SIEMENS

SIMATIC HMI

HMI devices
TP1000F Mobile RO

Operating Instructions

Legal information

Warning notice system

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

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

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

⚠ CAUTION
indicates that minor personal injury can result if proper precautions are not taken.

NOTICE
indicates that property damage can result if proper precautions are not taken.

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 product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

⚠ WARNING
Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

Trademarks

All names identified by ® are registered trademarks of 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.

Preface

Purpose and knowledge

Purpose of the operating instructions

These operating instructions contain 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:

- Users
- Commissioning engineers
- Maintenance personnel

Basic knowledge required

General knowledge of automation technology and process communication is needed to understand the operating instructions. Knowledge of personal computers and the Microsoft operating systems is required to understand this manual.

Scope and brands

Scope of the document

The operating instructions apply to the following HMI device in combination with the corresponding connection boxes and the RemoteOperate V4.0.0.1 software:

- SIMATIC HMI TP1000F Mobile RO, article number 6AV2145-6KB10-0AS0

The HMI device is technically based on the Mobile Panels 2nd Generation and is therefore also referred to as "Mobile Panel 2nd Generation" or "HMI device of the type KTP Mobile" is this document, see section "Conventions".

The corresponding connection boxes with article numbers and information on compatibility can be found in the following sections:

- Connection boxes (Page 15)
- Mobile Panel and connection box compatibility (Page 24)

Note

This document belongs to the system

- Mobile Panel
- Connection box
- KTP Mobile connecting cable

You will also need the document whenever the system is re-commissioned. Keep all supplied and supplementary documentation for the entire service life of the Mobile Panel.

Provide any future owner or user with all the documents for the HMI device.

Make sure that every supplement to the documentation that you receive is stored together with the operating instructions.

Associated documents

Additional information on the RemoteOperate software is available in the RemoteOperate V4.0.0.1 programming manual.

Conventions

Style conventions

Style Convention	Scope
"Add screen"	- Terminology that appears in the user interface, for example, dialog names, tabs, buttons, menu commands - Necessary entries, for example, limit, tag value - Path information
"File > Edit"	Operational sequences, e.g, menu command, shortcut menu command
<F1>, <Alt+P>	Keyboard operation

Please observe notes labeled as follows:

Note

A note contains important information about the product described in the document and its handling, or a specific section of the document to which you should pay particular attention.

Naming conventions

Term	Applies to
Control cabinet	Mounted cabinet, enclosure, terminal box, panel, control panel
Plant	System, machining center, one or more machines
F-system	Fail-safe automation system with fail-safe Mobile Panel
Connection box	• Connection box compact • Connection box standard • Connection box advanced
Connecting cable for the device	Connecting cable KTP Mobile for HMI devices of the type KTP Mobile
Wall-mounting bracket for the device	Wall-mounting bracket KTP Mobile for HMI devices of the type KTP Mobile
HMI device Mobile Panel	TP1000F Mobile RO
Fail-safe Mobile Panel	TP1000F Mobile RO
Safety-related operator control	• Emergency stop / stop button • Enabling button
Storage medium	• SD memory card • USB flash drive
RemoteOperate Server	The RemoteOperate Server software
RemoteOperate Client	The RemoteOperate Client software
RemoteOperate	The RemoteOperate software (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 runs.

Information on standards

You can find detailed information on standards including year of publication and corresponding supplements in the section "Standards on operating safety (Page 156)".

Standards and supplements will be referenced in the remainder of the document without citation of the year of publication, for example, "EN 61000-6-4 +A1".

Figures

This document contains figures of the devices described. The figures can deviate from the particularities of the delivered device.

Table of contents

Overview 1

1.1 Product overview

The second generation of SIMATIC HMI Mobile Panels offers direct mobile operation and monitoring of the production process. The Mobile Panels 2nd Generation system consists of a Mobile Panel, connection box and connecting cable.

The TP1000F Mobile RO has a 10" display in widescreen format.

The figure below shows a fail-safe Mobile Panel connected to a connection box advanced.

With a fail-safe Mobile Panel, you run the plant in fail-safe mode. You meet the requirements of Safety Integrity Level 3 and Performance Level PL e with a fail-safe Mobile Panel. An emergency stop / stop switch and an enabling button are integrated in a fail-safe Mobile Panel 2nd Generation. You can evaluate the safety-related operator controls in a hard-wired F-system using safety relays.

You can choose from three connection boxes each with a different range of functions. The connection box compact is designed for installation in control cabinets. The connection box standard and connection box advanced are approved for external mounting directly on the machine.

The device is designed for industrial use:

● High fall resistance

● High protection class

● High impact resistance

● High chemical resistance to operating and cleaning agents.

The enclosure type protects the emergency stop / stop button. Two protective bumpers to prevent damage to the emergency stop / stop button during a fall of the HMI device.

1.2 Design of the Mobile Panel

The Mobile Panel with 10" display contains the following:

SIMATIC HMI	Number of function keys	Illuminated pushbutton	Emergency stop button, enabling button	Keyswitch
TP1000F Mobile RO	0	0	Yes	No

Note

System components

You need the following for operation:

- An HMI device
- A connecting cable (Page 14)
- At least one connection box (Page 15)
- For hardwired F-systems: A safety relay (Page 20)

You can find the ordering information for the system components on the Internet (https://mall.industry.siemens.com/mall/en/de/Catalog/Products/10165537).

Front and side views

The following figures show the design of the HMI device.

① Cover (no key switch)
② Enabling button
③ Emergency stop / stop button
④ Fall protection for the emergency stop / stop button
⑤ Cover cap for USB port
⑥ Handle
⑦ Holder with touch pen
⑧ Display with touch screen

The position of the emergency stop button makes it easily accessible. Due to its profiled design, the emergency stop button is easily accessible. Two bumpers protect the emergency stop / stop button against impact damage, for example, if it falls. The bumpers are dimensioned so that the emergency stop / stop button can be activated during an impact.

The operator controls are described in the section "Handling the Mobile Panel (Page 65)".

Rear view and interfaces

The following figure shows the layout of the HMI device.

①	USB port with cover	⑤	Threaded sleeve for fixing screw of the cable retainer
②	Handle	⑥	Slot for an SD memory card
③	Nameplate	⑦	12-pin connector for the connecting cable
④	Terminal compartment	⑧	RJ45 socket PROFINET (LAN)

1.3   KTP Mobile connecting cable

The connecting cable is resistant to many solvents and lubricants. The tensile and flexural strength of the connecting cable is geared toward the actual usage conditions.

Functions of the connecting cable:

● Power supply of the Mobile Panel

● Ethernet connection between Mobile Panel and connection box

● Transmission of the signals for emergency stop / stop button and enabling button

● Transmission of the box ID

①	RJ45 connector
②	Plug connector, 12-pin
③	Retainer, not required for KTP400F Mobile.
④	Label with order number, length specification and product version
⑤	Seal
⑥	Terminal compartment cover
⑦	Plug connector for the connection box

The KTP Mobile connecting cable is available in the following lengths:

Product name and length	Article number
KTP Mobile 2 m connecting cable	6AV2181-5AF02-0AX0
KTP Mobile 5 m connecting cable	6AV2181-5AF05-0AX0
KTP Mobile 8 m connecting cable	6AV2181-5AF08-0AX0
KTP Mobile 10 m connecting cable	6AV2181-5AF10-0AX0
KTP Mobile 15 m connecting cable	6AV2181-5AF15-0AX0
KTP Mobile 20 m connecting cable	6AV2181-5AF20-0AX0
KTP Mobile 25m connecting cable	6AV2181-5AF25-0AX0
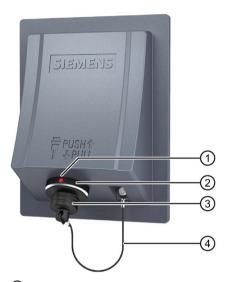
1.4 Connection boxes

The connection boxes are available in the following versions:

- Connection box compact, article number 6AV2125-2AE03-0AX0
- Connection box standard, article number 6AV2125-2AE13-0AX0
- Connection box advanced, article number 6AV2125-2AE23-0AX0

Connection box compact

The figure below shows the connection box compact.

① Positioning mark

There is also a red positioning mark on the connecting cable. Align this mark with the positioning mark on the connection box when connecting.
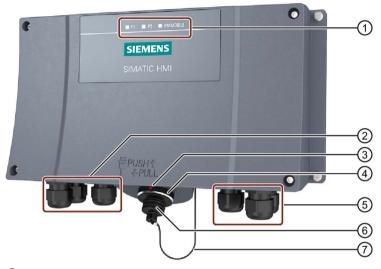
② Connection socket for the connecting cable

③ Cover cap

④ Safety strap

Connection box standard and connection box advanced

The figure below shows the connection box standard or the connection box advanced. The connection box advanced also features:

- Real-time Ethernet
- F-signal transmission
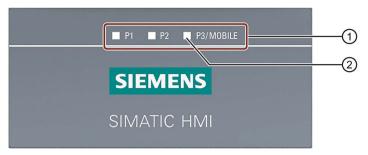
① LED display
② Screw glands for the data cables
③ Positioning mark

There is also a red positioning mark on the connecting cable. Align this mark with the positioning mark on the connection box when connecting.

④ Connection socket for the connecting cable
⑤ Screw glands for power supply cables and F-signal
⑥ Cover cap
⑦ Safety strap

There are three LEDs on the front of the connection box that indicate the status of communication.

①   LED display of the three Ethernet ports:

- P1: Fast Connector X1

- P2: Fast Connector X2

- P3: Connection socket for the Mobile Panel

②   LED

Basic functions of the LEDs:

- LED lit green: Link established, no data transmission

- LED flashes green or amber: Link established, data transfer in progress

You can find information about other possible LED states in the following document:

Operating instructions "SCALANCE X-200"
(https://support.industry.siemens.com/cs/ww/en/view/102051962)

See also

Connecting the connection box (Page 50)

1.5 Scope of delivery

This section describes the system components in the scope of delivery that you need for operating the HMI device.

Mobile Panel 2nd Generation:

- TP1000F Mobile RO

- 1 DVD with documentation and product information

- 1 "Mobile Panels 2nd Generation" Quick Install Guide

The scope of delivery may contain additional documents.

Connection box compact:

- 1 Connection box compact

- 1 DVD with documentation and product information

- 1 Accessory kit with mounting clips

- 1 Installation instruction

The scope of delivery may contain additional documents.

Connection box standard and connection box advanced:

- 1 Connection box

- 1 DVD with documentation and product information

- 1 Installation instruction

The scope of delivery may contain additional documents.

Connecting cable:

- 1 Connecting cable with terminal compartment cover with four screws

- 1 Cable retainer with screw

Accessory kit

The accessory kit of the HMI device includes the following:

- The "SIMATIC RemoteOperate - Application & Documentation" CD. The following software and documents are included on the CD:

  – The HMI device image with the operating system and the RemoteOperate Client software

  – These operating instructions and the RemoteOperate V4.0.0.1 programming manual

  – The ProSave software for transferring the HMI device image to the HMI device

  – The ProSave-Addon, which is required to select the TP1000F Mobile RO in ProSave

  – The RemoteOperate Server software

  – The "Readme.rtf" file in the main directory of the CD with additional information

- A touch pen for operating the touch screen.

Additional documents may be enclosed with the accessory kit.

1.6 Accessories

1.6.1 Overview

Accessories are not included in the scope of delivery but can be ordered from the following address:

SIMATIC HMI accessories (https://mall.industry.siemens.com/mall/en/de/Catalog/Products/10030052)
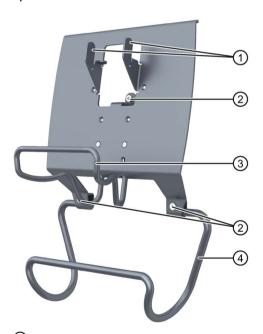
In the Industry Mall you can find the following accessories:

● KTP Mobile wall-mounting bracket

● Memory card

● Protective film for 4", 7", and 9" devices

1.6.2 KTP Mobile wall-mounting bracket

The wall-mounting bracket holds the Mobile Panel securely in place during stationary operation.

① Hooks for the handle on the Mobile Panel
② Screw flange
③ Safety bar for the Mobile Panel
④ Holding bracket for the connecting cable

The assembly of the KTP Mobile wall-mounting bracket is described in the section "Assembling the KTP Mobile wall-mounting bracket (Page 39)".

1.6.3 Touch pens

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

The touch pen set is not included with the HMI device. The touch pen set contains 5 pens and is available under article number 6AV6645-7AB14-0AS0.

1.6.4 Storage media

You can use the storage media to back up Mobile Panel data and copy data to the Mobile Panel. Use the following storage media:

- SIMATIC HMI Memory Card

  Siemens AG has approved the use of SD memory cards in the Mobile Panel.

- USB flash drive

  The USB flash drive must be suitable for industrial applications. The storage medium is inserted in the port on the left of the device.

1.6.5 SIRIUS safety relay

If you are using a fail-safe Mobile Panel in a hardwired F system, you must use a safety relay.
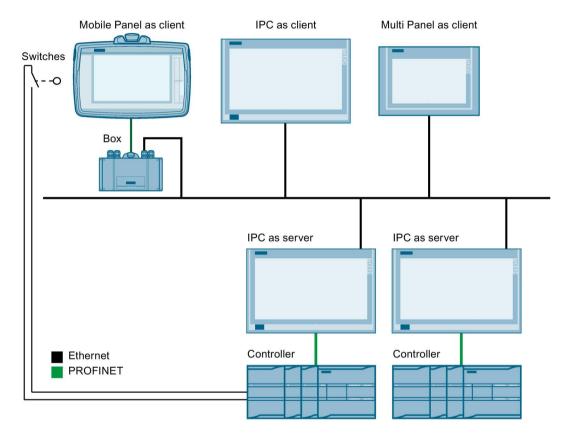
The Mobile Panels 2nd Generation have been tested with the following safety relays and approved:

- SIRIUS safety relay, standard, relay output
  article number 3SK1111-1AB30

- SIRIUS safety relay, standard, electronic output
  article number 3SK1112-1BB40

- SIRIUS safety relay, advanced, relay output
  article number 3SK1121-1AB40

- SIRIUS safety relay, advanced, electronic output
  article number 3SK1122-1AB40

1.7 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 PLC. The following figure shows an exemplary system design.

The HMI device is used for monitoring or controlling the operating process. The PLC 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 the RemoteOperate software can be found in the "RemoteOperate V4.0.0.1" programming manual.

1.8 Terms for fail-safe operation

This section defines terms relating to fail-safe operation with a fail-safe HMI device.

You can find additional information on the topic of "Safety" in the following document: "SIMATIC Safety - Configuring and Programming" programming and operating manual (http://support.automation.siemens.com/WW/view/en/54110126)

Fail-safe automation system, F system

A fail-safe automation system is required in a plant with high safety requirements. An F-system is characterized by the following features:

- Safety-related shutdown response of the system after the triggering of a stop or emergency stop via a safety-related operator control.

- The confirmation of machine movements entailing danger via an enabling mechanism.

In combination with the fail-safe Mobile Panel, a **hard-wired F-system** is used: The safety-related operator controls are wired to a safety relay. If one of the safety-related operator controls is activated, the safety relay triggers the safe state or confirms a machine movement entailing danger in the F-system via the enabing button.

Safe operating state

If an unexpected event occurs during plant operation that poses a risk to persons or equipment, the plant must respond with a defined safety shutdown. Protection of personnel against physical injury can only be ensured if intervention in manufacturing processes, for example during retrofitting or troubleshooting, is safe and secure.

Based on the risk analysis, the safety shutdown and therefore the shutdown response of the plant must therefore be configured to ensure that the plant or plant area can be switched to a safe operating state in the event of a risk.

In addition to the qualitative risk analysis required, the machine operator also has an obligation to make a quantitative assessment of potential hazards. On this basis, the operator must then establish what risks could arise during plant or plant area operation and whether the relevant safety functions are sufficiently effective for the hazard in question.

The safe operating state is assigned to the fail-safe controller by a safety program. The plant constructor is responsible for the required configuration which should be described in the plant documentation.

Fail-safe operation

In a hardwired F-system, you operate the plant or a plant section in fail-safe mode. In fail-safe mode, the safety-related operator controls emergency stop/stop button and enabling buttons are active. Fail-safe mode runs via a fixed connection with a safety relay.

Emergency stop, stop

The operator presses the emergency stop / stop button to activate either an emergency stop or a stop.

- The emergency stop is an emergency action that is intended to stop a process or movement entailing danger. All machines that are assigned to the trigger are immediately brought to a safe state via the emergency stop.

- The emergency stop / stop button of the HMI device brings about a safety-related stop of the plant or machine in accordance with EN 60204-1, Section 9.2.5.3.

Whether the emergency stop / stop button causes an "emergency stop" or "stop" function must be decided upon and configured on the basis of the risk analysis.

Safety-related operating mode

In fail-safe mode, you can use the HMI device in combination with a connection box in one of the following operating modes:

- Stop button evaluated by safety relay

  The signals of the safety-related operator controls are wired to a safety relay. If you press the emergency stop / stop button, the plant typically responds with a stop.

  The emergency stop / stop button does not light up.

  In this operating mode, the emergency stop / stop button is called the **stop button**.

- E-stop button evaluated by safety relay

  The signals of the safety-related operator controls are wired to a safety relay. When you press the emergency stop / stop button, the plant responds with an emergency stop.

  The emergency stop / stop button lights up when active.

  In this operating mode, the emergency stop / stop button is called the **emergency stop button**.

Emergency stop / stop bypass

The emergency stop / stop bypass is a function of the connection box advanced for hardwired F-systems.

The function ensures that no stop or emergency stop will be triggered in the plant when reconnecting the Mobile Panel to another connection box.

1.9 Organizational measures

Measures

If you are using a fail-safe Mobile Panel in a fail-safe system, you must consider the following organizational measures:

- Install stationary emergency stop or emergency off buttons in the plant that are effective independent of the Mobile Panel.
- Perform a risk analysis of the plant.
- If the overall plant is not to be monitored from a single location, configure plant areas.
- Select the same operating mode for all connection boxes in a contiguous plant area.
- Create a safety program.
- Run an acceptance test on the fail-safe automation system.

F-systems

The table below shows the F-systems that can be configured or installed for a given connection box. Requirement is that you are using a fail-safe Mobile Panel.

Connection box	Hardwired F-system, no emergency stop/stop bypass	Hardwired F-system with emergency stop/stop bypass
compact	Yes	No
standard	Yes	No
advanced	No	Yes
Safety-related operating mode	Stop button evaluated by safety relay	Stop button evaluated by safety relay
	E-stop button evaluated by safety relay	E-stop button evaluated by safety relay

1.10 Mobile Panel and connection box compatibility

The Mobile Panels 2nd Generation are not compatible with the connection box DP Basic and connection box DP Plus.

Compatibility of Mobile Panels 2nd Generation – connection box PN Basic and PN Plus

The TP1000F Mobile RO is compatible with the following connection boxes:

- Connection box PN Basic, article number 6AV6671-5AE01-0AX0
- Connection box PN Plus, article number 6AV6671-5AE11-0AX0

Restrictions:

- Only one hardwired F-system with a stop function and enabling function is permitted.

Safety instructions 2

2.1 General safety instructions

> **⚠ WARNING**
>
> **Personal injury or material damage due to non-compliance with safety regulations**
>
> Failure to exactly comply with the safety regulations and procedures in this document can result in hazards and disable safety functions. This can result in personal injuries or material damage.
>
> Closely follow closely the safety regulations and procedural instructions in each situation.

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

Safety during configuration and operational safety of the plant

> **⚠ WARNING**
>
> **Personal injury or material damage due to improper configuration of the plant**
>
> The configuration engineer for plant control must take precautions to ensure that an interrupted program will be correctly integrated again after communication failures, voltage dips or power outages.
>
> A dangerous operating state must not be allowed to occur - not even temporarily - during the entire execution of the control program, even during a troubleshooting.

> **⚠ WARNING**
>
> **Programming startup protection in the safety program**
>
> At a STOP/RUN transition of an F-CPU, the standard user program starts up as usual. When the safety program starts up, all FDBs are initialized with values from the load memory, same as during a cold restart. As a result, saved error information is lost. The F-system performs an automatic reintegration of the F-I/O. A startup of the safety program with values from the load memory can also be initiated by a handling error or an internal error. If the process does not permit this, a (re)start protection must be programmed in the safety program. The output of process values must be disabled until manually enabled; this must not occur until the process values can be output without posing a hazard and errors have been eliminated.

NOTICE
Exclusive operating right
Operating the plant with multiple HMI devices simultaneously can cause material damage.
Prevent simultaneous operation of the plant from multiple devices by configuring the assignment of operating rights to only one HMI device.

Configuration of fail-safe Mobile Panels

⚠ WARNING
Personal injury or property damage in case of remote control of a fail-safe HMI device
The remote control of a fail-safe unit consisting of HMI devices with RemoteOperate Client and a RemoteOperate server is not permitted because it is not ensured that the hazardous location is visible during operation. This can result in personal injury or property damage.
The following therefore applies to the fail-safe unit (RemoteOperate Clients / RemoteOperate Server): Remote control, for example, by means of Telnet or Sm@rtClient is not permitted.

⚠ WARNING
Personal injury or material damage with different operating modes in a plant area
If you assign different operating modes to the connection boxes in a contiguous plant area, the emergency stop / stop button may light at one of the connection boxes but not at another. When the emergency stop / stop button does not light up, it is not apparent to the operator if the safety-related operator controls are active or not. This can result in personal injury or material damage due to maloperation.
Only configure a single operating mode for multiple connection boxes in a contiguous plant area.

Operational safety in the plant

⚠ WARNING
Short-term PROFINET IO interruptions possible when using protocols with alternative communication paths
The following applies when you use a protocol with alternative communication paths, for example, MRP, STP or RSTP, for PROFINET communication: When an interruption in the network occurs, for example, due to a cable break, PROFINET IO interruptions can occur during the switching time to the alternative communication path. This can result in personal injury or material damage.
Take appropriate protection measures to prevent physical injury or material damage.
You can find additional information in the following document:Configuration manual "SCALANCE X-200" (https://support.industry.siemens.com/cs/ww/de/view/109476763)

Note

Observe the Operational Safety and Product Monitoring newsletter.

Plants with safety-related characteristics are subject to special requirements for operational safety on the part of the operator. Vendors are also required to comply with certain measures for monitoring the product. We therefore provide a special newsletter about product development and properties to inform you about important safety aspects for the operation of plants. To ensure that you are always kept up-to-date in this regard and can make changes to your plant, you should subscribe to the appropriate newsletter.

Subscribe to the newsletter for fail-safe system components and the SIMATIC industrial software at the following link: Newsletter (https://www.industry.siemens.com/newsletter/public/AllNewsletters.aspx)
To receive these newsletters, select the "News" check box.

Safety during commissioning

⚠ WARNING
Potential personal injury or material damage due to non-compliance with machine regulations
If it is unclear whether or not the machine operated with the HMI device described in this document meets the provisions of Directive 2006/42/EC, the machine must not be put into operation as there is a risk of personal injury and/or material damage.
Verify before commissioning that the provisions of Directive 2006/42/EC are fulfilled.

Safety when working in and on electrical systems

Work in or on electrical systems may only be carried out by authorized persons. The following safety regulations apply for the prevention of electric shock and electrocution:

1. Switch off the system

2. Secure the system to prevent it switching back on

3. Check the system to ensure it is de-energized

4. Ground and short the system

5. Cover or shield adjacent live parts

Note

These safety steps must always be taken in the above order before any work on electrical systems. Once work on an electrical system is finished, cancel the safety steps starting with the last and finishing with the first.

Label the electrical system in accordance with the applicable safety provisions when work is to be carried out.

Always adhere to the safety provisions applicable in the country of use.

Strong high-frequency radiation

NOTICE
Observe immunity to RF radiation
The device has an increased immunity to RF radiation according to the specifications on electromagnetic compatibility in the technical specifications. Radiation exposure in excees of the specified immunity limits can impair device functions, result in malfunctions and therefore injuries or damages. Read the information on immunity to RF radiation in the technical specifications.

ESD

A device with electronic components is an electrostatic sensitive device. Due to their design, electronic components are sensitive to overvoltage and thus to the discharge of static electricity. Note the applicable regulations for ESD.

Safety during operation

⚠ WARNING
Danger of injury
If the HMI device is to be used for manual movements in setup mode and the enabling button is not active, there is a serious risk for the operating personnel. For a project used to set up a plant, make sure that each movement requires the operation of the enabling button. Only allow movements with the enabling button and at a reduced speed.

⚠ WARNING
HMI device failure
A strong shock or impact can impair the proper functioning of the Mobile Panel. After any mechanical shock or impact, check that the Mobile Panel and the safety-related parts are in working order.

Note

The emergency stop / stop button can be triggered unintentionally when the HMI device is dropped. This can result in an unintended shutdown of the plant.

Note

The function of the emergency stop / stop button must be checked regularly. See "Testing Mobile Panel readiness for operation (Page 70)".

Industrial Security

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens' products and solutions only form one element of such a concept.

Customer is responsible to prevent unauthorized access to its plants, systems, machines and networks. Systems, machines and components should only be connected to the enterprise network or the internet if and to the extent necessary and with appropriate security measures (e.g. use of firewalls and network segmentation) in place.

Additionally, Siemens' guidance on appropriate security measures should be taken into account. For more information about industrial security, please visit (http://www.siemens.com/industrialsecurity).

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends to apply product updates as soon as available and to always use the latest product versions. Use of product versions that are no longer supported, and failure to apply latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under (http://www.siemens.com/industrialsecurity).

Disclaimer for third-party software updates

This product includes third-party software. Siemens AG only provides a warranty for updates/patches of the third-party software, if these have been distributed as part of a Siemens software update service contract or officially released by Siemens AG. Otherwise, updates/patches are undertaken at your own risk. You can find more information about our Software Update Service offer on the Internet at Software Update Service (http://www.automation.siemens.com/mcms/automation-software/en/software-update-service).

Notes on protecting administrator accounts

A user with administrator privileges has extensive access and manipulation options in the system.

Therefore, ensure there are adequate safeguards for protecting the administrator accounts to prevent unauthorized changes. To do this, use secure passwords and a standard user account for normal operation. Other measures, such as the use of security policies, should be applied as needed.

2.2 Notes about usage

NOTICE
HMI device approved for indoor use only
The HMI device may be damaged if operated outdoors.
Operate the HMI device indoors only.

Note

Using an Ethernet data transmission rate of 100 Mbps

The Ethernet data transmission rate of 10 Mbps is not supported by Mobile Panels 2nd Generation.

Use a data transmission rate of 100 Mbps for communication with the device.

Industrial applications

The HMI device is designed for industrial applications. It conforms to the following standards:

- Requirements for emitted interference EN 61000-6-4 +A1
- Requirements for interference immunity EN 61000-6-2

Use in residential areas

Note

The HMI device is not intended for use in residential areas. The operation of HMI devices in residential areas can cause interference to radio and television reception.

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 RF interference level to Limit Class B, for example, is the use of filters in power supply lines.

Individual acceptance is required for these measures.

2.3 Risk analysis of the plant

Note

Risk analysis in an F-system is always required

A risk analysis must be performed for each F-system. The responsibility lies with the operator of the plant.

The following rules apply to the risk analysis of the plant:

● ISO 12100-1 and ISO 12100-2, General design guidelines for machines

● ISO 13849-1, Safety of machinery - Safety-related parts of control systems - General principles for design

● ISO 14121-1, Safety of machinery – Risk assessment – Part 1: Principles

The results of the risk analysis leads to the Performance Levels a to e in accordance with ISO 13849-1, which indicates how the safety-related system components must be designed if the stop or emergency stop functions are needed locally in a plant segment or globally throughout the plant and which operating mode is to be used for the HMI devices in a safety-related plant area.

Also refer to the technical specifications in the section "Mobile Panel (Page 165)", section "Fail-safe operation". Take the plant configuration as a whole into consideration in the risk analysis and not just the individual areas. Additional information on risk analysis and risk mitigation is available at:

"Safety Technology in SIMATIC S7" system manual (http://support.automation.siemens.com/WW/view/en/12490443)

2.4 Important information on emergency stop / stop button

⚠ **WARNING**

Emergency stop / stop button disabled when HMI device is not connected

When the fail-safe Mobile Panel is not connected to the connection box, an emergency stop or stop cannot be triggered with the HMI device.

Install a stationary emergency stop or stop button that will be available at all times on the F-system.

> ⚠ **WARNING**
>
> **Stop functions of Category 0 or 1 according to EN 60204-1**
>
> If a category 0 or 1 stop circuit is implemented, the stop function must be effective regardless of the operating mode. A category 0 stop must take precedence. Releasing the emergency stop / stop button must not lead to any dangerous state (see also EN 60204-1, Section 9.2.5.3).
>
> The stop function is not to be used as a replacement for safety equipment.

Hardwired F-system

The emergency stop / stop button can trigger a safe machine stop or be looped into the safety circuit of the F-system based on the configuration of the F-system. The signals of the emergency stop / stop button are wired differently in the connection boxes:

● For connection box compact and connection box standard: When the fail-safe Mobile Panel is not connected, the safety circuit is open.

● For the connection box advanced: When the fail-safe Mobile Panel is not connected, the connection of the safety circuit is bypassed and thus closed.

> **NOTICE**
>
> **Emergency stop / stop bypass only works with fail-safe operator panel**
>
> If you use a non-fail-safe HMI device with the connection box advanced and remove it from the connection box advanced, the safety circuit is opened and the relevant plant section or the plant goes into a safe state.
>
> Only use fail-safe Mobile Panels in conjunction with the connection box advanced in an F-system with emergency stop / stop bypass.

> **NOTICE**
>
> **Versions of the connection box**
>
> If you install connection boxes with and without emergency stop / stop bypass in your fail-safe automation system, there is a risk that an accidental shutdown is triggered when replugging an HMI device.
>
> In a fail-safe automation system, you should therefore only use "compact" and "standard" connection boxes together or "advanced" boxes only.

See also

2.5 Important notes for the enabling mechanism

In a numerically controlled plant, "setup mode" requires an enabling mechanism. The enabling mechanism consists of the enabling button installed on the HMI device and the corresponding logic in the HMI device.

The operating modes relevant for the enabling mechanism are:

● Setup mode

In setup mode, safety has to be ensured in a different way than in automatic mode. During setup mode, personnel enter danger zones of the plant in which controlled movements must be possible.

Movements must be executed with reduced speed in setup mode in line with the risk assessment of the plant. Movement of plant parts should only be possible when the enabling mechanism is activated. Operators must have been trained accordingly and have detailed knowledge of the intended use.

● Process monitoring in manufacturing

This operation mode is used for processing complex workpieces, for example, or in cases when parts of the workpiece cannot be inspected. This operating mode allows additional manual intervention in line with DIN EN 13128 "Safety of machine tools - Milling and boring machines". Unlike in automatic mode, the user is able to monitor and control the processing process with open separating protective devices.

Safety instructions

⚠ WARNING

Injury or material damage

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

● The person can see the danger zone.

● The person is capable of recognizing personal injury hazards in good time.

● The person is capable of taking immediate measures to avoid danger.

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

⚠ WARNING

Injury or material damage

If you trigger a command for a hazardous operating state with the enabling button only, there is a risk of injury or material damage.

A hazardous operating state requires a second, specific operation with another key on the HMI device. Consider this during configuration.

NOTICE
Enabling button must not be fixed
Fixing the enabling button in one of its positions can cause malfunctions in the fail-safe automation system.
Make sure that the enabling button is not being held permanently in any of its positions.

Note

The enabling button is effective when the HMI device is connected to a connection box. The following applies:

- "E-stop button evaluated by safety relay" operating mode
  The emergency stop button is lit.

- "Stop button evaluated by safety relay" operating mode
  The emergency stop / stop button is not lit with this operating mode..

Note

Removing a discrepancy error

The enabling button has two channels. Both contacts must be closed at the same time for the "enable" and "panic" switch positions. A discrepancy error is generated if one of the contacts is open while the other is closed. When a discrepancy error occurs, enabling is no longer possible. To reactivate enabling, press the enabling button once completely into the "panic" position and then release it.

See also

Operating the enabling button (Page 67)

Installing system components

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

3.1 Checking the scope of delivery

Check the scope of delivery for visible signs of shipping damage and make sure that it is complete, see section "Scope of delivery (Page 18)".

Note

Do not install parts damaged during shipment. In the case of damaged parts, contact your Siemens representative. See section "Service and support (Page 184)".

3.2 Mounting the connection box compact

3.2.1 Mounting position, mounting cutout and clearance

Mounting position

The connection box is designed for installation in the following types of fixed enclosure:

- Mounting cabinets
- Control cabinets
- Control panels
- Consoles

The connection box compact can be installed in any mounting position.

Mounting cutout

The degree of protection is guaranteed if the following conditions are met:

Material thickness at the mounting cutout	2 to 6 mm
Deviation from plane at the mounting cutout	≤ 0.5 mm This condition also applies for the installed connection box.
Surface roughness in the area of the mounting seal	≤ 120 µm (R_z 120)

The following illustration shows the dimensions for the mounting cut-out, all dimensions in mm:
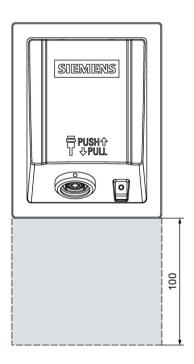
Clearance

The connection box is self-ventilated. To ensure self ventilation in the control cabinet and be able to connect the connecting cable without any problems, you need the clearance indicated in the figures below, all dimensions in mm:

Note that in addition to the mounting depth of the connection box, a rear clearance is required based on the leads and plugs used.

Note

Ensure that the maximum ambient temperature as detailed in "Operating Conditions (Page 160)" is not exceeded when installing the device in closed enclosure.

Allow for 80 mm of clearance below the connection box to enable you to easily plug in the connecting cable.

3.2.2 Fastening the connection box compact
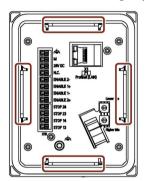
Read the instructions for work in and on electrical systems and on ESD in "General safety instructions (Page 25)".

Requirement

- 4 mounting clips
- 1 slotted screwdriver, size 2

Procedure

1. Check for damage to the mounting seal on the connection box.

   Do not install a connection box with a damaged mounting seal.

2. Insert the connection box in the mounting cutout.

   Secure the connection box to prevent it from falling out.

3. Place one mounting clip into each of the four cutouts marked.

4. Fasten the mounting clips.

   The permitted torque is 0.2 Nm.

You can find information on the electrical connection of the connection box in the section "Connecting the connection box (Page 50)".

3.3 Installing the connection box standard and connection box advanced

3.3.1 Mounting position and clearance

Mounting position
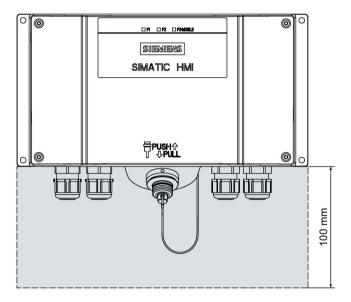
The connection box is designed to be mounted on a vertical surface of a stationary enclosure.

The connection box standard and connection box advanced can be installed in any mounting position.

Clearance

To ensure unhindered access to the interfaces, the clearance indicated in the figure below is required:

3.3.2 Fastening the connection box standard and connection box advanced

This section describes the mounting of the Anschuss box standard and the connection box advanced on a flat metal surface, such as a control cabinet wall.

Requirement

- 4 M5 cylinder head screws
- 1 suitable screwdriver

Procedure

In this example, the fastening described is outside of a control cabinet wall.

1. Hold the connection box on the area where you want to mount it.
2. Mark locations for the mounting holes.
3. Drill holes or threaded holes for the 4 cylinder head screws according to your requirements.
4. Attach the connection box.

See also

Dimension drawing for connection box standard and connection box advanced (Page 163)

3.4 Attaching the KTP Mobile wall-mounting bracket

3.4.1 Assembling the KTP Mobile wall-mounting bracket

The scope of supply for the wall-mounting bracket includes the following components:
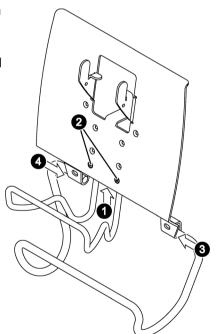
- Wall-mounting bracket
- Safety bar for the HMI device
- 2 screws for fastening the safety bar
- Holding bracket for the connecting cable

Requirement

- 1 T10 screwdriver

Procedure

1. Position the safety bar as shown in the figure.
2. Fasten the safety bar screws with the T10 screwdriver. The permitted torque is 0.8 Nm.
3. Slide the holding bracket for the connecting cable from one side into the mounting flange.
4. Slide the holding bracket for the connecting cable from the other side into the mounting flange until the holding bracket is aligned with the center of the wall-mounting bracket.

If you fasten the wall-mounting bracket to the mounting surface as described in the following section, the holding bracket is secured against lateral movement.

3.4.2 Mounting position and clearance

Mounting position

The KTP Mobile wall-mounting bracket is designed for vertical walls or one of the following types of enclosures:

- Mounting cabinets
- Control cabinets
- Control panels
- Consoles

The wall-mounting bracket can be installed vertically or tilted slightly backwards.

⚠ CAUTION
The wall-mounting bracket must be mounted securely
If the wall-mounting bracket is not mounted securely, it can fall off together with the HMI device and the connecting cable. This can result in personal injury or material damage.
Select a mounting location with sufficient load-carrying capacity for the total weight of the wall-mounting bracket, HMI device and connecting cable. Choose the corresponding fixing material.
Weight information is available in section "Technical specifications (Page 165)".

NOTICE
Do not attach the wall-mounting bracket to a moving or vibrating enclosure
When attaching the wall-mounting bracket to a moving or vibrating enclosure, the Mobile Panel can fall out of the wall-mounting bracket.
Only attach the wall-mounting bracket on a motionless and vibration-free enclosure.

Note
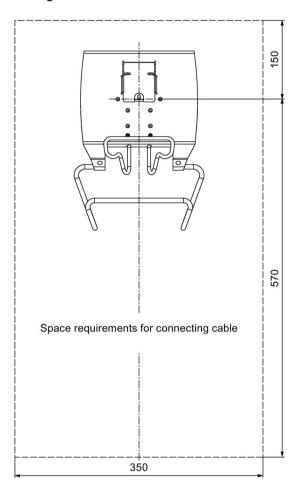
A position at eye level facilitates operation of the Mobile Panel when it is mounted in the wall-mounting bracket.

If you want to operate the HMI device in a stationary position, note the length of the connecting cable to the connection box when selecting the location for the KTP Mobile wall-mounting bracket.

Clearance

Consider the space required for the connecting cable used and the height that the HMI device extends up and over the wall-mounting bracket.

The figure below shows the minimum clearance required around the wall bracket.

Space requirements for connecting cable

All dimensions in mm

3.4.3 Fasteneing the KTP Mobile wall-mounting bracket
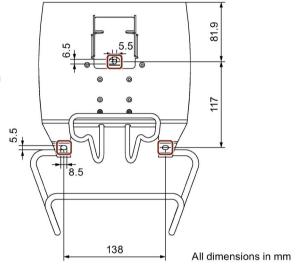
Requirement

The requirements refer to the installation of the wall-mounting bracket to a control cabinet.

- A level bolting surface
- 3 M5 bolts and a suitable screwdriver
- 3 M5 nuts and a suitable wrench

Procedure

1. Place the wall-mounting bracket level on the mounting surface.
2. Mark the drill holes at the indicated locations in the figure on the right.
3. Drill 3 holes for M5 type bolts based on your mounting requirements.
4. Fasten the wall-mounting bracket with the bolts and nuts.

All dimensions in mm

See also

KTP Mobile wall-mounting bracket dimension drawing (Page 164)

3.5 Connecting the Mobile Panel

3.5.1 Connection information

The Mobile Panel is supplied with an open terminal compartment. During commissioning, you will be working with an open terminal compartment when replacing the SD card or when replacing the connecting cable. To avoid damage to the HMI device, read the information in the section "General safety instructions (Page 25)" about working in and on electrical systems and about ESD.

NOTICE

Foreign objects and liquids

Foreign objects or liquids can cause a short-circuit inside the HMI device and damage the HMI device accordingly.

Pay attention to cleanliness. Keep foreign objects and liquids away while working on the terminal compartment of the HMI device.

Connection sequence

Keep to the following connection sequence:

- SD memory card, if required
- KTP Mobile connecting cable
- Connection box
- Configuration PC, if required

3.5.2 Inserting the SD memory card

All Mobile Panels 2nd Generation, with the exception of the KTP400F Mobile, have a slot for an optional SD memory card. If you do not want to install an SD memory card, you can skip this section during commissioning.

Note

SD card either for automatic backup or for data storage

For HMI devices with a slot for an SD memory card: You can use the SD memory card either for automatic backup or for data storage, e.g. for archiving.

The "automatic backup" and "archiving" functions cannot be used at the same time on the SD memory card.

Note

Use only a SIMATIC HMI Memory Card

Use only a SIMATIC HMI Memory Card with the Mobile Panel.

NOTICE
Unsuitable tools may damage the Mobile Panel
To avoid damaging the motherboard of the Mobile Panel, insert or remove the SD memory card with an appropriate tool made of plastic.

Requirement

- The Mobile Panel is deenergized.
- The terminal compartment is open.
- The connection cable is not attached.
- You have taken precautions to protect your device, see section "Connection information (Page 43)".
- A suitable tool made of plastic

Procedure

Inserting the SD memory card

1. Turn the storage medium so that the contacts are pointing towards the motherboard.
2. Push the storage medium into the slot with the suitable tool.

See also

Replacing the Mobile Panel (Page 151)

3.5.3   Connecting the Mobile Panel connecting cable

The connecting cable is a system component and is required for the operation of the Mobile Panel.

Use a cable labeled "Connecting cable KTP Mobile".

Note

If you use an SD memory card, you must insert the SD memory card before installing the connecting cable. See section "Inserting the SD memory card (Page 43)".

Requirement

- You have taken precautions to protect your device, see section "Connection information (Page 43)".
- Phillips screwdriver, size 2

Procedure

1. Plug the connector into port X80.

   Note the mechanical coding on the connector.

2. Plug in the RJ45 connector at port X1.

   Make sure that the connector audibly engages.

3. Place the terminal compartment cover over the terminal compartment. Tighten the corresponding screws using a torque of 0.2 Nm.

Note

- When closing the terminal compartment cover, make sure that the corresponding seal is undamaged and properly seated. Degree of protection IP65 is otherwise not guaranteed.
- Make sure that the cables in the terminal compartment are not bent too much.
- When closing the terminal compartment cover, be careful not to trap the cables.

---

4. All Mobile Panels 2nd Generation with the exception of the KTP400F Mobile: Attach the retainer.
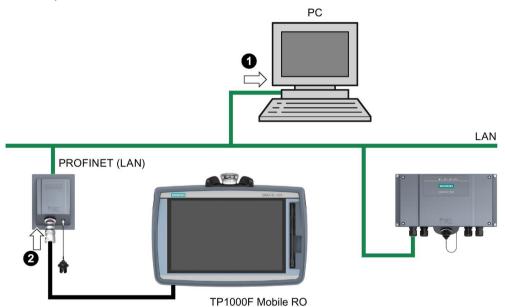
3.5.4 Connecting PC and server

When you update the operating system on the HMI device or want to reset the HMI device to factory settings, you have the transfer the image once again to the HMI device.

Procedure

1. Connect the PC to an Ethernet network.

2. Connect the HMI device to a connection box which is connected to the PC via the Ethernet network.

3. Start to transfer the image using the ProSave software (see section "Updating the HMI device image (ProSave) (Page 125)").

The figure below shows an example of how to connect the HMI device to a connection box compact.

Connecting the server

Just as you would connect a PC, you can connect a Panel PC as server to the HMI device as a server via the connection box.

3.5.5 Replacing the connecting cable

Requirement

- The connecting cable is unplugged from the connection box.
- You have taken precautions to protect your device, see section "Connection information (Page 43)".
- Phillips screwdriver, size 2

Procedure

Open

1. Place the HMI device on its front.

   hhh

① Screws for terminal compartment cover
② Retainer
③ Screw for the retainer
④ Connecting cable

2. Loosen the screw ③.
3. Loosen the screws ① of the terminal compartment cover.
4. Lift the terminal compartment cover to expose the connecting cable.

Replacing the connecting cable and closing the terminal compartment

1. Remove the RJ45 plug from the X1 port.
2. Remove the connector from the X80 port.
3. Remove the connecting cable.
4. Position the replacement cable so that the terminal compartment cover fits exactly over the terminal compartment.
5. Position the end of the connecting cable in the guide.

6. Plug the connector into port X80. Note the mechanical coding on the connector.

7. Plug in the RJ45 connector at port X1. Make sure that the connector audibly engages.

8. Place the terminal compartment cover over the terminal compartment. Tighten the corresponding screws using a torque of 0.2 Nm.

Note

- When closing the terminal compartment cover, make sure that the corresponding seal is undamaged and properly seated. Degree of protection IP65 is otherwise not guaranteed.
- Make sure that the cables in the terminal compartment are not bent too much.
- When closing the terminal compartment cover, be careful not to trap the cables.

---

9. Attach the retainer.

See also

Connecting the Mobile Panel connecting cable (Page 45)

3.5.6   Replacing an SD memory card

All Mobile Panels 2nd Generation, with the exception of the KTP400F Mobile, have a slot for an optional SD memory card.

Note

Use only a SIMATIC HMI Memory Card

Use only a SIMATIC HMI Memory Card with the Mobile Panel.

NOTICE
Unsuitable tools may damage the Mobile Panel
To avoid damaging the motherboard of the Mobile Panel, insert or remove the SD memory card with an appropriate tool made of plastic.

Requirement

- The Mobile Panel is deenergized.
- The terminal compartment is open.
- The connecting cable is removed.
- You have taken precautions to protect your device, see section "Connection information (Page 43)".
- A suitable tool made of plastic for gripping the SD memory card
- Phillips screwdriver, size 2

Procedure

Removing the SD memory card

1. Grab the SD memory card with an appropriate tool.

2. Pull the SD memory card from the slot to the center of the terminal compartment.

Inserting a new SD memory card

1. Turn the SD memory card so that the contacts are pointing towards the motherboard.

2. Push the SD memory card into the slot with the appropriate tool.

3. Attach the connecting cable to the Mobile Panel.

4. Close the terminal compartment cover.

5. Fasten the retainer.

6. Connect the Mobile Panel to a connection box.

    When the "Use system card?" dialog appears on the display, confirm the message.

3.5.7 Inserting the USB memory stick

The USB port is used to transfer data and save specific HMI device data.

NOTICE
USB port only enabled for USB flash drive
The USB port is only enabled for use with a USB flash drive for commissioning and maintenance purposes.
IP65 degree of protection with a USB flash drive not guaranteed
When a USB flash drive is connected to the USB port, the Mobile Panel does not conform to an IP65 degree of protection.
Do not connect a USB device if dust or moisture can enter the HMI device.

Requirement

● An industrial-grade USB flash drive

Procedure

1. Remove the cover cap of the USB port.

2. Insert the USB flash drive into the slot.

See also

Storage media (Page 20)

Functions for service and commissioning (Page 117)

3.6   Connecting the connection box

3.6.1   Connection information

⚠ CAUTION
Properties of cables to be used
Note the Specification of cables to be used (Page 173) before you start connecting. Use only cables that meet the specification.
Use shielded standard cables for all remaining data cables. You can find information on standard cables and additional information at: Industry Mall (https://mall.industry.siemens.com)

NOTICE
Foreign objects or liquids
Foreign objects or liquids can cause a short-circuit inside the connection box and damage the connection box or HMI device accordingly.
Pay attention to cleanliness. Keep foreign objects and liquids away while working on the connection box.
Take care when working on the connection box that conducting materials, such as bare cable leads, do not come into contact with the electrical circuits.

Connection sequence

NOTICE
Potential damage to property with incorrect connection sequence
Failure to adhere to the connection sequence can damage the connection box.

Connect the connection box in the following sequence:

1. Functional grounding

2. Power supply

3. Control via PROFINET (LAN)

4. Other Ethernet devices, such as an additional connection box

See also

General safety instructions (Page 25)

3.6.2 Opening and closing connection box standard and connection box advanced

The connection boxes standard and advanced must be opened for connecting and setting the box ID. To avoid damage to the connection box, read the information in the section "General safety instructions (Page 25)" about working in and on electrical systems and about ESD.

Requirement

● The connection box is de-energized.
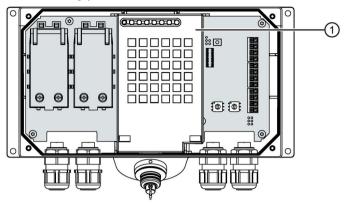
● Screwdriver, T10

Procedure

Open

① Cover
② Screws

1. Loosen the 4 screws ②.

2. Lift the cover ① carefully, because the seal may stick to the lid and can be pulled out.

3. Remove the screws and the cover.

   The following protective cover is visible:

①   Protective cover

NOTICE
Damage to the connection box
Without a protective cover, there is a risk that the electronics of the connection box are damaged or destroyed.
Do not remove the protective cover.

Close

Follow the steps for opening in reverse order.

NOTICE
Permissible torque
The connection box enclosure is made of plastic. Therefore, the mounting hole threads cannot handle the same amount of stress as a comparable metallic enclosure. If the screws are tightened with too great a torque or more than 20 times, there is risk of damage to the thread.
Do not exceed the maximum permissible torque of 0.4 – 0.5 Nm when tightening the screws.

Note

During assembly, make sure that the seal for the cover is inserted and not damaged. Otherwise degree of protection IP65 is not ensured.

3.6.3 Equipotential bonding of connection boxes

Potential differences

Differences in potential between separated plant components can lead to high equalizing currents over the data cables, destroying the circuits. This situation may arise if the cable shielding is terminated at both ends and grounded at different system parts.

Differences in potential can also be caused by different mains supplies.

General requirements for equipotential bonding

Differences in potential must be reduced far enough with equipotential bonding conductors to ensure error-free operation of the relevant electronic components. The following information must therefore be observed when installing the equipotential bonding:

- The effectiveness of equipotential bonding increases as the impedance of the equipotential bonding conductor decreases or as its cross-section increases.

- If two plant sections are interconnected by means of shielded data cables and their shielding is connected at both ends to the grounding/protective conductor, the impedance of the additionally installed equipotential bonding conductor must not exceed 10% of the shielding impedance.

- The cross-section of a selected equipotential bonding conductor must be capable of handling the maximum equalizing current.

  Experience has shown that the best equipotential bonding between two control cabinets is achieved by following the instructions in "Directives for interference-free installation of programmable logic controllers (http://support.automation.siemens.com/WW/view/de/1064706)".

- Use equipotential bonding conductors made of copper or galvanized steel. Connect the equipotential bonding conductors to the ground / protective conductor over a wide area. Protect the equipotential bonding conductors against 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.
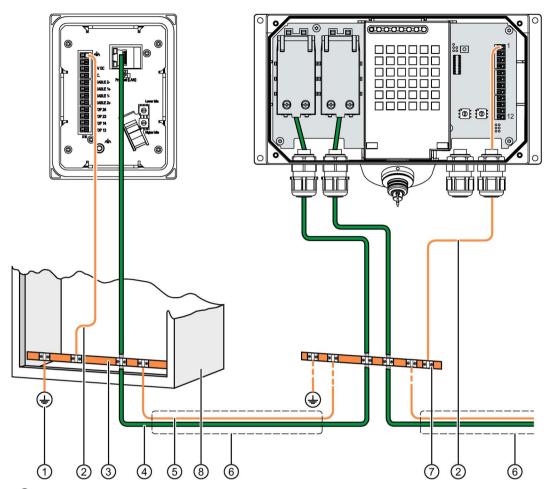
Note

Cable shielding is not suitable for equipotential bonding. Always use the prescribed equipotential bonding conductors. When installing PROFINET networks, always use cables with a sufficient cross-section. Otherwise, there is a risk that interface components will be damaged or destroyed.

Connection graphic

The figure below shows how to connect the equipotential bonding of the connection boxes to the equipotential busbars.

① Ground connection

② Equipotential bonding conductor, cross-section 1.5 mm²

③ Equipotential busbar

④ PROFINET cable

⑤ Equipotential bonding conductor, cross-section ≥ 16 mm²

⑥ Parallel routing of the equipotential bonding conductor and data cable

⑦ Cable clip

⑧ Control cabinet

3.6.4 Connecting the functional grounding and power supply to the connection box

The power supply for the HMI device is connected to a terminal strip in the connection box. The connection box has reverse polarity protection.

⚠ WARNING

24 V DC power supply

If the supply voltage is outside the specified range, it may cause the HMI device to malfunction. This can result in personal injury or material damage.

Use a 24 V DC power supply with the following properties for the connection box:

- Safe electrical isolation according to IEC 60364-4-41 or HD 384.04.41 (VDE 0100, Part 410).

- The power supply provides safety extra-low voltage according to SELV/PELV up to a maximum of 36 V DC and also does not exceed $_m$ = 36 V DC in case of fault. Refer to the information in the data sheet for overvoltage protection in the event of an internal error or take appropriate voltage-limiting measures, such as the use of a surge protection device.

NOTICE

External protective circuit

An external protective circuit is required for operation with 24 V DC; please refer to section 7 "Lightning protection and overvoltage protection" in the following function manual: "Designing interference-free SIMATIC S7-1500, ET 200MP, ET 200SP, ET 200AL controllers (https://support.industry.siemens.com/cs/ww/en/view/59193566)".

Requirement

- The power supply meets the requirements set out in "Technical specifications (Page 165)".

- The connection box standard or advanced is open.

- The power cable wires have been stripped by 6 mm.

- Power supply cables and equipotential bonding conductor, cross-section 1.5 mm^2
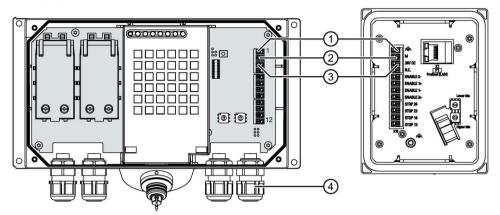
- Wire end ferrules $\varnothing$ 0.5 mm.

Procedure

1. For connection box standard and connection box advanced

   Thread the cables through the corresponding screw glands.

2. Place a wire end ferrule on each wire to be connected.

3. Insert the wire ends into the corresponding spring-loaded terminal as shown in the figures below.

   The figure below shows the contacts to be connected to the X10 terminal of the connection box.

①   Connection for the functional grounding
②   M24
③   P24
④   Screw gland

4. Connect the equipotential bonding conductor to the equipotential busbar.

5. Connect the equipotential bonding conductor to the terminal for the functional ground of the connection box.

   Connect the equipotential bonding conductor of the connection box as described in the section "Equipotential bonding of connection boxes (Page 53)".

Note

Applies to floating system design:

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

---

6. For connection box standard and connection box advanced:
   When all the required work has been completed in the connection box, close it.

See also

General safety instructions (Page 25)

3.6.5 Connecting cables for a hardwired F-system

The signals for the emergency stop / stop button and the enabling button must be wired for a hardwired F-system.

NOTICE
Length of the data cables to the connection box
If the permissible length of the data cables and signal cables between a connection box and the plant is exceeded, malfunctions may occur. Keep the permissible length of ≤ 30 m for cables to the connection box.

Requirement

- The connection box standard or advanced is open.
- The power cable wires have been stripped by 6 mm.
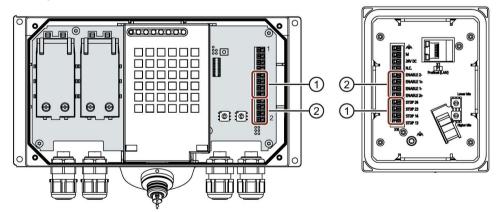- Wire end ferrules ⌀ 0.5 mm.

Procedure

1. Connection boxes standard and advanced:

   Thread the cables through the corresponding screw glands.

2. Place a wire end ferrule on each wire to be connected.

3. Insert the wire ends into the corresponding spring-loaded terminal as shown in the figures below.

   The figure below shows the terminals to be connected on the connection box.

①   Terminal for the emergency stop / stop button
②   Terminal for the enabling button

4. Connect the cables. Depending on the connection box, observe the pin assignment of interface X10:

   – Connection box standard and connection box advanced (Page 179)

   – Connection box compact (Page 176)

5. For connection box standard and connection box advanced:
   When all the required work has been completed in the connection box, close it.

See also

General safety instructions (Page 25)

Immunity to interferences (Page 159)

3.6.6 Connecting Ethernet to the connection box

The following devices can be connected to a connection box via PROFINET:

- A PLC

  The possible PLCs are listed in "SIMATIC PROFINET system description (https://support.industry.siemens.com/cs/us/en/view/19292127)".

- An Ethernet device

Note

- Only use a switch or comparable device to connect the connection box to public Ethernet networks.
- Follow the information in the "SIMATIC PROFINET system description (https://support.industry.siemens.com/cs/us/en/view/19292127)" manual for setting up a PROFINET network.

Requirement

- The connection box is mounted.
- Connection box compact:
  - 1 preassembled Ethernet cable including Ethernet connector.

    Recommendation: Use an angled connector, for example, an RJ45 connector with article number 6GK1901-1BB20-2Ax0.
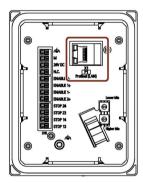
    x stands for the variant key of the article number.
- Connection boxes standard and advanced:
  - The connection box is open.
  - 1 Ethernet cable (not preassembled)
  - 1 screwdriver, PZ 2
  - 1 stripping tool

    See the online catalog at "Industry Mall (https://mall.industry.siemens.com)".

Procedure

Connection box compact

1. Plug the RJ45 connector on the Ethernet cable into the interface indicated.

Note

LEDs on the RJ45 socket not active

The two LEDs at the RJ45 socket of the connection box compact are not supported by the hardware and do not light up during operation.
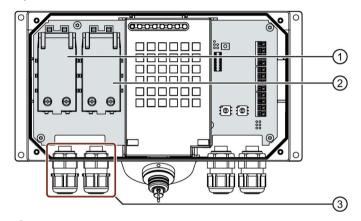
Connection boxes standard and advanced

1. Strip the insulation on the Ethernet cable as shown in the figure below.

All specifications in mm

| 30 | 12 |

2. Open fast connector 1.

①	Fast connector 1
②	Fast connector 2
③	Screw gland

3. Push the Ethernet cable through the screw gland and connect the wires as detailed in the interface description in "Internal interface X1 P1 (Page 174)".

4. Close the fast connector.

   Closing the fast connector establishes the contact to the wires in the Ethernet cable.

5. Tighten the screw cap on the screw gland.

   Degree of protection IP65 is only ensured once the screw cap has been tightened.

6. Once all the required work in the connection box has been completed, close it.

3.6.7 Setting the box ID of the connection box

You need to set a box ID for each connection box. The box ID must be valid and is transferred to the RemoteOperate Server. The server can identify the client using the box ID.

Note

You need to set a box ID for each connection box. Do not assign the same box ID twice.
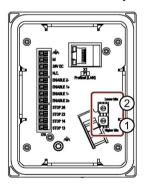
Note

Changing the box ID of a connection box

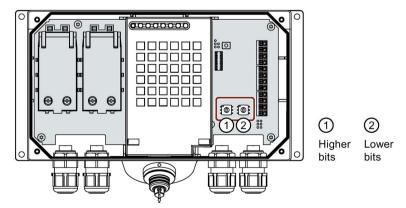Observe the following information when changing the box ID of a connection box:

* If you want to change the box ID of a connection box, remove the connection box from its power supply before you set the box ID with the rotary coding switch.
* After you have confirmed the changed box ID in the dialog "Safety operation", unplug the HMI-device connecting cable from the connection box and then plug it into the connection box again.

Rotary encoder switch

* Position of the rotary coding switch in the connection box compact

* Position of the rotary coding switch in the connection boxes standard and advanced

Requirement

- For connection box standard and connection box advanced: The connection box is open.
- The connection box is disconnected from its power supply.
- A suitable tool made of plastic

Procedure

1. Rotate the arrows of the rotary coding switch to the required hexadecimal value using a suitable tool.
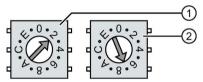
   Values from "00" to "FF" (0 to 255 in decimal form) can be set with the rotary coding switches.

   When setting the box ID:

   – Use the value "00" only for the "Stop button evaluated by safety relay" operating mode.

   – The value "FF" (255) is reserved and may not be used.

   Example:
   The figure below shows an example of the rotary coding switch for a connection box standard. "27H" (39 in decimal form) is set for the box ID as an example.

   ①   Rotary encoding switch for more significant bits

   This is the lower rotary coding switch in the connection box compact and the left rotary coding switch in the connection boxes standard and advanced.

   ②   Rotary encoding switch for less significant bits

2. For connection box standard and connection box advanced:
   When all the required work has been completed in the connection box, close it.

See also

Assigning a safety-related operating mode (Page 115)

Parameterizing the Mobile Panel (Page 73)

3.6.8 Secure cables and seal screw glands

Once all cables are connected to the connection box, the following final steps should be carried out:

- Connection box compact: Strain relief for cables on the back of the connection box
- Connection box standard and connection box advanced: Seal and secure screw glands

Requirement

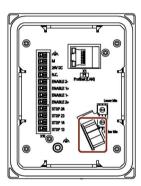For the connection box compact:

- 1 cable tie
- 1 diagonal cutter

For connection box standard and connection box advanced:

- The connection box is closed.

Procedure

Connection box compact

- Secure all connected cables with a cable tie on the fastening element, which is labeled in the figure on the right.

Connection box standard and connection box advanced

1. Check that caps are covering the screw glands not in use.
2. If a cap is missing, replace it.
3. Tighten the screw cap.

This will ensure IP65 degree of protection for the connection box standard or the connection box advanced.

3.7 Connecting the KTP Mobile connecting cable to the connection box

The connecting cable can be connected to the connection box using a circular connector. The connector is coded to prevent faulty insertion. The connecting cable is described in the section "KTP Mobile connecting cable (Page 14)".

①   Positioning mark
②   Outer sleeve

Procedure

Connecting

1. Align the positioning mark of the connector with the positioning mark on the socket of the connection box.

2. Insert the connector into the socket of the connection box.

   Additional characteristics of the Mobile Panel are described in the section "Testing Mobile Panel readiness for operation (Page 70)".

   The information in the section "Fail-safe operation (Page 149)" also applies to fail-safe HMI devices.

Unplugging

1. Pull the outer bushing.

   Do not tilt the connector when removing it.

2. If you do not intend to use the HMI device with a different connection box, place the HMI device in its wall-mounting bracket.

Note

- Wait for about 1 second after you have unplugged the connecting cable from the connection box before you plug in the connecting cable again.
- The socket of the connection box has IP65 degree of protection when the connecting cable is plugged in or the cover cap in installed.

See also

Connecting the connecting cable (Page 149)

Handling the Mobile Panel

4

4.1 Holding the Mobile Panel and attaching it to the wall-mounting bracket

Holding the HMI device

The figure below shows the device being held on the forearm.

When holding the Mobile Panel as shown, you can, for example, perform movements in the fail-safe automation system during setup mode.

The HMI device is easy to operate when held on the forearm as shown. With your free hand, you can reach the front of the device and the emergency stop / stop button. You can activate the enabling button with the hand holding the HMI device. The enabling button is optimally accessible.

NOTICE

Holding the HMI device during setup mode

Potentially dangerous movements can be controlled manually if setup mode is activated.

To ensure that the emergency stop / stop button and enabling button can be operated quickly in a dangerous situation, the HMI device must be held on your forearm as shown.

If you are only entering data and are not controlling potentially dangerous movements, you can hold the HMI device with both hands on the left and right instead of on your forearm.

Using the HMI device in a fixed position

A wall-mounting bracket is available for securely fixing the HMI device in position. You can place the HMI in the wall-mounting bracket and operate it as a stationary device. Observe the necessary organizational measures as described in the section "Organizational measures (Page 24)".

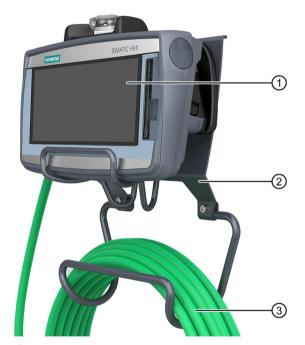| NOTICE |
| --- |
| **Operability of the emergency stop / stop button** |
| Placing the HMI device into an unsuitable wall-mounting bracket can impair the operability of the emergency stop / stop button. |
| Only use the KTP Mobile wall-mounting bracket (Page 19). |

Note

If the HMI device with the KTP Mobile connecting cable is not connected to the connection box, the emergency stop / stop button has no function. Potentially dangerous movements cannot be stopped.

The figure below shows the mounted HMI device.

①   HMI device
②   KTP Mobile wall-mounting bracket
③   KTP Mobile connecting cable

4.2   Operating the enabling button

The enabling mechanism comprises one integrated enabling button with three settings.

The signals of the enabling button are evaluated internally and sent to the connection box over the connecting cable. For setup mode, these signals must be wired dual-channel from the connection box to the F-system.
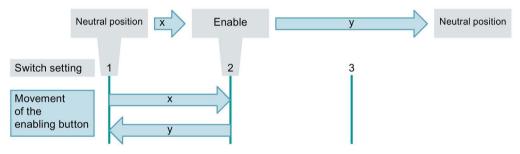
Requirement

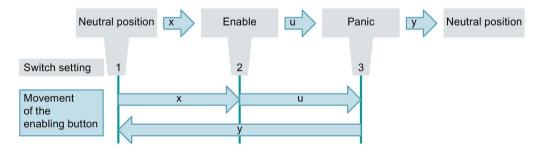● The HMI device is connected to a correctly installed connection box.

Procedure

1. Press the enabling key to switch position 2 or 3.

Switch position	Function	Enabling button switch status
1	Neutral position	Opened
2	Enable	Closed
3	Panic	Opened

   – The figure below shows the switching sequence for normal operation.

   – The figure below shows the switching sequence for panic operation.

2. Release the enabling button.

   If the enabling button is in switch position "3", the "Enable" setting is skipped when the button is released.

Note

Releasing the enabling button and the "Panic" switch position do not require acknowledgement of the safety shutdown.

4.3 Pressing the emergency stop / stop button

The emergency stop / stop button on the HMI device is an optional operator control. The emergency stop / stop button is designed with two circuits and enables a safety-related emergency stop or stop of the fail-safe automation system.

Note

- Whether the emergency stop / stop button has the "emergency stop" or "stop" function depends on the configuration of the plant and the parameter settings of the HMI device.
- If the emergency stop / stop button is configured and wired for the "emergency stop" function, the emergency stop / stop button lights up as soon as the "emergency stop" function becomes available.
- An emergency stop or stop can only be triggered when the fail-safe HMI device is attached to a connection box.

For a hardwired F-system:

- When a SIRIUS safety relay is used, the emergency stop / stop button meets the requirements of Safety Category 3 in accordance with EN ISO 13849--1.

- When you unplug the connecting cable from the connection box, the emergency stop circuit is either opened or automatically bypassed, depending on the connection box used.

Requirement

- The HMI device is connected to a correctly installed connection box.

Procedure

Note

Only press the emergency stop / stop button to avoid imminent danger. If you want to activate the emergency stop / stop button for test purposes, consult those responsible for the plant in advance.

1. Press the emergency stop / stop button. The system responds with an emergency stop or a stop.

2. Release:

> ⚠️**WARNING**
>
> **Release requirements**
>
> If you have operated the emergency stop / stop button and thereby shut down the fail-safe automation system, a situation entailing danger may still remain.
>
> You are only allowed to release the emergency stop / stop button under the following conditions:
> - The cause of the emergency stop / stop has been eliminated.
> - A safe hot restart of the fail-safe automation system is possible.

Turn the emergency stop / stop button to release it. The button jumps back to its initial position.

See also

SIRIUS safety relay (Page 20)

Assigning a safety-related operating mode (Page 115)

4.4 Testing Mobile Panel readiness for operation

This section describes how to check the operational readiness of the Mobile Panel after you have connected the connecting cable and, if necessary, a memory card to the Mobile Panel.

Requirement

- A connection box compatible with the HMI device is in place and ready for operation.

  See "Mobile Panel and connection box compatibility (Page 24)".

Procedure

Power on

1. Plug the connecting cable into the connection box.

   If the HMI device does not start, the wires at interface X10 in the connection box may have been crossed. Check the connected wires and change the connections if necessary.
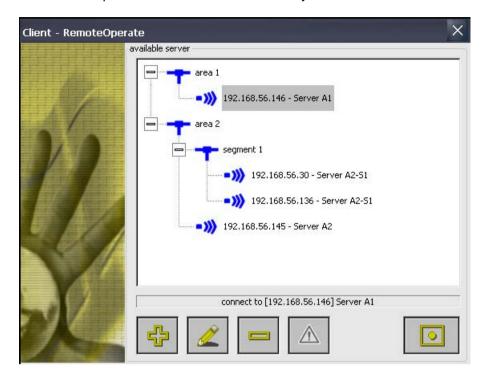
   When plugging and unplugging the connecting cable, follow "Mobile Panel and connection box compatibility (Page 24)". The HMI device display lights up once the cable is connected. A start screen is displayed during startup. The desktop with the Start Center is then displayed, see section "Desktop and Start Center (Page 73)".

2. The "Safety operation" dialog appears.

   The dialog is displayed if the connection box has not been configured. The dialog does not open if the HMI device is connected to a configured connection box.

   You can find additional information in the section "Assigning a safety-related operating mode (Page 115)".

The RemoteOperate Client starts when the delay time comes to an end.

The HMI device is ready for operation when the server selection list is displayed, see section "Using a client (Page 131)".

Testing the enabling button and emergency stop / stop button function

Note

Before testing the enabling button and emergency stop / stop button functions, read the information in the following sections:

- "Operating the enabling button (Page 67)"
- "Pressing the emergency stop / stop button (Page 68)".

The HMI device must be connected to a connection box for the function test.

1. Press down the acknowledgment button until it engages.

   Check whether the plant switches to the safe operating state described in the plant documentation.

2. Press the emergency stop / stop button.

   Check whether the system switches to the safe operating state as specified in the plant documentation.

Switching off

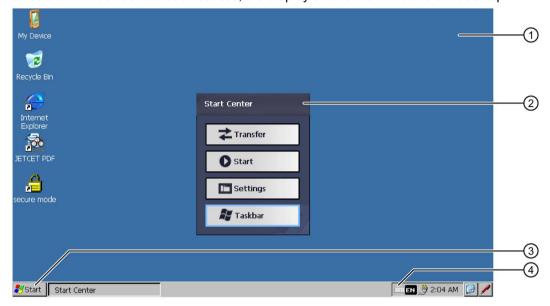1. Pull out the connecting cable from the connection box.

   The display switches off. If you do not connect the connecting cable to a connection box within the next 5 minutes, the HMI device switches off.

See also

Connecting the KTP Mobile connecting cable to the connection box (Page 64)

Fail-safe operation (Page 149)

Parameterizing the Mobile Panel

<div align="right">

5

</div>

5.1 Desktop and Start Center

Once the HMI device has been started, the display shows the Windows CE desktop.

①	Desktop
②	Start Center
③	Start menu
④	Icon for screen keyboard

The Start Center

The Start Center buttons have the following function:

- Transfer – You switch the HMI device to "Transfer" mode.
  The transfer is only activated if at least one data channel has been parameterized, see section "Configuring transfer (Page 94)".
- Start – You start RemoteOperate Client.
  If you do not execute a command, RemoteOperate Client starts automatically after the delay time set in the Control Panel.

  If the connection box is not configured correctly, RemoteOperate is closed automatically and you will see an error message. You will find additional information in the section "Using a client", "Alarm window".
- Settings – You start the Control Panel.
  See section "Overview of functions (Page 77)".
- Taskbar – Opens the taskbar and the Windows CE start menu.

The Start Center is displayed again when the RemoteOperate software has been closed.

See also

Restarting the HMI device (Page 86)

5.2 Operating the desktop, Start Center and Control Panel

You can operate the Windows user interface and the Start Center with the touch screen.

The operator controls shown in the dialogs are touch-sensitive. Touch objects are operated in the same way as mechanical keys. You activate an operator control by pressing on it. To double-click, touch an operator control twice in succession.

Note

Damage to the touch screen

Do not touch the touch screen with pointed or sharp objects. Avoid applying excessive pressure to the touch screen with hard objects. Both will substantially reduce the service life of the touch screen and can even lead to total failure.

Always operate the touch screen of the HMI device with your fingers or with a touch pen.

See also

Configuring transfer (Page 94)

5.3 Installed programs

Installed programs

The following programs are installed on the HMI device:

Installed programs	Icon	File formats
PDF Viewer		PDF
Internet Explorer		HTML

The programs can be found on the desktop or in the Start menu under "Programs".

The PDF viewer feartures a zoom function. You can find additional information on the programs on the Microsoft website.

Internet Explorer

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

The Internet Explorer for Windows CE differs in functionality from the Internet Explorer of the MS operating systems. Internet Explorer for Windows CE has separate proxy settings that are independent of the settings described in the section "Setting the proxy server (Page 102)".

5.4 Security mode

5.4.1 Overview

You can protect the desktop icons, the taskbar and the "Settings" and "Taskbar" buttons in the Start Center from unauthorized access. Security mode prevents unauthorized access.

Security mode can be activated if you have assigned a password as described in the section "Entering and deleting a password (Page 90)". If the password is not entered, only the "Transfer" and "Start" buttons can be operated.
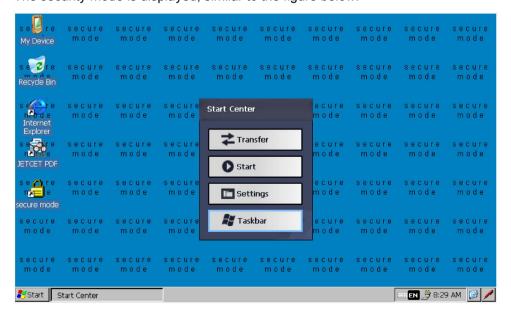

NOTICE

Keeping the password

If the password is no longer available, you have no access to the Control Panel and the taskbar. Backup password to protect it against loss.

5.4.2 Using the HMI device in password-protected security mode

If security mode has been activated, only the "Transfer" and "Start" buttons can be operated without a password. To deactivate security mode, delete the password as described in "Entering and deleting a password (Page 90)".

Requirement

- A password has been assigned as described in "Entering and deleting a password (Page 90)".

- The security mode is displayed, similar to the figure below:

Procedure

1. Operate a password-protected desktop icon, the taskbar or the "Settings" or "Taskbar" button in the Start Center.

   The following dialog appears:

2. Enter the required password.

3. Confirm your entry with "OK".

   The dialog will close and the selected operator control open.
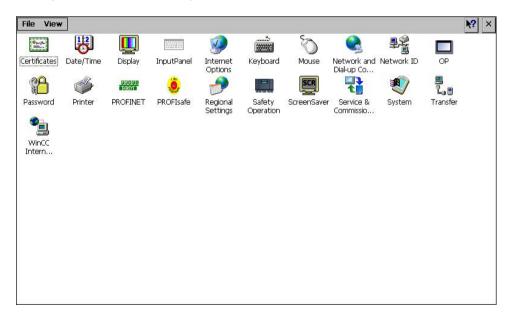
5.5 Control Panel

5.5.1 Opening the settings

The Control Panel can be opened as follows:

- With the "Settings" button in the Start Center.

- In the Windows CE start menu with "Settings > Control Panel".

The figure below shows the open Control Panel.

5.5.2 Overview of functions

The table below shows the icons of the Control Panel and provides links to the corresponding function descriptions in the appropriate sections.

Icon	Functional description
	Importing, displaying and deleting certificates (Page 106)
	Setting the date and time (Page 89)
	Changing display brightness (Page 81)
	Configuring the screen keyboard (Page 82)
	Changing general settings (Page 101)
	Setting the proxy server (Page 102)
	Changing Internet security settings (Page 103)
	Activating encryption protocols (Page 105)
	Setting the character repeat rate of the screen keyboard (Page 83)
	Setting the double-click (Page 84)
	Specifying the IP address and name server (Page 113)
	Specifying the logon data (Page 114)
	Backing up registry information and temporary data (Page 98)
	Displaying information about the Mobile Panel (Page 99)
	Restarting the HMI device (Page 86)
	Display firmware (Page 100)
	Calibrating the touch screen (Page 85)
	Entering and deleting a password (Page 90)
	Changing the printer settings: Not relevant
	Server time (Page 109)
	Checking the PROFINET IO settings (Page 108)
	Setting the PROFIsafe address: Not relevant
	Regional and language settings (Page 88)
	Assigning a safety-related operating mode (Page 115)
	Setting the screen saver (Page 92)
	Saving to external storage medium – backup (Page 117)
	Restoring from external storage medium – Restore (Page 120)
	Backing up and restoring data (ProSave) (Page 123)

Icon	Functional description
	Updating the HMI device image (ProSave) (Page 125)
	Using automatic backup (Page 127)
	Displaying general system properties (Page 99)
	Displaying memory distribution (Page 95)
	Specifying the computer name of the HMI device (Page 112)
	Configuring transfer (Page 94)
	Setting the delay time (Page 96)

5.5.3　Operating the Control Panel

You can operate the Control Panel using the touch screen. The following steps give a general description of how to operate a function.

Requirement

- The RemoteOperate Client software was closed.
- The Start Center is displayed.

Procedure

1. Open the Control Panel using the "Settings" button.
2. Double-click an icon. The corresponding dialog is displayed.
3. Select a tab.
4. Make the desired settings. When you navigate to an entry field, the screen keyboard opens.
5. Your settings are applied with the [OK] button.

   To cancel the entry, press the [X] button. The dialog closes.
6. To close the Control Panel, use the [X] button.
7. Start the RemoteOperate Client software with the "Start" button.

The Start Center is displayed.

See also

Configuring the screen keyboard (Page 82)

5.5.4 Display types for the screen keyboard

The screen keyboard is used for entering alphanumeric, numeric and special characters. As soon as you touch a text box, a numeric or alphanumeric screen keyboard is displayed, depending on the type of the text box.

You can also open the screen keyboard by selecting the icon in the status bar. The icon is shown in the figure in section "Overview of functions (Page 77)".

The procedure for setting the screen keyboard is described in the section "Configuring the screen keyboard (Page 82)".

Representation types for the screen keyboard

You can toggle the screen keyboard display as follows.

Alphanumerical screen keyboard

The alphanumerical screen keyboard has the following levels.

- Normal level

Note

The ' character on the keyboard is only displayed when followed by a space. If the ' character is followed by a letter, then the result will be an accent, such as "á".

- Shift level

  The shift level has uppercase letters and other special characters.

The alphanumeric keyboard is always displayed after a restart.

Numerical screen keyboard

By pressing the "Num" button, you can switch between the numerical and alphanumerical screen keyboard.

Reduced screen keyboard

You activate the reduced screen keyboard with the ▬ key.

Changing the display of the screen keyboard

Key	Function
Num	Switching between the numerical and alphanumerical keyboard
↑	Switching between the normal level and Shift level of the alphanumerical screen keyboard
Alt Gr	Switchover to special characters
_	Switching from full display to reduced display
⯃	Switching from reduced display to full display
✕	Closing of reduced display of the screen keyboard
⌨	Brief touch: Hide screen keyboard Long touch and move at the same time: Move the screen keyboard
⊞	Touch twice: The taskbar opens

Entering data

Key	Function
←	Delete character left of cursor
Del	Delete character right of cursor
↵	Confirm input
ESC	Cancel input

5.6 Configuring operation

5.6.1 Changing display brightness

You can use this function to change the brightness of the display by changing the intensity of the backlighting. The intensity of the backlighting can be adjusted with a slider or with the "Reduce brightness" and "Increase brightness" keys.

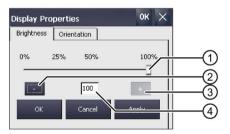| NOTICE |
| --- |
| **Reducing backlighting** |
| The brightness of the backlighting decreases with increasing service life. To avoid shortening the service life of the backlighting unnecessarily, set a reduction of the backlighting. |

Requirement

The Control Panel is open.

Procedure

1. Open the "Display Properties" dialog using the "Display" icon.

① Slider
② Reduce brightness
③ Increase brightness
④ Indicates the set value

2. To increase the brightness, press "+".
The brightness changes by 5% each time you press the key. Maximum possible value: 100%

3. To reduce the brightness, press "–".
Smallest value that can be set: 25%

4. To check the setting, press "Apply".
The set brightness value is applied.

5. Confirm your entry with "OK".
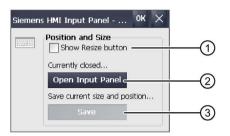The dialog closes.

The brightness of the display has been changed.

5.6.2 Configuring the screen keyboard

You can use this function to change the layout and the position of the screen keyboard.

Requirement

You have opened the "Siemens HMI Input Panel" dialog with the "InputPanel" icon.

① Check box for displaying the 🗗 button in the screen keyboard
② This button opens the screen keyboard
③ This button saves the screen keyboard settings

Procedure

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

   🗗 is displayed in the screen keyboard you want to open. If the check box is not selected, the size of the screen keyboard cannot be adjusted.

2. To open the screen keyboard, press "Open Input Panel".

3. To change the position of the screen keyboard, touch a free space between the keys.

   Release the screen keyboard when the required position has been reached.

4. To enlarge or reduce the screen keyboard, press "🗗".

5. Drag to adjust the size of the screen keyboard.

6. Release the screen keyboard when the required size has been reached.

7. To save the settings, press "Save".

8. Confirm your entries.

   The dialog closes.

The screen keyboard settings have been modified.

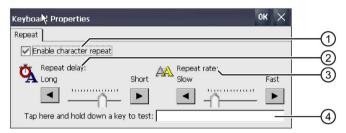## 5.6.3 Setting the character repeat rate of the screen keyboard

You can use this function to set the character repeat and repeat delay for the screen keyboard.

Requirement

The Control Panel is open.

Procedure

1. Open the "Keyboard Properties" dialog using the "Keyboard" icon.

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

2. If you want to enable character repetition, select the "Enable character repeat" check box.

3. To change the delay, press a button or the slider in the "Repeat delay" group.
   Moving the slider to the right reduces the delay. Moving it to the left extends the delay time.

4. To change the repeat rate, press a button or the slider in the "Repeat rate" group.
   Moving the slider to the right speeds up the repeat rate. Moving to the left will slow down the repeat rate.

5. Check the settings for the touch control by touching the test field.
   The screen keyboard is displayed.

6. Move the screen keyboard as needed.

7. Press a key for a character and keep the key pressed.
   Check that character repetition occurs and the rate of the character repetition in the test field.

8. If the settings are not ideal, correct them.

9. Confirm your entries with "OK".
   The dialog closes.

The character repetition and delay are set.

5.6.4   Setting the double-click

You start applications in the Control Panel and in the operating system with a double-click. A double-click corresponds to two brief touches.

In the "Mouse Properties" dialog, make the following settings for operation with the touch screen:

● Interval between two touch contacts on the touch screen

● Interval between the two clicks of a double-click

Requirement

The Control Panel is open.

Procedure

1. Open the "Mouse Properties" dialog using the "Mouse" icon.

①   "Checkered pattern" icon
②   "Test" icon

2. Double-click the "Checkered pattern" icon.
   After the double-click, the colors in the pattern are inverted. White boxes become gray. The timeframe for the double-click is saved.

3. Check the double-click: Press the "Test" icon twice in succession. If the double-click is recognized, the "Test" icon is displayed as follows:

4. Repeat steps 2 and 3 as necessary until the settings are okay.

5. Confirm your entry with "OK".
   The dialog closes.

The double-click adjustment is completed.

5.6.5 Calibrating the touch screen

Parallax may occur on the touch screen depending on the mounting position and perspective. To prevent any resulting operating errors, you may need to calibrate the touch screen.
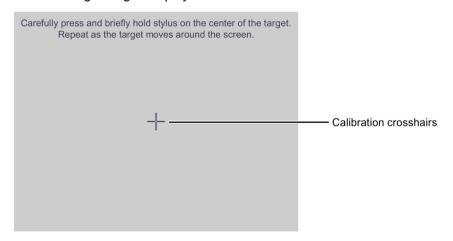
Requirement

- A touch pen
- The Control Panel is open.

Procedure

1. Open the ""OP Properties"" dialog using the ""OP"" icon.
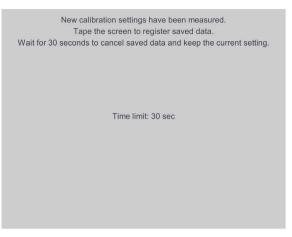
2. Change to the "Touch" tab.

3. Press the "Recalibrate" button.
   The following dialog is displayed:

Calibration crosshairs

4. Touch the center of the calibration cross until it is shown at the next position. The calibration cross appears at four other positions.
   Once you have touched the calibration cross at all positions, the following dialog appears:

New calibration settings have been measured.
Tape the screen to register saved data.
Wait for 30 seconds to cancel saved data and keep the current setting.

Time limit: 30 sec

5. Touch the touch screen within the indicated time.
   The calibration will be saved. The "Touch" tab is displayed once again in the "OP Properties" dialog. If you do not touch the touch screen within the time shown, your original setting will be retained.

6. Close the "OP Properties" dialog with "OK".

The touch screen of the HMI device is calibrated.

5.6.6 Restarting the HMI device

You need to perform a restart in the following situations:

- You have changed the time zone and activated daylight saving time, see section "Setting the date and time (Page 89)".

- You have changed the settings for the screensaver, see section "Setting the screen saver (Page 92)".

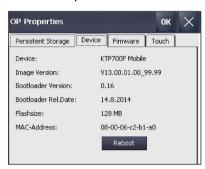| NOTICE |
| --- |
| **Data loss** |
| All volatile data is lost with a restart. |
| Make sure that the RemoteOperate Client software is closed and no data is being written to the flash memory. |

Requirement

- If you want to restore the factory settings:

  The HMI device is connected in accordance with "Connecting PC and server (Page 46)".

- You have opened the "Device" tab in the "OP Properties" dialog with the "OP" icon.

Procedure

1. Click the "Reboot" button.

   The following dialog appears:

   ①   Button for restart
   ②   Button for restoring factory settings and subsequent restart

2. Press one of the following buttons:

   – "Reboot": Restart the HMI device immediately.

   – "Prepare for Reset": Reset the HMI device to factory settings.

   Note

   When you press "Prepare for Reset" the operating system and the server selection list of the RemoteOperate Client software is deleted.

   Restore the operating system as described in the section "Updating the HMI device image (ProSave) (Page 125)".

   – "No": Do not perform a restart, close the dialog.

5.7 General settings

5.7.1 Regional and language settings
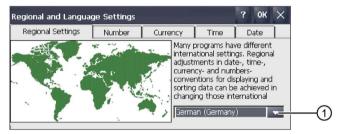
The date, time and decimal points are displayed differently in different countries. You can adapt the display format to meet the requirements of various regions.

Requirement

The Control Panel is open.

Procedure

1. Open the "Regional and Language Settings" dialog using the "Regional Settings" icon.

   ①   "Region" selection box

2. Select the required region in the selection box ①.

3. Navigate to the "Number", "Currency", "Time" and "Date" tabs one after the other.

4. Set the required regional settings in the selection field of these tabs.

5. Confirm your entries.
   The dialog closes.

The country-specific specifications for the HMI device are now set. "Setting the date and time (Page 89)" describes how to activate daylight saving time.

5.7.2 Setting the date and time
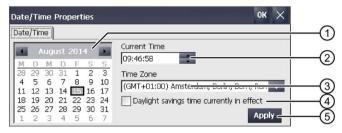
You can use this function to set the date and time. The HMI device has an internal buffered clock.

Requirement

The Control Panel is open.

Procedure

1. Open the "Date/Time Properties" dialog using the "Date/Time" icon.

①	Date selection box
②	Text box for the time
③	Time zone selection box
④	Check box for activating and deactivating daylight saving time
⑤	Button for applying changes

2. Select the applicable time zone for the HMI device from the "Time Zone" selection box.

3. Press the "Apply" button.
   The time of day shown in the "Current Time" field is adjusted correspondingly to the selected time zone.

4. Set the date in the selection box.

5. Set the current time of day in the "Current Time" entry field.

6. Press the "Apply" button.
   The entry is applied.

Note

The system does not automatically switch between standard time and daylight saving time.

---

7. If you want to switch from standard time to daylight saving time, select the "Daylight savings time currently in effect" check box.
   With "Apply", the time of day is set one hour ahead.

8. If you want to switch from daylight saving time to standard time, clear the "Daylight savings time currently in effect" check box.
   With "Apply", the time of day is set back one hour.

9. Confirm your entries.
   The dialog closes.

The settings for the data and time of day have now been changed. The HMI device must be restarted after changes in the following cases:

● You have changed the time zone setting

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

See "Restarting the HMI device (Page 86)".

5.7.3 Entering and deleting a password

You can set and delete passwords with the following procedure:

● For security mode, as described in the section "Using the HMI device in password-protected security mode (Page 75)".

● For security-related mode, as described in the section "Assigning a safety-related operating mode (Page 115)".

Requirement

● A password that does not contain the following characters:

– Blank

– The special characters ' or "

● Password length ≤ 12 characters

NOTICE
Keeping the password
If the password is no longer available, you have no access to the Control Panel and the Windows CE taskbar.
Backup password to protect it against loss.

Procedure

Setting up password protection

1. Double-click on the "Password" icon.

   The following dialog appears:

2. Enter the password in the "Password" text box.
   Activate the numeric keyboard on the screen for this.

3. Repeat the password entry in the "Confirm password" text box.

4. Confirm the inputs.
   The dialog and the screen keyboard close.

Security mode as described in the section "Using the HMI device in password-protected security mode (Page 75)" is active.

Canceling password protection

1. Double-click on the "Password" icon.
   The following dialog appears:

2. Enter the password in the "Password" text box.
   The following dialog appears:

3. Delete the entry in the "Password" text box.
   The entry in the "Confirm password" text box is deleted automatically.

4. Confirm the deletion.
   The dialog and the screen keyboard close.

Security mode as described in the section "Using the HMI device in password-protected security mode (Page 75)" is **not** active.

5.7.4 Setting the screen saver

You can set the following time intervals in the Control Panel:

- Automatic activation of the screen saver

- Automatic reduction in the display backlighting

The HMI device exhibits the following behavior based on the settings:

- The screen saver is automatically activated if the HMI device is not operated within the specified period of time.

- Touching the touch screen switches off the screen saver. If you touch a button at the same time, the function assigned to the button is not executed. In addition, the reduction of the backlighting according to the settings of the screen saver is canceled.

NOTICE
Activating the screen saver
Display content that is not changed for a long period can remain dimly visible in the background for a long time. This effect is reversible when you use a screen saver with moving image. Therefore, activate the screen saver of the type "Standard (Flying Windows)".
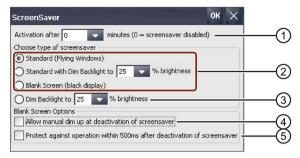
Requirement

The Control Panel is open.

Procedure

1. Open the "Screensaver" dialog using the "ScreenSaver" icon.

①	Period of time in minutes before the screen saver is activated
②	Type of screen saver
③	Reduced backlighting to a specified value
④	Allow dimming when deactivating the "Blank Screen" screen saver
⑤	Short-term operation lock after deactivating the "Blank Screen" screen saver

2. Enter the number of minutes after which the screen saver is to be activated.
   The minimum setting is 1 minute and the maximum setting is 360 minutes. Entering "0" disables the screen saver.

3. Select the type of screen saver:

   – Use the "Standard" option to enable the default screensaver.

   – Using the option "Standard with Dim Backlight" you activate the Windows standard screensaver and reduce the backlight to a value between 25% and 90%.
   If you enter a value outside the range of 25 to 90%, a message will appear and the value is reset to 25%.

   – Use the option "Blank Screen" to activate the disabling of the backlighting of the device.

4. Using the option "Dim Backlight to" you reduce the backlight to a value between 25% and 90%, without activating a screen saver.
   If you enter a value outside the range of 25 to 90%, a message will appear and the value is reset to 25%.

5. The "Allow manual dim up at deactivation of screensaver" for the "Blank Screen" screen saver works as follows:

   – If the option is activated, you can dim the display brightness on deactivation of the screen saver. The brightness is increased as long as you keep pressing the touch screen.

   – If the option is deactivated, the brightness is increased to the value that was set prior to activation of the screen saver when you touch the touch screen.

6. If you want to delay touch operation for a brief time following deactivation of the "Blank Screen" screensaver, for example, to prevent incorrect operator inputs in connection with option ④, select the "Protect against operation within 500 ms after deactivation of screensaver" check box.

7. Confirm your entries.
   The dialog closes.

The screen saver for the HMI device has now been set. You will need to restart the HMI device after the screen saver has been activated. The screen saver is then enabled.
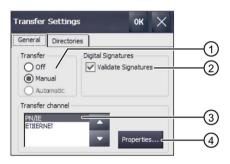
5.7.5 Configuring transfer

A HMI device image can only be transferred from the PC to the HMI device when at least one data channel is configured and enabled on the HMI device. Follow the procedure below to configure transfer mode.

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

Requirement

You have opened the "General" tab in the "Transfer Settings" dialog with the "Transfer" icon.

①	Transfer group
②	Signature during transfer
③	Transfer channel group
④	Button for parameterizing the transfer channel properties

Note

If you change the transfer settings while a transfer is in progress and want to confirm it with OK, an error message is displayed.

Procedure

1. In the "Transfer" group, select whether you want to enable or disable "Transfer" mode.

   Select one of the following options:

   – Off – Transfer is not possible

   – Manual – Manual transfer
   If you want to initiate a transfer, close the RemoteOperate Client software and press the "Transfer" button in the Start Center.

   – Automatic – Automatic transfer: Not available

2. To select the check of the signature during transfer of an HMI device image, select "Validate Signatures".

   To transfer an unsigned image clear "Validate Signatures".

3. Select the required data channel in the "Transfer channel" group.

   – PN/IE

      Transfer is over PROFINET or Industrial Ethernet. This means an HMI device can communicate over a switch or over a router in the local network.

   – Ethernet

4. To call up the addressing of the HMI device, press "Properties".

   You can find the necessary information in "Specifying the IP address and name server (Page 113)".

5. Confirm your entries.

   The dialog closes.

The data channel for transfer is configured.

5.7.6 Storage management

5.7.6.1 Displaying memory distribution

This function displays the size of the flash memory and its archived data and program data allocation.
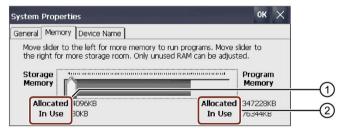
Requirement

The Control Panel is open.

Procedure

1. Open the "System Properties" dialog using the "System" icon.

2. Change to the "Memory" tab.

①   Cache memory, available and used
②   RAM, available and used

NOTICE
Malfunction
If you change the allocation of the memory, malfunctions may occur.
Do not change the memory allocation in the "Memory" tab unless the message "Insufficient memory" is displayed.

5.7.6.2 Setting the delay time
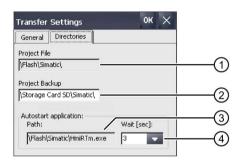
Introduction

After switching on the HMI device, the RemoteOperate Client application starts after a delay time.

Requirements

You have opened the "Directories" tab in the "Transfer Settings" dialog with the "Transfer" icon.

① Location of the project file. Not relevant for the fail-safe HMI device.

② Directory where the compressed source file of your project is saved

Not relevant for the fail-safe HMI device.

③ Location and start file for RemoteOperate Client

④ Selection box for the delay time

Note

Settings under "Path"

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 for the software start from the "Wait [sec]" selection box.

   The delay time sets how long the Start Center is displayed before the RemoteOperateClient software starts. Permissible values are 1, 3, 5 and 10 seconds.

   – "0 seconds"

   The RemoteOperate software starts immediately. The Start Center is **not** displayed.

   – "Forever"

   The RemoteOperate software is not started. The Start Center is displayed permanently.

Note

You can call the Start Center after starting the RemoteOperateClient software by closing this software.

---

2. Confirm your entries with "OK".

   The dialog closes.

Result

The delay time for the HMI device is now set.

5.7.7 Backing up registry information and temporary data

You can install and uninstall your own software on and from the HMI device. You need to back up the registry settings to flash memory after installation or removal.
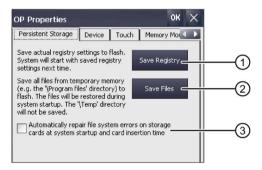
You can also save the data in the memory buffer to flash memory.

Requirement

The Control Panel is open.

Procedure

1. Open the "OP Properties" dialog using the "OP" icon.

①   Button for saving registry information

②   Button for saving temporary files

③   Automatically repairs file system errors on plug-in storage media during HMI device startup and when a storage medium is inserted.

2. To back up the current registry entries, press the "Save Registry" button.
The current registry entries will be backed up in the flash memory. The HMI device loads the saved registry information the next time it boots.

3. To back up temporary files, press the "Save Files" button.
All files from the temporary memory will be backed up in the flash memory. You can access the files saved under "Start > Documents". These files are written back when the HMI device is started. The "\Temp" directory is not saved.

4. If you want file system errors on the memory card to be repaired automatically, select the "Automatically repair file ..." check box.
If the check box is cleared, a necessary repair of the file system on memory cards is only performed on request.

5. Confirm your entries with "OK".
The dialog closes.

At the next startup, the HMI device will use the registry entries and temporary files set.

5.7.8 Displaying general system properties

Use this function to display the general system information relating to the operating system, processor and memory. You will need this information when contacting Technical Support (Page 184).

Requirement
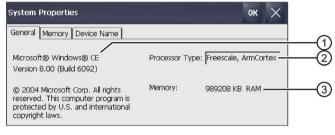
The Control Panel is open.

Procedure

- Open the "System Properties" dialog using the "System" icon.

  The following figure shows an example.

①	Information on the version and the copyright of the operating system
②	Processor information
③	Information on the size of the RAM

The displayed data relates to the specific device. The processor and memory information may deviate from that for this HMI device.

5.7.9 Displaying information about the Mobile Panel
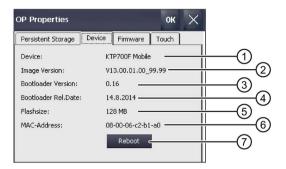
You can use this function to display device-specific information. You will need this information if you contact Technical Support (https://support.industry.siemens.com).

Requirement

You have opened the "Device" tab in the "OP Properties" dialog with the "OP" icon.

① HMI device name
② Version of the HMI device image
③ Version of the bootloader
④ Bootloader release date
⑤ Size of the internal flash memory in which the HMI device image and projects are stored
⑥ MAC address 1 of the HMI device
⑦ See "Restarting the HMI device (Page 86)."

Note

The size of the flash memory does not correspond to the available application memory.
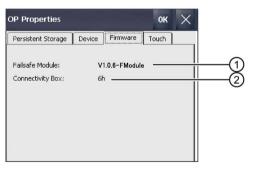
5.7.10 Display firmware

You can use this function to obtain information about the firmware on the HMI device. You will need this information if you contact Service and support (Page 184).

Requirement

You have opened the "Firmware" tab in the "OP Properties" dialog with the "OP" icon.

① Firmware version of the fail-safe module
② Firmware version of the connection box

5.8 Changing Internet settings

5.8.1 Changing general settings

You can use this function to set the homepage and search engine page for an Internet connection over Internet Explorer.

Requirement

- You have opened the "General" tab in the "Internet Options" dialog with the "Internet Options" icon.

①	Internet browser homepage
②	Search engine homepage
③	Homepage of your browser
④	Memory capacity

- Your system administrator has provided the necessary information for the setting.

Procedure

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

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

3. If you want to use your own browser, enter its homepage in the "User Agent" text box.

   The browser must then be launched.

4. Enter the required amount of cache in the "Cache" text box.

5. To delete the cache, press "Clear Cache".

6. To delete your browser history, press "Clear History".

7. Confirm your entries.

   The dialog closes.

The general parameters for the Internet browser have been set. The settings take effect the next time you start the Internet browser.

5.8.2 Setting the proxy server

Use this function to configure the type of Internet access.

Requirement

- You have opened the "Connection" tab in the "Internet Options" dialog with the "Internet Options" icon.

① LAN dial-up
② LAN configuration

- Your system administrator has provided the necessary information for the setting.

Procedure

1. If you want to use LAN without automatic dial-up, select the "Use LAN (no autodial)" check box.

2. If you want to use LAN with automatic dial-up, deselect the "Use LAN (no autodial)" check box and select the name in the "Autodial name" list.

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

4. If you want to use a proxy server, select the "Use a proxy server" check box.

   Specify the address and port of the proxy server. Only the start of the addresses is required. Separate the addresses with a semicolon.

5. In order to prevent using the proxy server for certain addresses, press "Advanced".
   The following dialog appears:

   In the text box, enter the addresses for which the proxy server should not be used.
   Only the start of the addresses is required. Separate the addresses with a semicolon.
   Confirm your entries with "OK" or close the dialog with "Cancel".

6. To use a local address, select the "Bypass for local address" check box.

7. Confirm your entries.
   The dialog closes.

The parameters for the LAN connection have been assigned.

5.8.3 Changing Internet security settings

A cookie typically contains information about websites visited; the Internet browser saves this information automatically when you surf the Internet. You can restrict cookies on a tab under "Internet Options".

Requirement

- You have opened the "Security" tab in the "Internet Options" dialog with the "Internet Options" icon.

① Display trusted websites
② Display restricted websites
③ Allow cookies for the current session only and then automatically delete them

- Your system administrator has provided the necessary information for the setting.

Procedure

1. Select "Trusted Sites" if you want to view and edit the set trusted websites.

2. Select "Sites".

   The following dialog appears:
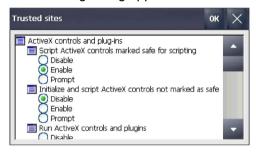
3. To add the website displayed in the "Add this web site ..." field to the list of trusted sites, select "Add".

4. To delete the website displayed in the "Add this web site ..." field from the list of trusted sites, select "Remove".

5. If server verification is required for all websites on the list of trusted sites, select the "Require server verification" check box.

6. To edit the settings for ActiveX control, plug-ins and script languages, select "Settings".

   The following dialog appears:

7. Adjust the settings to current requirements.

   You can find additional information on the options in this dialog on the Microsoft website.

8. Confirm your entries.

   The dialog closes.

The trusted websites are now set.

5.8.4 Activating encryption protocols

Data can be encrypted for greater data transmission security. Common encryption protocols include SSL and TLS. TLS is a more advanced encryption protocol than SSL. You can activate or deactivate the usage of encryption protocols.

Read "General safety instructions (Page 25)".

Requirement

● The Control Panel is open.

● Your system administrator has provided you with the necessary information.

Procedure

1. Open the "Internet Options" dialog using the "Internet Options" icon.

2. Change to the "Advanced" tab.

① Available encryption protocols
② Warning upon switch between secure and non-secure data transmission

3. Activate the required encryption protocols.

Note

If no encryption protocol is activated, data is sent over the Internet in non-secure mode.

---

4. If you want to be warned that you are switching between secure and non-secure data transmission, select the "Warn if changing between …" check box.

5. Confirm your entries with "OK".
   The dialog closes.

The encryption protocols are set.

5.8.5 Importing, displaying and deleting certificates

You can use this function to import, display and delete certificates. The certificates are proof of an IT qualification and the categories are as follows:

- Certificates that you can trust

- Own certificates

- Certificates from other known providers

A digital certificate consists of structured data, which confirms ownership and other properties of a public key.

Read "General safety instructions (Page 25)".

Requirement

- The Control Panel is open.

- A USB stick with one or more valid certificates

- Your system administrator has provided you with the necessary information.
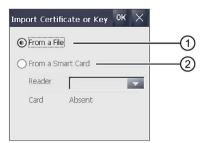
Procedure

1. Open the "Certificates" dialog using the "Certificates" icon.

 ①   List of trusted certificates

 ②   Certificate name

2. Insert the USB stick into the USB port.

3. Select the type of certificate from the selection box:

   – "Trusted Authorities" for trustworthy certificates

   – "My Certificates" for your own certificates

   – "Other Certificates" for other certificates

4. Use the "Import.." button to specify the source from which the certificate will be imported. The following dialog appears:

   ① Import from a file
   ② Import from a smart card reader

5. Select "From a File" or "From a Smart Card" if a smart card reader is connected to the HMI device.
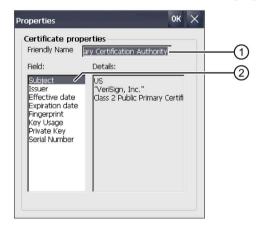
   Note

   The Smart Card reader is not an approved source for importing certificates for the HMI device.

6. Close the dialog with "OK".

7. In the subsequent file selection dialog, select the desired certificate on the USB flash drive and confirm with "OK".
   The certificate will be imported and displayed in the list on the "Stores" tab.

8. You can use the "View.." button to display the properties of a certificate.

   ① Name of the selected certificate
   ② Identity information and other properties of the selected certificate

9. You can use the "Remove" button to delete a certificate.

Note

The entry is deleted immediately and without further inquiry. If you want to again use a deleted certificate, you need to import it again from a storage medium.

---

10. Confirm your entries with "OK".

The dialog closes.

The list of certificates on the HMI device is updated.
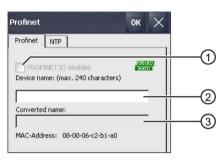
5.9 Checking the PROFINET IO settings

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 box with the "PROFINET" icon.

①　　Check box for enabling the PROFINET IO direct keys (disabled)
②　　Text box for the device name
③　　MAC address of the HMI device

Procedure

1. Enter the device name and the MAC address.

2. Confirm your entries.

The dialog closes.

3. Reboot the HMI device after saving the settings.

Result

PROFINET IO is disabled.

5.10 Server time

To obtain the time of the HMI device from a time server, you can specify up to four different time servers. The time is synchronized using the "Network Time Protocol". The synchronization cycle applies to all configured time servers.

Requirement
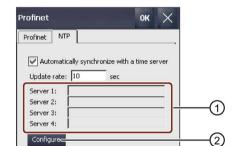
- The HMI device and time server are located in the same network.
- The Control Panel is open.

Procedure
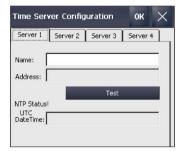
1. Open the "PROFINET" dialog using the "PROFINET" icon.

2. Change to the "NTP" tab.

① Text box for time servers 1 to 4
② Button for configuring the time servers

3. If you want to use the time of a time server, activate "Automatically synchronize with …".

4. Under "Update rate", enter the time interval in seconds after which the HMI device is to synchronize the time.
   Permitted value range: 1 ... 60 000 000 seconds.

5. Press the "Configure" button.
   The following dialog is displayed:

If you do not enter a time, the message "Second field wrong data type." will appear. Enter a time.

6. Enter the DNS name of the time server under "Name".

   You can also enter the IP address of the time server.

7. Use the "Test" button to check the accessibility of the time server.
   The communication connection to the time server is established and the time is displayed in the "DateTime:" display field. The IP address of the time server is also displayed in the "Address" display.

8. Up to three additional time servers can be set up, if needed.

9. Confirm your entries with "OK".

The communication connection to the time server is now set up and immediately active.

5.11 Configuring network operation

5.11.1 Overview

Addressing computers

Computers are usually addressed using computer names within a PROFINET network. However, the network address is set with RemoteOperate.

Determine the following parameters:

- Is DHCP used in the local network for dynamic assignment of addresses? If not, get a TCP/IP address for the HMI device.

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

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

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

Configuration includes:

- Specifying the computer name of the HMI device

- Specifying the IP address and name server

- Specifying the logon data

NOTICE
RemoteOperate connection overwrites network parameters
When you start RemoteOperate and connect the client to a server in the server selection list, RemoteOperate overwrites the network parameters with the stored properties of the server connection. If another application needs the network parameters for a network connection, note the following: • Note down the network parameters of the application. • After the start, exit RemoteOperate and re-configure the network. • Alternatively, select a shared IP address and subnet mask for RemoteOperate and your application.

Parameterization is described from section "Specifying the computer name of the HMI device (Page 112)" on.

5.11.2 Specifying the computer name of the HMI device

You can use this function to assign a computer name to the HMI device. The computer name is used to identify the HMI device in the local network.

Requirement

The Control Panel is open.
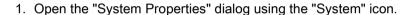
NOTICE
Computer name must be unique
Communication errors may occur in the local network if you assign a computer name more than once.   Enter a unique computer name in the ""Device name"" text box.
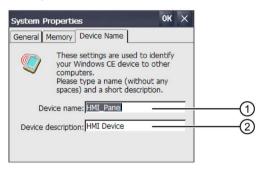
Procedure

1. Open the "System Properties" dialog using the "System" icon.

2. Change to the "Device Name" tab.

①   Computer name of the HMI device

②   Brief description of the HMI device (optional)

3. Enter the computer name for the HMI device in the "Device name" text box. Enter the name without spaces.

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

5. Confirm your entries with "OK".
   The dialog closes.

The computer name for the HMI device is now set.

5.11.3 Specifying the IP address and name server

You can use this function to address the HMI device in the local network.

Requirement

- You have opened the following window with the "Network and Dial-up Connections" icon:
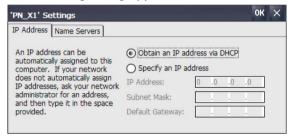
| File   Edit   View   Advanced |

PN_X1

- Your system administrator has provided the necessary information for the setting.

Procedure

1. Touch the "PN_X1" icon.

   The following dialog appears:

   'PN_X1' Settings

   IP Address | Name Servers

   An IP address can be automatically assigned to this computer. If your network does not automatically assign IP addresses, ask your network administrator for an address, and then type it in the space provided.

   ○ Obtain an IP address via DHCP
   ○ Specify an IP address
   IP Address: 0 .0 .0 .0
   Subnet Mask:
   Default Gateway:

2. If you need automatic address assignment, select the "Obtain an IP address …" option button.

3. If you need manual address assignment, select the "Specify an IP address" radio button.

NOTICE
IP address must be unique
An address conflict will occur and there may be malfunctions if more than one device is assigned the same IP address in the local network.
Assign a unique IP address to each HMI device in the local network.
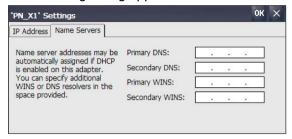
4. If you have selected manual address assignment, enter the corresponding addresses in the "IP Address," "Subnet Mask" text boxes and if necessary in "Default Gateway".

5. If a name server is used in the local network, open the "Name Servers" tab.

   The following dialog appears:

6. Enter the respective addresses in the text boxes.

7. Confirm your entries.

   The dialog closes.

8. Close the "Network&Dial-Up Connections" window.

   The Control Panel is displayed.

The HMI device is addressed in the local network.

5.11.4 Specifying the logon data
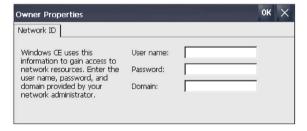
Use this function to enter the information for logging onto local networks.

Requirement

- The Control Panel is open.
- Your system administrator has provided you with the necessary information.

Procedure

1. Open the "Network ID" dialog using the "Network ID" icon.

2. Enter your user name in the "User name" text box.

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

4. Enter the name of your assigned domain in the "Domain" text box.

5. Confirm your entries with "OK".
   The dialog closes.

The logon data has now been set.

5.12   Assigning a safety-related operating mode

This section describes how to assign failsafe mode to a connection box.

You specify the function of the emergency stop/stop button for each connection box by selecting the operating mode:

● "Emergency stop" or

● "Stop"

Read "Important information on emergency stop / stop button (Page 31)".

The table below shows which F-system can be implemented depending on the connection box used and what modes you can use in the corresponding F-system.

Connection box	Hardwired F-system	
	without emergency stop / stop bypass	with emergency stop / stop bypass
compact	Feasible	–
standard	Feasible	–
advanced	–	Feasible
Possible operating mode	Stop button evaluated by safety relay	Stop button evaluated by safety relay
	E-stop button evaluated by safety relay	E-stop button evaluated by safety relay

Requirement

- The HMI device is connected to the connection box.
- The box ID has been set as described in "Setting the box ID of the connection box (Page 61)".
- You have opened the "Safety operation" dialog with the "Safety Operation" icon.

①   List of available operating modes:
- Stop button evaluated by safety relay: The emergency stop/stop button is **off** during operation. If you press the emergency stop / stop button, the plant typically responds with a **stop**.
- E-stop button evaluated by safety relay: The emergency stop / stop button lights up during operation when active. When you press the emergency stop / stop button, the plant responds with an **emergency stop**.
- E-stop button evaluated by PROFIsafe: not supported. RemoteOperate **is closed**.

②   Symbol for the selected operating mode
- Gray: Stop function
- Red/yellow: Emergency stop function

③   ID of the connection box

④   Information on the operating mode selected

If the connection box has not yet been assigned an operating mode, the dialog opens automatically after connecting and starting the Mobile Panel and the following information is shown in the "Operation Mode" text box: "Operation Mode: Please select!"

Procedure

1. Select the required operating mode from the drop-down list ①. The color of the icon ② changes according to the operating mode selected.

2. For the "E-stop button evaluated by safety relay" operating mode:
Enter the box ID of the connection box in decimal form in the "Verify Box ID" text box. The permitted value range is 1 to 254. The value must correspond to the rotary coding switch setting of the connection box.
The corresponding hexadecimal value is displayed in the "Hex" output field.

3. Confirm your entries with "Save".

Note

For the "E-stop button evaluated by safety relay" operating mode:

- If password protection is already enabled, the password prompt is displayed.
- If no password has been assigned, you are prompted to assign a password.

Enter the password and confirm your entry.

You can find additional information on password protection in the section "Entering and deleting a password (Page 90)".

The dialog closes. Information text ④ shows: "Operation mode successfully stored in Connection Box"

4. Close the "Safety operation" dialog with "Close".

The operating mode is assigned.

See also

Using the HMI device in password-protected security mode (Page 75)

5.13 Functions for service and commissioning

5.13.1 Saving to external storage medium – backup

You can use this function to back up the operating system, applications and data from the flash memory of the HMI device to an external storage medium.

Use a SIMATIC HMI Memory Card as the storage medium or an industrial USB flash drive.

Requirement

- You have opened the "Backup" tab in the "Service & Commissioning" dialog with the "Service & Commissioning" icon.
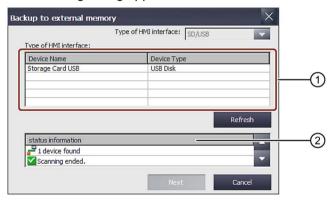
①	Data that can be saved

- There is a storage medium with sufficient free capacity in the HMI device.

- Data that must not be overwritten have been saved.

Procedure

1. Select "Next".

   The following dialog appears:

| ①	List of available storage media
②	Status information for the storage medium selected

   The "0 devices found" message appears if there is no storage medium in the HMI device or if it is defective. Insert a storage media or replace the storage medium.
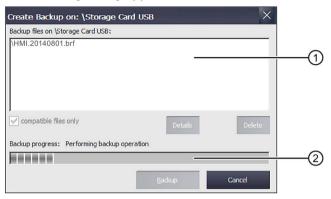
2. Press "Refresh".
   The "Type of HMI interface" list is updated and the "status information" box contains information about the selected storage medium. Note the memory capacity displayed.

3. Select a storage medium from the "Type of HMI interface" list.

4. Select "Next".

    The following dialog appears:

    ①   List of available backup files
    ②   Progress bar during data backup

5. If you only want to backup compatible files, select the "compatible files only" check box.

    –   Check box cleared:
        The list displays all backup files. This gives the user an overview of the files stored on the storage medium.

    –   Check box selected:
        The list only displays the backups that are compatible with the device currently in use.

6. Select "Backup".

    The following dialog appears:

7. Use the option buttons to select the data you want to back up.

8. If required, change the file name in the "File name" field.

9. Press "Create".
    The "Create Backup" dialog appears. A progress bar shows the status of the data backup. When the backup process is completed, the Backup operation successfully completed. message is displayed.

10. Acknowledge this message. The dialog closes.

11. Close the "Service & Commissioning" dialog.

    The HMI device data is now saved on the storage medium.

See also

> Storage media (Page 20)
>
> Restoring from external storage medium – Restore (Page 120)

5.13.2 Restoring from external storage medium – Restore

Use this function to restore data from a storage medium to the HMI device.

A restore operation deletes the old data from flash memory of the HMI device on confirmation. The data backed up on the storage medium is then transferred.

Requirement

- You have opened the "Restore" tab in the "Service & Commissioning" dialog with the "Service & Commissioning" icon.

NOTICE
Data loss
All data on the HMI device is deleted during a restore operation. License keys are only deleted after a security prompt.
Back up data before restore operations, if required.

- The storage medium with the backup data is in the HMI device.

Procedure

1. Select "Next".

   The Restore from external memory dialog is displayed. The dialog corresponds to the "Backup to external memory" dialog in the section "Saving to external storage medium – backup (Page 117)".
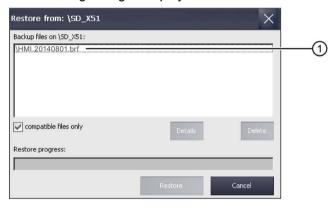
   The "0 devices found" message appears if there is no storage medium in the HMI device or if it is defective. Insert a storage media or replace the storage medium.

2. Select "Refresh".

   The "Type of HMI interface" group is updated. The HMI device checks the storage medium. Information about this storage medium is displayed in the "status information" field.
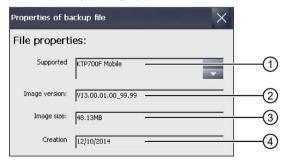
3. Select the storage medium with the required backup in the "Type of HMI interface" group.

4. Select "Next".

   The following dialog is displayed.

   ① Backup file

5. Select the required file in the "Backup files on" group.

6. For information about the file selected, press "Details".

   The following dialog appears:

   ① Supported HMI devices
   ② Image of the HMI device
   ③ Size of the selected file
   ④ Creation date of the backup file

7. To delete the file selected, press "Delete".

   The Delete confirmation dialog is displayed. The file is deleted when you select "OK".

8. To restore the data from the selected file, select "Restore".

   The following dialog appears:

9. Selecting "Yes" restores the data.
   The "Transfer" dialog appears. A progress bar shows the status of the restore process. When the restore operation is complete, the "Restore operation successfully completed." message is displayed. The HMI device then restarts and remains in transfer mode.

10. Remove the storage medium, if necessary.

The data from the storage medium is now restored on the HMI device.

Note

After restoring, a recalibration of the touch screen may be required, see also section "Calibrating the touch screen (Page 85)".

5.13.3   Backing up and restoring data (ProSave)

Requirements

- The HMI device is connected to a PC by means of the connection box and Ethernet.
- The ProSave application is installed on the PC. The ProSave software is located on the "SIMATIC RemoteOperate - Applications & Documentation" CD.
- The ProSave add-on with the information for the HMI device is installed on the PC. The ProSave add-on is located on the "SIMATIC RemoteOperate - Applications & Documentation" CD.
- The data channel on the HMI device is configured.
- 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 "Device type" "TP1000F Mobile RO" in the "General" tab.
3. Select "Ethernet" as the "Connection" between the HMI device and the PC.
4. Enter the IP address or the name of the HMI device.
5. Go to the "Backup" tab.
6. Select the data to be backed up.
7. Select a folder and file name for the "*.brf" backup file.
8. In the "Start Center" of the HMI device, click on the "Transfer" button.

   If automatic transfer mode is enabled on the HMI device, the HMI device automatically sets "Transfer" mode during backup.
9. On the PC in ProSave, click on the "Start Backup" button.

   Follow the instructions in ProSave.

The data of the HMI device is backed up. A status display shows the progress.

The system outputs a message when backup is completed.

Result

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

Procedure for restoring

NOTICE
Data loss
All data on the HMI device is deleted during a restore operation.
Back up your data before the restore operation, if necessary.

Proceed as follows:

1. Start ProSave from the Windows Start menu on the PC.

2. Select the "Device type" "TP1000F Mobile RO" in the "General" tab.

3. Select "Ethernet" as the "Connection" between the HMI device and the PC.

4. Enter the IP address or the name of the HMI device.

5. In the "Restore" tab select the "*.brf" backup file whose data is restored.

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

6. In the "Start Center" of the HMI device, click on the "Transfer" button.

   If automatic transfer mode is enabled on the HMI device, the device automatically sets "Transfer" mode when a restore operation is initiated.

7. On the PC in ProSave, click on the "Start Restore" button.

   Follow the instructions in ProSave.

The data of the HMI device is restored. A status display shows the progress.

Result

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

Note
After restoring, a recalibration of the touch screen may be required.

5.13.4 Updating the HMI device image (ProSave)

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

- The Microsoft Windows Embedded Compact 2013 operating system.
- The RemoteOperate Client software

The "SIMATIC RemoteOperate - Applications & Documentation" CD contains:

- The HMI device image file with the operating system and the RemoteOperate Client software
- The ProSave software
- The ProSave add-on with the information for the HMI device.

When you update the operating system on the HMI device or want to reset the HMI device to factory settings, you have the transfer the image once again to the HMI device. To do this, connect a PC to the HMI device and then start to transfer the image using ProSave.

NOTICE
Data loss
All data on the HMI device is deleted during an update.
Back up your data before the restore operation, if necessary.

Requirements

- The HMI device is connected to a PC by means of the connection box and Ethernet.
- The ProSave application is installed on the PC.
- The ProSave add-on is installed on the PC.
- 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 "Device type" "TP1000F Mobile RO" in the "General" tab.
5. Select "Ethernet" as the "Connection" between the HMI device and the PC.
6. Enter the IP address or the name of the HMI device.
7. Change to the "OS Update" tab.
8. Under "Opening", select the HMI device image file "*.fwf".

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

9. To restore the delivery state of the HMI device and set all device parameters to their default values, enable "Reset to factory settings".

10. In the "Start Center" of the HMI device, click on the "Transfer" button.

11. On the PC in ProSave, click on the "Update OS" button.

   Follow the instructions in ProSave.

The operating system on the HMI device is updated. A status display shows the 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.

Note

After restoring, a recalibration of the touch screen may be required.

See also

5.13.5   Using automatic backup

If the "Automatic Backup" function is enabled, the HMI device stores all data required for operation on the system memory card. You can insert the system memory card into any HMI device of the same type. After data is copied and a restart has been performed, the HMI device of the same type is operational.

Note

Use only a SIMATIC HMI Memory Card as the system memory card.

Only the SIMATIC HMI Memory Card ≥ 2 GB may be used as a system memory card. All other memory cards are not recognized as system memory card by the HMI device.

System memory card in a device of a different type

If you use the system memory card of an HMI device in an HMI device of a different type, an error message is displayed.
For service purposes, use a system memory card only in HMI devices of the same type.

The "Automatic Backup" is enabled in the delivery state of the device.

Requirement

● The Control Panel is open.

Enabling and disabling automatic backup

1. Open the "Service & Commissioning" dialog using the "Service & Commissioning" button.

2. Change to the "Automatic Backup" tab.

   If the "Automatic Backup" function was enabled ("Enabled: Yes"), the "Disable & Reboot" button is displayed.

   You can see whether or not a system memory card is inserted under "Attached:".

   – "Attached: Yes" means that a system memory card is in the corresponding slot of the HMI device. The "Safely remove" button is also displayed. Always use the "Safely remove" function to remove the system memory card from the HMI device.

   – "Attached: No" means that no system memory card is in the corresponding slot of the HMI device or that the system memory card was not recognized.

If the "Automatic Backup" function is currently disabled ("Enabled: No"), the "Enable & Reboot" button is displayed.

3. Press the "Disable & Reboot" or "Enable &Reboot" button to disable or enable the automatic backup.

   The "System card" dialog is displayed.

4. Press the "Yes" button.

Note

There is no message whether a storage medium is inserted / not inserted.

An automatic restart is carried out.

Applications

We differentiate between the following different cases, depending on whether the system memory card was previously used for automatic backup:

Using the system memory card without automatically backed up data

1. In the "Service & Commissioning" dialog, "Automatic Backup" tab, check whether the "Automatic Backup" function is enabled.

   – If the function is enabled, close the dialog.

   – If the function is not enabled, press the "Enable & Reboot" button.

2. Insert the SIMATIC HMI Memory Card without automatic backup into the slot for the system memory card.

   If the system memory card was recognized and read, the "Use system card" dialog is displayed as follows:

3. Press the "Continue" button. The device copies the data that is required for the "Automatic Backup" function onto the system memory card.

The "Automatic Backup" function is then available.

Using system memory card with automatically backed up data, no project data on the HMI device

1. In the "Service & Commissioning" dialog, "Automatic Backup" tab, check whether the "Automatic Backup" function is enabled.

   – If the function is enabled, close the dialog.

   – If the function is not enabled, press the "Enable & Reboot" button.

2. Insert the SIMATIC HMI Memory Card without automatic backup into the slot for the system memory card.

   If the system memory card was recognized and read, the "Use system card" dialog is displayed as follows:

3. Press the "Continue" button.

   The data of the system memory card is transferred to the HMI device.

After the data transfer, the state of the HMI device is the same as that of the HMI device used to generate the automatic backup.

Using system memory card with automatic backup, project data on the device

NOTICE
Data loss
All data on the HMI device, including the project and HMI device password, is deleted during a restore operation. License keys are only deleted after a security prompt. Back up your data before the restore operation, if necessary.

1. In the "Service & Commissioning" dialog, "Automatic Backup" tab, check whether the "Automatic Backup" function is enabled.

   – If the function is enabled, close the dialog.

   – If the function is not enabled, press the "Enable & Reboot" button.

2. Insert the SIMATIC HMI Memory Card with automatic backup into the slot for the system memory card.

   If the system memory card was recognized and read, the "Use system card" dialog is displayed as follows:

3. Select the "Start backup" check box in order to create a backup of the device data on an external storage medium before the device data is overwritten by the data on the system memory card. Select the corresponding path and file name under "Medium:".

4. Press the "Continue" button. If the "Start backup" check box was selected, the device then creates a corresponding data backup.
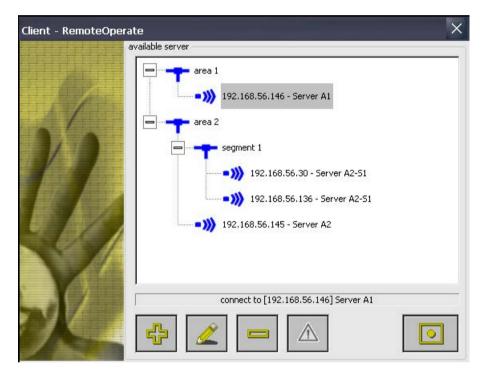
   The data of the system memory card is then transferred to the HMI device.

After the data transfer, the state of the HMI device is the same as that of the HMI device used to generate the automatic backup.

<div align="right">

6

</div>

Using a client

6.1 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" 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" dialog box.

The password will be queried with the following actions:

- Create server
- Change server properties
- Delete server

Create a new server connection

Note
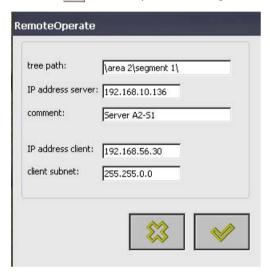
Limited number of servers per client

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. With the [+] button, open the dialog box to create a server connection:


```
RemoteOperate

tree path:            \area 2\segment 1\

IP address server:    192.168.10.136

comment:              Server A2-S1

IP address client:    192.168.56.30

client subnet:        255.255.0.0
```

Note

When you change the Client IP values and the Client subnet mask, these are set every time the server connection is established and applied for the HMI device.
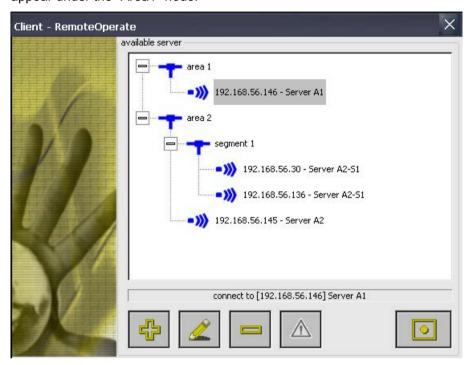
> **NOTICE**
>
> **RemoteOperate overwrites network parameters**
>
> When you start RemoteOperate and connect the client to a server in the server selection list, RemoteOperate overwrites the values for the client with the stored properties of the server connection. If another application needs these network parameters for a network connection, note the following:
>
> - Note down the network parameters of the application.
> - Before you call the application, exit RemoteOperate and re-configure the network.
> - Alternatively, select a shared IP address and subnet mask for RemoteOperate and your application.

2. In the "tree path" box, enter the path to the server within the server selection list. The "Path" specifies the node in the server tree under which the server connection is 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\Server A2-S1\".
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.
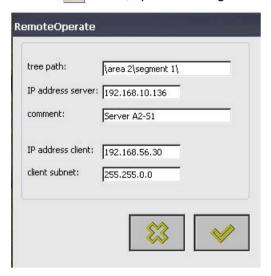
3. Enter the IP address of the new server in the "IP address:" input box.

4. Enter a description of the new server connection in the "comment:" input box. This comment is displayed next to the IP address in the tree of the server selection list.

5. If necessary, change the Client IP and the Client subnet mask of the HMI device. This creates the subnet. The client must be located in the same network (subnet) as the server; otherwise you will receive an error message.

   Client IP and Client subnet mask are always applied from the last input. These boxes are only empty when you create the first server connection.

6. Confirm your settings with [✓].

Changing the properties of a server connection

Proceed as follows:

1. Select the server whose properties you wish to edit.

2. With the 🖍 button, open the dialog box to change the server properties.

3. Follow steps 2 to 5 of the description above "Create a new server connection".

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.

6.2 Connect client

Requirement
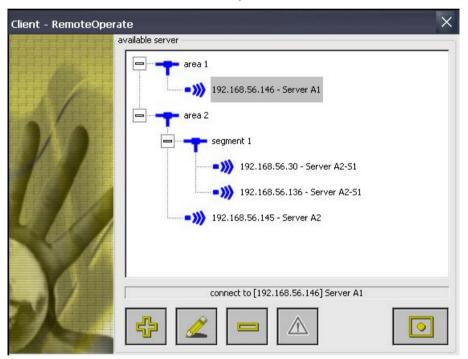
- You have switched on the HMI device.

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

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.

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.

Note

When you change the IP address on the client, the client automatically connects to the server. The network adapter is opened with an automatic IP address change and the new IP address is set. It takes longer to establish the connection in this case.

2. Connect the client to the selected server using the [▣] button.
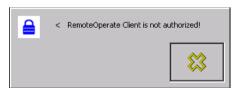
While the client is trying to connect to the server, the following message is displayed on your HMI device:

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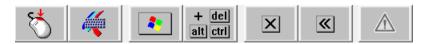
The operator authorization window, known as "traffic lights", is displayed in the foreground on the server screen and the screens of all connected clients with operator authorization. The traffic lights can assume the following states:

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.
	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 (time can be configured in the roServer.ini), the RemoteOperate toolbar is displayed in the foreground on your screen.

Alternatively, if you have operator authorization, you can left-click the traffic light to open the RemoteOperate toolbar.

Note

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. Proceed as follows: 1. Select a screen object which has a right-click function. 2. Touch the "Right-click" button. 3. Execute the desired function.
	Opens the screen keyboard (only with the Windows CE operating system).
	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.
	Opens the alarm window: Alarm is pending.
	Button disabled: No alarm is pending.

See also

6.3 Closing the RemoteOperate Client

Procedure
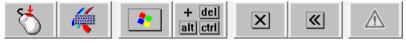
Proceed as follows:

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

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

   Alternatively, you can click once on the traffic lights.
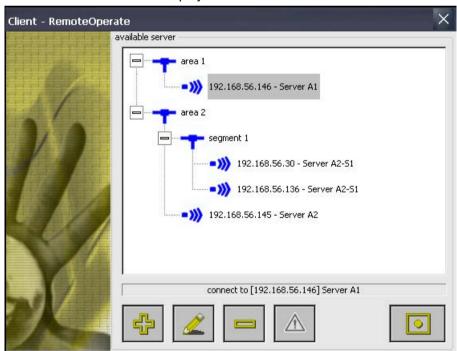
   Note
   Setting the time to display the toolbar

   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. Close the connection to the server using the ⊠ button.

   The server selection list is displayed:

Close the RemoteOperate Client software with the "X" button in the top right corner of the window.

Result

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

The Start Center 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.

- Press the "Settings" button to open the Control Panel.

- Use the "Taskbar" button to activate the taskbar when the Windows Start menu is open.

RemoteOperate is closed automatically

RemoteOperate closes automatically in the following cases:

- The connection box is defect or incompatible.

- The connection box has an invalid box ID.

- The connection box has not been assigned an operating mode yet.

- The connection box was assigned the "E-stop button evaluated by PROFIsafe" operating mode that is not supported.

6.4 Changing the server

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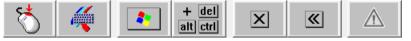
- The HMI device is connected as a client to a server.

Procedure

Proceed as follows:

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

   If you have operator authorization you can, as an alternative, click the traffic lights.
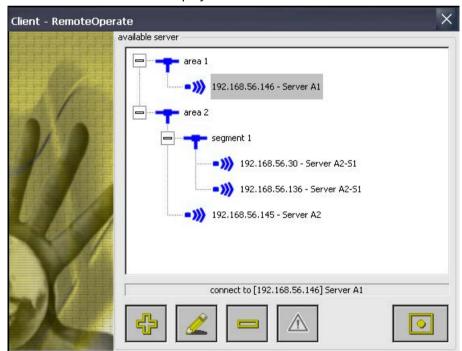
   #### Note
   #### Setting the time to display the toolbar

   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. Close the connection to the server using the ⊠ button.

   The server selection list is displayed:

3. Connect to a different server. Follow the instructions in the "Connecting a client" section.

Result

You have connected to a different server.

See also
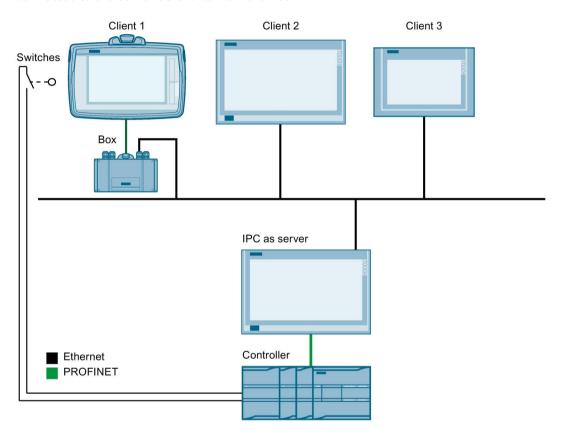
Connect client (Page 135)

6.5 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 |
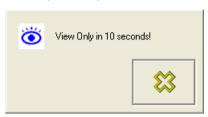
- A user tries to operate on client 2.
  Client 2 is not granted operator authorization because the user on client 1 has exclusive operator authorization.
  All traffic lights remain unchanged.

- 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
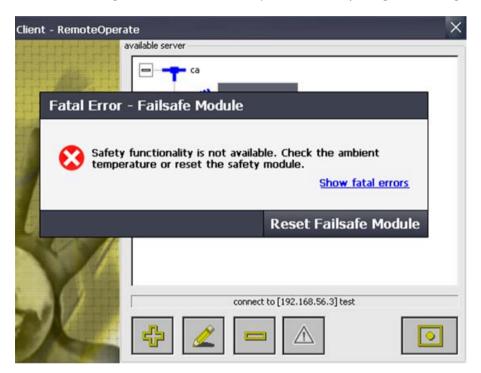
6.6 Alarm window

Overview
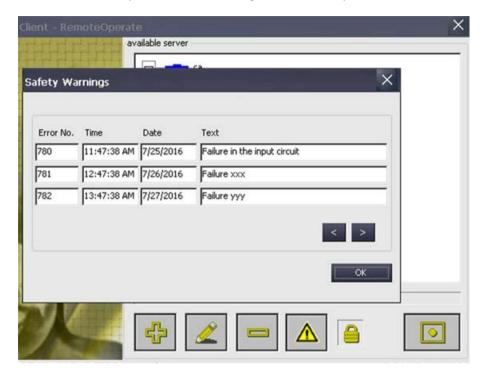
RemoteOperate displays new alarms:

● Serious errors in the popup window (see figure below)

● Alarm messages in the alarm window (see section "Opening and closing alarm windows")

Opening and closing the alarm window

As soon as a new Alarm message is pending, the alarm window opens and the pending alarms are shown (see section "Pending alarms" below).

Error No.	Time	Date	Text
780	11:47:38 AM	7/25/2016	Failure in the input circuit
781	12:47:38 AM	7/26/2016	Failure xxx
782	13:47:38 AM	7/27/2016	Failure yyy

Safety Warnings
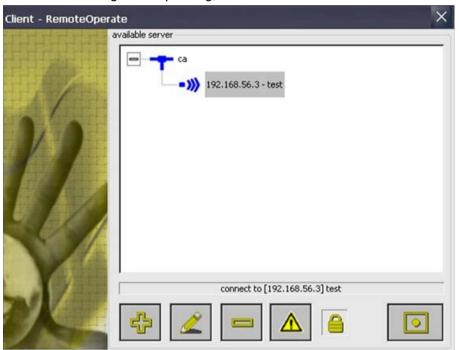
1. Close the alarm window.

   If no Alarm message is pending, the "Alarm window" button is grayed out and disabled (see section "Create/edit server selection list").

   If an Alarm message is still pending, the "Alarm window" button is active.

2. Click on the "Alarm window" button. The alarm window opens again.

Pending alarms

All pending alarms are displayed (incoming only, no outgoing event).

NOTICE
Pending of Safety alarms
Not all incoming events have an outgoing event. This means some Safety alarms may be pending forever.
• All Safety alarms are deleted again when you reboot the HMI device.
• Pending alarms are deleted during a restart.

Fail-safe operation

7

7.1 Connecting the connecting cable

Requirement

- The Mobile Panel is ready for operation.

Procedure

Connecting to a connection box without an assigned operating mode

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Note

If the connection box has not yet been assigned an operating mode, the emergency stop / stop button does not light up when the connecting cable is plugged in.

---

1. Plug the connecting cable into a connection box.

   The "Safety operation" dialog is displayed.

2. Select the required operating mode as described in "Assigning a safety-related operating mode (Page 115)".

3. Start the RemoteOperate Client software.

   The emergency stop / stop button does or does not light up depending on the selected operating mode, see the following sections.

Connection to a connection box with the assigned operating mode "Stop button evaluated by safety relay"

The stop button is active and does not light up.

Connection to a connection box with the assigned operating mode "E-stop button evaluated by safety relay"

The emergency stop button is active and lights up.

Response to errors

1. If an error occurs after you attach the connecting cable, a corresponding error message is displayed.

2. Check the connecting cable and the plug-in connection on the connection box. Read the message text and follow the instructions in the error message

You can find additional information on error scenarios in the following sections:

- Troubleshooting (Page 183)

7.2 Unplugging the connecting cable

Procedure

NOTICE
Connection box compact and connection box standard
When unplugging the connecting cable from the connection box compact or a connection box standard, there is no automatic bypass of the emergency stop / stop circuit. Without further actions, an emergency stop or stop is triggered in the plant and the plant switches to a safe state.
Take appropriate circuitry measures to prevent an undesired emergency stop or stop of the plant.

1. Unplug the connecting cable.

   The emergency stop button is no longer active and no longer lights up.

Switching to another connection box

If you have unplugged the connecting cable of the Mobile Panel from the connection box, the RemoteOperate software will remain active on the Mobile Panel for the duration of the bridging.

Note

Recovery time 1 second

After the connecting cable is unplugged from the connection box, the HMI device changes to **standby mode** in a defined manner: The screen switches off. The time needed for this process is approximately 1 second. Do not reconnect the HMI device to the connection box immediately after disconnecting it. Wait at least 1 second.

Bypass period 5 minutes

You can reconnect the HMI device to a connection box within 5 minutes. The RemoteOperate Client then connects to the server once again. You continue working in RemoteOperate at the same location (server screen).

The HMI device switches off when the bypass period has elapsed.

Maintenance and care 8

8.1 Replacing the Mobile Panel

When replacing an HMI device, the following applies:

● The TP1000F Mobile RO can only be replaced with a device of the same design.

● For a 1:1 data transfer from one HMI device to another, a replacement device with identical construction is required.

Below you will find a description of how to replace an HMI device with a replacement device with identical construction.

Replacement device with identical construction, manual backup exits

1. Insert the storage medium with the manually created backup into the slot of a replacement device with identical construction.

2. Proceed as described in the section "Functions for service and commissioning (Page 117)".

See also

Unplugging the connecting cable (Page 150)

8.2 Servicing the Mobile Panel

The HMI device is designed for low-maintenance operation. Also take into account the system components and accessories when carrying out maintenance. For maintenance, follow the safety instructions in "General safety instructions (Page 25)".

The scope of maintenance includes the following function tests:

● Function test of enabling button

● Function test of emergency stop / stop button

Depending on the Safety Integrity Level SIL of your application, the function tests are performed at the following intervals.

● SIL2: 1 x annually

● SIL3: 1 x monthly

Performing function tests

Function test of enabling button

1. Connect the HMI device to a connection box.

2. Press the enabling button to switch position 2 "Enabling".

3. Check whether the plant reacts to the "Enabling" switch position as defined.

4. Press the enabling button to switch position 3 "Panic".

5. Check whether the plant reacts to the "Panic" switch position as defined.

Function test of emergency stop / stop button

1. Press the emergency stop / stop button.

2. Check whether the plant reacts as defined.

3. Release the locking element of the emergency stop / stop button.

4. Check whether the plant starts up again as defined.

Result

If the function tests were completed successfully, you can continue using the HMI device.

If one of the function tests was not completed successfully, you must replace the HMI device.

See also

Reaction times and safety characteristics for fail-safe operation (Page 170)

8.3   Maintaining the Mobile Panel

The scope of maintenance includes:

- Cleaning the touch screen
- Cleaning the front membrane

For ongoing care, follow the safety instructions in "General safety instructions (Page 25)".

Procedure

NOTICE

Damage to the HMI device caused by unsuitable cleaning agents

The use of steam cleaners, high pressure cleaners, compressed air, solvents or abrasive cleaners will damage the HMI device.

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.

---

1. Follow the instructions in the section "Unplugging the connecting cable (Page 150)".

2. Spray cleaning agent onto a cleaning cloth.
   Do not spray cleaning agent directly onto the HMI device.

3. Clean the HMI device.
   When cleaning the display, wipe inwards from the edge of screen.

8.4 Replacing the touch pen

Requirement

You need the following to replace the touch pen:

- HMI device
- A touch pen, article number 6AV6645-7AB14-0AS0
- A T10 Torx screwdriver

Procedure

1. Remove the screw of the pen holder and take it out.
2. Remove the screw that fastens the strap of the touch pen.
3. Remove the strap and the touch pen.

Follow the steps in reverse order to install the new touch pen.

Tighten both screws using a torque of 0.3 Nm.

8.5 Spare parts and repairs

If the HMI device needs to be repaired, ship it to the Return Center in Erlangen.
The address is:

Siemens AG
Digital Factory Retouren-Center
c/o Geis Service GmbH, Tor 1-4
Kraftwerkstraße 25a
91056 Erlangen
Deutschland

You can find more detailed information on the Internet at "Spare parts and repairs (http://support.automation.siemens.com/WW/view/en/16611927)".

8.6 Recycling and disposal

The HMI devices described in these operating instructions can be recycled due to their low levels of pollutants. Contact a certified disposal service company for environmentally sound recycling and disposal of your old devices.

Technical specifications 9

9.1 Certificates and approvals

Approvals

> **Note**
>
> The following overview shows the possible approvals for the HMI device and the connection boxes. The only valid approvals for the HMI device and the connection boxes themselves are those shown on the nameplate.

CE approval

The Mobile Panel and the connection boxes satisfy the requirements and protection objectives of the following EC directives. The Mobile Panel and the connection boxes comply with the harmonized European standards that have been published in the Official Journals of the European Community for programmable controllers:

- 2004/108/EC "Electromagnetic Compatibility Directive" (EMC Directive) until 19 April 2016
- 2014/30/EU "Electromagnetic Compatibility Directive" (EMC Directive) as of 20 April 2016
- 2011/65/EU RoHS Directive
- The following also applies for fail-safe Mobile Panels: 2006/42/EC "Machinery Directive"

EC Declaration of Conformity

The EC Declaration of Conformity is available to the relevant authorities at the following address:

Siemens AG
Digital Factory
 Factory Automation
DF FA AS DH AMB
Postfach 1963
D-92209 Amberg

UL approval

Underwriters Laboratories Inc. in accordance with

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

IEC 61131

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

Marking for Australia

The HMI device and the connection boxes satisfy the requirements of Standard AS/NZS CISPR 16.

Identification for Eurasion Customs Union

- EAC (Eurasian Conformity)
- Customs union of Russia, Belarus and Kazakhstan
- Declaration of conformity according to Technical Regulations of the Customs Union (TR CU)

WEEE label (European Union)

Disposal instructions, observe the local regulations and the section "Recycling and disposal (Page 154)".

9.2   Standards on operating safety

Plant-related standards

The Mobile Panel and the connection box meet the following standards for use in a plant:

Standard	Title
DIN EN 12417:2001+A2:2009	Machine Tools - Safety - Machining Centres
EN 61000-6-2:2005	Electromagnetic compatibility (EMC) – Part 6-2: Generic standards - Immunity for industrial environments
EN 61000-6-4:2007 + A1:2011	Electromagnetic compatibility (EMC) – Part 6-4: Generic standard - Emission standard for industrial environments
DIN EN 61131-2:2007	The HMI device meets the requirements and criteria according to IEC 61131-2, Programmable Controllers, Part 2: Equipment requirements and testing

TÜV

The TÜV confirms that the Mobile Panel and the connection box satisfy the requirements of the following standards with regard to their safety functions:

Standard	Title
DIN EN 60204-1:2006	Safety of machinery – Electrical equipment of machines – Part 1: General Requirements
DIN IEC 62061:2005 + A1:2012	Safety of machinery – Functional safety of electrical, electronic and programmable control systems for machinery
IEC 61508-1 to 4:2010	Safety Integrity Level 3
DIN EN 13850:2012	Safety of machinery - EMERGENCY STOP - Principles for design
EN ISO 13849-1:2008	Performance Level e and Category 4

9.3 Electromagnetic compatibility

9.3.1 Electromagnetic compatibility

The Mobile Panel and connection box satisfy the requirements of the German EMC Act relating to the European internal market. The enhanced testing and limit value levels defined by CDV 61326-3-1/Ed. 1 have been taken into account during the type test.

EMC-compliant installation

EMC-compliant use of the Mobile Panel and connection box and the use of interference-proof cables are prerequisites for error-free operation. Note the following manuals:

● Directives for interference-free installation of programmable logic controllers (http://support.automation.siemens.com/WW/view/de/1064706), German

● Designing interference-free SIMATIC S7-1500, ET 200MP, ET 200SP, ET 200AL controllers (https://support.industry.siemens.com/cs/ww/en/view/59193566)

Disturbance variables

Electromagnetic compatibility applies for the following types of disturbance variables:

- Pulse-shaped disturbance variables

  The table below shows the electromagnetic compatibility of the Mobile Panel and the connection boxes with regard to pulse-shaped disturbance variables.

Pulse-shaped disturbance	Tested with	Degree of severity
Electrostatic discharge in accordance with IEC 61000-4-2	Air discharge: 8 kV Contact discharge: 6 kV	3
Burst pulses (high-speed transient interference) in accordance with IEC 61000-4-4	2 kV supply line	3

An external safety circuit is required for the "Surge immunity test according to IEC 61000-4-5".

Pulse-shaped disturbance	Tested with	Degree of severity
Asymmetrical coupling	2 kV power cable DC voltage with protective elements	3
Symmetrical coupling	1 kV power cable DC voltage with protective elements	3

- Sinusoidal interference

  The table below shows the electromagnetic compatibility of the Mobile Panel and the connection boxes with regard to sinusoidal interference.

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 - Up to 10 V/m in the 80 MHz to 1 GHz range - Up to 10 V/m in the 1.4 GHz to 2 GHz range - Up to 3 V/m in the 2 GHz to 6 GHz range	3
RF interference current on cables and cable shielding conforming to IEC 61000-4-6	Test voltage 10 V, with 80% amplitude modulation of 1 kHz in the 9 kHz to 80 MHz range	3

The following table shows the unwanted emissions from electromagnetic fields in accordance with EN 55016, Limit Value Class A, Group 1, measured at a distance of 10 m.

30 to 230 MHz	< 40 dB (V/m) quasi-peak
230 to 1 000 MHz	< 47 dB (V/m) quasi-peak

Emission of radio interference

Before you connect the HMI device and any connection box to the public electricity network, you must make sure that they comply with Limit Value Class B in accordance with EN 55022.

9.3.2 Emitted interference

The HMI device meets the requirements of EN 61000-6-4. The HMI device complies with limit class A.

The connection boxes meet the requirements of EN 61000-6-4. The HMI device complies with limit class A.

Note

The HMI device and connection boxes are not designed for use in residential areas. Operation of an HMI device and connection box in a residential area can interfere with radio and TV reception.

9.3.3 Immunity to interferences

The HMI device meets the requirements of EN 61000-6-2.

The connection boxes meet the requirements of EN 61000-6-2.

9.4 Mechanical ambient conditions

9.4.1 Transport and storage conditions

The following information applies to an HMI device and connection box transported and stored in its original packaging.

The HMI device meets the requirements of IEC 60721-3-2, Class 2M2 with the following amendments and limitations:

Type of condition	Permitted range
Free fall	≤ 1 m
Vibration to IEC 60068-2-6	5 … 8.4 Hz, deflection 3.5 mm 8.4 … 500 Hz, acceleration 1 g
Shock to IEC 60068-2-27	250 m/s^2, 6 ms, 1000 shocks

9.4.2 Operating Conditions

The HMI device is designed for mobile operation in a location protected from the weather. The HMI device meets the requirements of IEC 60721, Class 3M3 with the following amendments and limitations:
The following information applies to the HMI device and to the connection box.

Type of condition	Permitted range
Vibration to IEC 60068-2-6	5 ... 8.4 Hz, deflection 3.5 mm 8.4 ... 200 Hz, acceleration 1 g
Shock to IEC 60068-2-27	150 m/s^2, 11 ms, 3 shocks
Free fall tested to IEC 60068-2-31, knocking tested over according to IEC 60068-2-31	1.2 m free fall

9.5 Climatic ambient conditions

9.5.1 Transport and storage conditions

The following information applies to an HMI device and connection box transported and stored in their original packaging.

The HMI device meets the requirements of IEC 60721-3-2, Class 2K2 with the following amendments and limitations:

Type of condition	Permitted range
Temperature	-20 ... +60 °C
Atmospheric pressure	1080 ... 660 hPa, corresponds to an elevation of 1000 m to 3500 m
Relative humidity	10 ... 90%, without condensation
Pollutant concentration	SO2: < 0.5 ppm; Relative humidity < 60%, no condensation
	H_2S: < 0.1 ppm; Relative humidity < 60%, no condensation

Note

- Ensure that no condensation (dewing) develops on or inside the HMI device after transporting it at low temperatures or after it has been exposed to extreme temperature fluctuations.
- 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. In case of condensation, wait until the HMI device has dried completely or approximately 4 hours before switching it on.

9.5.2 Operating Conditions
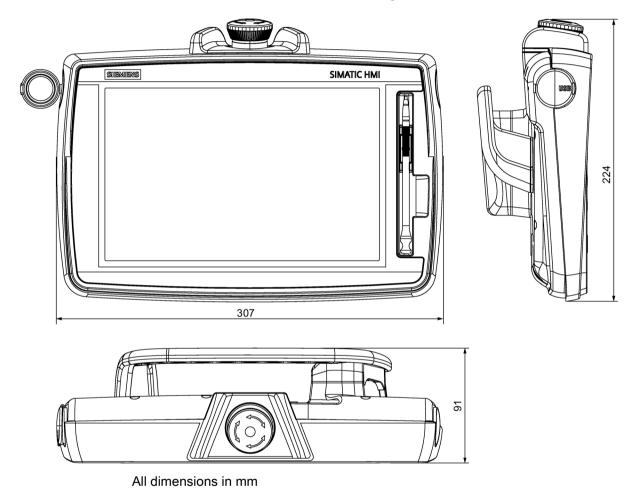
The HMI device is designed for mobile operation in a location protected from the weather. The HMI device meets the requirements of IEC 60721-3-3, Class 3K3 with the following amendments and limitations:

The following information applies to the HMI device and to the connection box.
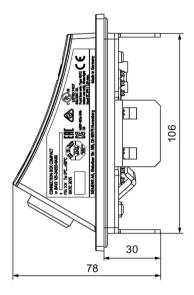
Type of condition	Permitted range
Temperature, HMI device	0 ... 45 °C
Temperature, connection boxes	0 ... 55 °C
Atmospheric pressure	1080 ... 795 hPa, corresponds to an elevation of 1000 m to 2000 m
Relative humidity	10 ... 90 %, no condensation
Pollutant concentration	SO_2: < 0.5 ppm; Relative humidity < 60%, no condensation
	H_2S: < 0.1 ppm; Relative humidity < 60%, no condensation
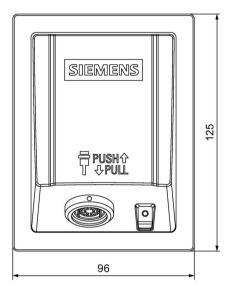
9.6 Dimension drawings
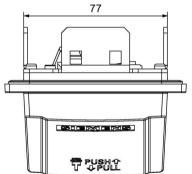
9.6.1 TP1000F Mobile RO dimension drawing

All dimensions in mm

9.6.2 Connection box compact dimension drawing
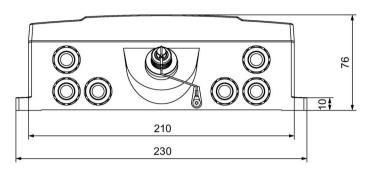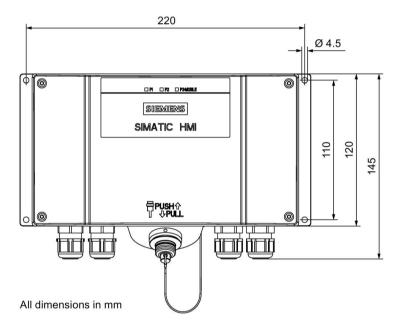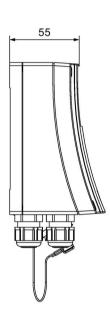
All dimensions in mm
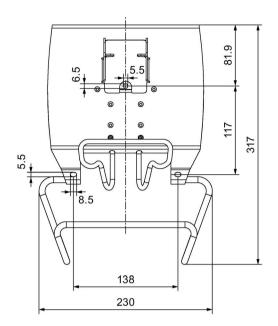
9.6.3 Dimension drawing for connection box standard and connection box advanced

All dimensions in mm

9.6.4 KTP Mobile wall-mounting bracket dimension drawing

All dimensions in mm

9.7 Technical specifications

9.7.1 Mobile Panel

Mechanical system

	TP1000F Mobile RO
Weight without packaging	Approx. 1650 g
Height of fall	1.2 m
Weight of the KTP Mobile wall-mounting bracket without packaging	Approx. 1000 g

Display

	TP1000F Mobile RO
Type	LCD TFT
Active display area	216.96 mm x 135.6 mm
Resolution	1280 × 800 pixels, widescreen
Color depth	16.2 million (8 bits)/262k colors (6 bits)
Brightness control	By software
Backlighting Half Brightness Life Time (MTBF [1])	LED ≥ 70,000 h with a brightness of 50%
Pixel error class in accordance with EN ISO 9241-307	II

[1] Operating hours after which the maximum brightness is reduced by half compared to the original value. MTBF is increased by using the integrated dimming function, for example, time-controlled via screen saver or centrally via PROFIenergy.

Input device

	TP1000F Mobile RO
Type	Touch screen, analog resistive
Labeling strips	No

Memory

	TP1000F Mobile RO
Data memory	512 MB
Program memory	1024 MB

Interfaces

	TP1000F Mobile RO
1 × Ethernet RJ45	10/100 Mbps
USB 2.0	Yes

Power supply, via connection box

	TP1000F Mobile RO
Rated voltage	+24 V DC
Permitted voltage range	19.2 … 28.8 V (24 V ± 20%)
Transients, maximum permitted	35 V (500 ms)
Time between two transients	≥ 50 s
Current consumption, maximum	Approx. 830 mA
Current consumption, typical	Approx. 450 mA
Inrush current I^2t	Approx. 0.2 A^2s
Fuse, internal	Electronic
Bridging time after the HMI device has been disconnected from the connection box	5 minutes
Charging time on the connection box until the bridging time is guaranteed	2 minutes

Miscellaneous

	TP1000F Mobile RO
Real time clock, buffered, can be synchronized	Yes, typical buffer period 3 weeks
Feedback, acoustic	No

Insulation testing, protection class and degree of protection

Insulation testing

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

Circuits with rated voltage of U_i	Test voltage
< 50 V	500 V AC to other circuits / to ground

Protection class

Protection class III according to IEC 61131-2.

Protection against foreign objects and water

The device meets the requirements of IEC 60529.

Degree of protection	Explanation
IP65 all-round	Applies to HMI device including connecting cable under the following conditions: • The terminal compartment cover is closed. • The USB port is closed using a cover cap.
Type 4X/Type 12 (indoor use only)	Applies if indicated on the nameplate

Degree of pollution and overvoltage category

The device meets the following requirements according to IEC 61131-2:2007.

Degree of pollution	2
Overvoltage category	II

9.7.2   Connecting cable

Weight	You can find the information based on length on the Internet at: SIMATIC HMI accessories (https://mall.industry.siemens.com/mall/en/de/Catalog/Products/10030052) *
Bending radius, minimum	≥ 4-times the outside diameter of the line
Rated condition, temperature	0 to 55 °C

* To navigate directly to the information about the connecting cable, enter the article number of the connecting cable in the "Site Explorer" text box.

9.7.3   Connection boxes

Mechanics

Weight without packaging	Connection box compact	Approx. 250 g
	Connection box standard, connection box advanced	Approx. 750 g

Power supply

The information in the table below applies to all connections boxes.

Rated voltage		+24 V DC
Permitted voltage range		19.2 … 28.8 V (± 20 %)
Transients, maximum permitted		35 V (500 ms)
Time between two transients		≥ 50 s
Enabling button [1]	Supply voltage	24 V DC
	Amperage, max.:	300 mA
	Amperage, min.:	10 mA
Emergency stop/stop button [1]	Supply voltage	24 V DC
	Amperage, max.:	500 mA
	Amperage, min.:	10 mA
Cable length between connection box and PLC		≤ 30 m
Fuse, internal		Electronic
Current load PLC-accompanying signals		< 100 mA
Recovery time		≥ 1 s

[1] For fail-safe Mobile Panel

Current consumption of the connection box compact

Current consumption without Mobile Panel	Typical	Approx. 20 mA
	Continuous current, maximum	Approx. 50 mA
	Inrush current I^2t	Approx. 0.1 A^{2}s
Current consumption with Mobile Panel	Typical	Approx. 550 mA
	Continuous current, maximum	Approx. 700 mA
	Inrush current I^2t	Approx. 0.6 A^{2}s

Current consumption of the connection box standard and connection box advanced

Current consumption without Mobile Panel	Typical	Approx. 100 mA
	Continuous current, maximum	Approx. 150 mA
	Inrush current I^2t	Approx. 0.5 A^{2}s
Current consumption with Mobile Panel	Typical	Approx. 600 mA
	Continuous current, maximum	Approx. 750 mA
	Inrush current I^2t	Approx. 0.6 A^{2}s
Industrial Ethernet switch	Designation	SCALANCE XF208
	Article number	6GK5208-0BA00-2AF2

Internal switches of the connection box standard and connection box advanced

Industrial Ethernet switch of the **connection box standard**	Designation	SCALANCE XF208
	Article number	6GK5208-0BA00-2AF2

Industrial Ethernet switch of the **connection box advanced**	Designation	SCALANCE XF204 IRT
	Article number	6GK5204-0BA00-2BF2

A detailed description of the internal SCALANCE switches of both connection boxes is available in the following documents:

- Operating instructions "SCALANCE X-200" (https://support.industry.siemens.com/cs/ww/en/view/102051962)

- Configuration manual "SCALANCE X-200" (https://support.industry.siemens.com/cs/ww/de/view/109476763)

Insulation testing, protection class and degree of protection

Insulation testing

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

Circuits with rated voltage of U_i	Test voltage
< 50 V	500 V AC to other circuits / to ground

Protection class

Protection class III according to IEC 61131-2

Protection against foreign objects and water

The device meets the requirements of IEC 60529.

Degree of protection	Validity

IP65 all-round	• For connection box compact:
	  The connection box has been installed as described in this document.
	• For connection boxes standard and advanced:
	  All unused screw connections are capped.

Type 4X/Type 12 (indoor use only)	Applies if indicated on the nameplate

9.7.4 Power consumption specifications

The connection box and Mobile Panel must be taken into consideration when calculating the power consumption. The tables below show typical values for the power consumption.

Note

The actual power consumption may vary depending on the configuration and the load at the interfaces of the Mobile Panel deviating from the specified values. The following factors affect the power consumption, for example:

- The display brightness set on the Mobile Panel
- The load on the USB interface of the Mobile Panel
- The length of the connecting cable

Connection box	Power consumption, typical
Connection box compact	0.5 W
Connection box standard	2.4 W
Connection box advanced	2.8 W

Mobile Panel	Power consumption, typical
TP1000F Mobile RO	10.8 W

9.7.5 Reaction times and safety characteristics for fail-safe operation

Note

Proof-test intervals

Proof-test interval of the device (Lifetime): 20 years. The device must be replaced after this, at the latest.

Proof-test interval for safety-related operator controls dependent on the Safety Integrity Level SIL:

- SIL2: Function test 1 × per year
- SIL3: Function test 1 × per month

Reaction times

The table shows below the reaction times of the HMI device up to the output or interface X10 of the connection box, dependent on the F-system.

Reaction time	Operating mode	Stop/E-stop button evaluated by safety relay
Emergency stop / stop button		
Reaction time during error-free operation	Press switch	< 10 ms
	Unlock switch	< 10 ms
Reaction time with error	Discrepancy detected (safe state)	See Safety relay
	Critical internal error	< 30 ms
Discrepancy time		See Safety relay
Acknowledgment time in safety mode		–
Enabling		
Reaction time during error-free operation	No Enabling or Panic	< 15 ms
	Enabling	< 40 ms
Reaction time with error pending	Discrepancy detected (safe state)	< 15 ms
	Critical internal error	< 30 ms
Discrepancy time		500 ms
Acknowledgment time in safety mode		-

Note

Times

The specified times do not include the applicable safety relay.

Safety characteristics

Note

All values for the following information are based on the SN 29500:2005 and an ambient temperature of 60 °C.

Safety characteristics for the HMI devices and the associated connection boxes

- In accordance with IEC 61508

Maximal attainable safety integrity level	SIL2 (Proof Test Interval 1 year)
	SIL3 (Proof Test Interval 1 month)
Mode of operation	High and low demand mode
Hardware fault tolerance (HFT)	1
Classification	B
Mean time to Restoration (MTTR)	100 h
Probability of a dangerous failure per hour (PFH)	$< 1 \times 10^{-8}$ 1/h
Probability of a dangerous failure on demand (PFD)	$< 8 \times 10^{-5}$
Lifetime	20 years

- In accordance with IEC 13849-1

Meantime to Failure (MTTFd)	High
Diagnostic Coverage (DCavg)	High
Performance Level	d (Proof Test Interval 1 year)
	e (Proof Test Interval 1 month)
Category	3 (Proof Test Interval 1 year)
	4 (Proof Test Interval 1 month)

Safety characteristics (compatibility with PN basic and PN plus connection boxes)

- In accordance with IEC 61508

Maximal attainable safety integrity level	SIL2 (Proof Test Interval 1 year)
Mode of operation	High and low demand mode
Hardware fault tolerance (HFT)	1
Classification	B
Mean time to Restoration (MTTR)	100 h
Probability of a dangerous failure per hour (PFH)	$< 3 \times 10^{-8}$ 1/h
Probability of a dangerous failure on demand (PFD)	$< 2 \times 10^{-4}$
Lifetime	20 years

- In accordance with IEC 13849-1

Meantime to Failure (MTTFd)	High
Diagnostic Coverage (DCavg)	Medium
Performance Level	d
Category	3

9.7.6 Specification of cables to be used

Cables for 24 V DC and functional grounding		Connection box advanced	Connection box standard	Connection box compact
Connectable cable cross-sections for single-core/solid cables H05(07) V-U		0.5 ... 1.5 mm²; AWG 21 ... AWG 16		
Connectable cable cross-sections for flexible/stranded cables H05(07) V-K	Without ferrule	0.5 ... 1.5 mm²		
		AWG 21 ... AWG 16		
	With ferrule according to DIN 46 228/1	0.5 ... 1.5 mm²		
	With ferrule according to DIN 46 228/4	0.5 ... 0.75 mm²		
Number of cables per connection		1		
Stripped length of the cables		8 mm		
Connection technology		Push-in terminal		

Connections for emergency stop / stop button and enabling button		Connection box advanced	Connection box standard	Connection box compact
Connectable cable cross-sections for single-core/solid cables H05(07) V-U		0.2 ... 1.5 mm²; AWG 24 ... AWG 16		
Connectable cable cross-sections for flexible/stranded cables H05(07) V-K	Without ferrule	0.2 ... 1.5 mm²		
		AWG 24 ... AWG 16		
	With ferrule according to DIN 46 228/1	0.25 ... 1.5 mm²		
	With ferrule according to DIN 46 228/4	0.25 ... 0.75 mm²		
Number of cables per connection		1		
Stripped length of the cables		8 mm		
Connection technology		Push-in terminal		

PROFINET cables	Connection box advanced	Connection box standard	Connection box compact
Connectable cable	6XV1840-2AH10 or comparable		6XV1840-2AH10 or comparable, Industrial Ethernet FastConnect Cable 2x2 *
Connection technology	Fast connect		RJ45

* Available on the Internet at: Industrial Ethernet FastConnect Cable 2x2 (http://w3.siemens.com/mcms/industrial-communication/en/ie/Cabling-technology/fc-cable-2x2/Pages/fc-cable-2x2.aspx)

9.8 Interface description for Mobile Panel

9.8.1 Internal interface X1 P1

RJ45 plug connector, socket, 8-pin

Contact	Assignment
1	TD+
2	TD–
3	RD+
4	Not connected
5	Not connected
6	RD–
7	Not connected
8	Not connected

9.8.2 Internal interface X80

Pin connector, 12-pole

The pin connector has connections for:

- Power supply
- STOP circle
- Enable circuit
- Signals for transmitting the box ID

9.8.3 External interface X61

USB, type A, socket
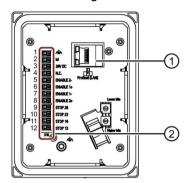
Contact	Assignment
1	+5 V DC, out, max. 500 mA
2	USB-DN
3	USB-DP
4	GND

9.9 Connection box compact interfaces

9.9.1 Position of the interfaces

The figure below shows the interfaces of the connection box compact with relevance for commissioning.

①   Interface X1
②   Interface X10

9.9.2 Interface X1

RJ45 socket, 8-pin

Contact	Assignment
1	TD+
2	TD–
3	RD+
4	Not connected
5	Not connected
6	RD–
7	Not connected
8	Not connected

Note

LEDs on the RJ45 socket not active

The two LEDs at the RJ45 socket of the connection box compact are not supported by the hardware and do not light up during operation.

9.9.3   Plug-in terminal strip X10
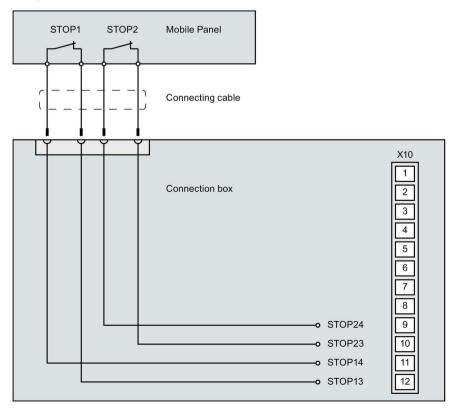
Plug-in terminal strip, 12-pin

Contact	Assignment	Associated circuits and reference information
1	Functional grounding	**Ground and power supply**
2	M	See "Connecting the functional grounding and power supply to the connection box (Page 55)."
3	P24	
4	Not connected	
5	ENABLE2–	**Enabling button**
6	ENABLE1+	See section "Operating the enabling button (Page 67)" and wiring information in the following section
7	ENABLE1–	
8	ENABLE2+	
9	STOP 24	**Emergency stop / stop button**
10	STOP 23	See section "Pressing the emergency stop / stop button (Page 68)" and wiring information in the following section
11	STOP 14	
12	STOP 13	

9.9.4   Wiring of safety-related operator controls
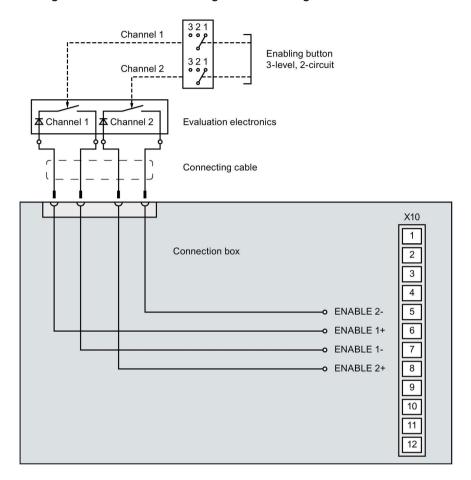
Emergency stop/stop button

The figure below shows the wiring of the emergency stop/stop button in the connection box compact.

Enabling button
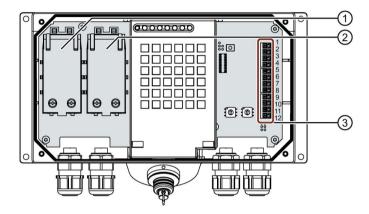
The figure below shows the wiring of the enabling button in the connection box compact.

9.10 Interfaces of the connection box standard and connection box advanced

9.10.1 Position of the interfaces

The figure below shows the position of the interfaces in the connection box standard and in the connection box advanced with relevance for commissioning.
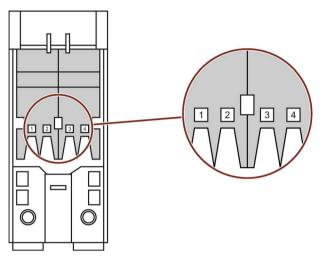
①   Fast Connector X1
②   Fast Connector X2
③   Interface X10

9.10.2 Fast connector X1 and X2

Fast Connector, 4-pin

The connection box contains two fast connectors for connecting the Ethernet data cables.

Contact	Color	Assignment in the connection box	Assignment in the PLC [1]
1	Yellow	RD+	TD+
2	White	TD+	RD+
3	Orange	RD–	TD–
4	Blue	TD–	RD–

[1] Only relevant if the PLC is connected directly to the connection box.

9.10.3 Plug-in terminal strip X10
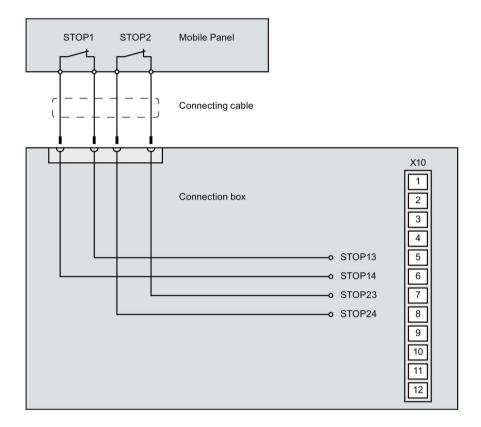
Plug-in terminal strip, 12-pin

Contact	Assignment	Associated circuits and reference information
1	Functional grounding	**Ground and power supply**
2	M	See "Connecting the functional grounding and power supply to the connection box (Page 55)."
3	P24	
4	Not connected	
5	STOP 13	**Emergency stop / stop button**
6	STOP 14	See section "Pressing the emergency stop / stop button (Page 68)" and wiring information in the following section
7	STOP 23	
8	STOP 24	
9	ENABLE2+	**Enabling button**
10	ENABLE1–	See section "Operating the enabling button (Page 67)" and wiring information in the following section
11	ENABLE1+	
12	ENABLE2–	

9.10.4 Wiring of safety-related operator controls

Emergency stop/stop button
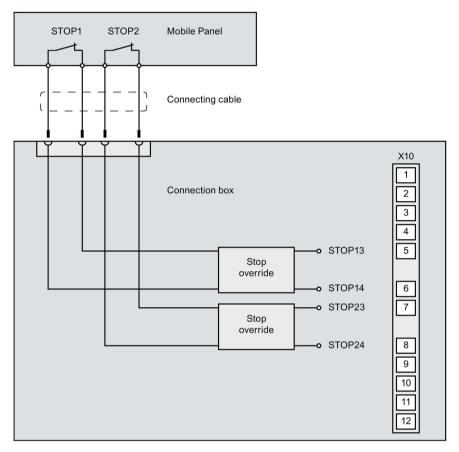
Connection box standard

The figure below shows the wiring of the emergency stop/stop button in the connection box standard.

Connection box advanced

The figure below shows the wiring of the emergency stop/stop button in the connection box advanced.
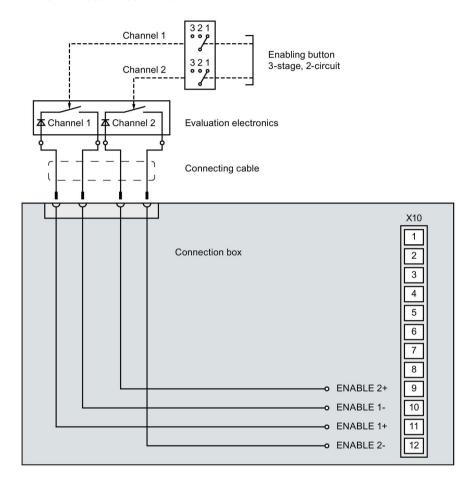
The stop bypass only works if the connection box is supplied with power.

Enabling button

The figure below shows the wiring of the enabling button in the connection box standard and in the connection box advanced.

Technical Support

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

A.1 Troubleshooting

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

- HMI does not start
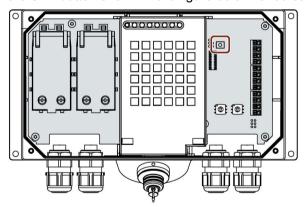
  If the HMI device does not start, the wires at interface X10 in the connection box may have been crossed. Check the connected wires and change the connections if necessary.

- Internal error

  If an internal error occurs in the HMI device, the HMI device displays a message. Safety functions are no longer available. If the error persists after resetting the fail-safe module, contact the Siemens hotline. You can find additional information in the following section: Service and support (Page 184)

- SCALANCE firmware error in the connection box

  If a SCALANCE firmware error occurs in the standard or advanced connection box, press the SET button shown in the figure below for at least 15 seconds.

The SET button resets the firmware of the internal SCALANCE switch to the factory settings.

Note

The setting for safety-related operating mode of the connection box is retained.

You can find additional information about the SET button in the following document:

Operating instructions "SCALANCE X-200"
(https://support.industry.siemens.com/cs/ww/en/view/102051962)

A.2 Service and support

You can find additional information and support for the products described at:

- Technical Support (https://support.industry.siemens.com)

  For support information, refer to "Displaying information about the Mobile Panel (Page 99)" and "Display firmware (Page 100)".

- Support request form (http://www.siemens.com/automation/support-request)

- After-sales information system for SIMATIC PC/PG (http://www.siemens.com/asis)

- Overall SIMATIC documentation (http://www.siemens.com/simatic-tech-doku-portal)

- Contacts and office locations (http://www.automation.siemens.com/mcms/aspa-db/en/Pages/default.aspx)

- Training center (http://sitrain.automation.siemens.com/sitrainworld/?AppLang=en)

- Industry Mall (https://mall.industry.siemens.com)

When contacting your local representative or Technical Support, please have the following information at hand:

- Article number of the HMI device

- BIOS version for industrial PC or image version for HMI device

  You can find the necessary information in "General settings (Page 88)".

- Other installed hardware

- Other installed software

Tools & downloads

Please check regularly whether there are any updates or hotfixes available for download to your HMI device. The download area is available on the Internet at the following link:

After-sales information system for SIMATIC PC/PG (http://www.siemens.com/asis)

List of abbreviations

<div align="right">

B

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B.1 List of abbreviations

AS	Australian Standard
AWG	American Wire Gauge
CPU	Central Processing Unit
CSA	Canadian Standards Association
DB	Data block
DC	Direct Current
DHCP	Dynamic Host Configuration Protocol
DNS	Domain Name System
DP	Distributed I/O
DVD	Digital Versatile Disk
I/O	Input and Output
EAC	Eurasian Conformity
EC	European Community
ESD	Electrostatically sensitive devices
EMC	Electromagnetic compatibility
EN	European standard
ES	Engineering System
FCC	Federal Communications Commission
F_FB or F-FB	Fail-safe function block
GND	Ground
HF	High Frequency
Hardware	Hardware
HMI	Human Machine Interface
ID	Identification
IEC	International Electronic Commission
IEEE	Institute of Electrical and Electronics Engineers
IP	Internet Protocol
ISO	International Standard Organization
KTP	Key Touch Panel
LAN	Local Area Network
LED	Light Emitting Diode
MAC	Media Access Control
MTBF	Mean Time Between Failures
NTP	Network Time Protocol

NZS	New Zealand Standard
OB	Organization block
OP	Operator Panel
PC	Personal Computer
PG	Programming device
PELV	Protective Extra Low Voltage
RAM	Random Access Memory
RJ45	Registered Jack Type 45
RO	RemoteOperate
SD	Secure Digital
SELV	Safety Extra Low Voltage
SMTP	Simple Mail Transfer Protocol
SP	Service Packet
SSL	Secure Socket Layer
STEP 7	Simple programming of controllers
TAB	Tabulator
TCP/IP	Transmission Control Protocol/Internet Protocol
Telnet	Telecommunication Network
TFT	Thin Film Transistor
TIA	Totally Integrated Automation
TLS	Transport Layer Security
UL	Underwriter's Laboratory
USB	Universal Serial Bus
VDE	Verband Deutscher Elektrotechniker
WINS	Windows Internet Naming Service

Glossary

"Automatic mode" and "setup mode"

Program-controlled plants pose a significant safety risk for operators. EN 12417 "Machine tools. Safety. Machining centers" and DIN EN 13128 " Safety of machine tools - Milling and boring machines" define operating modes to ensure staff safety. A "setup mode" is required for correct plant setup for "automatic mode". Plant functions in this mode are limited compared to automatic mode. Devices have to be moved with the handwheel or in jog mode.

"Transfer" operating modes

In this mode, you can transfer an image from the configuration PC to the HMI device or backup and restore HMI device data, for example.

Automation system

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

Configuration software

Configuration software is software used to create projects for process visualization and input of process values. The SIMATIC TIA Portal is configuration software.

Controller

Controller is a general term for devices and systems with which the HMI device communicates, for example SIMATIC S7.

EMC

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

Flash memory

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

HMI device

An HMI device is a device used for the operation and monitoring of machines and systems. The machine or system states are visualized on the HMI device by means of graphic objects or signal lamps. The operator controls of the HMI device allow the operator to interact with the processes of the machine or system.

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.

PROFINET

Within the framework of Totally Integrated Automation, PROFINET represents the systematic further development of the following bus systems:

- PROFIBUS DP as well-established fieldbus

- Industrial Ethernet as the communications bus for the cell level

The experience gained from both systems has been and continues to be integrated in PROFINET. PROFINET is an Ethernet-based automation standard from PROFIBUS International and defines a vendor-neutral communication and engineering model.

Proof-test interval

Recurring test for detecting hidden dangerous failures in a safety-related system so that a repair, if needed, can restore the system to an "as new" condition or as close to this condition as is practically possible.

Real-time Ethernet

Ethernet for isochronous cycle times of < 1 ms, for example, to meet the high real-time requirements of drive technology.

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.

System

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

Telnet

Telnet is the name of a network protocol widely used on the Internet. The client-server protocol is based on character-based data exchange over a TCP connection. Programs that implement the function of the terminal device are also frequently called Telnet.

Transfer

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

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