SIEMENS

# SIMATIC HMI

# HMI device
# Mobile Panel 277 RO

Operating Instructions

The following supplement is part of this documentation:

| No. | Designation | Drawing number | Edition |
|---|---|---|---|
| 1 | Product Information | A5E02561841-03 | 09/2009 |




07/2008
A5E01127746-02

## 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

All names identified by ® are registered trademarks of the Siemens AG. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

## 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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A5E01127746-02
℗ 07/2008

# 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

  Operators operate and monitor the system during the process control phase. The following chapters are relevant to the operator:

  – Overview

  – Operator controls and displays

  – Configuring the operating system

  – Using RemoteOperate Client

  – Backing up and restoring data

- Commissioning engineers

  Commissioning engineers integrate the HMI device into the system and ensure the operating capability of the device for the process control phase.
  The entire set of operating instructions is relevant to commissioning engineers in principle.
  Depending on the use of the HMI device, however, certain chapters may not be relevant to them, e.g., the chapter on "Maintenance and care".

- 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, e.g., 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.

All user groups must pay special attention to the chapter on "Safety instructions and general notes".

## 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 SIMATIC Mobile Panel 277 RO HMI device in combination with the RemoteOperate V2 software package.

## Position in the information landscape

These operating instructions form part of the SIMATIC HMI documentation. The following section provides an overview of other documents from the SIMATIC HMI environment on the subjects covered in these operating instructions.

## Operating instructions

- Mobile Panel 277 Operating Instructions
- Mobile Panel 277 Operating Instructions (Compact)
- Panel PC 677 Operating Instructions

## Programming manuals

- RemoteOperate V2 Programming Manual

## Online availability

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

"http://www.automation.siemens.com/simatic/portal/html_76/techdoku.htm"

## Screens

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

The following designations for hardware and software are used in this manual:

| Designation | Meaning |
|---|---|
| RemoteOperate Server | The RemoteOperate Server software package |
| RemoteOperate Client | The RemoteOperate Client software package |
| RemoteOperate | The RemoteOperate software package (Server and Client) |
| Server | A system on which the RemoteOperate Server software is installed or runs. |
| Client, HMI device | A system on which the RemoteOperate Client software package runs. |

The following text notation will facilitate reading this manual:

| Notation | Scope |
|---|---|
| "Add screen" | • Terminology that appears in the user interface, for example dialog names and buttons.<br>• Required inputs, for example, an IP address.<br>• Path information |
| "File > Edit" | Operating sequences, for example, menu commands, shortcut menu commands. |
| <F1>, <Alt + P> | Keyboard actions |

Please observe notes labeled as follows:

**Note**

Notes containing important information about the product and its use or a specific section of the documentation to which you should pay particular attention.

## Registered trademarks

| |
|---|
| HMI® |
| SIMATIC® |
| SIMATIC HMI® |

Third parties using for their own purposes any other names in this document which refer to trademarks might infringe upon the rights of the trademark owners.

## 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.

Find your contact person at "http://www.automation.siemens.com/partner"

## Training center

Siemens AG offers a variety of training courses in order 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

Technical support for all Industry Sector products is available as follows:

Using the Web form to request support
"http://www.siemens.com/automation/support-request"

Phone: + 49 180 5050 222

Fax: + 49 180 5050 223

You will find more information on our technical support on the Internet at "http://support.automation.siemens.com".

## Service & Support on the Internet

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

- The newsletter offers you 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
- You local representative
- Information about on-site services, repairs, spare parts, and more

## 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 application options – with Mobile Panel 277 RO

SIMATIC Mobile Panels offer the option of making safety functions available on a mobile basis at any point of a machine or plant.

The Mobile Panel 277 RO enables you to use text or graphically based projects even more efficiently for simple and medium-complexity control and monitoring tasks on machines and plants.

Benefits of the Mobile Panel 277 RO include its short commissioning times, large user memory and excellent performance.

In addition, the Mobile Panel 277 RO comes with the following features:

- Ethernet port
- 10" TFT screen with 64k colors

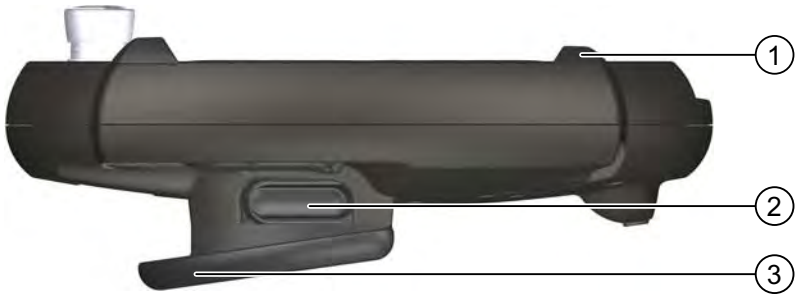
## 1.2 Design of the HMI device

The SIMATIC Mobile Panel 277 RO HMI device and an accessory kit are included in delivery.

### Front view of the Mobile Panel 277 RO

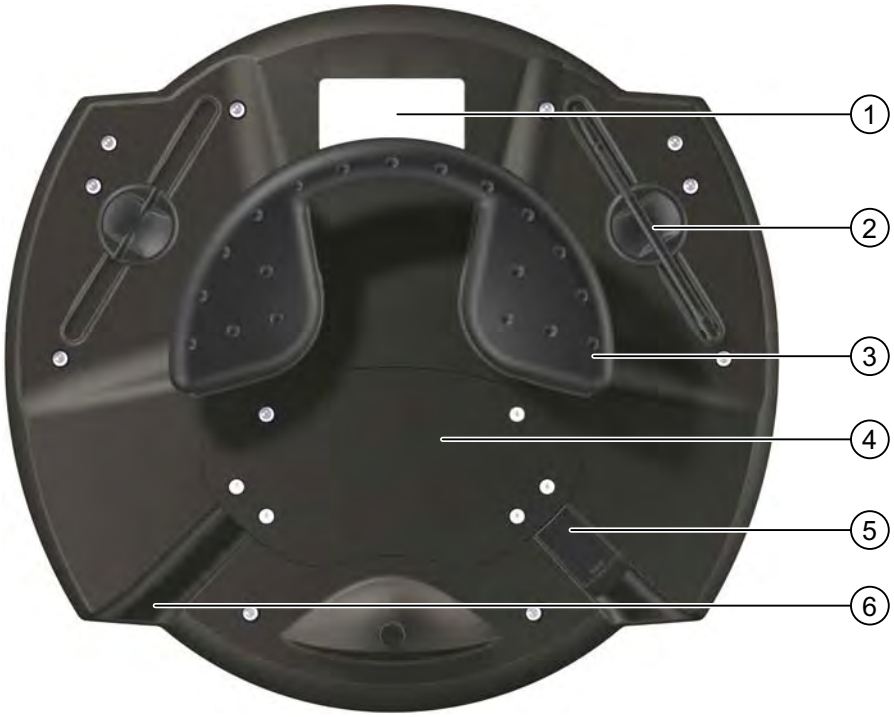

① STOP button
② Display with touch screen

### Side view of the Mobile Panel 277 RO




① Impact guards
② Enabling buttons, positioned on both sides of the Mobile Panel 277 RO
③ Handle

## Rear view of the Mobile Panel 277 RO




① Rating label
② Pen holder with touch pen
③ Handle
④ Connection compartment cover
⑤ USB port and plugs
⑥ Cable inlet

A touch pen is attached to the back of the HMI device.

## Accessory kit

The accessory kit contains the following:

- The "SIMATIC RemoteOperate - Applications & Documentation" CD-ROM. The following applications and documents are included on the CD-ROM:
  - The HMI device image with the operating system and the RemoteOperate Client software in the \Client Mobile Panel 277 10inch folder.
  - These operating instructions and the RemoteOperate V2 programming manual, in PDF format, in the \Docu folder.
  - The ProSave software package for transferring the HMI device image to the Mobile Panel 277 RO in the \ProSave folder.
  - The ProSave add-on software, which is needed in order to select the Mobile Panel 277 RO in ProSave, in the \ProSave_Addon folder.
  - The RemoteOperate Server software in the \Server folder.
- A touch pen for operating the touch screen.

Additional documents may be enclosed with the accessory kit.

# 1.3 Accessories

## 1.3.1 Connecting cable

The Mobile Panel 277 RO is compatible with the connecting cable PN:


① Metallic push-pull circular connector
② Strain relief and antikink device for the connecting cable
③ RJ45 connector
④ Plug connector, 12-pin

Connect the connecting cable to the Mobile Panel 277 RO so that it is not detachable. The connection to the connection box PN Plus is achieved by means of a detachable connector. The connecting cable PN is an industrial cable and is therefore resistant to many solvents and lubricants. The flexural strength of the connecting cable is geared to the actual usage conditions.

**Note**

**Degree of protection**

When inserted, the circular connector guarantees protection class IP65.

### Ordering information

The connecting cable PN is not included with the HMI device. The connecting cable PN is available in various lengths under the following order numbers:

| Length of the connecting cable | Order number |
|---|---|
| 5 m | 6XV1440-4BH50 |
| 10 m | 6XV1440-4BN10 |
| 25 m | 6XV1440-4BN25 |

## 1.3.2 Connection box

The Mobile Panel 277 RO is compatible with the connection box PN Plus:


① Screwed joint for process data line
② LEDs
③ Threaded assembly for power supply cable
④ Threaded assembly for cable with supplementary Stop and enabling button signals and for PLC-accompanying signals
⑤ Connecting socket for the connecting cable - covered with dummy cap

A mechanical foolproofing device means that only the connecting cable PN can be connected to the connection box PN Plus.

**Note**

**Degree of protection**

Degree of protection IP65 is guaranteed for the connection box when the Mobile Panel 277 RO is connected or when a dummy cap is inserted.

**Note**

**Recovery time**

Wait for approximately one second after you have removed the connecting cable from the connection box before you plug the connecting cable back in.

After power failures lasting less than one second the connecting cable has to be disconnected.

### Ordering information

The connection box PN Plus is not included with the HMI device. The connection box PN Plus is available under order number 6AV6671-5AE11-0AX0.

### Division of the system into zones

You can divide a system into various zones or functional areas by using numerous connection boxes. You can also set up the safety functions zone-dependently. This means that both enabling buttons and STOP buttons can act in only one particular zone and not in others.

## 1.3.3 Rechargeable buffer battery

The rechargeable buffer battery avoids the need to restart the Mobile Panel when changing between different connection boxes.

The maximum buffer time is 10 minutes. The rechargeable battery is able to bridge the buffer time 5 times without recharging. During the buffer time, the backlight of the display is switched off.

When the mobile panel is connected to a connection box, the rechargeable battery is charged automatically.

| NOTICE |
| --- |
| **Recharging and discharging the rechargeable battery**<br>In the following cases, there is a risk of fire and, in extreme cases, explosion!<br>• Incorrect charging and discharging of the rechargeable battery<br>• Reverse polarity<br>• Short-circuit<br>The rechargeable battery may only be recharged in the mobile panel. |

**Note**

The HMI device may supply the same system alarms as it would do in the event of a communication interrupt when reconnecting the HMI device to another connection box.

### Safety instructions

The rechargeable battery is a Li-ion rechargeable 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 immerse in liquid – the battery might crack or burst.

### Ordering information

The rechargeable buffer battery is not included with the HMI device.

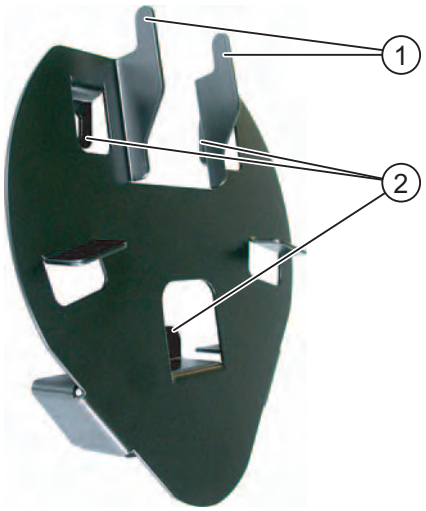
**Note**

You may only use the battery option package as of product version 02. The product version is available on the battery.

The rechargeable battery can be ordered separately under the order number 6AV6671-5AD00-0AX0.

## 1.3.4 Wall holder

The wall holder ensures that the Mobile Panel 277 RO is securely held in position when it is being used in a fixed location.




① Hook for the grip on the HMI device
② Screw flange

### Ordering information

The wall holder is not included with the HMI device. The wall holder can be ordered separately under the order number 6AV6574-1AF04-4AA0.

### 1.3.5 PC/PPI cable

You need the cable to update the HMI device image via the RS 232 serial interface. You can also use the cable for data transfer. Connect the PC/PPI cable to the RS 232/RS 485 port.

**Note**

If the connection fails during the operating system update, set the system to a lower bit rate. If you use a higher bit rate, you must use the PC/PPI cable release 3 or higher. The version code is printed on the cable (e.g., "E-Stand 3" corresponds to version 3).

#### Ordering information

The PC/PPI cable is not included with the HMI device. The cable can be ordered separately under the order number 6ES7 901-3CB30-0XA0.

### 1.3.6 USB/PPI cable

The cable is required when updating the HMI device image via USB. You can also use the cable for data transfer. Connect the USB/PPI cable to the USB/RS 485 port.

**Note**

If the connection fails during the operating system update, set the system to a lower bit rate. If you use a higher bit rate, you must use the USB/PPI cable release 3 or higher. The version code is printed on the cable (e.g., "E-Stand 3" corresponds to version 3).

#### Ordering information

The USB/PPI cable is not included with the HMI device. The cable can be ordered separately under the order number 6ES7 901-3DB30-0XA0.

### 1.3.7 Protective foil

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

#### Ordering information

The protective foil kit is not included with the HMI device. The protective foil kit contains 10 pieces of protective foil and can be ordered separately under order number 6AV6645-7AB15-0AS0.

## 1.3.8 Touch pens

The touch pens make it easier to operate the touch screen.

### Ordering information

The touch pen set is not included with the HMI device. The touch pen set contains 5 pens and can be ordered separately under order number 6AV6645-7AB14-0AS0.

## 1.3.9 Memory card

You can use a memory card to back up data from the HMI device and to copy data onto the HMI device. Only use the SD memory cards or multimedia cards tested and released by Siemens.

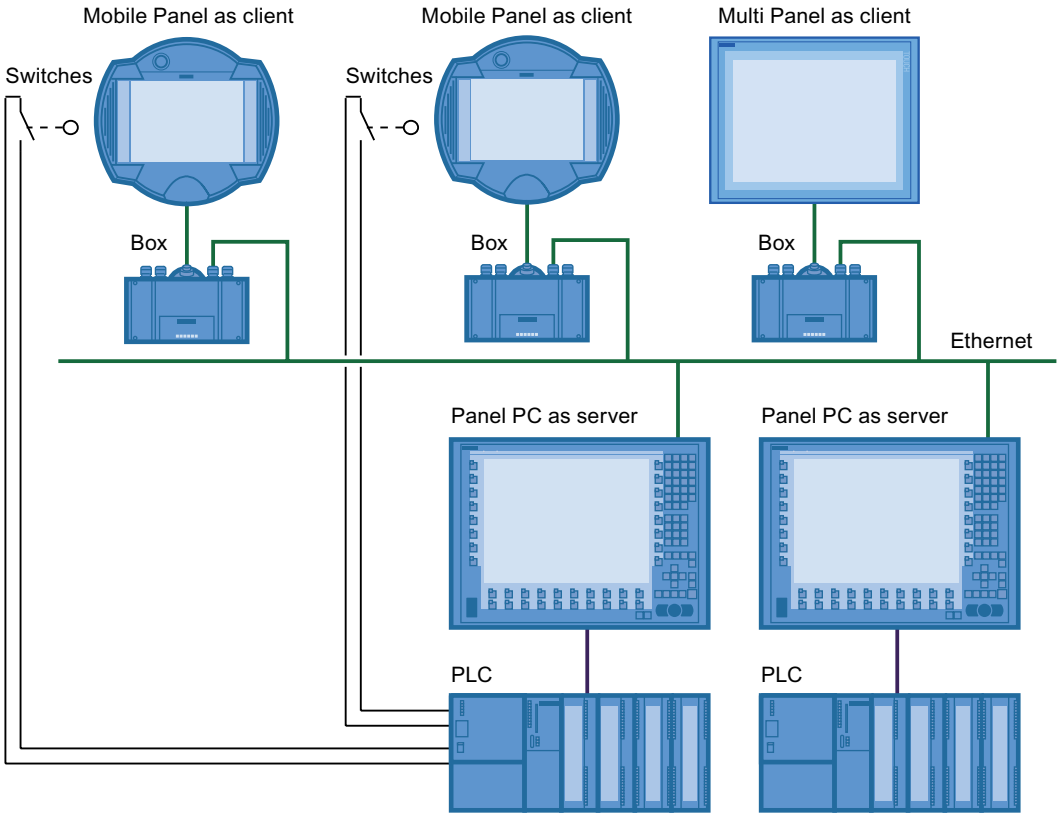
### Ordering information

A memory card is not included with the HMI device. A memory card can be ordered separately via the Siemens online catalog.
The online catalog and the online ordering system are at:

"http://mall.automation.siemens.com"

## 1.4 The HMI device in the operating process

The HMI device is part of the operating process. The operating process is marked by three-way communication between the HMI device, server and controller.




The HMI device is used for monitoring or controlling the operating process. The controller in turn supplies the server with the results of the operating process, which are displayed on the HMI device.

### The RemoteOperate software package

Communication between the HMI device and the server is handled using the RemoteOperate software package.

Using RemoteOperate you can monitor or operate a server from a client. The range of operations covers all the functions of the server.

The RemoteOperate software package comprises two components:

- The RemoteOperate Server software
- The RemoteOperate Client software

A detailed description of RemoteOperate can be found in the RemoteOperate V2 Programming Manual.

# Safety instructions and general notes

# 2

## 2.1 Safety Instructions

### Safety regulations

**⚠ WARNING**

Strictly observe all instructions in these operating instructions at all times. Otherwise, hazardous situations can arise or the safety mechanisms 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.

**⚠ WARNING**

The configuration engineer for a machine or system PLC must take precautions so that an interrupted program can be restarted normally after voltage dips or power failures. Dangerous operating conditions must not occur, even temporarily.

If faults in the system can cause bodily injury or significant property damage, additional measures must be taken outside of the system. These measures must also ensure safe operating conditions in the system in the event of a fault.

The system's configuration engineer must take precautions to ensure that memory changes that could lead to a dangerous situation can only be undertaken by authorized persons.

The STOP button must be checked periodically for proper functioning.

**⚠ WARNING**

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.

Manual actions performed with the HMI device may only occur in conjunction with the enabling buttons and at reduced velocity.

If the system is operated with the HMI device:

Ensure that current operation is only possible by means of the HMI device and not from any other point on the system.

### Proper use

**⚠WARNING**

Commissioning of the HMI device is forbidden until it has been absolutely ensured that the machine in which the HMI device is to be installed complies with Directive 98/37/EC or Directive 2006/42/EC as of 29 December 2009.

### 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 only valid approvals for the HMI device and the connection box itself are those shown on the label on the rear panel.

### CE approval

CE

The HMI device and the connection box satisfy the requirements and protection objectives of the following EC Directory. The HMI device and the connection box comply with the harmonized European standards (EN), promulgated in the Official Journals of the European Community for programmable controllers:

- 2004/108/EC Electromagnetic Compatibility Directive (EMC Directive)
- 2006/95/EC "Electrical equipment for use within specific voltage limits" (Low-Voltage Directive)

### EC Declaration of Conformity

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

Siemens Aktiengesellschaft
Industry Sector

I IA AS RD ST PLC
Postfach 1963
D-92209 Amberg

## UL approval

Underwriters Laboratories Inc., to

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

## Marking for Australia

N117

The HMI device and the connection box satisfy the requirements of Standard AS/NZS 2064 (Class A).

## SIBE Switzerland Certification Service

The HMI device and the connection box satisfy Safety Category 3 in accordance with EN 954-1.

The enabling device safety function for special operation control and the STOP button satisfy the following requirements:

- Safety category 3 according to EN 954-1
- Requirements of EN 60204-1, under compliance with the safety instructions detailed in the operating instructions

## IEC 61131

The HMI device meets the requirements and criteria according to IEC 61131-2, Programmable Controllers, Part 2: Equipment requirements and tests.

# 2.3 Operating safety

## Standards

The HMI device complies with the following standards:

- EN 60204-1

  Safety of Machinery – Electrical Equipment of Machines
- EN 61131-1 and EN 61131-2

  Programmable Controllers
- The HMI device was tested for EMC in accordance with the following standards:
  - EN 50081-2, EMC – Unwanted emissions
  - EN 61000-6-2, Generic standard, Immunity, industrial environments
  - EN 61131-2, Programmable Controllers
- STOP button for fast machine stop

  EN 60947-5-1:1997, K 2.2, Low-voltage Switchgear and Control Gear, Positive-Opening Contacts

  EN 954-1 category 3 is achievable with an external monitoring device. Two potential-free switches for the connection of external I/O devices for a rated voltage of 24 V and max. current 500 mA (safety low voltage according to EN 61131-2 or EN 50178, equipment for power installations with electronic resources).
- Enabling device in accordance with EN 60204-1 in safety categories according to EN 954-1:1996, safety-related features of PLCs
  - EN 954-1, category 3 is achievable with an external monitoring device.
  - 2 parallel switched floating make contacts for connection of external I/O, rated voltage of 24 VDC (safety extra-low voltage in accordance with EN 61131-2 or EN 50178), maximum current of 400 mA.

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 Voltage supply

### Safety specifications

**⚠ WARNING**

The HMI device corresponds to protection class III according to EN 61131-2 or EN 50178. The 24 VDC supply must be isolated from touch-hazardous voltages, for example by means of a safety isolation transformer or similar equipment.

Protect the power supply circuit with a 3.15 A fuse.

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

## 2.5 Notes about Usage

### Use in industry

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

- Requirements for emissions EN 61000-6-4: 2007
- Requirements for interference immunity DIN EN 61000-6-2: 2005

### Residential use

**Note**

The HMI device is not suitable for use in residential areas: If you use the HMI device in residential areas, the radio/TV reception may be impeded.

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.

## 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 lead to 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 to be monitored are to be furnished.

The connection examples with three different monitoring devices show how the safety-related parts of the Mobile Panel 277 can achieve safety category 3 according to EN 954-1. Attention must be paid that the overall concept of the system is designed with this in mind.

## 2.7 Enabling button

### Introduction

The enabling device comprises the two enabling buttons mounted on both sides of the Mobile Panel 277 RO.

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

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

### Special operation

A reduced speed on the machine or in the system has to be specified for special operation based on the risk assessment. An action must be possible only 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.

Safety Category 3 in accordance with EN 954-1:1996 can be achieved by implementing the enabling devices with two circuits. The draft C standard for machine tools notes the following:

"Enabling devices can either be a 2-position command device in conjunction with a Stop device or a 3-position command device. The 3-position command device is preferable."

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**

Enabling buttons may only be used if the person activating them promptly recognizes a danger to personnel and can immediately take steps to avoid the danger!

Commands for unsafe conditions are not permitted to be issued with one enabling button alone. For this purpose, a secondary, conscious start command by means of a button on the Mobile Panel 277 RO is required. The only person allowed to remain in the danger zone is the person who is activating the enabling button.

In special operating modes, safety is achieved through use of the enabling button in combination with reduction in the velocity of the drives that are posing the danger.

## Risk from improper use

To avoid danger arising from improper use of the enabling buttons, the following actions should be taken:

- Scan the enabling buttons

  The scan has to be carried out for the following processes:

  – When the system being monitored is switched on

  – When the operating mode changes from "Automatic" to "Manual mode"

  In both cases, the enabling function may not be used.

- The enabling button must be released within a specified time frame and returned to the "Enable" setting

  Select the time frame according to the activity on the system being monitored.

# 2.8 STOP button

## Safety instructions

The STOP button on the HMI device brings about a safety-related stop of the system or machine 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.

## Stop loop through

The Stop or Emergency Stop circuit of the system or machine is looped through the connection box PN Plus and not interrupted.
Interruption of the Stop or Emergency Stop circuit takes place in the following cases:

- If the Stop button is pressed on a connected Mobile Panel 277 RO
- If a Mobile Panel 277 RO with pressed STOP button is connected

**⚠ WARNING**

**HMI device with STOP button**

If the HMI device is equipped with a STOP button and is not connected to the connection box, a Stop cannot be initiated using the HMI device. The STOP button of the HMI device is then ineffective!

Install stationary Emergency Stop buttons that are available at all times in the system.

**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. The release of a STOP button may 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.

**NOTICE**

**Connection boxes in a system**

Install only one type of connection box in your system - in other words, only PN Plus connection boxes.

**Mobile Panel 277 RO connected**

If the Mobile Panel 277 RO is connected to the connection box, the STOP button on the Mobile Panel 277 RO can trip if it falls, thus causing the system to come to a standstill.

# 2.9 Electromagnetic Compatibility

## Introduction

The HMI device satisfies, among other things, the requirements of the EMC laws pertaining to the European domestic market.

## EMC-compliant installation

The EMC-compliant installation of the connection box and the application of interference-proof cable is the basis for interference-free operation. The "Guidelines for interference-free installation of PLCs" description and the "PROFIBUS Networks" manual also apply to the installation of connection boxes.

## Pulse-shaped interference

The following table shows the electromagnetic compatibility of modules with regard to pulse-shaped interference. This requires the HMI device to meet the specifications and directives for electrical installation.

| Pulse-shaped interference | Test voltage | Degree of severity |
|---|---|---|
| Electrostatic discharge<br>in accordance with IEC 61000-4-2 | Air discharge: 8 kV<br>Contact discharge: 6 kV | 3 |
| Bursts<br>(high-speed transient interference)<br>in accordance with IEC 61000-4-4 | 2 kV power supply cable<br>2 kV signal cable, > 30 m<br>1 kV signal cable, < 30 m | 3 |
| High-power surge pulses in accordance with IEC 61000-4-5, external protective circuit required<br>(refer to S7-300 PLC, Installation, chapter “Lightning and overvoltage protection”) | | |
| • Asymmetrical coupling | 2 kV power cable<br>DC voltage with protective elements<br>2 kV signal/data cable, > 30 m,<br>with protective elements as required | 3 |
| • Symmetrical coupling | 1 kV power cable<br>DC voltage with protective elements<br>1 KV signal cable, > 30 m,<br>with protective elements as required | 3 |

## Sinusoidal interference

The following table shows the EMC behavior of the modules with respect to sinusoidal interference. This requires the HMI device to meet the specifications and directives for electrical installation.

| Sinusoidal interference | Test values | Degree of severity |
|---|---|---|
| HF radiation (in electromagnetic fields) in accordance with IEC 61000-4-3 | • 80% amplitude modulation at 1 kHz<br>with 10 V/m in the range of 80 MHz to 1 GHz<br>with 3 V/m in the range 1.4 GHz to 2 GHz<br>with 1 V/m the range 2 GHz to 2.7 GHz<br>• 10 V/m with 50 % pulse modulation at 900 MHz<br>10 V/m with 50 % pulse modulation at 1.89 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 10 kHz to 80 MHz range | 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.

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

### Additional measures

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

# 2.10 Transport and Storage Conditions

## Mechanical and climatic transport and storage conditions

The transportation and storage conditions of this HMI device exceed requirements in accordance with IEC 61131-2. The following specifications apply to the transportation and storage of an HMI device in its original packaging.

The climatic conditions comply with the following standards:

- IEC 60721-3-3, Class 3K7 for storage
- 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 transportation and storage conditions for the HMI device.

| Type of condition | Permitted range |
|---|---|
| Drop test (in transport package) | ≤ 1 m |
| Temperature | From –20 to +60 °C |
| Atmospheric pressure | From 1080 hPa to 660 hPa,<br>corresponds to an elevation –1000 to 3,500 m |
| Relative humidity | From 10 % to 90 %, without condensation |
| Sinusoidal vibration in accordance with IEC 60068-2-6 | 5 Hz to 8.4 Hz: 3.5 mm<br>8.4 to 500 Hz: 9.8 $m/s^2$ |
| Shock in accordance with IEC 60068-2-29 | 250 $m/s^2$, 6 ms, 1000 shocks |

The following table shows the transportation and storage conditions for the terminal device.

| Type of condition | Permitted range |
|---|---|
| Drop test (in transport package) | ≤ 1 m |
| Temperature | From –20 to +70 °C |
| Atmospheric pressure | From 1080 hPa to 660 hPa,<br>corresponds to an elevation –1000 to 3,500 m |
| Relative humidity | From 35 % to 85 %, without condensation |
| Sinusoidal vibration in accordance with IEC 60068-2-6 | 5 Hz to 8.4 Hz: 3.5 mm<br>8.4 to 500 Hz: 9.8 $m/s^2$ |
| Shock in accordance with IEC 60068-2-29 | 250 $m/s^2$, 6 ms, 1000 shocks |

**NOTICE**

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

- 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 Notes about usage

### 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)
- Class 3K3 (climatic requirements)

### Use with additional measures

Examples of applications where 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

### Mechanical ambient conditions

The following table shows the mechanical ambient conditions for the HMI device in the form of sinusoidal vibration.

| Frequency band in Hz | Constant | Occasional |
|---|---|---|
| 10 ≤ f ≤ 58 | Amplitude 0.0375 mm | Amplitude 0.075 mm |
| 58 ≤ f ≤ 150 | Constant acceleration 0.5 g | Constant acceleration 1 g |

### 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 HMI device to vibration-absorbent material (on metal shock absorbers, for example).

## Testing mechanical ambient conditions

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

| Tested for | Test standard | Comments |
|---|---|---|
| Vibrations | Vibration test in accordance with IEC 60068, part 2–6 (sinusoidal) | Type of vibration:<br>Transitional rate of the frequency:<br>1 octave/minute.<br>10 ≤ f ≤ 58,<br>constant amplitude 0.075 mm<br>58 ≤ f ≤ 150,<br>Constant acceleration 1 g<br>Vibration duration:<br>10 frequency cycles per axis in each of the three mutually vertical axes. |
| Shock | Shock testing in accordance with IEC 60068, Part 2–27 | Type of shock: half-sine<br>Shock intensity:<br>Peak value 15 g, duration 11 ms<br>Direction of impact:<br>3 shocks in ± directions in each of the three mutually vertical axes |
| Falling | Drop testing in accordance with<br>EN 60068-2-32 | |

## Climatic ambient conditions for the mobile panel

The following table shows the permitted climatic ambient conditions for use of the mobile panel.

| Ambient conditions | Permitted range | Comments |
|---|---|---|
| Temperature<br>• Operation<br>• Storage/Transport | <br>• From 0 to 40 °C<br>• From –20 to 60 °C | See the "Mounting positions and type of fixation" section |
| Relative humidity | 10 % to 90 %, no condensation | Corresponds to relative humidity, load degree 2 in accordance with IEC 61131, part 2 |
| Atmospheric pressure | 1080 hPa to 795 hPa | Corresponds to an elevation of –1,000 to 2,000 m |
| Pollutant concentration | $SO_2$: < 0.5 ppm;<br>Relative humidity < 60 %, no condensation | Check: 10 $cm^3/m^3$; 10 days |
| | $H_2S$: < 0.1 ppm;<br>Relative humidity < 60 %, no condensation | Check: 1 $cm^3/m^3$; 10 days |

### Climatic ambient conditions for the connection box

The following table shows the permitted climatic ambient conditions for use of the connection box.

| Ambient conditions | Permitted range | Comments |
|---|---|---|
| Temperature<br>• Operation<br>• Storage/Transport | <br>• From 0 to 50 °C<br>• From –20 to 70 °C | See the "Mounting positions and type of fixation" section |
| Relative humidity<br>• Operation<br>• Storage/Transport | <br>• 35 % to 85 %<br>• 35 % to 85 % | Without condensation, corresponds to a relative humidity, stress class 2 in accordance with IEC 61131, part 2 |
| Atmospheric pressure | 1080 hPa to 795 hPa | Corresponds to an elevation of –1,000 to 2,000 m |
| Pollutant concentration | $SO_2$: < 0.5 ppm;<br>Relative humidity < 60 %, no condensation | Check: 10 $cm^3/m^3$; 10 days |
| | $H_2S$: < 0.1 ppm;<br>Relative humidity < 60 %, no condensation | Check: 1 $cm^3/m^3$; 10 days |

## 3.2 Mounting positions and type of fixation

### Mounting position

The wall holder is designed for vertical mounting.

The connection box is designed for surface mounting independently of cabinets or control panels.

The connection box is self-ventilated and is approved for all mounting positions. Note that the guaranteed protection rating is only ensured if the connecting cable or the dummy cap is plugged into the connection box.

## 3.3 Preparing for mounting

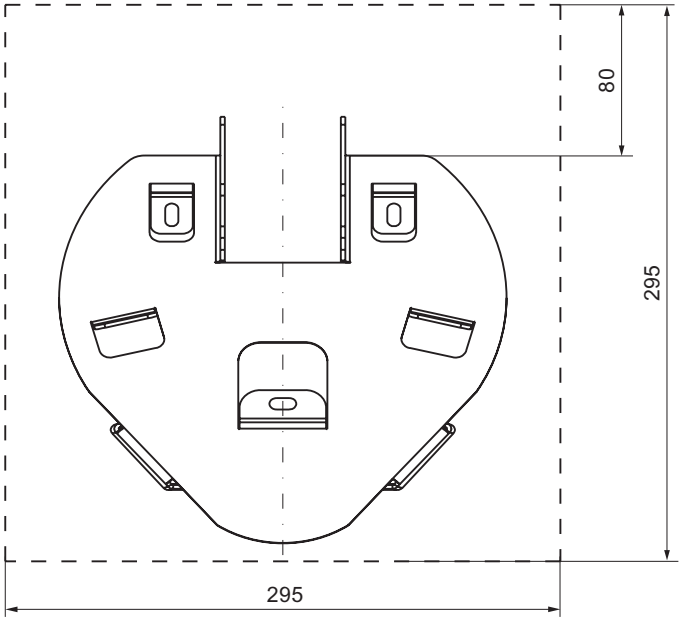
### Choose the mounting location for the wall holder

Observe the following points when selecting the mounting location:

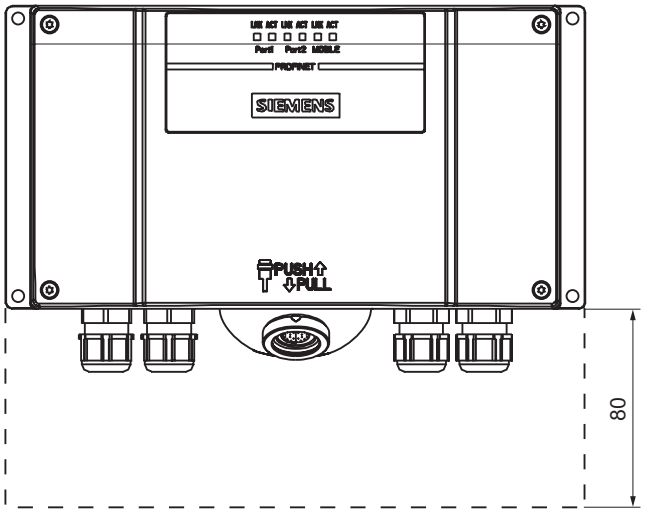
- Position the wall holder so that the display of the hooked-in HMI device is not exposed to direct sunlight.
- Position the wall holder so that the HMI device can be ergonomically inserted by the user. Choose a suitable mounting height.

## Maintaining clearances

The following clearances are required around the wall holder:




The following clearances are required around the connection box PN Plus:



## 3.4 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 class

Protection Class I in accordance with IEC 60536, i.e. equipotential bonding conductor to profile rail required!

### Protection against foreign objects and water

| Degree of protection in accordance with IEC 60529 | Description |
|---|---|
| Front panel and rear panel | In installed status:<br>• IP65<br>Only for the connection box:<br>• NEMA 4X/NEMA 12 (indoor use only) |

## 3.5 Rated voltages

The following table shows the rated voltage and the corresponding tolerance range.

| Nominal voltage | Tolerance range |
|---|---|
| +24 VDC | 20.4 V to 28.8 V (–15 %, +20 %) |

# Mounting and connecting

# 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. Retain all enclosed documentation for 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.

## 4.2 Mounting the connection box and wall holder

### Requirements

The following are required for mounting:

- Three M5 cylinder head screws for the wall holder of the HMI device
- Four M4 cylinder head screws for the connection box

If the HMI device is to be operated while hooked into the wall holder, ensure that the connecting cable is long enough.

### Procedure for mounting the wall holder

| NOTICE |
| --- |
| 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.<br>For HMI device with STOP button:<br>The HMI device can fall down if it is not securely hooked in. In the process the STOP button might be triggered unintentionally, thus causing the machine or system to stop. |

**Note**

**Positioning**

A position at eye level is recommended. This enables the Mobile Panel 277 RO to be operated when it is hooked into the wall holder.

Proceed as follows:

1. Select a position for the wall holder that is easy and safe to reach.
2. Place the wall holder from the front onto the mounting surface.
3. Mark the mounting holes with a marking tool.
4. Drill three through holes or three threaded holes M5.
5. Attach the wall holder.

## Procedure for mounting the connection box

**Note**

**Length of the connecting cable**

Allow for the maximum length of the connecting cable when selecting the position for the connection box.

Proceed as follows:

1. Select a position for the connection box that is easy and safe to reach.
2. Place the connection box from the front onto the mounting surface.
3. Mark the mounting holes with a marking tool.
4. Drill four through holes or four threaded holes M4.

| CAUTION |
| --- |
| **Permissible torque**<br>The connection box housing is made of plastic. Therefore, the mounting hole threads cannot handle the same amount of stress as a comparable metallic housing. Do not exceed 0.4 to 0.5 Nm of torque when tightening the screws.<br>If the screws are tightened more than 20 times, there is risk of damage to the threads. |

5. Attach the connection box.

## 4.3 Electrical installation

### Electrical connections

The electrical installation comprises the components:

- Connection box PN Plus
- Mobile Panel 277 RO

You can connect the following devices or HMI devices to these components:

| Device/Control element | Mobile Panel 277 RO | Connection box |
|---|---|---|
| Panel PC | Yes | Yes |
| Supply voltage | – | Yes |
| Connection to Stop circuit | – | Yes |
| Monitoring signal of the STOP button | – | Yes |
| Connection to enable circuit | – | Yes |

## 4.4 Connecting the connection box

### 4.4.1 Overview

### Requirements

- The connection box PN Plus must be mounted in accordance with the specifications in these operating instructions.
- Always use only shielded standard cables.

**Note**

The maximum length of the cable for connecting the Stop button and the enabling button may not exceed 30 m.

### Connection sequence

Connect the connection box in the following sequence:

1. Equipotential bonding
2. Supply voltage

| CAUTION |
|---|
| **Connection sequence**<br>Always follow the correct sequence for connecting the connection box PN Plus. Non-observance can cause damage to the connection box PN Plus. |

## 4.4.2 Opening and closing the connection box

Follow the instructions below before opening the connection box PN Plus:

| CAUTION |
| --- |
| **Short circuit in the connection box**<br>If a short-circuit occurs in the connection box PN Plus, there is a risk that the function of the Mobile Panel 277 RO will be impaired.<br>Take care when working on the opened connection box, that conducting materials, such as cable remains, do not come into contact with the electrical circuits.<br>**ESD**<br>When working in the open housing, ensure that current-carrying conductors do not come into contact with electrical circuits.<br>Note the ESD instructions. |

### Requirements

- Torx screwdriver, Size 10

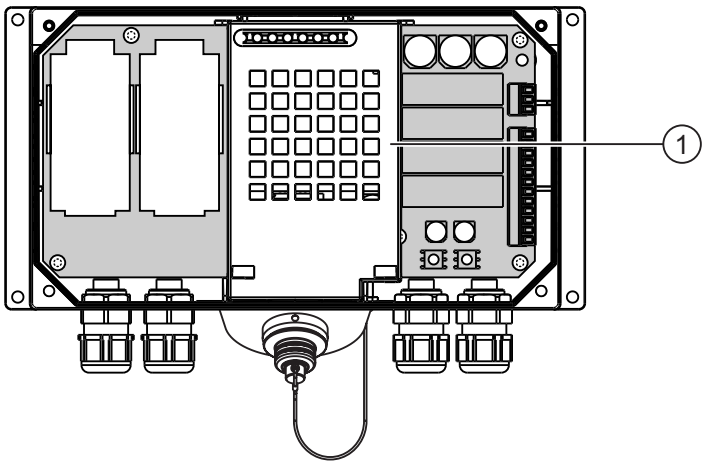
### Procedure


① Screws
② Cover

Proceed as follows:

1. Loosen the four marked screws.
2. Remove the screws and the cover.

## Protective cover




① Protective cover

**Note**

**Protective cover**

Do not remove the protective cover. Otherwise there is a risk that the electronics of the connection box will be damaged or destroyed.

## Notes for closing

**NOTICE**

**Permissible torque**

The connection box housing is made of plastic. Therefore, the mounting hole threads cannot handle the same amount of stress as a comparable metallic housing. Do not exceed 0.4 to 0.5 Nm of torque when tightening the screws.

If the screws are tightened more than 20 times, there is risk of damage to the threads.

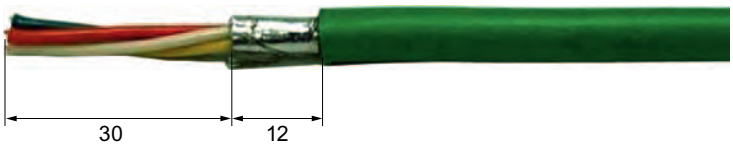
**Degree of protection not fulfilled**

When assembling the unit, be sure to fit plugs to all unused screw glands and to insert the appropriate seal for the cover. Otherwise degree of protection IP65 is not ensured.

## 4.4.3 Stripping the insulation of cables

### Stripping insulation

The following figure shows you how to strip an Ethernet cable.




All specifications in mm

**Note**

Use a wire stripper as specified in the online catalog under "http://mall.automation.siemens.com" for fast and accurate stripping of the insulation.

## 4.4.4 Connecting the equipotential bonding circuit

### Potential differences

Differences in potential between spatially separated system parts can lead to high equalizing currents via the data cables and therefore to the destruction of their ports. This situation may arise if the cable shielding is terminated at both ends and grounded at different system parts.

Differences in potential may develop when a system is connected to different mains supplies.

## General requirements for equipotential bonding

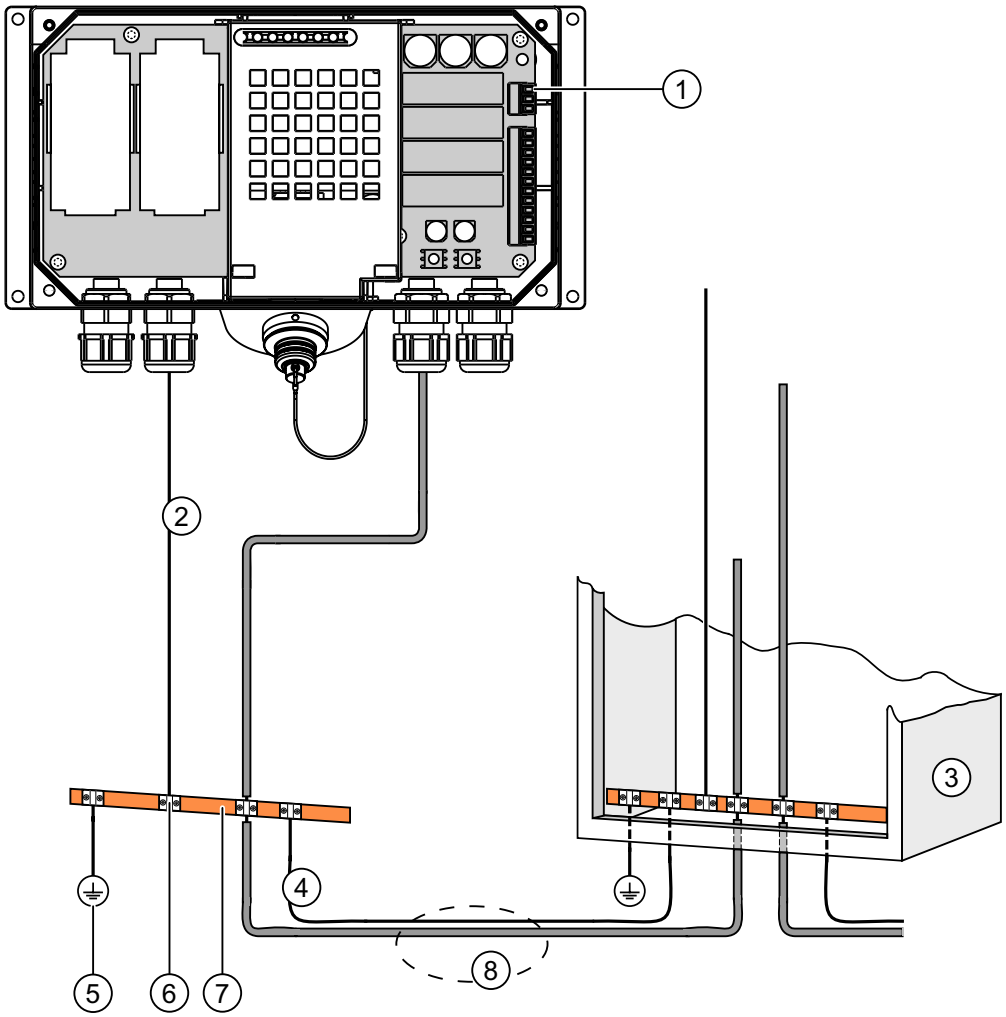
Differences in potential must be reduced by means of equipotential bonding in order to ensure trouble-free operation of the relevant components of the electronic system. The following must therefore be observed when installing the equipotential bonding circuit:

- The effectiveness of equipotential bonding increases as the impedance of the equipotential bonding conductor decreases or as its cross-section increases.
- If two parts of the system are connected to each other by means of shielded data cables, and its shielding is connected at both ends with the grounding / protective grounding conductor, then the impedance of the additionally-laid equipotential bonding may amount to a maximum of 10% of the screened impedance.
- The cross-section of a selected equipotential bonding conductor must be capable of handling the maximum equalizing current. Between switching cabinets, equipotential bonding conductors as detailed in the "Guidelines for interference-free installation of PLCs" description and the "PROFIBUS networks" manual have proven themselves reliable in practice.
- Use equipotential bonding conductors made of copper or galvanized steel. Establish a large surface contact between the equipotential bonding conductors and the grounding/protective conductor and protect these from corrosion.
- Clamp the shielding of the data cable on the HMI device flush and near the equipotential busbar using suitable cable clamps.
- Route the equipotential bonding conductor and data cables in parallel with minimum clearance between them.

| NOTICE |
| --- |
| **Equipotential bonding conductor**<br>Cable shielding is not suitable for equipotential bonding. Always use the prescribed equipotential bonding conductors. When installing MPI and PROFIBUS DP networks, always use cables with an adequate cross-section. Otherwise there is a risk that interface components will be damaged or destroyed. |

## Connection graphic

The following figure shows how to connect the equipotential bonding conductor to the connection box PN Plus.

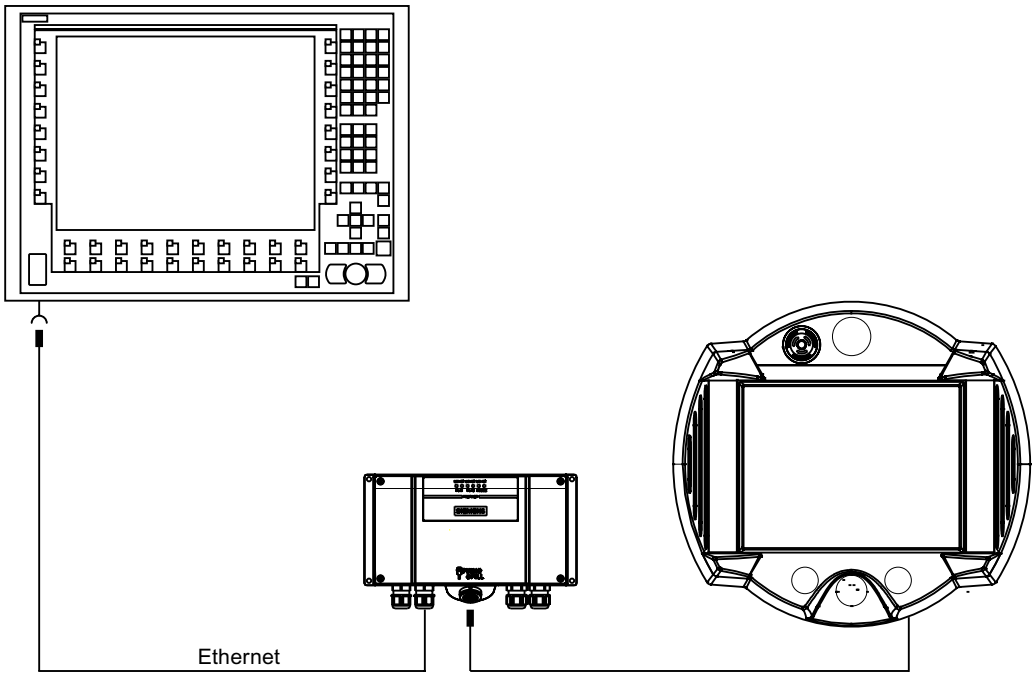



① PE connection on the connection box (terminal strip 1, pin 1)
② Equipotential bonding conductor cross-section: 2.5 mm²
③ Switching cabinet
④ Equipotential bonding conductor cross-section: min. 16 mm²
⑤ Ground connection
⑥ Cable clip
⑦ Voltage bus
⑧ Parallel routing of the equipotential bonding conductor and data cable

## 4.4.5 Connecting the server

### Connection graphic

The following figure shows how to connect a panel PC to the HMI device as a server via the connection box.




## 4.4.6 Connecting the power supply

The supply voltage for the HMI device is connected to a terminal strip in the connection box. The terminal block is designed for cables with a maximum cross-section of 1.5 $mm^2$.

Connect the protective conductor connection of the connection box with the cabinet casing or equipotential bonding.

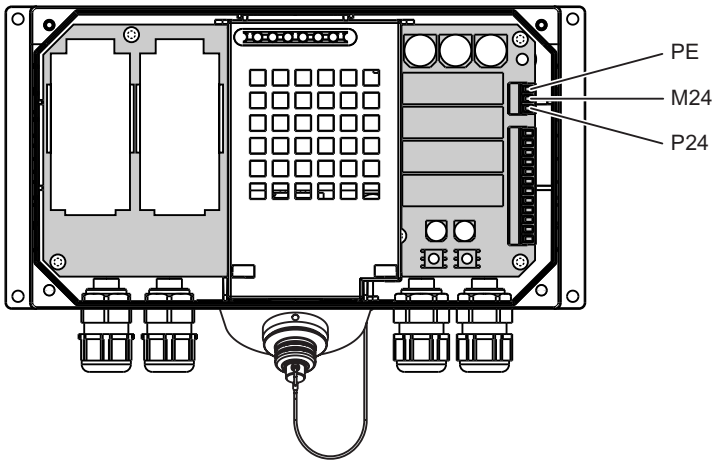
**Note**

**Reverse polarity protection**

The connection box has reverse polarity protection.

## Connection graphic

The following figure shows how to connect the power supply to the connection box PN Plus.




The abbreviations in the figure are defined as follows:

- PE stands for protective conductor.
- M24 stands for ground.
- P24 stands for +24 VDC.

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

**WARNING**

**Personal injury and damage to property**

Configure the 24 VDC supply of the Mobile Panel 277 RO correctly. Otherwise there is a risk that the components of your automation system will be damaged and that people will be injured.

Use only voltage generated as safety extra-low voltage (SELV) for the 24 VDC supply of the Mobile Panel 277 RO.

**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 24 VDC supply.

The supply voltage must be within the specified voltage range. Otherwise there is a risk that the HMI device will malfunction.

Applies to non-isolated system design:

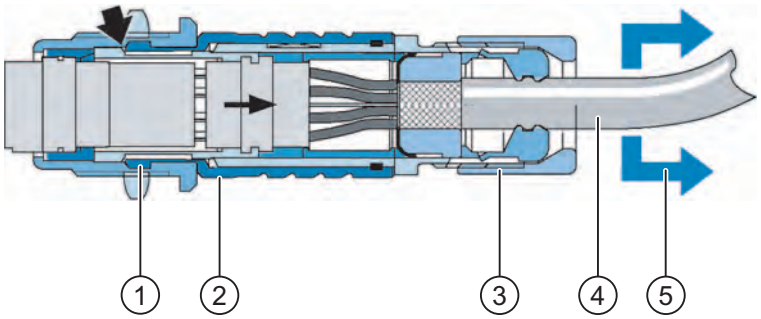
Connect the connection for GND 24 V from the 24 V power supply output to equipotential bonding for uniform reference potential.

## 4.4.7 Connecting the connecting cable

### Introduction

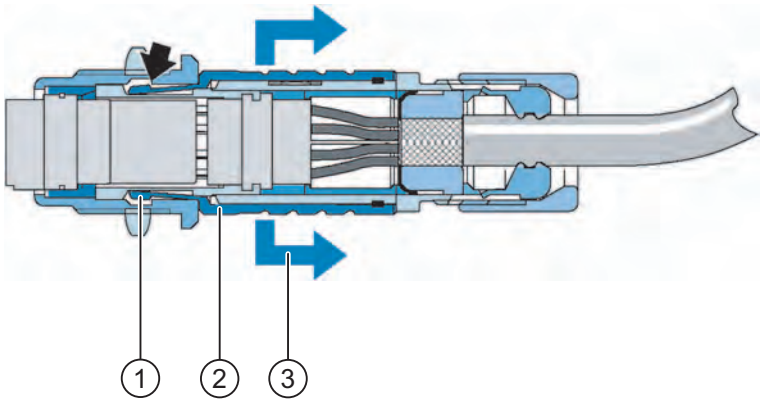
The connecting cable can be connected to the connection box with the help of a connector (metallic push-pull circular connector). The plug connector is coded anti-rotationally using a slot and key system.

### Interlocking mechanism




① Interlocking claws
② Outer sleeve
③ Clamping nut
④ Cable
⑤ Strain direction

If you pull on the cable or the clamping nut, the taper sleeve moves under the interlocking claws and presses them into the interlocking slot. The plug connection cannot be separated.




① Interlocking claws
② Outer sleeve
③ Strain direction

If you pull on the outer sleeve, the interlocking claws slide out of the interlocking slot. The plug connection can be separated.

### Procedure for plugging in the connector

Proceed as follows:

1. Retract the outer sleeve on the plug connector.
2. Plug the connector with retracted outer sleeve into the socket of the connection box.
3. Now release the outer sleeve.

   The outer sleeve glides automatically in the direction of the connection box and thereby locks the connector.

### Procedure for removing the connector

Proceed as follows:

1. Retract the outer sleeve on the plug connector.
2. Pull the connector with retracted outer sleeve out of the socket of the connection box.

If you do not intend to use the HMI device with a different connection box, place the HMI device securely in its wall holder.

## 4.5 Connecting the Mobile Panel 277 RO

### 4.5.1 Connecting the HMI device

### Connecting the cables

When connecting the cables, ensure that the contact pins are not bent. Secure the connectors with screws.

The pin assignment of the ports is described in the technical specifications.

## 4.5.2 Opening and closing the terminal compartment

### Before you begin

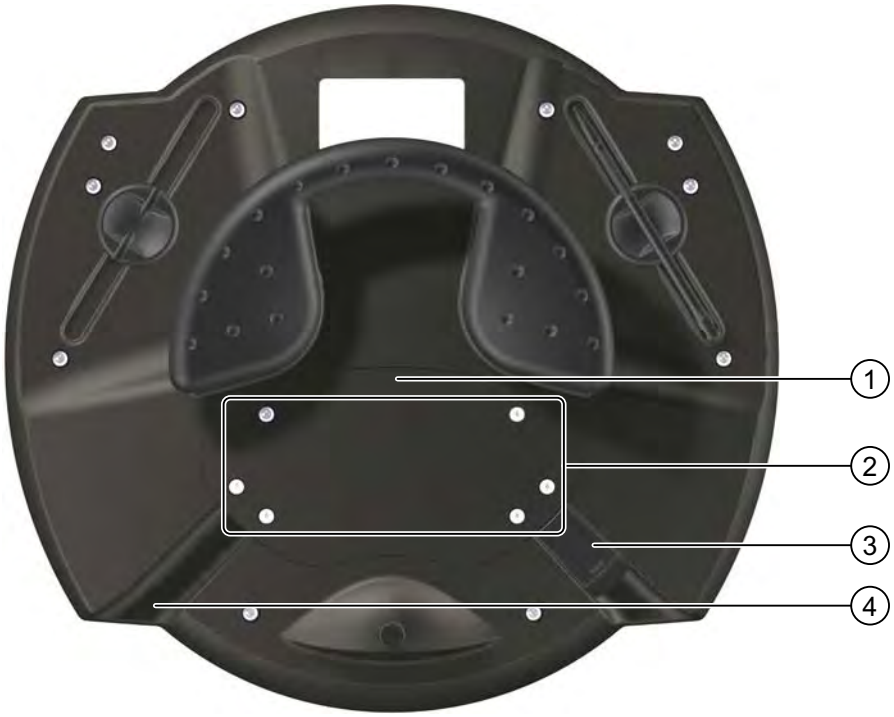
| CAUTION |
| --- |
| **Malfunctions**<br>If the HMI device is lying on its front, there is a risk that the STOP button can be activated, leading to a malfunction.<br>When you open the terminal compartment, you must therefore disconnect the connection cable for the Mobile Panel 277 RO from the connection box.<br>**Mobile panel with rechargeable battery**<br>Never open the terminal compartment if the HMI device is live. Wait until the HMI device switches itself off.<br>An HMI device with inserted battery initially switches to standby mode. After around 10 minutes, when the rechargeable battery has discharged, the HMI device will switch off.<br>**ESD**<br>When working in the open housing, ensure that current-carrying conductors do not come into contact with electrical circuits.<br>Note the ESD instructions. |

| CAUTION |
| --- |
| **Damage to the HMI device**<br>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.<br>Place the HMI device with the front side facing down on a flat, clean surface to protect against damage. |

### Requirements

Cross-head screwdriver, size 2

## Procedure




① Cover
② Screws on the cover
③ Plugs
④ Cable inlet

Proceed as follows:

1. Unscrew the six screws approximately 1 cm out of the cover.

   The cover is designed in such a way that the screws cannot fall out. Therefore, do not screw the screws out further than 1 cm. The screws can then be removed together with the cover.

2. Put the cover with the screws to one side.

Note on closing:

1. Place the sealing plugs into the cable inlets which are not used.

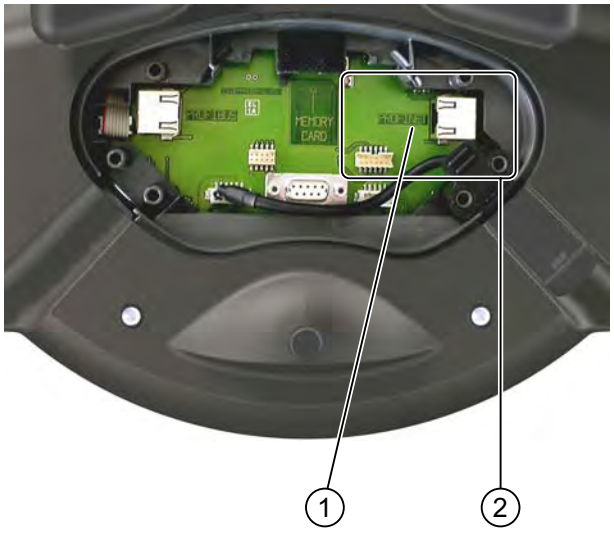
### Notes for closing

| CAUTION |
| --- |
| **Permissible torque**<br>The connection box housing is made of plastic. Therefore, the mounting hole threads cannot handle the same amount of stress as a comparable metallic housing. Only tighten the screws with the permitted torque of 0.4 to 0.5 Nm.<br>If the screws are tightened more than 20 times, there is risk of damage to the threads.<br>**Degree of protection not fulfilled**<br>Ensure that the seal belonging to the cover is present during assembly. When you have finished working on the connections, check to make sure that the unused threaded cable entry holes are fitted with rubber plugs. Otherwise degree of protection IP65 is not ensured. |

## 4.5.3 Mobile Panel 277 RO ports

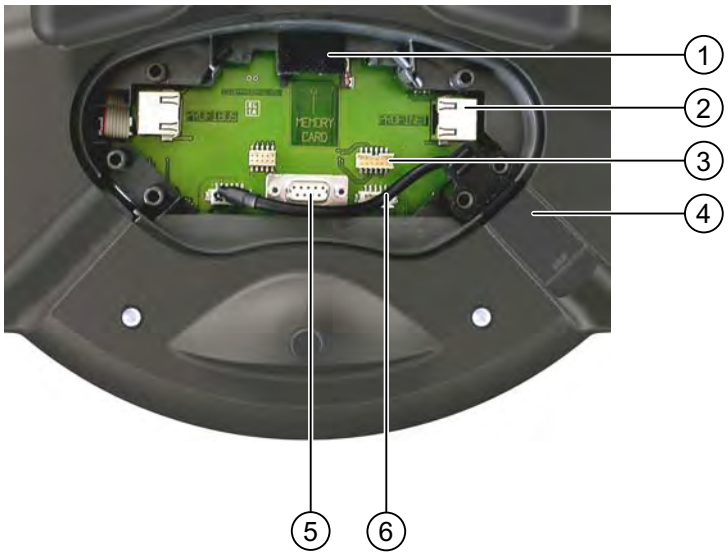
For reasons of clarity, the following figures depict the terminal compartment without the Velcro strip for fastening the memory card.

The figure below shows the Ethernet port area.




① Port designation
② Ethernet ports

The following figure shows additional ports on the Mobile Panel 277 RO which you can use.




① Slot for a memory card
② RJ45 socket for connecting cable PN
③ Post connector, 12-pole for the connecting cable PN
④ USB socket
⑤ RS 485 port (IF 2)
⑥ Connection for the rechargeable battery

| CAUTION |
| --- |
| **RJ45 socket**<br>Only use the RJ45 socket for the connection box's connecting cable.<br>When connecting the cable, remember that the functional reliability of the Mobile Panel 277 RO is only ensured by means of the connecting cable's RJ45 socket. Note the warning signs in the opened Mobile Panel 277 RO. |

### USB socket

The USB socket is built as a sealing plug. You can deploy the USB socket in either of the two cable inlets.


① USB socket
② Cap
③ Cable inlet

| CAUTION |
| --- |
| **Degree of protection not fulfilled**<br>Degree of protection IP65 is only ensured if the cap on the USB socket is plugged and sealed tight. |

### Connection sequence

Connect the connecting cable's connector in the following sequence:

1. Place the USB socket in the other cable inlet if necessary.
2. Plug in the connecting cable.
3. Connect the connector for the power supply.
4. Connect the connector for the data communication.

## 4.5.4 Connecting a PC

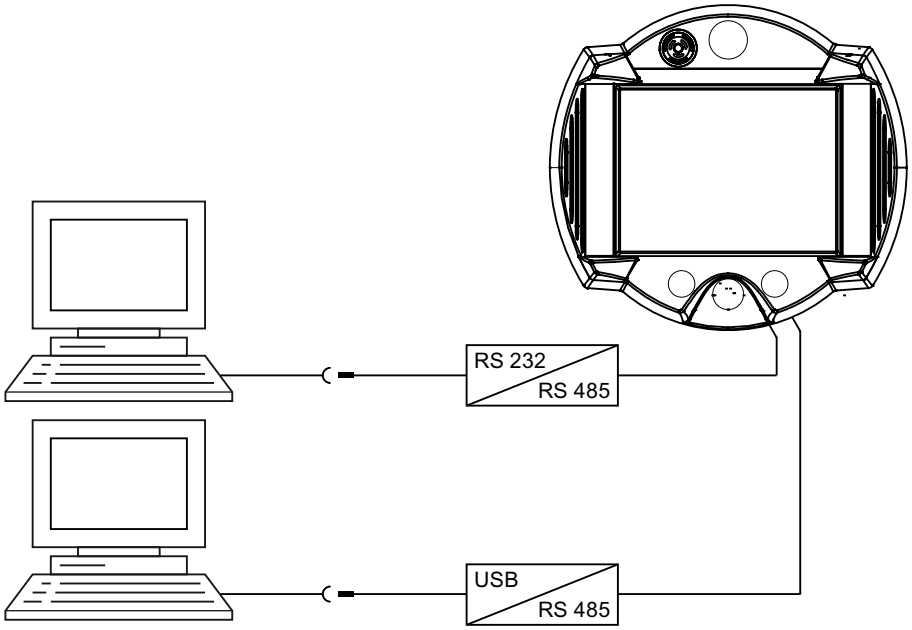
If the image with the operating system and RemoteOperate is missing from an HMI device, you need to transfer the image to the HMI device. To do this, connect a PC to the HMI device and then start to transfer the image using ProSave.

### Requirements

The cover of the terminal compartment on the Mobile Panel 277 RO is removed.

## Connection graphic

The following figure shows the RS 485 serial connection between the HMI device and a PC.




A Siemens AG tested and released PC/PPI cable must be used to convert from RS 232 to RS 485. You can order the PC/PPI cable from a Siemens dealer or from Siemens directly. The order number for PC/PPI cable is 6ES7 901-3CB30-0XA0.

A Siemens AG tested and released USB/PPI cable must be used to convert from USB to RS 485. You can order the USB/PPI cable from a Siemens dealer or from Siemens directly. The order number for the USB/PPI cable is 6ES7 901-3DB30-0XA0.

**Note**

If the connection fails during the operating system update, set the system to a lower bit rate. If you use a higher bit rate, you must use the PC/PPI cable release 3 or higher. The version code is printed on the cable (e.g., "E-Stand 3" corresponds to version 3).

The ports are described in the specifications.

| NOTICE |
| --- |
| **Degree of protection not fulfilled**<br>When a PC is connected directly to the Mobile Panel 277 RO, you cannot close the cover of the terminal compartment.<br>You should only connect a PC directly to the Mobile Panel 277 RO for a short time. |

## See also

Connecting the connecting cable (Page 49)

Opening and closing the terminal compartment (Page 51)

Commissioning the HMI device (Page 73)

## 4.6 Switching on and testing the HMI device

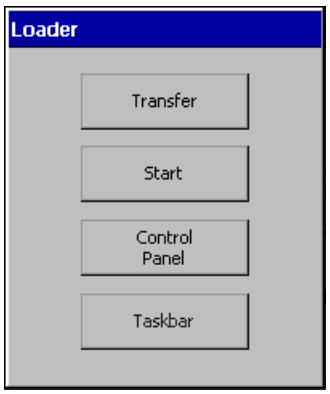
### Procedure

Proceed as follows:

1. Switch on the power supply.

   The display lights up after power is switched on. A progress bar is displayed during startup.

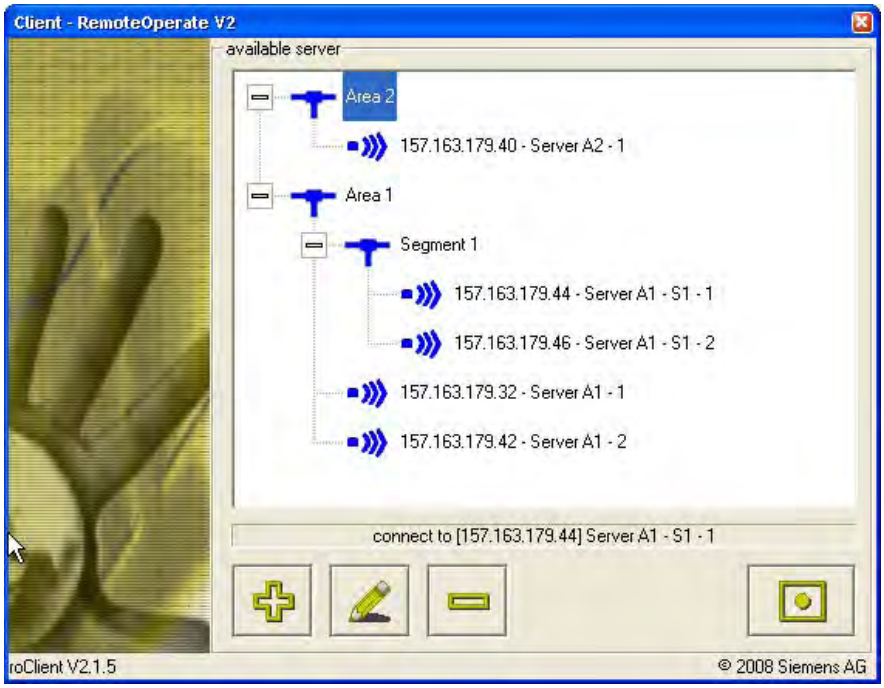
   If the HMI device does not start, it is possible that the wires on the terminal block have been crossed. Check the connected wires and change the connections if necessary.




   At the end of the delay time, the RemoteOperate Client software starts.

### Result

The server selection list is displayed.



## Switching off the HMI device

Quit the RemoteOperate Client software by pressing the button before switching off the HMI device.

You have the following options for switching off an HMI device with no rechargeable battery:

- Switch off the power supply.
- Pull out the connecting cable from the connection box.

**Note**

**Recovery time**

Wait for approximately one second after you have removed the connecting cable from the connection box before you plug the connecting cable back into the connection box.

Wait approximately one second after switching off the power supply before you switch it back on again.

After power failures lasting less than one second the connecting cable has to be disconnected.

If the HMI device is fitted with a rechargeable buffer battery, wait until the HMI device has switched off.

An HMI device with a rechargeable battery will switch into standby mode first. After around 10 minutes, when the rechargeable battery has discharged, the HMI device will switch off.

## See also

Setting the delay time (Page 97)

Creating/editing a server selection list (Page 109)

Connecting a client (Page 112)

# 5 Operator controls and displays

## 5.1 Operator controls and displays on the Mobile Panel 277 RO

### 5.1.1 Overview


① STOP button
② Display with touch screen

#### STOP button

The STOP button allows a safety-related stop of the system being monitored, for example the triggering of the emergency stop function.

### Standard input unit

The standard input unit on the HMI device is the touch screen. All operator control objects 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. |

## 5.1.2 Enabling button

### Introduction

The enabling device comprises two enabling buttons mounted on both sides of the Mobile Panel 277 RO. The switch setting of the two enabling buttons is determined by electrical momentary contact switches. The associated evaluation logic is dual-channel. This means that one channel processes the enabling button information digitally and the second channel analogously (diversity).


① Enabling button

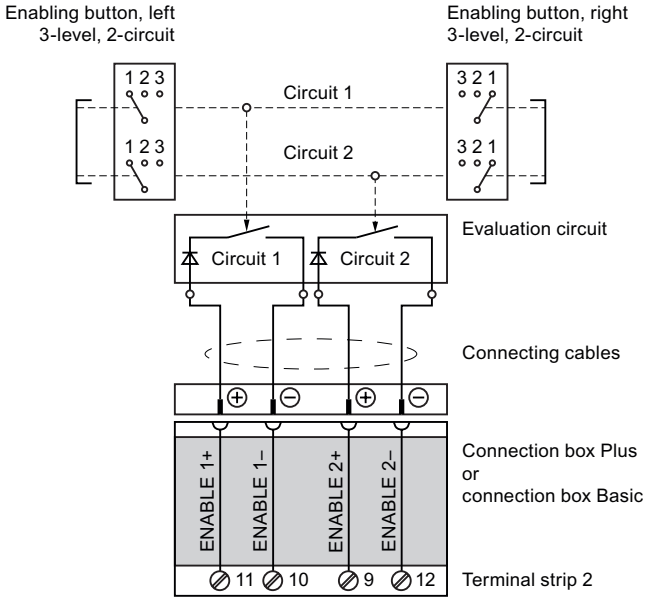
### Operation

You only have to activate one enabling button. It is not possible for the PLC to determine whether the Mobile Panel 277 RO is being operated with one hand or two.

The enabling buttons fulfill the requirements of safety category 3 according to EN 954-1 when used in combination with an external monitoring device.

## Circuit diagram

The figure below shows the operating positions and interconnections of the enabling button.

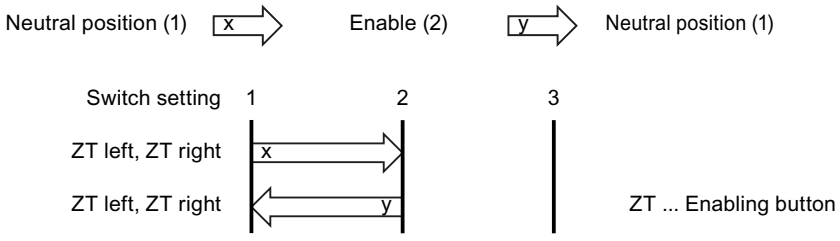



## Switch settings

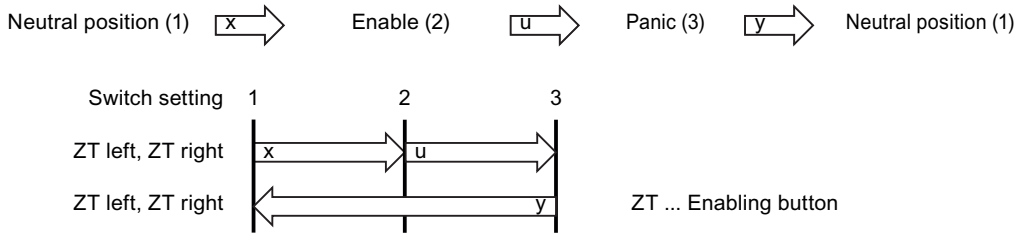
The primary function of the evaluating logic is to recognize the three switch settings:

| Switch setting | Functions | Enabling button | Switch state |
|---|---|---|---|
| 1 | Neutral position | Not activated | OFF (open) |
| 2 | Enable | Activated | ON (closed) |
| 3 | Panic | Pressed | OFF (open) |


The following figure shows the switching sequence during normal usage.



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 be skipped when the switch is released.

The signals of the enabling button are fed to the connection box via the connecting cable. For manual special operating modes, these signals must be interconnected from the connection box to the safety circuit using two channels for power interruption.

**Note**

Releasing the enabling button or pressing through to the Panic setting does not require acknowledgment of the safety cut-out.

## 5.1.3 STOP button

### 5.1.3.1 Overview

#### Overview

The STOP button is designed with two circuits and allows a safety-related stop of the system being monitored.

The STOP button fulfils safety category 3 in accordance with EN 954-1 when used in combination with an external monitoring device. Please refer to the "Safety instructions and general notes" chapter for further safety instructions.

When you unplug the Mobile Panel 277 RO from the connection box, the Stop circuit of the system being monitored remains closed.

Possible application areas for the STOP button:

- The STOP button can be used to initiate a process-cycle-specific rapid stop of a monitored system (plant, machine or machine zone). The Stop operation can occur with or without a power shutdown.

  Advantages:

  – Limitation of effective range
  – Fast restart
  – No loss of machine coordinates and thus no recalibration upon restart
  – Preservation of tool and workpiece

- Triggering of the Emergency Stop function of a monitored system by means of looping in the Emergency Stop circuit.

  Advantage:

  Simple integration in an existing Emergency Stop circuit when the system to be monitored has no option for a fast process stop.


① STOP button

Due to its position, the STOP button is equally accessible to both left-handed and right-handed individuals.

Due to its profiled design, the STOP button is easily accessible. The STOP button can be activated if the panel is dropped.

## Operation

The STOP button is operated by pressing the button. Once the stop operation has been initiated, the STOP button remains engaged in the stop position.

**Note**

The STOP button engages compulsorily when activated!

### Releasing the STOP button

**⚠ WARNING**

If you have activated the STOP button and thereby brought the monitored system to a standstill, the STOP button may only be released under the following conditions:

The reasons for the stop have been eliminated.

A safe restart is possible.

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

## 5.1.3.2 Safety functions of the STOP button

The STOP button on the Mobile Panel 277 RO brings about a safety-related stop of the system being monitored 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.

The Stop function of the Mobile Panel 277 RO is used as a safe machine stop.

In the connection box Plus, the signals of the Stop or Emergency Stop circuit are routed via the STOP button. If the Mobile Panel 277 RO is not connected, the Stop or Emergency Stop circuit of the system being monitored remains closed.

**⚠ WARNING**

**Mobile Panel 277 RO with STOP button**

If the Mobile Panel 277 RO is not connected to the connection box, a Stop cannot be initiated using the Mobile Panel 277 RO. The STOP button of the Mobile Panel 277 RO is then ineffective.

Install stationary Emergency Stop buttons that are available at all times on the system being monitored.

**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. Releasing the STOP button must not initiate a dangerous situation (see also EN 60204-1:1997, Section 9.2.5.3).

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

**NOTICE**

**Several connection boxes**

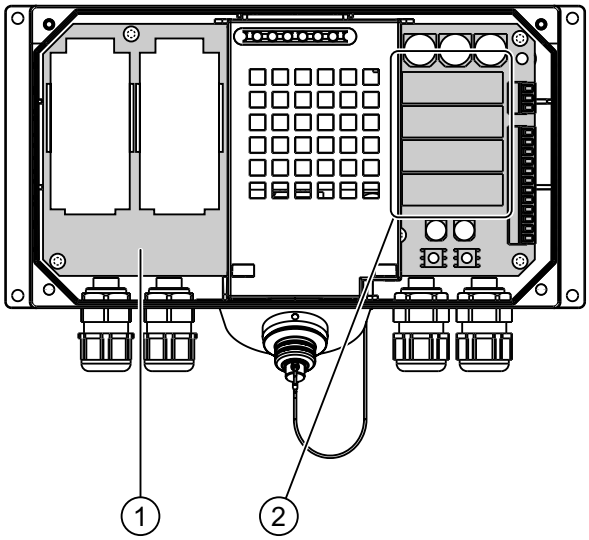
Install only one type of connection box in the system to be monitored - in other words, only Plus connection boxes.

| NOTICE |
| --- |
| **STOP button can be activated if the panel is dropped**<br>The standstill of the monitored system can be activated under the following conditions:<br>The Mobile Panel 277 RO is connected to the connection box and the STOP button is activated due to the Mobile Panel 277 RO falling down or being dropped. |

### 5.1.3.3 STOP button on the connection box Plus

#### Overview

The "Stop loop" function is implemented on the connection box PN Plus. The double-circuit loop is provided by four relays mounted on the printed-circuit board.




① Board
② Relays

### Switching states of the Stop or Emergency Stop circuit with connection box Plus

Switching states of the Stop or Emergency Stop circuit for a connected Mobile Panel 277 RO with STOP button and connection box PN Plus:

| Mobile Panel 277 RO | STOP button | Status of the Stop or Emergency Stop circuit |
|---|---|---|
| Is connected | Not pressed | The Stop or Emergency Stop circuit remains closed. |
| Is connected | Pressed | The Stop or Emergency Stop circuit is open.<br>The system being monitored is shut down. |
| Is not connected | – | The Stop or Emergency Stop circuit remains closed. |

**⚠ WARNING**

**Disconnecting the Mobile Panel 277 RO**

If you disconnect the Mobile Panel 277 RO from the connection box PN Plus, the Stop or Emergency Stop circuit is closed and the Stop status of the system being monitored is nullified. This is independent of whether or not the STOP button was pressed on the Mobile Panel 277 RO.

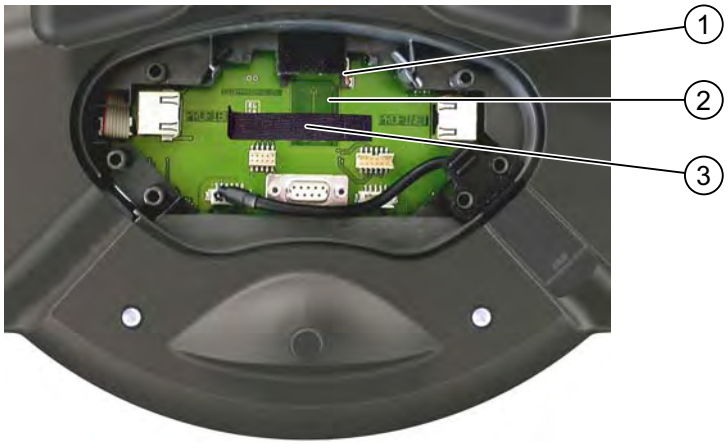
**NOTICE**

Approximately 100 ms elapse between the time the STOP button is pressed and response of the Stop contacts at the connection box Plus.

## 5.1.4 Using memory cards

### Requirements

The terminal compartment of the Mobile Panel 277 RO is open.




① Slot
② Memory card symbol
③ Velcro strip for fastening the memory card

### Procedure for inserting a memory card

Proceed as follows:

1. Remove the Velcro strip.
2. 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. 3mm proud of the slot.
3. Close the Velcro strip.

### Procedure for unplugging a memory card

Proceed as follows:

1. Remove the Velcro strip.
2. Pull the memory card out of the slot.
3. Deposit the memory card in a safe place.

## 5.2 Changing the touch pen

### Requirements

You need the following tool to replace the touch pen:

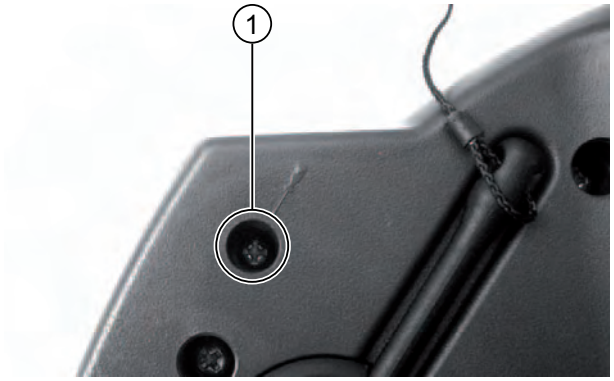
- Phillips screwdriver, size 2

## Procedure

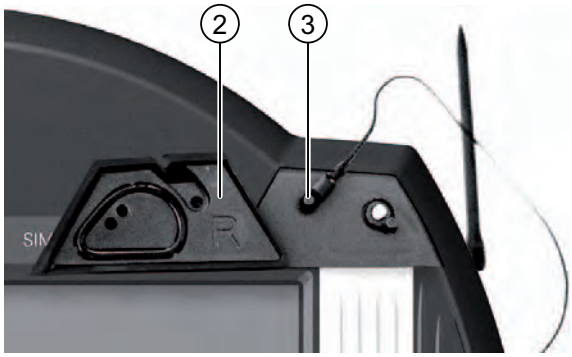
Proceed as follows to replace the touch pen:

1. Close the RemoteOperate Client software.
2. Switch off the HMI device.
3. Place the HMI device front-down on a clean, level surface.

   On the back of the HMI device, you will find a screw ① in the top left and top right corners to fasten the impact guards. These screws are identified by a tool symbol.




4. Open the screw ① on that side on which the touch pen is located that you would like to replace.
5. Remove the impact guard ②. The pin ③ for retaining the touch pen is now freely accessible.




6. Replace the touch pen.
7. Place the impact guard ② once again on the front of the HMI device.
8. Fasten the impact guard to the back of the HMI device with screws.

### Result

You have replaced the touch pen.

# 5.3 Holding the mobile panel and fixing it to the wall

## Holding the Mobile Panel

The following illustrations show the correct method for holding the device on the forearm for right- and left-handed people.


The depicted method of holding enables you, for example, to undertake movements while servicing the monitored system.

The depicted forearm holding method enables both right and left-handed persons to use the HMI device with equal ease. The free hand can be used to operate the control elements 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 for the confirmation of axis movements. 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 STOP button can also be quickly reached with your free hand.

## Fixing the Mobile Panel in position

A wall holder is available for securely fixing the HMI device in position. The Mobile Panel can be used as a stationary HMI device when it is hooked into the wall holder.

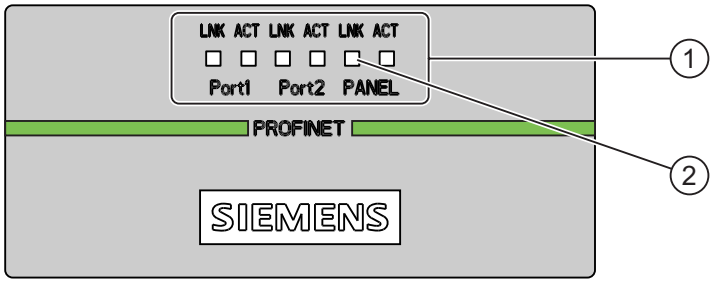
The following picture shows the Mobile Panel in the wall holder:

| NOTICE |
| --- |
| **Operability**<br>If the Mobile Panel is not hooked into the wall holder, the operability of the STOP button can be impaired. |

# 5.4 Displays on the connection box PN

## Introduction

On the front of the connection box PN Plus there are six LEDs which indicate the communication status.




① LED display
② LED

There is an "LNK" and "ACT" LED available for the following connections:

- PROFINET connection Port1
- PROFINET connection Port2
- Mobile Panel 277 RO

## Meaning of the LED displays

- LED "LNK"

  The LED is permanently lit if the associated port of the connection box PN Plus is connected to a cable and the connection is error-free.

- LED "ACT"

  The LED flashes when data is being transferred via the associated port of the connection box PN Plus.

# Commissioning the HMI device

# 6

The following applications are pre-installed on the HMI device:

- The Microsoft Windows CE 5.0 operating system
- The RemoteOperate Client software

The operating system and the RemoteOperate Client software are located in an image in the \Client folder on the "SIMATIC RemoteOperate - Applications & Documentation" CD-ROM.

If the image with the operating system and RemoteOperate is missing from an HMI device, you need to transfer the image to the HMI device. To do this, connect a PC to the HMI device and then start to transfer the image using ProSave.

## Requirements

- The HMI device is connected to a PC via the RS 485 serial interface.
- The ProSave application is installed on the PC. The ProSave software is located in the \ProSave folder on the "SIMATIC RemoteOperate - Applications & Documentation" CD-ROM.
- The ProSave add-on software with the information for the HMI device is installed on the PC. The add-on software is located in the "\ProSave_Addon" folder on the SIMATIC RemoteOperate - Applications & Documentation CD-ROM.
- The data channel on the HMI device is configured.

## Procedure

Proceed as follows:

1. Check that the HMI device is turned off.
2. Turn on the PC.
3. Start ProSave from the Windows Start menu on the PC.
4. Select the HMI device type in the "General" tab.
5. Select "Serial" as the connection type between the HMI device and the PC.
6. Select the "OS Update" tab.
7. Select the "Reset factory settings" check box.
8. Select the HMI device image file "*.img" from the "Image Path" area.
9. The HMI device image file is located in the \Client Mobile Panel 277 10inch or \Client Multi Panel 377 folder or on the SIMATIC RemoteOperate - Applications & Documentation CD-ROM. In the output area, you are provided information on the version of the HMI device image file after it is opened.
10. Start the operating system update by means of the "Update OS" button.
11. Switch on the power supply to the HMI device.
12. Click on the "Transfer" button in the loader.
13. Follow the instructions in ProSave.

During the operating system update a status view opens to indicate progress. A message is displayed when the operating system update is successfully completed.

## Result

You have successfully installed the operating system and the RemoteOperate Client application on the HMI device.

## See also

Connecting a PC (Page 55)

Configuring the data channel (Page 98)

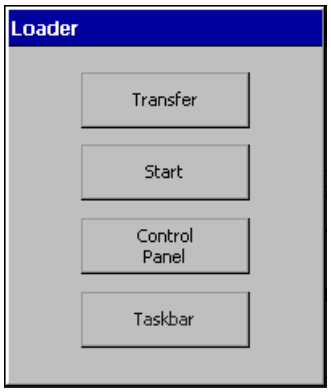
# Configuring the operating system

# 7

## 7.1 Loader

### Loader

The following figure shows the Loader.




The Loader buttons have the following functions:

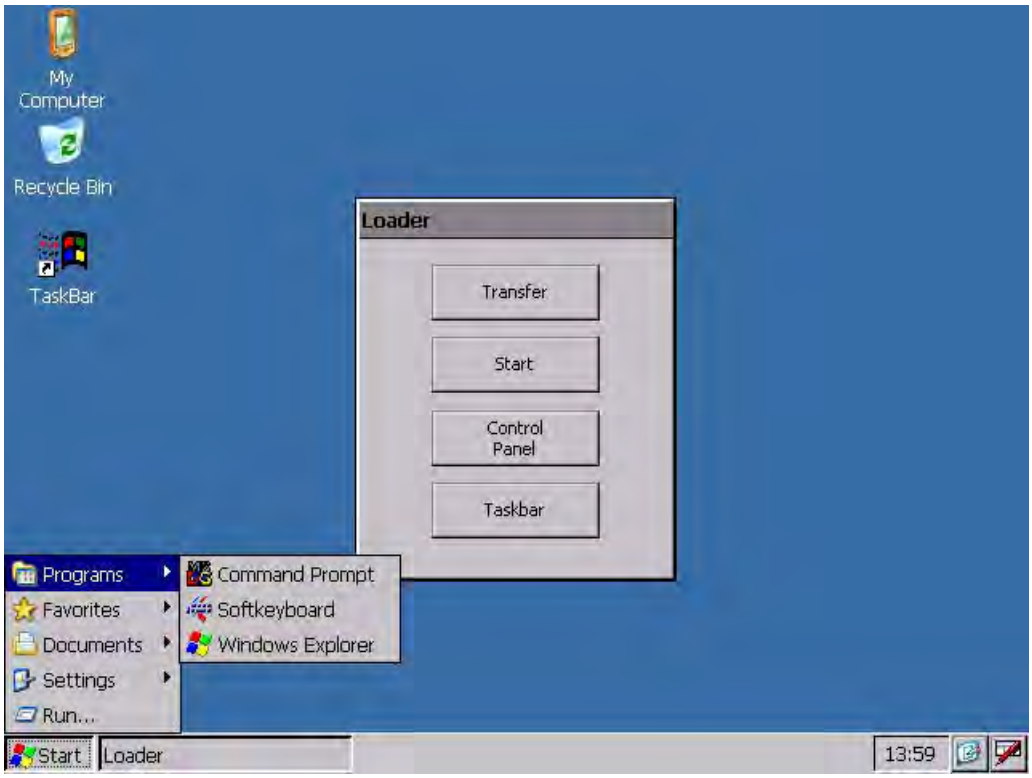
- Press the "Transfer" button to set the HMI device to "Transfer" mode.

  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 RemoteOperate Client application.

  If you do not execute a command, RemoteOperate Client starts automatically after the delay time set in the Control Panel.
- 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:




## Open Loader

The following options are available to open the Loader:

- The Loader appears briefly after starting the HMI device
- The loader is displayed after exiting the RemoteOperate Client application

## Password protection

| NOTICE |
| --- |
| If the password is no longer available, you can only cancel password protection by updating the operating system. All data on the HMI device will be deleted 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.

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

This prevents inadvertent operations and increases security for the plant or machine.

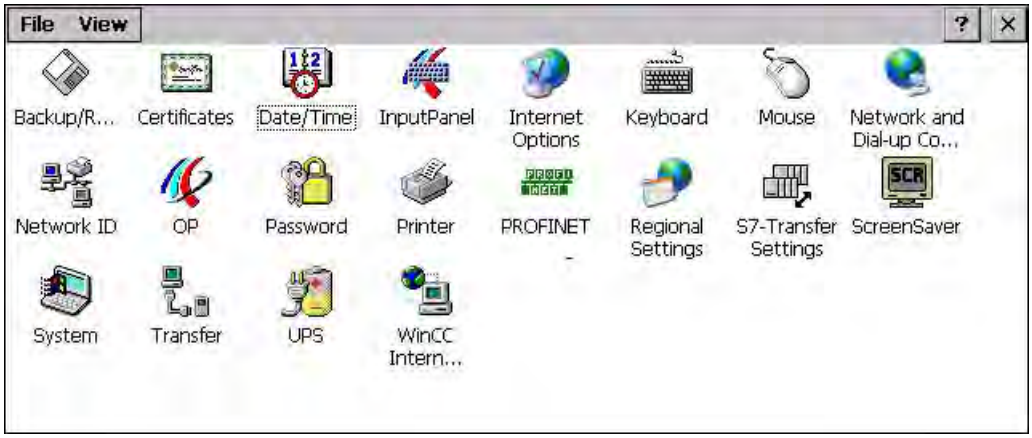
## See also

Setting the delay time (Page 97)

# 7.2 Control Panel

## 7.2.1 Overview

### Control Panel of the HMI device




The following settings, for example, can be made in the Control Panel of the HMI device:

- Password protection for the HMI device
- The delay time for starting the RemoteOperate Client application
- The date/time on the HMI device
- A screen saver

### Opening the Control Panel

The Control Panel can be opened as follows:

- In the startup phase or after exiting the RemoteOperate Client application:
  Press "Control Panel" to open the HMI device Control Panel in the loader.
- During operation:
  - Open the Windows CE Start menu by touching the  button on the alphanumeric screen keyboard twice.
  - Open the Control Panel with "Settings > Control Panel".

## 7.2.2 Reference

### Overview of functions

The following table shows the settings in the Control Panel.

Some settings are only effective when a project is running on the HMI device. These settings are not relevant for the Mobile Panel 277 RO and are marked accordingly in the table below.

| Icon | Functions | | Tab / entry |
|---|---|---|---|
|  | Backup and restore with the memory card | | – |
|  | Importing, displaying and deleting certificates<br>Not relevant for the Mobile Panel 277 RO. | | "Stores" |
|  | Setting the date and time | | "Date/Time" |
|  | Configuring the screen keyboard | | – |
|  | Changing internet settings<br>Not relevant for the Mobile Panel 277 RO. | | – |
|  | Setting the character repeat for the keyboard | | "Repeat" |
|  | Setting the double-click | | "Double-Click" |
|  | Parameterizing the LAN connection | | "LAN90001" |
| | Setting the IP address | "'SMC LAN91C111 Ethernet' Settings" | "IP Address" |
| | Setting the name server | "'SMC LAN91C111 Ethernet' 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" |
| | Display rechargeable battery charge level | | "Accu" |
| | Activate memory management<br>Not relevant for the Mobile Panel 277 RO. | | "Memory Monitoring" |
|  | Changing password protection | | "Password Settings" |
|  | Changing the printer properties<br>Not relevant for the Mobile Panel 277 RO. | | – |
|  | Changing the PROFINET IO setting | | – |
|  | Changing regional settings<br>Not relevant for the Mobile Panel 277 RO. | | – |
|  | Changing S7 transfer settings<br>Not relevant for the Mobile Panel 277 RO. | | – |

| Icon | Functions | Tab / entry |
|---|---|---|
|  | Setting the screen saver<br>Reducing the backlighting | – |
|  | Displaying the system information | "General" |
| | Displaying memory information | "Memory" |
| | Setting the device name of the HMI device | "Device Name" |
|  | Configuring the data channel | "Channel" |
| | Setting the delay time | "Directories" |
|  | Changing e-mail settings<br>Not relevant for the Mobile Panel 277 RO. | – |

## 7.2.3 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. Exit the RemoteOperate Client application by pressing  .

   The Loader appears.
2. Open the Control Panel by means of the "Control Panel" button.
3. To open the required dialog, double-click its symbol.
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 activate or deactivate a check box.
   - Touch a radio button to select it.
6. Confirm the selection with the  button or abort the entry with the  button.

   The dialog closes.
7. Close the Control Panel with the  button.
8. Start the RemoteOperate Client application by pressing "Start" in the loader.

## Input with the screen keyboard

A screen keyboard is available for data input. 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

The display method for the screen keyboard can be changed and its position on the screen can be fixed. Confirm the entry with the ↵ button or abort the entry with the ESC key. Either action closes the screen keyboard.

- Numerical screen keyboard


- Alphanumerical screen keyboard


  The alphanumerical screen keyboard has various levels.
  - Normal level
  - Shift level

- Reduced screen keyboard

## Changing the display of the screen keyboard

| Key | Functions |
|---|---|
|  | Switching between the numerical and alphanumerical keyboard |
|  | Switching between the normal level and Shift level of the alphanumerical screen keyboard |
|  | Activation and deactivation of the numerical and alphanumerical keys of the alphanumerical screen keyboard |
|  | 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:

Touch the  symbol.

1. Touch and move the screen keyboard on the touch screen.

   Release the  symbol when the required position is reached.

# 7.3 Changing settings for operation

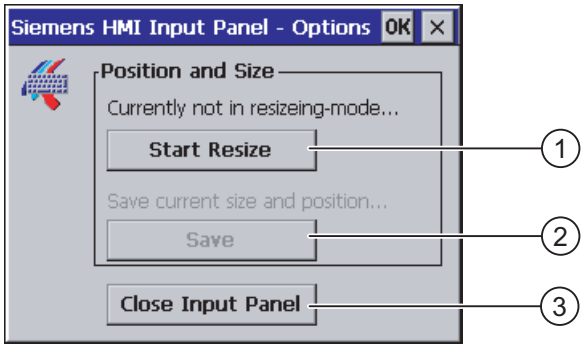
## 7.3.1 Configuring the screen keyboard

### 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 Button for displaying the screen keyboard
② Button for saving the screen keyboard settings
③ Button for closing the screen keyboard

### Procedure

Proceed as follows:

1. Press the "Open Input Panel" button to display the screen keyboard.
2. By pressing the  button, you can switch between the numerical and alphanumerical screen keyboard.
3. Set the position of the screen keyboard by moving the screen keyboard on the screen.
4. Store the settings by pressing the "Save" button.
5. Close the screen keyboard by pressing the "Close Input Panel" button.
6. Close the dialog.

### Result

The screen keyboard settings have been modified.

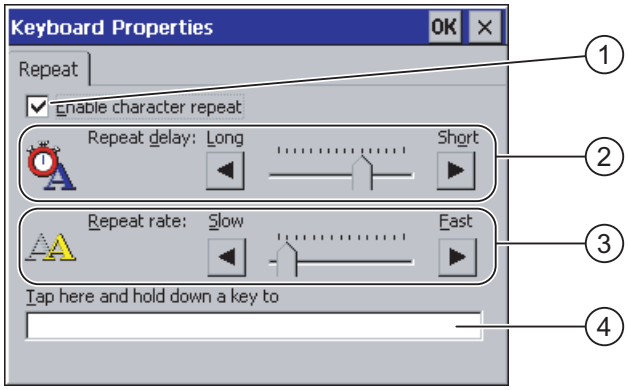
## 7.3.2 Setting the character repeat rate of the screen keyboard

### 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 activating 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 field

### Procedure

Proceed as follows:

1. Activate the "Enable character repeat" check box to enable the character repeat.
2. Use the buttons to set the delay and rate of the character repeat. You can also use the slider control for this.
3. Verify your settings.
   - Touch the test field. 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 field.
   - Correct your setting if necessary.
4. Confirm your entries.

   The dialog closes.

### Result

The character repeat for the screen keyboard has been altered.

## 7.3.3 Setting the double-click

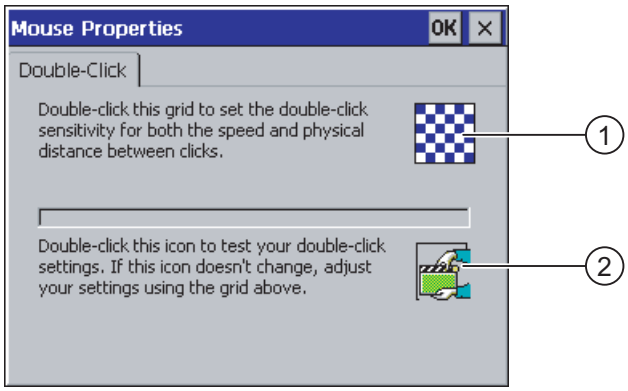
### Introduction

You can start applications in the Control Panel and in Windows CE with a double-click. A double-click corresponds to two brief touches in sequence.

In the "Mouse Properties" dialog box, you can set the time interval between the two touches of the touch screen.

### Requirements

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




① Pattern
② Icon

### Procedure

Proceed as follows:

1. Double-click the pattern twice.

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

2. Double-click the symbol twice.

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

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

   The dialog closes.

### Result

The double-click adjustment is completed.

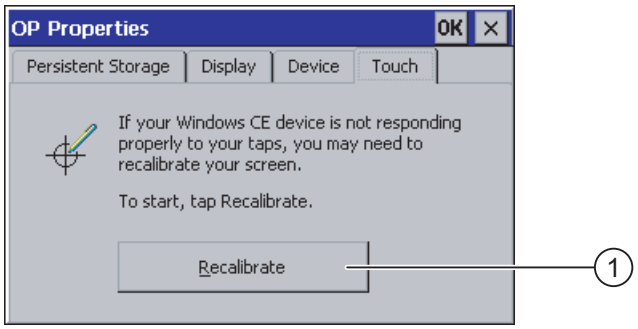
## 7.3.4 Calibrating the touch screen

### 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.

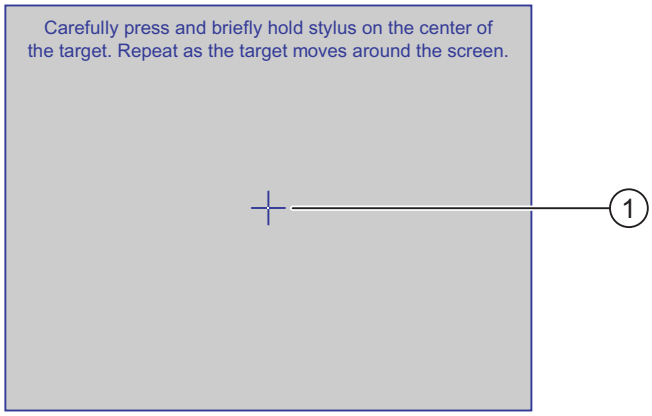



① Button for calibrating the touch screen

## Procedure

Proceed as follows:

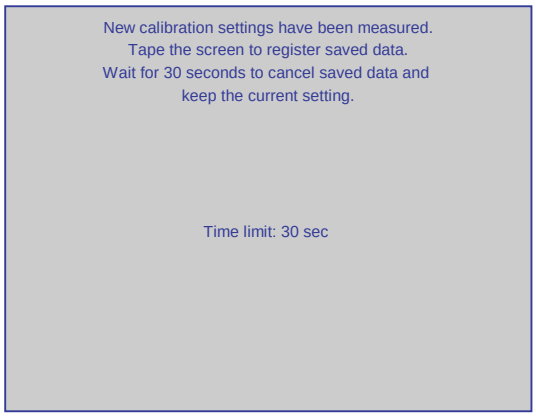
1. Touch the "Recalibrate" button to open the following dialog:




2. Briefly touch the middle of the calibration crosshairs ①.

   The calibration crosshairs is then displayed at four more positions. 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:




3. 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 , "Touch" tab is displayed again.

4. Close the dialog.

## Result

The HMI device touch screen is now recalibrated.

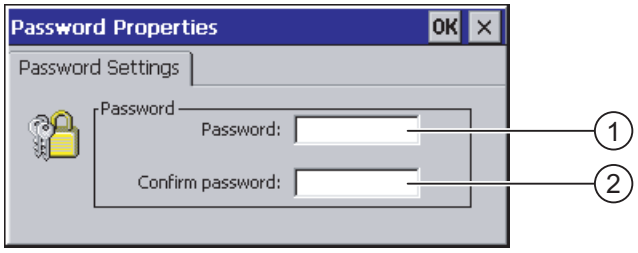
# 7.4 Changing password protection

## Introduction

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

## Requirements

You have opened the "Password Properties" dialog box by touching 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.<br>• Making changes to the Control Panel<br>• Operating the Windows CE task bar<br>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:<br>• Blank<br>• 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 entries in the "Password" and "Confirm password" text boxes.
2. Confirm your entries.

   The dialog closes.

### Result

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

## 7.5 Changing HMI device settings

### 7.5.1 Setting the date and time

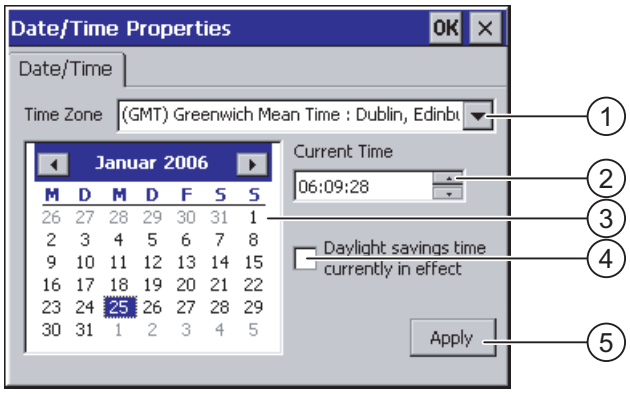
### Introduction

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" dialog with the "Date/Time Properties" icon.




① Time zone selection box
② Input field 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 field.
2. Touch the "Apply" button to confirm your entry.

   The time of day shown in the "Current Time" field 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" input field.

   **Note**

   The system does not automatically switch between winter and summer time.
5. If you want to switch from winter to summer time, activate the "Daylight savings time currently in effect" check box.

   The time is moved forward one hour.
6. If you want to switch from summer to winter time, deactivate the "Daylight savings time currently in effect" check box.

   The time is set back one hour.
7. Touch the "Apply" button to confirm your input.

   The values you have set are now in effect.
8. 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.

## 7.5.2 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:

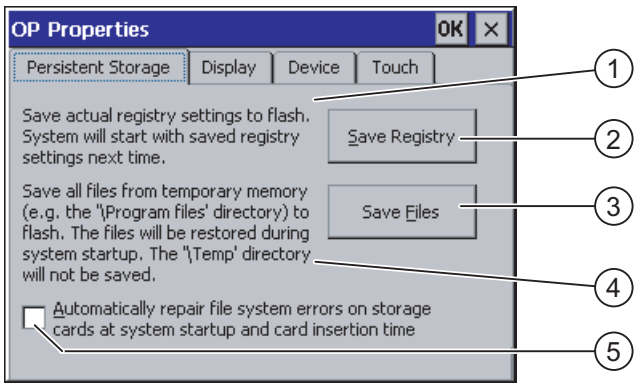
- Registry Information
- Temporary files

## 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, "Persistent 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. Select the "Save Registry" button to save the current registry settings.
2. Select the "Save Files" button to save temporary files.
3. Specify how the file system on the memory card should be restored.
   - Activate the check box "Automatically Repair ..." to activate automatic restore.
   - Deactivate the check box "Automatically Repair ..." if you wish to have the files system restored only upon prompting.
4. Confirm your entries.

   The dialog closes.

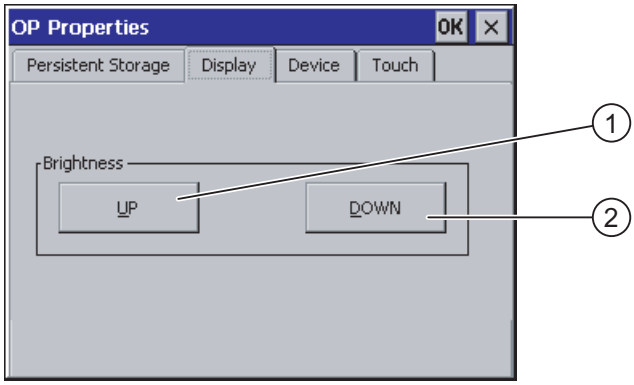
### Result

The HMI device uses the saved registry information the next time it starts. The temporary files are copied back.

## 7.5.3 Changing monitor 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. You can increase the brightness of the screen by pressing the "UP" button. Alternatively, you can reduce the brightness of the screen with the "DOWN" button.
2. Confirm your entries.

   The dialog closes.

### Result

The screen settings have been changed.

## 7.5.4 Setting the screen saver

### Introduction

You can set the following time intervals on the HMI device:

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

If no input is made within the predefined time interval, the function is activated automatically.

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

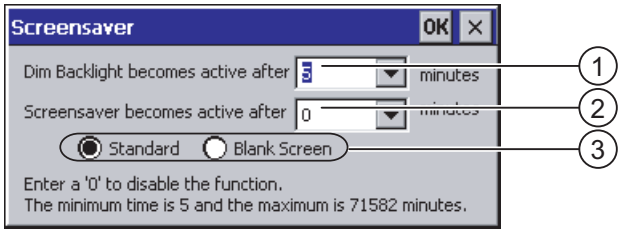
- By pressing any key
- By touching the touch screen

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

| NOTICE |
| --- |
| **Reduce backlighting**<br>The brightness of the backlighting decreases incrementally during its operational life. In order to increase the operational lifetime of the backlighting, activate the backlighting reduction.<br>**Activating the screen saver**<br>Generally, you should always activate the screen saver. Otherwise, the screen contents may leave a burn-in effect in the background if they appear too long.<br>This effect is reversible.<br>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, activate the "Standard" option.
   - In order to select an empty screen as screen saver, activate 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.

## 7.5.5 Restarting the HMI device

### Introduction

The HMI device must be restarted in the following cases:

- You have changed the time zone setting
- You have changed the automatic daylight savings and standard setting

**CAUTION**

**Data loss when the HMI device is restarted**

All volatile data is lost when the HMI device is rebooted.

Check the following:

- The RemoteOperate Client application is not running
- No data is being written to the flash memory

### Requirements

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

### Procedure

1. Change to the "Device" tab in the "OP Properties" dialog box.
2. Press "Reboot" to reboot the HMI device.

   A warning is displayed.

   The HMI device reboots immediately if you confirm this warning.

### Result

The HMI device starts.

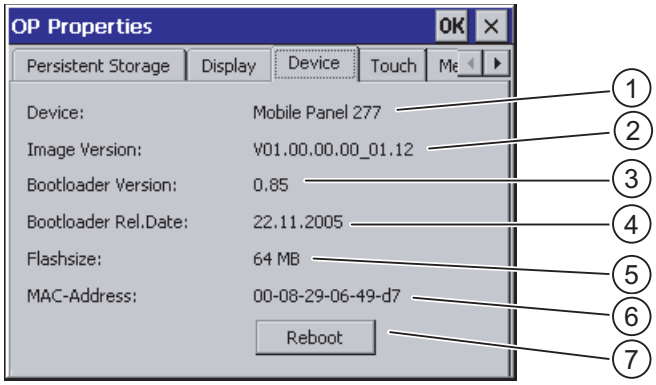
## 7.5.6 Displaying information about the HMI device

### 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 are stored
⑥ MAC address of the HMI device
⑦ Button for restarting the HMI device

### 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 size of the internal flash memory does not correspond to the available application memory.

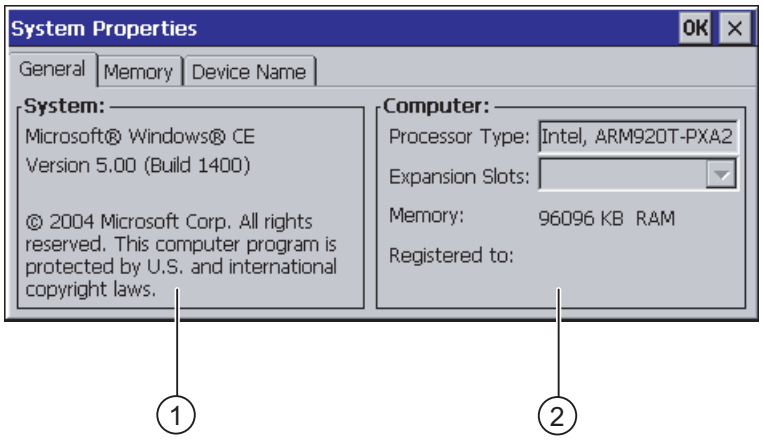
## 7.5.7 Displaying system properties

### 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 to Microsoft Windows CE

② Information about the processor, size of the internal flash memory, and capacity of a memory card when inserted

### Displaying the system information

The system information is displayed. This dialog is read-only.

Close the dialog.

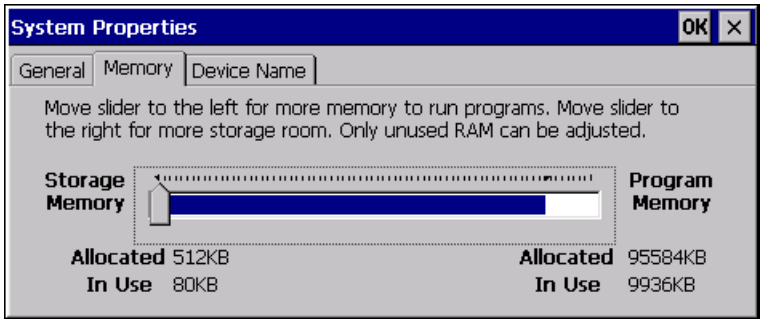
## Procedure for displaying memory information

| NOTICE |
| --- |
| **"Memory" tab**<br>Do not change the memory distribution in the "Memory" tab.<br>Only applies for the usage of options:<br>An alteration to the memory distribution may be necessary. Please refer to the accompanying documentation for further information. |

Proceed as follows:

1. Change to the "Memory" tab.

   The memory information is displayed.




2. Close the dialog.

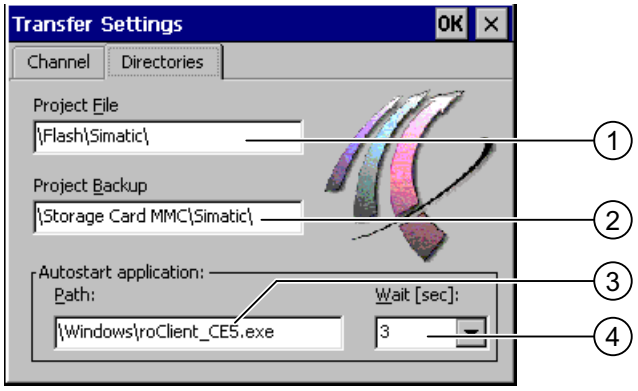
# 7.6 Setting the delay time

## Introduction

After switching on the HMI device, the RemoteOperate Client application starts after a delay time. 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 Location of the project file. Not relevant for the Mobile Panel 277 RO.

② Directory where the compressed source file of your project is saved
Not relevant for the Mobile Panel 277 RO.

③ Location and start file for RemoteOperate Client

④ Selection box for the delay time

| NOTICE |
| --- |
| **Settings under "Path"**<br>Do not change the settings in the "Path" field. If changes are made here, the RemoteOperate Client software may not start the next time the HMI device is switched on. |

## Procedure for setting the delay time

1. Select the desired delay time in seconds in the "Wait [sec]" selection box.

   With the value "0", RemoteOperate Client starts immediately. It is then no longer possible to call the Loader after switching on the HMI device. Set a value greater than "0" if you need to access the loader.

2. Confirm your entries.

   The dialog closes.

## Result

The delay time for the HMI device is now set.

# 7.7 Communication settings

## 7.7.1 Configuring the data channel

### Introduction

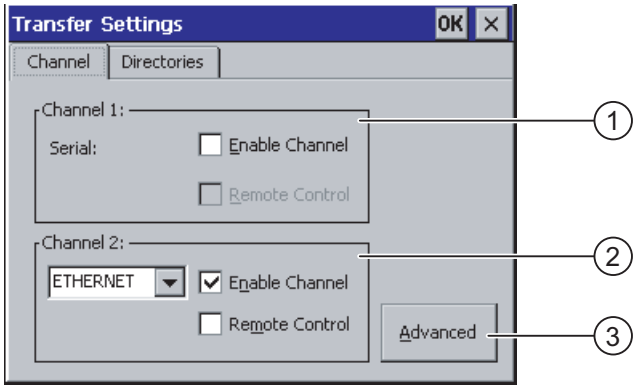
If you disable all data channels, the HMI device is protected against unintentional overwriting of the HMI device image.

**Note**

An image can only be transferred from a PC to the HMI device if at least one of the data channels is enabled on the HMI device.

### Requirements

You have opened the "Transfer Settings" dialog with the "Transfer Settings" icon.




① Group for the data channel 1 (Channel 1)
② Group for the data channel 2 (Channel 2)
③ Button for the "MPI/DP-Transfer Settings" and/or "Network and Dial-Up Connections" dialog

**Note**

**"Remote Control" for channel 1**

Only activate the "Remote Control" check box in the "Channel 1" group if serial transfer is in progress. Clear the check box before changing to "Online" mode.

## Procedure

Proceed as follows:

1. You can enable the required data channel by activating the corresponding "Enable Channel" check box in the "Channel 1" or "Channel 2" group.

   In the "Channel 1" group, the RS-422/RS-485 port is enabled for the serial data transfer.

   – Activate the "Enable Channel" check box to enable the data channel.

   – Deactivate the "Enable Channel" check box to disable the data channel.

2. You can enable automatic transfer by activating the corresponding "Remote Control" check box in the "Channel 1" or "Channel 2" group.
3. Select the required protocol for "Channel 2" in the selection box.
4. Enter further parameters if required.

   – Applies to "MPI/PROFIBUS DP"

     Press the "Advanced" button to switch to the "S7-Transfer Settings" dialog box. You can change the settings for MPI/PROFIBUS DP there.

     Confirm your entries.

     The "S7-Transfer Settings" dialog box closes.

   – Applies to "ETHERNET":

     Press the "Advanced" button to switch to the "Network&Dial-Up Connections" dialog box.

     Open the "LAN9001" entry. You can change the TCP/IP settings there.

     Confirm your entries.

     Close the "Network&Dial-Up Connections" dialog.

   – Applies to "USB"

     No further settings are required for "USB".

5. Confirm your entries.

   The dialog closes.

## Result

The data channel is configured.

## General information

**Note**

**Changes during the "Transfer" operating mode**

If the HMI device is in "Transfer" mode while changes are made to the transfer settings, the settings only go into effect after the transfer function is restarted.

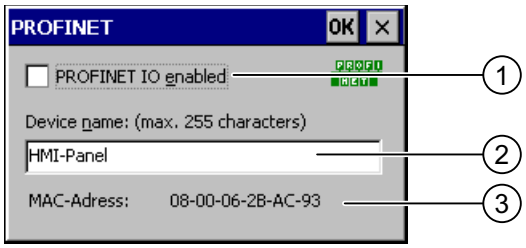
This may occur if the Control Panel is opened to change the transfer properties during the process control phase.

## 7.7.2 Checking the PROFINET IO settings

The HMI device is supplied with PROFINET IO deactivated. This default setting is necessary for error-free operation of the HMI device with RemoteOperate.

### Requirements

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




① Check box for enabling or locking the PROFINET IO direct keys
② Text box for the device name
③ MAC address of the HMI device

### Procedure

1. Deactivate the "PROFINET IO enabled" check box.

| NOTICE |
| --- |
| PROFINET IO must be locked. PROFINET IO is not supported by RemoteOperate. |

2. Confirm your entries.

   The dialog closes.
3. Reboot the HMI device after saving the settings.

### Result

PROFINET IO is disabled.

# 7.8 Configuring network operation

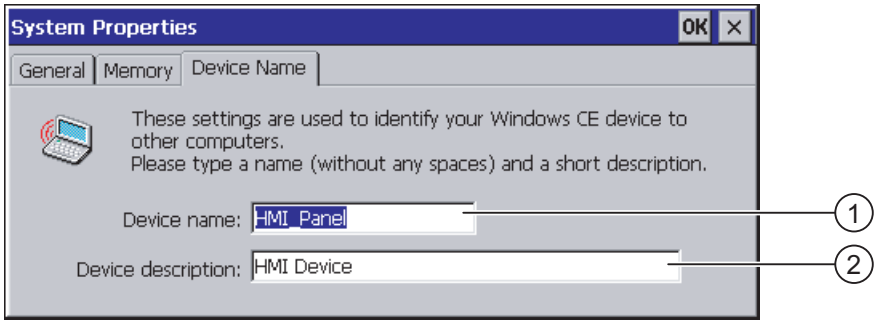
## 7.8.1 Setting the device name of the HMI device

### Introduction

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

### Requirements

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




① Device name of the HMI device
② Description for the HMI device (optional)

**Note**

Change the device name for the HMI device in the "Device name" text box to activate the network functions.

### Procedure

Proceed as follows:

1. Enter the device name for the HMI device in the "Device name" text box.
2. If necessary, enter a description for the HMI device in the "Device description" text box.
3. Confirm your entries.

   The dialog closes.

### Result

The device name for the HMI device is now set.

## 7.8.2 Changing the network configuration

### Overview

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

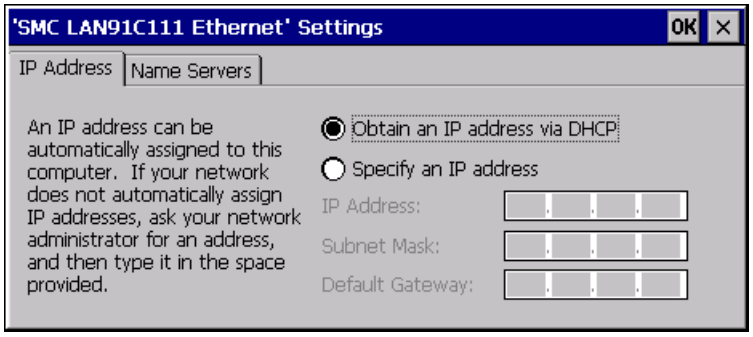
### Requirement - changing LAN connection settings

You have opened the following display by touching the "Network&Dial-Up Connections" icon.

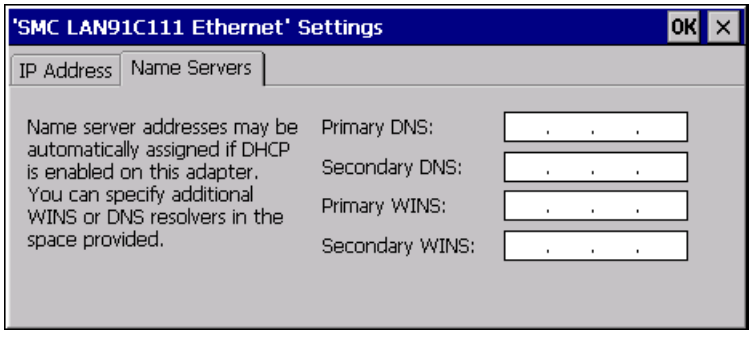

### Procedure

Proceed as follows:

1. Open the "LAN90001" entry.
   – The "'SMC LAN91C111 Ethernet' Settings" dialog opens.




2. Select either automatic address assignment via DHCP or manual address assignment.
3. If you assign the address manually, enter the corresponding addresses in the entry fields for "IP Address", "Subnet Mask" and, if used, "Default Gateway".
4. If a name server is used in the network, change to the "Name Server" tab.



5. Enter the respective addresses in the text boxes.
6. Confirm your entries.

   The dialog closes.
7. Close the "Network&Dial-Up Connections" display.

   The Control Panel is displayed again.

### Result

The LAN connection parameters for the HMI device have been changed.

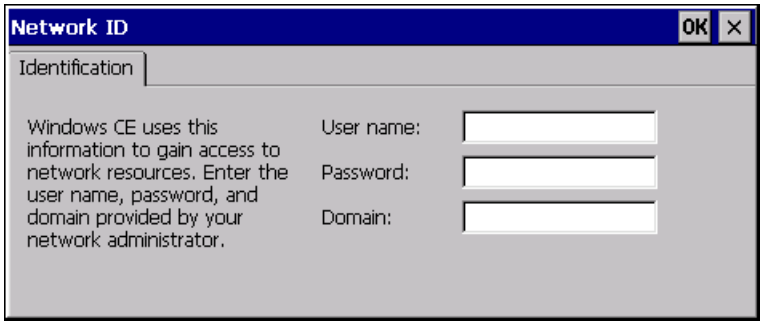
## 7.8.3 Changing the logon data

### Introduction

Windows CE uses this information to gain access to the network resources. Enter the user name, password and domain you have received from your administrator.

### Requirements

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




### Procedure

Proceed as follows:

1. Enter the user name in the "User name" text box.
2. Enter your password in the "Password" text box.
3. Enter the domain name in the "Domain" text box.
4. Confirm your entries.

   The dialog closes.

### Result

The logon information has now been set.

# 7.9 Backup and restore with the memory card

## Introduction

Backup involves copying the operating system, applications and data from the internal flash memory of the HMI device to a memory card.

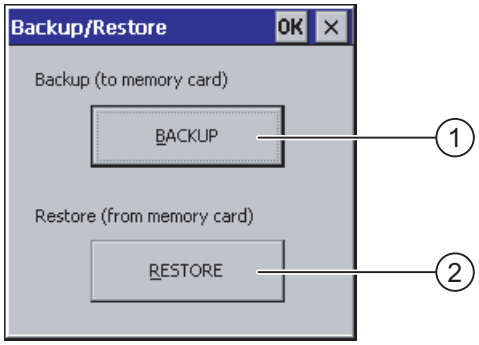
A restore operation deletes the old data from flash memory of the HMI device on confirmation. The data stored on the memory card is then copied to the internal flash memory.

| CAUTION |
| --- |
| All data on the HMI device will be deleted during a restore operation. Existing licenses are retained. |

## Requirements

A memory card with sufficient free capacity is inserted in the HMI device. The size of the internal flash memory is displayed with information about the HMI device. A warning is displayed if the available space is insufficient and backup is aborted.

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




① Button for backup to memory card
② Button for restore from memory card

## Procedure for backup

Proceed as follows:

1. Select "BACKUP" to start Backup.
2. The HMI device checks the memory card.

   If no memory card is inserted in the card slot of the HMI device or if the memory card is damaged:

   – The following warning is displayed:

     "No storage card detected!"

   – Acknowledge the warning and the following message "Backup aborted".

     The Control Panel is displayed again.

   A message is displayed if the memory card already contains data. Follow the instructions of the HMI device.
3. The following messages and dialogs are displayed in sequence during backup.

   – "Checking Registry"

   – "Backup Progress"

   – "Saving CE-Image"

   A progress bar shows the status of the backup process.
4. If backup was successful, the following message is displayed:

   "Backup successfully completed. Press OK and remove your storage card."
5. Click "OK" button to acknowledge the message.

   Remove the memory card.

## Result

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

## Requirements

The memory card with the backup is inserted in the HMI device.

## Procedure for restore

Proceed as follows:

1. Select "RESTORE" to start Restore.

   The HMI device checks the memory card.

2. If no memory card is inserted in the card slot of the HMI device or if the memory card is damaged:

   – The following warning is displayed:

     "Storage card couldn't be detected. Try restore again? Insert storage card and Press 'OK' or abort restore with 'CANCEL'."

   – Replace the defective memory card and restart Restore with "OK".

3. The data to be restored is checked.

   The following messages are displayed in sequence during the check.

   – "Starting Restore"

   – "Checking data".

4. When the data has been checked, the following prompt for confirmation is displayed:

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

   At this point you can abort the restore if required in order to prevent the data on the HMI device from being deleted.

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

   The following messages are displayed in sequence during the restore:

   – "Deleting files on flash"

   – "Restore CE Image"

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

6. After successful restoration of the Windows CE image, the following message is displayed: "Restore of CE Image is finished. The device will be rebooted now. Don`t remove the storage card."

   Acknowledge this message.

7. The HMI device starts. The operating system boots, opening the "Loader" and "Restore" dialog in sequence.

8. The restore process is resumed. All data stored on the flash file system is restored. Afterwards the following message is displayed "Restore succesfully finished. Press ok, remove your storage card and reboot your device."

   Remove the memory card.

   Acknowledge this message.

9. The HMI device starts.

## Result

The data from the memory card is now on the HMI device.

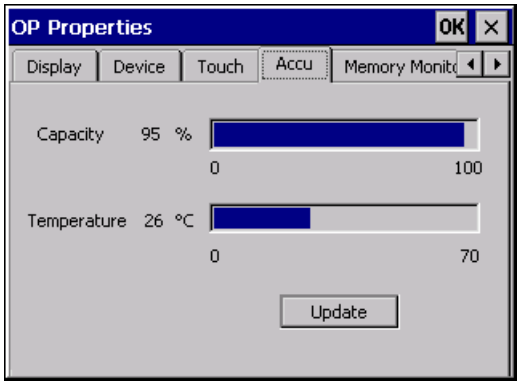
# 7.10 Display rechargeable battery charge level

## Introduction

The rechargeable battery is an optional accessory. The "OP Properties" dialog box, "Accu" tab, displays the remaining capacity and temperature of the rechargeable battery.

## Requirements

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




## Procedure

Proceed as follows:

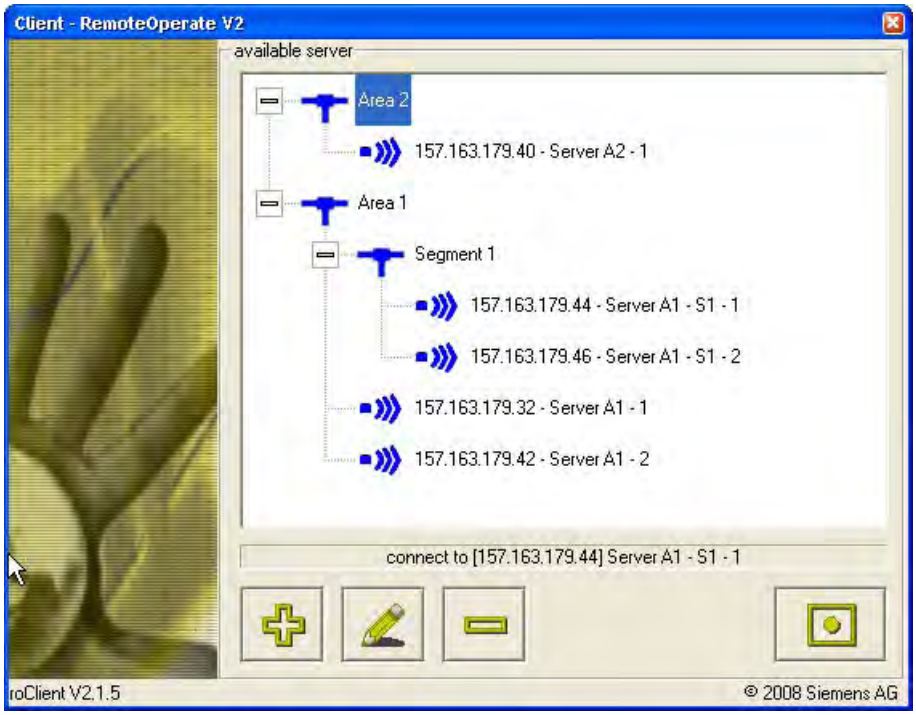
1. Update the display if required by pressing the "Update" button.
2. Close the dialog.

# Using RemoteOperate Client

# 8

## 8.1 Creating/editing a server selection list

When you switch on the HMI device and once the HMI device starts up, the server selection list is displayed in the "Client - RemoteOperate V2" dialog box:




**Note**

When you switch on the HMI device for the first time, the server selection list is empty. You must first create a new server.

## Password protection

If your HMI device is password protected, the icon also appears in the "Client - RemoteOperate V2" dialog box.

The password is requested once per connection attempt and with the following actions:

- Create server
- Change server properties
- Delete server
- Close RemoteOperate Client

## Creating a new server

**Note**

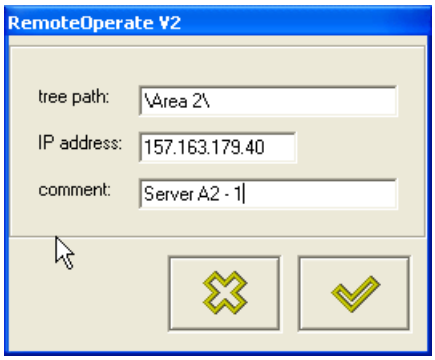
**Limited number of servers per client**

RemoteOperate supports a maximum of ten servers in a client's server selection list.

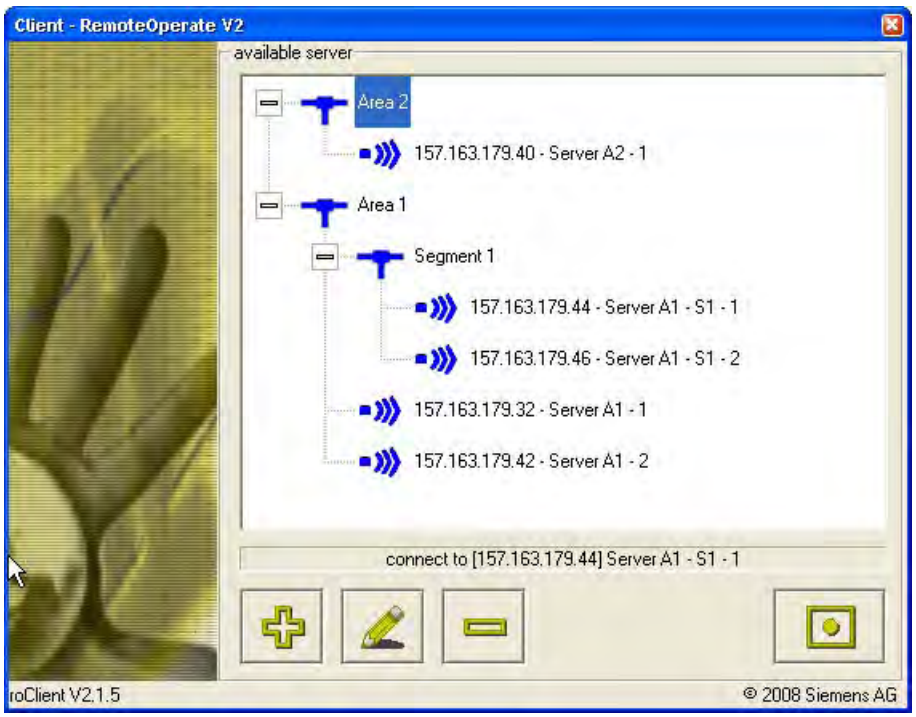
If you wish to create a new server, make sure that there are no more than nine servers in the server selection list.

Proceed as follows:

1. Open the "RemoteOperate V2" dialog box with the button to create a server.



2. Enter in the "tree path:" box the path of the server inside the server selection list. "Path" denotes the node in the server tree under which the server will be created. For example, if you specify "\Area1\", the IP address of the server will subsequently appear under the "Area1" node:




**Note**

The path of the server selection list has a maximum of three levels. Specify no more than three path levels for a server, for example "\Area2\Segment1\Place2\".
If the path already exists in the server selection list, the new server will be inserted at this point. If the path does not yet exist, it is created automatically.

3. Enter the IP address of the new server in the "IP address:" text box.
4. Enter the name of the new server in the "comment:" text box that is displayed in addition to the IP address in the tree of the server drop down list box.
5. Confirm your settings with  .

## Changing the properties of a server

Proceed as follows:

1. Select the server whose properties you wish to edit.
2. Open the "RemoteOperate V2" dialog box with the  button to change the server properties.
3. Follow steps 2 to 5 of the instructions for creating a new server.

### Remove server

Proceed as follows:

1. Select the server that you wish to remove from the server selection list.
2. Remove the selected server from the server selection list using the  button.

### Result

You have created a new server selection list or changed an existing server selection list.

## 8.2 Connecting a client

### Requirements

- You have switched on the HMI device.
- You have entered your password to authorize access if your HMI device is password protected.

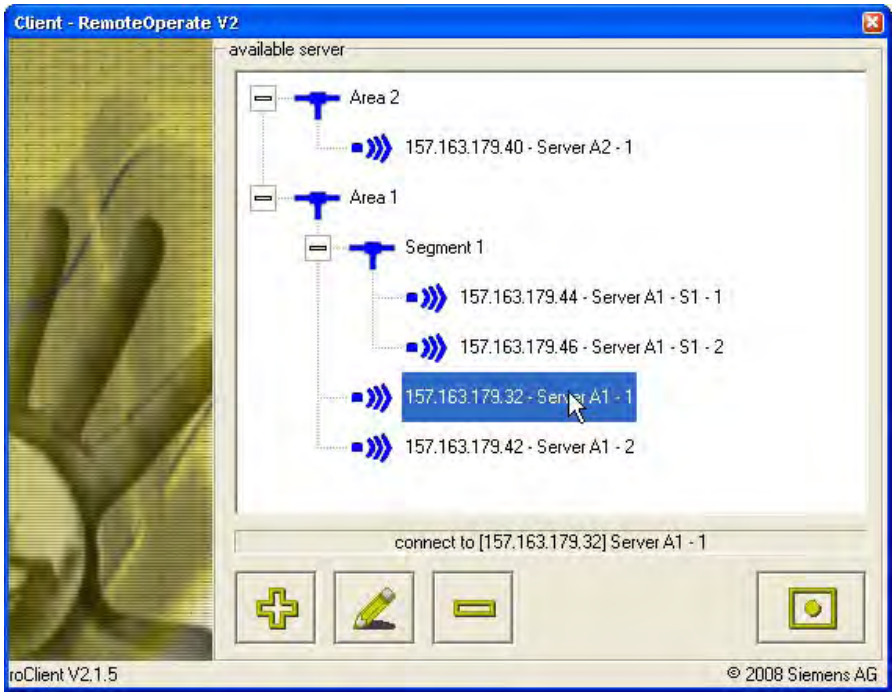
**Note**

If you have switched on the HMI device for the first time, the server selection list is empty. Create a new server selection list.

### Procedure

Proceed as follows:

1. Select the name of the server to which you want to connect.



**DANGER**

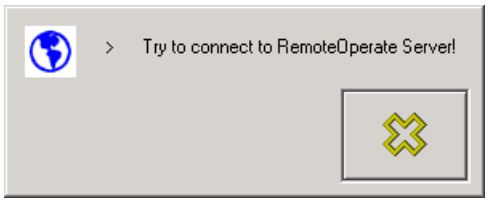
**Full access to the server**

Depending on your access authorization, when you connect to the server, you have full access.

Improper use of the server by unauthorized personnel may cause the server to malfunction. Malfunctions can result in death or serious injury.
You should assign passwords to the HMI devices. Develop an operator authorization plan. This will enable you to ensure that only authorized personnel are given full access to the server.

2. Connect the client to the selected server using the button.

   While the client is trying to connect to the server, the following message is displayed on your HMI device:




**Note**

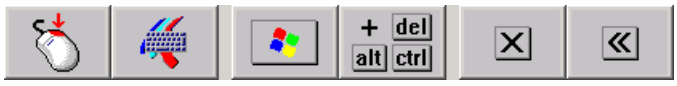
**Response to a network fault**

If a transient or long-term network fault occurs, the client repeatedly tries to establish a connection to the server. You can abort this repeated attempt to establish a connection with the button.

## Result

Once a connection to the server has been established, the following options are available:

- The server grants you access. The project running on the server is displayed. Depending on your authorization, you can either monitor or operate the project on the server.
- The server grants you access. The Windows desktop of the server is displayed. If you have operator authorization, you can launch your project via the appropriate desktop icon.
- The server grants you access. The server's Windows logon screen is displayed. Press the touch screen until the RemoteOperate toolbar is displayed:



**Note**

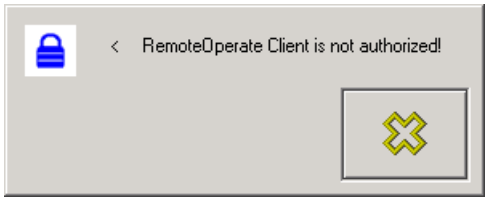
**Setting the time to display the toolbar**

The length of time you need to press the touch screen before the RemoteOperate toolbar is displayed is defined in the "roServer.ini" file.

If you have operator authorization, press the "Ctrl+Alt+Del" button  .

Then press the  button and log onto the server. Launch your project via the appropriate desktop icon.

- The server does not grant you access. The following message is displayed on your HMI device:




You can abort the attempt to establish a connection using the  button.

Once the server has rejected your access attempt, your client will remain unauthorized until the server explicitly grants you access.

## The operator authorization window ("traffic lights")

The operator authorization window, known as "traffic lights", are displayed in the foreground on the server screen and the screens of all connected clients with operator authorization. The traffic lights can assume the following states:

| Traffic light icon | Activated by | Meaning |
|---|---|---|
|  | Touching the touch screen on a client with operator authorization or enabling exclusive operator authorization on another client with operator authorization. | You have authorization to operate the server. Other clients can make an operator request. |
|  | Two rapid touches (double-click) on the traffic lights of the current client with operator authorization. | You have exclusive authorization to operate the server. Other clients will only be able to make an operator request when you relinquish the exclusive operator authorization by double-clicking the traffic light once again. |
|  | Enable the "Forced Exclusive" mode, for example with a switch close to the Mobile Panel. | You have exclusive authorization to operate the server. Other clients will only be able to make an operator request when you relinquish the exclusive operator authorization disabling the "Forced Exclusive" mode. |
|  | Touching the touch screen on another client with operator authorization. | Another client has authorization to operate the server. You can make an operator request on your client by touching the touch screen. |

| Traffic light icon | Activated by | Meaning |
|---|---|---|
|  | Double-click on the traffic lights on another client with operator authorization. | Another client has exclusive authorization to operate the server. You cannot make another operator request until the other client has given up the exclusive operator authorization by double-clicking the traffic light. |
|  | Enable the "Forced Exclusive" mode, for example with a switch close to the Mobile Panel. | Another client has exclusive authorization to operate the server. You cannot make another operator request until the other client has given up the exclusive operator authorization by disabling the "Forced Exclusive" mode. |

## The RemoteOperate toolbar

If you press the touch screen for more than five seconds, the RemoteOperate toolbar is displayed in the foreground on your screen.


**Note**

**Setting the time to display the toolbar**

The length of time you need to press the touch screen before the RemoteOperate toolbar is displayed is defined in the "roServer.ini" file.

The special functions of the RemoteOperate toolbar are shown in the table below:

| Buttons | Functions |
|---|---|
|  | Executes a right-click on the server.<br>Proceed as follows:<br>1. Select a screen object which has a right-click function.<br>2. Touch the "Right-click" button.<br>3. Execute the desired function. |
|  | Opens the screen keyboard. |
|  | Operates the Windows button on the server. |
|  | Executes the <Ctrl+Alt+Del> shortcut on the server, e.g., to log onto the server. |
|  | Terminates the connection to the server. |
|  | Closes the RemoteOperate toolbar. |

# 8.3 Changing the server

## Requirements

- The HMI device is connected as a client to a server.

## Procedure

Proceed as follows:

1. Press the touch screen until the RemoteOperate toolbar is displayed.

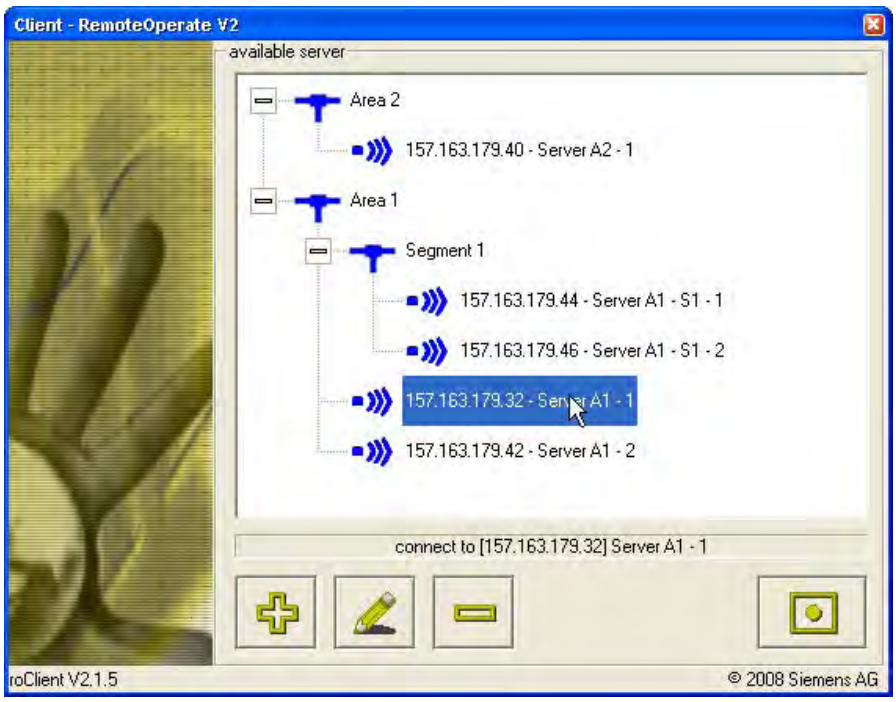

**Note**

**Setting the time to display the toolbar**

The length of time you need to press the touch screen before the RemoteOperate toolbar is displayed is defined in the "roServer.ini" file.

2. Terminate the connection to the server using the  button.

   The server selection list is displayed:




3. Connect to a different server, following the instructions in the "Connecting a client" chapter.

## Result

You have connected to a different server.

# 8.4 Closing the RemoteOperate Client

## Procedure

Proceed as follows:

If you are still connected to a server, terminate the connection as follows:

1. Press the touch screen until the RemoteOperate toolbar is displayed:

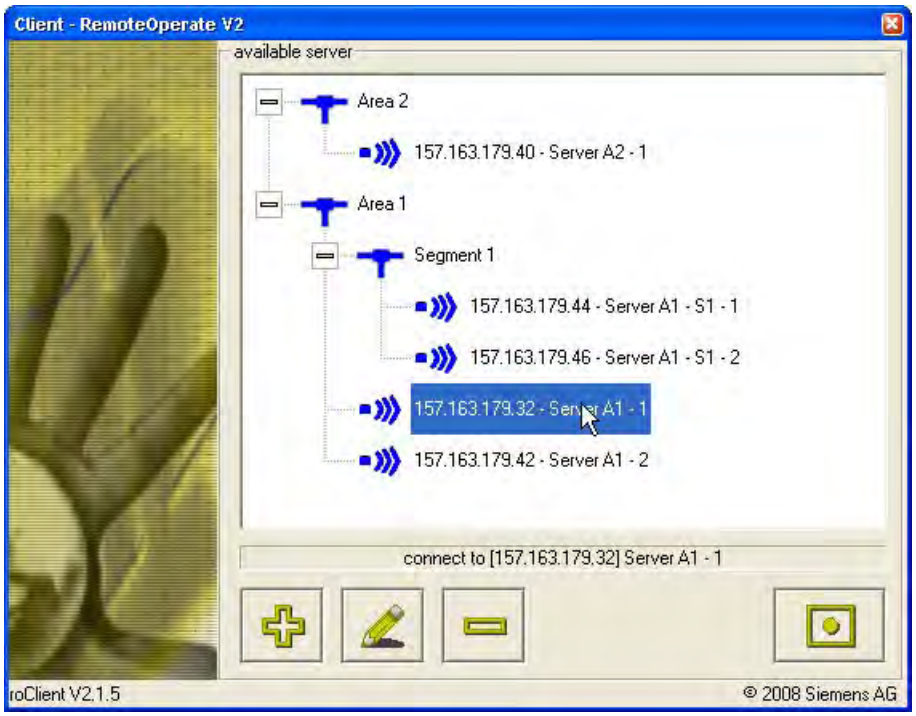

**Note**

**Setting the time to display the toolbar**

The length of time you need to press the touch screen before the RemoteOperate toolbar is displayed is defined in the "roServer.ini" file.

2. Terminate the connection to the server using the  button.

   The server selection list is displayed:




Close the RemoteOperate Client software using the  button in the upper right corner of the window.

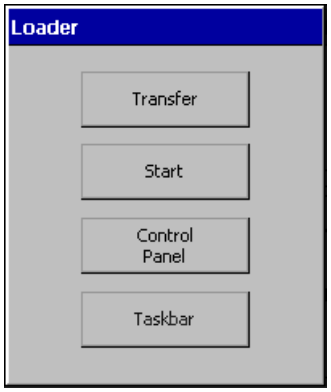
**Note**

**Password protection**

If your HMI device is password protected, you will be prompted for the password at this point. To close RemoteOperate Client, enter the password for the HMI device.

## Result

You have closed the RemoteOperate Client software. The loader is displayed:




The loader contains the following four buttons:

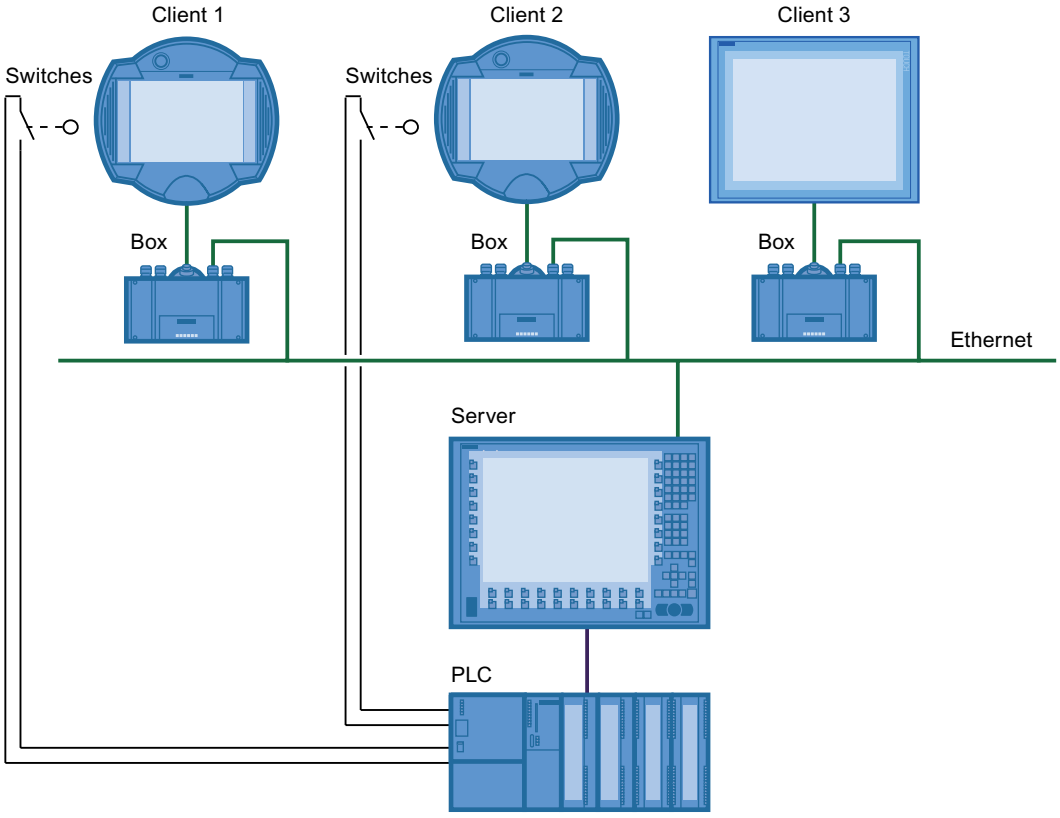
- Use the "Transfer" button to transfer data from a PC to the HMI device
- Use the "Start" button to open the server selection list
- Use the "Control Panel" button to configure the operating system
- Use the "Taskbar" button to activate the taskbar when the Windows CE Start menu is open

# 8.5 Example: Assigning operator authorization

## Introduction

This chapter describes how to assign operator authorization on the server to different clients in succession.

The description uses an example configuration with one server and three HMI devices connected to the server as clients via Ethernet.



## Sequence of the example scenario

During the operation of a plant control system, the request, refusal and transfer of operator authorizations could look like this:

Client 1, client 2, and client 3 are entered in the list of "available clients" on the server. All clients are granted the right to connect to the server and to operate on the server.

- Client 1, client 2, and client 3 connect to the server. All clients can see the project that is running on the server on their screen.
  If neither client executes an operation, all traffic lights are green at first:

  Client 1 Client 2 Client 3 Server

- A user starts to operate on client 1 by pressing the touch screen.
  Client 1 is immediately granted operator authorization since no other user is operating on the server.
  The traffic light for client 1 stays green. The traffic lights for client 2, client 3, and the server turn red:

  Client 1 Client 2 Client 3 Server

- The user on client 1 touches the green traffic light twice in quick succession (double-click).
  Client 1 is granted exclusive operator authorization. The traffic light for client 1 turns entirely green. The traffic lights for client 2, client 3, and the server turn completely red:

  Client 1 Client 2 Client 3 Server

- A user tries to operate on client 2.
  Client 2 is not granted operator authorization because the user on client 1 has exclusive operator authorization.
  All traffic lights remain unchanged.
- The user on client 1 touches the green traffic light twice in quick succession (double-click) and gives up exclusive operator authorization. Client 1 continues to operate.
  The traffic light for client 1 turns green. The traffic lights for client 2, client 3, and the server turn red:

  Client 1 Client 2 Client 3 Server

- A user tries to operate on client 2. The operator request dialog opens on the screens of client 1, client 2, client 3 as well as the server screen:


- Since the user on client 1 has operator authorization, he decides on whether to transfer operator authorization:
  - If the operator on client 1 with the button  denies the operator request of client 2 within the specified time, client 1 will still have operator authorization.

    All traffic lights will remain unchanged.
  - If the user on client 1 ignores the operator request, client 2 is granted operator authorization after a predefined time.
    The traffic light for client 2 turns green. The traffic lights for client 1, client 3, and the server turn red:

Client 1 
Client 2 
Client 3 
Server 

**Note**

The time interval for the automatic transfer of operator authorization is defined by the "TIMEWAITACCESS" variable in the "roServer.ini" file on the server.
The "roServer.ini" file is part of the advanced server settings.

- The operator at client 1 enables the "Forced Exclusive" mode, for example with a switch close to the HMI device. The traffic light of client 1 turns completely green and all other traffic lights turn completely red. The traffic lights also come equipped with a key symbol:

Client 1 
Client 2 
Client 3 
Client 4 

Client 1 has exclusive operator authorization. Only when the operator at client 1 has disabled the "Forced Exclusive" mode, will operators at other clients or the server be able to make other operator requests.

- The operator at client 1 disables the "Forced Exclusive" mode, for example by pressing the switch close to the HMI device.

  If the operator at client 1 continues operation, the traffic light will stay green while all other traffic lights will turn red:

Client 1 Client 2 Client 3 Server

If the operator at client 1 stops operation, all traffic lights will turn green:

Client 1 Client 2 Client 3 Server

# Backing up and restoring data

# 9

## Requirements

- The HMI device is connected to a PC via Ethernet.
- The ProSave application is installed on the PC. The ProSave application is located in the \ProSave folder on the "SIMATIC Mobile Panel 277 RO Applications & Documentation" CD-ROM.
- The ProSave add-on application with the information for the Mobile Panel 277 RO is installed on the PC. The add-on application is located in the \ProSave_Addon folder on the "SIMATIC Mobile Panel 277 RO Applications & Documentation" CD-ROM.
- The data channel is programmed on the HMI device.
- The PC is switched on.

## Procedure for backup

Proceed as follows:

1. Start ProSave from the Windows Start menu on the PC.
2. Select the HMI device type "Mobile Panel 277 RO" in the "General" tab.
3. Select "Ethernet" as the connection type between the HMI device and the PC.
4. Enter the IP address or the name of the HMI device.
5. Select the data to be backed up in the "Backup" tab.
6. Select a destination folder and a file name for the "*.psb" backup file.
7. Set "Transfer" mode on the HMI device.

   If automatic transfer mode is enabled on the HMI device, the HMI device automatically sets "Transfer" mode when a backup is initiated.
8. Start the backup operation in ProSave with "Start Backup".

   Follow the instructions in ProSave.

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

## Result

The system outputs a message when the backup is completed.

You have backed up the selected HMI device data to the PC.

## Procedure for restoring

Proceed as follows:

1. Start ProSave from the Windows Start menu on the PC.
2. Select the HMI device type "Mobile Panel 277 RO" in the "General" tab.
3. Select "Ethernet" as the connection type between the HMI device and the PC.
4. Enter the IP address or the name of the HMI device.
5. Select the "*.psb" backup file to be restored from the "Restore" tab.

   You can see the HMI device for which the backup file was created and the type of backup data the file contains.
6. Set "Transfer" mode on the HMI device.

   If automatic transfer mode is enabled on the HMI device, the device automatically sets "Transfer" mode when a restore operation is initiated.
7. Start the restore operation in ProSave on the PC with "Start Restore".

   If there are license keys on both the HMI device and in the backup, you are asked whether you wish to overwrite the license keys or to cancel the restore operation.

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

   – Then restart the restore process.

   Follow the instructions in ProSave.

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

## Result

You have successfully transferred the backed up data from the PC to the HMI device.

## See also

Configuring the data channel (Page 98)

Setting the device name of the HMI device (Page 101)

Changing the network configuration (Page 102)

# Maintenance and care

# 10

## 10.1 Maintenance and care

### Scope of maintenance

The HMI device is designed for maintenance-free operation. You should clean the touch screen at regular intervals, however.

| ⚠ CAUTION |
| --- |
| **Inadvertent operation**<br>Always switch off the HMI device before cleaning it. This will ensure that you do not trigger functions unintentionally when you touch the keys. |

| CAUTION |
| --- |
| Do not clean the HMI device with compressed air or steam jet blowers. Never use aggressive solvents or scouring powder.<br>Use a cleaning cloth dampened with a cleaning agent to clean the equipment. Only use water with a little liquid soap or a screen cleaning foam. |

### Procedure

Proceed as follows:

1. Switch off the HMI device.
2. Spray the cleaning solution onto a cleaning cloth.

   Do not spray directly onto the HMI device.
3. Clean the HMI device.

   When cleaning the display wipe from the screen edge inwards.

## 10.2 Spare parts and repairs

### Repairs

In case of repair, the HMI device must be shipped to the Return Center in Fürth. Repairs may only be carried out at the Return Center in Fürth.

The Mobile Panel 277 RO HMI device is covered by the conditions of repair and return of equipment, as follows:

1. You return the defective device to the A&D returned goods center. The address is:

   Siemens AG
   Industry Sector
   Returns Center
   Siemensstr. 2
   90766 Fürth
   Germany

2. After it has been repaired, the device is returned to you. A new device will not be supplied in exchange.

Depending on the work necessary to repair the device, the Center may decide to give you a credit note. In this case, it is your responsibility to order a new device.

### Service & Support on the Internet

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

- Local service
- Repairs
- Spare parts and a lot more.

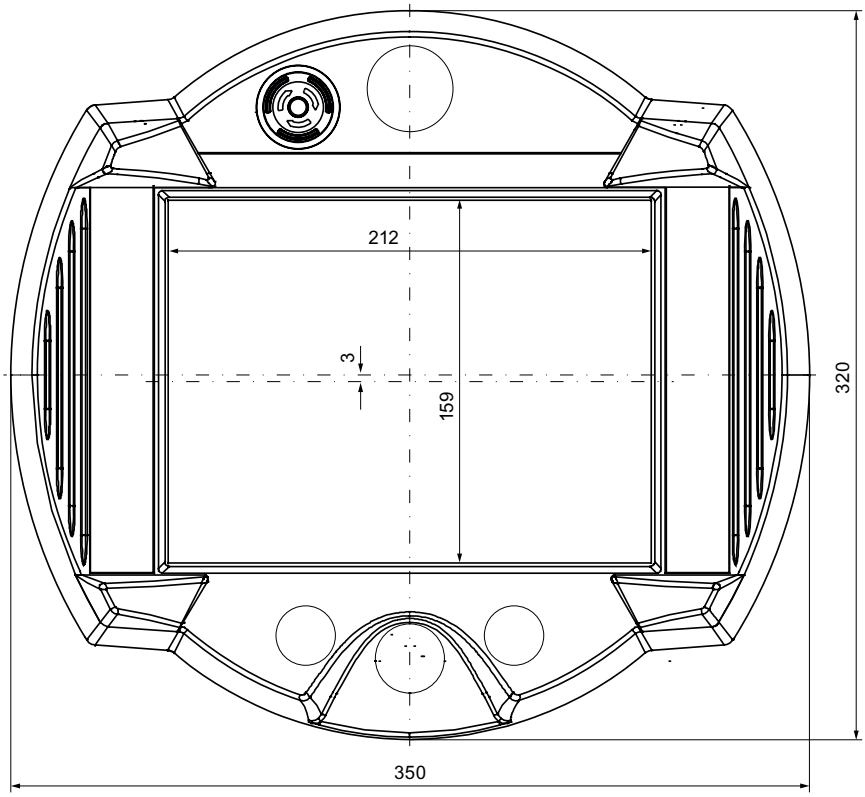
# 11 Technical specifications

## 11.1 Dimension drawings

### 11.1.1 Mobile Panel 277 RO

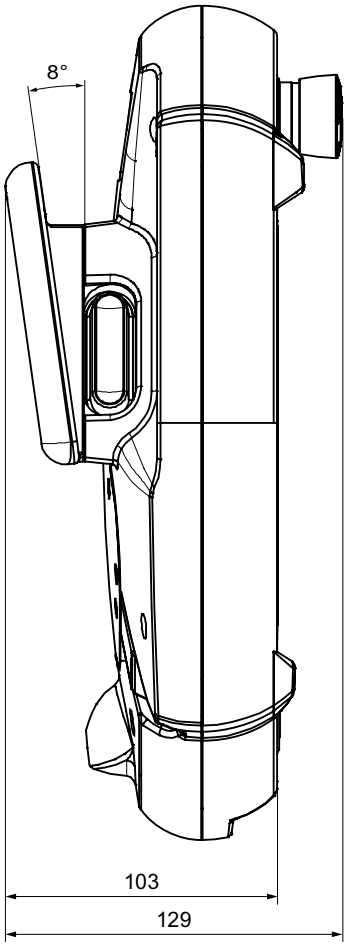
#### Front view

All dimensions in mm

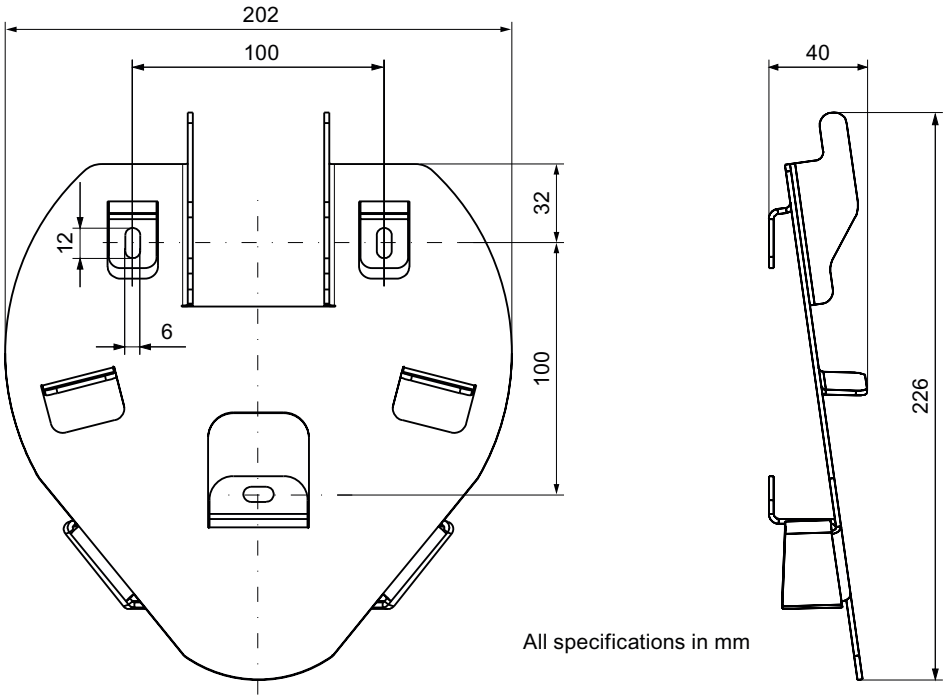


## Side view

All dimensions in mm

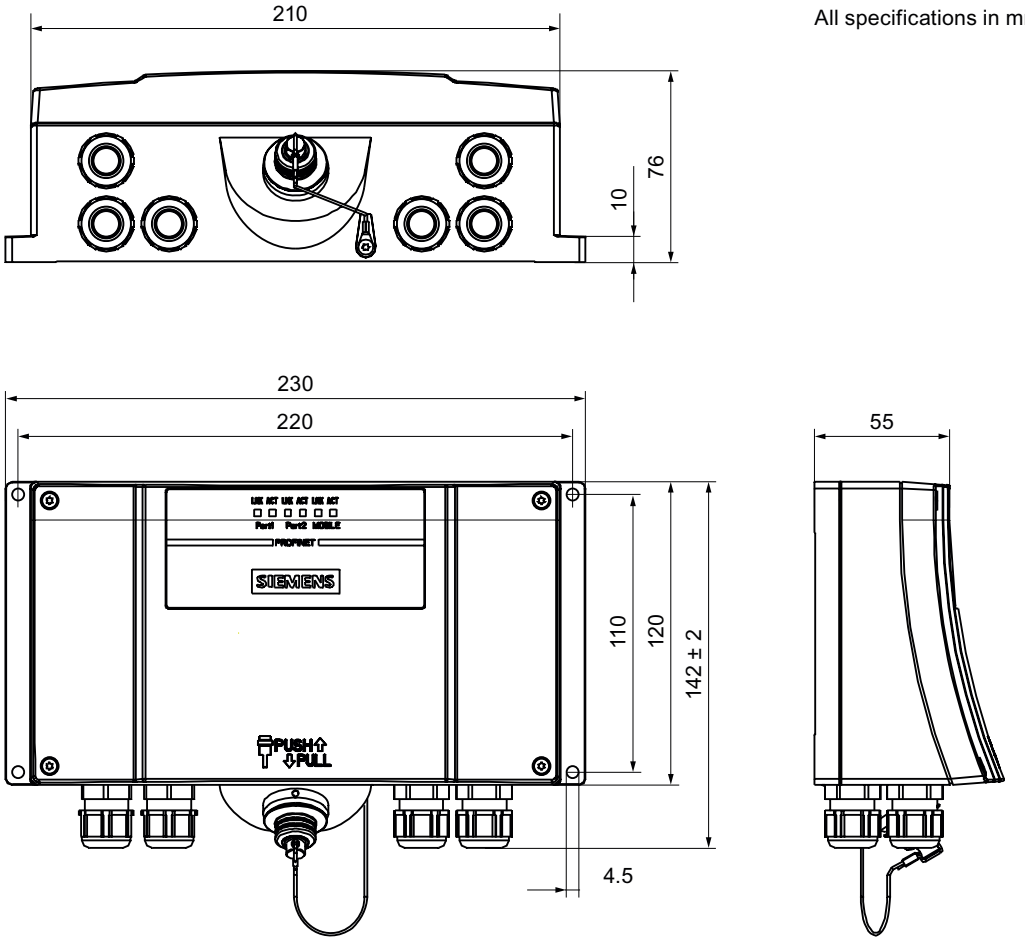


## 11.1.2 Wall holder



## 11.1.3 Connection box PN Plus

All specifications in mm



# 11.2 Specifications

## 11.2.1 Mobile Panel 277 RO

### HMI device

| | |
|---|---|
| Weight without packing | Approx. 2.3 kg |

### Display

| | |
|---|---|
| Type | Color TFT-LC Display |
| Display area, active (W x H) | 211.2 mm x 158.4 mm (10") |
| Resolution | 800 x 600 pixels |
| Colors, displayable | 64k colors |
| Brightness control | Yes |
| Back-lighting<br>Half Brightness Life Time, typical | CCFL<br>50,000 h |

### Input unit

| | |
|---|---|
| Type | Touch screen, analog, resistive |
| Enabling button | 2-circuit, 3-level<br>Connection voltage: 24 VDC<br>Amperage, max.: 400 mA<br>Amperage, min.: 10 mA |
| STOP button (optional) | 2-circuit<br>Connection voltage: 24 VDC<br>Amperage, max.: 500 mA<br>Amperage, min.: 10 mA<br>These are normally closed contacts. |

### Memory

| | |
|---|---|
| Application memory | 6 MB |

### Ports

| | |
|---|---|
| 1 x RS 485 | Max. 12 Mbit/s |
| 1 x USB | • USB host; conforms to USB standard 1.1 (supporting low-speed and full-speed USB devices)<br>• Maximum load 500 mA |
| 1 x RS 45 | For Ethernet |
| 1 x plug-in terminal strips (12-pin) | For Ethernet |

### Supply voltage

| | |
|---|---|
| Supply voltage | Via connection box |

### Additional specifications

| | |
|---|---|
| Fall height | Max. 1 m |
| Buffer time with internal clock<br>• Without rechargeable battery<br>• With rechargeable battery | <br>Approx. 3 days<br>Approx. 6 months |

## 11.2.2 Rechargeable buffer battery

The following technical specifications are in effect for all new batteries. The batteries are delivered uncharged.

| | |
|---|---|
| Type | Lithium ion accumulator |
| Bridging time | 10 min |
| Charging cycles | 500 |
| Charging time | Approx. 5 h |

| **Number of changes between connection boxes** | |
|---|---|
| With fully charged battery | 5 changes |
| With empty battery after a charging time of 1 h | 2 changes |

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.

## 11.2.3 Connection box PN Plus

### Weight

| | |
|---|---|
| Weight without packing | Approx. 700 g |

### Supply voltage

| | |
|---|---|
| Nominal voltage<br>Range, permissible | +24 VDC<br>20.4 V to 28.8 V (–15 %, +20 %) |
| Transients, maximum permissible | 35 V (500 ms) |
| Time between two transients, minimum | 50 s |
| Power consumption connection box PN without Mobile Panel<br>• Typical<br>• Constant current, maximum<br>• Power on current surge $I^2t$ | <br>• Approx. 100 mA<br>• Approx. 150 mA<br>• Approx. 0.5 $A^2s$ |
| Power consumption connection box PN with Mobile Panel<br>• Typical<br>• Constant current, maximum<br>• Power on current surge $I^2t$ | <br>• Approx. 600 mA<br>• Approx. 750 mA<br>• Approx. 0.6 $A^2s$ |
| Enabling button<br>• Connection voltage<br>• Amperage, max.<br>Amperage, min. | <br>• 24 VDC<br>• 400 mA<br>• 10 mA |
| STOP button (optional)<br>• Connection voltage<br>• Amperage, max.:<br>• Amperage, min.: | <br>• 24 VDC<br>• 500 mA<br>• 10 mA |
| Fuse, internal | Electronic |
| Current load PLC-accompanying signals | Max. 100 mA |
| Recovery time | After 1 s |

**Note**

**Recovery time**

Wait for approximately one second after you have removed the connecting cable from the connection box before you plug the connecting cable back into the connection box.

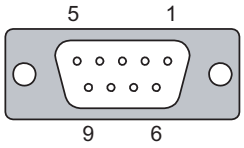
**Power failure**

It is necessary to remove and replace the connecting cable in the event of power failures lasting less than a second in order to eliminate possible malfunctions.

# 11.3 Mobile Panel 277 RO interface assignment

## 11.3.1 RS 485 (IF 2)

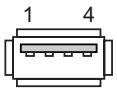
Sub-D socket, 9-pin, with screw lock




| Pin | Assignment |
|---|---|
| 1 | n. c. |
| 2 | GND 24 V |
| 3 | Data channel B (+) |
| 4 | n. c. |
| 5 | GND 5 V, floating |
| 6 | +5 VDC, floating |
| 7 | +24 VDC, out (max. 100 mA) |
| 8 | Data channel A (–) |
| 9 | n. c. |

## 11.3.2 USB

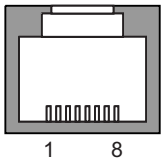
USB socket




| Pin | Assignment |
|---|---|
| 1 | +5 VDC, out (max. 500 mA) |
| 2 | USB-DN |
| 3 | USB-DP |
| 4 | GND |

### 11.3.3 RJ45 for connecting cable PN

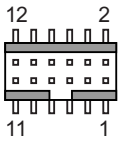
RJ45 plug connector, 8-pin




| Pin | Assignment |
|---|---|
| 1 | TD+ |
| 2 | TD– |
| 3 | RD+ |
| 4 | n. c. |
| 5 | n. c. |
| 6 | RD– |
| 7 | ICD+ |
| 8 | ICD– |

### 11.3.4 Post connector for connecting cable PN

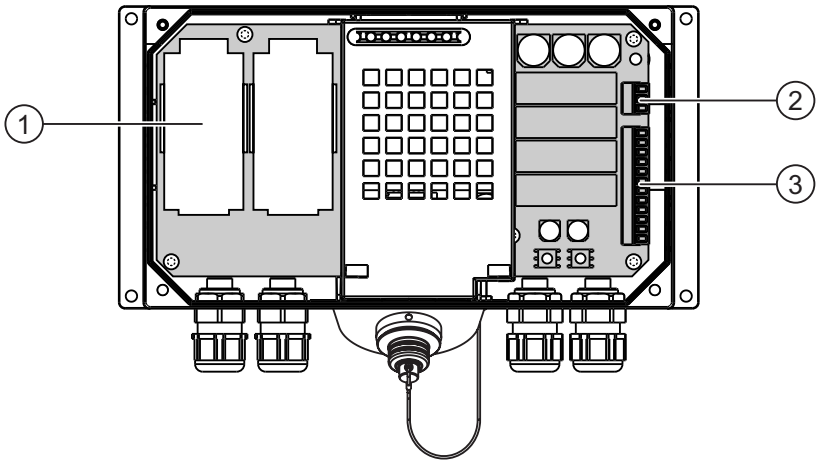
Post connector, 12-pin




| Pin | Assignment | Circuit |
|---|---|---|
| 1 | +24 VDC | Power supply |
| 2 | GND 24 V | |
| 3 | Stop 23 | Stop circuit |
| 4 | Stop 24 | |
| 5 | Stop 13 | |
| 6 | Stop 14 | |
| 7 | Enable 1+ | Enable circuit |
| 8 | Enable 1– | |
| 9 | Enable 2+ | |
| 10 | Enable 2– | |
| 11 | ICD+ | Box ID |
| 12 | ICD– | |

# 11.4 Connection box PN Plus interface assignment

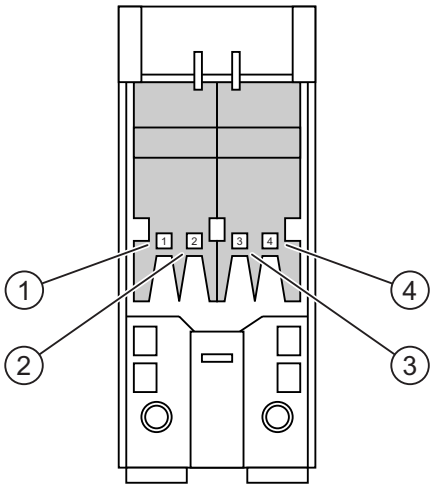
## Position of the ports




① Fast connector
② Terminal strip 1
③ Terminal strip 2

## Fast connector, 4-pin

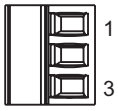
The connection box contains two fast connectors for connecting the PROFINET data cables. The figure below illustrates the assignment of the fast connector:




| Pin | Assignment |
|---|---|
| 1 | TD+ |
| 2 | RD+ |
| 3 | TD– |
| 4 | RD– |

## Terminal strip 1, for power supply, 3-pin

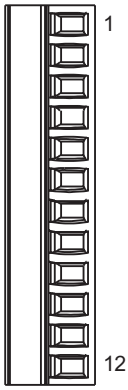
The figure below illustrates the assignment of terminal strip 1:




| Pin | Power supply |
|---|---|
| 1 | PE |
| 2 | M24 |
| 3 | P24 |

## Terminal strip 2, 12-pin

The safety and additional functions are connected to this terminal strip. The terminal strip has a mechanical coding to prevent it from being mixed up with terminal strip 1. The figure below illustrates the assignment of terminal strip 2:



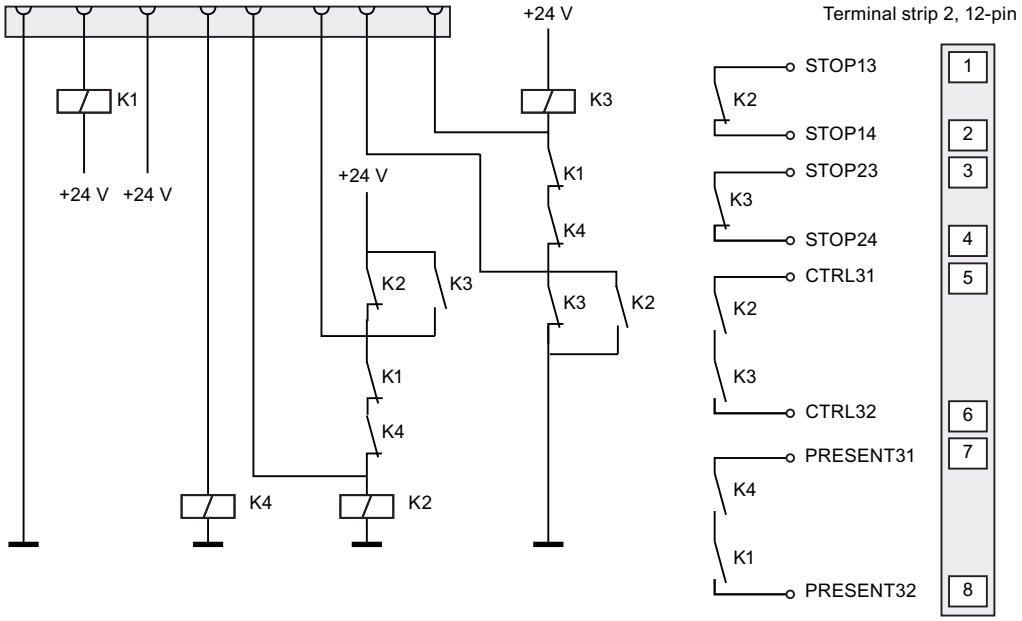

| Pin | Connection box Plus | Circuit |
|---|---|---|
| 1 | STOP13 | STOP button |
| 2 | STOP14 | See also post connectors |
| 3 | STOP23 | |
| 4 | STOP24 | |
| 5 | CTL31 1) | PLC auxiliary signals |
| 6 | CTL32 1) | |
| 7 | PRESENT31 2) | |
| 8 | PRESENT32 | |
| 9 | ENABLE2+ | Enabling button |
| 10 | ENABLE1– | See also post connectors and connection examples |
| 11 | ENABLE1+ | |
| 12 | ENABLE2– | |

1) Active if Emergency Stop pressed
2) Active if Mobile Panel connected

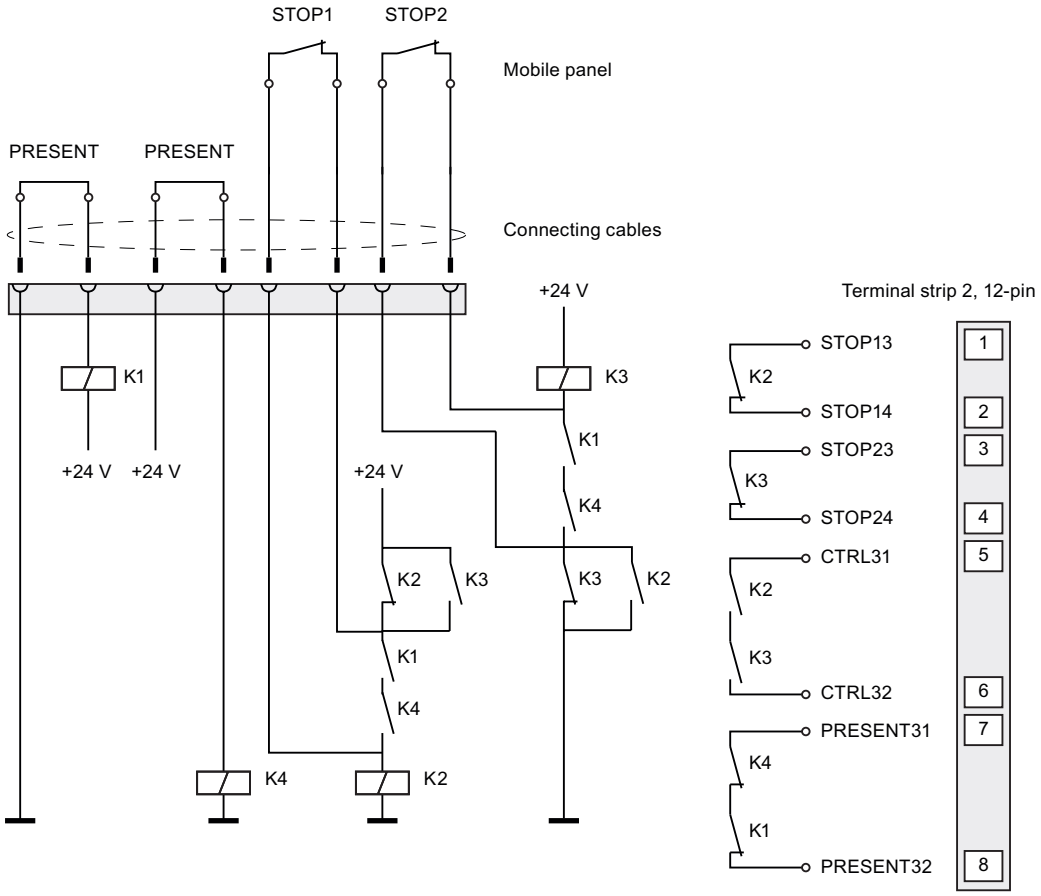
The "STOP button depressed" signal has no error detection and must therefore not be used for safety-critical applications.

## Typical circuit diagrams for connection box Plus

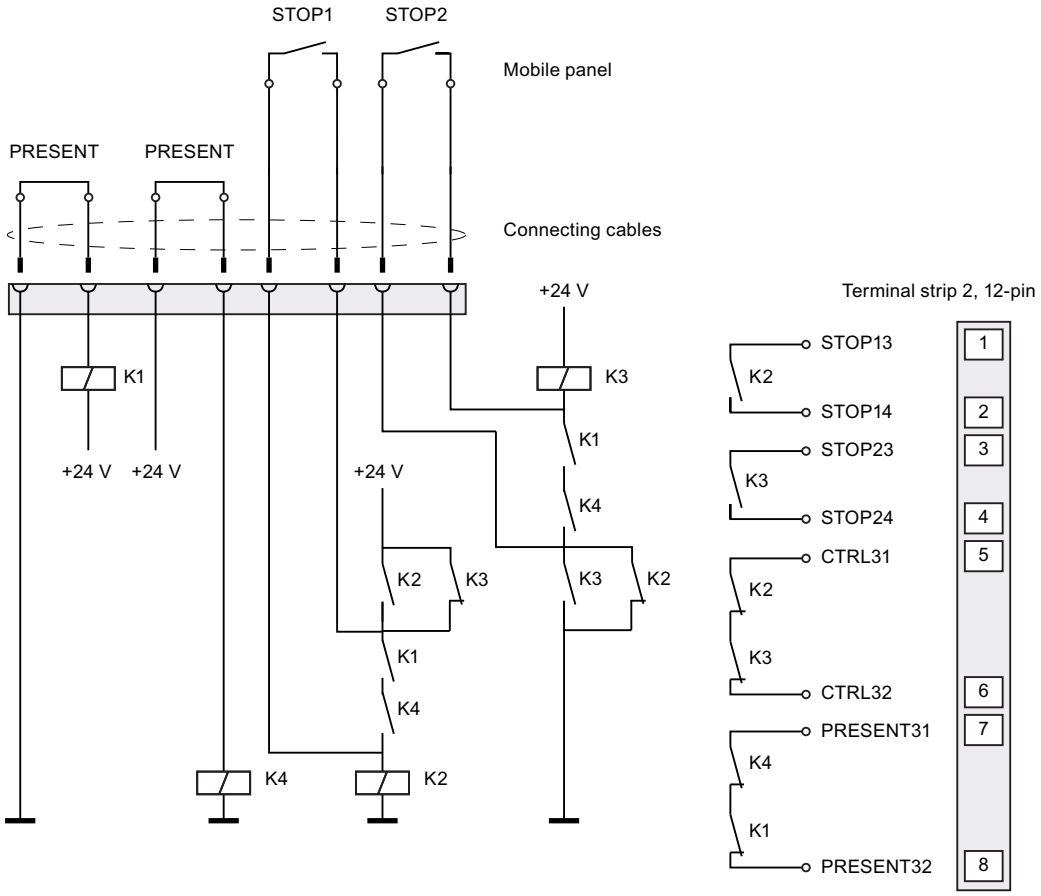
Typical circuit diagram: Mobile Panel 277 RO not connected and power supply switched on:



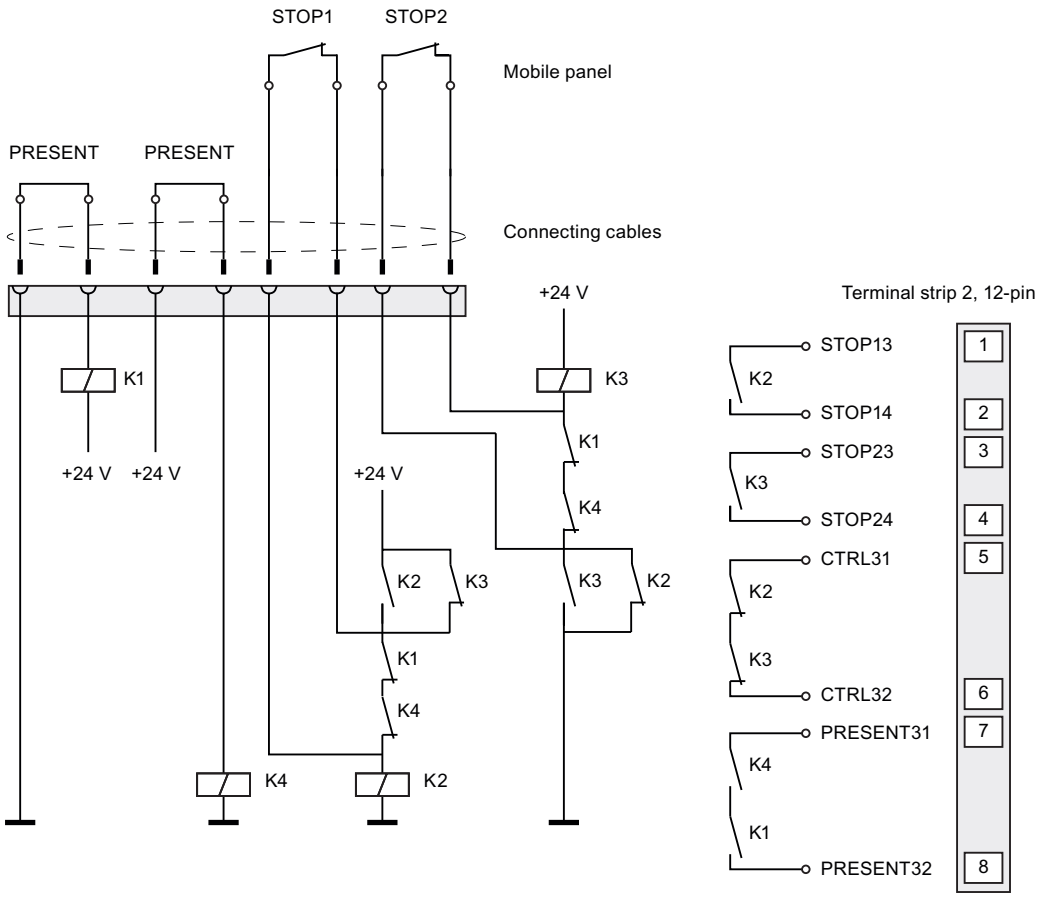
Typical circuit diagram: Mobile Panel 277 RO connected, power supply switched on and Emergency Stop inactive:



Typical circuit diagram: Mobile Panel 277 RO connected, power supply switched on and Emergency Stop active:



Typical circuit diagram: Power supply switched off




## 11.5 Wiring examples for enabling button and STOP button

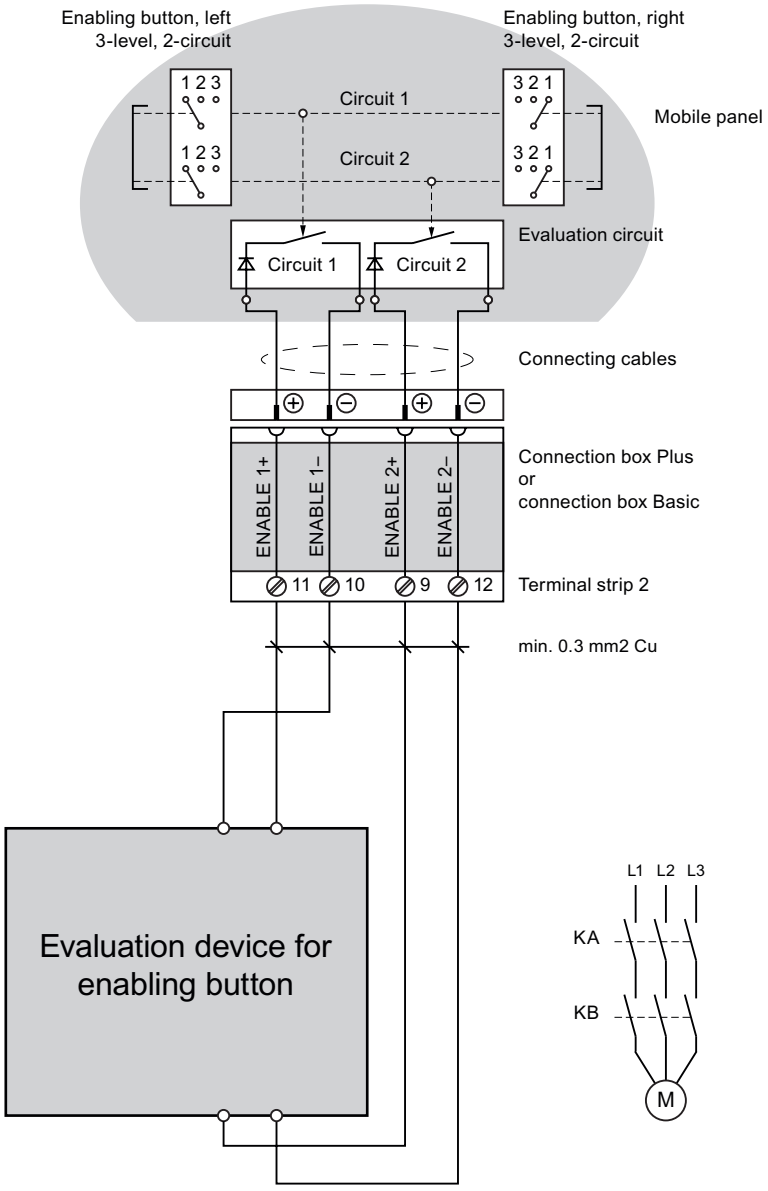
### Introduction

This chapter contains connection examples for enable and STOP buttons corresponding to safety category 3 in accordance with EN 954-1.

| NOTICE |
| --- |
| In order to guarantee safety category 3 in accordance with EN 954-1, please also consider the operating instructions of the monitoring device used. |

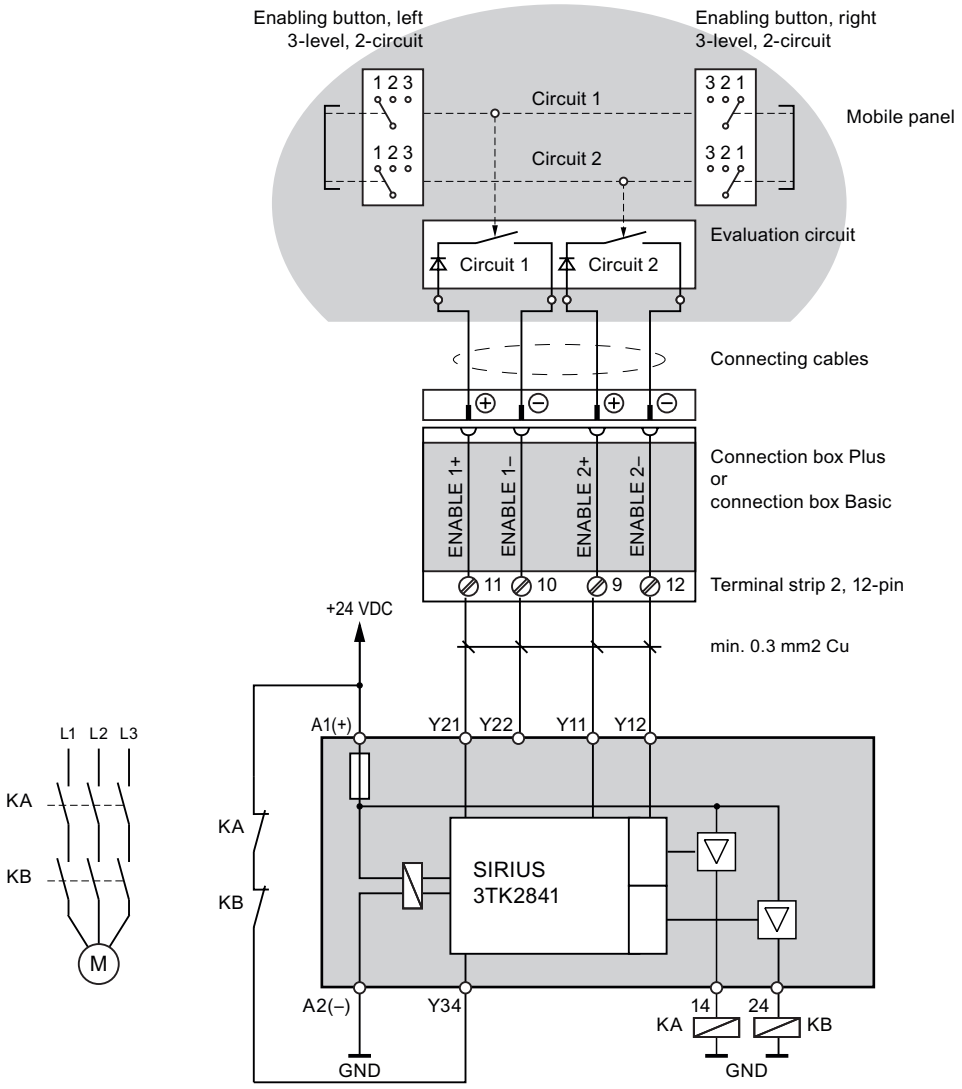
## Connection - Enabling button with evaluation device

The following figure shows the connection of an evaluating device to the enabling button of the mobile panel. All contacts of the safety relay (contactor) KA and KB are fitted with positively-driven contacts in accordance with EN 50205.



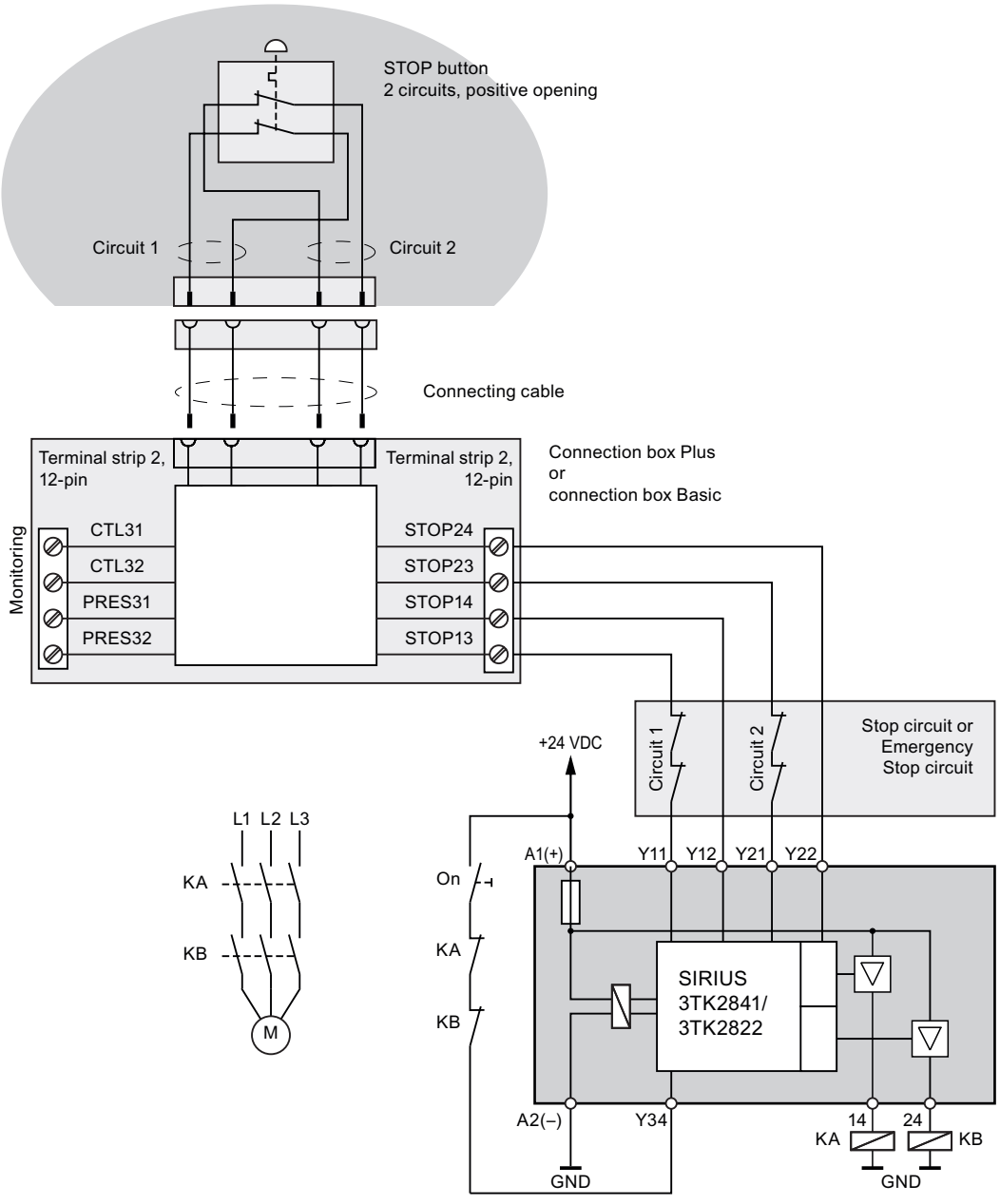
## Connection example 1 - Enabling button with safety circuit device

The following figure shows the connection of a SIRIUS 3TK2841 safety circuit device to the enabling button of the Mobile Panel. All contacts of the safety relay (contactor) KA and KB are fitted with positively-driven contacts in accordance with EN 50205.



## Connection example 2 – STOP button with safety circuit device

The following figure shows the connection of a SIRIUS 3TK2822 or SIRIUS 3TK2841 to the STOP button of the Mobile Panel. All contacts of the safety relay (contactor) KA and KB are fitted with positively-driven contacts in accordance with EN 50205.




Monitoring outputs may not be used for safety-related functions.

# Appendix

# A

## A.1 ESD guideline

### Definition of ESD

All electronic modules are equipped with large-scale integrated ICs or components. Due to their design, these electronic elements are highly sensitive to overvoltage, and thus to any electrostatic discharge. These electronic components are therefore specially identified as ESDs.

### Abbreviations

The following abbreviation is commonly used for electrostatic sensitive devices:

- EGB – Elektrostatisch Gefährdete Bauteile/Baugruppen (Germany)
- ESD – Electrostatic Sensitive Device (internationally recognized term)

### Labeling

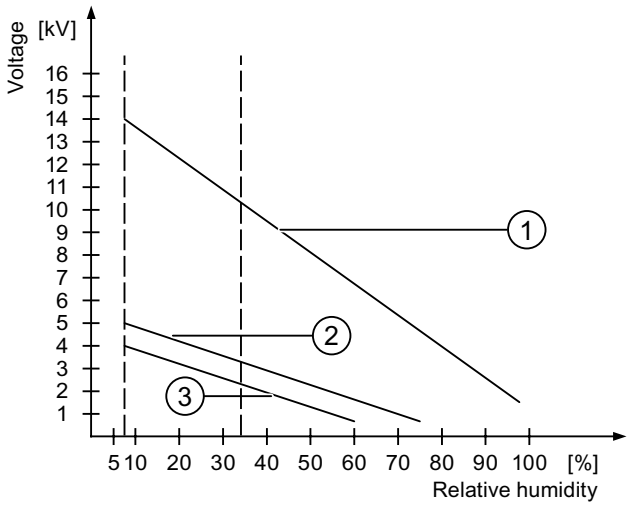
ESDs are labeled with the following symbol:

## Electrostatic charging

| CAUTION |
| --- |
| **Electrostatic charging**<br>ESDs may be destroyed by voltages far below the level perceived by human beings. Voltages of this kind develop when a component or an assembly is touched by a person who is not grounded against static electricity. Usually, it is unlikely that damage to an ESD as a result of overvoltage is detected immediately but may become apparent only after a longer period of operation.<br>Prevent electrostatic charging of your body before you touch the ESD! |

Anyone who is not connected to the electrical potential of their surroundings is subjected to electrostatic charging.

The following figure indicates the maximum electrostatic charge anyone is subjected to when coming into contact with the materials shown. These values correspond with specifications to IEC 801-2.




① Synthetic materials
② Wool
③ Antistatic materials such as wood or concrete

## Protective measures against electrostatic discharge

| CAUTION |
| --- |
| **Observe grounding measures**<br>When working with electrostatic sensitive devices, make sure that the person, the workplace and the packaging are properly grounded. This helps to avoid electrostatic charging. |

As a rule, only touch the ESD if this is unavoidable, for example for maintenance. When you touch modules, make sure that you do not touch the pins on the modules or the PCB tracks. In this way, the discharged energy cannot reach and damage the sensitive devices.

Discharge electrostatic electricity from your body if you are performing measurements on an ESD. Do so by touching grounded metallic parts.

Always use grounded measuring instruments.

# Abbreviations

B

| | |
|---|---|
| DC | Direct Current |
| DHCP | Dynamic Host Configuration Protocol |
| DNS | Domain Name System |
| ESD | Components and modules endangered by electrostatic discharge |
| EMC | Electromagnetic Compatibility |
| EN | European standard |
| ESD | Components and modules endangered by electrostatic discharge |
| GND | Ground |
| HF | High Frequency |
| HMI | Human Machine Interface |
| IEC | International Electronic Commission |
| IF | Interface |
| IP | Internet Protocol |
| LED | Light Emitting Diode |
| MAC | Media Access Control |
| MPI | Multipoint Interface (SIMATIC S7) |
| n. c. | Not connected |
| PC | Personal Computer |
| PPI | Point-to-Point Interface (SIMATIC S7) |
| PELV | Protective Extra Low Voltage |
| RJ45 | Registered Jack Type 45 |
| RO | RemoteOperate |
| SD | Security Digital |
| SELV | Safety Extra Low Voltage |
| Sub-D | Subminiature D (plug) |
| TCP/IP | Transmission Control Protocol/Internet Protocol |
| TFT | Thin Film Transistor |
| UL | Underwriter’s Laboratory |
| USB | Universal Serial Bus |
| WINS | Windows Internet Naming Service |

# Glossary

### Automation system

Controller of the SIMATIC S7 series such as a SIMATIC S7-300

### Bootloader

Used to start the operating system. Automatically started when the HMI device is switched on. After the operating system has been loaded, the Loader opens.

### EMC

Electromagnetic compatibility is the ability of electrical equipment to function properly in its electromagnetic environment without influencing this environment.

### Flash memory

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

### Hardcopy

Output of the screen content to a printer.

### HMI device

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

### HMI device image

The HMI device image is a file that can be transferred from a connected PC to the HMI device. The HMI device image contains the operating system for the HMI device and the RemoteOperate Client software.

### Operating element

Component of a project used to enter values and trigger functions. A button, for example, is an operating element.

### Plant

General term referring to machines, processing centers, systems, plants and processes which are operated and monitored on an HMI device.

### PLC

A PLC is a general term for devices and systems with which the HMI device communicates, e.g. SIMATIC S7.

### Project

Result of a configuration using a configuration software. The project normally contains several screens with embedded system-specific objects, basic settings and alarms.

### RemoteOperate

Using RemoteOperate you can monitor or operate a server from a client. The range of operations covers all the functions of the server.

### STEP 7

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

### Transfer

Transfer is the transfer of an image from a PC to the HMI device.

### "Transfer" mode

"Transfer" mode is an operating mode of the HMI device in which an image is transferred from a PC to an HMI device.

# Index

## D

## E



## F



## H



## I



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## M



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## R



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## T

## U



## V



## W

SIEMENS

# SIMATIC HMI
# Mobile Panel 277 RO
# Zulassung nach ISO 13849-1:2006

**Produktinformation**

## Gültigkeit

Diese Produktinformation gilt für das Bediengerät "Mobile Panel 277 RO", Bestellnummer 6AV6645-7AB10-0AS0, ab Erzeugnisstand 3, in Verbindung mit der zugehörigen Anschlussbox.

Diese Produktinformation enthält wichtige Hinweise aufgrund von Änderungen der folgenden Sicherheitsnormen und Richtlinien:

- Norm ISO 954-1 auf ISO 13849-1
- Maschinenrichtlinie 98/37/EG auf 2006/42/EG

Bei Bewertungen von Sicherheitsfunktionen nach IEC EN 62061 können die Angaben in PL (Performance Level) nach der Äquivalenztabelle der ISO 13849-1 in SIL umgesetzt werden:

| Performance Level (PL) | Dicherheits-Integritätslevel (SIL) (IEC 61508-1, zur Information) hohe/kontinuierliche Betriebsart | Durchschnittliche Wahrscheinlichkeit eines gefährlichen Ausfalls je Stunde 1/h |
|---|---|---|
| a | keine Entsprechung | $\geq 10^{-5}$ bis $< 10^{-4}$ |
| b | 1 | $\geq 3 \times 10^{-6}$ bis $< 10^{-5}$ |
| c | 1 | $\geq 10^{-6}$ bis $< 3 \times 10^{-6}$ |
| d | 2 | $\geq 10^{-7}$ bis $< 10^{-6}$ |
| e | 3 | $\geq 10^{-8}$ bis $< 10^{-7}$ |
| Anmerkung: Neben der durchschnittlichen Wahrscheinlichkeit eines gefährlichen Ausfalls je Stunde, sind weitere Maßnahmen notwendig, um den PL zu erreichen. | | |

Die Hinweise ergänzen die Betriebsanleitung für das Bediengerät und sind den Aussagen in der Betriebsanleitung, in den Release Notes und in der Online-Hilfe in der Verbindlichkeit übergeordnet.

Diese Produktinformation und die zugehörige Betriebsanleitung des Bediengeräts sind in deutscher Sprache verfasst. Die entsprechenden anderssprachigen Dokumente sind Übersetzungen dieser Originale. In der Übersetzung wird kein Bezug auf länderspezifische Richtlinien und Normen genommen.

# Sicherheitshinweise und allgemeine Hinweise

## Sicherheitshinweise

### Bestimmungsgemäßer Gebrauch

**⚠ WARNUNG**

Die Inbetriebnahme des Bediengeräts ist solange untersagt, bis festgestellt wurde, dass die Maschine, in die das Bediengerät eingebaut werden soll, den Bestimmungen der Richtlinie 98/37/EG, ab 29.12.2009 der Richtlinie 2006/42/EG entspricht.

**Hinweis**

Alle Sicherheitsfunktionen des Bediengeräts sind 2-kanalig ausgeführt und können bis PL d nach ISO 13949-1:2006 erreichen.

### Sicherheitsvorschriften

**⚠ WARNUNG**

Die Funktion des STOP-Tasters und des Zustimmtasters muss zyklisch überprüft werden.

**⚠ WARNUNG**

Von der Bedienstelle, die vom Personal eingenommen wird, muss Einsicht in die Gefahrenstelle gegeben sein.

## Normen und Zulassungen

### SIBE Schweiz Zertifizierungsstelle

Das Bediengerät und die Anschluss-Box erfüllen die Kategorie 3 PL d nach ISO 13849-1:2006.

Die Sicherheitsfunktion Zustimmeinrichtung für die Sonderbetriebssteuerung und der STOP-Taster erfüllen folgende Anforderungen:

- Kategorie 3 PL d nach ISO 13849-1:2006
- Anforderungen der EN 60204-1:2006, bei Befolgung der Sicherheitshinweise in der Betriebsanleitung

### CE-Zulassung

CE

Das Bediengerät und die Anschluss-Box erfüllen die Anforderungen und Schutzziele der folgenden EG-Richtlinien. Das Bediengerät und die Anschluss-Box stimmen mit den harmonisierten europäischen Normen (EN) überein, die für Speicherprogrammierbare Steuerungen in den Amtsblättern der Europäischen Union bekannt gegeben wurden:

- 2004/108/EG "Elektromagnetische Verträglichkeit" (EMV-Richtlinie)
- Richtlinie 2006/42/EG des Europäischen Parlaments und des Rates vom 17. Mai 2006 über Maschinen und zur Änderung der Richtlinie 95/16/EG (Neufassung)

## Risikobeurteilung

### Risikobeurteilung durchführen

Um die Risikobeurteilung durchzuführen, sind folgende Normen anzuwenden:

- ISO 12100-1:2003 und ISO 12100-2:2003, Allgemeine Gestaltungsleitsätze von Maschinen
- ISO 14121-1:2007, Risikobeurteilung der Maschine
- ISO 13849-1:2006, Sicherheitsbezogene Teile von Maschinen

Diese Überlegungen führen zu einem Performance Level (PL a bis e) nach ISO 13849-1:2006, die letztlich aussagen, wie die sicherheitsbezogenen Teile des zu überwachenden Systems beschaffen sein müssen.

Die Anschlussbeispiele mit verschiedenen Überwachungsgeräten im Kapitel "Anschlussbeispiele für Zustimmtaster und STOP-Taster (Seite 5)" zeigen, wie mit den sicherheitsbezogenen Teilen des Mobile Panel die Kategorie 3 PL d nach ISO 13849-1:2006 erreicht werden kann. Es ist zu beachten, dass das gesamte Konzept der Anlage dafür ausgelegt sein muss.

# Einsatzhinweise

### Klimatische Umgebungsbedingungen für die Anschluss-Box

Die folgende Tabelle zeigt die zulässigen klimatischen Umgebungsbedingungen für den Einsatz der Anschluss-Box.

| Umgebungsbedingungen | Zulässiger Bereich | Bemerkungen |
|---|---|---|
| Betriebstemperatur | Von 5 bis 55 °C | |

# Begriffserklärung

Diese Produktinformation entspricht der Maschinenrichtlinie 2006/42/EG und der EN 60204-1:2006.

**EN 60204-1**

| EN 60204-1:1997 | EN 60204-1:2006 |
|---|---|
| Zustimmungseinrichtung | Gerät zur Freigabesteuerung |

Um Unklarheiten beim Benutzer zu vermeiden, werden die bisher gebräuchlichen Begriffe auch in den zukünftigen Auflagen der Betriebsanleitungen beibehalten.

# Bedienelemente und Anzeigen

## Sicherheitsfunktionen des STOP-Tasters

Der STOP-Taster am Mobile Panel bewirkt einen Stopp des zu überwachenden Systems gemäß EN 60204-1:2006, Absatz 9.2.5.3. Die Stopp-Funktion kann ein Stopp der Kategorie 0, 1 oder 2 nach EN 60204-1:2006, Absatz 9.2.2 sein und muss anhand der Risikobeurteilung ausgebildet werden.

Die Stopp-Funktion des Mobile Panel kann daher sowohl als sicherer Maschinenstopp als auch für die Einschleifung in den Not-Aus-Kreis des zu überwachenden Systems verwendet werden.

**⚠ WARNUNG**

**Stopp der Kategorie 0 oder 1**

Wenn der Stopp-Kreis als Stopp der Kategorie 0 oder 1 ausgeführt ist, dann muss die Stopp-Funktion unabhängig von der Betriebsart wirksam sein. Ein Kategorie-0-Stopp muss Vorrang haben. Das Entriegeln des STOP-Tasters darf keinen gefahrbringenden Zustand einleiten (siehe auch EN 60204-1:2006, Kapitel 9.2.5.3).

Der Stopp ist kein Ersatz für Sicherheitseinrichtungen.

## Zustimmtaster

### Einleitung

Unter Verwendung eines externen Überwachungsgeräts erfüllen die Zustimmtaster die Anforderungen der Kategorie 3 PL d nach ISO 13849-1:2006.

Das Erreichen der Kategorie 3 PL d nach ISO 13849-1:2006 ist durch die Realisierung der Zustimmungseinrichtung mit 2 Kreisen und der geeigneten Überwachung auf Kurz- und Querschluss dieser Kreise möglich.

### Missbrauchsgefahr

Ein unerlaubtes Fixieren der Zustimmtaster in der Stellung "Zustimmung" mit mechanischen Hilfsmitteln ist als vorhersehbarer Missbrauch anzusehen, welcher verhindert werden kann. Dazu empfehlen wir folgende Maßnahmen, die den Stillstand der Maschine im manuellen Betrieb zur Folge haben:

- Zustimmtaster abfragen.

  Die Abfrage muss bei folgenden Vorgängen erfolgen:
  - Beim Einschalten des zu überwachenden Systems
  - Beim Betriebsartenwechsel von "Automatik" auf "Manueller Betrieb"

  Es darf in beiden Fällen keine Zustimmung geben.
- Der Zustimmtaster muss innerhalb eines festgelegten Zeitraums losgelassen und erneut in die Stellung "Zustimmung" gebracht werden.

  Wählen Sie die Länge des Zeitraums entsprechend der Tätigkeit am zu überwachenden System.

# Technische Angaben

| ⚠ WARNUNG |
|---|
| Die Sicherheitskenngrößen in den Technischen Daten gelten für ein Proof-Test-Intervall von 10 Jahren und eine mittlere Reparaturzeit von ca. 8 Stunden. |

**STOP-Taster**

| | |
|---|---|
| Nennspannung | DC 24 V |
| Mindeststrom | 10 mA, pro Kontakt |
| Strombelastbarkeit, max. | 1 000 mA, pro Kontakt |
| Gebrauchskategorie | DC-13, nach IEC 60947-5-1 |
| $B_{10d}$ | 100 000 |

**Zustimmtaster**

| | |
|---|---|
| Ausgangstyp | Solid-state output |
| Nennspannung, schaltbar | DC 24 V<br>Toleranz DC 19,2 V bis DC 30 V nach EN 61131-2 |
| Nennstrom, schaltbar, max. | 500 mA |
| Abschaltstrom, max.<br>Kreis 1<br>Kreis 2 | <br>1,5 A<br>0,8 A |
| Induktive Last, max.<br>Kreis 1<br><br>Kreis 2 | <br>145 mJ/1,16 H bei DC 24 V, 500 mA<br>(vergleichbar DC 13 nach EN 60947-5-1)<br>145 mJ/1,16 H bei DC 24 V, 500 mA<br>(vergleichbar DC 13 nach EN 60947-5-1) |
| Verpolungsschutz<br>Kreis 1<br>Kreis 2 | <br>Ja<br>Ja |
| Kurzschluss- und Überlastungsschutz<br>Kreis 1<br>Kreis 2 | <br>Ja, integriert im Ausgangs-FET<br>Ja, durch Schutzschaltung |
| Schaltspiele<br>Schalterstellung 2<br>Schalterstellung 3 | <br>$10^5$<br>$5 * 10^4$ |
| Betätigungskräfte<br>von Schalterstellung 1 auf 2, typisch<br>von Schalterstellung 2 auf 3, typisch | <br>5 N<br>20 N |

**Angaben zu ISO 13849-1**

| | |
|---|---|
| **Stop mit Anschlussbox PLUS**[1] | |
| Kategorie 3 | PL d |
| $PFH_d$ für beide Kanäle | $1{,}01 * 10^{-7}$ |
| **Zustimmung** | |
| Kategorie 3<br>$PFH_d$ | PL d<br>$1{,}35 * 10^{-7}$ |
| **Panik** | |
| Kategorie 3<br>$PFH_d$ | PL d<br>$1{,}14 * 10^{-7}$ |

1 Bestellnummern:
- Anschlussbox DP PLUS: 6AV6671-5AE10-0AX0
- Anschlussbox PN PLUS: 6AV6671-5AE11-0AX0

# Anschlussbeispiele für Zustimmtaster und STOP-Taster

### Einleitung

Dieses Kapitel enthält Anschlussbeispiele für Zustimm- und STOP-Taster entsprechend der Kategorie 3 PL d nach ISO 13849-1:2006.

---

**Hinweis**

Um die Kategorie 3 PL d nach ISO 13849-1:2006 zu gewährleisten, beachten Sie auch die Betriebsanleitung des eingesetzten Überwachungsgeräts.

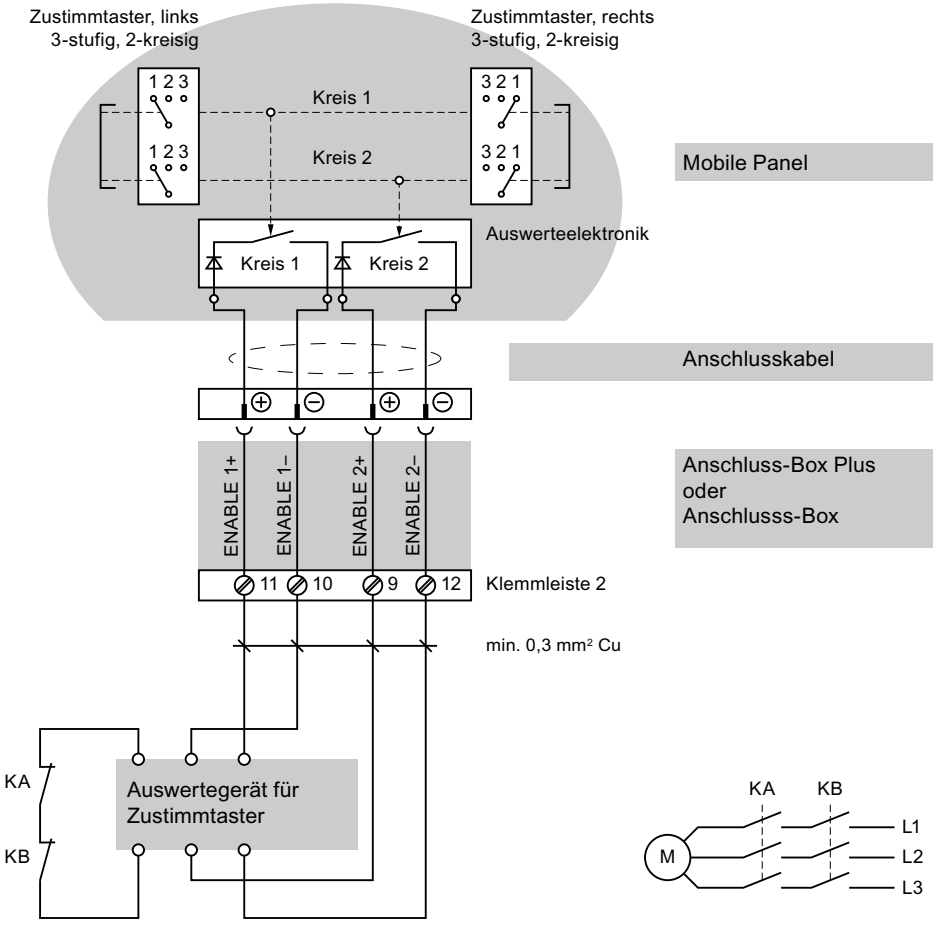
Die in den folgenden Beispielen aufgeführten Überwachungsgeräte erfüllen die Kategorie 4 PL e nach ISO 13849-1:2006.

Für die Berechnung der gesamten Sicherheitsfunktion "Stop" und "Zustimmung" sind das Überwachungsgerät und nachgeschaltete Komponenten noch mit zu berücksichtigen.

---

### Anschluss – Zustimmtaster mit Auswertegerät

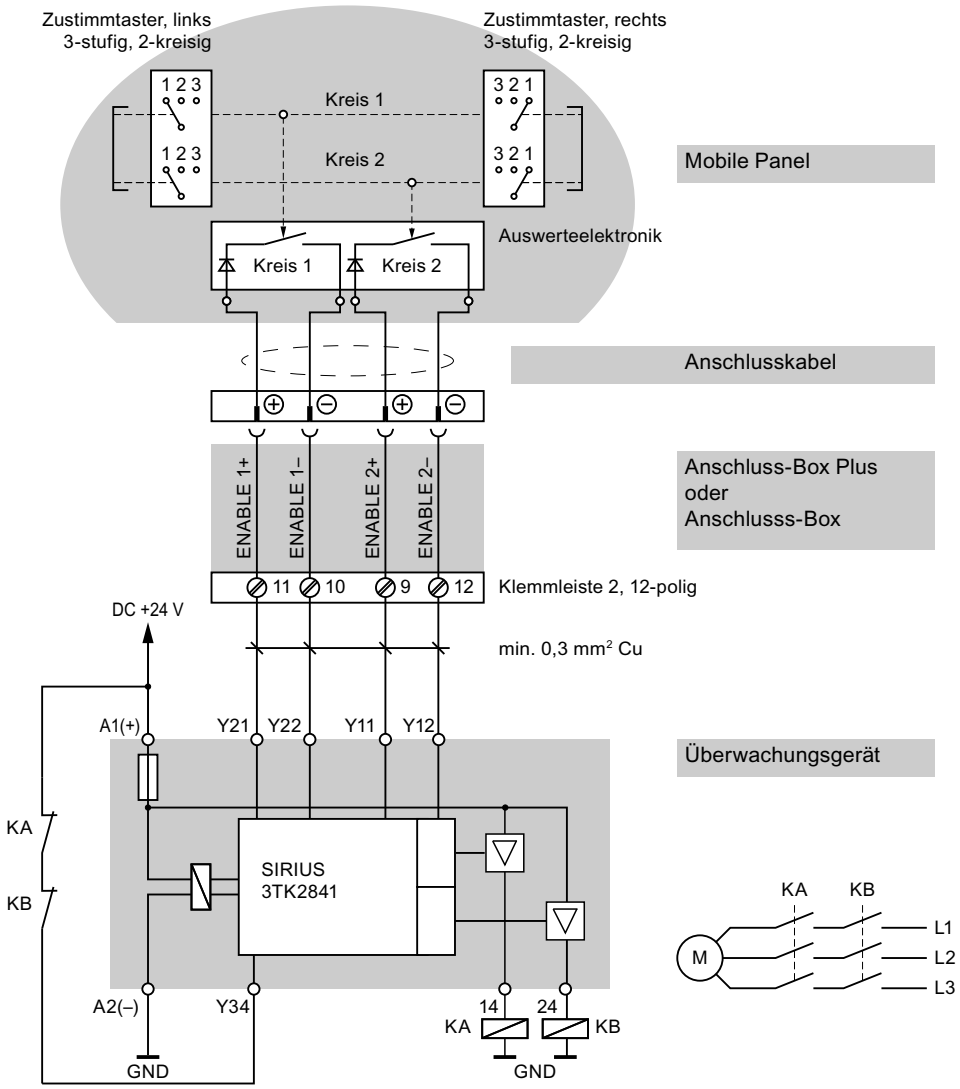
Das folgende Bild zeigt den Anschluss eines Auswertegeräts an die Zustimmtaster des Mobile Panel.




Alle Kontakte der Sicherheitsrelais (Schütze) KA und KB sind mit zwangsgeführten Kontakten entsprechend EN 50205:2002 ausgestattet.

### Anschlussbeispiel 1 – Zustimmtaster mit Sicherheitsschaltgerät

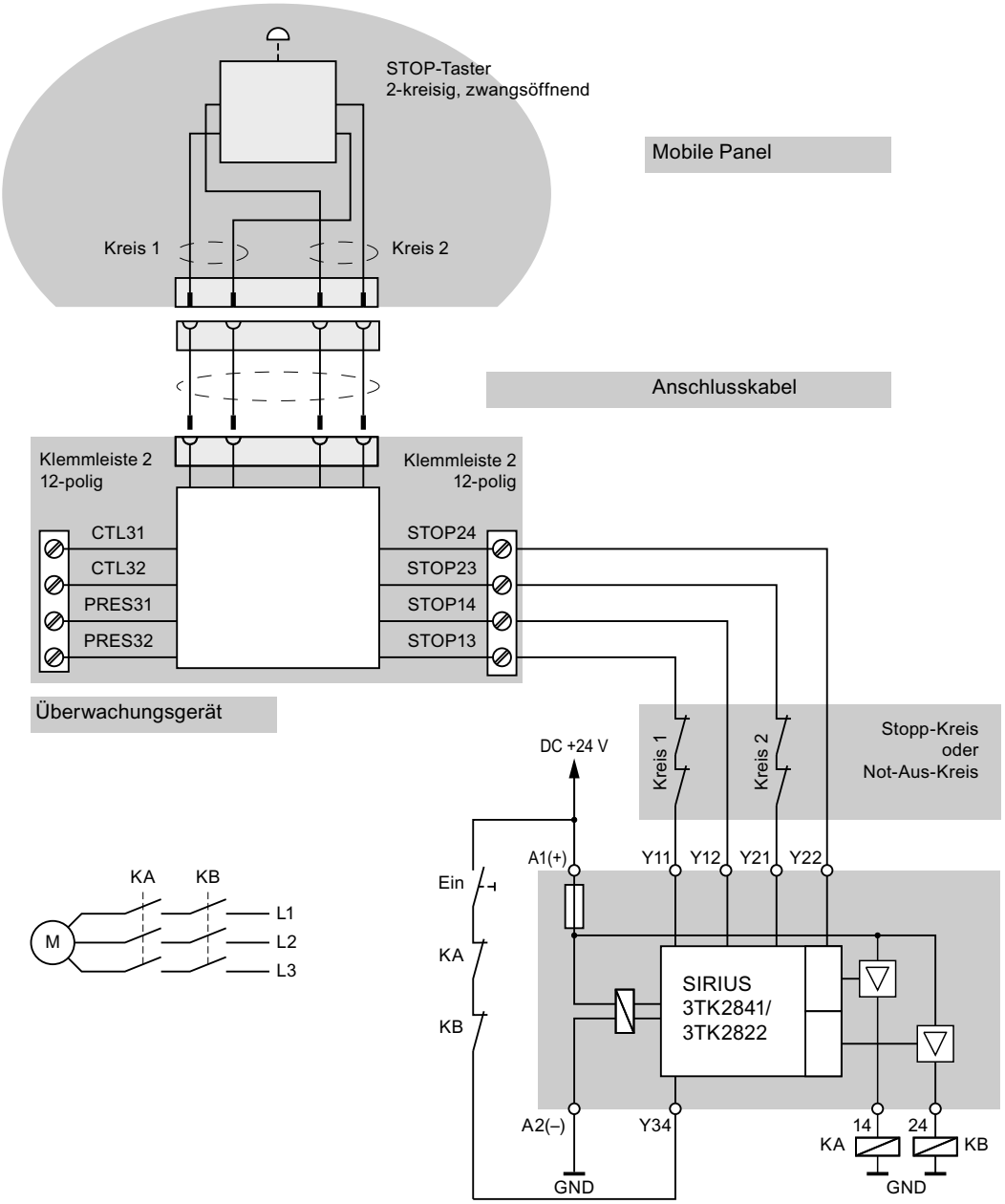
Das folgende Bild zeigt den Anschluss eines Sicherheitsschaltgeräts SIRIUS 3TK2841 an die Zustimmtaster des Mobile Panel.




Alle Kontakte der Sicherheitsrelais (Schütze) KA und KB sind mit zwangsgeführten Kontakten entsprechend EN 50205:2002 ausgestattet.

### Anschlussbeispiel 2 – STOP-Taster mit Sicherheitsschaltgerät

Das folgende Bild zeigt den Anschluss des Sicherheitsschaltgeräts SIRIUS 3TK2822 oder SIRIUS 3TK2841 an den STOP-Taster des Mobile Panel.




Alle Kontakte der Sicherheitsrelais (Schütze) KA und KB sind mit zwangsgeführten Kontakten entsprechend EN 50205:2002 ausgestattet.

Die Monitoring-Ausgänge dürfen nicht für sicherheitsrelevante Funktionen eingesetzt werden.

SIEMENS

# SIMATIC HMI
# Mobile Panel 277 RO
# Approval in accordance with ISO 13849-1:2006

**Product Information**

## Validity

The product information applies to the "Mobile Panel 277 RO", order number 6AV6645-7AB10-0AS0, as of product version 3, in combination with the corresponding connection box.

This product information contains important notes on changes made to the following safety standards and guidelines:

- Standard ISO 954-1 to ISO 13849-1
- Machinery Directive 98/37/EC to 2006/42/EG

For IEC EN 62061 evaluations of safety functions, the specified performance level (PL) can be converted to SIL according to the 13849-1 equivalence table:

| Performance Level (PL) | Safety Integrity Level (SIL) (IEC 61508-1, for information purposes) high/continuous duty | Average probability of one hazardous failure per hour 1/h |
|---|---|---|
| a | No equivalent | ≥ $10^{-5}$ to < $10^{-4}$ |
| b | 1 | ≥ 3 x $10^{-6}$ to < $10^{-5}$ |
| c | 1 | ≥ $10^{-6}$ to < 3 x $10^{-6}$ |
| d | 2 | ≥ $10^{-7}$ to < $10^{-6}$ |
| e | 3 | ≥ $10^{-8}$ to < $10^{-7}$ |
| Note: In addition to the average probability of one hazardous failure per hour, additional measures are necessary to achieve the PL. | | |

The notes supplement the operating instructions for the HMI device and take precedence over statements in the operating instructions, release notes and online help.

This product information and the corresponding operating instructions for the HMI device were written in German. Other language versions of the documents are translations of these originals. The translations do not reference guidelines and standards for other countries.

# Safety instructions and general notes

## Safety Instructions

### Proper use

| ⚠ WARNING |
| --- |
| Commissioning of the HMI device is prohibited until it has been absolutely ensured that the machine in which the HMI device is to be installed complies with Directive 98/37/EC or Directive 2006/42/EC as of December 29, 2009. |

**Note**

All safety functions of the HMI device have a 2-channel configuration and are able to achieve PL d in accordance with ISO 13949-1:2006.

### Safety regulations

| ⚠ WARNING |
| --- |
| The STOP button and enabling button must be checked periodically for proper functioning. |

| ⚠ WARNING |
| --- |
| The hazardous location must be visible from the operating position taken by the personnel. |

## Standards, Cetificates and Approvals

### SIBE Switzerland Certification Service

The HMI device and the connection box satisfy Category 3 PL d in accordance with ISO 13849-1:2006.

The enabling device safety function for special operation control and the STOP button satisfy the following requirements:

- Category 3 PL d in accordance with ISO 13849-1:2006
- Requirements of EN 60204-1:2006, under compliance with the safety instructions detailed in the operating instructions

### CE approval

CE

The HMI device and the connection box satisfy the requirements and protection objectives of the following EC directives. The HMI device and the connection box comply with the harmonized European standards (EN), promulgated in the Official Journals of the European Community for programmable controllers:

- 2004/108/EC "Electromagnetic Compatibility" (EMC Directive)
- Directive 2006/42/EC of the European Parliament and Council of May 17, 2006, on machinery, and amending Directive 95/16/EC (recast)

## Risk assessment

### Performing risk assessment

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

- ISO 12100-1:2003 and ISO 12100-2:2003, General Design Guidelines for Machines
- ISO 14121-1:2007, Risk Assessment for Machinery
- ISO 13849-1:2006, Safety-related Parts of Machines

These considerations result in a performance level (PL a to e) in accordance with ISO 13849-1:2006 that ultimately dictate how the safety-related parts of the system to be monitored must be furnished.

The connection examples with various monitoring devices in the section "Wiring Examples for Enabling Switch and STOP Button (Page 12)" show how the safety-related parts of the mobile panel can achieve Category 3 PL d in accordance with ISO 13849-1:2006. Attention must be paid that the overall concept of the system is designed with this in mind.

## Notes about Usage

#### Climatic ambient conditions for the connection box

The following table shows the permitted climatic ambient conditions for use of the connection box.

| Ambient conditions | Permitted range | Comments |
|---|---|---|
| Operating temperature | 5 to 55° C | |

## Terminology

This product information conforms to Machinery Directive 2006/42/EC and EN 60204-1:2006.

#### EN 60204-1

| EN 60204-1:1997 | EN 60204-1:2006 |
|---|---|
| Enabling apparatus | Device for enabling control |

To avoid confusing users, terms used in the past will continue to be used in future versions of the operating instructions.

# Operator controls and displays

## Safety Functions of the STOP Button

The STOP button on the mobile panel brings about a stop of the system being monitored in accordance with EN 60204-1:2006, 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: 2006, Section 9.2.2. The stop function category must be selected on the basis of a risk assessment.

The stop function of the mobile panel can therefore be used as a reliable machine stop as well as for looping in the emergency stop circuit of the system to be monitored.

**⚠ WARNING**

**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. Releasing the STOP button must not initiate any dangerous state (see also EN 60204-1:2006, section 9.2.5.3).

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

## Enabling Switch

#### Introduction

The enabling buttons meet the requirements of Category 3 PL d in accordance with ISO 13849-1:2006 when used in combination with an external monitoring device.

Category 3 PL d in accordance with ISO 13849-1:2006 can be achieved by implementing the enabling apparatus with 2 circuits and suitable monitoring for shorting and crossing of these circuits.

#### Risk from improper use

Prohibited fixation of the enabling button in the "Enable" position by mechanical means is considered foreseeable misuse, which can be prevented. We recommend the following measures for this, which result in bringing the machine to a standstill in manual mode:

- Scan the enabling buttons.
  The scan has to be carried out for the following processes:
  - When the system being monitored is switched on
  - When the operating mode changes from "Automatic" to "Manual mode"

  In both cases, the enabling function may not be used.
- The enabling button must be released within a specified time frame and returned to the "Enable" position.
  Select the time frame according to the activity on the system being monitored.

# Specifications

| ⚠ WARNING |
|---|
| The safety characteristics in the specifications apply for a proof-test interval of 10 years and a mean repair time of 8 hours. |

**STOP button**

| | |
|---|---|
| Rated voltage | 24 V DC |
| Minimum current | 10 mA, per contact |
| Max. current carrying capacity | 1 000 mA, per contact |
| Utilization category | DC-13, in accordance with IEC 60947-5-1 |
| $B_{10d}$ | 100 000 |

**Enabling button**

| | |
|---|---|
| Output type | Solid-state output |
| Rated voltage, switchable | 24 V DC<br>Tolerance 19.2 to 30 V DC in accordance with EN 61131-2 |
| Rated current, switchable, max. | 500 mA |
| Breaking current, max.<br>Circuit 1<br>Circuit 2 | <br>1.5 A<br>0.8 A |
| Inductive load, max.<br>Circuit 1<br><br>Circuit 2 | <br>145 mJ/1.16 H at 24 V DC, 500 mA<br>(comparable to 13 DC in accordance with EN 60947-5-1)<br>145 mJ/1.16 H at 24 V DC, 500 mA<br>(comparable to 13 DC in accordance with EN 60947-5-1) |
| Reverse polarity protection<br>Circuit 1<br>Circuit 2 | <br>Yes<br>Yes |
| Short-circuit and overload protection<br>Circuit 1<br>Circuit 2 | <br>Yes, integrated in the output FET<br>Yes, through protective circuit |
| Switching cycles<br>Switch position 2<br>Switch position 3 | <br>$10^5$<br>$5 * 10^4$ |
| Actuation forces<br>From switch position 1 to 2, typical<br>From switch position 2 to 3, typical | <br>5 N<br>20 N |

**Specifications in accordance with ISO 13849-1**

| | |
|---|---|
| **Stop with PLUS connectivity box**[1] | |
| Category 3 | PL d |
| $PFH_d$ for both channels | $1.01 * 10^{-7}$ |
| **Enable** | |
| Category 3 | PL d |
| $PFH_d$ | $1.35 * 10^{-7}$ |
| **Panic** | |
| Category 3 | PL d |
| $PFH_d$ | $1.14 * 10^{-7}$ |

1 Order numbers:

- DP PLUS connectivity box: 6AV6671-5AE10-0AX0
- PN PLUS connectivity box: 6AV6671-5AE11-0AX0

# Wiring Examples for Enabling Switch and STOP Button

### Introduction

This section contains connection examples for enable and STOP buttons corresponding to Category 3 PL d in accordance with ISO 13849-1:2006.

---

**Note**

To ensure Category 3 PL d in accordance with ISO 13849-1:2006, be sure to follow the operating instructions for the monitoring device being used.

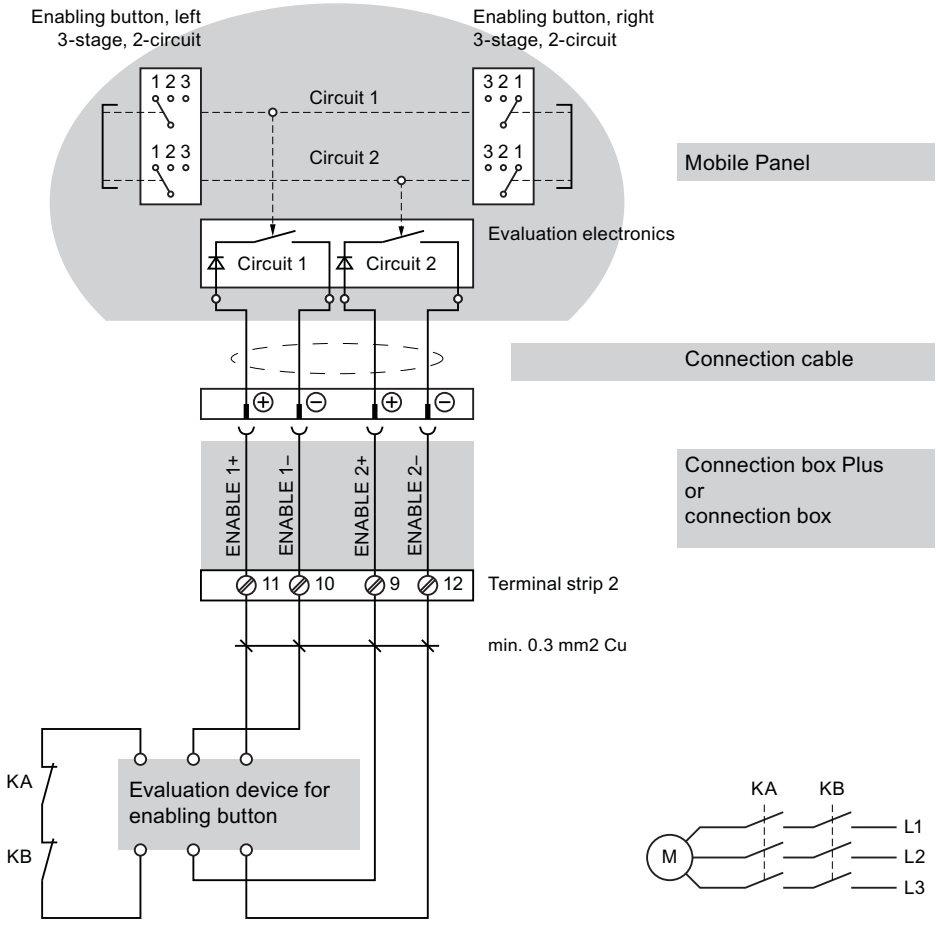
The monitoring devices shown in the following examples satisfy Category 4 PL e in accordance with ISO 13849-1:2006.

The monitoring device and downstream components should be taken into consideration when calculating the overall "Stop" and "Enabling" safety function.

---

### Connection – Enabling button with evaluation device

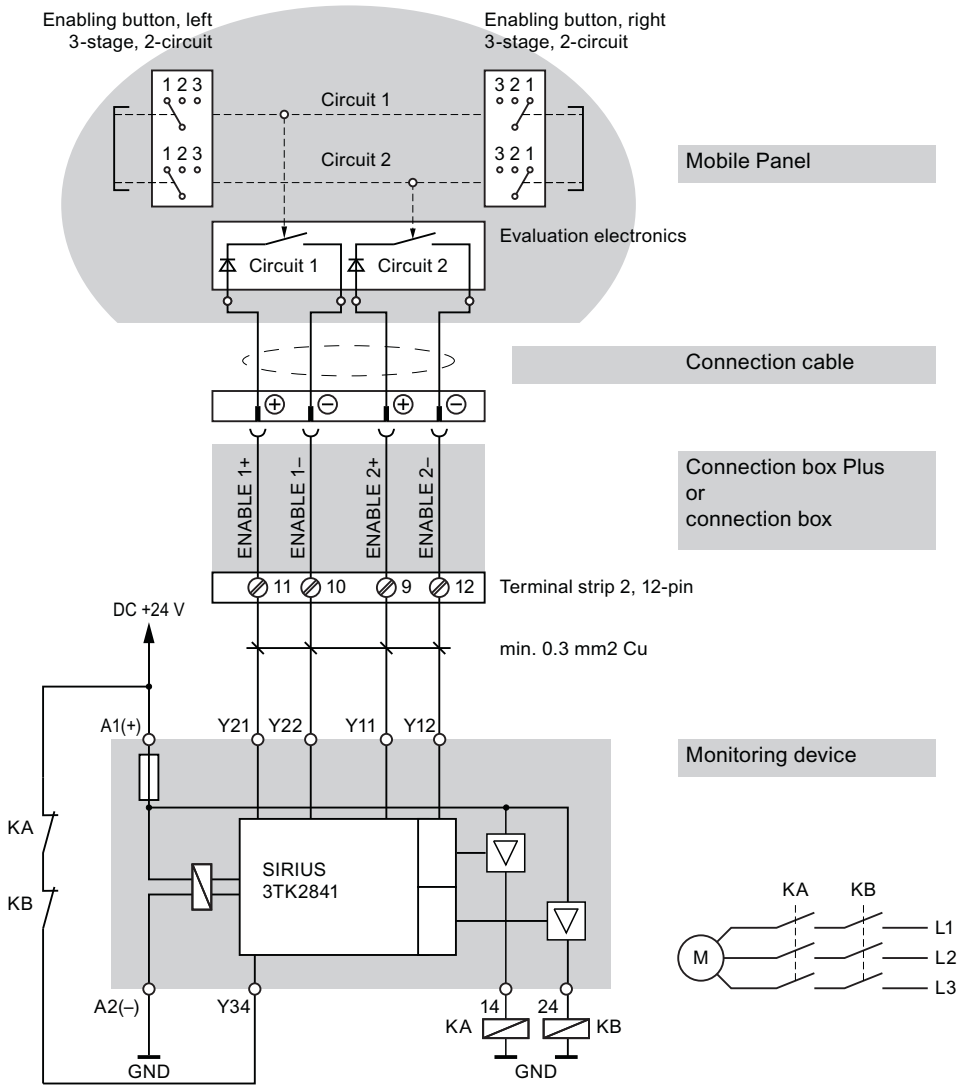
The following figure shows the connection of an evaluating device to the enabling button of the mobile panel.




All contacts of the safety relay (contactor) KA and KB are fitted with positively-driven contacts in accordance with EN 50205:2002.

### Connection example 1 – Enabling button with safety circuit device

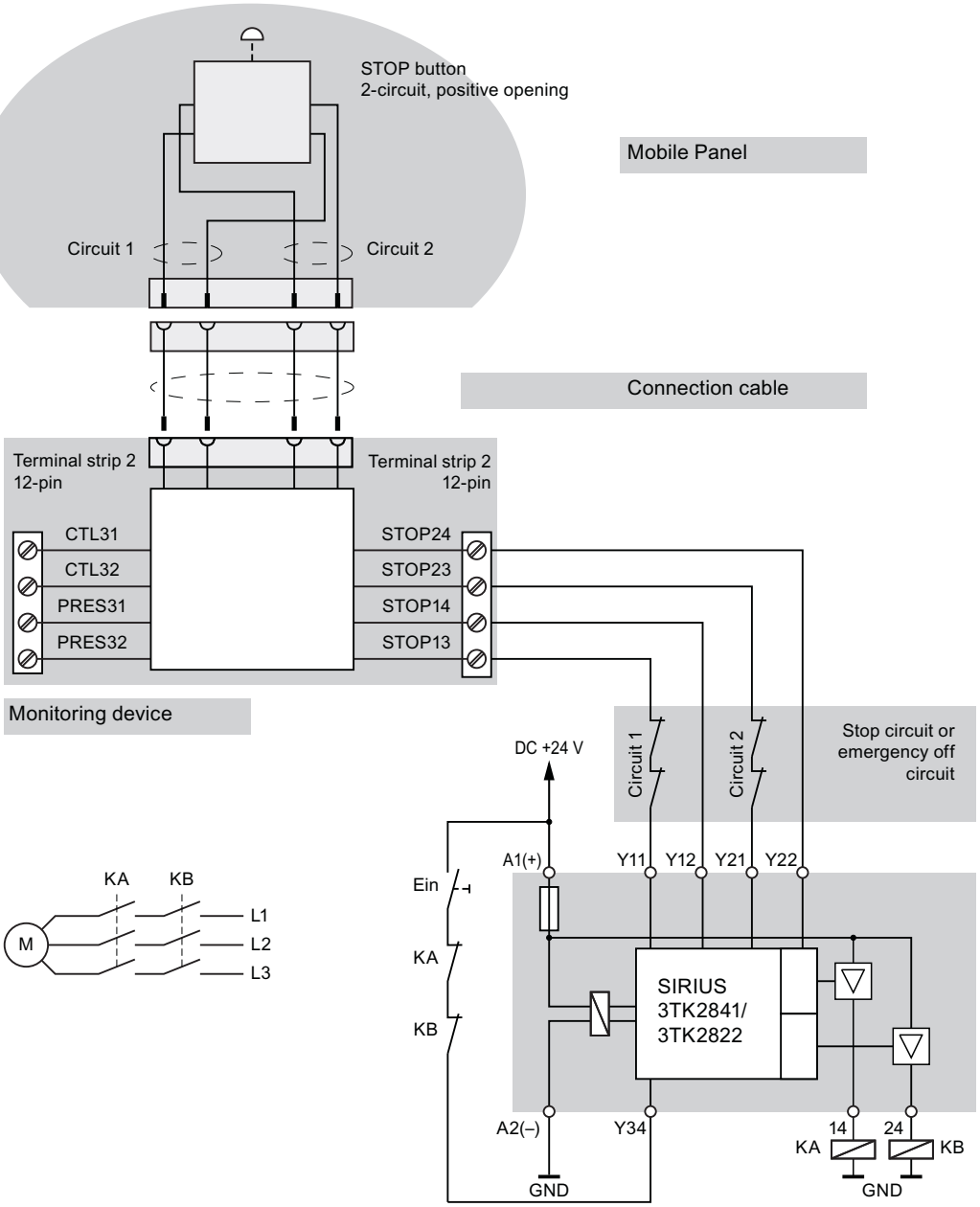
The following figure shows the connection of a SIRIUS 3TK2841 safety circuit device to the enabling button of the mobile panel.




All contacts of the safety relay (contactor) KA and KB are fitted with positively-driven contacts in accordance with EN 50205:2002.

### Connection example 2 – STOP button with safety circuit device

The following figure shows the connection of a SIRIUS 3TK2822 or SIRIUS 3TK2841 to the STOP button of the mobile panel.




All contacts of the safety relay (contactor) KA and KB are fitted with positively-driven contacts in accordance with EN 50205:2002.

Monitoring outputs may not be used for safety-related functions.

**SIEMENS**

# EG-Konformitätserklärung
## *EC DECLARATION of CONFORMITY*

Nr./No. Mobile Panel 277 / V1 / 04.2009

| | |
|---|---|
| Hersteller:<br>*Manufacturer:* | Siemens AG<br>Elektronikwerk Amberg<br>Werner-von-Siemens-Straße 50<br>D-92224 Amberg<br>Germany |
| Produktfamilie:<br>*Product Family:* | **SIMATIC Mobile Panel 277** |

Die bezeichnete Produktfamilie stimmt mit den Vorschriften folgender Europäischer Richtlinien überein:
*The indicated product family is in conformance with the regulations of the following European Directives:*

| | |
|---|---|
| 2004/108/EG | Richtlinie des Rates zur Angleichung der Rechtsvorschriften der Mitgliedstaaten über die elektromagnetische Verträglichkeit (EMV-Richtlinie) |
| *2004/108/EC* | *Council Directive on the harmonization of the laws of the Member States relating to electromagnetic compatibility (EMC Directive)* |
| 2006/42/EG | Richtlinie des europäischen Parlaments und des Rates für Maschinen |
| *2006/42/EC* | *Directive of the European Parliament and of the council for machines* |

Weitere Angaben über die Einhaltung dieser Richtlinien enthält Anhang EMV.
*Additional details concerning adherence to these Directives are provided in Appendix EMC.*

CE-Kennzeichnung / *CE marking:* 2006

Siemens Aktiengesellschaft

Amberg, *08-April-2009*

| | | | |
|---|---|---|---|
| B. Grosser<br>Director System Test | B. Grosser | Göldner<br>Director Quality Assurance | |
| Name, Funktion<br>*Name, function* | Unterschrift<br>*signature* | Name, Funktion<br>*Name, function* | Unterschrift<br>*signature* |

Der Anhang EMV ist Bestandteil dieser Erklärung.
Diese Erklärung bescheinigt die Übereinstimmung mit der genannten Richtlinie, ist jedoch keine Zusicherung von Eigenschaften im Sinne des Produkthaftungsgesetzes.
Die Sicherheitshinweise der mitgelieferten Produktdokumentation sind zu beachten.

*Appendix EMC is part of this declaration.*
*While this declaration indicates conformance with the European Directive listed, it does not imply a guarantee with respect to the product liability laws.*
*The safety notes included with the product documentation must be observed.*

# Anhang EMV

*Appendix EMC*

## zur EG-Konformitätserklärung

*for EC DECLARATION of CONFORMITY*

Nr. / No. Mobile Panel 277 / V1 / 04.2009

**Produktfamilie:** **SIMATIC Mobile Panel 277**

***Product Family:***

Die Übereinstimmung der bezeichneten Produkte mit den Vorschriften der Richtlinie 2004/108/EG wird nachgewiesen durch die vollständige Einhaltung folgender Normen:

*Conformity of the designated products with the regulations of Directive 2004/108/EC demonstrated by adherence to the following standards, when installed in accordance with User Manual specifications.*

Harmonisierte Europäische Normen:
*Harmonized European Standards:*

| Referenznummer / *Reference number* | Ausgabedatum / *Edition* |
|---|---|
| EN 61000-6-4 | 2007 |
| EN 61000-6-2 | 2005 |

Die Produktfamilie, SIMATIC Mobile Panel 277, für die die CE-Kennzeichnung gilt, besteht aus folgenden Komponenten:

*The SIMATIC Mobile Panel 277 product family to which the CE marking applies consists of the following components:*

Mobile Panel 277 DP

6AV6 645-0CA01-0AX0

6AV6 645-0CB01-0AX0

6AV6 645-0CC01-0AX0

Connectivity Box DP Basic

6AV6 671-5AE00-0AX0

Connectivity Box DP Plus

6AV6 671-5AE10-0AX0

Connectivity Box PN Basic

6AV6 671-5AE01-0AX0

Connectivity Box PN Plus

6AV6 671-5AE11-0AX0

Mobile Panel 277 RO

6AV6 645-7A...-....

Mobile Panel 10" PN/DP

6AV6 645-0BE02-0AX0

# Anhang Maschinenrichtlinie

*Appendix Directive for Maschines*

## zur EG-Konformitätserklärung

*for EC DECLARATION of CONFORMITY*

Nr. / No. Mobile Panel 277 / V1 / 04.2009

Die Übereinstimmung der bezeichneten Produkte mit den Vorschriften der Richtlinie 2006/42/EG wird durch die Einhaltung folgender harmonisierter europäischer Normen für den STOP-Taster und die Zustimmungseinrichtung nachgewiesen:

*Conformity to the directive 2006/42/EC is assured by the application of the following harmonized european standards for the stop switch and the enabling device:*

**Harmonisierte Europäische Normen:**
*Harmonized European Standards:*

| Referenznummer / *Reference number* | Ausgabedatum / *Edition* |
|---|---|
| EN 60204-1 | 2006 |

**Wichtige Hinweise:**

Der STOP-Taster und die Zustimmungstaster sind Teile der Sicherheitskreise einer Maschine. Die Grundlegenden Sicherheitsanforderungen nach Anhang 1 der Richtlinie für Maschinen können daher nur mit den gesamten Sicherheitssteuerkreisen erfüllt werden.

Bei einer nicht mit uns abgestimmten Änderung des (der) Produkt(e)s verliert diese Erklärung ihre Gültigkeit.

Diese Erklärung bescheinigt die Übereinstimmung mit der genannten Richtlinie, beinhaltet jedoch keine Zusicherung von Eigenschaften.

Die Sicherheitshinweise der mitgelieferten Produktinformation sind zu beachten.

Die Produktfamilie, SIMATIC Mobile Panel 277, für die die CE-Kennzeichnung gilt, besteht aus folgenden Komponenten:

*The SIMATIC Mobile Panel 277 product family to which the CE marking applies consists of the following components:*

Mobile Panel 277 DP

6AV6 645-0CA01-0AX0

6AV6 645-0CB01-0AX0

6AV6 645-0CC01-0AX0

Connectivity Box DP Basic

6AV6 671-5AE00-0AX0

Connectivity Box DP Plus

6AV6 671-5AE10-0AX0

Connectivity Box PN Basic

6AV6 671-5AE01-0AX0

Connectivity Box PN Plus

6AV6 671-5AE11-0AX0

Mobile Panel 277 RO

6AV6 645-7A...-....

Mobile Panel 10" PN/DP

6AV6 645-0BE02-0AX0



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