SIEMENS

SIMATIC HMI

HMI device
Mobile Panel 277F IWLAN

Operating Instructions

Order No.: 6AV6691-1DQ01-2AA0

12/2007
A5E01003940-01

Safety Guidelines

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

⚠DANGER

indicates that death or severe personal injury **will** result if proper precautions are not taken.

⚠WARNING

indicates that death or severe personal injury **may** result if proper precautions are not taken.

⚠CAUTION

with a safety alert symbol, indicates that minor personal injury can result if proper precautions are not taken.

CAUTION

without a safety alert symbol, indicates that property damage can result if proper precautions are not taken.

NOTICE

indicates that an unintended result or situation can occur if the corresponding information is not taken into account.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

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

Prescribed Usage

Note the following:

⚠WARNING

This device may only be used for the applications described in the catalog or the technical description and only in connection with devices or components from other manufacturers which have been approved or recommended by Siemens. Correct, reliable operation of the product requires proper transport, storage, positioning and assembly as well as careful operation and maintenance.

Trademarks

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Disclaimer of Liability

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

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Ordernumber: A5E01003940-01
℗ 01/2008

Preface

Purpose of the operating instructions

These operating instructions provide information based on the requirements defined by DIN EN 62079 for mechanical engineering documentation. This information relates to the place of use, transport, storage, mounting, use and maintenance.

These operating instructions are intended for the following user groups:

- Operators

  The operator operates and monitors the system during the process control phase. The following chapters are relevant to the operator:

  – Operator controls and displays

  – Fail-safe operation

  – Operating a project

  – Operating recipes

  – Operating alarms

- Commissioning engineers

  The commissioning engineer integrates the HMI device into the system and ensures the operating capability of the HMI device for the process control phase.

  All the operating instructions are relevant for the commissioning engineer.

  Depending on the use of the HMI device, certain chapters may not be of relevance to the commissioning engineer, for example the chapter "Maintenance and servicing".

- Service technicians

  Service technicians rectify faults that occur during the process control phase.

  The entire set of operating instructions is relevant to service technicians in principle.

  Depending on the use of the HMI device, however, certain chapters may not be relevant to them, for example the chapter on "Maintenance and care".

- Maintenance technicians

  Maintenance technicians carry out regular maintenance work during the process control phase. The chapter on "Maintenance and care" is relevant to maintenance technicians.

The chapter "Safety instructions, standards and information" should be particularly heeded by all person groups.

The help integrated in WinCC flexible, the WinCC flexible Information System, contains detailed information. The information system contains instructions, examples and reference information in electronic form.

Basic knowledge required

General knowledge of automation technology and process communication is needed to understand the operating instructions.

It is also assumed that those using the manual have experience in using personal computers and knowledge of Microsoft operating systems.

Scope of the operating instructions

These operating instructions apply to the Mobile Panel 277F IWLAN HMI device in combination with the WinCC flexible software package.

For fail-safe operation, the information in the function manual "Fail-safe operation of the Mobile Panel 277F IWLAN" applies.

Position in the information landscape

These operating instructions form part of the SIMATIC HMI documentation. The following information provides you with an overview of the SIMATIC HMI information landscape.

User manuals

- WinCC flexible Micro

  Describes basic principles of configuration using the WinCC flexible Micro Engineering System.

- WinCC flexible Compact/ Standard/ Advanced

  Describes basic principles of configuration using the WinCC flexible Compact Engineering System/WinCC flexible Standard/WinCC flexible Advanced.

- WinCC flexible Runtime

  Describes how to commission and operate your runtime project on a PC.

- WinCC flexible Migration

  – Describes how to convert an existing ProTool project or WinCC project to WinCC flexible.

- Communication

  – Communication Part 1 describes the connection of the HMI device to SIMATIC PLCs.

  – Communication Part 2 describes the connection of the HMI device to third-party PLCs.

Getting started

- WinCC flexible for first time users

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

- WinCC flexible for power users

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

- WinCC flexible options

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

- Mobile Panel 277 IWLAN

  Introduces project design for WLAN communication step by step using a sample structure.

Operating instructions

- Operating instructions for SIMATIC HMI devices
  - OP 73, OP 77A, OP 77B
  - TP 170micro, TP 170A, TP 170B, OP 170B
  - OP 73micro, TP 177micro
  - TP 177A, TP 177B, OP 177B
  - TP 270, OP 270
  - TP 277, OP 277
  - MP 270B
  - MP 277
  - MP 370
  - MP 377
- Operating instructions for mobile SIMATIC HMI devices
  - Mobile Panel 177
  - Mobile Panel 277
  - Mobile Panel 277 IWLAN
  - Mobile Panel 277F IWLAN
- Operating instructions (compact) for SIMATIC HMI devices
  - OP 77B
  - Mobile Panel 177
  - Mobile Panel 277
- Operating instructions for SIMATIC accessories
  - Industrial USB Hub 4
- Function manual
  - Fail-safe operation of the Mobile Panel 277F IWLAN

Online availability

Technical documentation on SIMATIC products and SIMATIC systems is available in PDF format in various languages at the following addresses:

- SIMATIC Guide Technical Documentation in German:
  "http://www.ad.siemens.de/simatic/portal/html_00/techdoku.htm"
- SIMATIC Guide for Technical Documentation in English:
  "http://www.ad.siemens.de/simatic/portal/html_76/techdoku.htm"

Photos

The HMI device is sometimes shown in the form of photographs in these operating instructions. The photographs of the HMI device may differ slightly from the factory state of the HMI device.

Conventions

Configuration and runtime software differ with regard to their names as follows:

- "WinCC flexible 2007" for example, refers to the configuration software

  The term "WinCC flexible" is used in a general context. The full name, for example "WinCC flexible 2007", is always used when it is necessary to differentiate between different versions of the configuration software.
- "WinCC flexible Runtime" refers to the runtime software that can run on HMI devices

The name "Mobile Panel 277 Wireless" is the collective term for the following HMI devices:

- Mobile Panel 277 IWLAN
- Mobile Panel 277F IWLAN

The following text notation will facilitate reading these operating instructions:

Notation	Scope
"Add screen"	• Terminology that appears in the user interface, for example dialog names, tabs, buttons, menu entries • Inputs required, for example limit values, tag values • Path information
"File > Edit"	Operational sequences, for example, menu commands, context menu commands
<F1>, <Alt+P>	Keyboard operation

Please observe notes labeled as follows:

Note

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

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- HMI®
- SIMATIC®
- SIMATIC HMI®
- SIMATIC ProTool®
- WinCC®

Representatives and offices

If you have any further questions relating to the products described in this manual, please contact your local representative at the Siemens branch nearest you.

Your Siemens representative can be found at "http://www.siemens.com/automation/partner".

Training center

Siemens AG offers a variety of training courses to familiarize you with automation systems. Please contact your regional training center, or our central training center in 90327 Nuremberg, Germany, for details.

Phone: +49 (911) 895-3200

Internet: "http://www.sitrain.com"

Technical support

You can find technical support for all A&D projects

- Using the support request form on the web at: "http://www.siemens.de/automation/support-request"
- Phone: + 49 180 5050 222
- Fax: + 49 180 5050 223

Further information about our technical support is available on the Internet at "http://www.siemens.com/automation/service".

Service & Support on the Internet

Service & Support provides additional comprehensive information on SIMATIC products through online services at "http://www.siemens.com/automation/support":

- Newsletters with the latest information about your products
- A large document base is available using our Service & Support search engine
- A forum for global exchange of information by users and experts
- Current product information, FAQs and downloads
- Your local Automation & Drives representative
- Information about field service, repairs, spare parts and much more under the heading "Services"

Recycling and disposal

Due to the low levels of pollutants in the HMI devices described in these operating instructions, they can be recycled. For environment-friendly recycling and disposal of your old equipment, contact a certified disposal facility for electronic scrap.

Table of contents

1 Overview

1.1 Product overview

Expanded possible fields of application – with Mobile Panel 277F IWLAN

The Mobile Panel 277F IWLAN offers the option of implementing mobile safety functions (emergency stop and enabling) at any point of a machine or system.

An effective range limit has been implemented for the Mobile Panel 277F IWLAN. Depending on his or her location, the operator receives a secure, electronically monitored operator control enable.

The HMI device communicates with the F-CPU via WLAN. This enables the operator to operate different machines or systems without cables getting in the way.

The Mobile Panel 277F IWLAN is characterized by short commissioning times, a large user memory and high performance, and is optimized for projects based on WinCC flexible.

The Mobile Panel 277F IWLAN has the following features:

- Safety-related operator controls:
  - Emergency stop button
  - Enabling button
- Effective range concept
- Wireless operation with
  - IWLAN interface via PROFINET
  - Battery operation
- 7.5" TFT screen with 64k colors
- 18 function keys with LED
- Extended HMI functions

1.2 Design of the HMI device

1.2.1 Mobile Panel 277F IWLAN

Introduction

The Mobile Panel 277F IWLAN is available in two design variations:

- With enabling button and emergency stop button
- With enabling button, emergency stop button, handwheel, key-operated switch and two illuminated pushbuttons

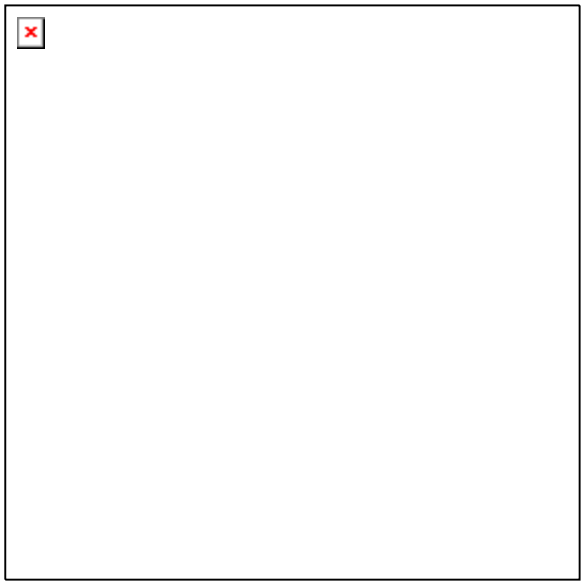
Note

The Mobile Panel 277F IWLAN is intended to be battery-operated.

Front view

The following figure shows the Mobile Panel 277F IWLAN.

This can vary, depending on the delivery status of the HMI device.



① Emergency stop button
② LEDs
③ Display with touch screen
④ ON/OFF button
⑤ Covers for the labeling strip guides
⑥ Key-operated switch, optional

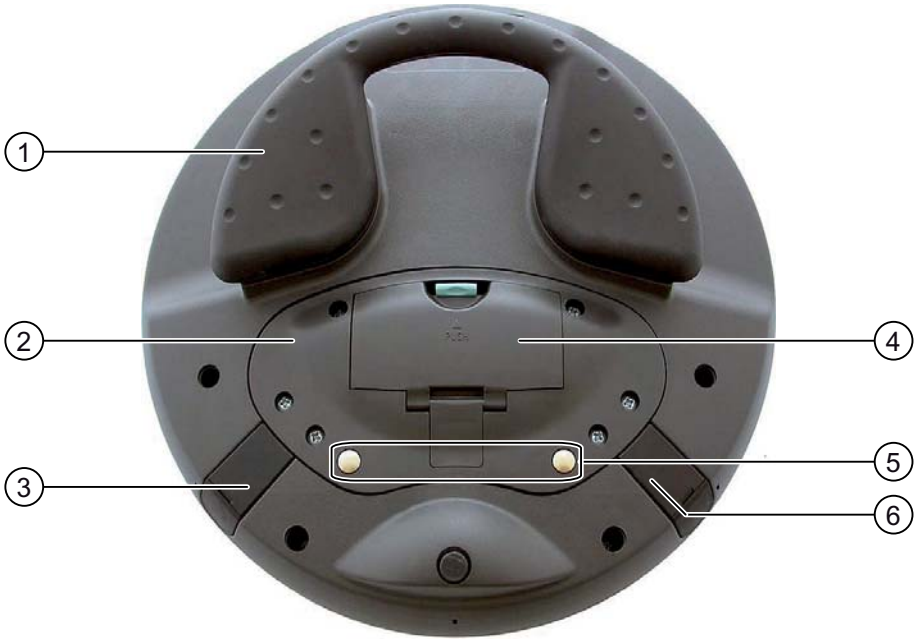
⑦ Illuminated pushbutton, optional
⑧ Membrane keyboard
⑨ Handwheel, optional

Side view

① Fall protection for the emergency stop button
② Enabling buttons, positioned on both sides of the Mobile Panel 277F IWLAN
③ Handle

Rear view

On the reverse side you will find the type plate and approvals.



① Handle
② Connection bay cover
③ Connection for tabletop power supply unit
④ Battery compartment cover
⑤ Charging contacts for charging station
⑥ USB connector

The Mobile Panel 277F IWLAN can be securely hooked into a charging station.

1.2.2 Supplementary pack and other accessories

Accessory kit

The accessory kit is supplied with the HMI device.

The accessories pack for the HMI device contains the following:

- Main battery
- Bridging battery
- Cover cap with rubber seal
- Screws for fixing the cover cap
- Label for cover cap
- Function manual "Fail-safe operation of the Mobile Panel 277F IWLAN", in German
- CD

  The CD includes:

  – Function manual "Fail-safe operation of the Mobile Panel 277F IWLAN", in German, English and Japanese
  – F-FBs for the Mobile Panel 277F IWLAN

Additional documents may be enclosed with the accessory kit.

Protective foil

A protective foil kit for the HMI device can be ordered. Use order number 6AV6 671-5BC00-0AX0.

The protective foil prevents the touch screen from being scratched or soiled.

Labeling strips

Labeling strips can be ordered as accessories. Use order number 6AV6 671-5BF00-0AX0. Stickers for the cover caps can also be supplied, in addition to the labeling strips. The cover caps cover the slot openings for the labeling strips.

Memory card

Note

Multimedia card

The multimedia card of the SIMATIC S7 PLC cannot be used.

Only use the SD memory cards or multimedia cards tested and approved by Siemens.

SIMATIC PC USB FlashDrive

The SIMATIC PC USB FlashDrive is a mobile form of data storage with a high data throughput, designed for industrial use.

Main battery

The HMI device is designed to be operated by a battery.

The main battery can be ordered with the order number 6AV6 671-5CL00-0AX0.

Bridging battery

The bridging battery allows you to change the main battery during operation.

Charging station

The charging station is used to charge the battery in the HMI device and to safely store the HMI device. You can also charge a main battery in each of the two charging compartments. The charging station is designed to be used in the system.

The charging station can be ordered with the order number 6AV6 671-5CE00-0AX0.

Tabletop power supply unit

The tabletop power supply unit is only suitable for an office environment. You can operate the HMI device with a tabletop power supply unit. The tabletop power supply unit, including main supply conductors (EU, US, UK, Japan), can be ordered with the order number 6AV6 671-5CN00-0AX1.

Transponder

One or more transponders form zones in the system. The transponder can be ordered with the order number 6AV6 671-5CM00-0AX0.

You can find more information about this on the Internet at:http://mall.automation.siemens.com

1.2.3 Battery

Purpose

The HMI device is supplied with a main battery and a bridging battery.

Main battery and bridging battery

When fully charged, the main battery guarantees approximately 4 hours' operation time in normal operation. After this time, the battery must be either changed or recharged.

You can change the main battery while the HMI device is operating. The bridging battery supplies the power while the main battery is being changed.

While the power is being drawn from the bridging battery, the following features are deactivated:

- Display backlighting
- Membrane keyboard
- Touch screen
- Function key LEDs
- Illuminated pushbuttons
- USB interface

Charging options

To charge the main battery, you have the following possibilities:

- In the HMI device while it is in the charging station
- In the charging compartment of the charging station
- In the HMI device when connected to the tabletop power supply unit

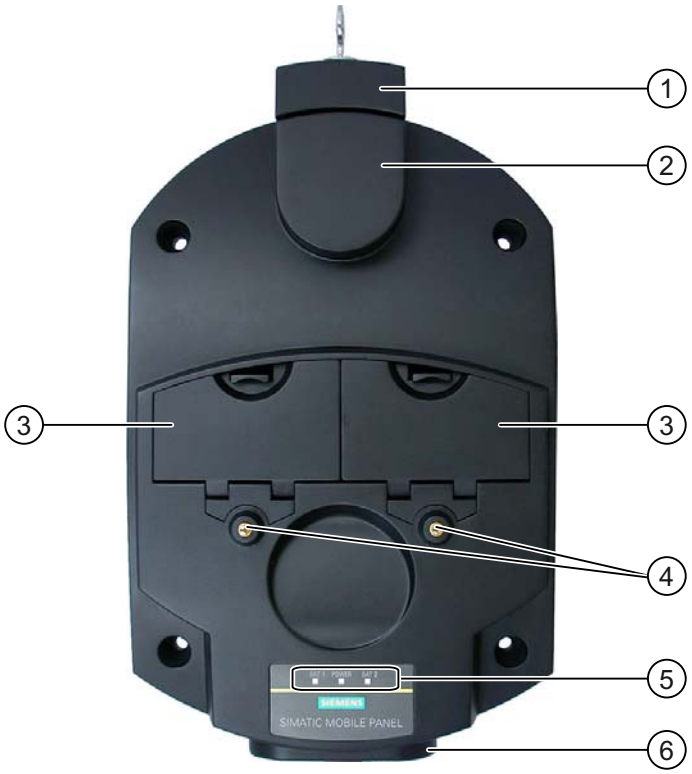
See also

Inserting, charging and changing the battery (Page 83)

Charging batteries in the charging compartment (Page 120)

1.2.4 Charging station

The following figure shows the charging station.



① Lock
② Hook for hooking in the HMI device
③ Charging compartment for one main battery each
④ Charging contacts for the HMI device
⑤ LED display
⑥ Power supply connection

Functions

The charging station performs the following functions:

- Charging the batteries in the charging compartments of the charging station
- Supplying power to the HMI device
- Charging the main battery fitted in the HMI device
- Safe storage of the HMI device

  The lock prevents unauthorized removal of the HMI device from the charging station.

Accessory kit

The accessory kit is supplied with the charging station.

The accessory kit for the HMI device contains the following:

- Lock

- Key set for lock
- Counterpart for power supply connector

Additional documents may be enclosed with the accessory kit.

See also

Charging station (Page 120)

1.3 Configuration and process control phase

Introduction

You must follow the phases below in order to use an HMI device in the system:

- Configuration phase
- Process control phase

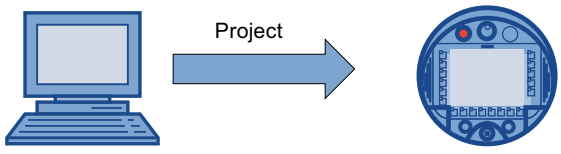
Configuration phase

The HMI device project, which includes the plant screens, is created during the configuration phase.

The following actions are carried out as part of the configuration phase:

- Creating the project
- Accepting the project (determining the checksum)
- Testing the project
- Simulating the project
- Backing up the project

After the configuration phase, the project is transferred to the HMI device by the configuring PC.

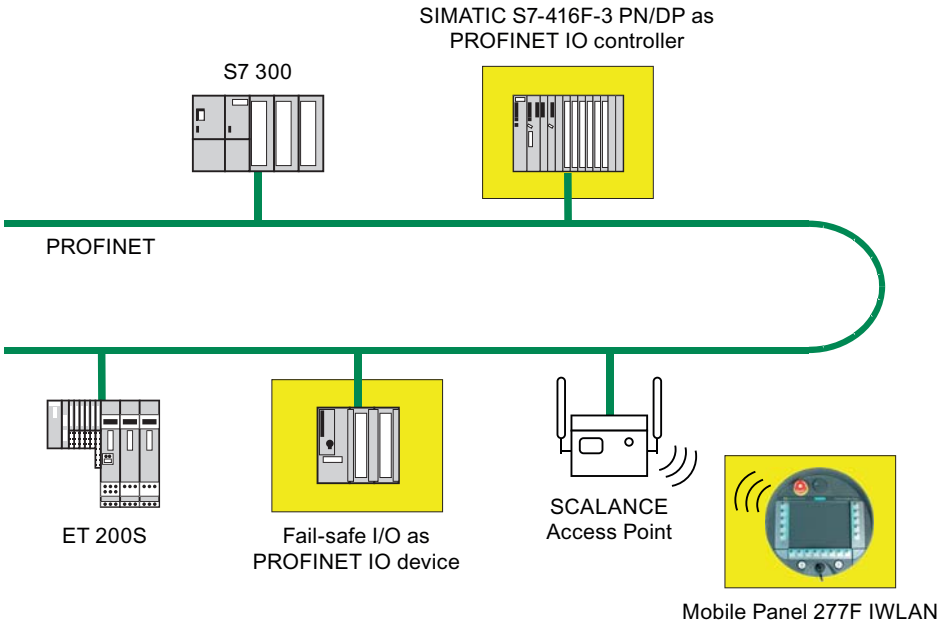


Configuring PC Mobile Panel 277F IWLAN

Process control phase

Once the project is transferred to the HMI device, the operator operates and monitors current processes in the process control phase. The HMI device is connected to a PLC in the plant and exchanges values with this PLC. The plant screens on the HMI devices are used to provide a clear overview of the active processes.

The following figure shows an example of a system structure with the Mobile Panel 277F IWLAN.



In the depicted configuration, each PROFINET IO device communicates with just one PROFINET IO controller. In this example, the Mobile Panel 277F IWLAN communicates exclusively with the F-CPU as the F-PROFINET IO controller.

See also

Operating a project (Page 231)

Preparing and backing up a project (Page 189)

1.4 Transponder

Forming effective ranges and zones with transponders

Transponders form effective ranges and zones. Effective ranges and zones are defined by the maximum distance from one or more transponders.

Effective ranges

You can define effective ranges in your system.

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.

Zones

You can divide your system into zones.

A zone is a physical range for operator control and monitoring which is registered by the HMI device. Depending on the project design, the HMI device displays zone-specific process displays and allows image objects to be operated in a zone-dependent manner.

Determining the current effective range and current zone

The assignment of transponders to effective ranges and zones is predefined in the project.

Each transponder has a unique ID. The transmitting range of the transponder approximates to a lobe shape with a range of approximately 8 m.

Distances are measured as follows:

- The HMI device sends signals in the current project
- The transponder responds to the signal from the HMI device and sends its ID to the HMI device
- The HMI device evaluates the ID and only measures the distance between it and the configured transponder(s)

Thus the HMI device determines which effective range/zone it is currently in.

Installation and connection

You must install the transponders in the system such that the effective ranges and zones are covered by the transmitting ranges of the relevant transponders.

The transponders are battery-operated.

System without effective ranges and zones

You can also operate the Mobile Panel 277F IWLAN in a system without effective ranges and zones. In this case, no transponders are required in the system.

Accessory kit

The accessories pack is supplied with the transponder.

The accessories pack for the transponder contains the following:

- 3 AA mignon batteries, 1.5 V

Additional documents may be enclosed with the accessory kit.

See also

Distance measurement between HMI device and transponder (Page 61)

Setting transponder ID and inserting the battery (Page 66)

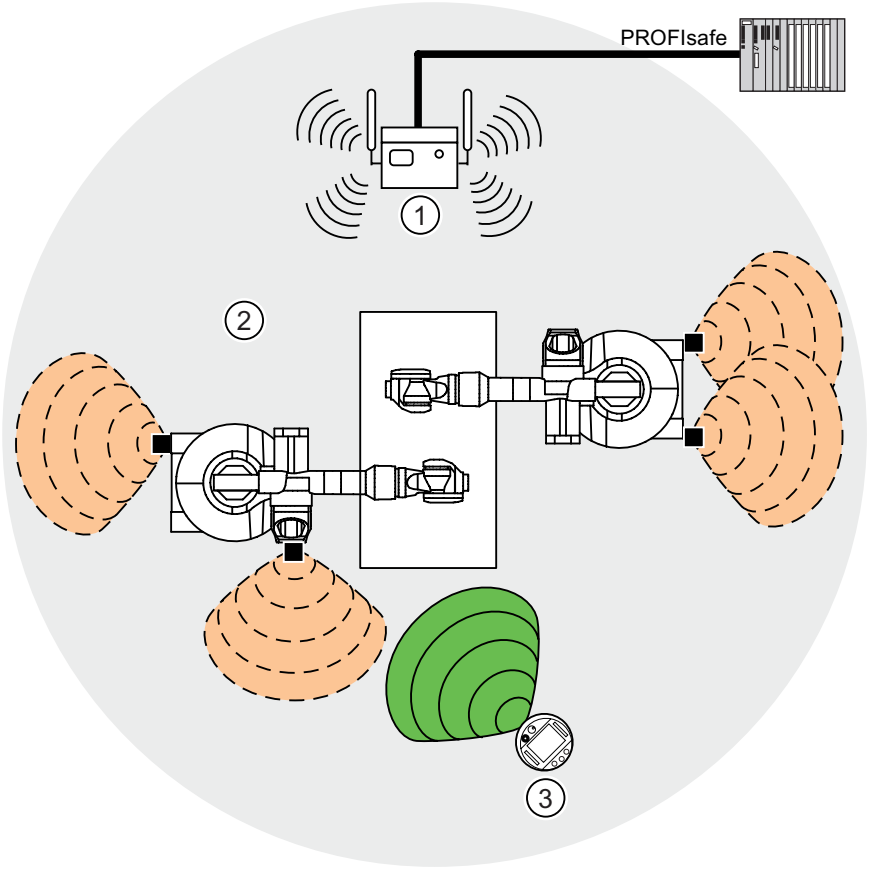
Effective ranges and zones (Page 58)

Radiation characteristic of the transponder (Page 314)

1.5 Ranges in the plant

WLAN range

The WLAN range is the range in the plant where the HMI device communicates with other communication nodes over a wireless local area network.



① Access point is the network transition from WLAN to LAN

② WLAN range in which communication with the access point is possible

③ Mobile panel in the WLAN range; the emergency stop button is active, the enabling buttons are without function.

When the PROFIsafe communication between the controller and operator panel is established in the WLAN range, the emergency stop button on the HMI device becomes active.

Effective range

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. A requirement for fail-safe operation is that the HMI device is logged onto an effective range within the WLAN range.

Zones

In addition to the effective ranges you can define zones in your system. The zones are not relevant for fail-safe operation. They are used merely to control the project depending on the location of the operator. For example a picture change can be configured for zone entry or zone exit.

Zones and effective range are independent of each other.

See also

Division of the system into effective ranges and zones (Page 58)

1.6 Fail-safe operation

Configuration tools and add-on packages

For fail-safe operation of the HMI device, the following software is required:

- STEP 7 V5.4 as of SP2
- SIMATIC S7 Distributed Safety as of V5.4 SP3
- WinCC flexible 2007

Fail-safe automation system

Fail-safe automation system (F systems) are used in plants requiring higher levels of safety.

F systems control processes in such a way that a safe state is achieved in every situation. An immediate shutdown therefore does not pose a danger to people or the environment.

Fail-safe application of the HMI device

The Mobile Panel 277F IWLAN is a PROFINET IO device on Industrial Ethernet.

During fail-safe operation, the HMI device registers the signal states of the emergency stop button and enabling button, and transmits corresponding safety message frames to the CPU. The CPU and HMI device communicate with each other via the PROFIsafe fail-safe protocol.

The HMI device can operate in fail-safe mode conforming to SIL3/PIe/Cat. 4 if the safety functions are appropriately configured in STEP 7 with the "S7 Distributed Safety" option package.

To guarantee availability of the safety functions, particular fail-safe function blocks (F-FBs) must be used in the safety program. The F-FBs are supplied on a CD together with the HMI device.

Diagnostics function of the HMI device

HMI device diagnostics conforming to PROFINET IO standard IEC 61784-1:2002 Ed1 CP 3/3 are available for the standard application.

The diagnostics function cannot be parameterized. The diagnostics are always activated and are automatically made available by the HMI device in STEP 7 in the event of an error.

In addition to the safety-relevant part, the diagnostics function transfers the following diagnostics:

- Communication error

  Communication between the HMI device as I/O device and the F-CPU as I/O controller has been interrupted (for example, due to incorrect PROFIsafe address or missing WLAN connection).

1.7 Functional scope with WinCC flexible

The following tables show the objects that can be integrated into a project for a Mobile Panel 277F IWLAN.

Note

The specified values are maximum values of the individual objects. Simultaneous use of multiple objects with their maximum value can lead to problems in the active project.

Alarms

Object	Specification	Mobile Panel 277F IWLAN
Alarm	Number of discrete alarms	4.000
	Number of analog alarms	200
	Length of the alarm text	80 characters
	Number of tags in an alarm	Max. 8
	LEDs	Alarm line, Alarm window, Alarm view
	Acknowledge error alarms individually	Yes
	Acknowledge several error alarms simultaneously (group acknowledgment of alarm groups)	16 alarm groups
	Edit alarm	Yes
	Alarm indicator	Yes
ALARM_S	Display S7 alarms	Yes
Alarm buffer retentive	Alarm buffer capacity	512 alarms
	Simultaneously queued alarm events	Max. 250
	View alarm	Yes
	Delete alarm buffer	Yes
	Line-by-line printing of alarms	Yes

Tags, values and lists

Object	Specification	Mobile Panel 277F IWLAN
Tag	Number	2.048
Limit value monitoring	Input/Output	Yes
Linear scaling	Input/Output	Yes
Text list	Number	500 1)
Graphics list	Number	400 1)

1) The maximum total of text and graphics lists is 500.

Screens

Object	Specification	Mobile Panel 277F IWLAN
Screen	Number	500
	Fields per screen	200
	Tags per screen	200
	Complex objects per screen (for example bars)	10
	Template	Yes

Recipes

Object	Specification	Mobile Panel 277F IWLAN
Recipe	Number	300
	Data records per recipe	500
	Entries per recipe	1.000
	Recipe memory	64 KB
	Location1)	• Memory card • USB memory stick • Network drive

1) The number of recipe data records might be restricted by the capacity of the storage medium.

Logs

Note

The HMI devices are suitable for the logging of relatively small volumes of data.

Manage the data in several adjacent archives in a segmented circular log. The use of a large circular log has a negative effect on performance.

Object	Specification	Mobile Panel 277F IWLAN
Logs	Number of logs	20
	Number of sub-archives with segmented circular log	400
	Entries in each log including all partial logs	10.000
	Filing format	CSV with ANSI character set
	Location[1)]	• Memory card • USB memory stick • Network drive

1) The number of entries in the log may be restricted by the capacity of the storage medium.

Safety

Object	Specification	Mobile Panel 277F IWLAN
User administration	Number of user groups	50
	Number of users	50
	Number of authorizations	32

Infotexts

Object	Specification	Mobile Panel 277F IWLAN
Infotext	Length (no. of characters)	320 (depending on font)
	For alarms	Yes
	For screens	Yes
	For screen objects (for example for I/O field, switch, button, invisible button)	Yes

Additional functions

Object	Specification	Mobile Panel 277F IWLAN
Monitor setting	Touch screen calibration	Yes
	Brightness setting	Yes
Language change	Number of languages	16
VBScript	User-specific extension of the functionality	Yes
	Number of scripts	50
Graphic object	Vector and pixel graphics	Yes
Trends	Number	300
Task planner	Number of tasks	48
Text objects	Number	10.000
Direct keys	PROFINET IO direct keys	Yes

Device-specific functions

Object	Specification	Mobile Panel 277F IWLAN
Battery	Displaying battery status	Yes
WLAN quality	Displaying WLAN quality	Yes
Effective range quality	Displaying the effective range quality	Yes
Effective range name	Display effective range name	Yes
Zone quality	Displaying zone quality	Yes
Zone name	Displaying zone names	Yes

1.8 Software options

The following software options are available for the HMI device:

- WinCC flexible/Sm@rtService

  The Sm@rtService option enables you to access a remote HMI device from the HMI device or PC via Ethernet. Access to the Mobile Panel 277F IWLAN is read-only.

- WinCC flexible/Sm@rtAccess

  The Sm@rtAccess option enables you to set up communication between different HMI systems.

- WinCC flexible /Audit

  The /Audit option extends the HMI device to include functions for recording operations in an audit trail and electronic signature.

1.9 Communication

Number of connections

Connection	Mobile Panel 277F IWLAN
Maximum number of connections	6

Note

In the following cases, you must not enable PROFINET IO in the Control Panel:

- Use of PLCs from other manufacturers

PLCs that can be used for the Mobile Panel 277F IWLAN

The HMI device has been enabled for use with the following type of PLC:

- SIMATIC S7
- Allen-Bradley E/IP C.Logix

Note

A SIMATIC S7F is vital for fail-safe functionality. The HMI device cannot be operated without fail-safe communication.

Protocols

The HMI device uses the following protocol for communication with the PLC:

- PROFIsafe Mode V2.0

Safety instructions, standards and notes

2

2.1 Safety instructions

Safety regulations

⚠ WARNING

Injury or material damage

Strictly observe all instructions in this document at all times. Otherwise, hazardous situations can arise or the safety functions integrated in the HMI device can be rendered ineffective.

Observe the safety and accident prevention instructions applicable to your application in addition to the safety instructions given in this manual.

Configuration requirements

⚠ WARNING

Injury or material damage

The configuration engineer for a machine or system PLC must take precautions to ensure that an interrupted program can be restarted normally after communication errors, voltage dips, or power failures.

Dangerous operating modes must not occur, not even temporarily, from the entire sequence of the user program up to troubleshooting.

Proper use

⚠ WARNING

Commissioning of the HMI device is forbidden until it has been absolutely ensured that the machine which is to be operated with the HMI device complies with Directive 98/37/EC.

Fault-free operation

⚠ WARNING

Interference with other systems

When using the HMI device in accordance with DIN EN 13557 you must ensure that the HMI device does not interfere with other systems at the site, or that other systems do not interface with the HMI device.

Safety measures during operation

NOTICE

Non-functional emergency stop button

The emergency stop button must be checked periodically for proper function.

⚠ WARNING

HMI device failure

After a hard impact to the HMI device, check the safety-relevant features for functional capability, for example in the event that the HMI device is dropped.

⚠ WARNING

Danger of injury

Manual movements controlled with the HMI should only be executed in conjunction with the enabling buttons and at reduced velocity.

⚠ WARNING

Exclusive operating right

When operating the plant with the HMI device it is not permitted to operate the plant concurrently from a different HMI device.

Prevent concurrent operation through appropriate configuration.

High frequency radiation

NOTICE

Unintentional operating situations

High-frequency radiation, for example from cellular phones, can lead to undesirable operating situations.

2.2 Standards, certificates and approvals

Certifications

⚠ CAUTION
The following overview shows possible approvals. The respective valid approvals for the HMI device itself, the charging station, power supply unit and transponder are those shown on the rear panel.

CE approval

CE

The HMI device, charging station, power supply unit, and transponder satisfy the requirements and protection objectives of the EC Directives below. The HMI device, charging station, power supply unit, and transponder comply with the harmonized European standards (EN) published in the Official Journals of the European Union for programmable controllers:

- 89/336/EEC Electromagnetic Compatibility Directive (EMC Directive)
- 98/37/EG Directive of the European Parliament and Council of 22 June 1998 on the approximation of the laws and administrative regulations of the Member States concerning machinery
- Specific absorption rate in accordance with EN 50932

EC Declaration of Conformity

The EC Declarations of Conformity are available to the relevant authorities at the following address:

Siemens Aktiengesellschaft
Automation & Drives
A&D AS RD ST PLC
PO Box 1963
D-92209 Amberg, Germany

UL approval

c UL us

Underwriters Laboratories Inc., to

- UL 508 (Industrial Control Equipment)
- CSA C22.2 No. 142 (Process Control Equipment)

The approval is only valid in the case of battery operation or when stationary in the charging station.

Marking for Australia

The HMI device, charging station, power supply unit, and transponder satisfy the requirements of Standard AS/NZS 2064 (Class A).

Wireless approval

The HMI device wireless approvals for the various countries are located as follows:

- On the rear of the HMI device
- In the product information supplied together with the HMI device

BGIA

The BGIA confirms that the HMI device satisfies the requirements of the standards below with regard to its safety functions.

- SIL3 in accordance with IEC 61508-1 to 4
- Category 4 in accordance with EN 954-1.
- Pl e and Cat. 4 in accordance with EN ISO 13849-1
- ISO 13850
- Principle for testing and certifying "Bus systems for the transmission of safety-related information", GS-ET-26 Electrical Engineering Technical Committee, Edition 05.2002
- Principles for testing and certifying electromechanical enabling switches and devices, GS-ET-22 Electrical Engineering Technical Committee, Edition 11.2005

TÜV

The TÜV confirms that the HMI device satisfies the requirements of the standards below with regard to its safety functions.

- SIL3 in accordance with IEC 61508-1 to 4
- Category 4 in accordance with EN 954-1.
- Pl e and Cat. 4 in accordance with EN ISO 13849-1
- EN 60204-1

- ISO 13850
- IEC 62061
- 98/37/EC

Requesting certificates

Copies of the certificates and associated reports can be requested from the following address:

Siemens Aktiengesellschaft
Automation & Drives
A&D AS RD ST
PO Box 1963
D-92209 Amberg, Germany

2.3 Operating safety

Standards

The HMI device complies with the following standards:

- EN 954-1

  Safety of machinery
- EN 60204-1

  Safety of machinery – Electrical equipment of machines
- EN 62061

  Safety of machinery – Functional safety of safety-related electrical, electronic and programmable electronic control systems
- EN ISO 13849-1

  Development, testing and certification of safety-related machine controls
- ISO 13850

  Safety of machinery – Emergency stop – Principles for design
- IEC 61508

  Functional safety of electrical/electronic/programmable electronic-related systems
- EN 61131-1 and EN 61131-2

  Programmable Controllers
- The HMI device was tested for EMC in accordance with the following standards:
  - EN 61000-6-4, Generic standard – emitted interference
  - EN 61000-6-2, Generic standard, Immunity, industrial environments
  - EN 61131-2, Programmable Controllers

- EN 300 328 V1.6.1, EN 300 440-1 V1.3.1, EN 301 893, EN 301 489-1, EN 301 489-17, FCC Part 15.245, 15.247, 15.407

  Wireless approval
- EN 50 360, IEEE 1528-X, EN 50371, EN 50 392

  Radiation protection requirements (SAR/EMF)

If the HMI device is used in a system, the following standards are fulfilled:

- prEN 1921, Industrial automation systems – safety of integrated manufacturing systems
- EN 12417:2001, Machine tools – safety – machining centers
- UL 508, Industrial Control Equipment
- CSA C22.2 No.14, Industrial Control Equipment

2.4 Power supply

Safety specifications

CAUTION
Damage to the HMI device Only operate the HMI device with approved components: • Batteries • Charging station • Tabletop power supply unit

http://mall.automation.siemens.com

⚠ WARNING
Injury or material damage The HMI device should only be operated in the plant with the battery or in the charging station. Operation with the tabletop power supply is not permitted in the plant.

⚠ WARNING
Effectiveness of the emergency stop button The emergency stop button only becomes active when the HMI device is integrated into the safety program.

Charging station

⚠ WARNING

Injury or material damage

The charging station complies with the following standards:

- EN 50335-2-29
- DIN EN 60204-1
- Protection class III in accordance with EN 61131-2 or EN 50178.

The 24 VDC power supply must be ensured by safely isolating the low voltage from hazardous voltages, for example by using a safety transformer or equivalent equipment.

Protect the power supply circuit with a 7 A fuse.

Allowance should be made for the loss of voltage on the connection cable during dimensional analysis of the supply!

Please refer to the technical data for the supply voltage requirements.

⚠ WARNING

Injury or material damage

Configure the 24 VDC supply for the charging station correctly, otherwise components of your automation system can be damaged and persons may be injured.

Use only voltage generated as protective extra-low voltage (PELV) for the 24 VDC supply of the charging station.

CAUTION

Safe electrical separation

Use only power supply units with safety isolation complying with IEC 60364-4-41 or HD 384.04.41 (VDE 0100, Part 410), for example according to the PELV standard, for the charging station's 24 VDC supply.

The supply voltage must be within the specified voltage range. Malfunctions in the charging station may otherwise result.

Applies to non-isolated system design:

Connect the connection for GND 24 V from the 24 V power supply output to equipotential bonding for uniform reference potential.

Tabletop power supply unit

CAUTION

Please note that the mains connector must be removed for a complete disconnection from the mains.

Do not operate the HMI device in the plant with the table power supply unit.

The tabletop power supply unit is only suitable for an office environment.

The device is designed for operation on grounded power supply networks (TN systems to VDE 0100, Part 300, or IEC 364-3).

Operation is not authorized on ungrounded or impedance-grounded power networks (IT networks).

2.5 Notes about usage

Using the HMI device

A list indicating in which country or in which geographical region of a country the HMI device can be used is included in the product information supplied with the HMI device.

Use in industry

The HMI device is designed for industrial use. For this reason, the following standards are met:

- Interference emission requirements, paragraph 7.3, DIN EN 60947-1, Environment A
- Interference immunity requirements DIN EN 61326

Residential use

If the HMI device is used in a residential area, you must take measures to achieve Limit Class B conforming to EN 55011 for RF interference.

A suitable measure for achieving the required RF interference level for Limit Class B includes for example:

- Use of filters in electrical supply lines

Individual acceptance is required.

Use of cable-free control equipment

⚠ WARNING
When using cable-free control equipment you must ensure that it does not interfere with other systems at the site, or that other systems do not interfere with it.

2.6 Risk analysis

Carrying out a risk analysis

The following standards must be used to perform the risk analysis:

- EN ISO 12100-1 and EN ISO 12100-2, General design guidelines for machines
- EN 1050 Risk Assessment for Machinery
- EN 954-1 Safety of Machinery

These considerations result in a safety category (B, 1, 2, 3, 4) in accordance with EN 954-1 that ultimately dictates how the safety-related aspects of the system that will be configured must be furnished.

With the safety-related parts of the Mobile Panel 277F IWLAN the following requirements are satisfied:

- Category 4 in accordance with EN 954-1.
- SIL 3 in accordance with IEC 61508
- Pl e and Cat. 4 in accordance with EN ISO 13849-1

The risk assessment must take into account that the overall concept of the plant must be configured accordingly. More detailed instructions on risk assessment and risk reduction are provided in the system manual "Safety Integrated".

See also

Safety-related operator controls (Page 100)

2.7 Safety functions of the emergency stop button

Safety instructions

There is an emergency stop button on the Mobile Panel 277F IWLAN.

The emergency button on the Mobile Panel 277F IWLAN brings about a safety-related stop of the configured system in accordance with EN 60204-1:1997, Section 9.2.5.3. You have the option of implementing a Category 0, 1, or 2 Stop function in accordance with EN 60204-1: 1997, Section 9.2.2. The stop function category must be selected on the basis of a risk assessment.

⚠ WARNING

Emergency stop button not available

The emergency stop button on the HMI device must not used as a replacement for a permanently-wired emergency stop/emergency off on the machine. Install stationary emergency stop buttons that are available at all times on the configured system.

⚠ WARNING

Effectiveness of the emergency stop button

The following requirements must be met in order to render the emergency stop button effective:

- The HMI device must be operated in the charging station or operated with the battery.
- The project must be running on the Mobile Panel 277F IWLAN.
- The HMI device must be integrated in the safety program of the F-CPU.

If these prerequisites are satisfied the following applies:

- The "SAFE" LED on the HMI device is illuminated.
- The emergency stop button of the Mobile Panel 277F IWLAN is effective.

Category 0 or 1 Stop

If a Category 0 or 1 Stop circuit is implemented, the stop function must be in effect regardless of the operating mode. A Category 0 Stop must have precedence. Release of the emergency stop button should not cause a hazardous situation (see also EN 60204:1997 chapter 9.2.5.3).

The stop function is not to be used as a replacement for safety equipment.

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.

See also

Emergency stop button (Page 100)

2.8 Enabling button

Introduction

The enabling device consists of the two enabling buttons mounted on both sides of the Mobile Panel 277F IWLAN.

Numerically controlled machines and systems are equipped with the operating modes "Automatic mode" and "Special mode".

Safety is ensured in automatic mode by means of closed, isolating protective devices and/or with functional non-isolating protective devices that block access.

In special mode, safety has to be ensured in a different manner than in automatic mode. In special mode, the danger zones of the machine or system are entered, where controlled movements have to be possible.

Special mode

A reduced speed on the machine or in the system has to be specified for special mode based on the risk assessment. Movement of the machine should only be possible when the enabling device is activated. The operator must have the necessary qualifications and be acquainted with the details of the intended application.

Safety instructions

The safety-related aspects of the velocity reduction control and those for the enabling device are designed in such a way that they satisfy the EN 954-1 safety category determined by the risk analysis.

The operating principles of enabling devices are described in EN 60204. Through the findings from accident investigations and the existence of technical solutions, the 3-stage enabling button became state of the art. Positions 1 and 3 of the enabling button are Off functions. Only the middle position allows the enabling function. EN 60204-1:1997 is identical to IEC 60204-1, whereby the 3-stage enabling button is gaining international importance.

The Stop category of the enabling device must be selected on the basis of a risk assessment and correspond to a Category 0 or 1 Stop.

⚠ WARNING

Injury or material damage

Enabling buttons should only be used when the following applies for the person activating the enabling button:

- The person can see the danger zone.
- The person is capable of recognizing personal injury hazards in good time.
- The person is capable of taking immediate measures to avoid danger.

The only person allowed to remain in the danger zone is the person who is activating the enabling button.

Commands for unsafe conditions are not permitted to be issued with one enabling button alone. For this purpose, a secondary, intentional start command by means of a button on the Mobile Panel 277F IWLAN is required.

If you leave the effective range only briefly for a time period of up to 30 seconds while the enabling button is pressed, the following occurs: 5 seconds after the effective range is left, the enabling function is revoked.
If you enter the effective range again within 30 seconds, the enabling button must be released and pressed again in order to reactivate enabling.

Note

Enabling button not effective

The enabling button is only effective if the HMI device is logged onto the effective range and the "RNG" LED on the HMI device lights up.

If the operator leaves the effective range, the enabling button is deactivated after 5 seconds. After 30 seconds the "Effective range exited without logoff" dialog box opens. The LED "RNG" only goes out when the operator has confirmed this dialog box.

Risk from improper use

To avoid the danger of unauthorized use of the enabling button due to impermissible hold-down, on each project start the enabling button must be pressed all the way down, and then released.

2.9 Electromagnetic compatibility

Introduction

The HMI device, the charging station, the transponder, and the power supply satisfy, among other things, the requirements of the EMC laws pertaining to the European domestic market. The enhanced testing and limit value levels defined by CDV 61326-3-1/Ed. 1 have been taken into account during the type test

EMC-compliant installation

Conditions for fault-free operation include EMC-compatible assembly of the charging station and the use of interference-proof cables. The "Directives for interference-proof installation of PLCs" and the "SIMATIC NET, Fundamentals of Industrial WLAN" manual also apply to the assembly of the charging station.

Pulse-shaped interference

The following table shows the electromagnetic compatibility of modules with regard to pulse-shaped interference.

Pulse-shaped interference	Checked with Applies to charging station with or without plugged-on HMI device and power supply unit (230 VAC)	Degree of severity
Electrostatic discharge in accordance with IEC 61000-4-2	Air discharge: 8 kV Contact discharge: 6 kV	3
Bursts (high-speed transient interference) in accordance with IEC 61000-4-4	2 kV supply line	3

Pulse-shaped interference	Checked with Applies to charging station with or without plugged-on HMI device and power supply unit (230 VAC)	Degree of severity
High-power surge pulses in accordance with IEC 61000-4-5, external protective circuit required (refer to S7-300 PLC, Installation, chapter “Lightning and overvoltage protection”)		
• Asymmetrical coupling	2 kV power cable DC voltage with protective elements	3
• Symmetrical coupling	1 kV power cable DC voltage with protective elements	3

Sinusoidal interference

The following table shows the EMC behavior of the modules with respect to sinusoidal interference.

Sinusoidal interference	Test values Applies to HMI device, charging station, and power supply unit:	Degree of severity
HF radiation (in electromagnetic fields) in accordance with IEC 61000-4-3	80% amplitude modulation at 1 kHz • To 10 V/m in the range 80 MHz to 1 GHz • To 10 V/m in the range 1.4 GHz to 2 GHz • To 1 V/m in the range 2 GHz to 2.7 GHz	3
HF conductance on cables and cable shields in accordance with IEC 61000-4-6	Test voltage 10 V, with 80% amplitude modulation of 1 kHz in the range 9 kHz to 80 MHz	3

Emission of radio interference

The following table shows the unwanted emissions from electromagnetic fields in accordance with EN 55011,
Limit Value Class A, Group 1, measured at a distance of 10 m.

30 MHz to 230 MHz	< 40 dB (V/m) quasi-peak
230 MHz to 1000 MHz	< 47 dB (V/m) quasi-peak

Additional measures

Before you connect the HMI device to the public network, ensure that it is compliant with Limit Class B in accordance with EN 55022.

Specific absorption rate SAR

Recommendation 1999/519/EC; Exposure of the public to EMF

Limit values for Europe in accordance with EN 50932

Limit values for USA in accordance with FCC OET Bulletin 65 Supplement C

- 2.0 W/kg within 10 g of tissue (in accordance with ICNIRP guideline)
- 1.6 W/kg within 1 g of tissue (in accordance with IEEE/FCC)

2.10 Transport and storage conditions

Mechanical and climatic transport conditions

The shipping conditions of this HMI device exceed requirements in accordance with IEC 61131-2. The following specifications apply to devices that are shipped and stored in the original packaging.

The climatic conditions comply with the following standard:

- IEC 60721-3-2, Class 2K4 for transport

The mechanical conditions are compliant with IEC 60721-3-2, Class 2M2.

The following table shows the transport and storage conditions for the HMI device, charging station, tabletop power supply unit and transponder.

Type of condition	Permitted range
Drop test (in transport package)	≤ 1 m
Temperature	From –20 to +60 °C
Atmospheric pressure	From 1,080 hPa to 660 hPa, corresponds to an elevation –1,000 to 3.500 m
Relative humidity	Applies to HMI device: From 10% to 90%, without condensation Applies to charging station and transponder from 35% to 85%, without condensation
Sinusoidal vibration in accordance with IEC 60068-2-6	5 Hz to 9 Hz: 3.5 mm 9 Hz to 500 Hz: 9.8 m/s^2
Shock in accordance with IEC 60068-2-29	250 m/s^2, 6 ms, 1,000 shocks

NOTICE

Device failure

In the following cases, ensure that no moisture (dew) can settle on or in the HMI device, charging station or transponder:

- Transportation of the HMI device in low temperatures
- Under extreme temperature variations

The HMI device must have acquired room temperature before it is put into operation. Do not expose the HMI device to direct radiation from a heater in order to warm it up. If dewing has developed, wait approximately four hours until the HMI device has dried completely before switching it on.

The following points must be adhered to in order to ensure a fault-free and safe operation of the HMI device:

- Proper transportation and storage
- Proper installation and mounting
- Careful operation and maintenance

The warranty for the HMI device will be deemed void if these stipulations are not heeded.

Planning application

3

3.1 Application and ambient conditions

Mechanical and climatic conditions of use

The HMI device is designed for use in a location protected from the effects of the weather. The conditions of use are compliant with requirements to DIN IEC 60721-3-3:

- Class 3M3 (mechanical requirements)

  The table applies to the HMI device, charging station and transponder.

Tested for	Test standard	Comments
Sinusoidal vibration, stationary	DIN IEC 60721-3-3	Frequency range: **2 ≤ f ≤ 200 Hz** Deflection: 1.5 mm/5 m/s^2
Shocks, non-stationary, Total shock response spectrum	DIN IEC 60721-3-3	Shock amplitude: 70 g shock duration: 22 ms

- Class 3K3 (climatic requirements)

  The table applies to the HMI device, charging station and transponder.

Ambient conditions	Permitted range	Comments
Air temperature	5 to 40 °C	
Relative humidity	5 to 85 %, no condensation	Corresponds to relative humidity, load degree 2 in accordance with IEC 61131, part 2
Absolute humidity	1 to 25 g/m^3	
Atmospheric pressure	70 to 106 kPa	Corresponds to an elevation of up to 3,000 m

Use with additional measures

In the following cases the use of the HMI device requires additional measures:

- In locations with a high degree of ionizing radiation
- In locations with difficult operating conditions, for example due to:

  - Corrosive vapors, gases, oils or chemicals
  - Electrical or magnetic fields of high intensity
- In systems that require special monitoring, for example:
  - Elevators
  - Systems in especially hazardous rooms

Testing for mechanical environmental conditions in accordance with GS-ET-22

The following table provides information on the type and scope of tests for mechanical ambient conditions.

The table applies to the HMI device, charging station and transponder.

Tested for	Test standard	Comments
Vibrations	IEC 60068, part 2–6 (sinusoidal) Test principles GS-ET-22	Type of vibration: 20 frequency cycles with a tuning rate of 1 octave/minute. Frequency range in accordance with GS-ET-22: **10 ≤ f ≤ 150 Hz, ± 1 Hz** Deflection: 0.35 mm / 5 g ± 15 % at the control point
Shock	IEC 60068, Part 2–27	Shock form: Half-sinus Shock amplitude: 30 g Shock duration: 11 ms Number of shocks: 3 per axis
Continuous shocks	IEC 60068, Part 2–29	Shock form: Half-sinus Shock amplitude: 10 g Shock duration: 16 ms Shock cycle: (1–3)/s Number of shocks: 1000 ± 10
Impact	IEC 60068, Part 2–75	One-time impact stress of 1 Nm with an impact test device similar to DIN VDE 0740, Part 1, Section 19.2 at room temperature.

The table only applies to the HMI device, with and without battery.

Tested for	Test standard	Comments
Falling	Drop testing in accordance with EN 60068-2-32	1.2 m

Reducing vibrations

If the HMI device is subjected to greater shocks or vibrations, you must take appropriate measures to reduce acceleration or amplitudes.

We recommend fitting the charging station of the HMI device to vibration-absorbent material (on metal shock absorbers, for example).

Climatic ambient conditions for the HMI device

The following table shows the permitted climatic ambient conditions for use of the HMI device:

Ambient conditions	Permitted range	Comments
Temperature • Operation • Storage/transport	 • 0 to 40 °C • –20 to 60 °C	
Relative humidity	5 to 85 %, no condensation	Corresponds to relative humidity, load degree 2 in accordance with IEC 61131, part 2
Atmospheric pressure	1.060 hPa to 700 hPa	Corresponds to an elevation of –1,000 to 2,000 m
Pollutant concentration	SO_2: < 0.5 vpm; Relative humidity < 60 %, no condensation	Check: 10 cm^3/m^3; 10 days
	H_2S: < 0.1 vpm; Relative humidity < 60 %, no condensation	Check: 1 cm^3/m^3; 10 days

Climatic ambient conditions for the charging station

The following table shows the permitted climatic ambient conditions for use of the charging station.

Ambient conditions	Permitted range	Comments
Temperature • Operation • Storage/transport	 • From 0 to 40 °C • From –20 to 60 °C	
Relative humidity	5 to 85 %, no condensation	Corresponds to relative humidity, load degree 2 in accordance with IEC 61131, part 2
Atmospheric pressure	1.060 hPa to 700 hPa	Corresponds to an elevation of –1,000 to 2,000 m
Pollutant concentration	SO_2: < 0.5 vpm; Relative humidity < 60 %, no condensation	Check: 10 cm^3/m^3; 10 days
	H_2S: < 0.1 vpm; Relative humidity < 60 %, no condensation	Check: 1 cm^3/m^3; 10 days

Ambient climatic conditions for the transponder

The following table shows the permitted climatic ambient conditions for use of the transponder:

Ambient conditions	Permitted range	Comments
Temperature • Operation • Storage/transport	 • 0 to 50 °C • –20 to 60 °C	
Relative humidity	5 to 85 %, no condensation	Corresponds to relative humidity, load degree 2 in accordance with IEC 61131, part 2
Atmospheric pressure	1.060 hPa to 700 hPa	Corresponds to an elevation of –1,000 to 2,000 m
Pollutant concentration	SO_2: < 0.5 vpm; Relative humidity < 60 %, no condensation	Check: 10 cm^3/m^3; 10 days
	H_2S: < 0.1 vpm; Relative humidity < 60 %, no condensation	Check: 1 cm^3/m^3; 10 days

3.2 Mounting location and clearance of charging station

Selecting a mounting location for the charging station

The charging station is designed for vertical installation.

⚠ WARNING

Emergency stop button not effective

If the HMI device is not integrated, the emergency stop button does not function.

The charging station must be installed in either a system area with sufficiently wide WLAN coverage or a separate service area. If the charging station is in the system and the HMI device is hooked into the charging station, the emergency stop button must be effective.

To avoid confusion between effective and non-effective emergency stop buttons, only one integrated HMI device should be freely accessible.

CAUTION

System or machine stop

The HMI device can fall down if it is not securely hooked in. The emergency stop button on the HMI device can also be triggered unintentionally.

In order to ensure that the HMI device can be hooked in securely, select a vertical surface or one inclined slightly to the rear as the mounting surface.

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.

Note

Positioning

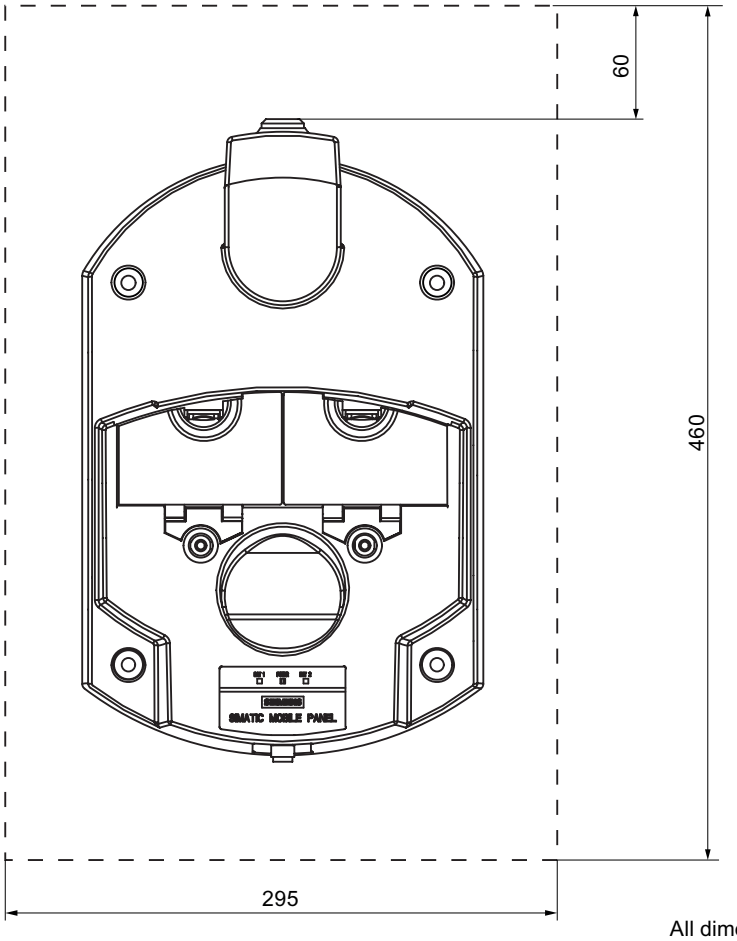
Observe the following points when selecting the mounting location:

- Do not mount the charging station directly below an Access Point.
- The display must not be exposed to direct sunlight
- Ergonomic mounting height

  The position must satisfy the following conditions:
  - Ergonomic operation of the HMI device while it is in the charging station
  - Ease of insertion of the HMI device into the charging station and removal from the charging station

Maintaining clearances

The following clearance is required around the charging station:



All dimensions in mm

3.3 Information on insulation tests, protection class and degree of protection

Test voltages

Insulation strength is demonstrated in the type test with the following test voltages in accordance with IEC 61131-2:

Circuits with a nominal voltage of U_e to other circuits or ground	Test voltage
< 50 V	500 VDC

Protection against foreign objects and water

Note

The HMI device only complies with the quoted safety classes if the plugs in the cable entries have sealing caps.

Degree of protection in accordance with IEC 60529	Description
Front panel and rear panel	HMI device: • IP65 For the charging station and transponder: • IP65

3.4 Rated voltages

The following table shows the permissible rated voltage and the relevant tolerance range for the charging station.

Nominal voltage	Tolerance range
+24 VDC	19.2 V to 28.8 V (–20%, +20%)

The following table shows the possible, permissible rated voltage for the tabletop power supply unit.

Nominal voltage	Tolerance range
230 VAC	170 to 264 V
120 VAC	85 to 132 V

3.5 Required properties of the WLAN connection

Please observe the installation guidelines when installing the WLAN network. Further information on this is available in the system manual "Fundamentals of industrial wireless LAN", in the "Network architecture" chapter.

NOTICE
As a basic principle, WLAN in accordance with IEEE 802.11 a should be used with the Mobile Panel 277F IWLAN. We recommend you not to use roaming in applications with PROFIsafe communication.

Ad hoc mode

Ad hoc mode cannot be used in conjunction with the Mobile Panel 277F IWLAN.

See also

Description of interfaces on the HMI device (Page 313)

3.6 Effective ranges and zones

3.6.1 Division of the system into effective ranges and zones

Effective ranges

Safety-related operator inputs are only possible in a limited area upstream of a machine or system. This is known as the effective range. The effective range assumes that the operator has a clear view the machine without any obstructions. To perform safety-related operator inputs, the operator must log the HMI device onto the effective range.

Note

You can also operate the HMI device without any effective ranges being defined in the system.

Note

Zones and effective ranges are completely independent of each other.

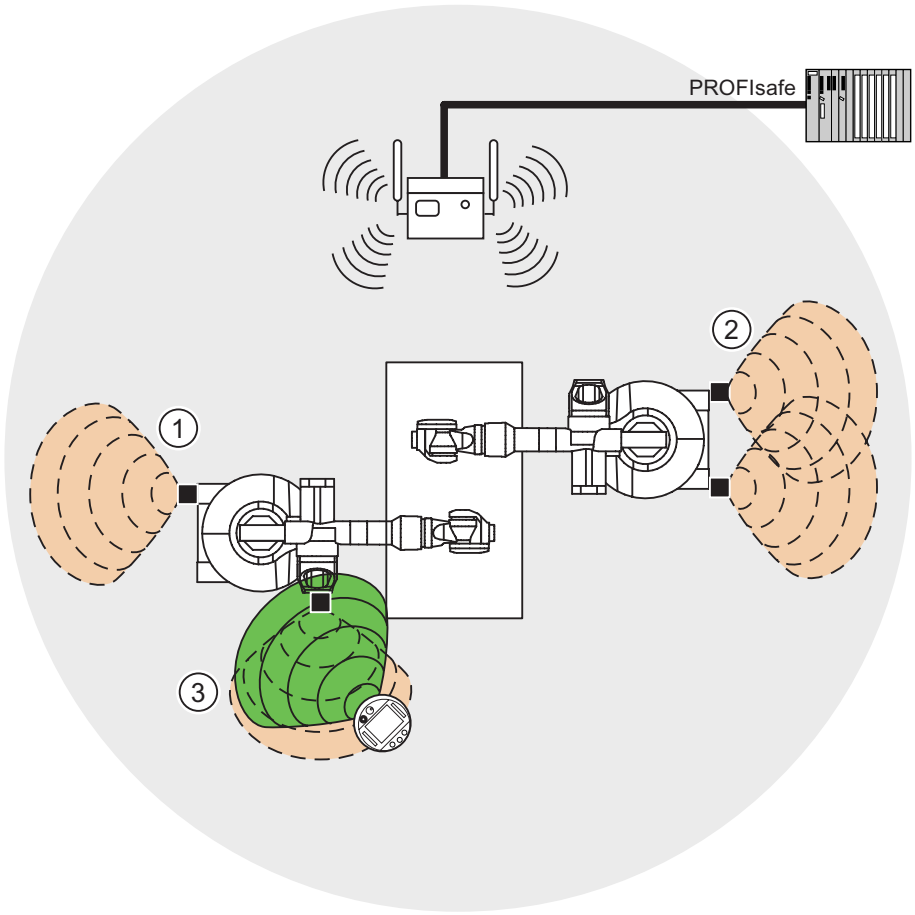
Rules for effective ranges

A maximum for 127 effective ranges can be defined for each project. An effective range requires at least one transponder. An effective range can be formed by a maximum of 127 transponders. Effective ranges must not overlap.

An effective range is defined by the maximum distance of the HMI device from one or more transponders. The same maximum distance applies to all transponders in an effective range. The assignment of transponders to effective ranges is predefined in the project.

Example

The following figure shows an example with three effective ranges.



① Effective range 1, formed by a transponder
② Effective range 2, formed by two transponders
③ The Mobile Panel is in effective range 3.

Zones

The system can be divided into different zones. A zone might be where part of a particular industrial process is carried out, for example assembly of parts. Zone-specific process displays and possible operations can be configured in the project.

Note

You can also operate the HMI device without any zones being defined in the system.

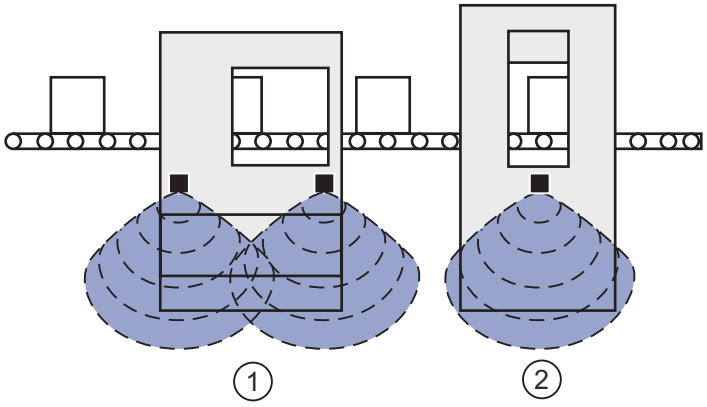
Rules governing zones

A maximum of 254 zones is possible. A zone requires at least one transponder. A zone can be formed by a maximum of 255 transponders. Zones must not overlap.

A zone is defined by the maximum distance of the HMI device from one or more transponders. The same maximum distance applies to all transponders in a zone. The assignment of transponders to zones is defined in the project.

Example

The figure below shows an example with two zones:



① Zone 1, formed by 2 transponders
② Zone 2, formed by 1 transponder

Transponder

Each transponder has a unique ID. The transmitting range of the transponder approximates to a lobe shape with a range of approximately 8 m.

The ID is set directly on the transponder. The set ID must match the project parameterization.

Distances are measured as follows:

- The HMI device sends signals in the current project
- The transponder responds to the signal from the HMI device and sends its ID to the HMI device
- The HMI device measures the distance between it and the transponder(s).

Thus the HMI device determines which effective range/zone it is currently in.

Rules governing transponders

The following rules apply to assigning transponders:

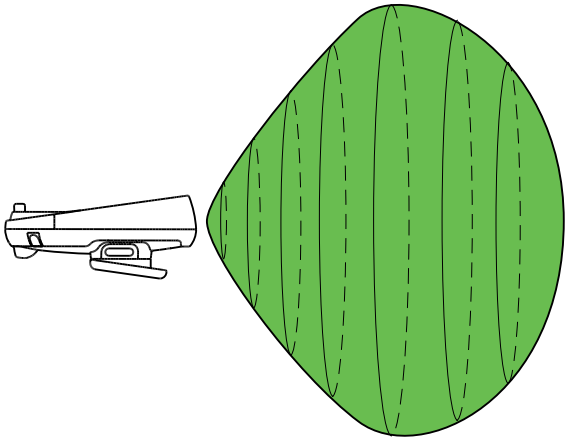
- A transponder can only be assigned to one zone.
- A transponder can only be assigned to one effective range.
- A transponder can be assigned to a zone and an effective range simultaneously.

See also

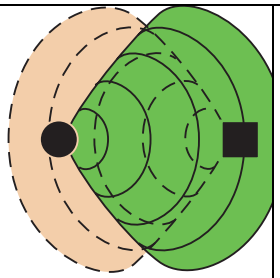
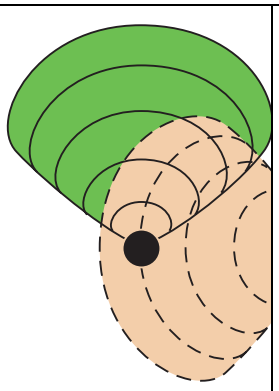
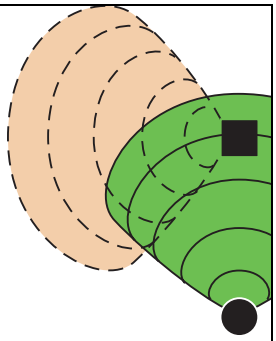
Ranges in the plant (Page 27)

3.6.2 Distance measurement between HMI device and transponder

The transmitting range of the transponder and the receiving area of the HMI device approximate to a lobe shape with a range of approximately 8 m. More information can be found in chapter Radiation characteristic (Page 314) .



Distance measurement between the HMI device and the transponder is only possible if both devices are within the other's receiving area. The table below shows when distance measurement is feasible. In the figures, the HMI device is shown as a circle and the transponder as a square.

			
HMI device in transponder's transmitting range	Yes	Yes	No
Transponder in HMI device's receiving area	Yes	No	Yes
Result	**Distance measurement successful**	**Distance measurement not possible**	**Distance measurement not possible**

Aligning the HMI device to the transponder

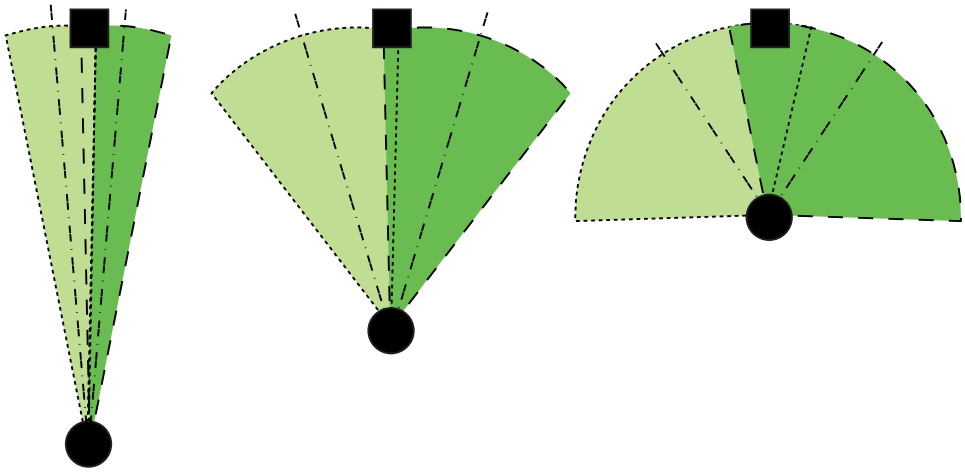
You must align the HMI device to the transponder to enable them to recognize one another.

The further away the HMI device is from the transponder, the more accurately it and, therefore, the antennae's main direction of radiation, must be aligned to the transponder. It is only permissible to turn the HMI device very slightly.

The closer the HMI device is to the transponder, the further you can turn the HMI device away from the transponder.

At a distance of 8 m, the permissible angle of deviation is about 20°. At a distance of 4 m, the permissible angle of deviation is about 110 °.

The figure below shows an example of the possible angle of rotation in relation to the distance from the transponder.



See also

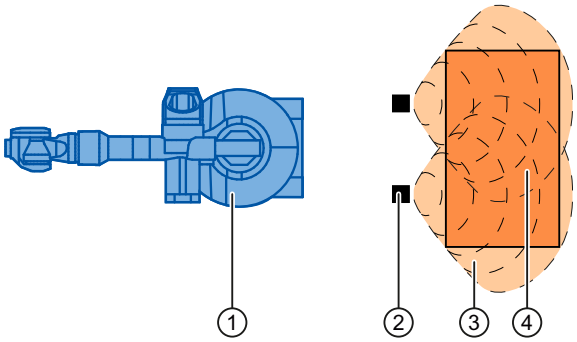
Transponder (Page 25)

3.6.3 Planning effective ranges

Effective range and transponder

An effective range is formed physically by transponders. Transponders must be mounted in the perimeter around the machine in such a manner that the planned effective range is covered by the transmitting range of the transponders assigned to it.

Example:



① Machine that will be operated from within the effective range

② Transponder with transmitting range in the form of a lobe

③ Planned effective range;
Assuming that the Mobile Panel is aligned with the effective range, fail-safe operation of the machine is possible.

④ Actual effective range, safe operation is still possible from here.

Rules for effective ranges

The following rules apply when defining effective ranges:

Rule	Explanation
The distance between the transponder and the HMI device must not be longer than 8m.	System limits
The effective range must be sized in such a way that it can be fully seen by the operator.	Too great or an unclear effective range prevents visual control on the part of the operator.
The distance between the machine to be operated and the operator must be sized depending on the machine.	Insufficient distance from the machine increases the injury hazard for the user. Too great a distance from the machine prevents visual control on the part of the operator.
Machine, transponder and operator position must be aligned with each other.	The HMI device must be able to measure the distance to the transponder during operation. To do this, you have to align the HMI device with the transponder. The operator must be able to see the the machine at the same time.
Effective ranges should not overlap. Consequently you should only assign each transponder to a single effective range. Transponders in **different** effective ranges must be far enough away from each other that their transmission ranges do not overlap.	Assignment of effective range to the machine that will be operated must be unique.
You can set up a maximum of 127 effective ranges in a project.	System limits
A maximum of 127 transponders can be assigned to one effective range.	System limits

Procedure

1. On the system plan specify which parts of the system will be operated with the enabling buttons. You require effective ranges for these areas of the system.
2. Specify the spatial expansion of the individual effective ranges. The operator must be located within the limits of the respective effective range in order to operate the corresponding plant unit with the enabling buttons.

   Comply with the rules for the definition of effective ranges. Take special note that the effective range is not too large so that it cannot be seen or that any other hazards occur.
3. Plan the transponders in the effective range in such a manner that the effective range is covered by the radiated emission of the transponders. Also note that the effective range is not too large so that it cannot be seen or that any other hazards occur.
4. Define:
   - A name, a display name and an ID from the value range 1 to 65534 for each effective range
   - A name and a plant-unique ID for each transponder from the value range 1 to 65534
   - For each effective range the maximum distance that the HMI device can have to the transponders of this effective range. The distance must be the same for all transponders of an effective range.
   - The mounting location for an indicator, for example a light that shows that an HMI device is logged in in the effective range.
5. On the system plan, note the display names and the IDs that you use during commissioning.

   Prior to commissioning you must affix the IDs of the effective ranges in the plant so that they are easily legible.

Installation and connection

4

4.1 Checking the package contents

Check the package contents for visible signs of transport damage and for completeness.

NOTICE
Do not install parts damaged during shipment. In the case of damaged parts, contact your Siemens representative.

The documentation belongs to the HMI device and is required for subsequent commissioning. Keep the supplied documentation to hand throughout the entire service life of the HMI device. You must pass on the enclosed documentation to any subsequent owner or user of the HMI device. Make sure that every supplement to the documentation that you receive is stored together with the operating instructions.

The following is supplied along with the HMI device:

- HMI device
- Main battery
- Bridging battery
- Function manual "Fail-safe operation of the Mobile Panel 277F IWLAN", in German
- CD

  The CD includes:

  – Function manual "Fail-safe operation of the Mobile Panel 277F IWLAN", in German, English and Japanese

  – F-FBs for the Mobile Panel 277F IWLAN
- Cover cap with rubber seal
- Screws for fixing the cover cap
- Label for cover cap

Additional documents may be included in the delivery.

4.2 Mounting the charging station

Requirements

- 4 x M6 cylinder head screws, with nuts if required
- You have selected a location with a low ambient temperature

  To charge the batteries, the ambient temperature / battery temperature must not exceed 40 °C
- You have selected a position for the charging station that is easy and safe to reach
- You have selected a good ergonomic height for the charging station

Procedure

Proceed as follows:

1. Place the charging station from the front onto the mounting surface.
2. Mark the fastening holes with a marking-off tool.
3. Drill 4 through holes or 4 x M6 threaded holes.
4. Mount the charging station.

Result

The charging station is now mounted.

See also

Mounting location and clearance of charging station (Page 54)
Application and ambient conditions (Page 51)

4.3 Setting transponder ID and inserting the battery

Introduction

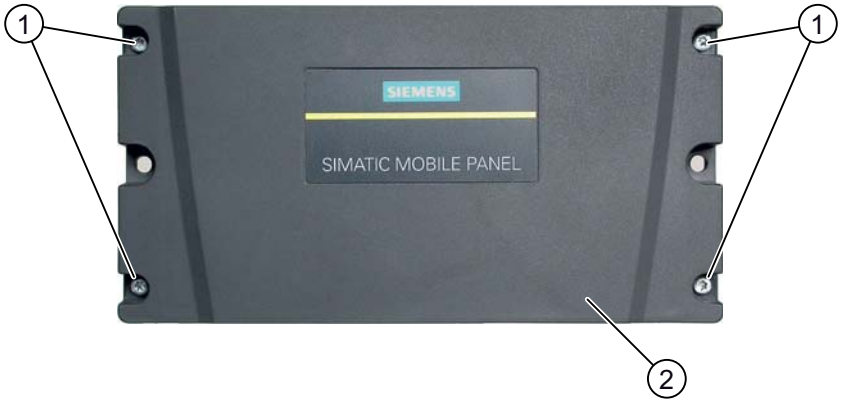
To operate the transponder you must first insert the batteries and set the transponder ID.

The transponder ID is read and evaluated by the HMI device in the current project.

Requirements

- Torx screwdriver, size T10
- Screwdriver, size 0
- 3 AA mignon batteries, 1.5 V, included in delivery

Procedure for opening the transponder



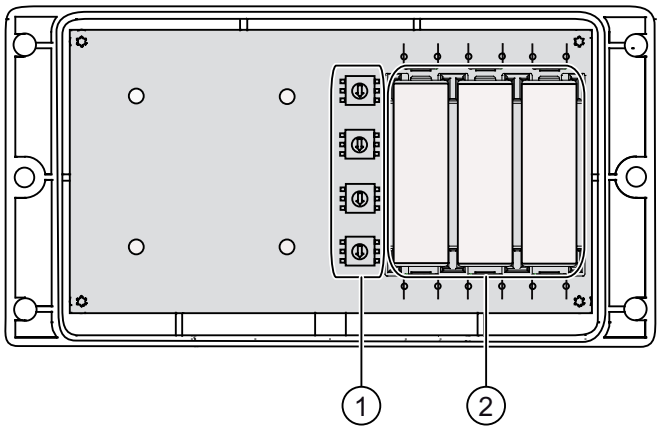
① Screws
② Cover

1. Loosen the four marked screws.
2. Lay the cover aside.

   The cover is designed in such a way that the screws cannot be lost.

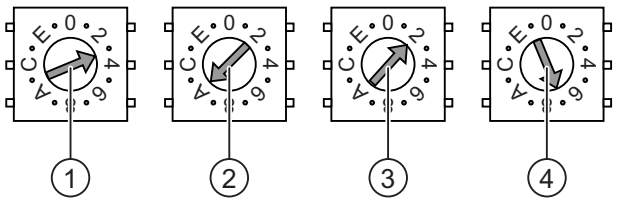
Rotary coding switch and batteries

The following figure shows the position of the 4 rotary coding switches and the batteries in the transponder.



① Rotary coding switch
② Batteries

Example for setting the transponder ID



①	Rotary coding switches for 4th decade, MSB: most significant byte	Set value: 3
②	Rotary coding switches for 3rd decade	Set value: A
③	Rotary coding switches for 2nd decade	Set value: 2
④	Rotary coding switches for 1st decade, LSB: least significant byte	Set value: 7

The figure shows the set transponder ID 3A27H, i.e. 14,887, in decimal format.

Procedure

CAUTION
ESD
When working in the open housing, ensure that current-carrying conductors do not come into contact with electrical circuits.
Note the ESD instructions.

Proceed as follows:

1. Insert the batteries as shown on the printed circuit board.
2. Set the transponder ID with the help of a screwdriver.

   Please note the MSB and LSB markings on the printed circuit board.

   Set the hexadecimal transponder ID. The values permitted in hexadecimal format are 1 to FFFE, i.e. decimal format from 1 to 65,534.
3. Screw down the cover on the transponder.

NOTICE
Damage to thread
The transponder housing is made of plastic. Therefore, the mounting hole threads cannot handle the same amount of stress as a comparable metallic housing. If the screws are tightened more than 20 times, there is risk of damage to the threads.
Only tighten the screws with the permitted torque of 0.4–0.5 Nm.

Result

The batteries have been inserted in the transponder. The transponder ID is now set.

See also

Distance measurement between HMI device and transponder (Page 61)

4.4 Mounting the transponder

Requirements

- 2 x M4 cylinder head screws, with nuts if required
- The batteries have been fitted in the transponder and the ID is set
- You have selected a position that provides good illumination for the desired area

  The transmitting range of the transponder and the receiving area of the HMI device approximate to a lobe shape with a range of approximately 8 m. More information can be found in chapter Radiation characteristic (Page 314) .

Procedure

Proceed as follows:

1. Place the transponder from the front onto the mounting surface.
2. Mark the fastening holes with a marking-off tool.
3. Drill two through holes or two threaded holes M4.
4. Attach the transponder.

Result

The transponder is now mounted.

4.5 Electrical installation

Electrical connections

The following connection options are available:

	HMI device	Charging station	Tabletop power supply unit
Configuring PC	Yes		
Supply voltage		Yes	Yes

4.6 Connection of the charging station to the power supply

Requirements

- The charging station is mounted according to the specifications in this document.
- Cable plug included in the scope of supply
- Three-core cable, flexible, 0.75 mm²
- End sleeves

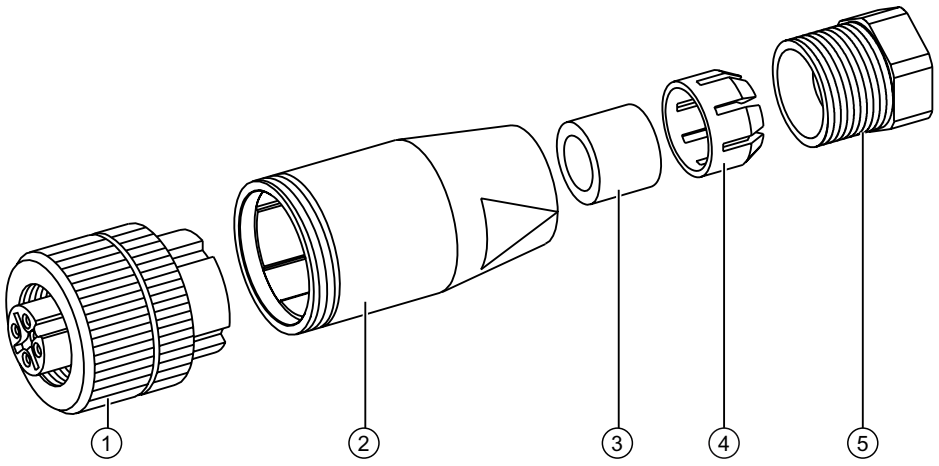
Pin assignment

Pin	Assignment
1	+24 VDC
2	n. c.
3	GND 24 V
4	PE

Procedure for mounting the cable plug

1. Screw the cables to the contacts in the socket insert and mount the socket.

The following figure shows an exploded view of the cable plug:



① Socket insert
② Coupling bush
③ Seal

④ Fastening case
⑤ Cable seal

Procedure for connecting the charging station

1. Connect the supply line to the power supply.
2. Connect the cable plug to the counterpart on the charging station.

Result

The charging station is now connected to the power supply. The "POWER" LED lights up green when the power supply to the charging station is within the nominal range.

See also

Rated voltages (Page 57)

4.7 Connecting the HMI device

4.7.1 Opening and closing the terminal compartment

Introduction

You can open the connection bay of the HMI device during operation.

Before you begin:

CAUTION
Malfunctions If the HMI device is switched on and resting on its front, the following can be activated: • The emergency stop button This can bring the system to a standstill unintentionally. • The key-operated switch or an illuminated pushbutton This can result in malfunctions.

NOTICE
Damage to the HMI device Pay attention to cleanliness. Foreign bodies or liquids must not come into contact with the printed circuit board or penetrate the inside of the HMI device. Place the HMI device with the front side facing down on a flat, clean surface to protect against damage.

CAUTION
Shutdown or rampdown of the system When you open the connection bay, you remove the main battery. This failure of the main battery is bridged by the bridge battery, if fitted. The maximum buffer time is 5 minutes. If you exceed the buffer time, the HMI device will switch off. If the HMI device has been integrated, this will lead to a shutdown or rampdown of the system. Do not exceed the buffer time!

Requirements

Cross-head screwdriver, size 2

Battery compartment and connection bay

① Locking latch
② Connection bay cover
③ Connection for tabletop power supply unit
④ Battery compartment cover
⑤ Charging contacts for charging station
⑥ USB interface

Note

Sequence for opening

Always remove the battery compartment cover first and remove the main battery before opening the connection bay cover.

Procedure for opening the battery compartment

Proceed as follows:

1. Pull up the locking latch on the battery compartment cover.

   The battery compartment cover can now be opened.

2. Remove the battery compartment cover.

Result

The battery compartment is open. The main battery, if fitted, is visible.

NOTICE
Damage to the HMI device The connection bay cover is connected to the HMI device's housing by wiring. Close the connection bay cover carefully.

Procedure for opening the connection bay

CAUTION
The connection bay may only be opened by trained skilled personnel for service purposes.

CAUTION
Damage to the HMI device When the connection bay is open the HMI device is vulnerable to damage from mechanical influences and live parts. If a bridging battery is fitted in the HMI device or the tabletop power supply unit is connected, some parts of the HMI device will still be electrically live. Please observe the following: If you have connected a tabletop power supply unit, isolate the unit from the HMI device if possible.

CAUTION
Damage to the HMI device When the connection bay is open the HMI device is vulnerable to damage from electrostatic discharge. **ESD** When working in the open housing, ensure that current-carrying conductors do not come into contact with electrical circuits. Note the ESD instructions.

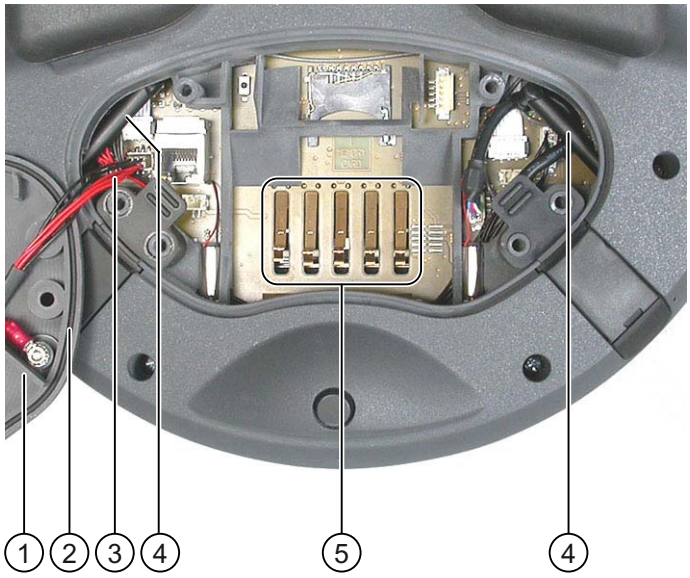
1. Remove the main battery (if fitted) using the ribbon.

   The bridging battery and the memory card, if fitted, are now visible.
2. Unscrew the six screws approximately 1 cm out of the cover.

   The cover is designed in such a way that the screws cannot be lost.
3. Open the cover.

Result

The connection bay is open.



① Connection bay cover
② Rubber seal
③ Wiring to charging contacts
④ Antenna
⑤ Contacts for main battery

Note

Only use the connection bay to insert the memory card and bridging battery! Do not insert any other objects in the connection bay.

Notes for closing

CAUTION
Damage to thread The HMI device housing is made of plastic. Therefore, the mounting hole threads cannot handle the same amount of stress as a comparable metallic housing. If the screws are tightened more than 20 times, there is risk of damage to the threads. Do not exceed 0.4 to 0.5 Nm of torque when tightening the screws.

NOTICE
Damage to wiring at charging contacts When closing the connection bay cover, be careful not to trap the wiring at the charging contacts.

CAUTION
IP65 degree of protection not fulfilled Ensure that the seals belonging to the connection bay cover and battery compartment cover are present during mounting. After completing the connections, check whether the covers are fitted on the USB interface and the terminal for the tabletop power supply unit.

Procedure for closing the connection bay and battery compartment

1. Place the cover on the connection bay.

   Be careful with the wiring to the charging contacts.
2. Tighten the 6 cover screws.
3. Insert the main battery.
4. Replace the cover on the battery compartment.

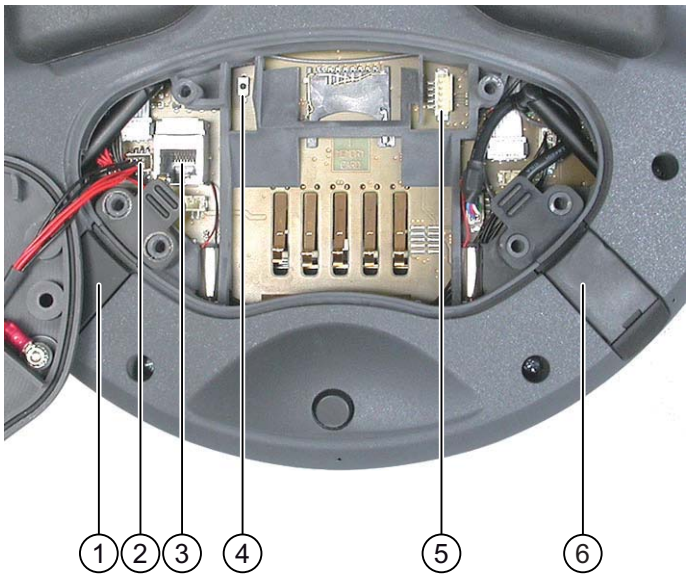
   The fastener of the battery compartment cover must engage below the locking latch.

Result

The connection bay and battery compartment of the HMI device are now closed.

4.7.2 Interfaces of the HMI device

The following figure shows the interfaces of the HMI device.



① Connection for tabletop power supply unit
② Cable connector for wiring to charging contacts
③ RJ45 jack for PROFINET
④ Reset button
⑤ Connection for bridging battery
⑥ USB interface

CAUTION
Degree of protection IP 65 not fulfilled If you want to use the RJ45 interface, you must first open the connection bay. If the connection bay is open, degree of protection IP 65 is not fulfilled. Only use the RJ45 jack for the connector of the configuring PC when resetting to factory settings.

⚠ CAUTION
Shutdown or rampdown of the system Triggering the reset button results in the following: • The HMI device switching off and restarting • If the HMI device has been integrated, the F-CPU triggers a local shutdown or a global rampdown. Only press the reset button in an emergency.

USB jack and connector for tabletop power supply unit

The USB jack and the connector for the tabletop power supply unit are shown as plugs.

See also

Description of interfaces on the HMI device (Page 313)

4.7.3 Connecting the configuring PC

Requirements

- For connection via PROFINET (LAN via RJ 45 interface):

  The connection bay on the HMI device is open.
- For connection via PROFINET (WLAN):

Note

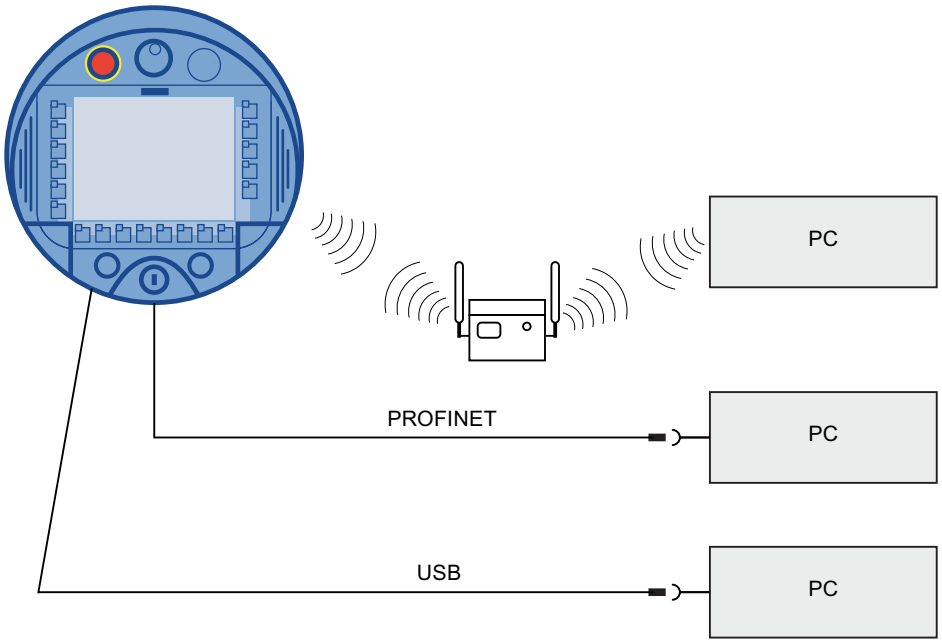
You must connect the HMI device to the configuring PC in infrastructure mode. An ad hoc network is not possible.

The HMI device must be in an area with sufficient WLAN quality. It must be possible for the configuring PC to be contacted via WLAN.

Connection graphic

The following figure illustrates the connection between the HMI device and the configuring PC. You can transfer the following data between the HMI device and a configuring PC:

- Project
- HMI device image
- Additional project data



NOTICE

USB connection sequence

Observe the following sequence when connecting by USB:

1. HMI device
2. PC

USB Host-to-Host cable

Only use the driver for the USB host cable, which is included in the WinCC flexible package. Never use the driver supplied with the USB Host-to-Host cable.

Restoring factory settings

Note

To update the operating system and reset to factory settings, you must connect the HMI device to the configuring PC via the RJ45 interface.

Note

For a point-to-point connection, use a cross cable. The HMI device and the PC can also be part of a LAN network.

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

NOTICE
Damage to the HMI device Pay attention to cleanliness. Foreign bodies or liquids must not come into contact with the printed circuit board or penetrate the inside of the HMI device.

Only connect a configuring PC directly to the HMI device for a short period.

The ports are described in the specifications.

See also

Interfaces of the HMI device (Page 76)

4.7.4 Connecting the PLC

Introduction

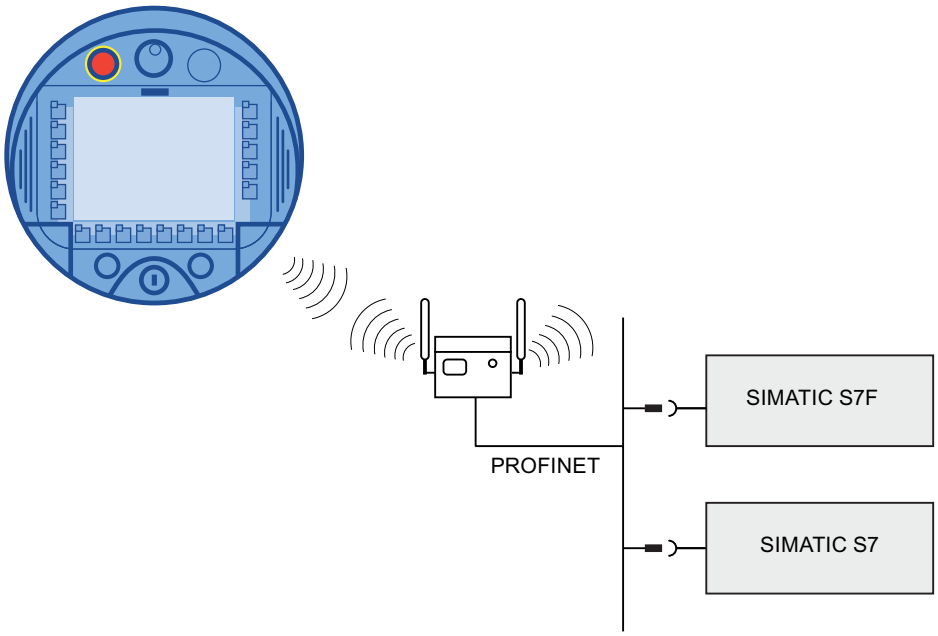
Only use approved components to connect a SIMATIC S7 PLC. You can find more information about this on the Internet at:http://mall.automation.siemens.com.

Note

A SIMATIC S7F is vital for fail-safe functionality. The HMI device cannot be operated without fail-safe communication.

Connection graphic

The following figure shows the connection between the PLC and the HMI device.



See also

Interfaces of the HMI device (Page 76)
Communication (Page 32)

4.7.5 Connecting the printer

Introduction

Printers are connected to the HMI device via WLAN.

The current list of recommended printers for the HMI devices can be found on the Internet under http://support.automation.siemens.com/WW/view/de/11376409.

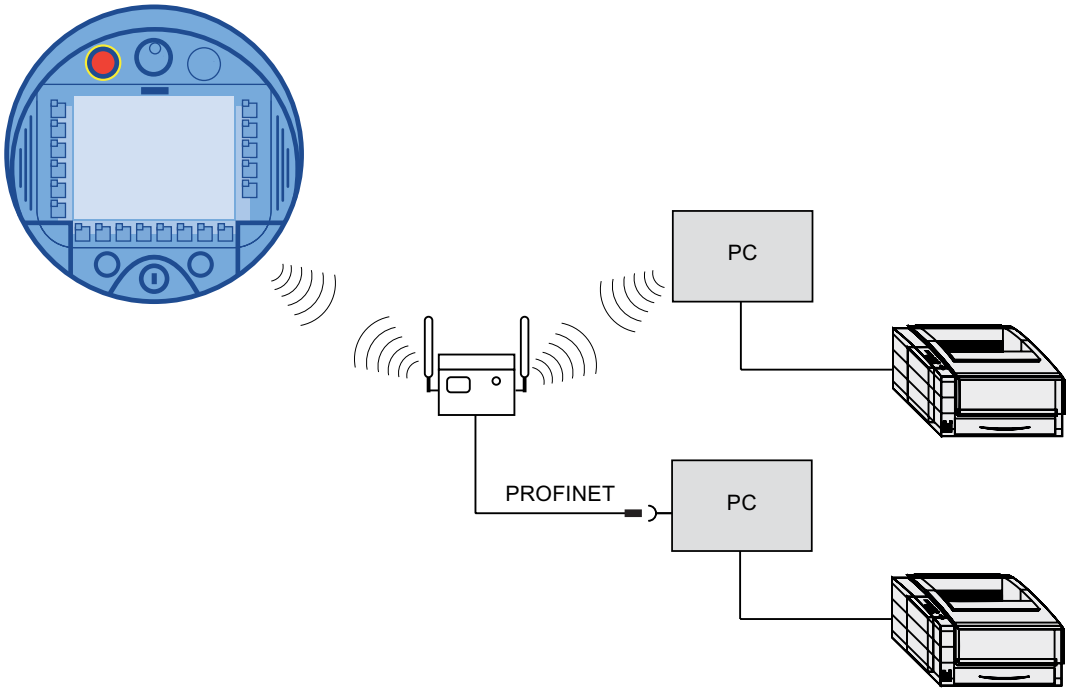
Observe the supplied printer documentation when you connect the printer.

Connection graphic

Note

It is not possible to connect a printer to the HMI device's USB interface.

The following figure illustrates the connection between the HMI device and a printer.



4.7.6 Connecting USB devices

The following devices can be connected to the USB port of the HMI device:

- External mouse
- External keyboard
- USB memory stick

Note when connecting

NOTICE
Devices with a separate power supply Except for the configuring PC or PC, do not connect any device with a separate power supply to the USB interface. You can connect the configuring PC or PC to the USB interface for transferring, saving and restoring data.

NOTICE
Additional load for battery Devices without a separate power supply cause additional load on the battery when they are connected to the USB interface. This will reduce the battery's operation time.

NOTICE
Functional problem If USB devices overload the interface, malfunctions might occur. Observe the values for the maximum load of the USB interface. You will find the values in the technical specifications.

NOTICE
Access to USB interface is not possible The USB interface is disabled while the main battery is being changed. During a main battery change it is not possible to export recipes and archives to a USB memory stick, for example. Make sure no one tries to access the USB interface while the main battery is being changed.

See also

Interfaces of the HMI device (Page 76)

4.7.7 Connecting the tabletop power supply unit

Introduction

The tabletop power supply unit is used to power the HMI device and to charge the battery in the HMI device in 120 V and 230 V networks. The setting of the voltage range takes place automatically. The tabletop power supply unit is connected with the power supply cable by the input connector.

CAUTION
Danger of overheating Do not cover the tabletop power supply unit.

CAUTION
Please note that the mains connector must be removed for a complete disconnection from the mains.

NOTICE
Only use the tabletop power supply unit approved for the HMI device. The tabletop power supply unit is only suitable for an office environment.

The tabletop power supply unit is supplied with power supply cables for the following countries:

- UK
- US
- EU
- Japan

Procedure

1. Remove the cover from the plug of the HMI device.
2. Connect the tabletop power supply unit to the HMI device.
3. Connect the tabletop power supply unit to the mains with the correct power supply cable.

See also

Rated voltages (Page 57)

4.8 Inserting, charging and changing the battery

4.8.1 Safety instructions

⚠ CAUTION

Charging and discharging the battery

In the following cases, there is a risk of fire and, in extreme cases, explosion!

- Incorrect charging and discharging of the battery
- Reverse polarity
- Short-circuit

Only charge the bridging battery in the HMI device.

Only charge the main battery in the HMI device or in the charging compartment of the charging station.

⚠ CAUTION

Danger of injury

If used incorrectly, fluid can leak from the battery. Avoid contact with the battery fluid. If fluid comes into contact with the skin, rinse with water.

If fluid comes into contact with the eyes, rinse with water and seek medical advice.

⚠ CAUTION

The battery is a lithium ion battery. The following safety notes apply to these rechargeable batteries:

- Do not crush
- Do not expose to heat and do not burn
- Do not short-circuit
- Do not take apart
- Do not submerge in liquids - the battery could crack or explode.
- Store unused batteries away from the following items, which can cause the contacts to be bridged.
  - Paper clips
  - Coins
  - Keys
  - Nails
  - Screws or other small metal objects

CAUTION

Possibility of rampdown while logging onto effective range

If the HMI device no longer recognizes the transponder and, therefore, the measuring range, it triggers a rampdown.

To change the battery, rest the HMI device on its front. Align the HMI device so that it is still possible to measure the distance between the HMI device and the transponder.

If possible, log the HMI device off from the effective range.

CAUTION

Malfunctions

If the HMI device is resting on its front, the following can be activated:

- The emergency stop button
  This can bring the system to a standstill unintentionally.
- The key-operated switch or an illuminated pushbutton
  This can result in malfunctions.

ESD

When working in the open housing, ensure that current-carrying conductors do not come into contact with electrical circuits.

Note the ESD instructions.

NOTICE

Only use batteries that are approved for the HMI device.

NOTICE
Pay attention to cleanliness. Foreign bodies or liquids must not come into contact with the printed circuit board or penetrate the inside of the HMI device. Place the HMI device with the front side facing down on a flat, clean surface to protect against damage.

Disposal

Used lithium ion batteries are special waste. Please dispose of used lithium ion batteries properly according to the appropriate regulations. Label transport packaging with the words: "USED LITHIUM BATTERIES".

See also

Distance measurement between HMI device and transponder (Page 61)

4.8.2 Inserting batteries for the first time

NOTICE
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.

The batteries are delivered uncharged.

Please note that a battery is subject to a natural self-discharge. The self-discharge can lead to a complete discharge over long periods of disuse.

Requirements for inserting the bridging battery

You have opened the battery compartment and connection compartment of the HMI device.

Procedure for inserting the bridging battery

Observe the safety information!

Proceed as follows:

1. Plug the bridging battery's plug connector into the interface in the connection compartment.

   The plug connector is coded. There is no risk of incorrect connection.

2. Insert the bridging battery.

3. Align the line as shown in the figure. Ensure that the line runs underneath the cable entry.

Result

The bridging battery is now fitted.

The following figure shows the bridging battery inserted in the connection compartment.

① Cable routing

Requirements for inserting the main battery

The connection compartment is open.

The battery compartment is open.

Procedure for inserting the main battery

1. Place the main battery in the battery compartment.
2. Close the battery compartment.

Result

The main battery is inserted.

The following figure shows the main battery in the battery compartment.

Charging the battery

The batteries are charged automatically whenever the HMI device is placed in the charging station or connected to the tabletop power supply unit.

See also

Safety instructions (Page 83)

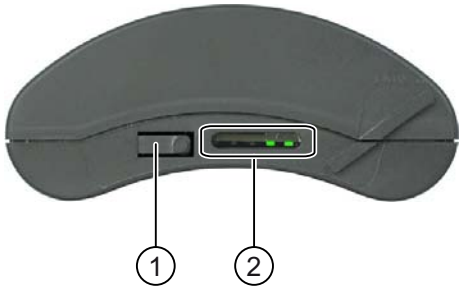
4.8.3 Displaying battery status

The battery's charging condition can be displayed in the following ways:

- On the main battery itself
- By the BAT LED on the HMI device
- In the "OP" dialog box, "Battery" tab in the Control Panel
- In a running project, if configured

Procedure for displaying the charging condition on the main battery itself

The LED display on the main battery consists of 5 LEDs.



① Pushbutton
② LED display

Briefly press the pushbutton on the battery.

The LEDs on the LED display will briefly light up to show the charging condition. The LEDs will light up according to the charging status. If all the LEDs light up, the battery is fully charged. If no LEDs light up, the battery is flat.

4.8.4 Changing the main battery

Introduction

CAUTION
Shutdown or global rampdown If the bridging battery can no longer be charged, the HMI device will switch off the next time the main battery is changed. Change the bridging battery at least every 5 years.

Note

Change the main battery in good time!

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.

We recommend keeping an inventory of spare main batteries.

You can replace the main battery during operation. The bridging battery supplies power to the HMI device while the main battery is being changed. The maximum buffer time is 5 minutes.

While the power is being drawn from the bridging battery, the following features are deactivated:

- Display backlighting
- The function keys and associated LEDs
- All LEDs except for "SAFE" and "RNG"
- The illuminated pushbuttons and handwheel
- USB interface

NOTICE
Access to USB interface is not possible
The USB interface is deactivated while the main battery is changed. Make sure no one tries to access the USB interface while the main battery is being changed.

Requirements

You have opened the battery compartment of the HMI device

Procedure

Observe the safety information.

Proceed as follows:

1. If the HMI device is logged onto the effective range, log it off.
2. Remove the main battery using the ribbon.
3. Insert the new main battery.
4. Close the battery compartment.

Result

The main battery has been changed.

Disposal

Used lithium ion batteries are special waste. Please dispose of used lithium ion batteries properly according to the appropriate regulations. Label transport packaging with the words: "USED LITHIUM BATTERIES".

See also

Safety instructions (Page 83)

Power management (Page 98)

4.8.5 Changing the bridging battery

Introduction

The bridging battery is charged automatically in the following cases:

- The HMI device is placed in the charging station
- The main battery in the HMI device is sufficiently charged
- The HMI device is connected to the tabletop power supply unit

CAUTION
Shutdown or global rampdown If the bridging battery can no longer be charged, the HMI device will switch off the next time the main battery is changed. Change the bridging battery at least every 5 years.

NOTICE
Bridging of main battery not possible After the bridging battery is changed it must first be recharged before the main battery can be bridged. Do not change the main battery immediately after changing the bridging battery. Check the charging status of the bridging battery first.

The "Battery" tab in the "OP" dialog box in the Control Panel displays the charging status and temperature of the main battery and bridging battery.

Requirements

- The project on the HMI device is complete and the HMI device is switched off
- You have opened the battery compartment of the HMI device

Procedure

Observe the safety information!

Proceed as follows:

1. Remove the main battery using the ribbon.
2. Open the connection bay.
3. Disconnect the plug connector of the bridging battery.
4. Remove the bridging battery.
5. Plug the plug connector of the new bridging battery into the interface in the connection bay.

   The plug connector is coded. There is no risk of incorrect connection.
6. Insert the new bridging battery.
7. Align the lines.
8. Close the connection bay.
9. Insert the main battery.
10. Replace the cover on the battery compartment.

    The fastener of the battery compartment cover must engage below the locking latch.

Result

The bridging battery has been changed.

Disposal

Used lithium ion batteries are special waste. Please dispose of used lithium ion batteries properly according to the appropriate regulations. Label transport packaging with the words: "USED LITHIUM BATTERIES".

See also

Safety instructions (Page 83)

4.9 Switching on and testing the HMI device

Requirements

In order to switch on the Mobile Panel 277F IWLAN, one of the following requirements must be met:

- The batteries have been charged and inserted in the HMI device
- The HMI device is placed in the charging station
- The HMI device is connected to the tabletop power supply unit

Procedure

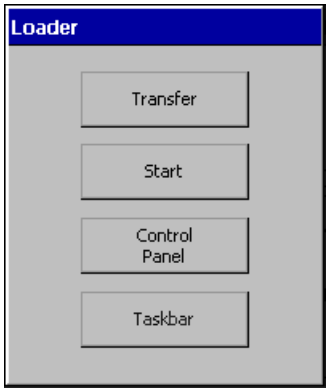
Proceed as follows:

1. To switch the HMI device on, briefly press the ON/OFF button.

   The "PWR" LED lights up.

   The screen lights up. A progress bar is displayed during startup.

   The Loader is displayed once the operating system has started. If a charged battery is available, the "BAT" LED lights up green. If the HMI device does not start, the battery may be empty or not available for use.



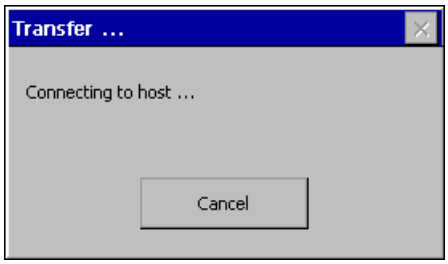
Transfer

The HMI device automatically switches to "Transfer" mode if the following requirements have been met:

- No project is loaded on the device
- At least one data channel has been configured

  On first commissioning, there is no project on the HMI device and no data channel has been parameterized.

While communication is being established, the following dialog box is displayed:



Press "Cancel" to stop the transfer.

Result

The Loader appears.

Starting and transferring a project

Note

When restarting the system, a project may already be loaded on the HMI device. The project will then start either following a delay (whose duration can be adjusted) or when you press the "Start" button.

When the project starts, the following dialog boxes will appear:

- "Establishing secure connection"
- "Testing enabling button"

If you want to transfer another project, for example, proceed as follows:

- Close the project and restart the HMI device.
- If necessary, parameterize the required data channel.
- Select "Transfer" to start the transfer.

Function test

Check whether the HMI device is fully functional. The HMI device is fully functional when one of the following states is indicated after switching on:

- The "Transfer" dialog is displayed.
- The Loader appears
- The "Test enabling button" dialog box appears.

Switching off the HMI device

To switch the HMI device off, press the ON/OFF button on the HMI device for at least 4 seconds.

If the project has been started, the "Confirm removal" dialog box appears following a prompt.

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

   The HMI device is removed.

   The current project is terminated.

   The HMI device switches off.

See also

Inserting batteries for the first time (Page 85)

Operator controls and displays

5

5.1 Overview

The following figure shows the operator controls and displays of the Mobile Panel 277F IWLAN. This can vary, depending on the delivery condition of the HMI device.

① Emergency stop button
② LED display
③ Display with touch screen
④ ON/OFF button
⑤ Covers for the labeling strip guides
⑥ Key-operated switch, optional
⑦ Illuminated pushbutton, optional
⑧ Membrane keyboard
⑨ Handwheel, optional

Operator control functions

The functions assigned to the function keys, the handwheel, the key-operated switch and the illuminated pushbuttons are determined during configuration. The above-mentioned operator controls do not function outside of a project.

Evaluation and selection of the operator controls

The following information can be transferred between the HMI device and the PLC:

- Direction pulses of the handwheel
- Status of the function keys
- Status of the key-operated switch
- State of the illuminated pushbuttons
- State of the function keys and illuminated pushbutton LEDs

There are two ways of transmitting information:

- Direct keys
- System functions of WinCC flexible

Standard input unit

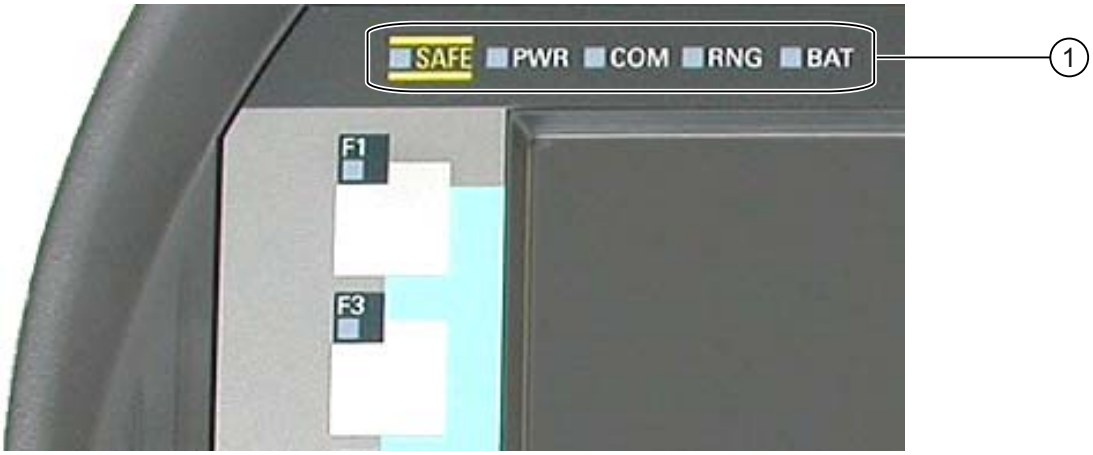
The standard input unit on the HMI device is the touch screen. All operating elements required for touch operation are displayed on the touch screen once the HMI device has started.

NOTICE
Damage to the touch screen Never touch the touch screen with pointed or sharp objects. Avoid applying excessive pressure to the touch screen with hard objects. Both these will substantially reduce the useful life of the touch screen and even lead to total failure. Always operate the HMI touch screen with your fingers or with a touch pen. **Damage to the keyboard** Pressing the keys with a hard instrument considerably reduces the service life of the key mechanism. Always use your fingers to operate the keys of your HMI device.

5.2 Displays on the Mobile Panel 277F IWLAN

Introduction

On the front of the Mobile Panel there are 5 LEDs that show the states of the HMI device and communication.



① LED display

Meaning of the LED displays

The LEDs are only activated when the HMI device is switched on.

Functions	Designation	Color	Meaning
PROFIsafe communication	SAFE	Yellow	The "SAFE" LED lights up when the HMI device is integrated in the safety program of the F CPU. The requirement for this is that PROFIsafe communication has been established. If the "SAFE" LED lights up, the emergency stop button is effective.
Power	PWR	Green	The "PWR" LED only lights up or flashes when the HMI device is switched on. The "PWR" LED lights up under the following circumstances: • The battery is fitted and charged. • The HMI device is in the charging station. • The HMI device is connected to the tabletop power supply unit The "PWR" LED flashes when the HMI device is in the "POWER SAVE 2" state.
Communication	COM	Green	The "COM" LED remains off as long as no WLAN network is configured. The "COM" LED flashes when the HMI device is attempting to establish a connection to a WLAN network. The "COM" LED lights up when the HMI device has established a connection to a WLAN network.

Functions	Designation	Color	Meaning
Effective range	RNG	Green	The "RNG" lights up when the HMI device is logged onto the effective range. If a communication error occurs after the HMI device has logged onto the effective range, the "RNG" lights up until PROFIsafe communication is reestablished and the communication error has been acknowledged. The "RNG" LED goes out when the HMI device logs off from the effective range.
Battery status	BAT	Green/ red	The "BAT" LED goes out under the following circumstances: • The main battery is empty • The main battery is not installed The "BAT" LED flashes when the main battery is being charged. The "BAT" LED lights up red when the main battery has a charging status of less than 10%. The "BAT" LED lights up green when the main battery has a charging status of at least 10%.

5.3 Power management

Introduction

The HMI device is equipped with a power management function. If you do not operate the HMI device for a configurable time interval, power management will switch the HMI device to power save mode. This extends the operation time of the HMI device until the next battery change or charging of the battery.

States

Power management has two levels of power saving:

- "Power Save 1"

  Reduces the brightness of the touch screen.
- "Power Save 2"
  - The touch screen is switched off.
  - The function keys and associated LEDs are switched off.
  - The handwheel and the illuminated pushbuttons are switched off.
  - Other power save measures are activated.

In WinCC flexible, power management is parameterized in "Device settings" under "Power management".

- "Power Save 1" corresponds to the "Reduce brightness" setting.
- "Power Save 2" corresponds to the "Switch off screen" setting.

Note

When the HMI device is logged onto an effective range, the "Power Save 2" state is not possible.

Power management recognizes the following status change:

State	LED display	Successful action for resulting state	Resulting state
HMI device OFF	The "PWR" LED is off. The "BAT" LED is off.	Briefly press the ON/OFF button	HMI device ON
HMI device ON	The "PWR" LED lights up.	Automatically, after a configured time interval if no operations are carried out.	"Power Save 1"
		Briefly press the ON/OFF button	"Power Save 2"
		Press the ON/OFF button for at least 4 seconds	HMI device OFF
"Power Save 1"	The "PWR" LED lights up. Reduces the brightness of the touch screen.	Operation on touch screen or using function keys	HMI device ON
		Briefly press the ON/OFF button	"Power Save 2"
		Automatically, after a configured time interval if no operations are carried out	"Power Save 2"
		Press the ON/OFF button for at least 4 seconds	HMI device OFF
"Power Save 2"	The "PWR" LED flashes. The touch screen is switched off.	Briefly press the ON/OFF button	HMI device ON
		Press the ON/OFF button for at least 4 seconds	HMI device OFF

Pressing the ON/OFF button for at least 4 seconds initiates the following:

- The current project on the HMI device is terminated, following several prompts.
- The HMI device switches off.

Note

In the "Power Save 2" state it is no longer possible to connect via the RJ 45 interface.

See also

Setting the screen saver (Page 152)

5.4 Safety-related operator controls

5.4.1 Emergency stop button

Introduction

The emergency stop button is designed with 2-channels and enables an emergency stop of the configured system.

The emergency stop button satisfies the requirements specified in DIN IEC 60947-5-5;1997 Annex K.

For additional safety instructions please refer to the section titled "Safety instructions, standards and notes".

When using the emergency stop button the following F-FBs must be linked in the safety program of the F CPU:

- F_FB_MP
- F_FB_RNG_n

① Fall protection

② Emergency stop button

Due to its position, the emergency stop button is equally accessible for both left-handed and right-handed persons.

Due to its profiled design, the emergency stop button is easily accessible. A collared enclosure serves as protection if the device falls. Thus if the Mobile Panel 277F IWLAN

should fall down, the emergency stop button will not be activated. However the emergency stop button is extensively protected against damage.

Operation

The operator triggers the emergency stop by pressing the emergency stop button. The emergency stop button engages in the emergency stop position.

Releasing the emergency stop button

⚠ WARNING

If you have activated the emergency stop button and thereby brought the configured system to a standstill, the emergency stop button should only be released under the following conditions:

- The reasons for the emergency stop have been eliminated.
- A safe restart is possible.
- The restart should not be executed by releasing the emergency stop button.

  The operator must strictly ensure that he executes a separate operator action to commence the restart. The safety program must ensure that release of the emergency stop button alone does not trigger an automatic restart of the system.

In order to release the emergency stop button, turn it in a clockwise direction. The emergency stop button then returns on its own to the initial position.

NOTICE

The emergency stop button can be triggered unintentionally

The emergency stop button is evaluated under the following conditions:

- The Mobile Panel 277F IWLAN is integrated in the safety program of the F CPU.

The emergency stop button can be triggered unintentionally in the following cases, and bring the configured system to a standstill:

- If the HMI device falls down
- When opening one of the coverings on the rear of the HMI device

⚠ WARNING

Non-functional emergency stop button

The emergency stop button is only effective if the HMI device is in the charging station or if is operated with the battery.

Do not operate the HMI device in the plant with the table power supply unit.

Storing the HMI device

WARNING

Non-functional emergency stop button

If the HMI device is not integrated in the safety program of the F CPU, 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.

See also

Safety functions of the emergency stop button (Page 43)

5.4.2 Enabling button

Introduction

The enabling device consists of the two enabling buttons mounted on both sides of the Mobile Panel 277F IWLAN. The switch setting of the two enabling buttons is determined by electrical momentary contact switches.

Note

The HMI device analyzes the switch settings of the two enabling buttons in the form of an OR gate.

① Enabling button

Operation

⚠ WARNING

Undesirable enabling function

Only push the enabling button until the operation which you enabled has been completed.

The enabling function is an intentional operator action. It is not permissible to constantly hold the enabling button or lock it otherwise.

If you leave the effective range only briefly for a time period of up to 30 seconds while the enabling button is pressed, the following occurs: 5 seconds after you have left the effective range, the enabling function is revoked. If you return to the effective range within 30 seconds with the enabling button still pressed, the enabling function is automatically returned.

The enabling button has three switch settings:

- Neutral position: The enabling button is not pressed.
- Enable: The enabling button is pressed to a mid position. This switch setting is used to allow another command, for example an input with the membrane keyboard.
- Panic: The switch setting "Panic" is achieved as soon as one of the enabling buttons have been pressed. The switch setting of the other enabling button is irrelevant in this case. The switch setting "Panic" has the same effect as releasing the enabling button, namely revoking the enable.

You only have to activate one enabling button. The PLC receives the same signal regardless of whether only one or both enabling buttons of the Mobile Panel 277F IWLAN having been pushed.

Note

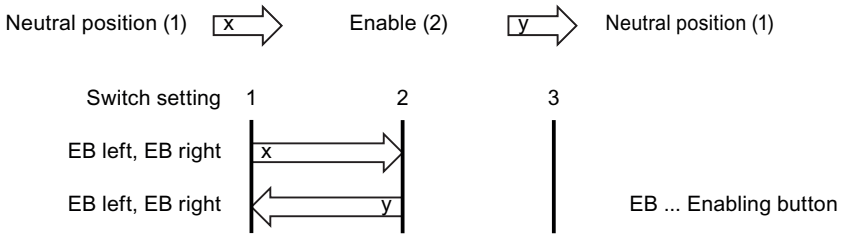
The enabling button and the membrane keyboard can be operated at the same time.

When using the enabling button the following F-FBs must be linked in the safety program of the F CPU:

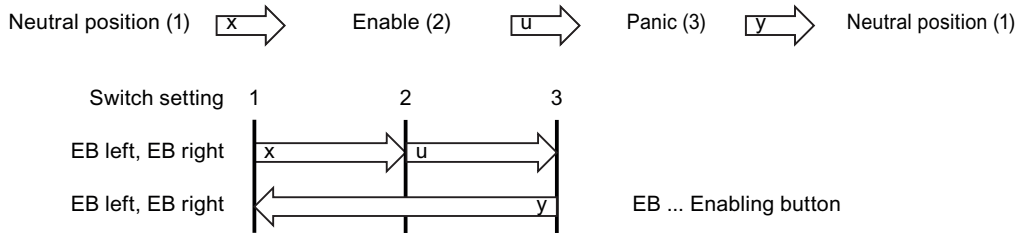
- F_FB_MP
- F_FB_RNG_n

Switch settings

The following figure shows the switching sequence for enable.



The following figure shows the switching sequence during panic usage.



If the operator has pressed the enabling button through to the "Panic" setting, the "Enable" setting will not be evaluated when leaving the panic setting. A new enable can only be triggered by releasing the enabling button.

5.5 Operator controls

5.5.1 Handwheel

Introduction

The handwheel is an optional operator control on the Mobile Panel 277F IWLAN. The handwheel can be turned without a stop and does not have a zero position.

① Handwheel with recess

Operation

To facilitate operation, the handwheel has a small recess.

5.5.2 Key-operated switch

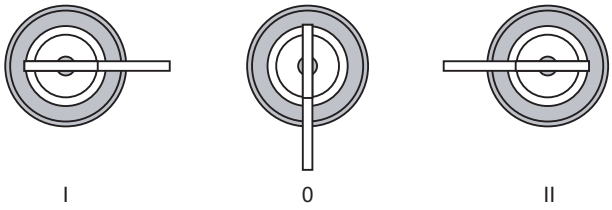
Introduction

The key-operated switch is an optional operator control on the Mobile Panel 277F IWLAN. The key-operated switch is used to lock functions that can be triggered via the Mobile Panel 277F IWLAN.

① Key-operated switch

Operation

The followinig figure shows the three switch positions of the key-operated switch, I-0-II.



The key can be removed in the switch setting 0.

Remove the key after use. This avoids possible damage to the key if the HMI device falls down.

Note

The key to the key-operated switch is supplied together with the HMI device. The key does not have an HMI device-dependent coding. This means the key can be used on any Mobile Panel 277F IWLAN.

5.5.3 Illuminated pushbutton

Introduction

The illuminated pushbuttons are optional operator controls on the Mobile Panel 277F IWLAN. The illuminated pushbuttons are available for fast digital inputs.

① Illuminated pushbutton

5.5.4 Evaluation of the operator controls

5.5.4.1 Overview

Operator controls

The following information can be transferred between the HMI device and the PLC:

- Direction pulses of the handwheel
- Status of the function keys
- Status of the key-operated switch
- State of the illuminated pushbuttons
- State of the function keys and illuminated pushbutton LEDs

There are two ways of transmitting information:

- Direct keys
- System functions of WinCC flexible

Note

The following sections are intended for the configuration engineer of the HMI device.

5.5.4.2 Evaluating operator controls as direct keys

Introduction

You can configure the operator controls of the HMI device as direct keys.

The states of the following operator controls are available directly in the I/O area of the PLC:

- Direction pulses of the handwheel
- The switching state of the function keys
- The switching state of the key-operated switch
- The switching state of the illuminated pushbuttons

Byte assignment

The following figure shows the assignment of the keys (inputs) and LEDs (outputs) to the bytes in the PLC process image.

Check whether additional information is available in your plant documentation.

Button bits							
7	6	5	4	3	2	1	0
F8	F7	F6	F5	F4	F3	F2	F1
F16	F15	F14	F13	F12	F11	F10	F9
						F18	F17
			T2		T1	S1	S0
I7	I6	I5	I4	I3	I2	I1	I0
D7	D6	D5	D4	D3	D2	D1	D0
7	6	5	4	3	2	1	0
15	14	13	12	11	10	9	8
23	22	21	20	19	18	17	16
31	30	29	28	27	26	25	24

Byte
n
n + 1
n + 2
n + 3
n + 4
n + 5
n + 6
n + 7
n + 8
n + 9

LED bits							
7	6	5	4	3	2	1	0
F8	F7	F6	F5	F4	F3	F2	F1
F16	F15	F14	F13	F12	F11	F10	F9
						F18	F17
					T2	T1	

F Bit for function key
S Bit for key-operated switch
T1 Bit for left illuminated pushbutton
T2 Bit for right illuminated pushbutton
I Bit for handwheel pulses, forwards
D Bit for handwheel pulses, backwards

The bytes "n+6" to "n+9" contain the direct key bits for the touch buttons.

Bit coding

The following tables show the bit coding for function keys, key-operated switch, illuminated pushbutton and handwheel:

- Bit coding of function keys

State	F1 to F18
Not pressed	0
Pressed	1

- Bit coding of function key LEDs

State	F1 to F18
LED not illuminated	0
LED is illuminated	1

- Bit coding of key-operated switch

State	S1	S0	Key position
Position 0	0	0	In middle position
Position I	0	1	Turned in clockwise direction up to stop
Position II	1	0	Turned counter-clockwise up to stop

- Bit coding of illuminated pushbuttons

State	T1	T2
Not pressed	0	0
Pressed	1	1

- Bit coding of illuminated pushbutton LEDs

LED status	T1	T2
Off	0	0
On permanently	1	1

- Bit coding of handwheel
  - A setpoint is not specified for the handwheel.
  - After start-up of the HMI device, the bytes "n+4" to "n+5" are set to zero.

    Rotation of the handwheel produces positive or negative pulses depending on the rotation direction. The number of positive pulses are stored in bits I0 to I7. The number of negative pulses are stored in bits D0 to D7. The values are entered in binary format, where bit 0 is the lowest and bit 7 is the highest valued bit.

    A complete handwheel revolution yields 50 pulses.
  - Every pulse of the handwheel is added to byte "n+4" or "n+5" depending on the direction of rotation. There are no negative values. When the possible value range is exceeded, there is an overflow:

    If a value of 255 is increased by one pulse, a value of 0 results.

Example of bit coding for handwheel

The following table includes an example for rotation direction determination. The pulses are stored in bytes "n+4" and "n+5" and are measured during the points in time t_1 to t_4.

The numbers in the following table represent a byte in the PLC.

Evaluation time	Handwheel		Evaluation
	Pulses, forwards	Pulses, backwards	
t_1	255 (≙ -1)	245 (≙ -11)	--
t_2	10	245 (≙ -11)	Pulses, forwards: 11 Pulses, backwards: 0 Resulting value: +11
t_3	10	4	Pulses, forwards: 0 Pulses, backwards: 15 Resulting value: -15
t_4	15	5	Pulses, forwards: 5 Pulses, backwards: 1 Resulting value: +4

The difference in pulses at times t_n and t_{n+1} allows you to determine the resulting value and thus the direction of rotation.

Establish the following values:

- Number of pulses, forwards
  - At time t_n
  - At time t_{n+1}
- Number of pulses, backwards
  - At time t_n
  - At time t_{n+1}

From this, you determine the resulting value. This is calculated as:

Pulses, forwards, t_{n+1}
– Pulses, forwards, t_n
– Pulses, backwards, t_{n+1}
+ Pulses, backwards, t_n
= Resulting value

Reaction time

The bytes "n+4" and "n+5" must be retrieved on the PLC side within a second and cyclically. This ensures that no more than 256 pulses can be added between two scans of the handwheel. For 256 pulses, approximately 4.5 revolutions of the handwheel are required.

The rotary pulse encoder supplies a maximum of 200 pulses per second.

NOTICE
Sample cycle time The input pulses should take effect immediately on the PLC and cause a response in the system. Set a scan cycle ≤ 100 ms in the PLC in order to achieve this.

See also

Direct keys (Page 234)

5.5.4.3 Activation of function key LEDs using system functions

Application

LEDs are integrated in the HMI device's function keys F1 to F18. The integrated LEDs can be controlled from the PLC.

The LEDs can assume the following states:

- Off
- Flashing slowly
- Flashing quickly

- On

You can use the LED to signal to the user that a function key should be pressed, in a running project.

Bit assignment

The following table shows the possible states of the LEDs and the corresponding entries in bit n+1 and bit n of the LED tags.

Bit n+1	Bit n	LED status
0	0	Off
0	1	Flashing quickly
1	0	Flashing slowly
1	1	ON (continuous)

5.5.4.4 Evaluation of the handwheel with system functions

Application

The handwheel is an optional operator control of the HMI device. You can enter incremental values in a running project with the handwheel.

Note

Do not configure limit values in WinCC flexible for tags assigned to the handwheel.

Evaluation of the incremental values

If the signals of the handwheel are assigned to a WinCC flexible tag, then the forward and backward increments will be set off against each other. The absolute value of the increments is given. The maximum or minimum value of the increments until an overflow depends on the type of tags assigned.

A complete handwheel revolution yields 50 pulses. The rotary pulse encoder supplies a maximum of 200 pulses per second.

Example

- The handwheel has a starting value of 120 increments.
- You rotate the wheel 10 increments forwards and 3 increments backwards.

  This results in a new value of 127 increments.

5.5.4.5 Evaluation of the key-operated switch with system functions

Application

The key-operated switch is an optional operator control of the HMI device. The key-operated switch serves to lock functions in a running project which can be triggered by means of the HMI device.

Bit assignment

The following table shows the bit assignment for the tag of the key-operated switch:

Bit 1	Bit 0	Key position
0	0	Central position
0	1	Turned in clockwise direction up to stop
1	0	Turned counter-clockwise up to stop

Note

If you use a tag of the "Boolean" type for the key-operated switch, the following assignment applies:

- Status "0": Central position of the key-operated switch
- Status "1": Key-operated switch turned clockwise or counter-clockwise to the stop

5.5.4.6 Evaluation and activation of the illuminated pushbuttons

Application

The illuminated pushbuttons are optional operator controls of the HMI device. The integrated LEDs can be controlled from the PLC.

The LEDs can assume the following states:

- Off
- Flashing slowly
- Flashing quickly
- On

You can use the LEDs to signal to the user that a function key should be pressed in a running project.

Bit assignment

The following table shows the bit assignment for the status tags of the illuminated pushbuttons:

Bit 0	Status of the illuminated pushbutton
0	Pressed
1	Not pressed

The following table shows the bit assignment for the LED tags of the illuminated pushbuttons:

Bit n+1	Bit n	LED status
0	0	Off
0	1	Flashing quickly
1	0	Flashing slowly
1	1	ON (continuous)

5.6 Using a memory card with the HMI device

Introduction

The following can be saved to the memory card of the HMI device:

- Logs
- Recipes
- Operating system
- Applications
- Additional specifications

The memory card can be inserted and removed during operation. Do not remove the memory card while data is being accessed by an application, for example during backup or recipe transfer.

Instructions

CAUTION

Malfunctions

If the HMI device is resting on its front, the following can be activated:

- The emergency stop button
  This can bring the system to a standstill unintentionally.
- The key-operated switch or an illuminated pushbutton
  This can result in malfunctions.

ESD

When working in the open housing, ensure that current-carrying conductors do not come into contact with electrical circuits.

Note the ESD instructions.

CAUTION

Possibility of shutdown while logging onto the effective range

If the HMI device no longer recognizes the transponder and, therefore, the measuring range, it triggers a shutdown.

To remove or insert the memory card, rest the HMI device on its front. Align the HMI device so that it is still possible to measure the distance between the HMI device and the transponder. Distance measurement between HMI device and transponder (Page 61)

If possible, log the HMI device off from the effective range.

CAUTION

Shutdown or rampdown of the system

When you insert or remove the memory card, remove the main battery. This failure of the main battery is bridged by the bridge battery, if fitted. The maximum buffer time is 5 minutes. If you do not replace the main battery after 5 minutes, the HMI device will switch off. If the HMI device has been integrated, this will lead to a shutdown or rampdown of the system.

Do not exceed the buffer time!

NOTICE

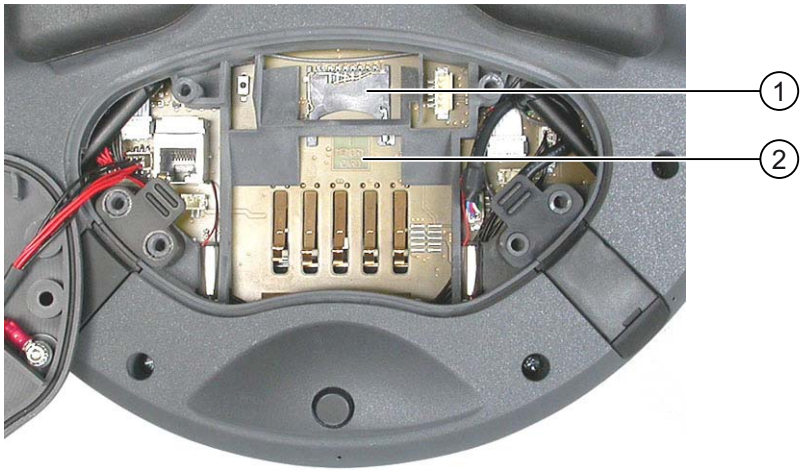
Multimedia card

The multimedia card of the SIMATIC S7 PLC cannot be used.

NOTICE
Pay attention to cleanliness. Foreign bodies or liquids must not come into contact with the printed circuit board or penetrate the inside of the HMI device. Place the HMI device with the front side facing down on a flat, clean surface to protect against damage.

Requirements

- You have opened the battery compartment of the HMI device
- The main battery is removed
- You have opened the connection bay of the HMI device



① Slot
② Memory card symbol

Procedure for inserting a memory card

Proceed as follows:

1. Insert the memory card into the slot.

   Pay attention to the memory card symbol when inserting the memory card. An arrow on the memory card indicates the front side and the direction of insertion. When the memory card is correctly inserted into the slot, it stands approx. 3 mm proud of the slot.

Using a memory card for the first time

NOTICE
Data loss If the HMI device asks you to perform formatting the first time you use a memory card, back up any existing data on the memory card first.

Proceed as follows in order to prevent data loss:

1. Cancel the formatting procedure by pressing "ESC".
2. Remove the memory card from the HMI device.
3. Back up any data that you do not want to lose on the memory card.
4. Insert the memory card into the HMI device.
5. Format the memory card on the HMI device.

Procedure for unplugging a memory card

Proceed as follows:

1. Pull the memory card out of the slot.
2. Close the connection bay.
3. Replace the main battery.
4. Close the HMI device's battery compartment.
5. Store the memory card in a safe place.

See also

Distance measurement between HMI device and transponder (Page 61)

Opening and closing the terminal compartment (Page 71)

5.7 Labeling the function keys

Introduction

You can label the function keys as required for your project. Use labeling strips to do so.

NOTICE
Do not write on the keyboard to label the function keys.

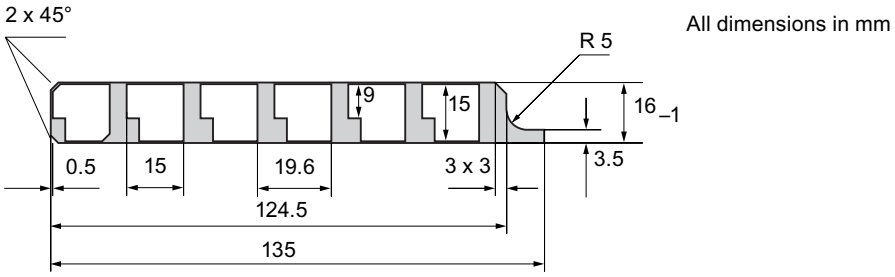
Printing labeling strips

WinCC flexible comes with a range of labeling strip templates. You will find further information regarding the location of the templates in the WinCC flexible Online Help.

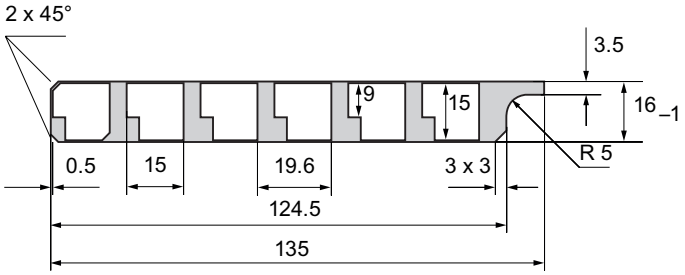
Any printable and writable foil can be used as labeling strips. Use transparent foil so that the LEDs of the function keys can be seen. The permitted thickness of the labeling strip is 0.13 mm. Paper should not be used as labeling strips.

Labeling strip dimensions

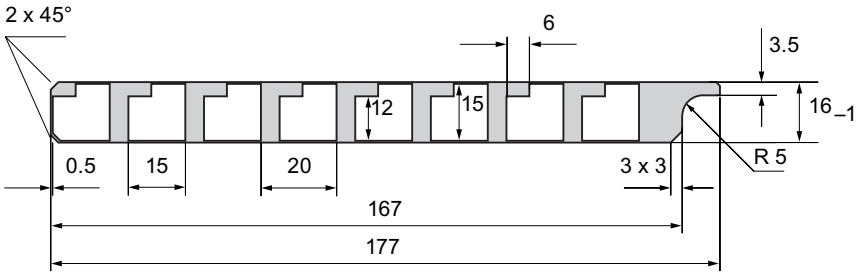
Labeling strip on right:



Labeling strip on left:



Labeling strip at bottom:

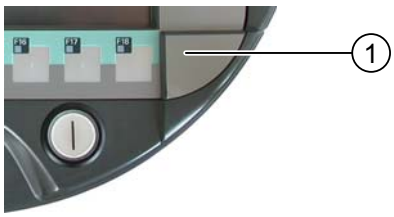


Procedure for attaching the labeling strips

The following steps apply for the initial attaching of labeling strips.

Proceed as follows:

1. Lay the HMI device on its reverse side.
2. Remove the label ① from the cover caps.



1. Unscrew both cover caps.
2. Pull the labeling strips out of the guides.
3. Inscribe the labeling strips in accordance with the system.

   Wait for the printed labeling strips to dry before you insert them.
4. Push the labeling strips into the guides.
5. Screw both cover caps back on.

   Screwed on cover caps with inserted rubber seals satisfy degree of protection IP65.
6. Place the label on to the cover caps.

Procedure for exchanging the labeling strips

Should the exchange of labeling strips become necessary, these can be reordered.

See also

Supplementary pack and other accessories (Page 20)

5.8 Holding the mobile panel and fixing it to the wall

Holding the HMI device

CAUTION
Rampdown If the HMI device is logged onto an effective range and more than 5 seconds pass without it recognizing the effective range, the enabling button is deactivated. If a further 25 seconds pass without the HMI device recognizing the effective range, the HMI device triggers a local rampdown. Always align the HMI device towards the transponder.

The method of holding the HMI device illustrated above enables you, for example, to move around while servicing the system to be monitored.

NOTICE
Availability of the safety-related operator controls If you are manually controlling potentially dangerous movements in the special operating modes, you must use the above shown forearm holding method. Holding the HMI device so that it is supported on your forearm in this way enables you, for example, to quickly reach the emergency stop button or the enabling button in the event of a dangerous situation.

Availability of the enabling button and emergency stop button

The HMI device is equally easy to hold for right-handers and left-handers because it is designed symmetrically. The free hand can be used to operate the operator controls on the front side. The hand holding the HMI device can also be used to activate the enabling button. The acknowledgment of the control input is also given if you only press one of the enabling buttons.

The enabling button is required to confirm axis movements, for example. The enabling button is optimally accessible. The enabling button triggers a safety shutdown in the event of a panic reaction to danger (release or cramping).

The emergency stop button can also be quickly reached with your free hand.

Holder for the HMI device

NOTICE
Operability of the emergency stop button impaired If the HMI device is hooked into an unsuitable wall holder, the operability of the emergency stop button can be impaired.

A charging station is available for safe accommodation of the HMI device. The HMI device is used as a stationary HMI device when it is hooked into the charging station. The HMI device's battery is charged in the charging station.

5.9 Charging station

5.9.1 Charging batteries in the charging compartment

Introduction

You can charge one main battery in each of the two charging compartments of the charging station. The batteries are charged independently of each other.

① Locking latch for charging compartment cover
② Charging compartment
③ LED display

Procedure for inserting the battery in the charging compartment

Proceed as follows:

1. Pull up the locking latch on the charging compartment cover.

   The cover can now be opened.
2. Place the battery in the charging compartment.
3. Close the charging compartment.

Result

The battery is charged automatically whenever the charging station is connected to the power supply unit. The LED display shows the battery's charging status.

Procedure for removing the battery from the charging compartment

Proceed as follows:

1. Pull up the locking latch on the charging compartment cover.

   The cover can now be opened.

2. Remove the main battery using the ribbon.
3. Close the charging compartment.

5.9.2 Displays on the charging station

Introduction

There are 3 LEDs on the charging station. The LEDs show the states of the batteries in the charging compartments and of the power supply unit.

Meaning of the LED displays

Designation	Color	Meaning
BAT 1	Green	The "BAT 1" LED is off when there is no battery in the first charging compartment. The "BAT 1" LED flashes when the battery in the first charging compartment is being charged. The "BAT 1" LED lights up when the battery in the first charging compartment is 95% charged.
BAT 2	Green	The "BAT 2" LED is off when there is no battery in the second charging compartment. The "BAT 2" LED flashes when the battery in the second charging compartment is being charged. The "BAT 2" LED lights up when the battery in the second charging compartment is 95% charged.
POWER	Green/red	The "POWER" LED is off when there is no voltage supply to the charging station. The "POWER" LED lights up green when the power supply to the charging station is within the nominal range. The "POWER" LED lights up red when there is an overvoltage or undervoltage at the charging station.

5.9.3 Locking the charging station

Introduction

The lock prevents unauthorized removal of the HMI device from the charging station.

① Lock barrel with key
② Lock
③ Hook for hooking in the HMI device

Procedure for locking the charging station

Proceed as follows:

1. Slide the lock down to the appropriate cut-out in the charging station.
2. Turn the key by 90 degrees.
3. Remove the key.

Result

The charging station is locked. You cannot remove the HMI device.

Procedure for unlocking the charging station

Proceed as follows:

1. Insert the key into the lock barrel.
2. Turn the key by 90 degrees.
3. Slide the lock upwards.

Result

You can now remove the HMI device.

See also

Charging station (Page 22)

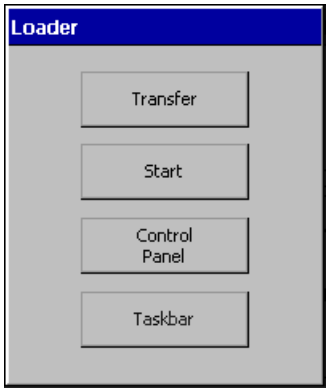
Configuring the operating system

6

6.1 Loader

Loader

The following figure shows the Loader.



The buttons on the Loader have the following function:

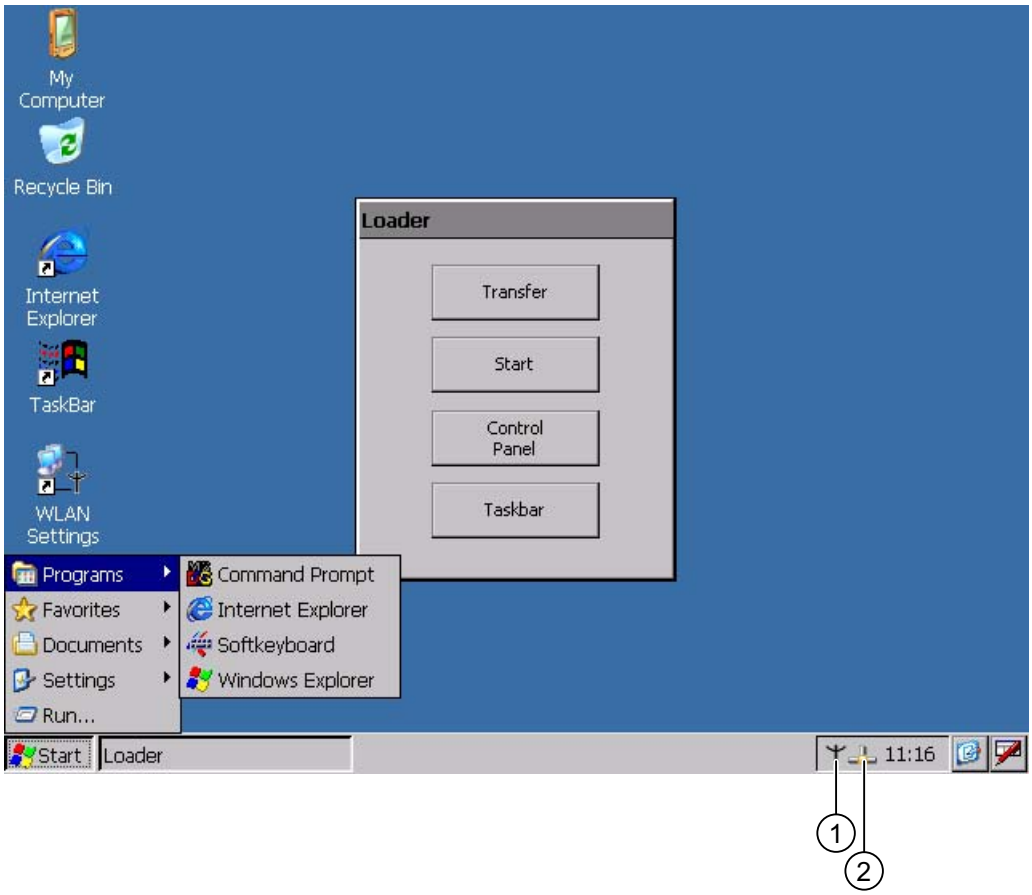
- The "Transfer" button sets the HMI device to transfer mode

  The transfer mode can only be activated when at least one data channel has been enabled for the transfer.
- Press the "Start" button to start the project on the HMI device

  If you do not perform an operation, the project on the HMI device will automatically start after a delay, depending on settings.
- Press the "Control Panel" button to open the HMI device Control Panel

  You can change various settings in the Control Panel, for example the transfer settings.
- Press the "Taskbar" button to activate the taskbar with the Windows CE start menu open

The following figure shows the open start menu.



① Symbol for parameter assignment for the WLAN network
② Symbol for displaying IP information about the LAN connection

Open Loader

The following options are available to open the Loader:

- The Loader appears briefly after starting the HMI device
- The Loader appears when the project is closed

  If configured, use the relevant operating element to close the project.

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

Password protection

NOTICE
If the password is no longer available, you cannot do the following until you have updated the operating system. • Making changes to the Control Panel • Operating the Windows CE task bar All data on the HMI device will be overwritten when you update the operating system!

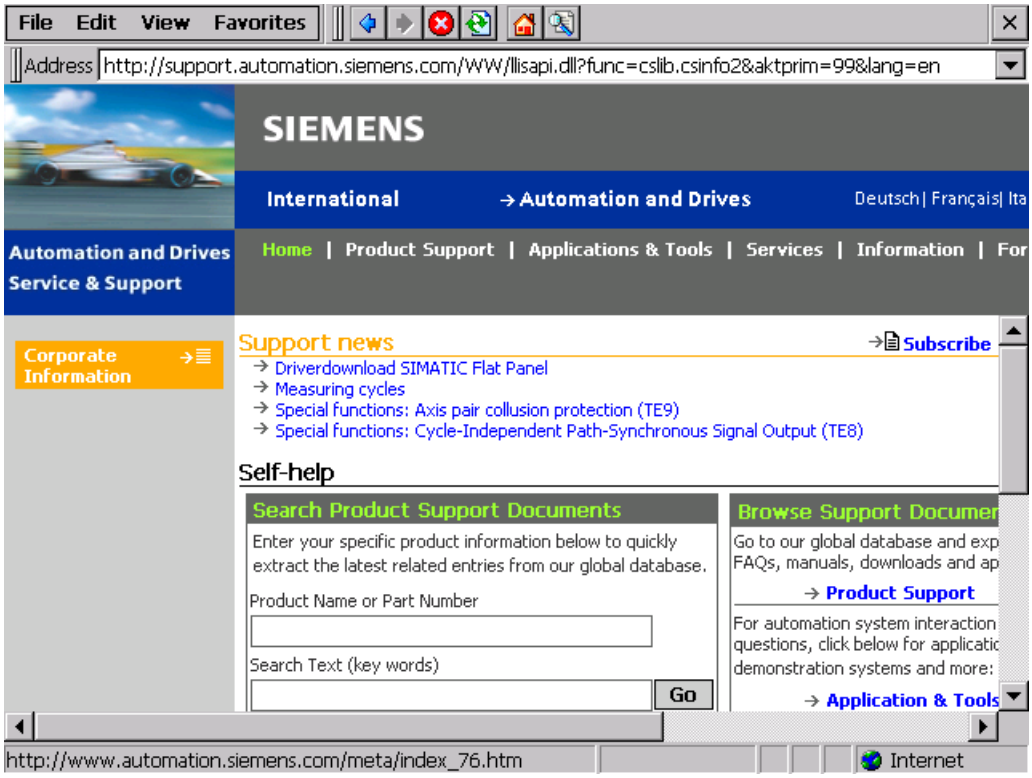
You can protect the Control Panel and taskbar from unauthorized access. When password protection is enabled, the message "password protect" is displayed in the Loader.

Password protection prevents maloperations and increases security for the system or machine.

If the password is not entered, only the "Transfer" and "Start" buttons are operable.

Internet Explorer

Internet Explore for Windows CE is installed on the HMI device.



Note

Internet Explorer for Windows CE and the Internet Explorer version which can run on a PC differ in terms of functionality.

For further information, please refer to Microsoft's website.

See also

Changing password protection (Page 146)

Programming the data channel (Page 160)

Switching on and testing the HMI device (Page 91)

6.2 WLAN

6.2.1 Overview

Introduction

The properties of the WLAN networks can be entered in the "WLAN" dialog box. Open the "WLAN" dialog box in Windows CE.

WLAN connection

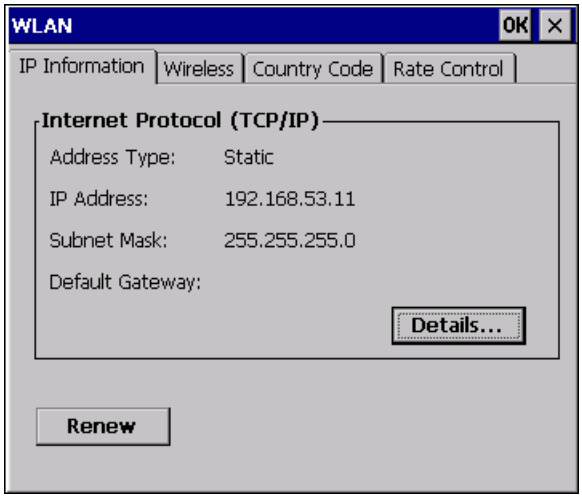
In the case of a WLAN connection, the configuration engineer for the current project can specify the following:

- The WLAN networks to which the HMI device connects

  The configuration engineer can specify up to 3 WLAN networks
- Priority assignment of WLAN networks
- Whether the HMI device is permitted to connect with other WLAN networks

Procedure

You have activated the taskbar in Windows CE and opened the following dialog box with the "WLAN Settings" or  icon.



The dialog box shows the parameters of the WLAN connection that are set in the "'WLAN'-Settings" dialog box in the Control Panel. If you have not yet parameterized the connection, the boxes will be empty.

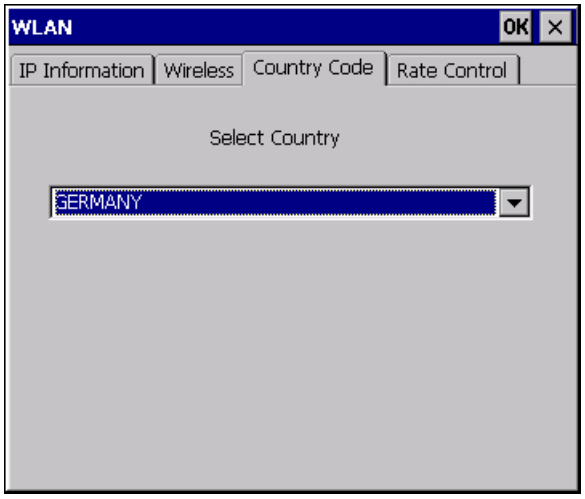
Select the "Details..." button to open a dialog box which provides more detailed information about the established network connection.

Set country code

NOTICE
The correct country setting is essential for operation complying with the approvals. The selection of a country other than the one where you are using the system is subject to criminal penalties.

For WLAN communication, the frequency bands are split into channels differently in different countries.

1. Change to the "Country Code" tab.



1. Select the required country code from the "Country Code" selection box.
2. Confirm your entries.

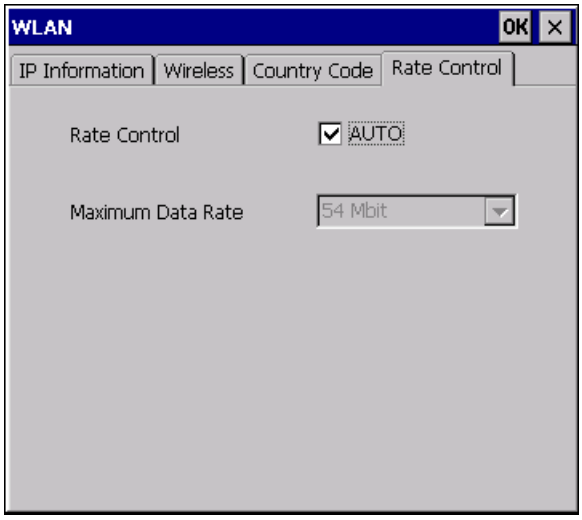
   The dialog closes.

Result

The country code for the WLAN connection has been set.

Setting the transmission rate for WLAN

Use the register "Rate Control" to change the transfer rate of the HMI panel, if necessary.



NOTICE
Communication not possible. Deselect the "Auto" check box only in case of transfer problems. If you want to change the transfer rate, please contact your network administrator. Communication between HMI Panel and Access Point is not possible in case of incorrect settings.

1. Deselect the "Auto" check box.
2. Select the desired data transfer rate in the Maximum Data Rate selection box.
3. Confirm your entries.
4. Confirm the message of the HMI device.
5. Restart the HMI device.

See also

Restarting the HMI device (Page 156)

6.2.2 Parameterizing the WLAN connection

Introduction

You can define the parameters for the WLAN connection and also create new WLAN connections.

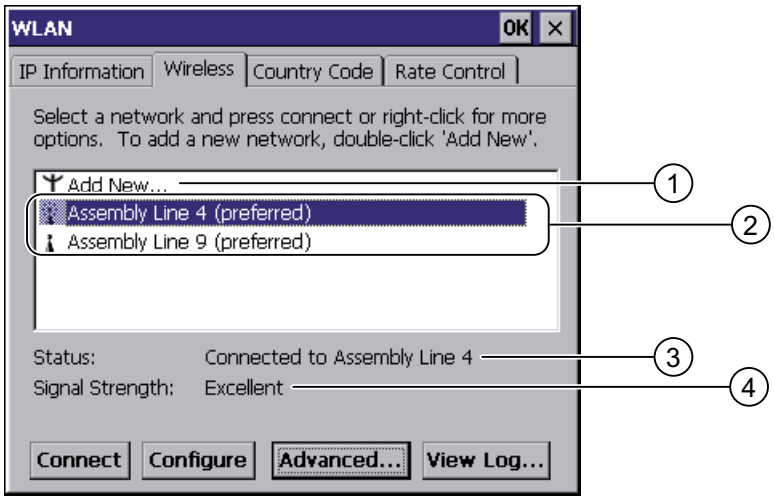
Requirements

You have opened the "WLAN" dialog box, "Wireless" tab, by touching either the "WLAN Settings" icon or the icon.

If no connection to a WLAN network exists, all available WLAN networks are listed.

If a connection to a WLAN network exists, the following WLAN networks are displayed:

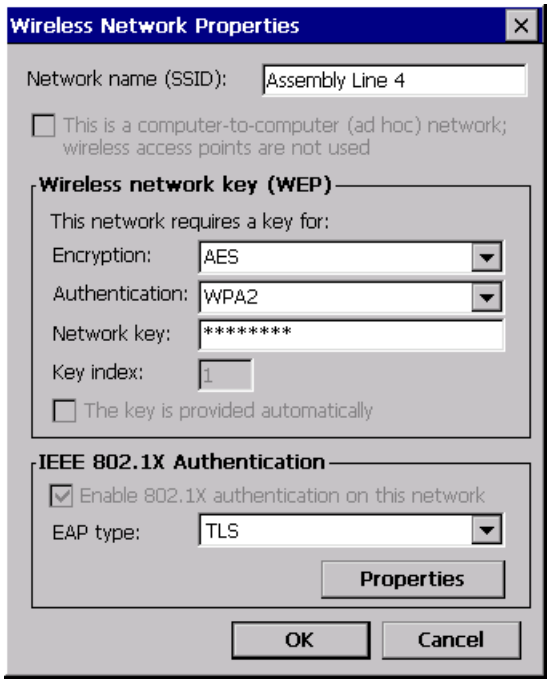
- The WLAN network to which the connection exists
- All parameterized networks



① "Add New" entry
② Existing and parameterized WLAN networks
③ Status information, shows the WLAN network to which the HMI device is connected
④ Signal strength of the selected network

Procedure for creating a WLAN network, parameterize the WLAN network and establish a connection

1. If you want to create a new WLAN network, select "Add New".
2. If you want to configure an existing WLAN network or connect the HMI device to a WLAN network, select the desired network.
3. Use the "Configure" or "Connect" button to open the "Wireless Network Properties" dialog box.



Note

If the HMI device has detected the WLAN network, the encryption and the authentication process for this network will already be shown in the dialog box.

If necessary, you must also enter the appropriate password in the "Network key" text box. After you have entered the password, it is shown in encrypted form.

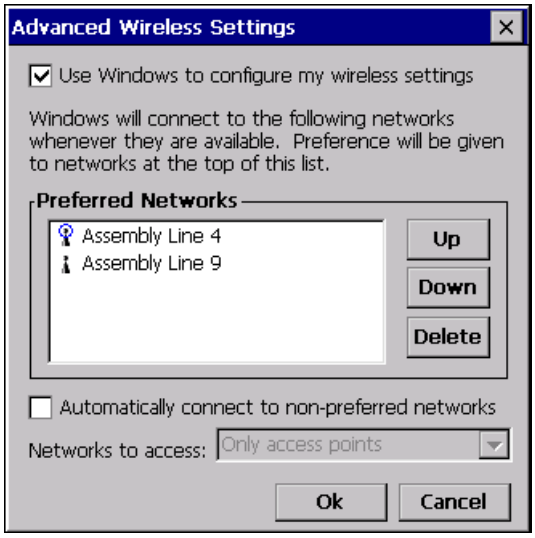
1. If necessary, select the encryption you are using under "Encryption".
2. If necessary, select the required authentication process under "Authentification".
3. If necessary, enter the password for the WLAN network under "Network key".
4. If necessary, select the type of authentication protocol under "EAP type".
5. Confirm your entries.

   The dialog closes. The parameterized WLAN network is added to the list of preferred networks.

   If the HMI device is connected to the WLAN network, the WLAN network is put at the top of the list of preferred networks.

Procedure for parameterizing list of preferred networks

1. In the "WLAN" dialog box, "Wireless" tab, press Advanced... to open the "Advanced Wireless Settings" dialog box.



1. If you want to block the connection to the parameterized networks in the list of preferred networks, clear the "Use Windows to configure my wireless settings" check box.

   Note

   If preferred networks are configured in the project, the sequence of entries in the list of preferred networks changes when you start a project. The sequence configured in the project is set. Any networks not permitted in the project are removed from the list.

   The HMI device attempts to connect with a WLAN network in the sequence of the preferred networks in the list.

1. Change the sequence as required.
   - Select the WLAN network you want to move.
   - Use the "Up" and "Down" buttons to select the desired position.
2. If necessary, use the "Delete" button to delete the selected WLAN entry from the list of preferred networks.
3. Select the "Automatically connect to non-preferred networks" check box if you want the HMI device to connect to other WLAN networks.
4. Confirm your entries.

   The dialog closes.

Result

The WLAN parameters are now set.

Display logbook

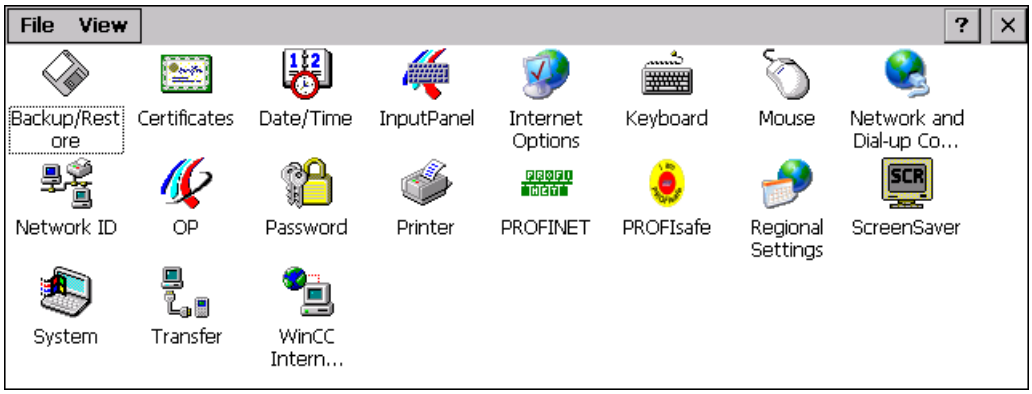
Press "View Log..." in the "WLAN" dialog box, "Wireless" tab, to open the logbook.

The logbook provides information about connection buildup, connection cleardown and failed attempts at connection buildup.

6.3 Control Panel

6.3.1 Overview

Control Panel of the HMI device



The HMI device Control Panel can be used to modify the following HMI device settings:

- PROFIsafe address
- Vibration alarm
- Date/time
- Screen saver
- Regional settings
- Transfer settings
- Network settings
- Delay time
- Password

Opening the Control Panel

The Control Panel can be opened as follows:

- In the startup phase

  Press "Control Panel" to open the HMI device Control Panel in the Loader.
- In a running project

  Select the operating element provided for the respective task, if configured.
- In the Windows CE start menu
  - Press the  key on the alphanumeric screen keyboard twice.
  - Open the Control Panel with "Settings > Control Panel".

6.3.2 Reference

Overview of functions

The following table shows the settings in the Control Panel.

[1] 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.

Icon	Functions		Tab / entry	Chapter
	Saving and restoring with external storage device		–	
	Importing, displaying and deleting certificates		"Stores"	
	Setting the date and time		"Date/Time"	
	Configuring the screen keyboard		–	
	Changing the browser startup page and general browser settings		"General"	
	Changing connection and proxy server settings		"Connection"	
	Changing cookie settings		"Privacy"	
	Changing privacy settings		"Advanced"	
	Setting the character repeat for the keyboard		"Repeat"	
	Setting the double-click		"Double-Click"	
	Parameterizing the WLAN connection		"WLAN"	
	Setting the IP address	'WLAN' Settings'	"IP Address"	
	Setting the name server	'WLAN' Settings'	"Name Servers"	
	Parameterizing the LAN connection		"LAN"	
	Setting the IP address	'LAN' Settings'	"IP Address"	
	Setting the name server	'LAN' Settings'	"Name Servers"	
	Changing the logon data		"Identification"	
	Backup registry information		"Persistent Storage"	
	Changing monitor settings		"Display"	
	Displaying information about the HMI device		"Device"	
	Restarting the HMI device		"Device"	
	Calibrating the touch screen		"Touch"	Calibrating the touch screen (Page 144)
	Displaying battery status		"Battery"	Displaying battery status (Page 181)
	Activate memory management		"Memory Monitoring"	Activate memory management (Page 182)
	Activating vibration alarm		"Vibration Alarm"	Activating vibration alarm (Page 159)

Icon	Functions	Tab / entry	Chapter
	Changing password protection	"Password Settings"	Changing password protection (Page 146)
	Changing the printer properties	–	Changing the printer properties (Page 154)
	Changing the PROFINET IO setting	–	Enabling PROFINET IO (Page 165)
	Setting the PROFIsafe address		Setting the PROFIsafe address (Page 164)
	Changing regional settings	"Regional Settings"	Changing regional settings (Page 149)
	Changing the number format	"Number"	
	Changing the currency format	"Currency"	
	Changing the time format	"Time"	
	Changing the date format	"Date"	
	Setting the screen saver Reducing the backlighting		Setting the screen saver (Page 152)
	Displaying the system information	"General"	Displaying system properties (Page 158)
	Displaying memory information	"Memory"	
	Setting the device name of the HMI device	"Device Name"	Setting the device name of the HMI device (Page 168)
	Programming the data channel	"Channel"	Programming the data channel (Page 160)
	Setting the delay time	"Directories"	Setting the delay time (Page 162)
	Changing e-mail settings[1)]	"Email"	Changing e-mail settings (Page 172)

1) 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.

6.3.3 Operating the Control Panel

Introduction

The Control Panel is operated with the HMI device touch screen.

Procedure

Proceed as follows to change settings in the Control Panel:

1. Close the project.

   Use the provided operating element.

   The Loader appears
2. Open the Control Panel by pressing "Control Panel".
3. To open the required dialog, double-click its icon.
4. Change as required by touching the tab.
5. Now make the necessary changes.

   Touch the respective input object to make entries.
   - Use the screen keyboard of the HMI device to enter the new values in the text boxes.
   - Touch a button to operate it.
   - Touch the selection box to open a drop down list box. Touch the required entry from the drop down list box.
   - Touch the check box to select or clear a check box.
   - Touch a radio button to select it.
6. Confirm the entries using the button OK or terminate the entries using the button ×.

   The dialog closes.
7. Close the Control Panel with the × button.
8. Start the project with the "Start" button in the Loader.

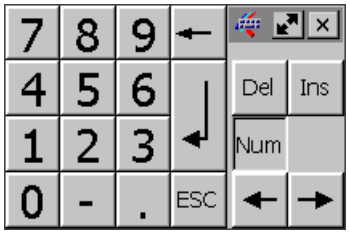
Input with the screen keyboard

A screen keyboard is available for alphanumeric characters. The screen keyboard is displayed as soon as you touch a text box. You can also call up the screen keyboard directly from the Control Panel.

Display methods for the screen keyboard

You can change the display method for the screen keyboard and fix the position on the screen. Confirm an entry using the key ↵ or terminate the entry using the key ESC. Either action closes the screen keyboard.

- Numerical screen keyboard



- Alphanumerical screen keyboard

The alphanumerical screen keyboard has the following levels.

- Normal level
- Shift level

  The shift level includes uppercase letters.

- Reduced screen keyboard

Changing the display of the screen keyboard

Key	Functions
Num	Switching between the numerical and alphanumerical keyboard
⇧	Switching between the normal level and Shift level of the alphanumerical screen keyboard
Alt Gr	Switchover to special characters
_	Switching from full display to reduced display
❐	Switching from reduced display to full display
×	Closing of reduced display of the screen keyboard

Moving the screen keyboard

In order to move the screen keyboard, proceed as follows:

1. Touch the icon  .
2. Touch and move the screen keyboard on the touch screen.
3. When the desired position is reached, release the icon  .

Adjust screen keyboard size

Note

The  icon only appears on the screen keyboard if in the "Siemens HMI InputPanel" dialog box you have selected the "Show Resize button" check box.

To adjust the size of the screen keyboard, proceed as follows:

1. Touch the icon  .

2. To adjust the size of the screen keyboard, maintain contact.
3. When the size you want is reached, release contact with the icon.

See also

Configuring the screen keyboard (Page 140)

6.4 Changing settings for operation

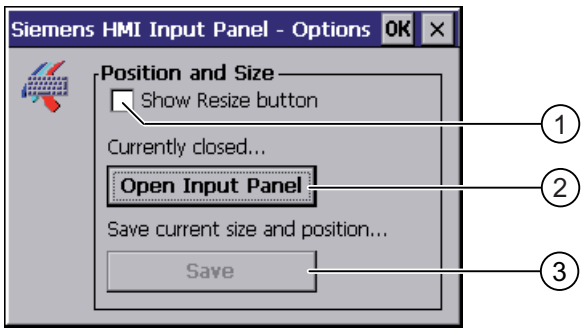
6.4.1 Configuring the screen keyboard

Introduction

You can change the layout and the position of the screen keyboard as follows.

Requirements

You have opened the "Siemens HMI InputPanel - Options" dialog with the "InputPanel" icon.



① Check box for displaying the button in the screen keyboard
② Button for displaying the screen keyboard
③ Button for saving the screen keyboard settings

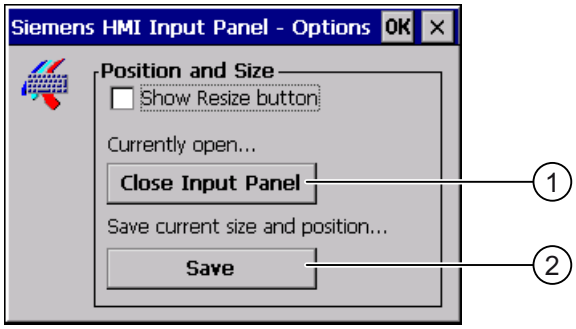
Procedure

Proceed as follows:

1. If you want to change the size of the screen keyboard, activate the "Show Resize button" check box.

   The icon also appears in the screen keyboard.
2. Use the "Open Input Panel" button to open the screen keyboard.

The appearance of the dialog box changes:



① Button for closing the screen keyboard
② Button for saving the screen keyboard settings

1. If you want to switch between the numeric and alphanumeric screen keyboard, press the Num key.
2. If you want to change the position of the screen keyboard, move it using the icon. Release contact from the icon when the required position is reached.
3. If you want to increase the size of the screen keyboard, enlarge it to the size required using the icon. Release contact from the icon when the required size is reached.
4. If you want to save the settings, press the "Save" button.
5. Close the screen keyboard by pressing the "Close Input Panel" button.
6. Confirm your entries.

   The dialog closes.

Result

The screen keyboard settings have been modified.

See also

Operating the Control Panel (Page 137)

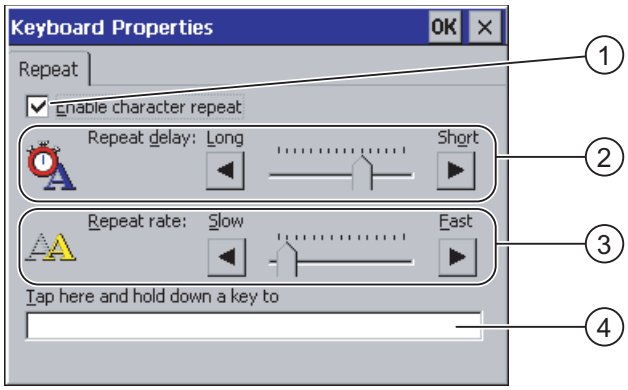
6.4.2 Setting the character repeat rate of the screen keyboard

Introduction

You can set the character repeat for the screen keyboard in the Control Panel.

Requirements

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



① Check box for selecting the character repeat
② Slider control and buttons for the delay time before character repeat
③ Slider control and buttons for the rate of the character repeat
④ Test box

Procedure

Proceed as follows:

1. If you want to enable character repetition, select the "Enable character repeat" check box.
2. If you want to change the delay, press a button or the slider in the "Repeat delay" group.

   Moving the slider to the right will shorten the delay. Moving to the left will extend the delay.
3. If you want to change the repeat rate, press a button or the slider in the "Repeat rate" group.

   Moving the slider to the right will shorten the repeat rate. Moving to the left will extend the repeat rate.
4. Verify your settings.
   - Touch the test box. The screen keyboard opens.
   - Move the screen keyboard as needed.
   - Touch any character and keep it pressed.
   - Check the implementation of the character repetition and the rate of the character repetition in the test box.
   - Correct your setting if necessary.
5. Confirm your entries.

   The dialog closes.

Result

The character repetition and delay are set.

6.4.3 Setting the double-click

Introduction

You can start applications in the Control Panel and in Windows CE by double-clicking.

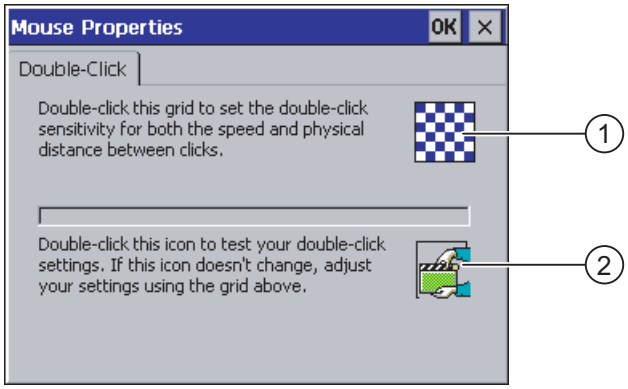
In the "Mouse Properties" dialog box you can change the following settings.

- The time interval between two clicks for a double-click
- The physical distance between two clicks for a double-click

A double-click corresponds to two brief touches in sequence.

Requirements

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



① Icon for setting the double-click
② Icon for testing the double-click

Procedure

Proceed as follows:

1. Double-click on the grid.

   After one double-click the grid is shown in inverse colors.

2. Double-click on the icon.

   If the double-click is valid, the icon is displayed as follows:

3. If the icon remains unchanged, double-click on the grid again.
4. Confirm your entries.

   The dialog closes.

Result

The double-click adjustment is completed.

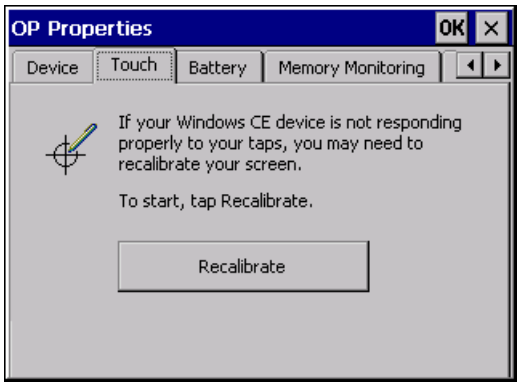
6.4.4 Calibrating the touch screen

Introduction

Depending on the mounting position and viewing angle, it is possible that parallax may occur when operating the touch screen. In order to prevent any operating errors as a result, calibrate the touch screen again in the startup phase or during runtime.

Requirements

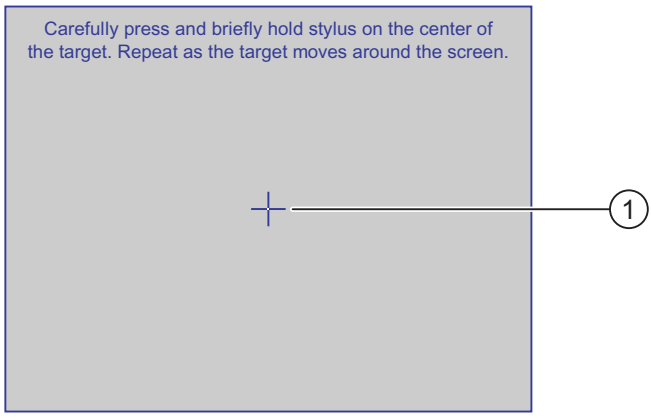
You have opened the "OP Properties" dialog box, "Touch" tab, by touching the "OP" icon.



Procedure

Proceed as follows:

1. Use the "Recalibrate" button to open the following dialog box:

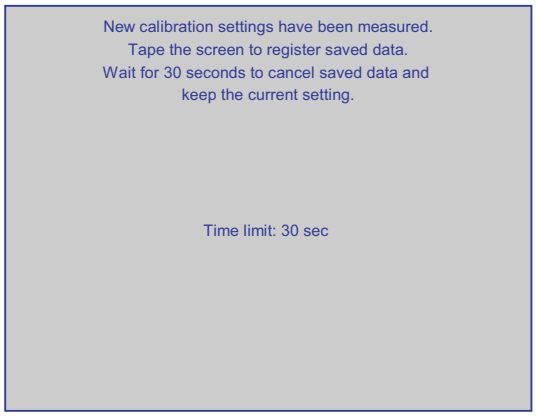


1. Briefly touch the center of the calibration crosshairs ①.

   The calibration crosshairs is then displayed at four more positions.
2. Touch the middle of the calibration crosshairs for each position.

   If you do not touch the middle of the calibration crosshairs, the procedure is repeated.

   Once you have touched the calibration crosshairs for all positions, the following dialog appears:



1. Touch the screen within 30 seconds.

   The new calibration is saved. If you wait longer than 30 seconds, the new calibration is discarded and the original calibration remains in effect.

   The "OP Properties" dialog box, "Touch" tab is displayed again.
2. Close the dialog.

Result

The HMI device touch screen is now recalibrated.

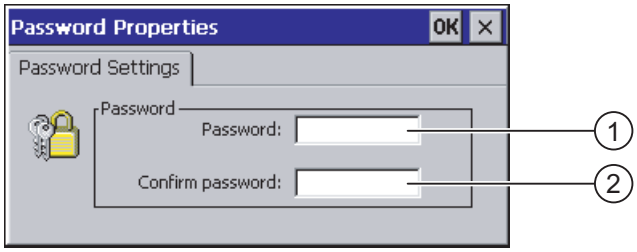
6.5 Changing password protection

Introduction

You can protect the Control Panel and the Windows CE taskbar with a password.

Requirements

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



① Password text box
② Text box for entering the password a second time

NOTICE
If the password is no longer available, you cannot do the following until you have updated the operating system. • Making changes to the Control Panel • Operating the Windows CE task bar All data on the HMI device will be overwritten when you update the operating system!

Procedure for activating password protection

Proceed as follows:

1. Enter a password in the "Password" text box.
2. Repeat the password entry in the "Confirm password" text box.
3. Confirm your entries.

   The dialog closes.

NOTICE
The following characters cannot be used in passwords: • Blank • Special characters * ? . % / \ ' "

Result

You cannot open the Control Panel or Windows CE taskbar without entering a password.

Procedure for deactivating password protection

Proceed as follows:

1. Delete the inputs in the "Password" and "Confirm password" text boxes.
2. Confirm your entries.

   The dialog closes.

Result

Password protection for the Control Panel and the Windows CE taskbar is disabled.

6.6 Changing HMI device settings

6.6.1 Setting the date and time

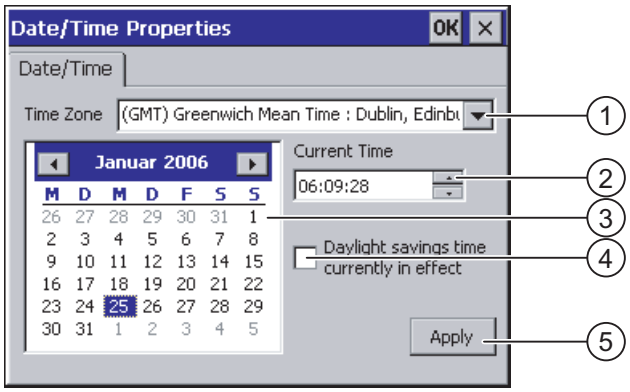
Introduction

You can set the date and time on the HMI device. The HMI must be restarted in the following cases:

- You have changed the time zone setting
- You have changed the "Daylight savings time currently in effect" check box setting

Requirements

You have opened the "Date/Time Properties" using the "Date/Time Properties" icon.



① Time zone selection box
② Text box for the time
③ Date selection box
④ "Daylight savings" check box
⑤ Button for applying changes

Procedure

Proceed as follows:

1. Select the appropriate time zone for the HMI device from the "Time Zone" selection box.
2. Touch the "Apply" button to confirm your entry.

   The time of day shown in the "Current Time" box is adjusted correspondingly to the selected time zone.
3. Set the date in the selection box.
4. Set the current time of day in the "Current Time" text box.
5. Touch the "Apply" button to confirm your input.

   The values you have set are now in effect.

Note

The system does not automatically switch between winter and summer time.

1. If you want to switch from winter to summer time, select the "Daylight savings time currently in effect" check box.

   When you press the "Apply" button, the time is brought forward by one hour.
2. If you want to switch from summer to winter time, clear the "Daylight savings time currently in effect" check box.

   When you press the "Apply" button, the time is moved backwards by one hour.
3. Confirm your entries.

   The dialog closes.

Result

The settings for the data and time of day have now been changed.

Internal clock

The HMI device has an internal buffered clock.

Synchronizing the date and time with the PLC

The date and time of the HMI device can be synchronized with the PLC if this has been configured in the project and the PLC program.

Additional information on this subject is available in the "WinCC flexible" system manual.

NOTICE
Time-dependent reactions You have to synchronize the date and time when time-controlled responses are triggered in the PLC by the HMI device.

See also

Restarting the HMI device (Page 156)

6.6.2 Changing regional settings

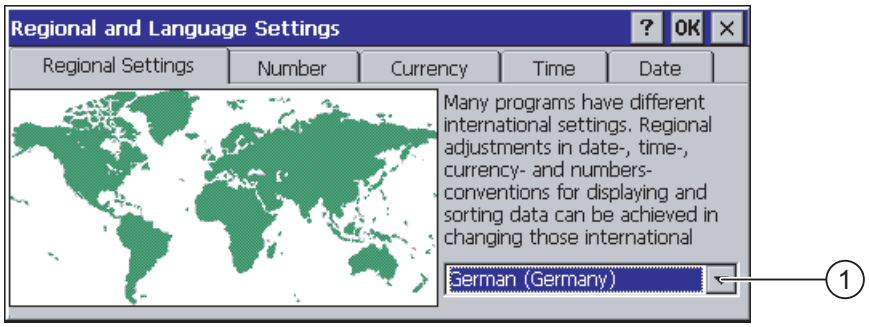
Introduction

In different countries, for example, the date, time and decimal points are displayed differently. You can adjust the display format to meet the requirements of different regions.

The country-specific settings apply to the current project. If the project language is changed, the country-specific settings are also changed.

Requirements

You have opened the "Regional and Language Settings" dialog with the "Regional Settings" icon.



① Region selection box

Procedure

Proceed as follows:

1. Select the region from the selection box.
2. Change to the "Number", "Currency", "Time" and "Date" tabs and set the selection boxes to the desired settings.

3. Confirm your entries.

   The dialog closes.

Result

The HMI device's regional settings have been changed.

6.6.3 Backup registry information

Registry information and temporary data

You can install and uninstall your own programs on the HMI devices under Windows CE. You must save the registry settings after installation or uninstallation.

You can save the following data to the flash memory:

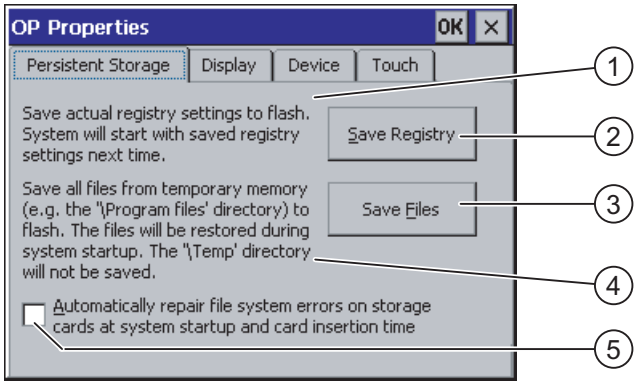
- Registry information
- Temporary files

Restoring the file system of a memory card

If memory cards are used, the file system on the memory card may become damaged, perhaps due to a power failure. The HMI device detects the defective file system on start-up or when the memory card is inserted. The HMI device can restore the file system automatically or on request.

Requirements

You have opened the "OP Properties" dialog box, "Persistant Storage" tab, by touching the "OP"  icon.



① Meaning of the text in the dialog:

Saves the current registry information to the flash memory. The HMI device loads the saved registry information the next time it boots.

② Button for saving registry information

③ Button for saving temporary files

④ Meaning of the text in the dialog:

Saves all the files in temporary storage to the flash memory (for example, from the "Program Files" directory). These files are written back when the HMI device is started. The "\Temp" directory is not saved.

⑤ Check box for automatically restoring the file system on the memory card when the HMI device starts up and when a memory card is inserted.

Procedure

Proceed as follows:

1. If you want to save the current registration entries, click the "Save Registry" button.
2. If you want to save the temporary files, click the "Save Files" button.
3. Specify how the file system on the memory card should be restored.
   - Activate automatic restore by selecting the "Automatically Repair ..." check box.
   - If you only want the restore to be carried out upon prompting, clear the "Automatically Repair ..." check box.
4. Confirm your entries.

   The dialog closes.

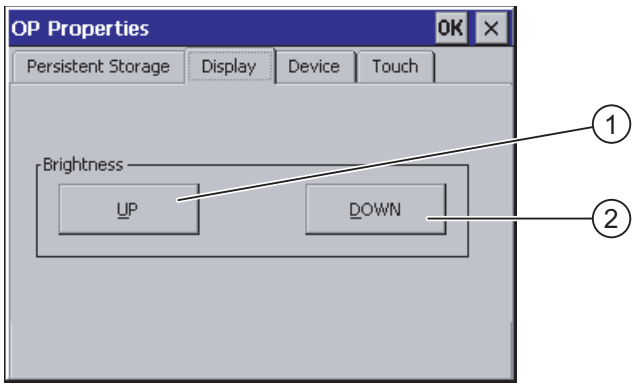
Result

The desired data is saved.

6.6.4 Changing screen settings

Requirements

You have opened the "OP Properties" dialog box, "Display" tab, by touching the "OP" icon.



① Button for increasing the brightness
② Button for reducing the brightness

Procedure

Proceed as follows:

1. If you want to increase the brightness of the screen, press "UP".
2. If you want to reduce the brightness of the screen, press "DOWN".
3. Confirm your entries.

   The dialog closes.

Result

The screen settings have been changed.

6.6.5 Setting the screen saver

Power management settings in the WinCC flexible project

To save power, the HMI device has a power management function with the following states:

- "Power Save 1"
  - Reduces the brightness of the backlighting.
- "Power Save 2"
  - The touch screen is switched off.
  - The function keys are not active.

The relevant time intervals are set in the project. Power management is automatically activated if the HMI device is not operated within the specified period of time.

You can clear the "Power Save 1" state by touching the touch screen or pressing the function key.

You can clear the "Power Save 2" state by briefly pressing the ON/OFF button.

Settings in the Control Panel

You can also set the following time intervals in the HMI device Control Panel:

- For the automatic activation of the screen saver
- For the automatic reduction in the screen's backlighting

The screen saver and the reduced screen backlighting functions are switched back off by means of the following actions:

- By pressing any key

- By touching the touch screen

The function associated to the key or button will not be executed by this.

Validity

The time until the backlighting is reduced is always the shorter time interval.

In other words,. the time interval set in the "Screensaver" dialog box applies if it is shorter than the setting for "Power Save 1" in the project.

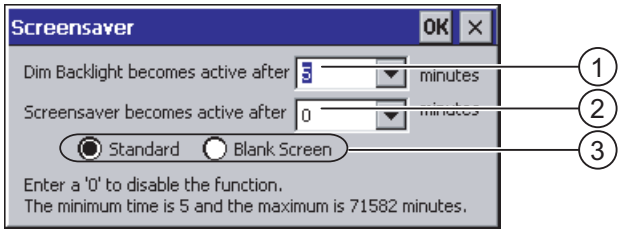
If a value of "0" is entered in the "Screensaver" dialog box for the reduction in backlighting, the value set in the project will apply.

After you have selected the screen saver and reduction of the backlighting, you must restart the HMI device. The settings become effective following a restart.

NOTICE
Reducing the brightness of the backlighting The brightness of the backlighting decreases incrementally during its operational life. In order to increase the operational life of the backlighting, activate the backlighting reduction. **Burn-in effect** Screen contents may occasionally leave a burn-in effect in the background if they appear too long. This burn-in effect will automatically disappear after a certain amount of time if the screensaver is activated, for example. The longer the same content is displayed on the screen, the longer it will take for the burn-in effect to disappear. Generally, you should always activate the screen saver. When the screen saver is active, the backlighting is reduced at the same time.

Requirements

You have opened the "Screensaver" dialog with the "ScreenSaver"  icon.



① Time interval in minutes until backlighting is reduced
② Period of time in minutes before the screen saver is activated
③ Screen saver setting

Procedure

Proceed as follows:

1. Enter the interval in minutes after which the backlighting is to be reduced.

   Entering "0" will deactivate the backlighting reduction.
2. Enter the number of minutes before the screen saver is to be activated.

   The minimum time is 5 minutes and the maximum time is 71582 minutes.

   Entering "0" disables the screen saver.
3. Select either the standard screen saver or an empty screen.
   - In order to select the standard screen saver, select the "Standard" option.
   - In order to select a blank screen as screen saver, select the "Blank Screen" option.
4. Confirm your entries.

   The dialog closes.

Result

The screen saver and the reduced backlighting for the HMI device is set. After you have reselected the screen saver and reduction of the backlighting, you must restart the HMI device. The selection becomes effective following a restart.

See also

Power management (Page 98)

Restarting the HMI device (Page 156)

6.6.6 Changing the printer properties

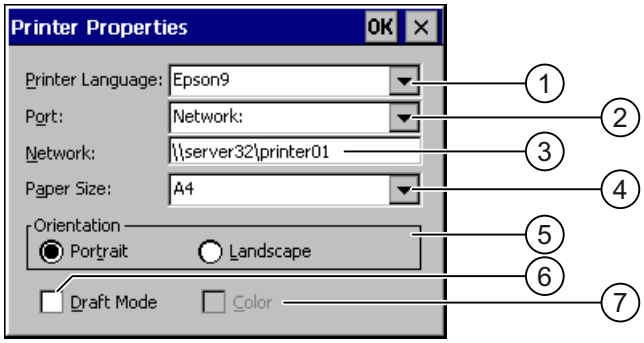
Introduction

You can print hardcopies and reports on a network printer. Line printing of alarms is not possible on a network printer.

The list of current printers and required settings for HMI devices can be found on the Internet under "http://support.automation.siemens.com/WW/view/en/11376409".

Requirements

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



① Selection boxd for the printer
② Interface selection box
③ Network address of the printer
④ Paper format selection box
⑤ "Orientation" group with radio buttons for print orientation
⑥ Print quality check box
⑦ Color printing check box

Procedure

Proceed as follows:

1. Select the printer from the "Printer Language:" selection box.
2. In the "Port:" selection box, select the "Network:" interface.
3. In the "Network:" text box, enter the network address of the printer.
4. Select the paper format from the"Paper Size:" selection box.
5. Select the required radio button in the "Orientation" group:
   - "Portrait" for portrait
   - "Landscape" for landscape
6. Select the print quality.
   - Select the "Draft Mode" check box if you wish to print in draft mode.
   - Clear the "Draft Mode" check box if you wish to print with higher quality.
7. If the printer selected can print in color and you wish it to do so, select the "Color" check box.
8. Confirm your entries.

   The dialog closes.

Result

The settings for the printer have now been changed.

6.6.7 Restarting the HMI device

Introduction

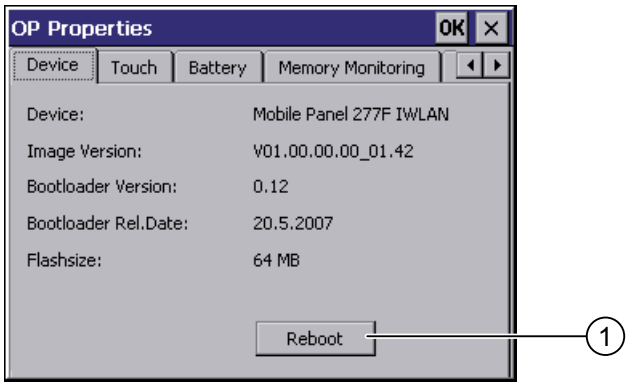
The HMI device must be restarted in the following cases:

- You have activated or deactivated the PROFINET IO direct keys.
- You have changed the time zone setting
- You have switched between summer time and winter time.
- You have reselected the screen saver and reduction of the backlighting.
- You have changed the transfer rate to the Access Point.

⚠ CAUTION
Data loss when the HMI device is restarted All volatile data is lost when the HMI device is restarted. Check the following: • The project on the HMI device is complete • No data is being written to the flash memory

Requirements

You have opened the "OP Properties" dialog box , "Device" tab, by touching the "OP" icon.



① Button for restarting the HMI device

Procedure

1. Press "Reboot" to reboot the HMI device.

   A warning is displayed.

   Confirm this warning to execute the following:

- If no projects are active on the HMI device, it will restart immediately.
- If a project is active on the HMI device, it will output several prompts. After you have acknowledged these prompts, the HMI device will restart.

Result

The HMI device starts.

See also

Setting the date and time (Page 147)

Enabling PROFINET IO (Page 165)

Overview (Page 128)

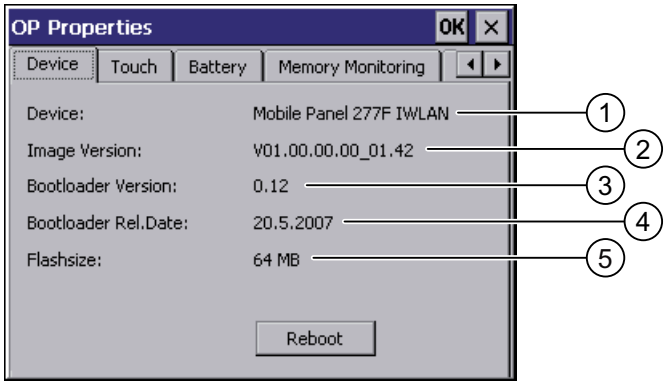
6.6.8 Displaying information about the HMI device

Introduction

You will need the device-specific information if you contact A&D Technical Support.

Requirements

You have opened the "OP Properties" dialog box, "Device" tab, by touching the "OP"  icon.



① HMI device name
② Version of the HMI device image
③ Version of the boot loader
④ Boot loader release date
⑤ Size of the internal flash memory in which the HMI device image and project are stored

Procedure

Proceed as follows:

1. The device-specific information is displayed in the "Device" tab.
2. Close the dialog when the information is no longer required.

Note

The memory available for the project is only a part of the internal flash memory displayed.

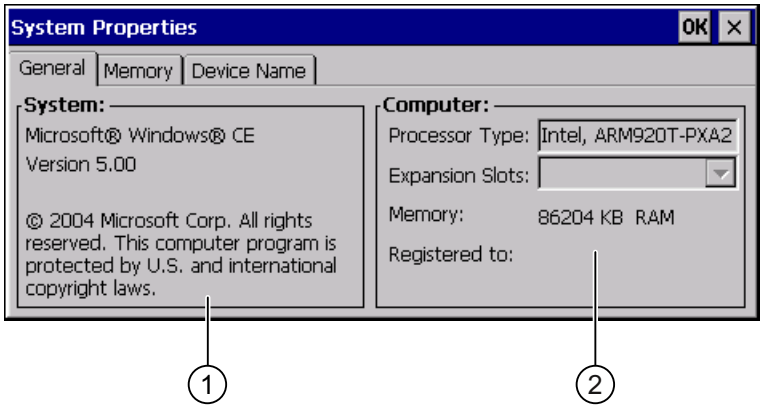
6.6.9 Displaying system properties

Introduction

The system-specific information provides you with information about the processor, operating system and memory of the HMI device.

Requirements

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



① Copyright for Microsoft Windows CE

② Information about the processor, size of the internal flash memory, and capacity of a memory card when inserted

Displaying system properties

The system information is displayed. This dialog is read-only.

Close the dialog.

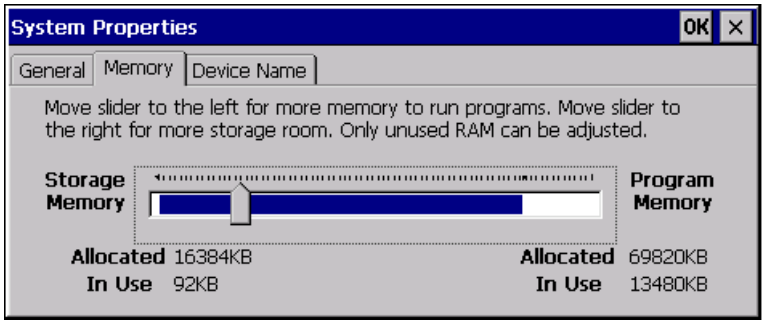
Procedure for displaying memory information

NOTICE
"Memory" tab Do not change the memory distribution in the "Memory" tab. Only applies for the usage of options: An alteration to the memory distribution may be necessary. Please refer to the accompanying documentation for the option for additional information.

Proceed as follows:

1. Change to the "Memory" tab.

   The memory information is displayed.



1. Close the dialog.

6.6.10 Activating vibration alarm

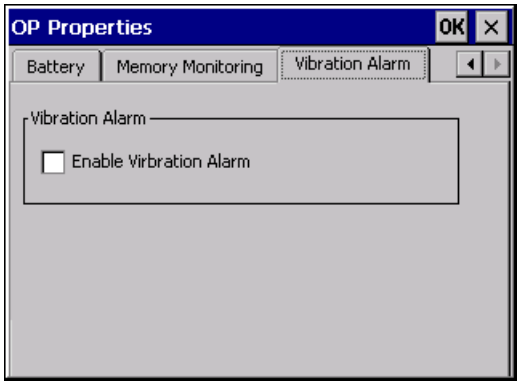
Introduction

You can activate a vibration alarm for the HMI device. The vibration alarm will be triggered in the current project under the following circumstances:

- You leave the effective range with the HMI device without logging the HMI device off from the effective range.
- The charging status of the main battery is critical.

Requirements

You have opened the "OP Properties" dialog box, "Vibration Alarm" tab, by touching the "OP" icon.



Procedure

1. Select the "Enable Vibration Alarm" check box.
2. Confirm your entries.

   The dialog closes.

Result

The vibration alarm is activated.

6.7 Programming the data channel

Introduction

You can only transfer a project if you have enabled at least one data channel.

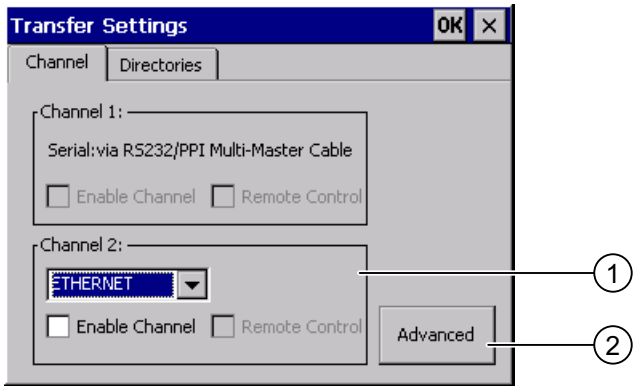
If you block all data channels, the HMI device is protected against unintentional overwriting of the project data and HMI device image.

Note

Data channel 1 is not available with the Mobile Panel 277 Wireless.

Requirements

The "Transfer Settings" dialog box has been opened using the "Transfer Settings" icon.



① Group for the data channel 2 (Channel 2)
② Button for the "Network and Dial-Up Connections" dialog box

Procedure

Proceed as follows:

1. Select the desired interface from the selection box.

Note

"ETHERNET" is for communication via LAN and WLAN.

1. If you want to enable the data channel, select the "Enable Channel" check box.
2. If you want to disable the data channel, clear the "Enable Channel" check box.
3. If you want to enable automatic transfer, select the "Remote Control" check box.
4. Enter further parameters if required.
   - Applies to "ETHERNET"

     Press "Advanced" to change to "Network and Dial-Up Connections".

     Open the "LAN"or "WLAN" entry. You can change the TCP/IP settings there.

     Confirm your entries.

     Close "Network and Dial-Up Connections".
   - Applies to "USB"

     No further settings are required for "USB".
5. Confirm your entries.

   The dialog closes.

Result

The data channel is programmed.

General information

Note

Changes during "Transfer" mode

If changes are made to the transfer settings when the HMI device is in "Transfer" mode or while a project is running, the new settings will only take effect the next time a transfer or the project is started.

This may occur if the Control Panel is opened to change the transfer properties in an active project.

NOTICE

Transfer mode via channel 2

You can change the settings for the transfer.

The following steps are required:

- Close the project.
- Change the settings on the HMI device.
- Then return to "Transfer" mode.

See also

Changing the network configuration (Page 169)

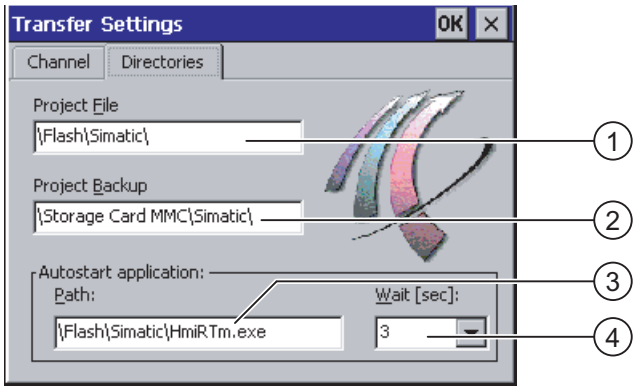
6.8 Setting the delay time

Introduction

The project is opened following a delay time when the HMI device is switched on. The Loader is displayed during the delay time.

Requirements

You have opened the "Transfer Settings" dialog box, "Directories" tab, by touching the "Transfer"  icon.



① Directory where the project file is saved

② Directory where the compressed source file of your project is saved

The external memory card or the network connection can be defined as the storage location. During the next backup process, the project's source file is stored in the specified location.

③ Memory location and start file of the HMI device for the executable project file

④ Delay time selection box

NOTICE
Settings under "Project File" and "Path" Do not change the setting in the "Project File" and "Path:" boxes. The project may not open at the next start of the HMI device if changes are made here.

Procedure for setting the delay time

1. Select the desired delay time in seconds from the "Wait [sec]:" selection box.

   With the value "0", the project starts immediately. It is now no longer possible to call the Loader after switching on the HMI device. If you still do need to access the Loader an operating element must be configured to close the project.

2. Confirm your entries.

   The dialog closes.

Result

The delay time for the HMI device is now set.

6.9 Setting the PROFIsafe address

PROFIsafe address

Each participant in PROFIsafe communication has a unique PROFIsafe address. This address is used to send safety message frames between the Mobile Panel 277F IWLAN and the F CPU.

Note

Assign the HMI device a PROFIsafe address that is unique within the relevant network segment.

Validity of the PROFIsafe address

The PROFIsafe address can be parameterized at the following stages:

- In the HMI device Control Panel
- In the WinCC flexible project

The PROFIsafe address that the HMI device loads depends on the parameterization in the Control Panel.

- If a valid PROFIsafe address has been parameterized in the Control Panel:

  The HMI device loads the PROFIsafe address set in the Control Panel.
- If a valid PROFIsafe address has not been parameterized in the Control Panel:

  The HMI device loads the PROFIsafe address set in the project.

Note

The invalid address 65,535 is parameterized by default in the Control Panel of the HMI device. The HMI device loads the address set in the project.

NOTICE
No integration in PROFIsafe communication To ensure that the HMI device can be integrated in PROFIsafe communication, the following addresses must match: • The PROFIsafe address configured in HW Config by STEP 7 • The PROFIsafe address set in the "PROFIsafe" dialog box

Requirements

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