recipe view is displayed as follows:

- As extended recipe view
- As simple recipe view

The configuration engineer also defines which operator controls are displayed in the recipe view.

Extended recipe view

The following figure shows an example of the extended recipe view.
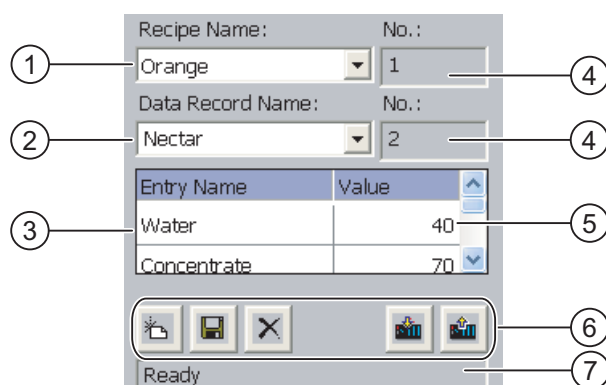
①	Selection box for the recipe
②	Selection box for the recipe data record
③	Element name The element name designates a specific element in the recipe data record
④	Display field This show the number of the selected recipe or the selected recipe data record
⑤	Value of the element
⑥	Buttons for editing a recipe data record
⑦	Status bar for display of the status messages

Simple recipe view

The simple recipe view consists of three areas:

- Recipe list
- Data record list
- Element list

In the simple recipe view, each area is shown separately on the HMI device. Depending on the configuration, the simple recipe view starts with the recipe list or data record list.

The following figure shows an example of the record list.
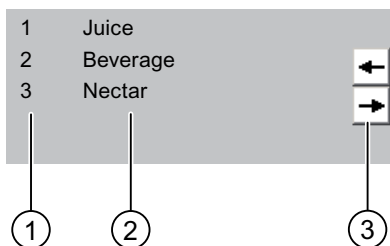
①	Number of the recipe data record
②	Recipe data records
③	Buttons for changing the displayed list and calling the menu

Display of values

NOTICE
Changing the recipe data record in the background
Applies to the processing of a recipe data record: If values of the corresponding recipe data record are changed by a PLC job, the recipe view is not updated automatically.
To update the recipe view, reselect the respective recipe data record.

Recipe screen

A recipe screen allows the correlation between the plant and the recipe data to be displayed in graphic form. The configuration engineer combines I/O fields and screen objects to form a custom input screen. The configuration engineer can distribute the I/O fields of a recipe over several recipe screens, thus allowing recipe elements to be arranged by subject. The recipe screen can be operated using buttons configured accordingly.

The following figure shows an example of the recipe screen.
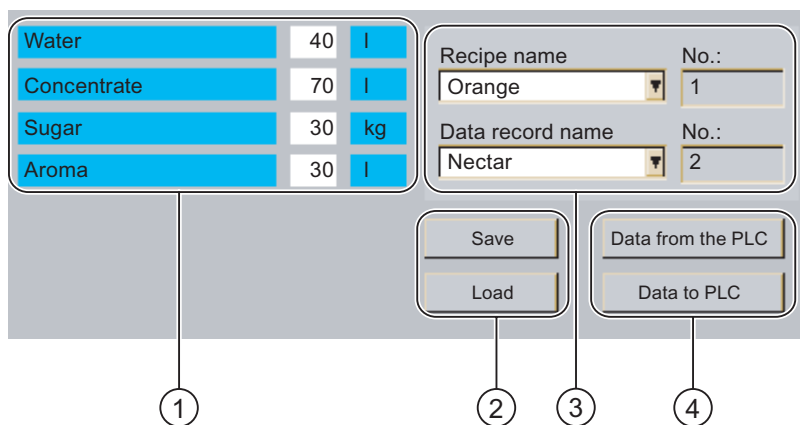
①	Element name and associated values
	The element name designates a specific element in the recipe data record
②	Buttons for editing a recipe data record
③	Modified recipe view
④	Buttons for transferring recipe data

The values displayed or entered in the recipe screen are saved in recipe tags. The recipe values are exchanged with the PLC immediately or later via these tags.

A configured recipe view can itself be a component of a recipe screen You must synchronize the tags in order to synchronize data between the tags of the recipe screen and the recipe data records displayed in the recipe view. Synchronization of tags is only possible in the extended recipe view.

Please refer to your system documentation to check whether additional information on this subject is available there.

11.5   Recipe values in the HMI device and the PLC

Introduction

You can change the values of a recipe on the HMI device and therefore influence the manufacturing process or a machine.

Depending on the configuration, the recipe values are displayed, edited and saved in different ways:

- If you are editing recipes with a recipe view in your project, the values are saved in recipe data records

- If you are editing recipes in a recipe screen in your project, the values are saved in recipe tags

Differences may occur between the display values in the recipe view and the values saved in the associated tags in an ongoing project when you edit recipes with a recipe view and in a recipe screen. To prevent this, the recipe data record values must be synchronized with the values of the recipe tags.

You have however the option to perform synchronization operations at any time. Synchronization only takes place if the configuration engineer has activated the respective settings for a recipe.

Note

Recipe tags can only be synchronized in the extended recipe view.

Synchronizing recipe tags

Synchronization of the recipe tags depends on the configuration:

- Automatic synchronization:

The values of the recipe view are synchronized with the associated recipe tags. In this case, changes to values in the recipe view have an immediate effect on the values of the associated recipe tags. The values are only synchronized, when an operating element that is outside the recipe view is operated.

- Synchronization by the user:

  The values of the recipe view and the associated recipe tags are not synchronized automatically. The configuration engineer has assigned the same function to the button or a different operating element in the recipe view. The recipe tags and the recipe view are only synchronized when you operate the buttons or the appropriate operating element.

Recipe tags online / offline

The configuration engineer can configure a recipe so that changes to the values of the recipe tags do not have an immediate effect on the current process.

Synchronization of the recipe values between the HMI device and the PLC depends on whether the configuration engineer has selected the settings "Tags online" or the setting "Tags offline" for a recipe.

- "Tags online":

  This setting has the following effect:
  – When you change recipe values in the recipe screen, these changes are applied immediately by the PLC and immediately influence the process
  – If recipe values are changed in the PLC, the changed values are displayed immediately in the recipe screen

- "Tags offline":

  With this setting, changed recipe values are not synchronized immediately between the HMI device and the PLC

  In this case, the configuration engineer must configure operating elements for transferring the values to the PLC or reading them from the PLC in a recipe screen. The recipe values are only synchronized between HMI device and PLC when you operate the appropriate operating element

11.6 Operating the recipe view

11.6.1 Overview

Operation

The recipe view can be operated as follows:

- Enter values for the recipe elements
- Create recipe data records

- Save recipe data records or save them under a new name
- Delete recipe data records
- Synchronize values of the recipe view with the associated recipe tags
- Transfer recipe data records from the PLC and to the PLC

Operator controls of the recipe view

The following table shows the operator controls of the recipe view.

Buttons	Functions
	Creates a new recipe data record. If a start value is configured, it is shown in the text box.
	Saves the displayed values of the recipe data record. The storage location is predefined by the project.
	The recipe data record is saved under a different name irrespective of the recipe view. A dialog box opens in which the name is entered.
	The displayed recipe data record is deleted.
	The values of the recipe view are synchronized with the associated recipe tags. The values changed during editing are written to the associated recipe tags. Subsequently all the values of the tags are read out and updated in the table.
	The recipe values from the PLC are displayed in the recipe view.
	The values of the set recipe data record displayed in the recipe view are transferred to the PLC.

Operating the recipe screen

You operate the recipes in a recipe screen with the operator controls provided by the configuration engineer.

Please refer to your system documentation to check whether additional information on this subject is available there.

11.6.2   Creating a recipe data record

Introduction

You create a new recipe data record by modifying an existing record. You then save the modified data record under a new name.

Requirements

A screen with a recipe view is displayed.

Procedure

Proceed as follows:

1. If the recipe view contains several recipes: Select the recipe for which you want to create a new recipe data record.

2. Touch .

   A new recipe data record with the next available number is created.

   If you change the new data record number to an existing data record number, the existing data record is overwritten.

3. Enter values for the elements of the data record.

   The elements of the recipe data record can be assigned default values depending on the configuration.

4. Touch .

5. Enter a name for the data record.

   The data record is saved under the new name.

   If the recipe data record already exists, a dialog is opened. In this dialog, specify whether the existing data record is to be overwritten.

Result

The new recipe data record is saved to the selected recipe.

See also

Recipes in the project (Page 279)

11.6.3   Editing a recipe data record

Introduction

Edit the values of the recipe data records and save them in a recipe view.

Synchronization with the PLC

If you want to display the current recipe values from the PLC in the recipe view, you first have to read the current values from the PLC with .

The values changed in the recipe view only become effective when the amended data record is transferred to the PLC by means of the button.

Requirements

A screen with a recipe view is displayed.

Procedure

Proceed as follows:

1. If the recipe view contains several recipes: Select the recipe which contains the desired recipe data record.

2. Select the recipe data record you want to change.

3. Change the data record as required.

4. Save your changes by means of the button.

   If you want to save the recipe data record under a different name, touch the key.

5. The recipe data record is saved.

Result

The edited recipe data record has now been saved in the selected recipe.

See also

Recipes in the project (Page 279)

11.6.4 Deleting a recipe data record

Introduction

You can delete all the data records of a recipe which are not required.

Requirements

A screen with a recipe view is displayed.

Procedure

Proceed as follows:

1. If the recipe view contains several recipes: Select the recipe which contains the desired recipe data record.

2. Select the recipe data record you want to delete.

3. Touch .

Result

The recipe data record is deleted.

See also

> Recipes in the project (Page 279)

11.6.5   Synchronizing tags

Introduction

> The values of the recipe elements can be saved to recipe tags, depending on the configuration.
>
> Differences may occur between the display values in the recipe view and the actual values of tags in an ongoing project. Synchronize the tags to equalize such differences.
>
> Synchronization always includes all the variables which belong to a recipe data record.

> | NOTICE |
> | --- |
> | **Changed tag name** |
> | Tags and the value of the recipe data record cannot be assigned to each other if the tag name of the tag to be synchronized has been changed. The tags in question are not synchronized. |

> **Note**
>
> Recipe tags can only be synchronized in the enhanced recipe view.

Requirement

> A screen with a recipe view is displayed.

Procedure

> Proceed as follows:
>
> 1. If the recipe view contains several recipes: Select the recipe which contains the desired recipe data record.
> 2. Select the recipe data record you want to synchronize.
> 3. Touch .

Result

> The elements of the recipe data record are synchronized with the recipe tags.
>
> If the values of the recipe view and the tag do not match, the more current value is accepted.

See also

        Recipes in the project (Page 279)

11.6.6   Reading a recipe data record from the PLC

Introduction

In the current project, the values which are also stored in the recipes in the HMI device can be changed directly in the plant. This is the case, for example, if a valve was opened further directly at the plant than is stored in the recipe. The values of the recipe data records saved in the HMI device possibly no longer match the values in the PLC.

To synchronize the recipe values, read the values from the PLC and display them in the recipe view.

Requirements

A screen with a recipe view is displayed.

Procedure

Proceed as follows:

1. If the recipe view contains several recipes: Select the recipe which contains the desired recipe data record.

2. Select the recipe data record to which you want to apply the values from the PLC.

3. Touch .

   The values are read from the PLC.

4. If you want to store the displayed values in the HMI device, touch the   button.

Result

The values were read from the PLC, displayed on the HMI device and saved to the selected recipe data record.

See also

        Recipes in the project (Page 279)

11.6.7   Transferring a recipe data record to the PLC

Introduction

In order for an edited recipe data record to take effect in the process, you must transfer the values to the PLC.

The display values in the recipe view are always transferred to the PLC.

Requirements

A screen with a recipe view is displayed.

Procedure

Proceed as follows:

1. If the recipe view contains several recipes: Select the recipe which contains the desired recipe data record.

2. Select the recipe data record whose values you want to transfer to the PLC.

3. Touch .

Result

The display values in the recipe view were transferred to the PLC and take effect in the process.

See also

Recipes in the project (Page 279)

11.7   Operating the simple recipe view

11.7.1   Overview

Introduction

The simple recipe view consists of three areas:

- Recipe list
- Data record list
- Element list

You can use the context menu to operate each of these display areas.

Operation

The simple recipe view can be operated as follows:

● Enter values for the recipe elements

● Create recipe data records

● Save recipe data records or save them under a new name

● Delete recipe data records

● Transfer recipe data records from the PLC and to the PLC

Operator controls of the simple recipe view

Toggle between the display areas and the context menus to operate the simple recipe views.

The following table shows the operation of the display area.

Operation	Functions
Touching an entry	The next lower display area opens.
←	The next higher display area opens.
→	The context menu of the display area opens.

The following table shows the operation of the context menu.

Operation	Functions
←	The menu is closed. The display area opens.
Touch the menu command	The menu command is executed.

Context menus of the simple recipe view

● Recipe list

Menu item	Functions
New	A new recipe data record is created for the selected recipe. If a start value is configured, it is shown in the text box.
Displaying infotext	The infotext configured for the simple recipe view is displayed.
Open	The record list of the selected recipe opens.

● Data record list

Menu item	Functions
New	A new recipe data record is created for the selected recipe. If a start value is configured, it is shown in the text box.
Delete	The selected record is deleted.
Save as	The selected record is saved under a different name irrespective of the simple recipe view. A dialog box opens in which the name is entered.
Rename	The selected data record is renamed. A dialog box opens in which the name is entered.

- Element list

Menu item	Functions
Save	The selected record is saved.
To PLC	The displayed values of the selected data record are transferred from the HMI device to the PLC.
From PLC	The recipe values from the PLC are displayed on the HMI device in the recipe view.
Save as	The selected data record is saved under a new name. A dialog box opens in which the name is entered.

Operating the menu

Touch the desired menu command. The command is executed.

Operating the recipe screen

You operate the recipes in a recipe screen with the operator controls provided by the configuration engineer.

Please refer to your system documentation to check whether additional information on this subject is available there.

11.7.2   Creating a recipe data record

Introduction

Create a new recipe data record in the recipe list or in the record list. Then enter the values for the new record in the element list and save the record.

Requirements

A screen with a simple recipe view is displayed.

Procedure

Proceed as follows:

1. If the recipe list contains several recipes: Select the recipe for which you want to create a new recipe data record.

2. Open the recipe list menu.

3. Select the menu command "New".

   Creates a new record

   The element list of the new record opens.

4. Enter values for the elements of the data record.

The tags of the record can be assigned default values depending on the configuration.

5. Open the menu of the element list and select the command "Save".

6. Enter a name for the new record.

7. Confirm your entries.

   If you change the new data record number to an existing data record number, the existing data record is overwritten.

Result

The new recipe data record is saved to the selected recipe.

See also

Recipes in the project (Page 279)

11.7.3   Editing a recipe data record

Introduction

Edit the values of the recipe data records in a simple recipe view.

Synchronization with the PLC

If you want to display the current recipe values from the PLC in the simple recipe view, you first have to read the current values from the PLC with the menu command "From PLC" in the element list.

The values changed in the recipe view only take effect in the PLC when you transfer the edited data record to the PLC with the menu command "To PLC".

Requirements

A screen with a simple recipe view is displayed.

Procedure

Proceed as follows:

1. If the recipe list contains several recipes: Select the recipe which contains the desired recipe data record.

2. Open the data record list.

3. Select the recipe data record you want to change.

4. Open the element list.

5. Change the values of the records as required.

6. Save your changes with the menu command "Save".

The recipe data record is saved.

Result

The edited recipe data record has now been saved in the selected recipe.

See also

Recipes in the project (Page 279)

11.7.4   Deleting a recipe data record

Introduction

You can delete all the data records which are not required.

Requirements

A screen with a simple recipe view is displayed.

Procedure

Proceed as follows:

1. If the recipe list contains several recipes: Select the recipe which contains the desired recipe data record.
2. Open the data record list.
3. Select the data record you want to delete.
4. Open the menu.
5. Select the menu command "Delete".

Result

The data record is deleted.

See also

Recipes in the project (Page 279)

11.7.5   Reading a recipe data record from the PLC

Introduction

The values of recipe elements are exchanged with the PLC via tags.

In the current project, the values which are also stored in the recipes in the HMI device can be changed directly in the plant. This is the case, for example, if a valve was opened further directly at the plant than is stored in the recipe. The values of the tags on the HMI device possibly no longer match the values in the PLC.

To synchronize the recipe values, read the values from the PLC and display them in the recipe view.

Requirements

A screen with a simple recipe view is displayed.

Procedure

Proceed as follows:

1. If the recipe list contains several recipes: Select the recipe which contains the desired recipe data record.

2. Select the element list of the recipe data record to which you want to apply the values from the PLC.

3. Open the menu.

4. Select the menu item "From PLC".

   The values are read from the PLC.

5. If you want to save the displayed values in the HMI device, select the menu item "Save".

Result

The values were read from the PLC, displayed on the HMI device and saved to the selected recipe data record.

See also

Recipes in the project (Page 279)

11.7.6   Transferring a recipe data record to the PLC

Introduction

In order for an edited recipe data record to take effect in the process, you must transfer the values to the PLC.

The display values in the recipe view are always transferred to the PLC.

Requirements

A screen with a simple recipe view is displayed.

Procedure

Proceed as follows:

1. If the recipe list contains several recipes: Select the recipe which contains the desired recipe data record.

2. Select the element list of the recipe data record whose values you want to transfer to the PLC.

3. Open the menu.

4. Select the menu item "To PLC".

Result

The values of the recipe data record were transferred to the PLC and take effect in the process.

See also

Recipes in the project (Page 279)

11.8   Exporting a recipe data record

Introduction

You can export one or more recipe data records to a CSV file, depending on the configuration. After export, the values in the recipe data record can be further processed in a spreadsheet program such as MS Excel. The degree to which you can influence the export depends on the configuration:

NOTICE
Export of recipe data to USB memory stick not possible
The USB interface is deactivated while the main battery is changed. Make sure that no recipe data is exported to a USB memory stick while the main battery is being changed.

Requirements

- A screen with a recipe view is displayed

- An operating element with the function "Export record" has been configured.

- The following tags are configured equally in the recipe view and for the "Export record" operating element.
    - Recipe number
    - Data record number

Procedure

Proceed as follows:

1. If the recipe view contains several recipes: Select the recipe which contains the desired recipe data record.

2. Select the recipe data record you want to export.

3. Operate the operator control which was configured for export, for example the "Export data record" button.

    The data record is exported as a CSV file to an external data medium.

    Please refer to your system documentation to check whether additional information on this subject is available there.

Result

The recipe data record is exported.

11.9 Importing a recipe data record

Introduction

You can import values from a CSV file to a recipe data record, depending on the configuration.

Requirements

- An operating element with the function "Import data record" has been configured, for example a button
- A screen with a recipe view is displayed

Procedure

Proceed as follows:

1. If the recipe view contains several recipes: Select the recipe which contains the recipe data record to be imported.

2. Operate the operating element with the function "Import data record".

    The record is imported from an external data medium as a CSV file and then displayed in the recipe view after import.

Result

The imported recipe data record is saved on the HMI device.

Deviating structure

If the structure of the CSV file differs from the structure of the recipe, deviations are handled as follows:

- Any additional values in the CSV file will be rejected

- The system applies the configured default value to the recipe data record if the CSV file contains an insufficient number of values

- If the CSV file contains values of the wrong data type, the configured default value is set in the recipe data record

  Example:

  The imported CSV file contains values that were entered as floating point numbers

  However, the corresponding tag expects an integer value. In this case, the system discards the imported value and uses the configured default

11.10 Examples

11.10.1 Entering a recipe data record

Introduction

You would like to enter production data on the HMI device without interrupting the process in the machine or plant. For this reason, the production data should not be transferred to the PLC.

Procedure

Proceed as follows:

1. Call the recipe view or a recipe screen.

2. Select the desired recipe data record.

3. Enter the values of the elements.

4. Save the recipe data record.

   The recipe data record is saved in the internal memory of the HMI device.

The following figure shows the data flow schematically.
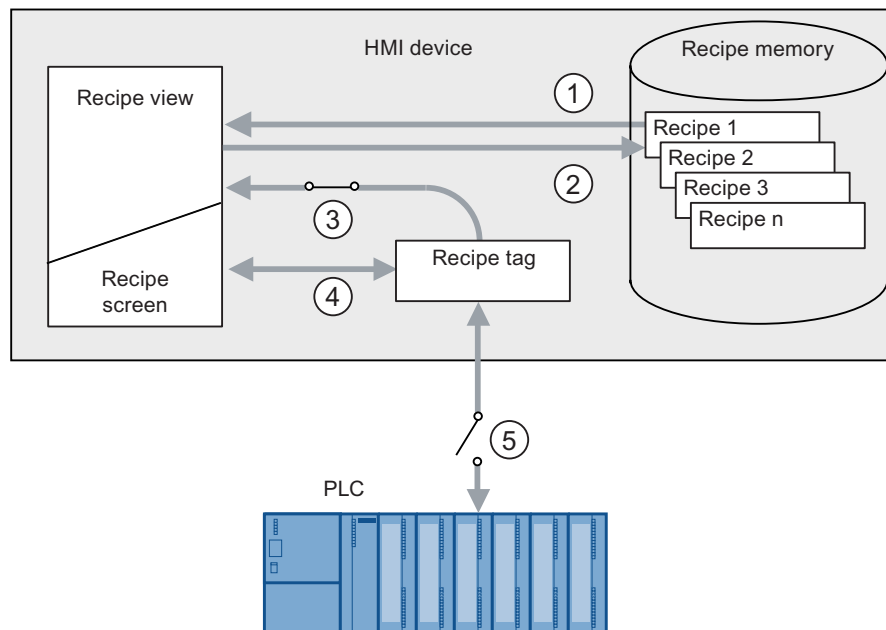
①   Display recipe data record

②   Save recipe data record

③   Tags are synchronized

④   Display and edit recipe tags in the recipe screen

⑤   Tags are offline

11.10.2   Manual production sequence

Introduction

You request the production data of different workpieces from the PLC and display this data on the screen of the HMI device for inspection. You want to correct the transferred production data in the recipe view or the recipe screen if necessary.

Procedure

A scanner connected to the PLC reads the barcode of a workpiece. The barcode names correspond to the names in the recipe data record. Based on the barcode name, the PLC can read the required recipe data record. The recipe data record is displayed for inspection on the HMI device. You can now edit and save the recipe data record. Then transfer the edited recipe data record to the PLC again.

The following figure shows the data flow schematically.
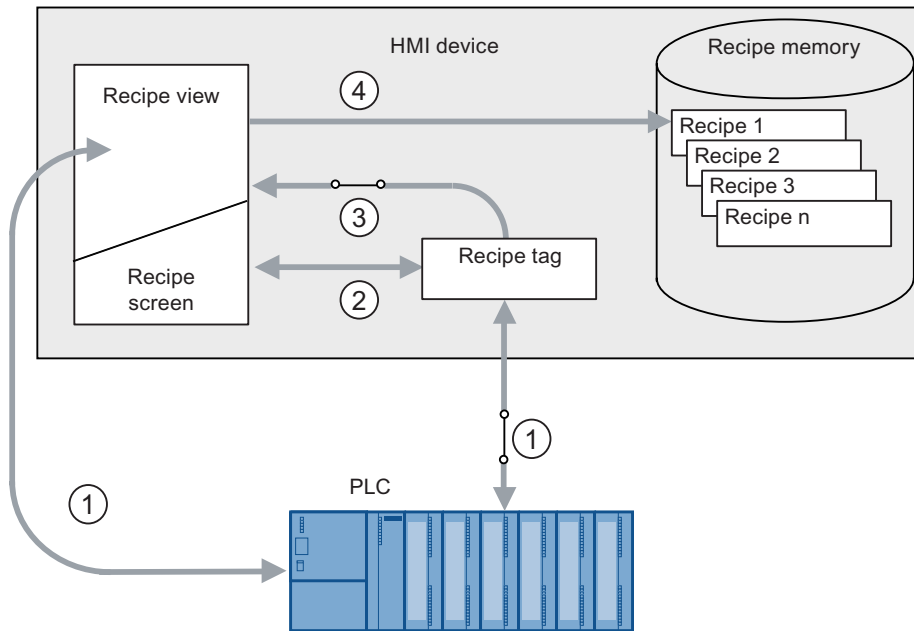
①   The recipe data record is read from the PLC and written to the PLC again following changes

②   Display and edit recipe tags in the recipe screen

③   Tags are synchronized

④   Recipe data records are saved in the recipe memory of the HMI device

Maintenance and care

<div style="text-align: right; font-size: 3em;">12</div>

12.1 Maintenance and care

Scope of maintenance

- Function tests

  Carry out the specified tests in the periods of time prescribed for each. Otherwise, the functionality of the HMI device is not guaranteed.

  To perform the function tests, the HMI device must be switched on but not integrated.

  – Press the emergency stop button at least once a year.

  – Press both enabling buttons every time you start a project.

- HMI device

  The HMI device is designed for maintenance-free operation. The touch screen and keyboard overlay should nevertheless be cleaned regularly.

- Maintenance cycle of battery

  We recommend that you replace the battery when it can only be charged to 50%. This is the case after approximately 500 complete charging cycles.

  A charging cycle is complete when the battery is fully charged.

  Example:

  The battery has a charging condition of 80%. It needs another 20% before it is fully charged. The battery is charged. This charging process counts as one fifth of a complete charging cycle.

- Transponder batteries

  Replace the transponder batteries at least every 5 years.

Cleaning the HMI device

⚠ CAUTION
Inadvertent operation
Always switch off the HMI device before cleaning it. This will ensure that you do not trigger unintended functions when you touch the keys.

CAUTION
Do not clean the HMI device with compressed air or steam jet blowers. Never use aggressive solvents or scouring powder.
Use a cleaning cloth dampened with a cleaning agent to clean the equipment. Only use water with a little liquid soap or a screen cleaning foam.

Procedure

Proceed as follows:

1. Switch off the HMI device.

2. Spray the cleaning solution onto a cleaning cloth.

   Do not spray directly onto the HMI device.

3. Clean the HMI device.

   When cleaning the display wipe from the screen edge inwards.

12.2 Spare parts and repairs

Repairs

In case of repair, the HMI device must be shipped to the Return Center in Fürth. Repairs may only be carried out at the Return Center in Fürth.

Depending on the work necessary to repair the device, the Center may decide to give you a credit note. In this case, it is your responsibility to order a new device.

The address is:

A&D Return Center

Siemensstr. 2

90766 Fürth, Germany

Service pack

A service pack can be ordered for servicing purposes.

The service pack includes:

- For the HMI device
  - Cover caps
  - Battery compartment cover
  - Bridging battery
- For the charging station
  - Covers for the battery compartment in the charging station.

– Lock

– Key set for lock

– Counterpart for power supply connector

The service pack can be ordered from your Siemens representative.

Replacement key set

You can order a replacement key set for the HMI device from your Siemens sales office.

Replacement batteries

Main batteries and bridge batteries can be ordered from your Siemens sales office.

Service & Support on the Internet

Service & Support provides additional comprehensive information on SIMATIC products through online services at "http://www.siemens.com/automation/support".

Information about on-site services, repairs, spare parts, and much more is available on our "Services" pages.

Technical specifications

13

13.1 Dimension drawings

13.1.1 Mobile Panel 277F IWLAN

Front view
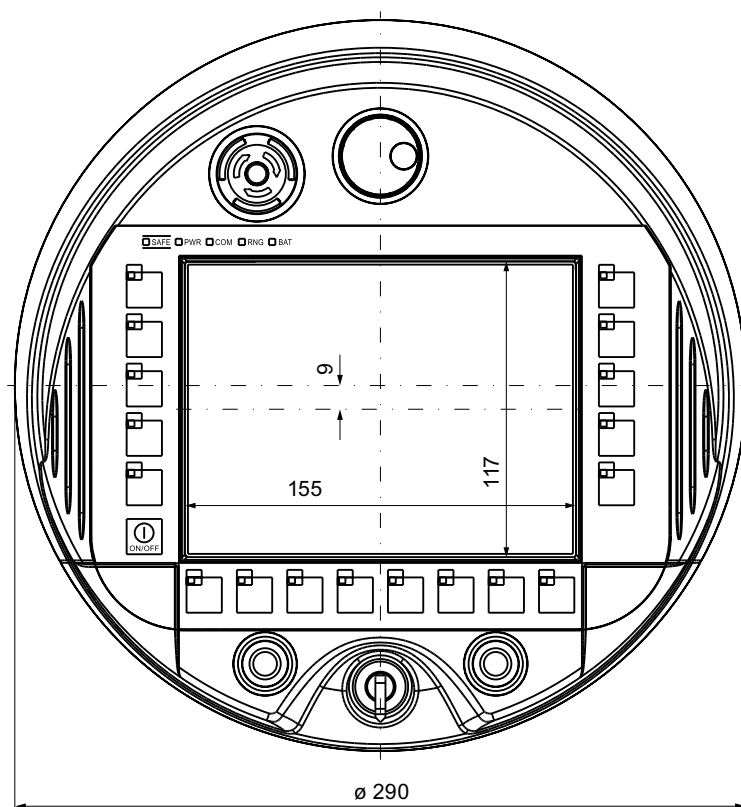
All dimensions in mm

Side view
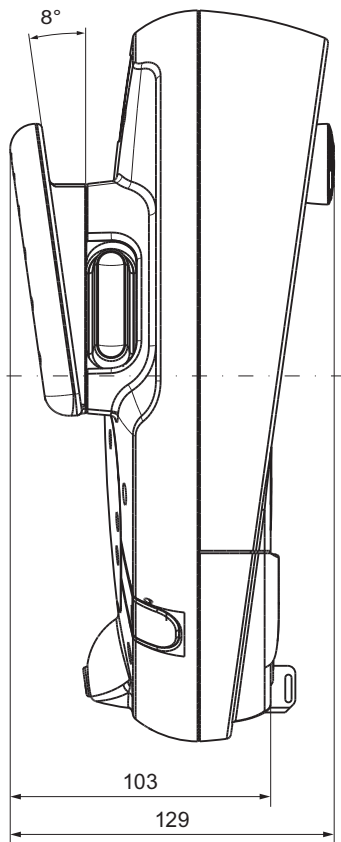
All specifications in mm

13.1.2   Charging station
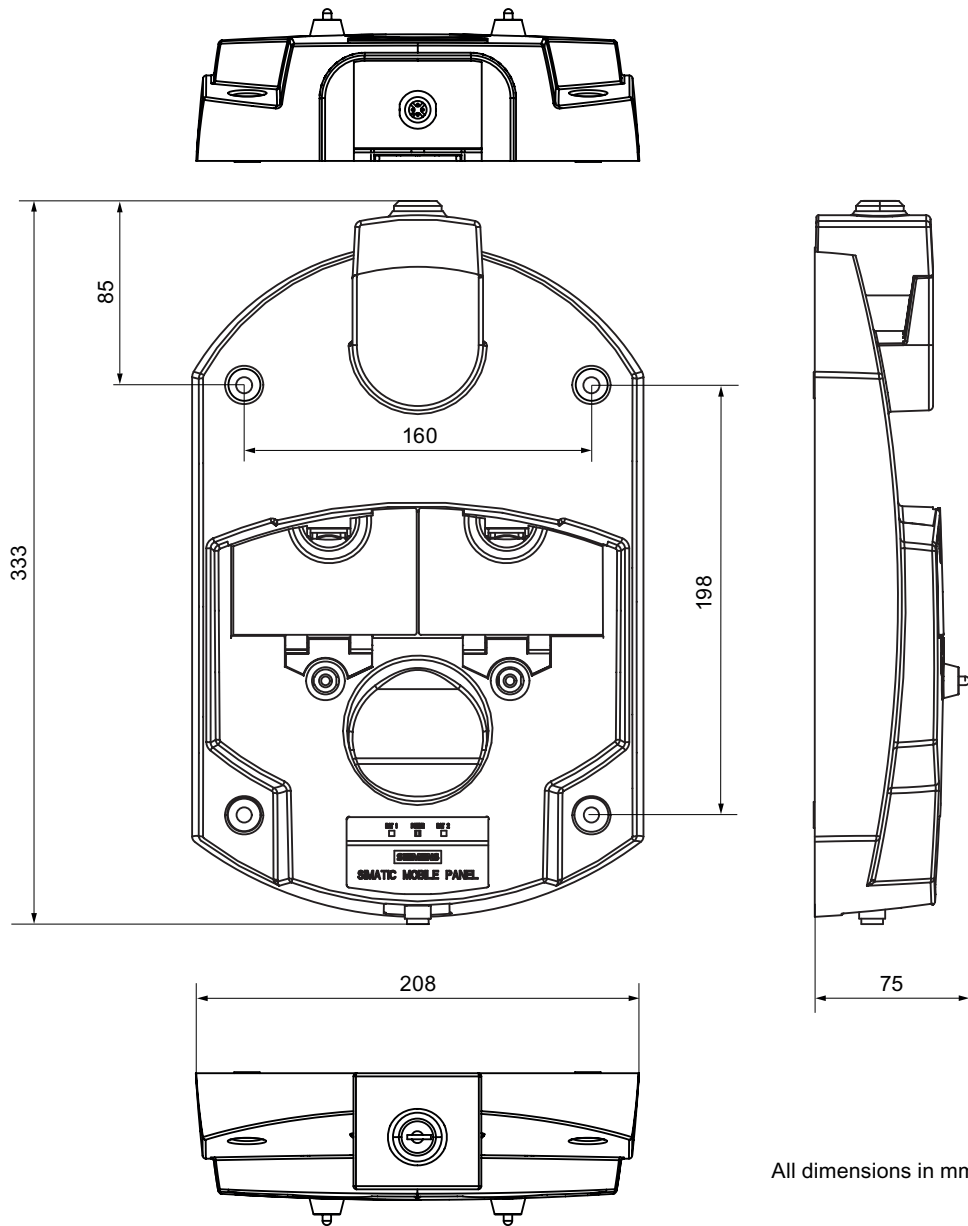
All dimensions in mm

13.1.3   Transponder
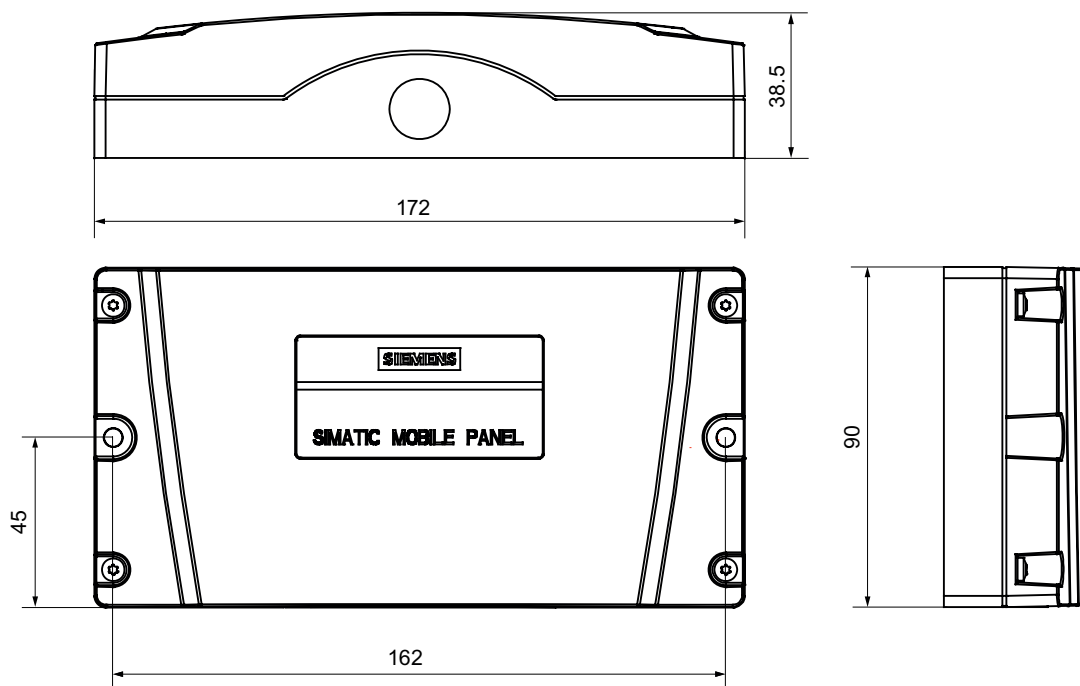
All dimensions in mm

13.2   Specifications

13.2.1   Mobile Panel 277F IWLAN

HMI device

Weight with battery and without packaging	Max. 2.2 kg

Display

Type	Color TFT LC display
Display area, active	151.66 mm x 113.74 mm (7.5")
Resolution	640 x 480 pixels

Colors, displayable	64k colors
Brightness control	Yes
Back-lighting Half Brightness Life Time, typical	CCFL 50,000 h
Pixel error class according to DIN EN ISO 13406-2	II

Input unit

Type	Touch screen, analog, resistive Membrane keyboard
Function keys	18, with LEDs
Enabling button	1
Emergency off button (optional)	1
ON/OFF button	1
Handwheel (optional)	1 50 pulses per rotation
Key-operated switch (optional)	1 3 switch settings
Illuminated pushbutton (optional)	2 LED separately controllable

Memory

Application memory	6 MB

Ports

1 x USB	• USB host; conforms to USB standard 1.1 (supporting low-speed and full-speed USB devices) • Maximum load 100 mA
1 x WLAN	For PROFINET WLAN
1 x RS 45	For PROFINET LAN

Supply voltage

Supply voltage	
About	• Battery • Charging station • Tabletop power supply unit

Additional specifications

Drop height with main battery	Max. 1.2 m
Buffer time of internal clock with bridging battery inserted	Approx. 4 days
Radio link to transponder • Frequency band • Transmission angle	 • 2400 - 2483 MHz • Approx. 83 °

Fail-safe mode

⚠ WARNING
The safety characteristics in the specifications apply for a proof-test interval of 10 years and a mean repair time of 8 hours.

In accordance with IEC 61508	
Hardware architecture	Redundant 1oo2d
Hardware error tolerance	1
Safe failure fraction	99,5 %
Diagnostic test interval	10 years
Request rate	High demand mode
High demand (PFH: probability of a dangerous failure per hour)	8,12E-11 1/h
Maximum achievable safety class (SIL)	3
Useful life	10 years
In accordance with DIN EN ISO 13849-1	
Mean time to failure (MTTF$_d$)	1679 years
Meantime to Restoration (MTTR)	8 hours
Diagnostic coverage (DC)	99 %
Performance level (PL)	e
Safety category	4
In accordance with EN 954-1	
Safety category	4

Other safety-related values	
Reaction time	??
Discrepancy time • Emergency stop • Enabling button position "Enable" • Enabling button position "Panic"	 • 500 ms • 2 sec • 1 sec

Quantity structure for the effective range concept

F-FBs required in safety program	
F_FB_MP	1x per Mobile Panel 277F IWLAN, maximum 126
F_FB_RNG_4	1x per effective range, for which up to 4 HMI devices have logging on authorization
F_FB_RNG_16	1x per effective range, for which up to 16 HMI devices have logging on authorization
DB_STATES	1

Configuring	
Maximum number of transponders used in the project for effective ranges	127
Maximum number of effective ranges in the project	127
Maximum number of transponders per effective range	127
Maximum number of HMI devices with logging on authorization per effective range	• When using F_FB_RNG_4: 4 HMI devices • When using F_FB_RNG_16: 16 HMI devices
Maximum configurable distance between transponder and HMI device	8 m

13.2.2 Batteries

Main battery	
Type	Lithium ion accumulator
Operation time in normal mode	Approx. 4 h
Operation time in stand-by mode	Approx. 15 days
Charging cycles	500
Charging time	Approx. 4 h [1]

Bridging battery	
Type	Lithium ion accumulator
Bridging time	5 min
Charging cycles	500

[1] The effective charging time depends on the ambient temperature.
     The higher the ambient temperature, the longer the charging time.

13.2.3   Charging station

Weight

Weight without packing	Approx. 1.1 kg

Supply voltage

Nominal voltage	+24 VDC
Range, permissible	19.2 V to 28.8 V (–20%, +20%)
Transients, maximum permissible	35 V (500 ms)
Time between two transients, minimum	50 sec
Current consumption with Mobile Panel • Typical • Constant current, maximum • Power on current surge I^2t	 • Approx. 1.5 A • Approx. 1.8 A • Approx. 1.7 A^2s
Current consumption with Mobile Panel and batteries in charging compartment • Typical • Constant current, maximum • Power on current surge I^2t	 • Approx. 2.8 A • Approx. 3.4 A • Approx. 1.7 A^2s
Fuse, internal	Electronic

13.2.4   Transponder

Weight without batteries	0,3 kg
Power supply	3 AA mignon batteries, 1.5 V
Operating life of batteries in normal operation	5 years
Radio link to HMI device • Frequency band • Transmission angle	 • 2400 - 2483 MHz • Approx. 93°
Type	Passive

13.2.5 Description of interfaces on the HMI device

USB

The figure below shows the pin assignment of the USB interface.
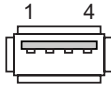
Pin	Assignment
1	+5 VDC, out (max. 100 mA)
2	USB-DN
3	USB-DP
4	GND

RJ45

The figure below shows the pin assignment of the RJ45 interface.
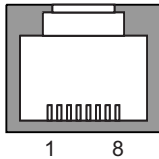
Pin	Assignment
1	TD+
2	TD–
3	RD+
4	n. c.
5	n. c.
6	RD–
7	ICD+
8	ICD–

WLAN

WLAN in accordance with IEEE 802.11 a

See also

Interfaces of the HMI device (Page 76)

13.3 Radiation characteristic

13.3.1 Radiation characteristic of the transponder

Antenna type	Dual port patch antenna
Polarization	Vertical and horizontal
Frequency band	2400 - 2483 MHz
Antenna gain	Max. in main count direction • Port 1: 2,6 dBic • Port 2: 2.7 dBic
Impedance	50 Ω
Full widths at half maximum, horizontal at 2.45 GHz	93°
Full widths at half maximum, vertical at 2.45 GHz	90°

Ranges depending on angular displacement to main count direction

The following figure shows the coordinate system applied to the transponder.
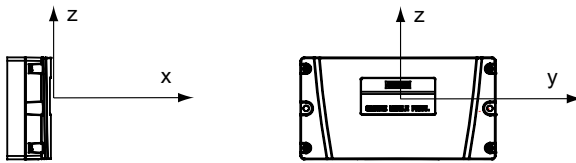
The figure below shows the transponder range depending on the angular displacement to the main count direction in the y direction:
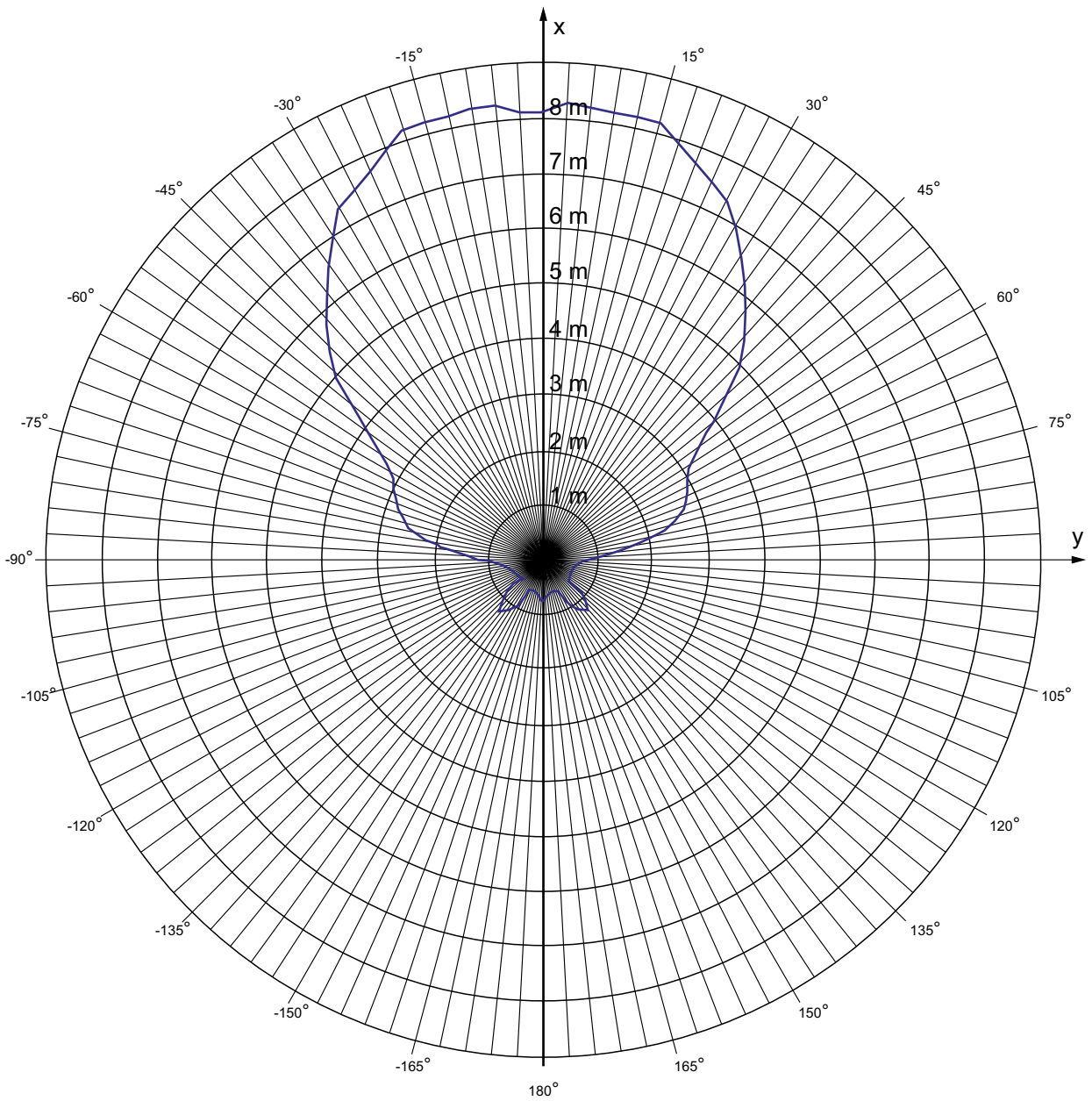
The following figure shows the transponder range depending on the angular displacement to the main count direction in the z direction:
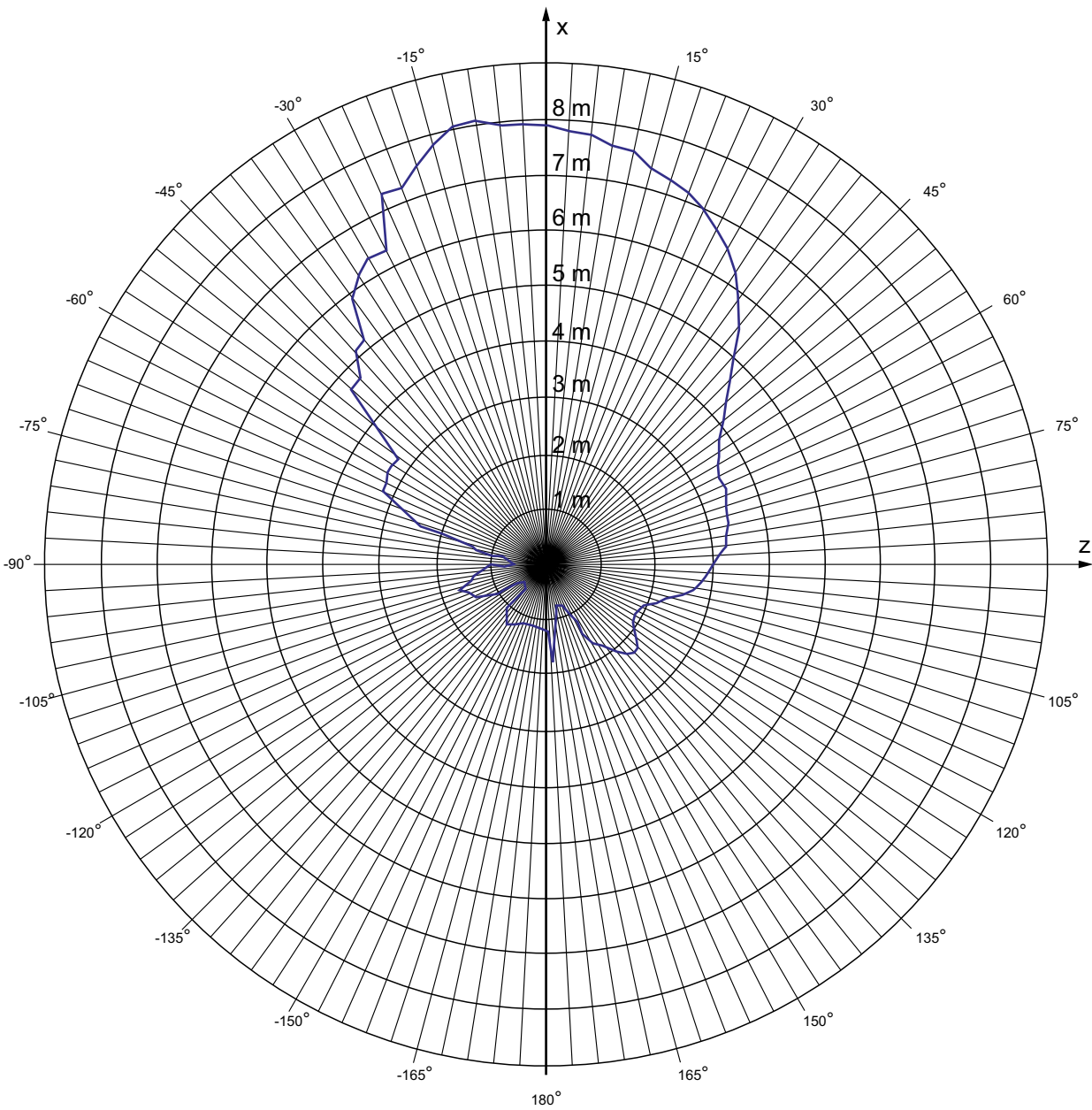
13.3.2   Radiation characteristic of HMI device

Antenna type	Dual port patch antenna
Polarization	Vertical and horizontal
Frequency band	2400 - 2483 MHz

Antenna gain	Max. in main count direction
	• Port 1: 2,6 dBic
	• Port 2: 2.7 dBic
Impedance	50 Ω
Full widths at half maximum, horizontal at 2.45 GHz	83°
Full widths at half maximum, vertical at 2.45 GHz	80°

Ranges depending on angular displacement to main count direction

The figure below shows the coordinate system applied to the HMI device.
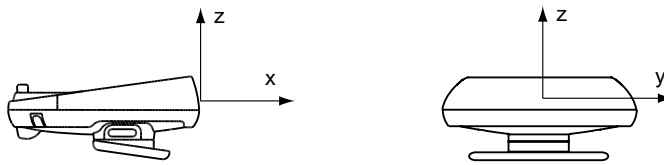
The figure below shows the HMI device range depending on the angular displacement to the main count direction in the y direction:
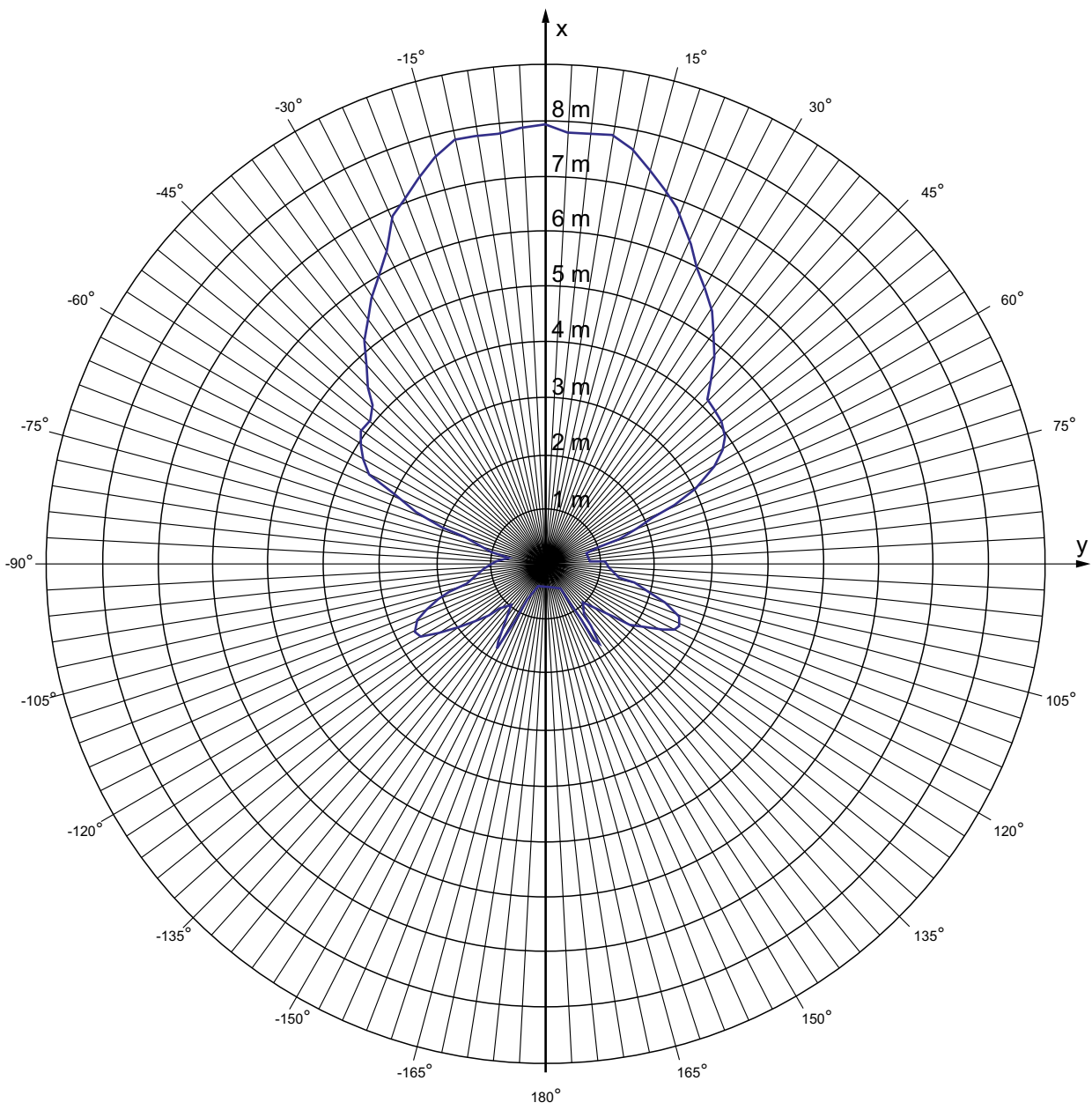
The figure below shows the HMI device range depending on the angular displacement to the main count direction in the z direction:
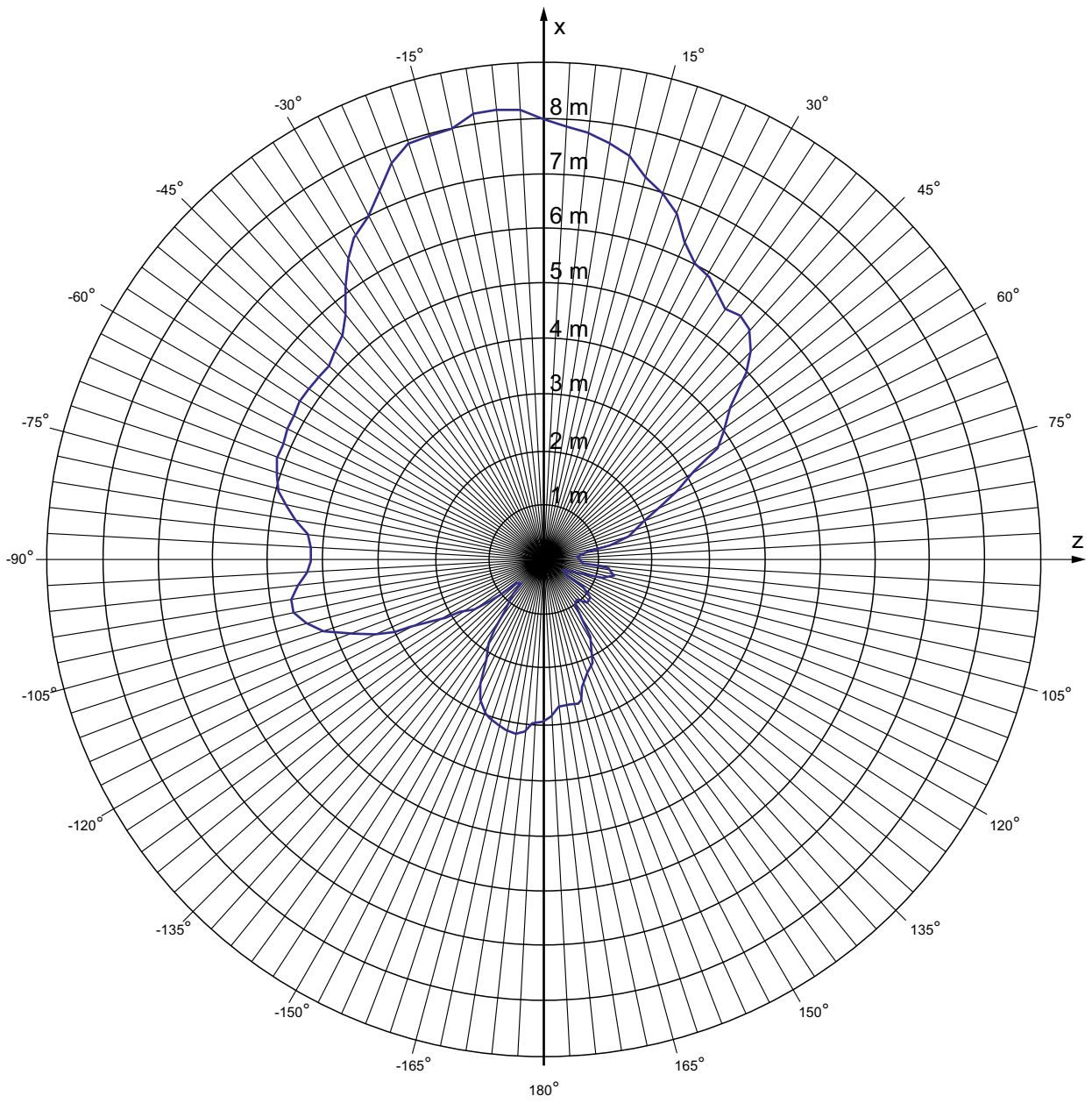
Appendix B

B.1 ESD guideline

Definition of ESD

All electronic modules are equipped with large-scale integrated ICs or components. Due to their design, these electronic elements are highly sensitive to overvoltage, and thus to any electrostatic discharge. These electronic components are therefore specially identified as ESDs.

Abbreviations

The following abbreviation is commonly used for electrostatic sensitive devices:

- EGB – Elektrostatisch Gefährdete Bauteile/Baugruppen (Germany)
- ESD – Electrostatic Sensitive Device (internationally recognized term)

Labeling

ESDs are labeled with the following symbol:

Electrostatic charging

CAUTION
Electrostatic charging
ESDs may be destroyed by voltages far below the level perceived by human beings. Voltages of this kind develop when a component or an assembly is touched by a person who is not grounded against static electricity. Usually, it is unlikely that damage to an ESD as a result of overvoltage is detected immediately but may become apparent only after a longer period of operation.
Prevent electrostatic charging of your body before you touch the ESD!

Anyone who is not connected to the electrical potential of their surroundings is subjected to electrostatic charging.

The following figure indicates the maximum electrostatic charge anyone is subjected to when coming into contact with the materials shown. These values correspond with specifications to IEC 801-2.
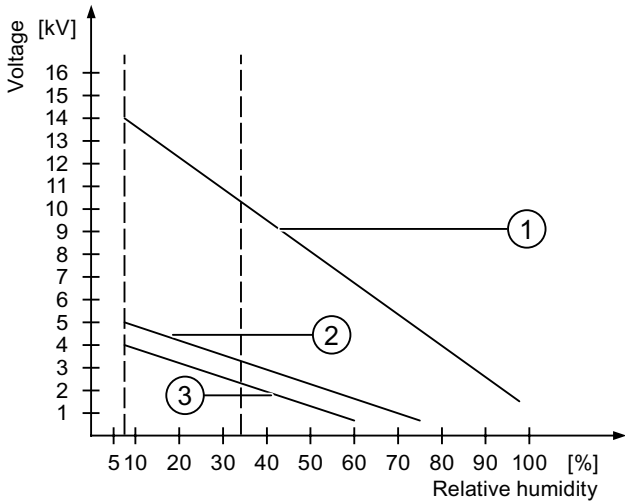
①   Synthetic materials

②   Wool

③   Antistatic materials such as wood or concrete

Protective measures against electrostatic discharge

CAUTION
Observe grounding measures
When working with electrostatic sensitive devices, make sure that the person, the workplace and the packaging are properly grounded. This helps to avoid electrostatic charging.

As a rule, only touch the ESD if this is unavoidable, for example for maintenance. When you touch modules, make sure that you do not touch the pins on the modules or the PCB tracks. In this way, the discharged energy cannot reach and damage the sensitive devices.

Discharge electrostatic electricity from your body if you are performing measurements on an ESD. Do so by touching grounded metallic parts.

Always use grounded measuring instruments.

B.2   System alarms

Abbreviations $\quad$ C

C.1 Abbreviations

ANSI	American National Standards Institution
CPU	Central Processing Unit
CSV	Comma Separated Values
CTS	Clear To Send
DC	Direct Current
DCD	Data Carrier Detect
DHCP	Dynamic Host Configuration Protocol
DIL	Dual-in-Line (electronic chip housing design)
DNS	Domain Name System
DP	Distributed I/O
DSR	Data Set Ready
DTR	Data Terminal Ready
IO	Input and Output
EAP	Extensible Authentication Protocol
ESD	Components and modules endangered by electrostatic discharge
EMC	Electromagnetic Compatibility
EN	European standard
ES	Engineering System
ESD	Components and modules endangered by electrostatic discharge
GND	Ground
HF	High Frequency
HMI	Human Machine Interface
IEC	International Electronic Commission
IEEE	Institute of Electrical and Electronics Engineers
IF	Interface
IP	Internet Protocol
IWLAN	Industrial Wireless Local Area Network
LAN	Local Area Network
LED	Light Emitting Diode
MAC	Media Access Control
MOS	Metal Oxide Semiconductor

MPI	Multipoint Interface (SIMATIC S7)
MS	Microsoft
MTBF	Mean Time Between Failures
n. c.	Not connected
OP	Operator Panel
PC	Personal Computer
PG	Programming device
PPI	Point-to-Point Interface (SIMATIC S7)
RAM	Random Access Memory
PELV	Protective Extra Low Voltage
RJ45	Registered Jack Type 45
RTS	Request to send
RxD	Receive Data
SAR	Specific absorption rate
SD Card	Security Digital Card
SELV	Safety Extra Low Voltage
SP	Service Pack
PLC	Programmable Logic Controller
SSID	Service set identifier
STN	Super Twisted Nematic
Sub-D	Subminiature D (plug)
TAB	Tabulator
TCP/IP	Transmission Control Protocol/Internet Protocol
TFT	Thin Film Transistor
TKIP	Temporal Key Integrity Protocol
TLS	Transport Layer Security
TxD	Transmit Data
UL	Underwriter's Laboratory
USB	Universal Serial Bus
WLAN	Wireless Local Area Network
WEP	Wired Equivalent Privacy
WINS	Windows Internet Naming Service
WPA	Wi-Fi Protected Access

Glossary

"Transfer" mode

An operating mode of the HMI device in which an executable project is transferred from the configuring PC to an HMI device.

Access point

The access point is a WLAN participant that also performs administrative functions on the network.

Acknowledge

Acknowledgment of an alarm confirms that it has been noted.

Ad hoc mode

WLAN network without access point

Alarm logging

Output of user-specific alarms to a printer, in parallel to their output to the HMI device screen.

Alarm, acknowledging

Acknowledgment of an alarm confirms that it has been noted.

Alarm, activated

Moment at which an alarm is triggered by the PLC or HMI device.

Alarm, deactivated

Moment at which the initiation of an alarm is reset by the PLC.

Alarm, user-specific

A user-specific alarm designates a certain operating status of the plant connected to the HMI device via the PLC.

Automation system

Controller of the SIMATIC S7 series such as a SIMATIC S7-300

Bootloader

Used to start the operating system. Automatically started when the HMI device is switched on. After the operating system has been loaded, the Loader opens.

Configuration software

Software used to generate projects used for the purpose of process visualization. An example of configuring software is WinCC flexible.

Configuring PC

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

CRC

Cyclic redundancy check

Test values contained in a safety message frame can be backed up as follows:

- The validity of the process values contained in the safety message frame
- The accuracy of the assigned address relationships
- The safety-related parameters

Display duration

Defines whether a system alarm is displayed on the HMI device and the duration of the display.

Effective range

Certain safety-related operator inputs are only possible in a limited area upstream of the machine or system. This is known as the effective range. To make these inputs, the operator must log onto this effective range.

EMC

Electromagnetic compatibility is the ability of electrical equipment to function properly in its electromagnetic environment without influencing this environment.

Event

Functions are triggered by defined incoming events. Events can be configured. Events which can be assigned to a button include "Press" and "Release", for example.

Fail-safe

Ability of a technical system to remain in a safe state or switch to another safe state immediately after certain failures occur.

Fail-safe mode

See Safety mode.

Fail-safe system, F system

Fail-safe systems are used to control processes in which immediate shutdown results in a safe system state. This means that an immediate shutdown does not result in danger to people or the environment. F systems are used in systems requiring higher levels of safety.

Field array

Area reserved in configured screens for the input and output of values.

Flash memory

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

Function keys

Key on the HMI device which supports user-specific functions. A function is assigned to the key in the configuration. The assignment of the keys may be specific to an active screen or not.

Half Brightness Life Time

Time period after which the brightness reaches 50% of the original value. The specified value is dependent on the operating temperature.

Hardcopy

Output of the screen content to a printer.

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 operating elements of the HMI device allow the operator to interact with the processes of the machine or plant.

HMI device image

A file that can be transferred from the configuring PC to the HMI device. The HMI device image contains the operating system and elements of the runtime software required to run a project.

I/O field

An I/O field enables the input or output of values on the HMI device which are transferred to the PLC.

Infotext

An infotext is a configured information on objects within a project. Infotext for an alarm, for example, may contain information on the cause of the fault and troubleshooting routines.

Infrastructure mode

WLAN network with access point

Object

An object is a component of a project. Example: screen or alarm. Objects are used to view or enter texts and values on the HMI device.

Operating element

Component of a project used to enter values and trigger functions. A button, for example, is an operating element.

Plant

General term referring to machines, processing centers, systems, plants and processes which are operated and monitored on an HMI device.

PLC

A PLC is a general term for devices and systems with which the HMI device communicates, for example SIMATIC S7.

PLC job

A PLC job triggers a function for the PLC at the HMI device.

Process visualization

Visualization of technical processes by means of text and graphic elements. Configured plant screens allow operator intervention in active plant processes by means of the input and output data.

PROFINET

Within the framework of Totally Integrated Automation (TIA), PROFINET represents an enhancement of the following bus systems:

- PROFIBUS DP as well-established fieldbus

- Industrial Ethernet as the communications bus for the cell level

The experience gained from both systems has been and continues to be integrated in PROFINET. PROFINET as an Ethernet-based automation standard from PROFIBUS International (PROFIBUS Nutzerorganisation e.V.) defines a vendor-independent communications and engineering model.

PROFINET IO controller

Device used to address the connected IO devices. That is: The IO controller exchanges input and output signals with assigned field devices. The IO controller is often the controller on which the automation program runs.

PROFINET IO device

A decentralized field device that is assigned to one of the IO controllers (e.g. remote IO, valve terminals, frequency converters, switches)

PROFINET IO

As part of PROFINET, PROFINET IO is a communication concept that is used to implement modular, distributed applications.

PROFINET IO allows you to create automation solutions of the type with which you are familiar from PROFIBUS.

PROFINET IO is implemented by the PROFINET standard for automation devices on the one hand, and on the other hand by the STEP 7 engineering tool.

This means that you have the same application view in STEP 7 regardless of whether you configure PROFINET devices or PROFIBUS devices. Programming your user program is essentially the same for PROFINET IO and PROFIBUS DP if you use the expanded blocks and system status lists for PROFINET IO.

PROFIsafe

Fail-safe bus profile of PROFINET for communication between the safety program and the F I/O in an F system.

PROFIsafe address

Every F I/O has a PROFIsafe address. The F I/O uses this address to receive safety message frames from the F CPU or send safety message frames to the F CPU.

Project

Result of a configuration using a configuration 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 a project on the configuring PC and that on an HMI device. A project may be available in more languages on the configuring PC than can be managed on the HMI device. The project on the configuring PC can also be set up for different HMI devices. Only the runtime project that has been generated for the respective HMI device can be transferred to it.

Project file

File generated from the runtime project file for use on the HMI device. The project file is normally not transferred and remains on the configuring PC.

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

Project file, compressed

Compressed format of the project file. The compressed project file can be transferred together with the runtime project file to the respective HMI device. For this purpose, backtransfer must be enabled in the project on the configuring PC. The compressed project file is normally stored on an external memory card.

The file extension of a compressed file is *.pdz.

Proof-test interval

The proof-test interval is the time period after which a component must be put into fail-safe state. That is, it is replaced by an unused component or it is proven to be completely error-free.

Recipe

Combination of tags forming a fixed data structure. The data structure configured can be assigned data on the HMI device and is then referred to as a record. The use of recipes ensures that all the assigned data is transferred synchronously to the PLC during the transfer of a record.

Runtime project file

File generated from the project file for a specific HMI device. The runtime project file is transferred to the corresponding HMI device and used to operate and monitor plants.

The extension of a compressed file is *.pdz.

Runtime software

The runtime software is a process visualization software used to test a project on a configuring PC.

Safe state

State of a unit in which safety is assured. In other words, the risk is acceptably low because it has been established that safety-related malfunctions do not occur or because of the safety measures taken to prevent possible safety-related malfunctions.

The basic principle of the safety concept in a fail-safe system is the existence of a safe state for all process variables.

Safety function

Safety function is a mechanism integrated in fail-safe I/Os and CPUs, enabling them to be used in fail-safe systems. In accordance with IEC 61508: A safety function is implemented by a safety system to ensure that the system is kept in a safe state or brought into a safe state in the event of a particular fault. (user safety function)

Safety integrity level

Safety integrity level (SIL) in accordance with IEC 61508 and prEN 50129. The higher the safety integrity level, the more comprehensive are the measures to avoid systematic errors and control systematic errors and random hardware failures.

Safety mode

Operating mode of the HMI device in which safety-related communication can be performed via safety message frames.

Safety-related communication

Communication used to exchange fail-safe data.

Screen

Form of the visualization of all logically related process data for a plant. The visualization of the process data can be supported by graphic objects.

Screen object

Configured object used to display or operate the plant, for example a rectangle, I/O field or alarm view.

STEP 7

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

Symbolic I/O field

A symbolic I/O field is a field for the input and output of the value. Contains a list of default entries from which one can be selected.

System alarm

A system alarm is assigned to the "System" alarm class. A system alarm refers to internal states on the HMI device and the PLC.

Tab sequence

During configuration, this defines the sequence in which objects are activated on pressing the <TAB> key.

Tag

Defined memory location to which values can be written to and read from. This can be done from the PLC or the HMI device. Based on whether the tag is interconnected with the PLC or not, we distinguish between "external" tags (process tags) and "internal" tags.

Transfer

Transfer of a runtime project from the configuring PC to the HMI device.

Transponder

A transponder is a – usually wireless – communications, display or control device that receives incoming signals and automatically responds to them. The term transponder is derived from transmitter and responder. Transponders can be passive or active.

Zone

A zone is a defined area in the system. The HMI device recognizes the zone it is in. When entering and leaving the zone, the HMI device can display a specific system image. This allows zone-specific operator inputs to be disabled or enabled.

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