

# SIEMENS

## SIMATIC HMI

### HMI device Mobile Panel 170 (WinCC flexible)

#### Operating Instructions

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## Safety Guidelines

This manual contains notices which you should observe to ensure your own personal safety as well as to avoid property damage. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring to property damage only have no safety alert symbol.



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### Danger

indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

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### Warning

indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

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### Caution

used with the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

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### Caution

used without safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

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### Notice

used without the safety alert symbol indicates a potential situation which, if not avoided, may result in an undesirable result or state.

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When several danger levels apply, the notices of the highest level (lower number) are always displayed. If a notice refers to personal damages with the safety alert symbol, then another notice may be added warning of property damage.

## Qualified Personnel

The device/system may only be set up and operated in conjunction with this documentation. Only qualified personnel should be allowed to install and work on the equipment. Qualified persons are defined as persons who are authorized to commission, to earth, and to tag circuits, equipment and systems in accordance with established safety practices and standards.

## Intended Use

Please note the following:



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### Warning

This device and its components may only be used for the applications described in the catalog or technical description, and only in connection with devices or components from other manufacturers approved or recommended by Siemens.

This product can only function correctly and safely if it is transported, stored, set up and installed correctly, and operated and maintained as recommended.

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# Preface

## Purpose of this manual

This manual provides information based on the requirements defined by DIN 8418 regarding mechanical engineering documentation. This information relates to the device, its place of use, transport, storage, installation, use and maintenance.

This manual is intended for the following target groups:

- User
- Commissioning engineer
- Service technicians
- Maintenance technicians

Please read carefully the section "Safety information and general notes".

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

## Basic knowledge required

A general knowledge of automation technology and process communication is necessary in order to understand the manual.

It is assumed users have good basic knowledge on the use of personal computers and Microsoft Windows operating systems.

## Area of validity

The manual applies to the SIMATIC Mobile Panel 170 in conjunction with the WinCC flexible 2004 software package.

## What's new since the 09/2002 release?

This manual describes the use of the HMI device in combination with WinCC flexible 2004.

The 09/2002 version is still valid for use of the HMI device with ProTool.

## Its place in the information landscape

This manual is part of the SIMATIC HMI documentation. The information below presents an overview of the information landscape of SIMATIC HMI.

### User manual

- WinCC flexible Micro:
  - Describes basic principles of configuration using the WinCC flexible Micro engineering system
- WinCC flexible Compact/Standard/Advanced:
  - Describes basic principles of configuration using the WinCC flexible Compact/WinCC flexible Standard/WinCC flexible Advanced engineering systems.
- WinCC flexible Runtime:
  - Describes how to commission and operate your Runtime project on a PC.
- WinCC flexible Migration:
  - Describes how to migrate an existing ProTool project to WinCC flexible.
  - Describes how to migrate an existing WinCC project to WinCC flexible.
  - Describes the conversion of ProTool projects together with changing the HMI device from OP7 to OP 77B.
  - Describes the conversion of ProTool projects with a change in the HMI device from a graphics device to a Windows CE device.
- Communication:
  - Communication Part 1 describes the connection of the HMI device to SIMATIC PLCs.
  - Communication part 2 describes the integration of the HMI device into control systems of third-party suppliers.

### Operating instructions

- Operating instructions for the SIMATIC OP 77B, TP 170micro/TP 170A/TP 170B/OP 170B, SIMATIC Mobile Panel 170, SIMATIC TP 270/OP 270/MP 270B, and SIMATIC MP 370 HMI devices.
- Quick reference manuals for the SIMATIC OP 77B and SIMATIC Mobile Panel 170 HMI devices.

### Getting started

- WinCC flexible for newcomers:
  - Based on a practical example, this is a step-by-step introduction to the basics of configuring screens, alarms, recipes and screen navigation.
- WinCC flexible for advanced users:
  - Based on a practical sample project, this is a step-by-step introduction to the basics of engineering log files, project reports, scripts, user management, multilingual projects and integration into STEP 7.
- WinCC flexible Options:
  - Based on a practical sample project, this is a step-by-step introduction to the basics of configuring the options WinCC flexible Sm@rtServices, Sm@rtAccess and OPC Server.

## Online availability

The following links provide direct access to technical documentation on SIMATIC products and systems in English, German, French, Italian, and Spanish.

- SIMATIC Guide Technische Dokumentation in Deutsch:  
[http://www.ad.siemens.de/simatic/portal/html\\_00/techdoku.htm](http://www.ad.siemens.de/simatic/portal/html_00/techdoku.htm)
- SIMATIC Guide for Technical Documentation in English:  
[http://www.ad.siemens.de/simatic/portal/html\\_76/techdoku.htm](http://www.ad.siemens.de/simatic/portal/html_76/techdoku.htm)

## Conventions

A distinction was made in naming configuration and runtime software:

- "WinCC flexible" refers to the configuration software.
- "Runtime" refers to the runtime software that can be executed on HMI devices.

The term "WinCC flexible" is used in the general context. A version name such as "WinCC flexible 2004" is always used when it is necessary to distinguish it from other versions.

The following conventions are intended to facilitate easy reading:

Layout	Range of validity
"Add screen"	<ul style="list-style-type: none"> <li>• Terminology of the user interface, e.g. dialog names, tabs, buttons, menu commands.</li> <li>• Input required, e.g. limit values, tag values.</li> <li>• Path specification</li> </ul>
"File ► Edit"	Operating sequence, e.g. menu / context menu commands.
<F1>, <Alt+P>	Keyboard operation

Please observe the following emphasized notes:

### Note

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

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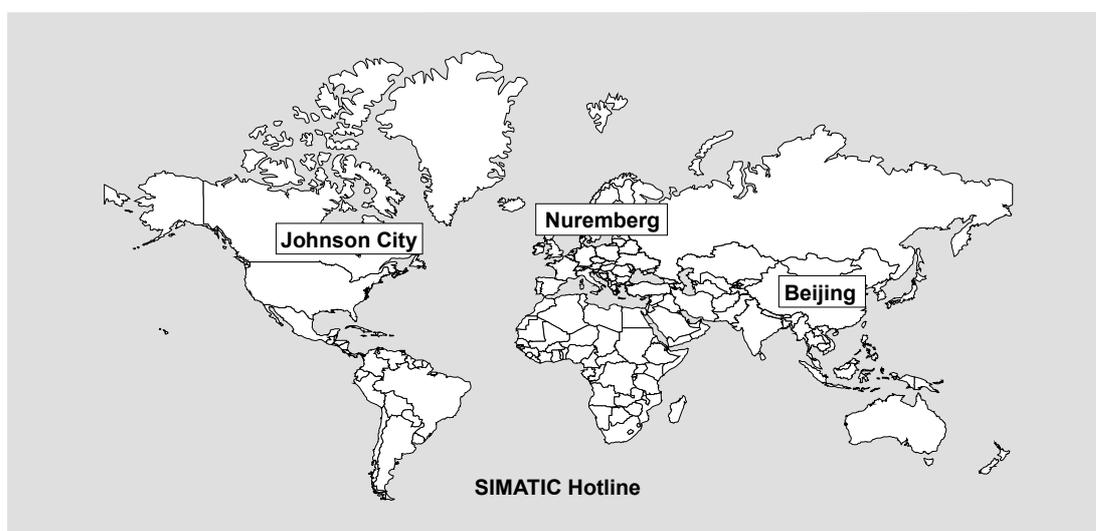
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- Our Service & Support search engine provides you with abundant documentation.
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Information is available in German and English.



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# Overview

## 1.1 Introduction

### Mobile HMI device

The Mobile Panel 170 is a mobile HMI device that is based on the innovative Microsoft Windows CE operating system.

The Mobile Panel 170 includes a serial interface and a MPI/PROFIBUS DP interface as standard equipment. Both interfaces can also be used to transfer the project.

The memory of the Mobile Panel 170 is designed for small to medium-sized configurations.

Performance features (sample):

- Automatic transfer detection for project transfer
- Password protection
- IO fields for displaying and making changes to process parameters
- Buttons and function keys available for configuration
- Graphic IO fields for configuring warning displays (indicator lights)
- Bargraphs for graphical display of dynamic values
- Standard library for graphics and buttons that can be used in WinCC flexible
- Graphics for labeling buttons or that can be configured as format-length background screens
- Tests for labeling buttons, process screens, or process values in any character size
- Print functions
- Trends
- Scheduler
- Alarms with buffering
- Recipe management
- Backup of recipe data and projects on CF card

## 1.2 Field of Application

### Overview

Wherever mobility in on-site operator control and monitoring is called for, the Mobile Panel 170 provides a complete solution regardless of the particular industry sector or application.

The choice of the Mobile Panel 170 is particularly advantageous in applications involving large production plants, complex or secluded systems, long transfer lines and production lines, and materials handling. The commissioning engineer or machine operator is always at the center of the action. This enables optimal viewing of the workpiece or process, thereby allowing the monitored process to be influenced directly.

Fast and precise setup and positioning during commissioning helps to reduce downtime for retrofitting, maintenance, and troubleshooting.

Due to its high degree of protection (IP65), non-rotating mass storage, and fanless operation, the Mobile Panel 170 is suitable for harsh industrial environments.

The Mobile Panel 170 offers the user the option to graphically display operating modes, current process values, and faults of a connected PLC with the help of Windows-based applications.

The Mobile Panel 170 enables you to:

- Control and monitor the process using menus.  
For example, setpoints can be entered or actuators can be controlled by entering values or activating configured function keys.
- Display the system being monitored on fully-graphic, dynamic screens
- Display and process alarms and visualize process tags, e.g., in I/O fields, bars, or graphical I/O fields.
- Intervene directly in the running process via inputs.

---

#### Note

Observe the applicable safety regulations!

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Hereinafter, the term "system being monitored" refers collectively to machines, machining centers, systems, and processes.

# 1.3 Configuring with WinCC flexible

## Introduction

In order to operate a machine or system using an HMI device, the user interface must be configured for the HMI device. This procedure is referred to as the "configuration phase".

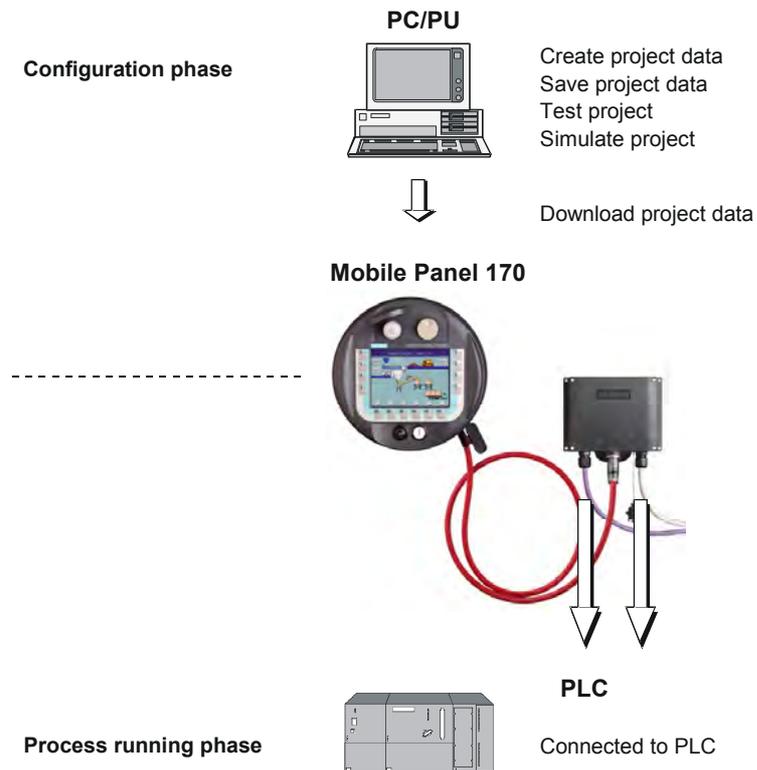


Figure 1-1 Configuration and process running phases

## Principle

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### Note

The Mobile Panel 170 can be configured with the WinCC flexible Compact, WinCC flexible Standard, or WinCC flexible Advanced configuration software. In this manual, the designation WinCC flexible is used to represent all three variants.

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1. Configuring the functionality of the user interface This includes, for example:
  - Graphics
  - Text
  - Operating and display objects

For this purpose, use a configuration computer (PC or programming device) containing the WinCC flexible configuration software.

2. Connect the HMI device to the terminal box in order to establish a connection to the power supply.
3. If the project is to be transferred serially to the HMI device, connect the configuration computer directly to the HMI device.  
  
If the project is to be transferred over MPI/PROFIBUS DP, connect the configuration computer to the HMI device via the terminal box.
4. Transfer the project to the HMI device.
5. Connect the HMI device to the PLC.

## Result

The HMI device communicates with the PLC and responds to the program progress in the PLC ("process running phase") according to the information configured.

## Further information

The creation of projects for HMI devices and functions for the configuration software are described in detail in the "WinCC flexible" user manual and in the WinCC flexible online Help.

The latest information, which could not be taken into consideration at the time the manuals went to print, is available in the "Readme.chm" file on the WinCC flexible CD.

## 1.4 Design

### Overview

The following figure shows the Mobile Panel 170 with a terminal box. For stationary operation, the Mobile Panel 170 can be securely placed in a wall holder (not shown).



Figure 1-2 Mobile Panel 170 – Design

With the Mobile Panel 170 (1), you can alternate between operator control of a system at multiple terminal boxes (2). A plug on the connecting cable (3) enables you to quickly switch to another terminal box.

Cables for process connection (5) are available in different lengths and must be purchased separately. Cables for the power supply and safety functions (4) must be selected specifically for the system.

### Mobile Panel 170

The Mobile Panel 170 comes equipped as follows:

- With enabling switches
- With enabling switches and STOP button
- With enabling switches, STOP button, handwheel, key-operated switch, and illuminated pushbutton



Figure 1-3 Front view of Mobile Panel 170

- 1 Handwheel - optional
- 2 STOP button, 2-circuit - optional
- 3 C-STN-LC display, with touch screen, analog, resistive:  
5.7-in., Q-VGA resolution 320 x 240
- 4 Function keys
- 5 Illuminated pushbutton - optional
- 6 Key-operated switch - optional

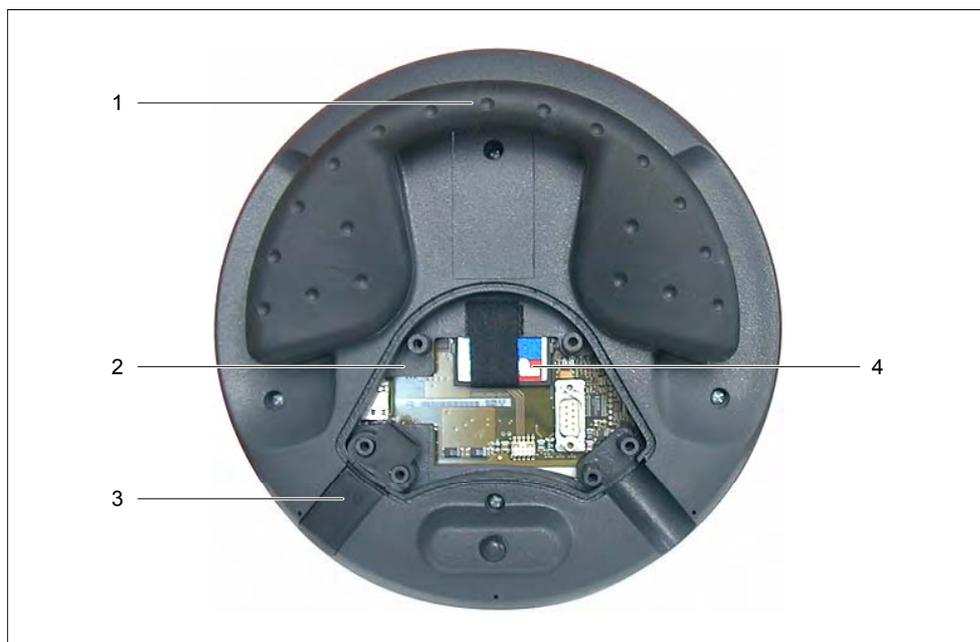


Figure 1-4 Rear view of Mobile Panel 170 with open terminal compartment

- 1 Grip
- 2 Terminal compartment
- 3 Sealing plug (for assurance of degree of protection IP65)
- 4 CF memory card



Figure 1-5 Side view of Mobile Panel 170

- 1 Enabling switches, 3-stage, 2-circuit  
The enabling switches are located on both sides of the Mobile Panel 170

**See also**

Connecting cables (Page 1-8)

Terminal box (Page 1-10)

Wall holder (Page 1-11)

## 1.5 Accessories

### 1.5.1 Connecting cables

#### Design

The connecting cable connects the Mobile Panel 170 to the terminal box. It is an industrial cable and, thus, resistant to many solvents and lubricants. The flexural strength of the connecting cable is tuned to the field usage conditions.

Connections on the HMI device side

- RJ45, 8-pin
- Plug connector, 10-pin

Connections on the terminal box side:

- Metallic push-pull circular connector, 22-pin

---

**Note**

When inserted, the circular connector guarantees a rating of IP65.

---

The connecting cable is available in different lengths. Additional information can be found in the Siemens ST 80 catalog.



Figure 1-6 Connecting cables

- 1 Metallic push-pull circular connector
- 2 Strain relief and kink protection
- 3 RJ45 plug
- 4 Plug connector

## 1.5.2 Terminal box

### Design

---

#### Note

To guarantee a degree of protection rating of IP65 at the terminal box, the dummy cap must be inserted.

---



Figure 1-7 Terminal box

- 1 Threaded cable entry hole for process data line
- 2 Threaded cable entry hole for power supply cable and shield
- 3 Threaded cable entry hole for cable with supplementary Stop and enabling switch signals and for PLC-accompanying signals
- 4 Connection jack for connecting cable plug
- 5 Dummy cap

---

#### Notice

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

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

---

## Variants

The terminal box can be ordered in the following variants:

- Terminal Box Basic
- Terminal Box Plus

The two types of terminal boxes differ in how the circuit evaluates the Stop Circuit or Emergency Stop signal of the system to monitored and corresponding response to the system being monitored.

## See also

Terminal Box Plus (Page 2-5)

Terminal Box Basic (Page 2-7)

STOP button (Page 5-7)

Terminal box (Page 12-4)

## 1.5.3 Wall holder

### Function

The wall holder is used to securely mount the Mobile Panel 170 for stationary operation.



Figure 1-8 Wall holder

## See also

Wall holder (Page 12-3)

## 1.5.4 Protective sleeves and films

### Function

To protect your customized keyboard labeling on the Mobile Panel 170, a set of five protective sleeves is available for the labeling strips.

For the touch screen, a set of protective films is available. This protective film prevents the touch screen from being scratched or soiled. The set contains five protective films.

## 1.5.5 Memory card

### Memory card

A commercially available CF memory card (Compact Flash, Type 1) can be used as an external storage medium. A CF card that has been tested and released can be ordered separately.

### See also

Location of memory card (Page 5-14)

## 1.6 Functional scope

### General

The following table presents an overview of the functional scope of the HMI device. The numeric values are maximum values which the HMI device is capable of managing. These values are not accumulative: It is not possible, for example, to simultaneously configure 2000 alarms and 100 screens each with 50 tags per screen.

The specified values are also limited by the size of the configuration memory.

Function		Mobile Panel 170
<b>Alarms</b>	Number	2000 <sup>1)</sup>
	Indicators	Alarm line/Alarm window/Alarm view
	View all pending alarms	Alarm window/Alarm view
	Long alarm text	70 characters (dependent on font)
	Process values in alarm text	8
	Color-coding of different alarm states	x
	Warning alarms	x
	Error alarms	x
	Type of display	First/last, selectable
	Acknowledge individual alarms	x
Acknowledge several fault alarms simultaneously (group acknowledgement)	16 acknowledgment groups	
EditAlarm	x	
<b>ALARM_S</b>	Display S7 alarms	x
<b>Alarm logging</b>	Output to printer	x
<b>Volatile alarm buffer</b>	Alarm buffer capacity	128 alarm events
	View alarms	x
	Delete	x
	Print	x
	Alarm events pending simultaneously (max.):	64
<b>Alarm acquisition</b>	Time of occurrence	Date/time
	Alarm events	Arrived, departed, acknowledged

Function		Mobile Panel 170
<b>Screens</b>	Number	100
	Fields per screen	50
	Tags per screen	50
	Complex objects per screen (trends, bargraphs, etc.)	5
	Indicators	x
	Print (hardcopy)	x
	Screen objects	<ul style="list-style-type: none"> <li>• Text box</li> <li>• IO field</li> <li>• Date / time field</li> <li>• Graphic IO field</li> <li>• Symbolic IO field</li> <li>• Graphic view</li> <li>• Button</li> <li>• Switch</li> <li>• Bar</li> <li>• User view</li> <li>• Trend view</li> <li>• Recipe views</li> <li>• Alarm window/Alarm view</li> <li>• Alarm indicator</li> </ul>
	Operator prompting	
	Operator note	x
	Animation	x
Unhide/Hide objects	x	
Pictograms for function keys	x	
Tab order	x	
LEDs in function keys	x	
Permanent window	x	
<b>Tags</b>	Number	1000 <sup>2)</sup>
<b>Limit-value monitoring</b>	Input/output	x
<b>Conversion functions</b>	Input/output	x
<b>Help text</b>	Lines/characters	7/35 (dependent on font)
	For alarms	x
	For screens	x
	For screen objects	
	IO field	x
	Symbolic IO field	x
	Graphic IO field	x
	Button	x
Switch	x	
Hidden button	x	

Function		Mobile Panel 170
<b>Trends</b>	Number	50
<b>Graphic objects</b>	Number	500
<b>Texts</b>	Number	2000
<b>Print functions</b>	Hardcopy of the screen content, also in color	x
	Direct message logging	x
<b>Recipes</b>	Number	20
	Data records per recipe	50 <sup>3)</sup>
	Elements per recipe	60
<b>Online languages</b>	Number of languages	5
<b>Screen settings</b>	Touch calibration	x
	Contrast	x
<b>Scheduler</b>	Trigger functions cyclically or once	x
<b>Connections</b> <sup>4)</sup>	Number	4

- 1) Total number for warning and error alarms
- 2) Maximum total number for PowerTags and internal tags
- 3) Limited by the storage medium
- 4) With SIMATIC S7

## 1.7 Communication with PLCs

The following tables show the PLCs to which the HMI device can be connected.

Table 1-1 Communication with SIMATIC controllers

Controller	Mobile Panel 170
SIMATIC S5 DP	x
SIMATIC S7-200	x
SIMATIC S7-300/400	x
SIMATIC 500/505 serial	x
SIMATIC 500/505 DP	x
SIMOTION	x

Table 1-2 Communication with PLCs from other manufacturers

<b>Controller</b>	<b>Mobile Panel 170</b>
Allen Bradley DF1	x
Allen Bradley DH485	x
LG GLOFA-GM	x
Modicon MODBUS	x
Mitsubishi FX	x
Mitsubishi protocol 4	x
GE Fanuc SNP	x
Omron Hostlink/Multilink	x

## Safety information and general notes

### 2.1 Safety information

#### Safety regulations



---

**Warning**

Strictly observe all instructions in this manual at all times. Otherwise, hazardous situations can arise or the safety mechanisms in the Mobile Panel 170 can be compromised.

---

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



---

**Warning**

The configuring engineer for a machine or system controller must take precautions so that an interrupted program can be restarted normally after a power interruption or power failure. Dangerous operating conditions must not occur, even temporarily.

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

The configuring engineer for the system being monitored must take precautions to ensure that only authorized personnel can make changes to the memory that could result in a hazardous situation.

The STOP button must be checked periodically for proper functioning.

---



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**Warning**

Following a heavy shock to the HMI device, e.g., the device was dropped, check the safety-relevant parts for proper functioning.

Manual actions performed with the Mobile Panel 170 may only occur in conjunction with the enabling switches and at reduced velocity.

If the system being monitored is being operated with the Mobile Panel 170, make sure that operator control has been assumed exclusively by the Mobile Panel 170 and cannot be applied from any other point in the system being monitored.

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## High frequency radiation

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### Notice

#### Exceptional operating situations

High-frequency emissions, from mobile phones for example, can cause exceptional operating situations..

---

## 2.2 General Notes

### Industrial use

The HMI device is designed for industrial use. The following standards are met:

- Requirements for emitted interference in EN 61000-6-4: 2001
- Requirements for noise immunity in EN 61000-6-2: 2001

### Residential use

If the HMI device is used in a residential area, you must take measures to achieve limit class B in accordance with EN 55011 for radio interference emissions.

Suitable measures to achieve limit class B for suppression of radio interference include:

- Installation of the HMI device in a grounded control cabinet
- Use of filters in electrical supply lines

## 2.3 Operating safety

### Norms

The HMI device complies with the following standards:

- EN 60204-1  
Safety of Machinery - Electrical Equipment of Machines
- EN 61131-1 and EN 61131-2  
Programmable Logic Controllers
- The HMI device was tested for EMC in accordance with the following standards:
  - EN 50081-2, EMC - Emitted Interference
  - EN 61000-6-2, Generic Standards - Immunity for Industrial Environments
  - IEC 61131-2, Draft 10.03.02, Programmable Logic Controllers

- STOP button for fast machine stops:  
EN 60947-5-1:1997, K 2.2, Low-Voltage Switchgear and Control Gear, Positive-Opening Contacts  
EN 954 Category 3 can be achieved with an external monitoring device. Two floating break contacts for connection of external I/O, rated voltage of 24 V (safety extra-low voltage in accordance with EN 61131-2 or EN 50179, Equipment of Electrical Power Installations with Electronic Devices), maximum current of 500 mA
- Enabling equipment in accordance with EN 60204-1 in safety categories defined in EN 954-1:1996, Safety-Related Parts of Control Systems:
  - EN 954 Category 3 can be achieved with an external monitoring device.
  - Two parallel switched floating make contacts for connection of external I/O, rated voltage of 24 VDC (safety extra-low voltage in accordance with EN 61131-2 or EN 50178), typical current of 500 mA.

If the Mobile Panel 170 is being used to monitor a system, the following standards are met:

- prEN 1921, Industrial Automation Systems - Safety of Integrated Manufacturing Systems
- EN 12417:2001, Machine Tools - Safety - Machining Centers
- UL 508, Industrial Control Equipment
- CSA C22.2 No.14, Industrial Control Equipment

### See also

Connection examples for Enable and STOP buttons (Page 12-14)

## 2.4 Voltage supply

### Safety specifications



---

#### Warning

The HMI device qualifies as Class III equipment in accordance with EN 61131-2 or EN 50178. The 24 VDC supply must be ensured through safe separation of extra low voltage from dangerous contact voltages, e.g., using a safety isolation transformer or equivalent.

The supply circuit must be protected against short circuits with a 3.15 A fuse.

Therefore, when sizing the supply, you must pay attention to the voltage drop at the connecting cable.

---

## 2.5 STOP button

### 2.5.1 Function

#### Function

A STOP button is available as an operator control element on the Mobile Panel 170.

The STOP button on the Mobile Panel 170 brings about a safety-related Stop of the system being monitored in accordance with EN 60204-1:1997, Section 9.2.5.3. You have the option of implementing a Category 0, 1, or 2 Stop function in accordance with EN 60204-1: 1997, Section 9.2.2. The Stop function category must be selected on the basis of a risk assessment.

The Stop function of the Mobile Panel 170 can, therefore, be used as a reliable machine stop as well as for looping in the Emergency Stop circuit of the system to be monitored.

The signals of the STOP button are wired differently in the two versions of the terminal box. In the Terminal Box Plus, the signals control the Stop or Emergency Stop circuit of the system being monitored. If the Mobile Panel 170 is not connected, the Stop or Emergency Stop circuit is closed. In the Terminal Box Basic, on the other hand, the signals of the Stop or Emergency Stop circuit are fed via the STOP button. If the Mobile Panel 170 is not connected, the Stop or Emergency Stop circuit of the system being monitored is open.

The term "Stop loop through" has the following meaning:

The Stop or Emergency Stop circuit of the system being monitored is looped through the terminal box and not interrupted, irrespective of whether the Mobile Panel 170 is connected to the terminal box (and STOP button not activated).

This functionality is only available in the Terminal Box Plus.



#### Warning

If the Mobile Panel 170 is equipped with a STOP button and is not connected to the terminal box, a Stop cannot be initiated using the Mobile Panel 170. The STOP button of the Mobile Panel 170 is then ineffective.

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

---



#### Warning

If a Category 0 or 1 Stop circuit is implemented, the Stop function must be in effect regardless of the operating mode. A Category 0 Stop must have precedence. Releasing the STOP button must not initiate a dangerous situation (see also EN 60204-1:1997, Section 9.2.5.3).

The Stop function is not to be used to replace safety equipment.

---

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**Notice**

Install only one type of terminal box (i.e., Terminal Box Plus or Terminal Box Basic) for monitoring your system.

---

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**Notice**

If the Mobile Panel 170 is connected to the terminal box, the STOP button on the Mobile Panel 170 can trip if it comes off, thus causing the system to come to a standstill.

---

**See also**

Connection examples for Enable and STOP buttons (Page 12-14)

## 2.5.2 Terminal Box Plus

### Introduction

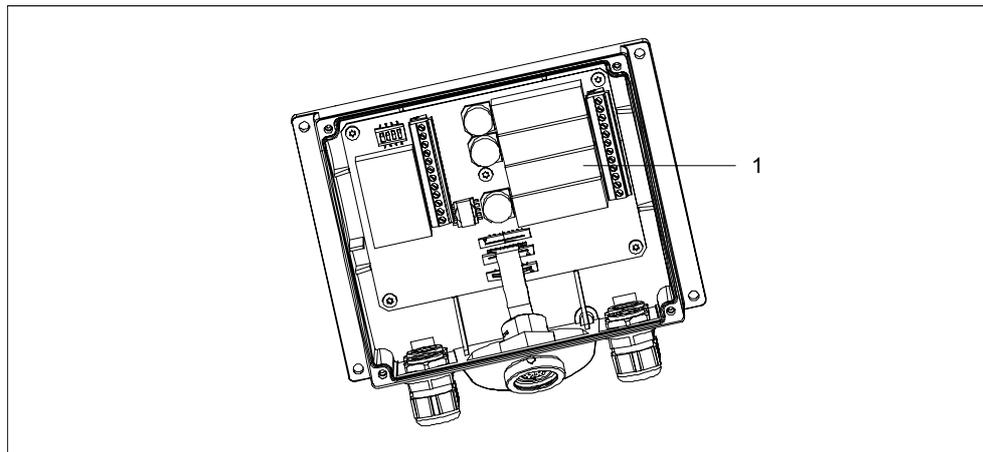


Figure 2-1 Terminal Box Plus

The Terminal Box Plus has four relays (1).

**States of the Stop or Emergency Stop circuit with Terminal Box Plus**

The Stop or Emergency Stop circuit statuses for a connected Mobile Panel 170 with a STOP button and Terminal Box Plus are:

Mobile Panel 170	STOP button	Status of the Stop or Emergency Stop circuit
Connected	Not pressed	The Stop or Emergency Stop circuit remains closed.
Connected	Pressed	The Stop or Emergency Stop circuit is open. The system being monitored is shut down.
Not connected	-	The Stop or Emergency Stop circuit remains closed.

The Stop or Emergency Stop circuit statuses for a connected Mobile Panel 170 without a STOP button and Terminal Box Plus are:

Mobile Panel 170	STOP button	Status of the Stop or Emergency Stop circuit
Connected	Not present	The Stop or Emergency Stop circuit remains closed.
Not connected	Not present	The Stop or Emergency Stop circuit remains closed.



**Warning**

If you have shut down the system, you can only release the STOP button or place the system being monitored back into operation if the condition triggering the Stop function has been corrected and a safe restart is provided for.



**Warning**

If you disconnect the Mobile Panel 170 from the Terminal Box Plus, the Stop or Emergency Stop circuit is closed and the Stop status of the system being monitored will be nullified. This occurs irrespective of whether the STOP button was pressed on the Mobile Panel 170.

**Notice**

Approximately 100 ms elapse between the time the STOP button is pressed and the Stop contacts respond at the Terminal Box Plus.

**See also**

Terminal box (Page 12-4)

### 2.5.3 Terminal Box Basic

#### Introduction

In contrast to the Terminal Box Plus, the Terminal Box Basic does not have the "Stop loop through" function.



#### Caution

If the Mobile Panel 170 is connected, the Stop or Emergency Stop circuit is controlled via the STOP button. If the connecting cable of the Mobile Panel 170 is disconnected from the Terminal Box Basic, the Stop or Emergency Stop circuit is interrupted and a safe shutdown of the system being monitored or Emergency Stop is executed.

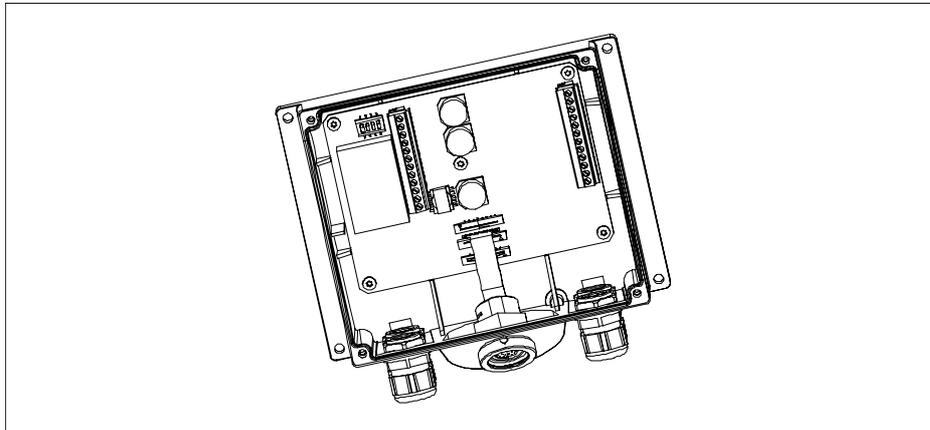


Figure 2-2 Terminal Box Basic

The Terminal Box Basic does not contain four relays (see also Terminal Box Plus).

#### States of the Stop or Emergency Stop circuit with Terminal Box Basic

The Stop or Emergency Stop circuit statuses for a connected Mobile Panel 170 with a STOP button and Terminal Box Basic are:

Mobile Panel 170	STOP button	Status of the Stop or Emergency Stop circuit
Connected	Not pressed	The Stop or Emergency Stop circuit remains closed.
Connected	Pressed	The Stop or Emergency Stop circuit is open. The system being monitored is shut down.
Not connected	-	The Stop or Emergency Stop circuit is open. The system being monitored is shut down.

The stop circuit states for a connected Mobile Panel 170 without a STOP button and Terminal Box Basic are:

Mobile Panel 170	STOP button	Status of the Stop or Emergency Stop circuit
Connected	Not present	The Stop or Emergency Stop circuit remains closed.
Not connected	Not present	The Stop or Emergency Stop circuit is open. The system being monitored is shut down.



**Warning**

If you have shut down the system, you can only release the STOP button or place the system being monitored back into operation if the condition triggering the Stop function has been corrected and a safe restart is provided for.

**See also**

Terminal box (Page 12-4)

## 2.6 Enabling equipment

### Introduction

The enabling equipment consists of two enabling switches.

Each machine has a normal and a special operating mode. In normal operation (automatic), the machine fulfills its mission. Safety is ensured in this operating mode through closed, isolating protective devices and/or with functional non-isolating protective devices that block access.

Special machine operating modes are used to maintain normal operation. In this case, safety must be ensured in a different way than in normal operation, because dangerous machine zones must be entered and selective actions must even be possible.

### Special operation

A reduced velocity for the system being monitored must be specified in this case on the basis of a risk assessment. An action is only possible when enabling equipment is activated simultaneously. The operator must have received the necessary training and be acquainted with the details of the intended application.

## Use of enabling equipment

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

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

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

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

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



---

### Warning

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

Commands for unsafe conditions are not permitted to be issued with an enabling switch alone. For this purpose, a second deliberate start command via a button on the Mobile Panel 170 is required. The only person allowed to remain in the danger zone is the person who is activating the enabling switch.

---

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

## See also

Field of Application (Page 1-2)

Design (Page 1-5)

Connection examples for Enable and STOP buttons (Page 12-14)

## **2.7 Risk analysis of the system to be monitored**

### **Norms**

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

- EN 292, General Machinery Directives
- EN 1050 Risk Assessment for Machinery
- EN 954-1 Safety of Machinery

These considerations lead to a safety category (B, 1, 2, 3, 4) in accordance with EN 954-1 that ultimately dictates how the safety-related aspects of the system to be monitored are to be furnished.

The connection examples with three different monitoring devices show how Category 3 in accordance with EN 954-1 can be achieved with the Mobile Panel 170 and its safety-related features. Attention must be paid that the overall concept of the system to be monitored is designed with this in mind.

### **See also**

Connection examples for Enable and STOP buttons (Page 12-14)

## Planning use

### 3.1 Transport

Only unpack the HMI device at its location of use.

---

**Notice**

Ensure that no condensation develops on or in the HMI device after it has been transported at low temperatures or it has been exposed to extreme temperature fluctuations.

Allow the HMI device to warm up to room temperature before starting it up. Do not expose the HMI device to direct radiation from a heater to do this. If condensation has formed, the HMI device may only be switched on when it has completely dried, normally after waiting approximately 4 hours.

---

Conditions for problem-free, reliable operation of the HMI device are proper transport and storage, positioning and assembly as well as careful operation and maintenance.

Failure to observe these conditions annuls the rights to claims under the terms of warranty.

---

**Notice**

The HMI device was function-tested before shipping. If a malfunction occurs nevertheless, please enclose a full description of the malfunction when returning the device.

---

## 3.2 Installation note

### Installing HMI devices in conformance with EMC requirements

The HMI device fulfills the requirements stipulated in the EMC law of the Federal Republic of Germany as well as the EMC guidelines of the European Union.

Conditions for error-free operation include a PLC design that conforms to EMC requirements and the use of interference-proof cables. The guidelines for interference-free installation of PLCs apply also to installation of the HMI device.



---

#### Caution

Only shielded cables are permitted for all signal connections.

Screw or lock all plug connections.

Do not install signal lines in the same cable ducts as power cables.

Siemens AG is not liable for malfunctions or damage arising from use of self-made cables or cables from other manufacturers.

---

### Conditions for use

The HMI device is intended for weatherproof use. The conditions under which the device can be used exceed the requirements set out in DIN IEC 60721-3-3:

- Class 3M3 (mechanical requirements)
- Class 3K3 (climatic requirements)

### Use with additional measures

Examples of applications where the use of the HMI device requires additional measures are:

- In locations with a high degree of ionizing radiation
- In locations with extreme operating conditions, e.g.:
  - Corrosive vapors or gases
  - Strong electric or magnetic fields
- In systems requiring special monitoring, e.g.:
  - In particularly hazardous locations

## 3.3 Installation location and type of protection

### Installation location

The HMI device is intended for mobile use and not for installation. A wall holder is available for stationary placement and can be mounted at a suitable location.

### Degree of protection

The HMI device guarantees an IP65 rating based on its dust and splash-proof housing.



---

#### Caution

To prevent overheating of the HMI device during operation, it must not be exposed to any direct sunlight.

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### Ambient conditions

---

#### Caution

If the maximum permissible ambient temperature is exceeded, do not operate the HMI device without external ventilation.

Otherwise, the HMI device may be damaged, nullifying the approvals listed in the "Approvals" section as well as the warranty for the HMI device.

---

### See also

HMI device (Page 12-5)

Approvals (Page A-1)

Ambient conditions (Page 12-7)



## Set up and connection

### 4.1 Check shipment

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

---

**Notice**

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

---

Keep the documentation supplied. This belongs to the HMI device and may be required when commissioning in the future.

### 4.2 Setting up the HMI device

#### 4.2.1 Mounting the wall holder

##### Procedure

---

**Notice**

Select a vertical surface or a surface with a slight backwards tilt to mount the wall holder. Otherwise, secure placement of the Mobile Panel 170 cannot be guaranteed.

The HMI device could fall off and the STOP button (if present) could be activated unintentionally.

---

1. Select a convenient, safe position for the wall holder.

---

**Note**

A position at eye level is recommended. This permits the Mobile Panel 170 to be operated even if it is placed in the wall holder.

---

2. Place the wall holder from the front onto the mounting surface.
3. Mark the mounting holes with a scribe.
4. Drill three through-holes or three M5 tapped holes
5. Attach the wall holder.

**See also**

Wall holder (Page 12-3)

### 4.2.2 Mounting the terminal box

**Procedure**

---

**Note**

Take into account the maximum length of the connecting cable when selecting the position for the terminal box.

---

1. Select a convenient, safe position for the terminal box.
2. Place the terminal box from the front onto the mounting surface.
3. Mark the mounting holes with a scribe.
4. Drill four through-holes or four M4 tapped holes
5. Attach the terminal box.

---

**Notice**

The terminal box housing is made of plastic. Do not exceed 0.4 to 0.5 Nm of torque when tightening the screws.

---

**See also**

Terminal box (Page 12-4)

## 4.3 Connecting the HMI device

### 4.3.1 Electrical installation

#### Electrical connections

Electrical installation involves the following:

- Mobile Panel 170
- Terminal box

The HMI devices require the following electrical connections:

Connection to	Mobile Panel 170	Terminal box
Configuration computer (programming device or PC)	x	x
Printer	x	-
Controller	-	x
Supply voltage	-	x
STOP button	-	x
Accept button	-	x
Monitoring signal of the STOP button	-	x
Cable for input bit for connection detection	-	x

An electrical connection to the programming device/PC is only required for transferring the project.

#### Communication interfaces

Communication interfaces for I/O devices and PLCs are integrated in the Mobile Panel 170.

Communication interface IF1 is located in the terminal box at terminal strip 1.

#### Communication interface for I/O devices

I/O device	Report	Interface
Configuration computer	RS 232	IF2
	PROFIBUS DP	IF1
Printer, local	RS 232	IF2

**Communication interface for PLCs**

Siemens PLC	Report	Interface
SIMATIC S5	PROFIBUS DP	IF 1
SIMATIC S7	MPI <sup>1)</sup> PPI PROFIBUS DP	IF 1
SIMATIC 500/505	NITP PROFIBUS DP	IF 1
SIMOTION	PROFIBUS DP	IF 1

1) Not possible when connected to SIMATIC S7-212

PLC manufacturer	Report	Interface
Allen-Bradley	DF1 <sup>1)</sup> DH+ <sup>2)</sup> DH485 <sup>3)</sup>	IF 1
GE Fanuc	SNP/SNPX	IF 1
LG GLOFA-GM	Dedicated communication <sup>4)</sup>	IF 1
Mitsubishi	FX Protocol 4	IF 1 IF 1
OMRON	Hostlink / Multilink	IF 1
Modicon	MODBUS	IF 1

1) Applies to SLC500, PLC5/20, MicroLogix PLCs

2) Applies to SLC500, PLC5/20 PLCs via DF1

3) Applies to SLC500, MicroLogix controllers

4) Lucky Goldstar via PROFIBUS DP, integrated also with SIMATIC S7, SIMATIC S5, SIMATIC 505

**See also**

HMI device (Page 12-5)

Connecting a configuration computer serially (Page 4-13)

Connecting a configuration computer via MPI/PROFIBUS DP (Page 4-26)

Connecting the PLC (Page 4-24)

Connect printer (Page 4-11)

Interfaces (Page 12-9)

Terminal box (Page 12-11)

## 4.3.2 Opening the terminal compartment

### Introduction

Before you begin:

---

#### **Caution**

Disconnect the Mobile Panel 170 from the terminal box.

If the HMI device is lying on its front side, the STOP button can be activated or other operator control elements (key-operated switches, buttons) can be inadvertently activating, causing malfunctions to occur.

---

---

#### **Caution**

Note the ESD instructions.

---

---

#### **Note**

Pay attention to cleanliness. Foreign bodies or liquids must not contact the printed circuit board or the inside of the HMI device.

Place the HMI device with the front side on a flat, clean surface to protect against damage.

Use a Philips screwdriver (No. 2 pt.) to open and close the terminal compartment.

---

---

#### **Notice**

The housing of the Mobile Panel 170 is made of plastic. Therefore, the mounting hole threads cannot handle the same amount of stress as a comparable metallic housing. Do not exceed 0.4 to 0.5 Nm of torque when tightening the screws.

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

---

To gain access to the connections of the Mobile Panel 170, remove the cover on the back of the Mobile Panel 170.

**Procedure**

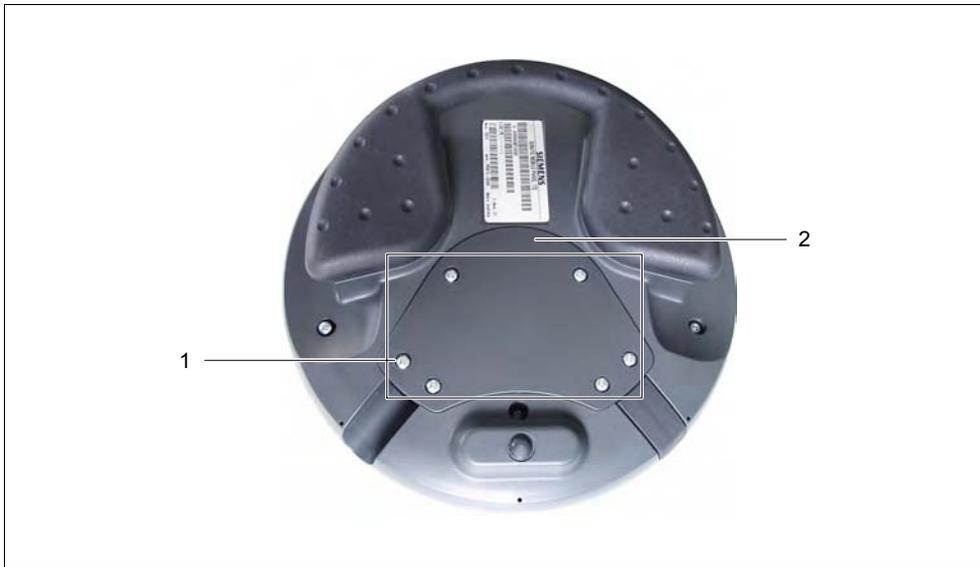


Figure 4-1 Opening the terminal compartment

1. Unscrew the six screws (1) approximately 1 cm on the back of the Mobile Panel 170.

---

**Note**

The cover was designed in such a way that the screws cannot be lost. Therefore, unscrew the screws a distance of only 1 cm. They can then be removed together with the cover where they will remain intact.

---

2. Lay down the cover (2) with the screws in a safe manner.

**See also**

ESD guideline (Page A-1)

### 4.3.3 Arrangement of terminals

#### Connections

The figure shows the arrangement of the terminals in the Mobile Panel 170 once the cover has been removed from the terminal compartment.

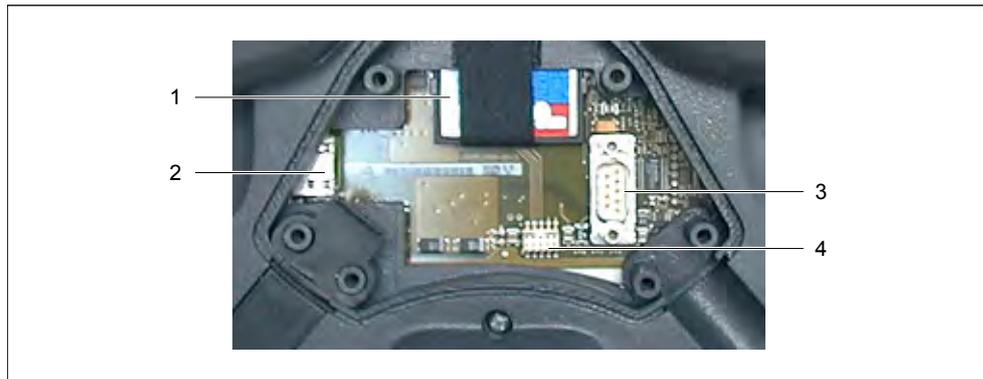


Figure 4-2 Arrangement of terminals

No.	Name	Description	Application
1	Slot	CF card	<ul style="list-style-type: none"> <li>• Data storage</li> <li>• Backup</li> <li>• Restore</li> </ul>
2	RJ45 socket	-	Connector for connecting cable
3	Sub-D connector, 9-pin	RS 232	IF2, terminal for configuration computer <ul style="list-style-type: none"> <li>• Configuration computer</li> <li>• Printer</li> </ul>
4	Female header	-	Terminal for connecting cable

#### See also

- Interfaces (Page 12-9)
- Using the memory card (Page 5-15)
- Remove memory card (Page 5-17)

### 4.3.4 Connecting the cable

#### Requirements

---

**Caution**

Note the ESD instructions.

---

**Notice**

Make sure that the plug connector clicks into place; otherwise, there is a risk that the Stop function will be triggered or the communication will not function.

---

**Note**

Prior to plugging in the connector, carefully lift the strain relief from the cable routing.

---

#### Connecting the connecting cable

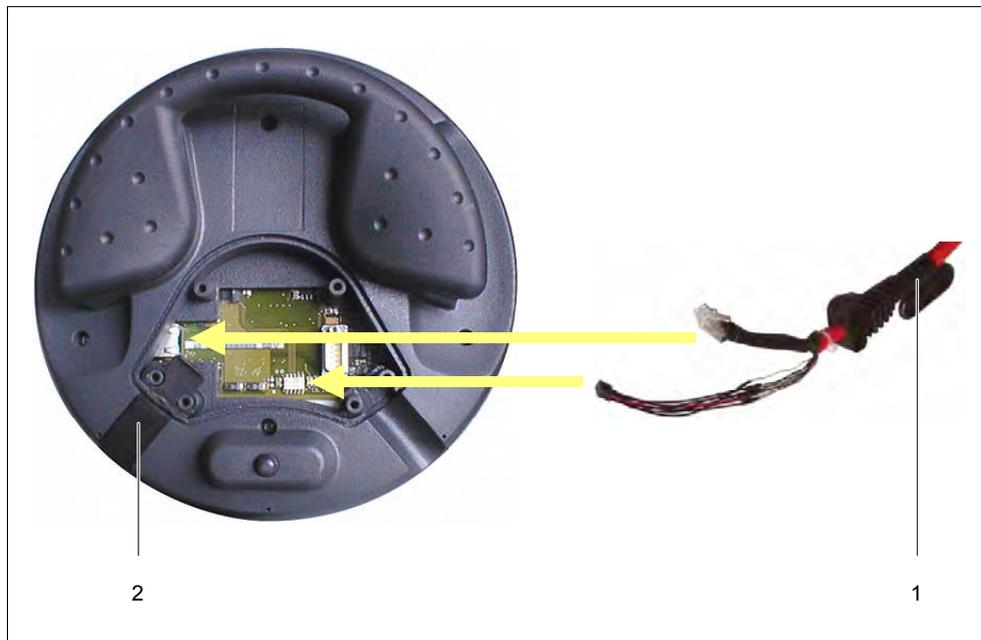


Figure 4-3 Connecting the connecting cable

1. Insert the connecting cable (1) into the cable routing.

---

**Notice**

The HMI device has two cable guides for the connecting cables on the left and right sides. Select the cable guide that is suitable for your particular application.

Minimize the amount of force applied. The interlocking hooks of the RJ45 connector can be damaged. Connecting cables with damaged RJ45 connectors must not be used.

Press the associated locking lever when unplugging the RJ45 connector. Do not apply force or use a tool with sharp edges.

---

2. Insert the sealing plug (2) in the unused cable guide.
3. Insert the two plug connectors of the connecting cable into the points of contact (see figure).
4. Check that both plug connectors are properly seated.

---

**Caution**

Avoid jerking motions when taking out the strain relief of the connecting cable. These could result in damage to the cable.

---

Continue with the next section, or close the terminal compartment.

## Connecting a configuration computer or printer

---

**Notice**

Data can only be transmitted to the configuration computer and printer when the terminal compartment is open. Under these conditions, the IP65 degree of protection no longer exists.

Therefore, you should only connect a configuration computer or printer to the HMI device during the commissioning phase.

---

---

**Note**

For presentation reasons, the required connecting cable is not connected in the following figure.

---

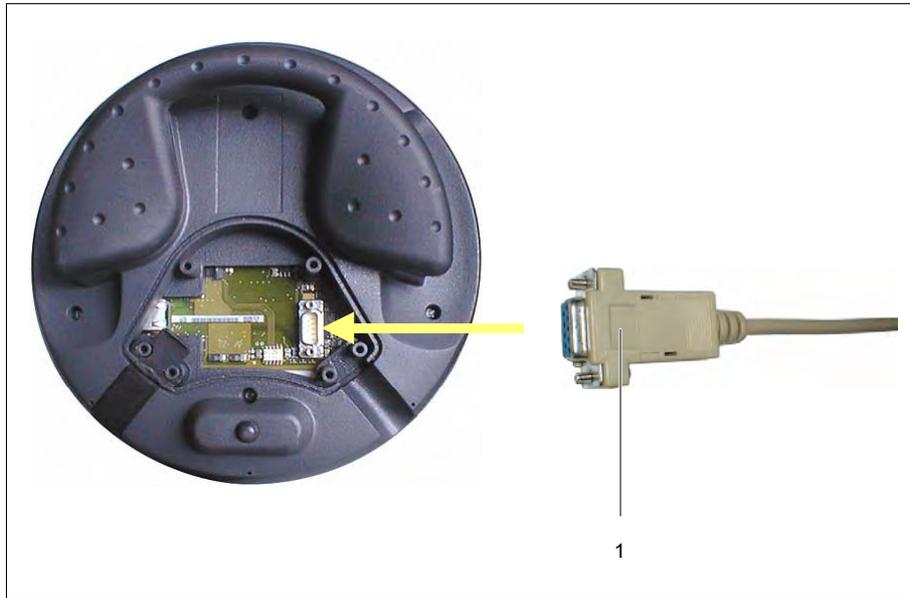


Figure 4-4 Connecting the RS 232 cable

1. Insert the plug connector of the RS 232 cable (1) into the point of contact (see figure).
2. Secure the RS 232 cable with the connector screws.
3. Lay down the Mobile Panel 170 in a safe manner.

Remove the RS 232 cable once the data transmission has concluded. Close the terminal compartment.

### See also

ESD guideline (Page A-1)

### 4.3.5 Closing the terminal compartment

#### Procedure

1. Close the cover of the Mobile Panel 170 and tighten the six screws. Make sure that the sealing gasket is properly seated in the cover.

---

#### Notice

The housing of the Mobile Panel 170 is made of plastic. Therefore, the mounting hole threads cannot handle the same amount of stress as a comparable metallic housing. Do not exceed 0.4 to 0.5 Nm of torque when tightening the screws.

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

---

2. Check that the cover, the connecting cable, and the sealing plug are properly seated.

## See also

Opening the terminal compartment (Page 4-5)

### 4.3.6 Connect printer

#### Connection configuration

The figure below illustrates how to connect a serial printer to the Mobile Panel 170. The HMI device supports the following printer standards:

- compatible with ESC/P, 9-pin ESC/P or ESC/P2 (EPSON)  
e.g., EPSON LQ 300+
- compatible with PCL3 (Hewlett Packard)  
e.g., Brother HL 1450

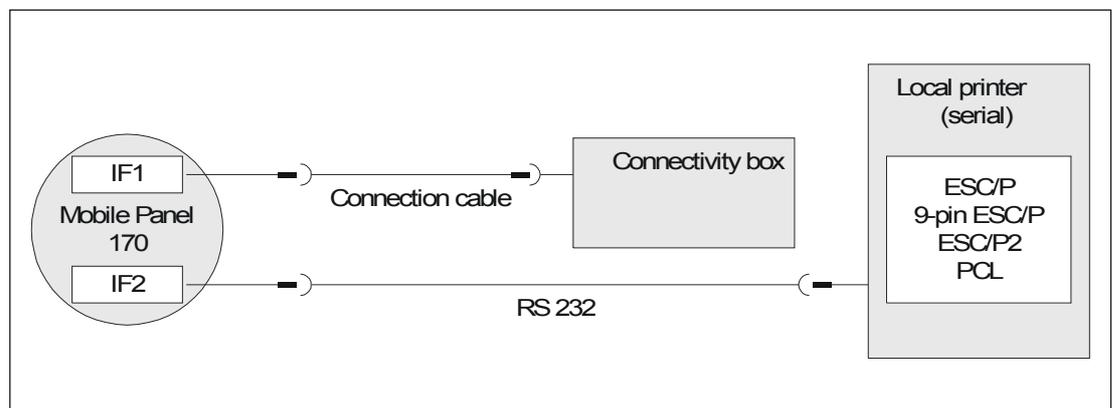


Figure 4-5 Printer connection configuration

---

#### Note

When a printer is connected, the cover of the terminal compartment cannot be closed. The specified degree of protection of the HMI device is not achieved under these circumstances.

Therefore, you should only connect a printer to the HMI device during the commissioning phase.

---

---

**Note**

Only use a cable with braided metal screening grounded at each end for connecting the HMI device and printer.

Deactivate the "Remote Control" option in the Configuration menu if a serial printer is connected to the HMI device via the IF2 interface.

Some printers may require that the ASCII character set used in the configuration is defined on the printer as well.

---

---

**Note**

If a serial printer is connected, the following settings are necessary on the printer:

- RS 232, whereby only the RxD, TxD, and GND signals are required
  - 8 data bits
  - 1 Stop bit
  - No parity
  - Baud rate between 9600 and 57600, printer-dependent
  - XON / XOFF protocol
- 

**Start up**

Proceed as follows when commissioning the terminal box:

1. Connect the terminal box to the power supply.
2. Switch on the power supply.

If the HMI device does not start up, the connections are probably reversed. In this case, reverse the connections.

3. Wait for the operating system to ramp up.
4. Connect the printer to the HMI device.

**See also**

Printer (Page 6-8)

Interfaces (Page 12-9)

Transfer mode options (Page 7-4)

### 4.3.7 Connecting a configuration computer serially

#### Introduction

Standard cables are available for the connections shown (refer to the Siemens ST80 catalog).

#### Connection configurator for serial transfer

The figure below shows how to connect a configuration computer (programming device or PC) to the HMI device to transfer a project serially.

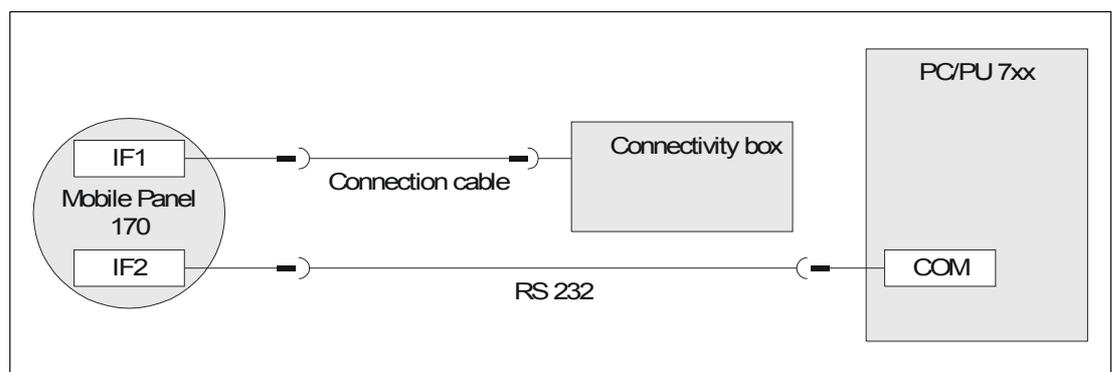


Figure 4-6 Connection configuration for configuration computer

#### See also

Connecting a configuration computer via MPI/PROFIBUS DP (Page 4-26)

## 4.4 Connecting the terminal box

### 4.4.1 Opening the terminal box

#### Requirements



---

**Caution**

Short circuits in the terminal box can impair the function of the Mobile Panel 170.

When performing manipulations in the open housing, make sure that no conductive residues of cables or the like get into the electrical circuit.

---

---

**Caution**

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

---

---

**Caution**

Note the ESD instructions.

---

#### Procedure

To gain access to the terminals of the terminal box, you must remove the cover from the terminal box.

---

**Notice**

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

If the screws are tightened more than 10 times, there is risk of damage to the threads.

---



Figure 4-7 Terminal box

1. Loosen the four screws (1).
2. Lay down the screws (1) and the cover (2) in a safe manner.
3. Once you have completed your work on the connections, reattach the cover of the terminal box.

---

**Notice**

Upon conclusion of your work on the connections, check to make sure that the unused threaded cable entry holes are provided with rubber seals. Otherwise, IP65 degree of protection is not guaranteed.

---

**See also**

ESD guideline (Page A-1)

### 4.4.2 Arrangement of terminals

#### Connections

The figure shows the arrangement of the terminals in the terminal box.

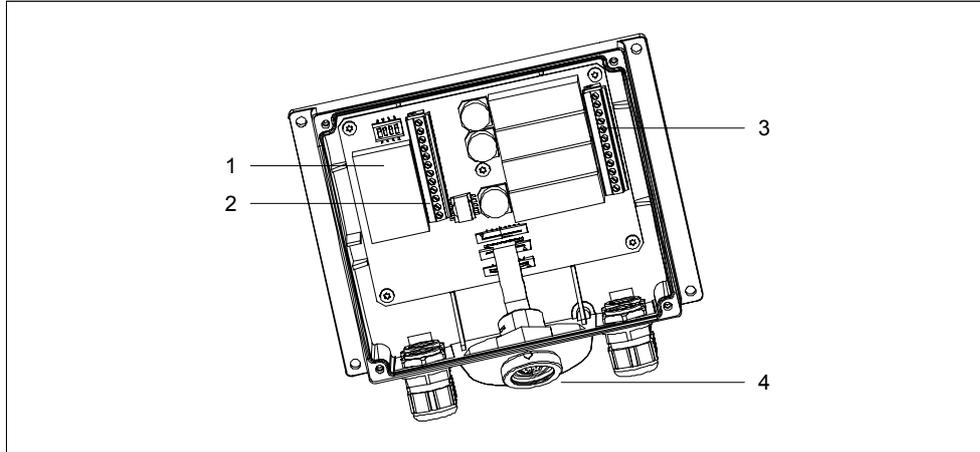


Figure 4-8 Arrangement of terminals

No.	Name	Description	Application
1	Fast connector	-	Terminal for MPI/PROFIBUS DP and RS 485
2	Terminal strip	RS 232 RS 422 RS 485 DC +24 V	<ul style="list-style-type: none"><li>• IF1</li></ul>
3	Terminal strip	-	<ul style="list-style-type: none"><li>• Power supply</li><li>• Safety functions for STOP buttons and enabling switches</li><li>• Additional functions for PLC</li></ul>
4	Socket	-	Terminal for connecting cable

#### See also

Terminal box (Page 12-11)

### 4.4.3 Connecting the MPI/PROFIBUS-DP cable

#### Stripping the insulation

Strip the insulation from the MPI/PROFIBUS-DP cable as shown in the figure below.

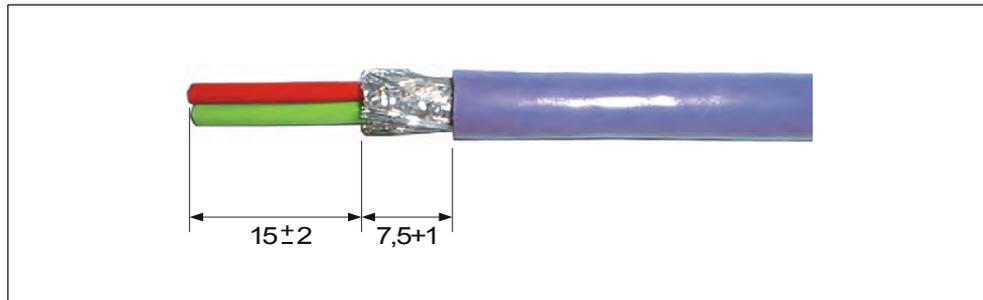


Figure 4-9 Stripping the insulation from the MPI/PROFIBUS-DP cable

#### Note

Use the cable stripper listed in the Siemens IK 10 catalog will enable you to strip the insulation from the cables faster and to the proper length.

#### Connecting

#### Note

For presentation reasons, the figure shows the printed circuit board in dismantled state. In addition, observe the labeling on the inside of the terminal box cover.

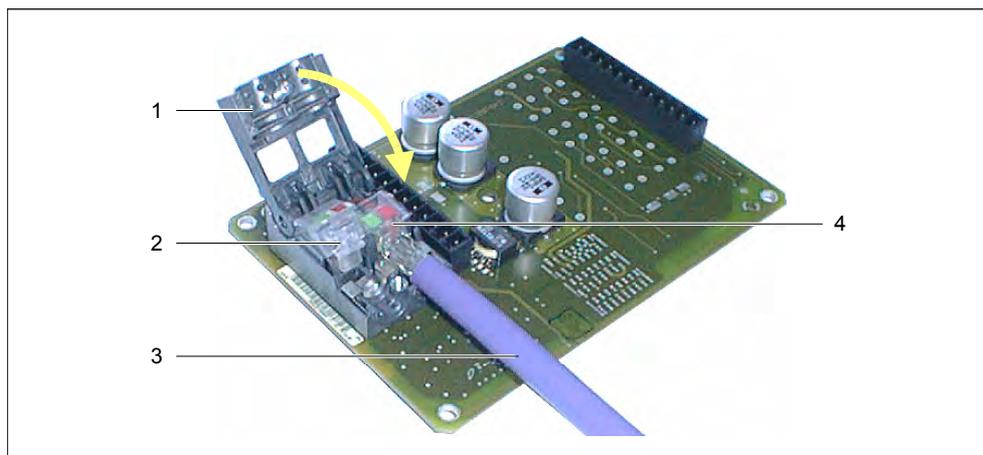


Figure 4-10 Connecting the MPI/PROFIBUS-DP cable

4.4 Connecting the terminal box

---

1. Unscrew the fast connector and open the cover (1).
2. Break the insulation piercing connecting device contact (2) or (4).
3. Insert the two strands of the MPI/PROFIBUS DP cable (3) in accordance with the color coding in the opening of the insulation piercing connecting device contact.
4. Press the insulation piercing connecting device contact (2) downward.  
The strands are thereby pressed into the insulation piercing connecting devices underneath the insulation piercing connecting device contact, whereby the contact is established.
5. Connect the MPI/PROFIBUS-DP cable for the insulation piercing connecting device contact (2) in the same manner.
6. Close and screw on the cover.

---

**Note**

If the terminal box is the bus end node, you must set the DIP switch on the free insulation piercing connecting device contact. As a result, the terminating resistors are switched in.

---

**See also**

Connecting the PLC (Page 4-24)

**4.4.4 Connect the equipotential bonding**

**Ground connection**



Connect the chassis terminal of the terminal box to the cabinet ground. Use the grounding screw provided and a conducting cable with a diameter of at least 2.5 mm<sup>2</sup>.

**Potential difference**

Potential differences can occur between separate system parts, leading to high equalizing currents, e.g., when cable shields are applied on both sides and grounded to different system parts.

The cause of potential differences can be different supply connections.

### **General requirements for equipotential bonding**

Potential differences must be reduced by laying sufficient equipotential bonding cables to ensure problem-free operation of the electronic components concerned. Therefore, the following must be observed when setting up equipotential bonding:

- The effectiveness of the equipotential bonding increases as the the impedance of the equipotential bonding cables decreases (i.e., or as the cross section of the equipotential bonding cable increases).
- If two system parts are connected to each other via shielded data lines with shielding connected to the grounding/protective conductor on both sides, the impedance of the additionally laid equipotential bonding cables must not exceed 10% of the shield impedance.
- The cross-section of an equipotential bonding cable must be selected to accommodate the maximum equalizing current flow. In practice, equipotential bonding cables between control cabinets with a minimum cross-section of 16 mm<sup>2</sup> have proven sufficient.
- Use equipotential bonding cables made of copper or galvanized steel. Connect the equipotential bonding cables properly to the grounding/protective conductor with the greatest possible surface area and protect them from corrosion.
- Clamp the shield of the data line on the terminal box over a large surface area and as close as possible to the equipotential bonding strip using suitable cable clips.
- Lay the equipotential bonding cables and data lines parallel to one another with a minimum gap (see figure below, Item 6).

---

#### **Notice**

##### **Equipotential bonding cable**

Cable shields are not suitable for equipotential bonding. Use only the intended potential cable prescribed. For example, potential cables must have a minimum cross-section of 16 mm<sup>2</sup>. When setting up MPI and PROFIBUS DP networks, make sure to use cables with a sufficient cross-section; otherwise, the interface modules may be damaged or even destroyed.

---

Connection configuration

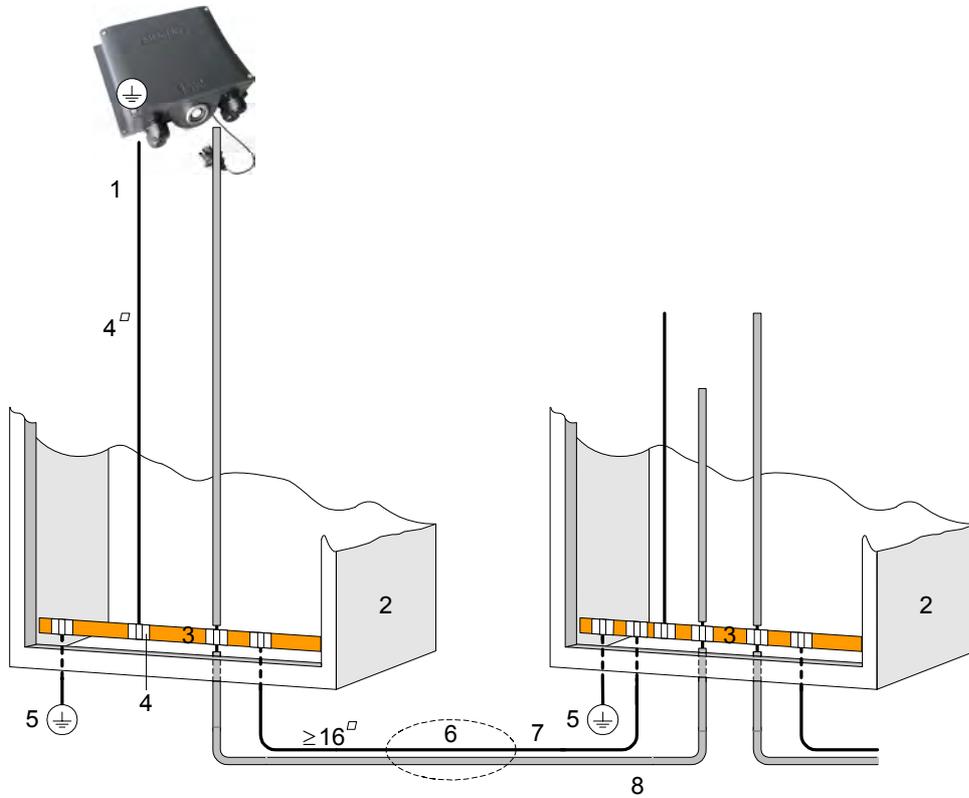


Figure 4-11 Equipotential bonding at the terminal box devices

- 1 Chassis terminal on the terminal box
- 2 Switching cabinet
- 3 Voltage bus
- 4 Cable clip
- 5 Grounding connection
- 6 Parallel laying of equipotential bonding cable and data line
- 7 Equipotential bonding cable
- 8 Data line, shielded

## 4.4.5 Connecting the connecting cable

### Introduction

The connecting cable can be connected to the terminal box using the plug connector (metallic push-pull circular connector). The plug connector is coded using a slot and key system.

### Interlocking mechanism

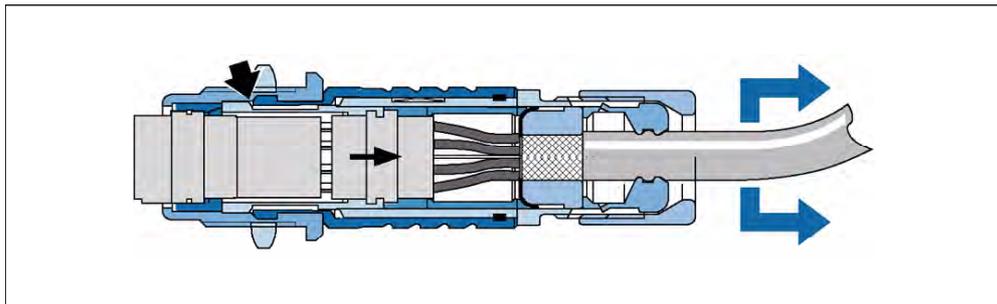


Figure 4-12 Effect of interlocking mechanism

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

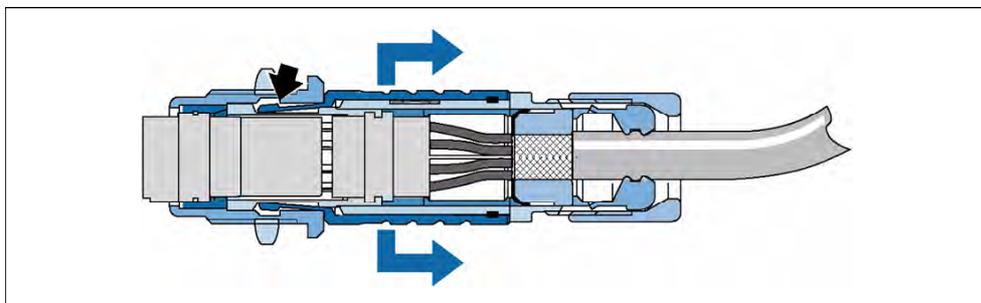


Figure 4-13 Detaching the plug connector

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

## Procedure

### Inserting the plug

The connection is made as follows:

1. Retract the outer sleeve on the plug connector.
2. With the outer sleeve retracted, insert the plug connector into the socket of the terminal box.
3. Now release the outer sleeve.

This slides on its own in the direction of the terminal box, thereby interlocking the plug connector.

### Removing the plug

1. Retract the outer sleeve on the plug connector.
2. With the outer sleeve retracted, remove the plug connector from the socket of the terminal box.
3. If you do now intend to use the Mobile Panel 170 on another terminal box, lay it down in a safe manner.

## 4.4.6 Connect power supply

### Procedure

The supply voltage for the HMI device is connected at the 12-pin male connector of the terminal box. Use the 2-pin terminal block supplied for this purpose. The terminal block is designed for cables with a maximum cross-section of 2.5 mm<sup>2</sup>.

Connect the ground terminal of the terminal box to the cabinet ground.

---

#### Note

The terminal box has protection against false polarity.

---

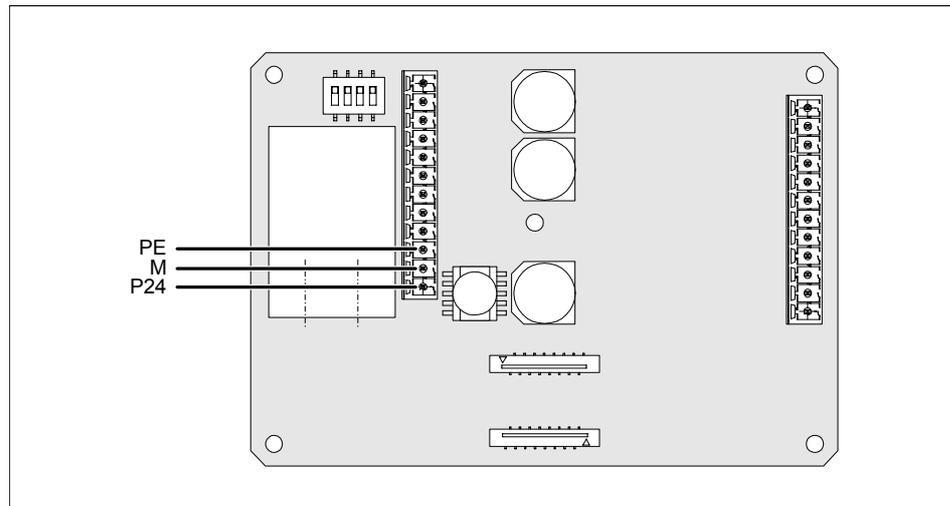


Figure 4-14 Interface for supply voltage and equipment grounding conductor

The abbreviations in the figure are defined as follows:

- PE stands for equipment grounding conductor
- M stands for ground
- P24 stands for +24 VDC

Please refer to Technical Data for information on the power supply requirements.



#### Caution

When using a 24 VDC supply, make sure that the extra-low voltage is isolated safely. Use only power supply units complying with IEC 364-4-41 or HD 384.04.41 (VDE 0100, Part 410).

The supply voltage must be within the specified voltage range. Otherwise, HMI device failures can occur.

The 24 V output of the power supply must be connected to the equipotential bonding; otherwise, the potential difference between the PLC and the HMI device can destroy the communication interface.



#### Warning

Personal injury and equipment damage can occur. Configure the 24 VDC supply of the Mobile Panel 170 correctly. Failure to do so can result in damage to components of your automation system and bodily injury to personnel.

Use only voltage generated as safety extra-low voltage (SELV) for the 24 VDC supply of the Mobile Panel 170.

#### See also

Terminal box (Page 12-6)

### 4.4.7 Connecting the PLC

#### Connection configuration

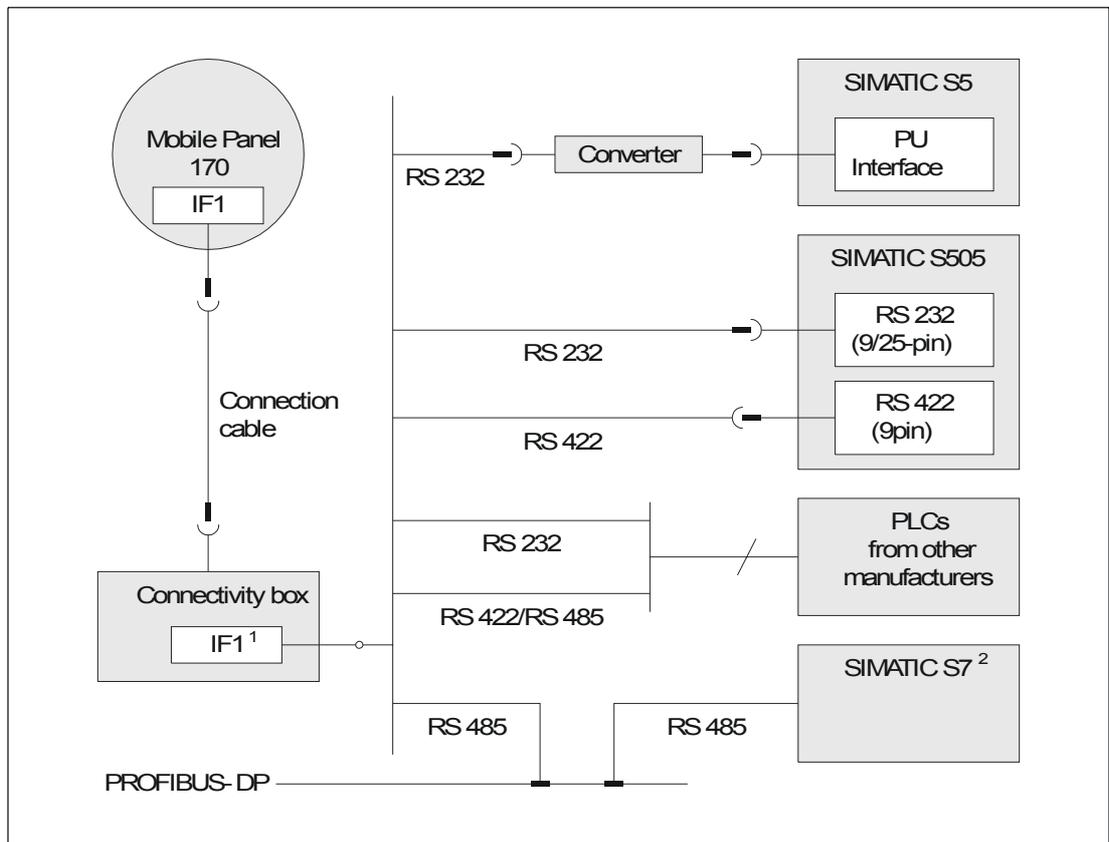


Figure 4-15 Connection configuration for PLCs

- 1) When a serial interface is used during operation, IF1 (RS 232) and (RS 422/485) may only be connected in turns.
- 2) Use only the cables approved for that purpose to connect to a SIMATIC S7.

#### Notice

The converter must be set up in such a way the an IP65 protection rating is ensured. Note the maximum permissible cable lengths for the process interface.

### Configuring the IF1 interface

The IF1 interface can be configured using the DIP switch. This causes the RTS signal for RS 485 receive data and RS 422 receive data to be switched over. By default, the RTS signal is not required by the communication peer.

The figure below shows the position of the DIP switch.

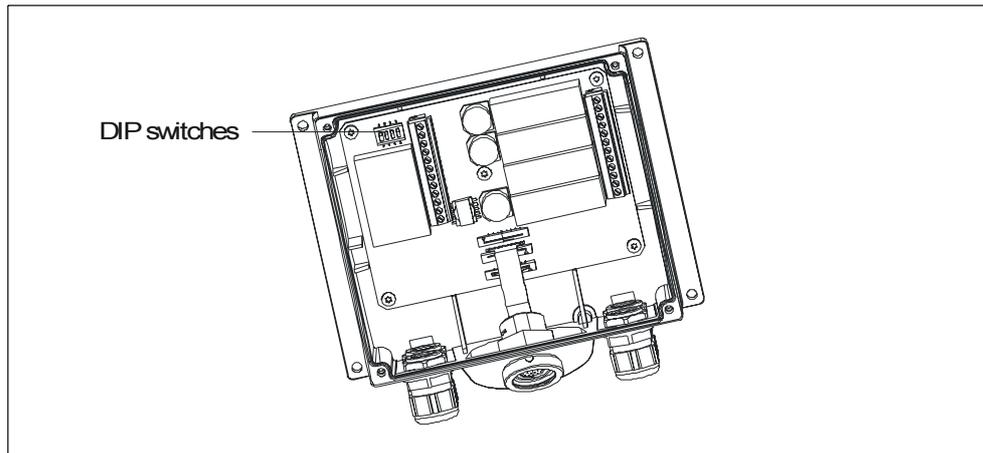


Figure 4-16 Position of the DIP switch

The table shows the permissible switch settings of the DIP switch and the assigned protocol for data transmission.

Table 4-1 Switch settings of the DIP switch

Communication		Switch settings																		
Mobile Panel 170	Connectivity box	<table style="border: none;"> <tr> <td>RS 232</td> <td>1</td><td>2</td><td>3</td><td>4</td> <td>ON</td> </tr> <tr> <td>RS 422</td> <td><input checked="" type="checkbox"/></td><td><input checked="" type="checkbox"/></td><td><input checked="" type="checkbox"/></td><td><input checked="" type="checkbox"/></td> <td>OFF</td> </tr> </table>	RS 232	1	2	3	4	ON	RS 422	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	OFF						
RS 232	1	2	3	4	ON															
RS 422	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	OFF															
Mobile Panel 170	Connectivity box	<table style="border: none;"> <tr> <td>MPI/PROFIBUS-DP</td> <td>1</td><td>2</td><td>3</td><td>4</td> <td>ON</td> </tr> <tr> <td></td> <td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td> <td>OFF</td> </tr> <tr> <td></td> <td><input checked="" type="checkbox"/></td><td><input checked="" type="checkbox"/></td><td><input checked="" type="checkbox"/></td><td><input checked="" type="checkbox"/></td> <td></td> </tr> </table>	MPI/PROFIBUS-DP	1	2	3	4	ON		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	OFF		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
MPI/PROFIBUS-DP	1	2	3	4	ON															
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	OFF															
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>																
Mobile Panel 170	Connectivity box	<table style="border: none;"> <tr> <td>MPI/PROFIBUS-DP</td> <td>1</td><td>2</td><td>3</td><td>4</td> <td>ON</td> </tr> <tr> <td></td> <td><input checked="" type="checkbox"/></td><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td> <td>OFF</td> </tr> <tr> <td></td> <td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input checked="" type="checkbox"/></td><td><input checked="" type="checkbox"/></td> <td></td> </tr> </table>	MPI/PROFIBUS-DP	1	2	3	4	ON		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	OFF		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
MPI/PROFIBUS-DP	1	2	3	4	ON															
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	OFF															
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>																
Last node																				

### Compressing the internal program memory for SIMATIC S5



#### Caution

In SIMATIC S5, compressing the internal program memory of the PLC ("Compress" function on the programming device, integrated FB COMPR) is not permitted if an HMI device is connected. When memory is compressed, the absolute addresses of the blocks in the program memory change. Since the HMI device only reads the address list during startup, it does not recognize the address change and accesses the wrong memory areas.

If you cannot avoid compressing memory during operation, turn off the HMI device before running the compress function.

### 4.4.8 Connecting a configuration computer via MPI/PROFIBUS DP

#### Introduction

Standard cables are available for the connections shown (refer to the Siemens ST80 catalog).

#### Connection configurator for transfer via MPI/PROFIBUS DP

The following figure shows how to connect a configuration computer (programming device or PC) to the HMI device to transfer project data via MPI/PROFIBUS-DP.

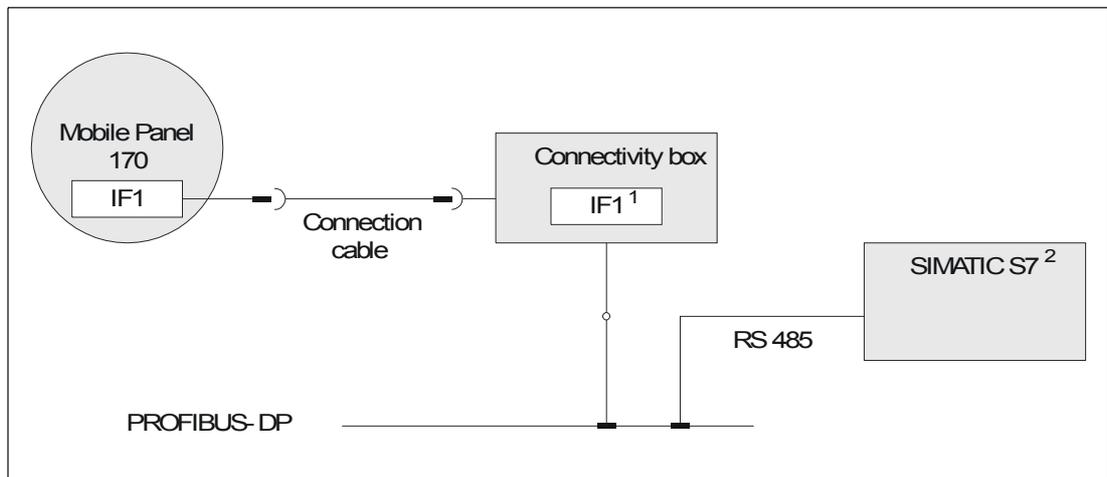


Figure 4-17 Connection configuration for configuration computer

- 1 When a serial interface is used during operation, IF1 (RS 232) and (RS 422/485) may only be connected in turns.
- 2 Use only the cables approved for that purpose to connect to a SIMATIC S7.

**See also**

Connecting a configuration computer serially (Page 4-13)



## Operating elements and indicators

### 5.1 Operator controls

#### Operator controls

The Mobile Panel 170 has the following operator control elements:

- C-STN-LC display, Q-VGA, with touch screen, analog, resistive
- Membrane keyboard
- Accept button

Available options

- Handwheel
- STOP button
- Illuminated pushbutton
- Key-operated switch

## 5.2 Touch screen

### Overview

You can use the touch screen of the HMI device to observe the operating conditions of the system being monitored and to influence process occurrences directly by pressing buttons and using input fields.



Figure 5-1 Touch screen

## 5.3 Function keys

### Overview

The function keys can be used to influence process occurrences directly.  
The Mobile Panel 170 has function keys <F1> to <F14> (see figure below).



Figure 5-2 Function keys

All function keys can be applied globally and locally (for a specific screen).

**Note**

Unintentional actions can be triggered by a multiple key operation.

No more than two function keys can be activated simultaneously.

---

**Direct keys**

When a PROFIBUS-DP connection exists, it is also possible to configure function keys for operation as direct keys in order to allow rapid operator inputs using keys. Rapid button operation is conditional for jog mode, for example.

PROFIBUS-DP direct keys place bits directly from the HMI device in the I/O area of a SIMATIC S7.

**Caution**

Configured direct keys are always active, e.g., even when an alarm window is displayed.

---

**Function keys with global function assignment**

A function key with global function assignment always triggers the same action on the Mobile Panel 170 or in the PLC, irrespective of which screen is currently displayed. These actions include:

- Select screen
- Display current alarm messages
- Start screen printout (hardcopy)

**Function keys with local function assignment**

A function key with local function assignment can trigger different actions on the Mobile Panel 170 or the PLC depending on which screen is currently selected (local meaning in the current screen). For each function key, you can configure a pictogram that is then shown on the screen.

**Caution**

If you press a function key after a screen change, the associated function in the new screen may be initiated before the new screen is displayed.

---

**Controlling screen objects with function keys**

You can also use function keys to control screen objects with buttons, e.g., alarm view, trend view, or recipe view. This requires that the appropriate system functions have been linked to the function keys in your project.

**See also**

Direct keys (Page 9-15)

Evaluation of direction pulses and switch statuses (Page 9-15)

## 5.4 Accept button

### Overview

Enabling equipment consists of two enabling switches arranged on both sides of the Mobile Panel 170. The switch setting of the two enabling switches is determined by electrical momentary contacts. The associated evaluating logic involves two channels for each enabling switch. Each channel converts the information of the enabling switch into digital and analog information (diversity).



Figure 5-3 Accept button

### Operation

You only have to activate one enabling switch. No feedback is provided to the PLC on whether the Mobile Panel 170 is operated with one hand or two hands.

---

**Note**

Because there is not an electrical connection between the enabling switch and the membrane keyboard, the enabling switches and the membrane keyboard can be operated simultaneously.

---

When an external monitoring device is used, the enabling switches satisfy Category 3 safety requirements as defined in EN 954.

### Switch settings

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

Switch setting	Function	Accept button	Switch state
1	Neutral position	Not activated	OFF (open)
2	Enable	Activated	ON (closed)
3	Panic	Pressed	OFF (open)

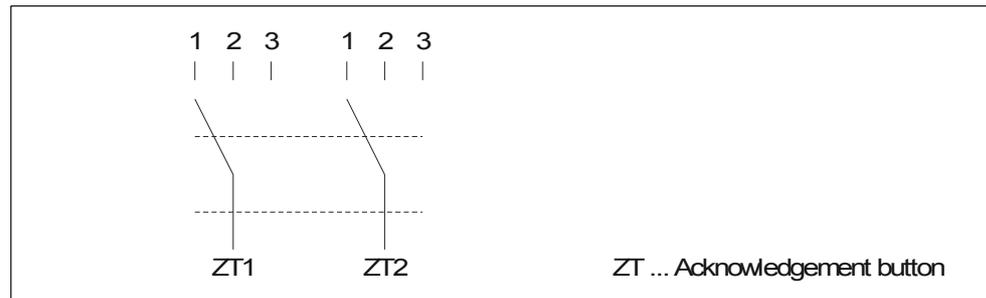


Figure 5-4 Switch settings of enabling switch

When the enabling switch is activated, the following switch sequences are possible:

### Normal activation

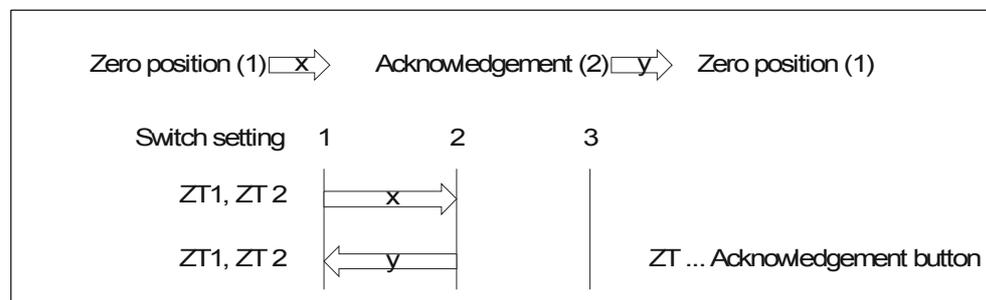


Figure 5-5 Interlinking of switch settings for normal operation

**Panic activation**

If the operator has pressed the enabling switch through to the "Panic" setting, the "Enable" setting will be skipped when the switch is released.

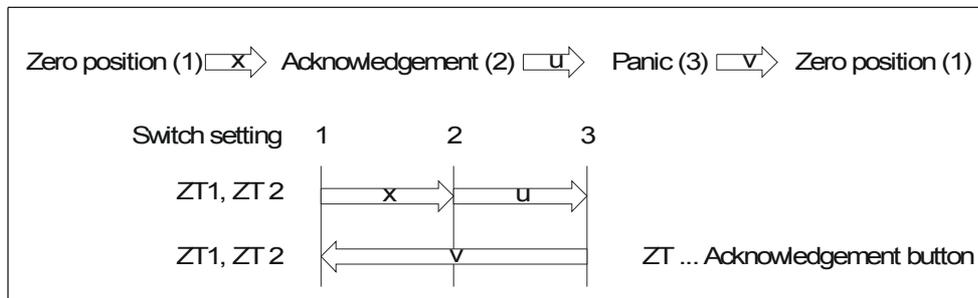


Figure 5-6 Interlinking of switch settings for panic activation

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

The position of the enabling switch can be scanned in the Mobile Panel 170 via the CPU and evaluated for non-safety relevant functions by the software.

The safety shutdown does not require an acknowledgement when an enabling switch is released or pressed through to the panic setting.

**Risk from improper use**

To avoid risk from improper use of the enabling switches, the following actions must be deliberately taken:

- Scan the enabling switches. The scan must
  - take place when the system being monitored is switched on and
  - when the operating mode changes from "automatic" to "manual."
 In both cases, the enabling function cannot be used.
- The enabling switch must be released within a specified time frame and returned to the "Enable" setting.
  - Select the time frame according to the activity on the system being monitored.

**See also**

Connection examples for Enable and STOP buttons (Page 12-14)

## 5.5 STOP button

### Overview

The STOP button is an optional operator control element on the Mobile Panel 170.

The STOP button is implemented with two circuits and enables a safety-related Stop of the system being monitored.

Depending on the terminal box utilized, the Stop circuit will be opened when the Mobile Panel 170 is unplugged or the circuit will be automatically short-circuited by the terminal box.

Possible application areas for the STOP button:

- The STOP button can be used to quickly stop the system being monitored (system, machine, or machine zone) according to the process cycle. The Stop operation can occur with or without a power shutdown.

Advantages:

- Containing the sphere of action
- Fast restart
- No loss of machine coordinates and, thus, no recalibration upon restart
- Preservation of tool and workpiece
- Triggering the Emergency Stop function of a system being monitored by looping it in in the Emergency Stop circuit.

Advantage:

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



Figure 5-7 STOP button

## Operation

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

---

### Note

The STOP button engages compulsorily when activated.

---



---

### Warning

If you activate the STOP button, thus bringing the system being monitored to a standstill, you may only release the STOP button if the reason for stopping the system has been eliminated and a safe restart is provided for.

---

To release the STOP button, it must be turned in a clockwise direction. The STOP button then returns on its own to the starting position.

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

The STOP button is exposed on the surface due to its designed profile. A shroud provides special protection for the STOP button. As a result, while the STOP button can still be triggered if the Mobile Panel 170 is dropped, it is nonetheless largely protected from damage.

When an external monitoring device is used, the STOP button satisfies Category 3 safety requirements as defined in EN 954.

## See also

Connection examples for Enable and STOP buttons (Page 12-14)

Terminal Box Plus (Page 2-5)

Terminal Box Basic (Page 2-7)

## 5.6 Handwheel

### Overview

The handwheel is an optional operator control element on the Mobile Panel 170.

You can use the handwheel to input incremental values. The handwheel does not have an end stop or a zero position.



Figure 5-8 Handwheel

### Operation

To facilitate operation, the handwheel has a small depression.

The handwheel inputs are evaluated by the PLC as direct distributed I/O.

### See also

Direct keys (Page 9-15)

Evaluation of direction pulses and switch statuses (Page 9-15)

## 5.7 Key-operated switch

### Overview

The key-operated switch is an optional operator control element on the Mobile Panel 170.

The key-operated switch is used to lock functions that can be initiated from the Mobile Panel 170.



Figure 5-9 Key-operated switch

### Operation

The key-operated switch has three positions: I-0-II.

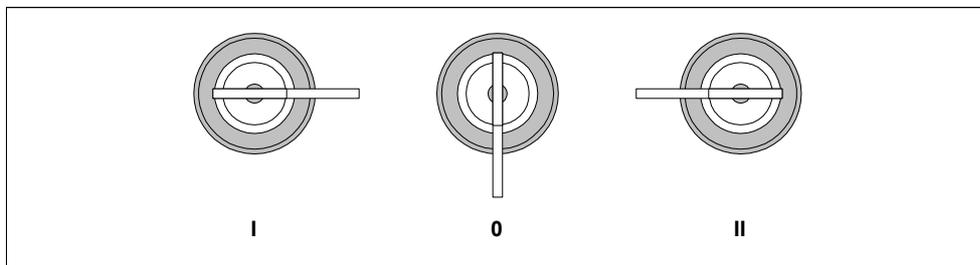


Figure 5-10 Key-operated switch settings

The key-operated switch settings are evaluated by the PLC as direct distributed I/O.

---

#### Note

The key for the key-operated switch is enclosed with the HMI device; its coding is not specific to the device. Therefore, the key can be used for any Mobile Panel 170.

Remove the key after use. This avoids damage to the key if the HMI device is dropped.

The key can only be removed in the 0 position.

---

**See also**

Direct keys (Page 9-15)

Evaluation of direction pulses and switch statuses (Page 9-15)

## 5.8 Illuminated pushbutton

**Overview**

The illuminated pushbutton is an optional operator control element on the Mobile Panel 170.

For fast digital inputs, the illuminated pushbutton is available. This button is fed to the printed circuit board via a terminal.



Figure 5-11 Illuminated pushbutton

**Operation**

The illuminated pushbutton acts by feel and is labeled with "I". When pressed, it illuminates.

The illuminated pushbutton switch setting is evaluated by the PLC as direct distributed I/O.

**See also**

Direct keys (Page 9-15)

Evaluation of direction pulses and switch statuses (Page 9-15)

## 5.9 Labeling the softkeys

### Labeling

The Mobile Panel 170 contains function keys "F1" to "F14."

For system-specific labeling of function keys, you can make labeling strips and apply them to the Mobile Panel 170. Protective sleeves are available to protect the labeling strips.

### Affixing the labeling strips

1. Lay down the Mobile Panel 170 on its back.
2. Clean the membrane keyboard.
3. Prepare the labeling strips for your specific system.
4. Place or adhere the labeling strips onto the membrane keyboard.

---

#### Notice

Before affixing the labeling strips, wait until the labeling is wipe-resistant.

---

### Create labeling strips

Only use transparent foil to create your own labeling strips so that the LEDs in the softkeys remain visible. Label the foil either with a printer or a waterproof felt-tip pen. Cut the strips according to the specifications depicted.

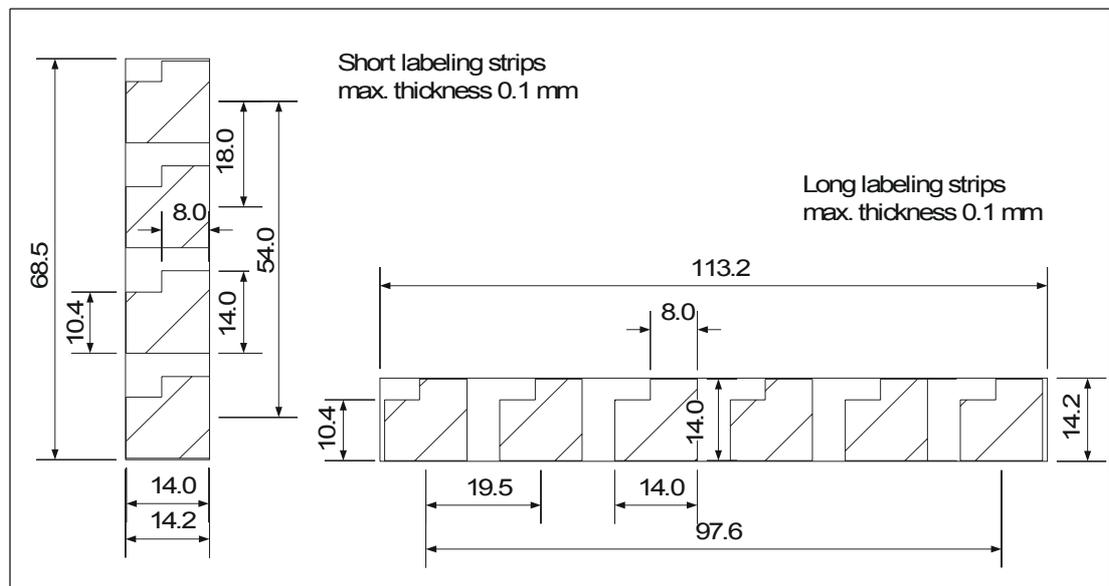


Figure 5-12 Labeling strip dimensions

---

#### Note

Use adhesive labels as labeling strips under advisement.

---

### Printing the labeling strips

The templates for the labeling strips are in the "SLIDE\_MOBILE\_PANEL.doc" on the "WinCC flexible" installation CD in the "\Support\Documents" folder. The file can be edited with MS Word or Wordpad, for example.

Pay attention to the information provided in the file.

### Affixing the protective sleeve

To protect your customized keyboard labeling on the Mobile Panel 170, a set of 5 protective sleeves are available for the labeling strips.

1. Take one protective sleeve and carefully peel off the protective film.
2. Adhere the protective sleeve to the membrane keyboard.
3. Using moderate pressure, press down on the protective sleeve so that it adheres evenly to the surface.

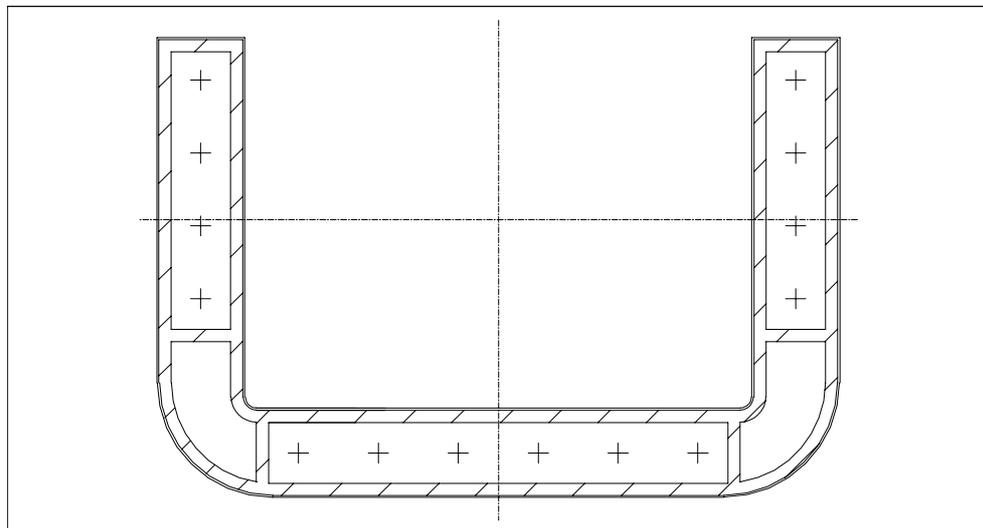


Figure 5-13 Protective sleeve

### See also

General Notes (Page 11-1)

## 5.10 Memory card

### 5.10.1 Location of memory card

#### Purpose

Memory cards can be used, for example, to store important process data or to backup/restore the internal flash memory.

If the power supply is interrupted inadvertently during normal operation, the HMI device checks the memory card after power is restored and repairs any defective sectors.

#### Memory card type

The HMI device supports changeable memory cards in accordance with the CompactFlash standard (CF card)>

The memory card is supplied with 3.3 VDC via the interface.

---

#### Note

The Mobile Panel 170 can also function without a memory card inserted. However, a data backup can only be performed from a connected PC or programming device.

---

#### Position

The memory card is located in the Mobile Panel 170 and is placed in a slot in the terminal compartment on the back of the HMI device.

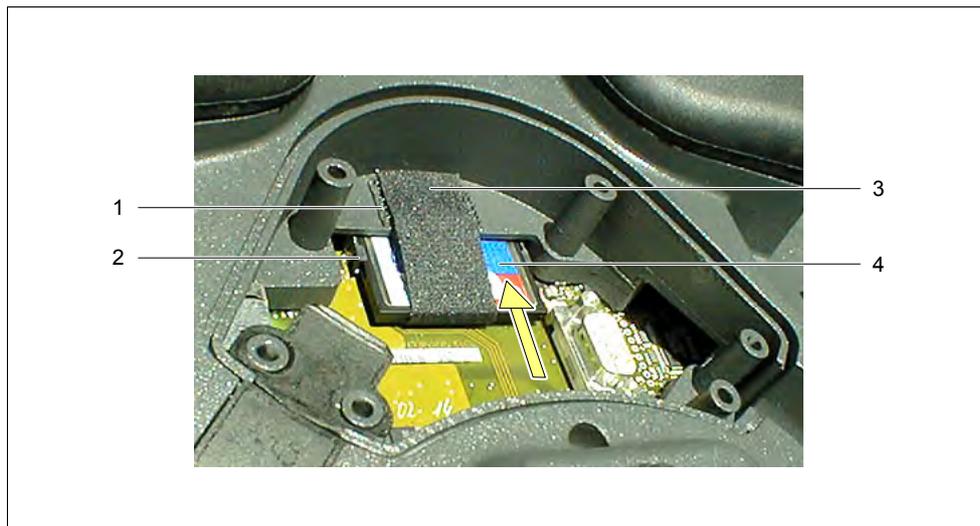


Figure 5-14 Location of memory card

- 1 Velcro fastener for fixing the CF card
- 2 Guide for CF card
- 3 Velcro strip
- 4 CF card

## 5.10.2 Using the memory card

### Requirements

Before you begin to use or remove the memory card:

- Pay attention to cleanliness. Foreign bodies or liquids must not contact the printed circuit board or the inside of the HMI device.
- Place the HMI device on a clean flat surface to protect against damage.
- Use a Philips screwdriver (No. 2 pt.) to open and close the terminal compartment.

### Procedure

1. Open the cover.
2. Pull the Velcro strip (3) back.
3. Set the memory card (4) in the guide (2) of the CF slot.  
The arrow on the memory card must be visible and pointing upwards.
4. Continue sliding the memory card (4) in the direction of the arrow until it engages the locking element and the eject lever is completely extended.

5. Fix the memory card using the Velcro strip (3).

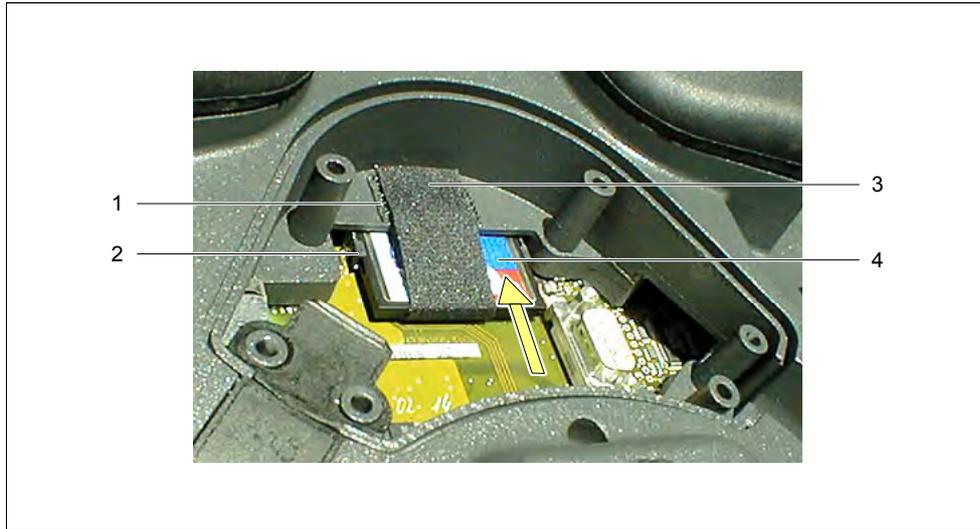


Figure 5-15 Location of memory card

---

**Notice**

Fasten the Velcro strip in such a way that it fits snugly around the memory card. This is necessary to ensure that the memory card remains on the contact strip when the Mobile Panel 170 is being operated.

---

6. Reattach the cover.

The protection class specified for the HMI device is only achieved under these conditions.

**See also**

Opening the terminal compartment (Page 4-5)

Connecting the cable (Page 4-8)

Closing the terminal compartment (Page 4-10)

### 5.10.3 Remove memory card

#### Requirements

Before you begin to use or remove the memory card:

- Pay attention to cleanliness. Foreign bodies or liquids must not contact the printed circuit board or the inside of the HMI device.
- Place the HMI device on a clean flat surface to protect against damage.
- Use a Philips screwdriver (No. 2 pt.) to open and close the terminal compartment.

---

#### Caution

Before you remove a memory card, check to make sure that the Mobile Panel 170 is not accessing the memory card.

If the Mobile Panel 170 is not accessing the memory card, it can be inserted and removed while the HMI device is switched on.

---

---

#### Notice

Carefully loosen the strain relief of the connecting cable from the cable guide before changing the memory card, or remove the connecting cable entirely. Use caution when performing this step: Jerky motions can damage the connecting cable.

---

#### Procedure

1. Terminate access made by the HMI device to the memory card.

The configuring engineer must have provided for this option by configuring a suitable operating element, e.g., for stopping the log operation.

---

#### Note

If the Runtime software is running and you cannot ensure that access to the memory card has been terminated, you must end Runtime. Use the operating element configured for this purpose by the configuring engineer.

---

2. Open the cover.
3. Pull the Velcro strip back.

*5.10 Memory card*

4. Press the eject lever.  
The memory card will be ejected.

---

**Notice**

During this operation, do not press on the memory card as this will prevent the card from being ejected.

---

5. Close the Velcro strip.
6. Store the memory card in a manner compatible with ESD guidelines.
7. Reattach the cover.  
The protection class specified for the HMI device is only achieved under these conditions.

**See also**

- HMI device loader (Page 6-1)
- ESD guideline (Page A-1)
- Opening the terminal compartment (Page 4-5)
- Connecting the cable (Page 4-8)
- Closing the terminal compartment (Page 4-10)

## Operating system and configuration

### 6.1 HMI device loader

#### Loader

During the startup phase, the Loader shown below is displayed briefly. The Loader also appears after Runtime has ended:

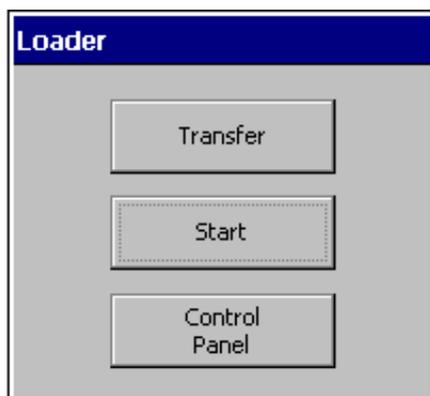


Figure 6-1 Loader

Press the "Transfer" button to switch the HMI device to Transfer mode.

Press the "Start" button to start Runtime.

Press the "Control Panel" button to access the Windows CE Control Panel in which various settings can be defined. The settings for Transfer mode options can be defined here, for example.

Press the "Taskbar" button to activate the taskbar containing the open Windows CE Start menu.

It is possible to protect the Loader from unauthorized access by assigning a password. If the password is subsequently not entered, only the "Transfer" and "Start" buttons are available. This prevents incorrect operation and increases system or machine security since settings cannot be modified.

#### See also

Open Control Panel (Page 6-2)

## **6.2 Windows CE Control Panel**

### **6.2.1 Open Control Panel**

#### **Windows CE Control Panel**

The Windows CE Control Panel can be used to modify the following system settings, for example:

- Date/time
- HMI device properties, e.g. contrast and calibration of the touch screen
- Regional settings
- Screensavers
- Screen keyboard
- Printer
- Backup/Recovery
- Transfer

#### **Open Control Panel**

The "Control Panel" button in the Loader can be used to make various settings. It may be necessary to enter a password.

The following options are available, amongst others, to open the Control Panel:

- During the startup phase:  
Press the "Control Panel" button in the Loader to open the Windows CE Control Panel containing the various options.
- During normal operation:  
Provided one is configured, activate the operating element that is linked to the "Open Control Panel" system function.

## Result

The Control Panel is opened.



Figure 6-2 Windows CE Control Panel with options

## Change settings



### Caution

End Runtime before making changes to system settings; otherwise the changes will not take effect, e.g. for a transfer operation.

Proceed as follows to change settings using the Windows CE Control Panel:

1. End Runtime if you intend to make system settings.
2. Open the Control Panel as described above.
3. Change the settings for your system in the Control Panel.
4. Close the Control Panel by pressing 
5. Start Runtime via the Loader.

## 6.2.2 InputPanel

### "InputPanel" option



Here you can specify the position on the HMI device where the on-screen keyboard is to be displayed.

### Procedure

1. Select the "Input Panel" option.
2. Move the on-screen keyboard to the desired position.
3. Store the new settings by pressing the "Save" button.
4. Press  to close the dialog.

---

#### Note

In order to correctly save the size and position of the on-screen keyboard in a fail-safe way, the alphanumeric representation must be selected prior to the Save operation.

---

### See also

Open Control Panel (Page 6-2)

## 6.2.3 OP

### "OP" option



The "OP" option enables you to make the following settings:

- Setting contrast
- Calibrate touchscreen
- Displaying HMI device data
- Back up non-retentive data

## Setting contrast

1. Open the "Display" tab in the "OP Properties" dialog.

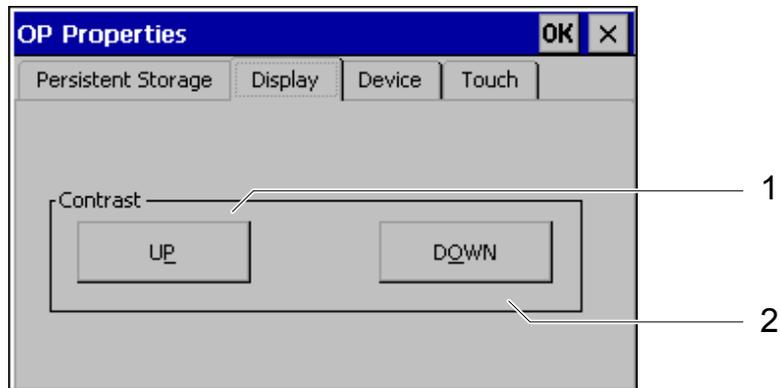


Figure 6-3 "OP Properties" dialog, "Display" tab

2. Change the contrast setting for the screen using the "UP" and "DOWN" buttons in the "Contrast" group.
3. Touch the OK button to close the settings menu.

---

### Note

Wait at least 10 s after changing the settings before switching the HMI device off. Otherwise, the changes will be lost.

---

## Calibrate touchscreen

### Purpose

Depending on the installation location and viewing angle, it is possible that a pronounced parallax may occur to a greater or lesser extent when the touch screen is operated. In order to prevent operating errors occurring as a result, the screen can be calibrated during the start-up phase and normal operation.

Recalibrate the screen of your Windows CE HMI device if your inputs are not carried out properly.

**Procedure**

1. Open the "Touch" tab in the "OP Properties" dialog.



Figure 6-4 "OP Properties" dialog, "Touch" tab

2. Press the "Recalibrate" button to start the calibration process.  
Five calibration crosses appear in succession on the screen. Follow the instructions provided on the screen and touch the respective calibration crosses using a touch stylus.
3. Apply calibration:  
Touch any point of the screen after the calibration process for the new calibration data to take effect.
4. Reject calibration:  
Wait 30 seconds, until the seconds counter displayed has reached zero, before rejecting the new calibration data.  
If calibration is not performed correctly, the new values are not accepted.
5. Press the "OK" button to close the dialog.

**Configured function**

If the "Calibrate Touch Screen" function has been linked to an operating element in your configuration, the touch screen can be calibrated during operation. The triggering operator control element can be configured in such a way that a password is required to calibrate the touch screen.

The calibration operation is identical to steps 2, 3, and 4 described for the start-up phase.

## Persistent storage of registrations

1. Open the "Persistent Storage" tab in the "OP Properties" dialog.



Figure 6-5 "OP Properties" dialog, "Persistent Storage" tab

2. Press the Save Registry button to start the storage process.  
The current registration settings are stored in the Flash memory.
3. Press the Save Files button to start copying the files in the RAM file system to the Flash memory.  
During a restart, these saved files will be copied back to the file system.
4. Press the "OK" button to close the dialog.

## Displaying HMI device data

1. Open the "Device" tab in the "OP Properties" dialog.  
Various HMI device data are displayed.

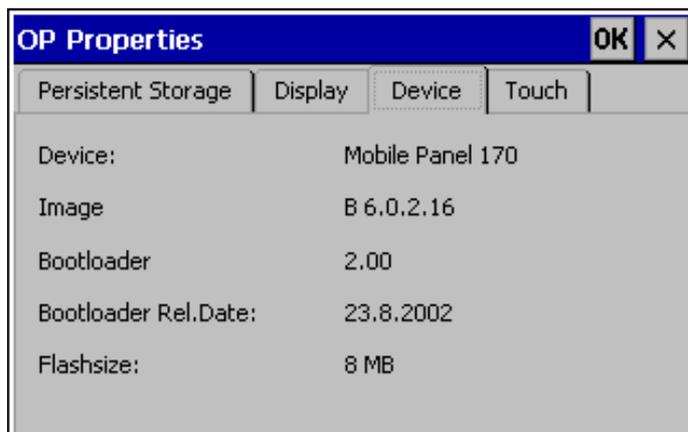


Figure 6-6 "OP Properties" dialog, "Device" tab (example)

2. Press the "OK" button to close the dialog.

**See also**

Open Control Panel (Page 6-2)

**6.2.4 Printer**

**"Printer" option**



Use the "Printer" option to select and set up a printer. Some settings are only relevant for printing a hardcopy of the screen contents and have no influence on alarm reporting, e.g., color or quality of graphics printing.

**Adjustable options**

The available settings are dependent on the printer selected.

**Printer Language**

Select the printer from the list to which the HMI device is connected.

**Port**

Select the port and baud rate used by the HMI device to transfer data to the printer, e.g. IF2: 9600.

**Paper Size**

Select the paper size used in the printer, e.g. A4 or Letter.

**Draft Mode**

Define the quality of the printout of graphics. If the option is activated, printout is performed in draft quality, if deactivated printout is in high quality.

## Orientation

Define whether the page should be printed in Portrait or Landscape,

---

### Note

If a serial printer is connected, the following settings are necessary on the printer:

- RS 232, whereby only the RxD, TxD, and GND signals are required
  - 8 data bits
  - 1 Stop bit
  - No parity
  - Baud rate between 9600 and 57600, printer-dependent
- 

## Default setting

When the HMI device is supplied, the following default settings are defined:

- Printer: EPSON 9 matrix printer
- Port: IF2
- Baud rate: 9600 bps

## See also

Connect printer (Page 4-11)

Interfaces (Page 12-9)

## 6.2.5 Regional Settings

### "Regional Settings" option



Language-specific settings can be defined here, e.g.

- Date and time format
- Decimal separator and list separator

The HMI device is supplied with the German options set.

---

### Note

If the operating system does not support the language set on the HMI device, the default language setting of the operating system is applied.

---

**See also**

Open Control Panel (Page 6-2)

**6.2.6 Screen Saver**

**"Screensaver" option**



It is possible to define a period of time (in minutes) for automatic activation of the screen saver on the HMI device. The screen saver settings are defined in the "Screen Saver" dialog of the Windows CE Control Panel.

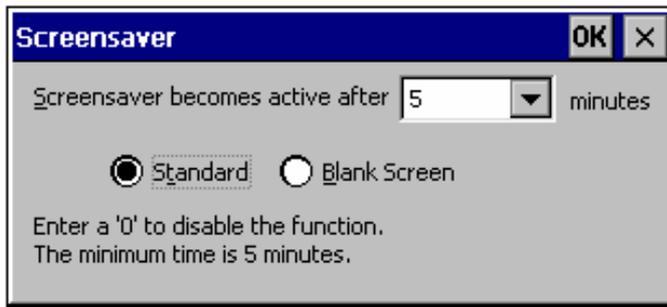


Figure 6-7 "Screen Saver" dialog

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

If a value of 0 is entered, the screen saver is deactivated.

The screen saver is deactivated when any key is pressed or the touch screen is touched. The function assigned to that key is not triggered.

**See also**

Open Control Panel (Page 6-2)

## Prepare and backup project

### 7.1 Transferring a project to the HMI device

#### 7.1.1 Commissioning for the first time

##### Introduction

When commissioning for the first time, there is no configuration on the HMI device. In order to transfer the project data required for operation and the Runtime software from the configuration computer to the HMI device, perform the following steps in the order specified.

---

**Caution**

Always end Runtime before removing the connecting cable of the Mobile Panel 170 to avoid data loss.

To end Runtime, press the operating element linked to the "Exit Runtime" function in your configuration. Wait until the HMI device displays the Loader and then remove the connecting cable of the Mobile Panel 170, thus disconnecting the power supply.

---

---

**Caution**

Observe the installation instructions.

---

---

**Note**

The IF1 interface mentioned below includes the interfaces for MPI/PROFIBUS DP, SIMATIC PLCs and third-party PLCs.

---

## Procedure

1. Connect the interface to the configuration computer using a suitable standard cable.  
Default setting: Serial connection
2. Enable the power supply for the HMI device by inserting the connecting cable into the terminal box.  
When the HMI device is started up, the system automatically switches from the Loader to transfer mode.
3. Press the "Cancel" button to switch to the Loader.
4. Press the "Control Panel" button to switch to the Windows CE Control Panel.
5. Adapt the interface setting (serial or MPI) in the transfer settings.  
Default setting: Serial connection
6. Close the Control Panel and switch to the transfer mode.
7. Start the project transfer operation on the configuration computer. Please refer to the "WinCC flexible" user manual for more information on the settings required on the configuration computer for the transfer operation.

## Result

The configuration computer checks the connection to the HMI device. If the connection is not available or is faulty, the configuration computer issues an error alarm to that effect.

If a transfer operation from the configuration computer is terminated as a result of a compatibility conflict, the operating system of the HMI device must be updated.

If the connection is correct, the new project data are transferred to the HMI device. Following successful transfer, the HMI device starts up again and displays the Start screen of the transferred project.

## See also

- HMI device loader (Page 6-1)
- Electrical installation (Page 4-3)
- Arrangement of terminals (Page 4-7)
- Arrangement of terminals (Page 4-16)
- Connecting a configuration computer serially (Page 4-13)
- Connecting a configuration computer via MPI/PROFIBUS DP (Page 4-26)
- Transfer mode options (Page 7-4)
- Update operating system (Page 7-17)

## 7.1.2 Recommissioning

### Purpose

When recommissioning, the existing configuration on the HMI device is replaced by another. To this end, a new project is transferred from the configuration computer to the HMI device.

The procedure for transferring the project required for operation from the configuration computer to the HMI device is described in "Transfer".

The following options are available with which to switch the HMI device to Transfer mode:

- Starting transfer mode manually during the HMI device startup phase
- Starting transfer mode manually by pressing the applicable operating element in the project when the HMI device is in operation
- Starting transfer mode automatically while the HMI device is in operation

## 7.2 Transfer

### 7.2.1 Start transfer manually

#### Procedure

1. Connect the interface to the configuration computer using a suitable standard cable.
2. Enable the power supply for the HMI device by inserting the connecting cable into the terminal box.
3. Press the "Cancel" button to switch to the Loader.
4. Press the "Control Panel" button to switch to the Windows CE Control Panel.
5. Adapt the interface setting in the transfer settings.
6. Close the Control Panel and switch to the transfer mode.
7. Start the project transfer operation on the configuration computer.

#### Result

The configuration computer checks the connection to the HMI device. If the connection is not available or is faulty, the configuration computer issues an error alarm to that effect.

If a transfer operation from the configuration computer is terminated as a result of a compatibility conflict, the operating system of the HMI device must be updated.

If the connection is correct, the new project is transferred to the HMI device. Following successful transfer, the project is started and the Start screen of the transferred project appears.

**See also**

- Connecting a configuration computer serially (Page 4-13)
- Connecting a configuration computer via MPI/PROFIBUS DP (Page 4-26)
- Update operating system (Page 7-17)

**7.2.2 Start transfer automatically**

**Overview**

The HMI device can be switched to transfer mode automatically when in normal operation as soon as downloading is started on the configuration computer connected to it. The transfer operation is completed without intervention on the HMI device. Therefore, this option is particularly suited for the test phase of a new project.

To switch to transfer mode from active operation, open the "Transfer Settings" window on the HMI device and select the required connection and the corresponding "Remote Control" function.

---

**Notice**

When the "Remote Control" option is activated, Runtime is automatically ended and the switch is made to transfer mode. Runtime cannot be ended if dialogs are open or a transfer operation has been started on the HMI device.

Close the dialog or cancel the transfer process on the configuration computer.

Following the start-up phase, disable the automatic transfer option to prevent inadvertently switching the HMI device to transfer mode in a running system, thereby ending Runtime. To do this, deactivate the "Remote Control" options in the Transfer Settings defined for the HMI device.

---

**7.2.3 Transfer mode options**

**Transfer mode options**



The following options can be set for Transfer mode:

- The HMI device can be switched to Transfer mode automatically when in normal operation as soon as downloading is started on the configuration computer connected to it.
- Selection of transfer mode for a certain connection type, so that the transfer operation only takes place over a serial connection or a MPI connection.

---

**Note**

Do not make any other changes if the Runtime software is running or the HMI device is in transfer mode.

---

The configuration menu is accessed via the "Control Panel" button in the Loader. The Windows CE Control Panel is displayed. Here, you select the "Transfer" option.

**Setting the communication channel**

On the "Channel" tab in the "Transfer Settings" dialog, select the required communication channel and the "Remote Control" check box. In addition to the serial communication channel, a second channel can also be selected for transfer of data from the configuration computer to the HMI device.

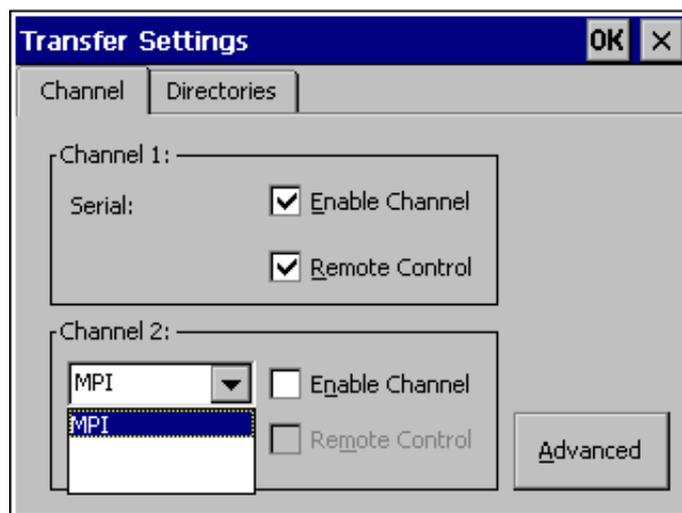


Figure 7-1 "Transfer Settings" dialog, "Channel" tab

To define the "Address" bus parameter and "Transmission Rate" and "Highest Station" network parameters for transfer operations via MPI or PROFIBUS DP, press the "Advanced" button. These parameters apply to the current project on the HMI device.



---

**Warning**

When the "Remote Control" checkbox is active, ensure that the HMI device is not inadvertently switched to Transfer mode from the configuration computer when in normal operation.

In the case of PROFIBUS DP, changes may only be made here for commissioning purposes.

For each modification to the PROFIBUS DP settings, the HMI devices set up only one corresponding standard bus parameter set. Under unfavorable conditions, this can lead to faults on the PROFIBUS.

In order to calculate the bus parameters exactly, the entire bus topology must be known.

Correct definition of the bus parameters for Runtime is automatically ensured through the integrated operation of WinCC flexible in SIMATIC STEP 7.

---

---

**Notice**

If a serial printer is connected to the HMI device, deactivate it by selecting "Remote Control" checkbox of the serial communication channel. Otherwise, printing is not possible.

When a configuration is transferred from the configuration computer to the HMI device, enable a communication channel using the "Enable Channel" option.

---

---

**Note**

The bus parameters for MPI transfer, e.g. MPI address, baud rate, etc., are read out from the current project on the HMI device.

The settings for MPI transfer can be modified. To do this, you must first end Runtime, modify the settings, and switch to transfer mode. When Runtime is started subsequently, the bus parameters are overwritten with the values from the project.

---

## Transfer mode directory

The "Directories" tab control can be used to specify the following paths (refer to figure below).

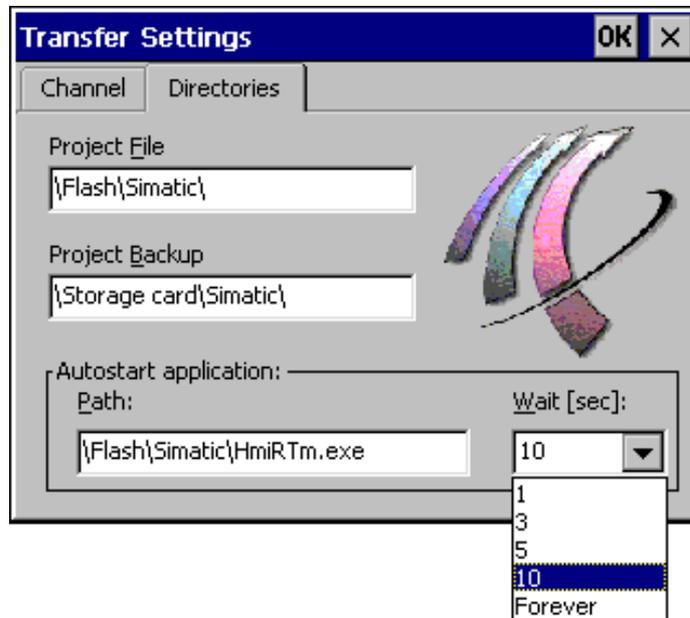


Figure 7-2 "Transfer Settings" dialog, "Directories" tab

## Project File

The predefined storage location for the project file can be changed here. The internal Flash memory or external Flash cards can be set. During the next transfer operation, the project will be stored in the storage location specified.

## Project Backup

Here, you change the default storage location for the source file of your project. This file can be used for restoring (uploading) the configuration. External Flash cards can be set.

### Autostart application

- **Path**

The memory location for Runtime is defined here. This is the application used to run your project in Windows CE.

- **Wait**

Here, you set the amount of time (in seconds) that the Loader is to be displayed before Runtime is started (1 s, 3 s, 5 s, 10 s, or constantly). If Runtime is not available, the device automatically switches to transfer mode.

---

**Notice**

With the exception of "Wait," do not change the default settings in these fields if you are working with WinCC flexible. Otherwise, the HMI device can no longer start your project.

---

Press the OK button to confirm the settings currently defined for the transfer options. The dialog is closed and the Windows CE Control Panel is displayed.

Press the Close button to close the dialog and switch to the Windows CE Control Panel. Any modifications made to the settings are rejected.

---

**Note**

If the HMI device is in Transfer mode while changes are made to the transfer settings, the settings only take effect after the transfer function is restarted. This can occur if you select the Control Panel via the Windows CE Start menu in order to modify the transfer properties.

---

## 7.2.4 Test project

### Introduction

There are two options on the HMI device for testing a new project:

- Test project offline

Testing offline means that communication between the HMI device and PLC is interrupted while the test is being carried out.

- Test project online

Testing online means that the HMI device and PLC communicate with each other during the test.

It is advisable to perform both tests starting with the "Offline test" followed by the "Online test."

**Note****Testing on a configuration computer**

A project can also be tested on a configuration computer using the Simulator. Detailed information on this is available in the "WinCC flexible" user guide and in the WinCC flexible online help.

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

---

Check the following:

1. Check that configured screens are displayed correctly
2. Check screen hierarchy
3. Test input objects
4. Test softkeys
5. Tag data can be entered

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

**Requirements for the offline test**

- The project is on the HMI device.
- The project is offline.

To do this, open the project concerned on the configuration computer. Select "Communication > Connections" and switch to "Online: Off". Transfer the project to the HMI device.

Alternatively, the operating mode can be changed by means of an operating element in the project. Use the operating element to switch the project offline.

---

**Note**

During the test phase, it is recommended that the transfer operation be started during operation.

---

**Procedure**

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

Test the project operating elements and displays to the extent possible without connecting to the PLC. Procedure:

1. Check configured object are displayed correctly
2. Check screen hierarchy
3. Check input fields
4. Test softkeys

### Conditions for the online test

- The project is on the HMI device.
- The project is online.

To do this, open the project concerned on the configuration computer. Select "Communication > Connections" and switch to "Online: On". Transfer the project to the HMI device.

Alternatively, the operating mode can be changed by means of an operating element in the project. Use the operating element to switch the project online.

---

#### Note

During the test phase, it is recommended that the transfer operation be started during operation.

---

### Procedure

Use "Online" mode to test the individual project functions on the HMI device with influence being exerted by the PLC. PLC tags are updated in this case.

Test the project operating elements and displays. If offline testing has not yet been performed, proceed as follows:

1. Check configured object are displayed correctly
2. Check screen hierarchy
3. Check input fields
4. Test softkeys

Test all of the objects in the loaded project for which communication with the PLC is necessary:

- Alarms
- Alarm logging
- Recipes
- Screen selection by PLC through PLC job
- Print functions

## 7.3 System settings

### 7.3.1 Set language

#### Language-dependent objects

When the project is transferred from the configuration computer, up to five languages can be transferred to the HMI device simultaneously. The ASIA language variants are also supported. You can switch between the individual languages online at any time and display language-dependent objects within Runtime, e.g., texts or formats, in another language.

The following are language-dependent:

- Alarms
- Screens
- Text lists
- Operator notes
- Date/time
- Decimal separator
- Static texts

#### Requirements

If during operation you want to change the language in which the project will appear on the HMI device, the following conditions must be met:

- The language must be available for the configuration on the HMI device.  
The languages available on the HMI device are defined during configuration.
- An operating element for switching languages must have been configured.

#### Select languages

Immediately after the operating element for switching languages is activated, all of the language-dependent objects are displayed in the new language.

Two different types of language change can be configured:

1. Each time the operating element for switching languages is activated, the HMI device advances cyclically by one language.
2. Activating the operating element for switching languages causes the HMI device to switch to a specific language.

## 7.3.2 Set operating mode

### Conditions for changing operating modes

In order to switch between the operating modes described below on the HMI device, the relevant function must be configured and linked to an operating element.

### Operating modes

The HMI device is designed for the following operating modes:

- Offline mode
- Online mode
- Transfer mode

An operating element in the project can be used to set "Offline" and "Online" operating modes on both the configuration computer and the HMI device.

Transfer mode must have been configured as an operating element.

### Offline mode

In this mode, there is no communication connection between the HMI device and PLC. The HMI device can be operated but data cannot be transmitted to the PLC or received from the PLC.

### Online mode

In this mode, a communication connection between the HMI device and PLC exists. When using this mode, processes in progress can be operated and visualized without restriction.

### Transfer mode

In this mode, you can transfer a project from the configuration computer to the HMI device.

## **7.4 Other transfer functions**

### **7.4.1 Functions**

#### **ProSave Service Tool**

The ProSave Service Tool is supplied with WinCC flexible. ProSave provides all the functions that are necessary to transfer data between the configuration computer and HMI device. These include:

- Saving data (Backup)
- Retrieving data (Restore)
- Updating the operating system (OS Update)

ProSave can be installed together with WinCC flexible or as a standalone tool on the configuration computer. Further information on ProSave is available in the "WinCC flexible" user's guide.

#### **ProSave functions in WinCC flexible**

ProSave is normally installed on the configuration computer together with WinCC flexible.

The entire function range of ProSave is available within WinCC flexible in the "Project ▶ Transfer" menu. In this way, all the necessary specifications, e.g. target device and download settings, are assumed from the project.

#### **Standalone ProSave**

ProSave can also be installed as a standalone application. In this case, the settings concerning the HMI device and transfer must be defined in the ProSave user interface and match the HMI device settings.

The advantage of standalone ProSave is that data backup and restore operations can be performed without WinCC flexible via the following transfer channels:

- Serial
- MPI/PROFIBUS DP

## 7.4.2 Backup and Restore

### Introduction

WinCC flexible or the ProSave Service Tool can be used to back up and restore projects, recipes, and passwords.

If the service tool was installed together with WinCC flexible, it can be called by selecting "SIMATIC ▶ ProSave" in the "Start" menu on the configuration computer.

ProSave is an executable program which can run without WinCC flexible. ProSave can, thus, be run without a WinCC flexible license.

### Requirements

- The HMI device is connected to a configuration computer.
- WinCC flexible or ProSave is installed on the configuration computer.

---

#### Notice

Close all open applications on the configuration computer before starting Backup or Restore.

---

### Backup

In the case of a backup process, the project is transferred from the HMI device Flash memory to the configuration computer.

There are two ways to make a backup copy:

- Backup using standalone ProSave
- Backup using WinCC flexible

---

#### Notice

Licenses on the HMI device are not included in the backup.

---

The procedure for the backup differs in terms of the operations performed on the configuration computer.

### **Procedure - backup using stand-alone ProSave**

1. Start ProSave on the configuration computer using the Windows Start menu.
2. Use the "General" tab to select the required HMI device and connection type with the appropriate connection parameters.
3. Use the "Backup" tab to select the data to be saved:
  - "Recipes" or
  - "Passwords"
  - "Complete backup"
4. Select the folder where the \*.psb backup file should be saved.
5. Configure the required transfer channel on the HMI device.
6. Switch the HMI device to transfer mode.
7. Start the backup operation in ProSave using the "Start Backup" button.  
A status display appears during the data transfer.

### **Procedure - backup using WinCC flexible**

1. In WinCC flexible, select "Project ► Transfer ► Transfer Settings" in the "Select HMI devices for transfer" dialog to select the connection type with the appropriate connection parameters.
2. Open the "Backup Settings" dialog in WinCC flexible using the "Project ► Transfer ► Backup" menu command.
3. Select the data to be saved:
  - "Recipes" or
  - "Passwords" or
  - "Complete Backup"
4. Select the folder where the \*.psb backup file should be saved.
5. Configure the required transfer channel on the HMI device.
6. Switch the HMI device to transfer mode.
7. Start the backup operation in WinCC flexible using the "OK" button.  
A status display appears during the data transfer.

### **Result**

When the transfer is successfully completed, a message appears. The project is copied on the configuration computer.

## Restore

In the case of a restore process, the data backup stored on the configuration computer is reloaded into the internal Flash memory of the HMI device.

There are two ways to restore the data:

- Restore using standalone ProSave
- Restore using WinCC flexible

---

### Notice

#### Data loss

The files in the working memory of the HMI device are deleted during this process. This also applies to the licenses on the HMI device. Therefore, save them elsewhere prior to starting the restore process.

---

The procedure for the restore process differs in terms of the operations performed on the configuration computer.

### Procedure - restore using stand-alone ProSave

1. Start ProSave on the configuration computer using the Windows Start menu.
2. Use the "General" tab to select the required HMI device and connection type with the appropriate connection parameters.
3. In the "Restore" tab, select the path of the file to be restored.  
"Content" indicates the HMI device for which the backup was created and the type of backup data contained in the file.
4. Configure the required transfer channel on the HMI device.
5. Switch the HMI device to transfer mode.
6. Start the restore operation in ProSave using the "Start Restore" button.

A status display appears during the Restore process.

### Procedure - restore using WinCC flexible

1. In WinCC flexible, select "Project ► Transfer ► Transfer Settings" in the "Select HMI devices for transfer" dialog to select the connection type with the appropriate connection parameters.
2. Open the "Restore Settings" dialog in WinCC flexible using the "Project ► Transfer ► Restore" menu command.
3. In the "Open" field, select the path of the file to be restored.  
"Content" indicates the HMI device for which the backup was created and the type of backup data contained in the file.

4. Configure the required transfer channel on the HMI device.
5. Switch the HMI device to transfer mode.
6. Start the restore process in WinCC flexible using the "OK" button.

A status display appears during the Restore process.

## **Result**

When the transfer is successfully completed, a message appears. The project is available on the HMI device again.

## **7.4.3 Update operating system**

### **Introduction**

Conflicts may occur when using the HMI device due to the use of different versions of the configuration software and the HMI device image present on the HMI device. In such a case, transfer of the project is stopped by the configuration computer and an alarm indicating a compatibility conflict appears. The operating system on the HMI device must then be updated. For this purpose, a current HMI device image must be transferred to the HMI device. The image contains the required operating system.

The procedure is described below.

### **Requirements**

- The HMI device is connected to the configuration computer according to the selected connection type.
- WinCC flexible or ProSave is installed on the configuration computer.

---

#### **Notice**

##### **Data loss**

When the operating system is updated, all of the existing data on the HMI device, such as project, applications, passwords, and recipes, are deleted.

---

There are two different procedures for updating the operating system:

- Updating the operating system using standalone ProSave
- Updating the operating system using WinCC flexible

If an operating system update should be performed using WinCC flexible, all the general settings, such as HMI device and transfer settings, are assumed from the project.

## Update operating system

A distinction must be made between two cases of operating system update:

- to an HMI device on which an operating system already exists,  
In this case, the operating system update is executed without selecting the "Boot" check box.
- to an HMI device on which no operating system exists,  
In this case, the operating system update is executed with the "Boot" check box selected.

## Procedure – update operating system without Booting

When updating the operating system without "Booting", the configuration computer communicates with the HMI device via its operating system.

Proceed as follows in order to adapt the operating system on the HMI device to the configuration software version used:

1. Start WinCC flexible from the Windows Start menu on the configuration computer and open a project, or start ProSave from the Windows Start menu.
2. When using WinCC flexible, select the "Project ► Transfer ► Transfer Settings" menu command or, using ProSave, select the existing HMI device on the "General" tab.
3. Select the connection.
4. Enter the connection parameters
5. In WinCC flexible, select the "Project ► Transfer ► Update Operating System" menu command, or in ProSave, select the "OS Update" tab in ProSave.
6. Clear the "Boot" check box if it is selected.
7. In "Image path," select the directory containing the image file (file extension \*.img) belonging to the HMI device.
8. Select the "Open" button.  
When the image file has been opened successfully, various information related to the version appears in a window.
9. Configure the required transfer channel on the HMI device.
10. Switch the HMI device to transfer mode.
11. Start the operating system update on the configuration computer using the "Update OS" button.

This process takes a different length of time, depending on the data channel selected. A status display appears during the update.

## Result

When the operating system update is successfully completed, an alarm appears.

The HMI device no longer contains a project.

## **Procedure – update operating system with Booting**

When the operating system is updated with "Booting", the configuration computer communicates with the boot loader of the HMI device.

Connect the HMI device to the configuration computer.

---

### **Notice**

An operating system update with booting is only possible via a serial connection.

---

After starting the operating system update, the HMI device must be switched off and on again so that the HMI device establishes contact via the serial interface.

Proceed as follows in order to adapt the operating system on the HMI device to the configuration software version used:

1. Switch off the power supply to the HMI device.
2. On the configuration computer, select the "Project ▶ Transfer ▶ Transfer Settings" menu command in WinCC flexible, or select the existing HMI device on the "General" tab in ProSave.
3. Select the connection.
4. Enter the connection parameters
5. In WinCC flexible, select the "Project ▶ Transfer ▶ Update Operating System" menu command, or in ProSave, select the "OS Update" tab in ProSave.
6. Select the "Boot" check box if it is cleared.
7. In the image path, select the directory containing the image file (file extension \*.img) belonging to the HMI device.
8. Select the "Open" button.

When the image file has been opened successfully, various information related to the version appears in a window.

9. Start the operating system update using the "Update OS" button.
10. Switch on the power supply to the HMI device again.

This starts the update. This process takes a different length of time, depending on the data channel selected. A status display appears during the update.

## **Result**

When the operating system update is successfully completed, an alarm appears.

The HMI device no longer contains a project.



# Runtime functionalities of a project

## 8.1 Screen objects

### Overview

Runtime offers the following objects for operator control and display:

- Button
- Switch
- IO field
- Graphic IO field
- Symbolic IO field
- Alarm indicator
- Alarm view
- Alarm window
- Recipe views
- Bar
- Trend view
- Date / time field
- User view

## 8.2 Alarms

### Alarm classes

Alarms indicate events and states in the control process on the HMI. WinCC flexible distinguishes the following alarm classes:

- Operation  
Warning alarms indicate a process status, e.g. motor is ON. Warning messages are configured.
- Error  
Error alarms indicate operational errors such as excess motor temperature. Alarm messages are configured. These are high-priority messages and must therefore be acknowledged.
- System  
System alarms are triggered by the HMI device. They are not configured. System alarms provide information on operator errors or communication faults, for example.
- SIMATIC diagnostic alarms  
SIMATIC diagnostic events provide information about the status of SIMATIC S7 or SIMOTION. They are not configured in the WinCC flexible programming software. A message text is output with each event and is automatically expanded if it exceeds the length of a line.
- Custom alarm classes  
It is possible to configure further alarm classes.

---

#### Note

ALARM\_S alarms are displayed as alarms or system events. SFM alarms (report system error) are displayed as alarm message.

---

### Alarm buffer

All incoming, outgoing and acknowledged alarm events are logged to an internal volatile buffer memory. The size of this alarm buffer depends on the type of HMI device.

### Alarm protocol

If alarm reporting is activated, alarm events are sent directly to the connected printer.

It is possible to individually configure each alarm to specify whether it is to be reported (sent to the printer).

### Alarm view

Events stored in the alarm buffer and the alarm log can be displayed in the alarm view in Runtime.

The alarm view is used to indicate process alarm events. Whether alarm events need to be acknowledged or not is defined in your configuration data.

### Alarm window

A configured alarm window shows all queued alarms, or alarms of the relevant alarm class which require acknowledgement. The alarm window opens when a new alarm is received.

You can configure the order in which the alarms are displayed. You can choose to indicate the alarms in ascending or descending order of their occurrence. The alarm window can also be set to indicate the exact location of the fault, including the date and time of the alarm event.

### Alarm indicator

An alarm indicator icon is output on-screen if at least one error alarm is queued on the HMI device.

The indicator flashes as long as unacknowledged alarms are pending. The displayed number indicates the number of pending alarms.

## 8.3 Tags

### Definition

Tags represent defined memory areas on the HMI device, to which values are written and/or from which values are read. This action can be initiated on the controller, or by the operator at the HMI device.

## 8.4 System functions

### Application

System functions are used in Runtime for the following purposes:

- To control the process
- To utilize the properties of the HMI device
- To make system settings on the HMI device online

In WinCC flexible, all system functions and scripts are linked to an object, such as a button, key, or screen, and an event. As soon as the event occurs, the system function is triggered.

### System functions

System functions are predefined functions that are used to implement many tasks in Runtime, such as:

- Calculations, e.g. increase of a tag value by a specific or variable amount
- Settings, such as changing the PLC or setting a bit in the PLC.
- Alarms, for instance after logon of a different user.

### Events

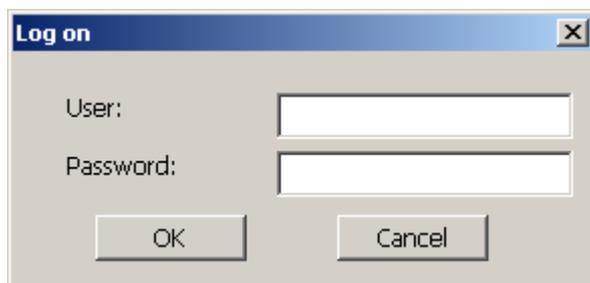
The object and the selected function determine what events can be defined as triggers for executing a system function.

For example, the events "Change value", "BelowLowerLimit" and "AboveUpperLimit" belong to the "Tag" object. The "Loaded" and "Cleared" events are associated with the "Screen" object.

## 8.5 Security

### Overview

Operation in Runtime is protected by the use of user groups, passwords and log-off times. After you started Runtime, type in the user name and password in the login dialog.



### User groups

The security concept of WinCC flexible has multiple levels for TP 170B and OP 170B: It is based on authorizations, user groups, and users.

- User groups are created for specific projects by the project engineer. The "Administrators" group is included in all projects by default. User groups are assigned authorizations. The authorization level required for an operation is specifically defined for each individual object and function in the project.
- User accounts are created by the project engineer, or in Runtime by the administrator, or by a user with the same rights, and are always assigned to one group only.

Users belonging to a user group with "Administration" authorization may create further user accounts and assign these to a group.

## Passwords

Only registered users may log in to Runtime by entering their user name and password. The passwords can be assigned by the configuring engineer, by the "Admin" user (or by users who have "Administration" authorization), or by the user himself.

Which functions a user may execute after login depends on which user group he/she is assigned to.

After the project is transferred, only the administrator is authorized to create user accounts, make user group assignments, and change passwords. Any further users assigned to the "Administrator" group by the administrator may also carry out these tasks.

The list will be encrypted and saved on the HMI device to protect it from loss due to a power failure.

---

### Note

Depending on the transfer settings, changes to the password list are overwritten when the project is transferred again.

---

## Log-off times

A log-off time is specified in the system for each user. If the time between any two user actions, e.g. entering a value or pressing a key, exceeds this logoff time, the user is automatically logged off. The user must then log on again to continue to operate Runtime.

## User view (TP 170B and OP 170B only)

Use the User view to display the users present on the HMI device.

User	Password	Group	Logoff time
Administrator	*****	Administrators	5
Miller	*****	Programmer	5
Smith	*****	Operators	5

## Export and import

All users, passwords, group assignments and logoff times furnished on the HMI device can be exported and reimported on another HMI device, when the configuration is suitable. This helps to you avoid having to enter all of the data again on another HMI device.

---

### Notice

The currently valid passwords are overwritten during an import. The imported passwords are valid immediately.

---

## 8.6 Other operating functions

### Print functions

The following print functions are available on the HMI device: :

- Hardcopy

You can print the content of the currently displayed screen using the "Print screen" system function in your configuration.

- Alarm protocol

All alarm events (incoming, outgoing, acknowledgment) are also output to a printer.

---

#### Note

##### Special, non-European characters

When printing alarms in languages other than Western European languages, some characters are not printed correctly under certain circumstances. The print result is dependent on the printer used.

---

### LED control

The light-emitting diodes (LED) in the function keys of the SIMATIC HMI devices can be controlled from the PLC. A lit or flashing LED may signal, for example, the operator to press a specific function key on the device.

# Operating a project

## 9.1 Basic principles of operation

### 9.1.1 Basics for operation in Runtime

#### Introduction

The process control features are defined by the project configuration and the options available on the HMI device. This section contains general information on the settings for Runtime and for operation of predefined screen objects.

Screen objects provide general system functions. Screen objects can be used and configured in screens in the project.

Runtime can be controlled with the keys, using the touch screen, or via the keyboard and mouse, depending on the HMI device used.

#### Multiple key operation

Unintentional actions can be triggered by a multiple key operation.

- When you use a key device, you may not press more than two function keys simultaneously.
- If you are using a touch screen device, you may only operate one touch object at a time.

## **Language switching**

WinCC flexible allows a multilingual project configuration. Up to five of these project languages can be loaded on the HMI device simultaneously.

Runtime allows you to change the languages, provided this function is configured. Language-specific objects such as texts or formats are localized. The following objects may contain language-relevant texts, for example:

- Alarms
- Screens
- Text lists
- Operator notes
- Recipes
- Date/time
- Static texts

## **Objects in the template screen**

Objects that should be available on each screen are configured in the template by the configuring engineer, e.g., important process values or date and time.

An operating element that is present in the template is available in every screen. In the case of touch screen devices, for example, a button in the template screen simulates a globally effective function key.

## **Pictograms**

In the case of keyboard devices, pictograms can be configured along the bottom and sides of the screen.

Pictograms highlight the screen-specific functions of the function keys. Activating the associated function key initiates the function symbolized by the pictogram.

## 9.1.2 Operating the touch panel (TP)

### 9.1.2.1 Operating touch objects

#### Operation

Touch objects are touch-sensitive operating objects on the HMI screen, e.g. buttons, I/O fields and alarm windows. The operation of these is basically no different than the operation of conventional keys. You operate these objects by touching them with the finger.



---

#### Caution

Always touch only one object on the screen. Do not touch several touch objects simultaneously. You may trigger an unintended action.

---

---

#### Caution

Do not use any pointed or sharp objects when operating the touch screen in order to avoid damaging the plastic surface.

---

#### Direct keys

With a PROFIBUS DP connection, it is also possible to configure buttons for operation as direct keys in order to allow rapid operator inputs using keys. Rapid button operation is conditional for jog mode, for example.

PROFIBUS-DP direct keys place bits directly from the HMI device in the I/O area of a SIMATIC S7.

---

#### Note

With touch operation, direct keys are triggered independent of any configured password protection. Therefore, do not use password protection for direct keys.

---

---

#### Notice

Direct keys are still active when the HMI device is in the "offline" mode.

---

#### Button action feedback

The HMI device outputs an acoustic and optical signal as soon as it detects the operation of a touch object. This feedback is always output, irrespective of communication with the PLC. Therefore, this feedback does not indicate whether the relevant action is actually executed or not.

### Visual feedback

The type of visual feedback depends on the operated touch object:

- Buttons

The HMI outputs different indications of the "Touched" and "Not touched" states, provided the programmer has configured a 3D effect:



Touched      Untouched

The programmer defines the layout of a selected field (line width and color of the focus.)

- Hidden buttons

The focus of hidden buttons is not set after marking (focus width value is 0, default.) In Runtime, the outline of a touched button is indicated as a line when you modify the focus with value in the configuration data. This outline remains visible until the focus is set on another operating object.

- I/O fields

After you touch an I/O field, a screen keyboard appears as a feedback signal.

### Operating screen objects with buttons

Screen objects with predefined buttons can also be operated with external buttons. The requires the programmer to have linked the relevant system functions to these buttons.

In WinCC flexible, these system functions are organized in the "Keyboard actions for screen objects" group.

### 9.1.2.2 Input of numeric values

#### Numeric screen keyboard

The HMI device automatically opens the numeric screen keyboard for the input of numeric values when you touch an I/O field on the screen. The HMI automatically hides the keyboard again when input is complete.

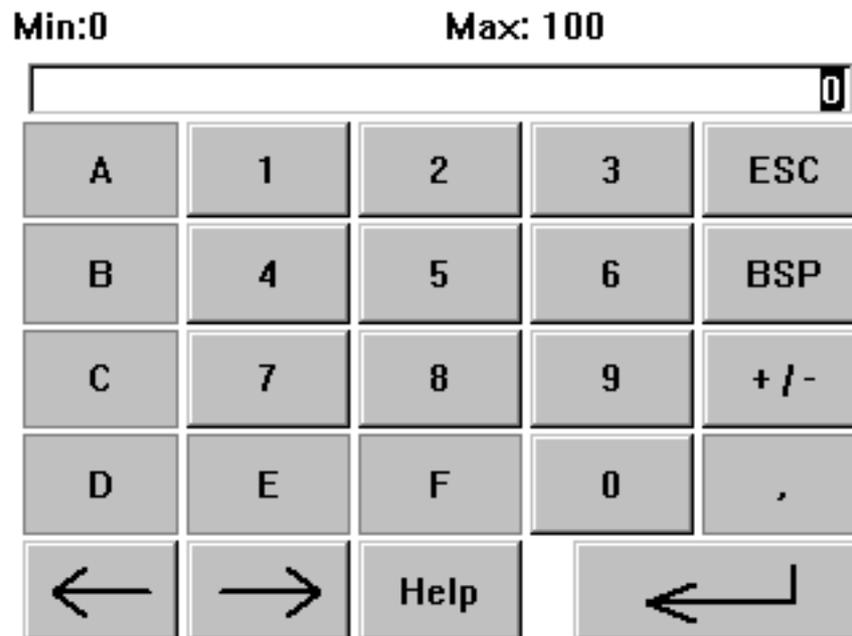


Figure 9-1 Example of on-screen keyboard for numeric inputs

The <Help> button is only active if an operator note is configured for the I/O field.

The <BSP> key corresponds to the <Backspace> key; it deletes the character to the left of the current cursor position.

On the on-screen keyboard, you can only operate the keys shown in the 3D display. Operability of keys is dependent on the type of value that is to be input.

#### Procedure

You enter numeric and hexadecimal values character-by-character using the on-screen keyboard buttons. You confirm the value entered by pressing <Enter> or cancel it by pressing <ESC>. Both functions will close the screen keyboard.

---

#### Note

The numeric input fields may be assigned limits. In this case, the system accepts only the values which lie within the configured range. The system rejects any values which are out of these limits and restores the original value. In this case, the HMI outputs a system alarm.

When the on-screen keyboard is displayed, the upper and lower limit values are displayed, if configured.

---

**Note**

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

**9.1.2.3 Input of alphanumeric values**

**Alphanumeric screen keyboard**

The HMI automatically opens an alphanumeric keyboard for the input of strings and numeric values in hex format when you touch an input object on the screen. The HMI automatically hides the keyboard again when input is complete.

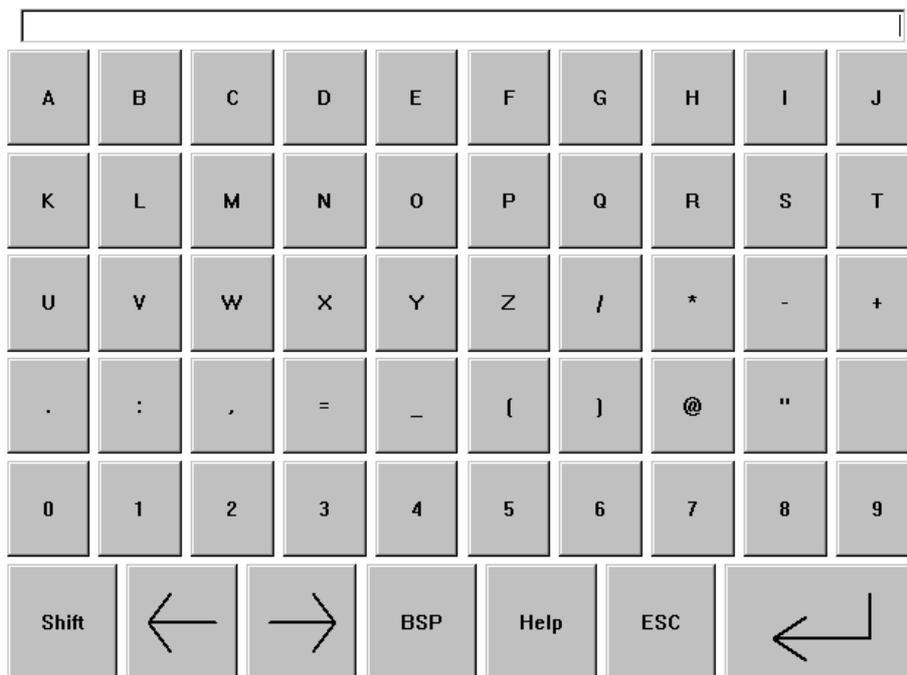


Figure 9-2 Screen keyboard for alphanumeric input

The <Help> is only active if an operator note is programmed for the input object.

The <BSP> key corresponds to the <Backspace> key; it deletes the character to the left of the current cursor position.

**Keyboard layers**

The alphanumeric keyboard is organized in several layers:

- Standard layer (refer to figure)
- <Shift> layer

## Procedure

You use the screen keyboard buttons to input the characters of alphanumeric values. You confirm the value entered by pressing <Enter> or cancel it by pressing <ESC>. Both functions will close the screen keyboard.

---

### Note

When the on-screen keyboard is open, PLC job "Select Screen" has no function.

---

## 9.1.2.4 Calling the operator note

### Purpose

The operator notes provide additional information and operating instructions with respect to alarms, screen and operable screen objects to the programmer. A operator note may contain information about the permissible range of values for an I/O field, or information on the causes of alarm events and their elimination.

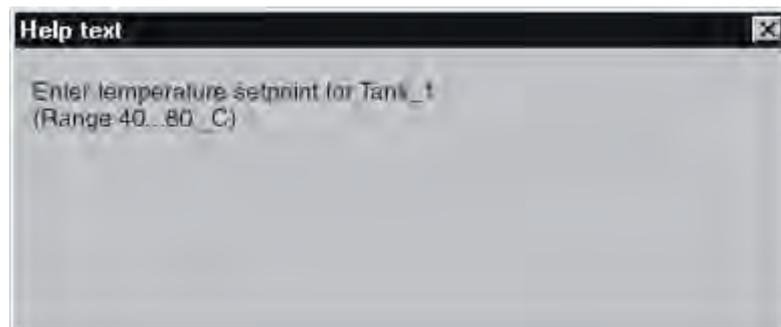


Figure 9-3 Operator note for an I/O field (Example)

### Help on messages

Actuate the  button on the alarm screen or in the alarm view

### Help on input objects

Touch the <Help> button on the screen keyboard. This button is only available if you configured an operator note.

### Help on the current screen

Call the operator note for the current screen

---

#### Note

To view a new operator note, you first need to close the window showing the current operator note.

---

## 9.2 Special functions for mobile operator control and monitoring

### 9.2.1 Holding and placing the HMI device

#### Mobile Panel 170 position for manual operation



Figure 9-4 Underarm position for right or left handed individuals

The positions shown above enable actions to be performed on the system being monitored, e.g., during maintenance.

In the underarm position shown, both right and left handed individuals can operate the Mobile Panel 170 equally well. All operator control elements on the front can be reached with your free hand. The hand holding the Mobile Panel 170 can also be used to activate the enabling switch. Control inputs are enabled when just one of the enabling switches is activated.

The enabling switch is required to confirm the action. The enabling switch is optimally placed for reachability; it triggers a safety shutdown in the event of panic situations involving potential danger (release or clench)

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

---

#### Note

If you are right handed, insert the connecting cable in the left cable guide on the Mobile Panel 170. Then, the connecting cable does not lie on the arm of the operator.

---

### Hand position of Mobile Panel 170 for data manipulation

This position is only permitted when you are manipulating data on the system being monitored.

---

#### Notice

If you are manually controlling unsafe actions in special operating modes, you must use one of the underarm positions shown above, so that you can quickly reach the STOP button or enabling switch, for example, should a dangerous situation arise.

---



Figure 9-5 Two hand position

### Placing the Mobile Panel 170

A wall holder is available for secure and location-specific placement of the Mobile Panel 170. The wall holder enables you to use the Mobile Panel 170 as a stationary HMI device.



Figure 9-6 Mobile Panel 170 in the wall holder

---

**Notice**

If the Mobile Panel 170 is hung in an unsuitable holder, the ability to operate the STOP button may be compromised.

---

**See also**

Connecting the cable (Page 4-8)

## 9.2.2 Connection point-dependent screen and function selection

### 9.2.2.1 Function method

#### Introduction

---

**Note**

The system being monitored can be divided by the terminal box into several zones or function areas, whereby the safety functions can also be set up on a zone-specific basis. This means that both enabling switches can also act as STOP buttons in a particular zone and not in others.

---

#### Configuration recognition

If different operating screens and functions at various connection points of the system being monitored are required on the Mobile Panel 170, use of the following procedure is recommended:

1. Wire the terminal box on the hardware side to an input signal of the PLC. This enables the PLC to recognize the terminal box that the Mobile Panel 170 is connected to.  
If the Mobile Panel 170 is plugged into one of these terminal boxes, the input bit is set to "1" in the PLC.
2. You can scan these inputs using a WinCC flexible tag and utilize the inputs in the project to display and hide screens and functions.

---

**Notice**

Observe the notes on the "Present 31" and "Present 32" switches.

---

---

**Note**

The "Project ID" range pointer can be used to ensure that the HMI device is connected to the PLC that forms the basis of the project.

The "Project ID" range pointer can be assigned to only one PLC for each project (see "WinCC flexible Communication" user manual).

---

The following sections contain examples for configuring screen and function selection according to the terminal box connection.

---

**Note**

The output of the Terminal Box Basic is connected to the power supply. In the case of the Terminal Box Plus, the output is fed to a relay using two pins.

---

**See also**

Terminal box (Page 12-11)

### 9.2.2.2 Application example 1

#### Example

Four terminal boxes are connected to one PLC by network. You can connect the HMI device to each terminal box.

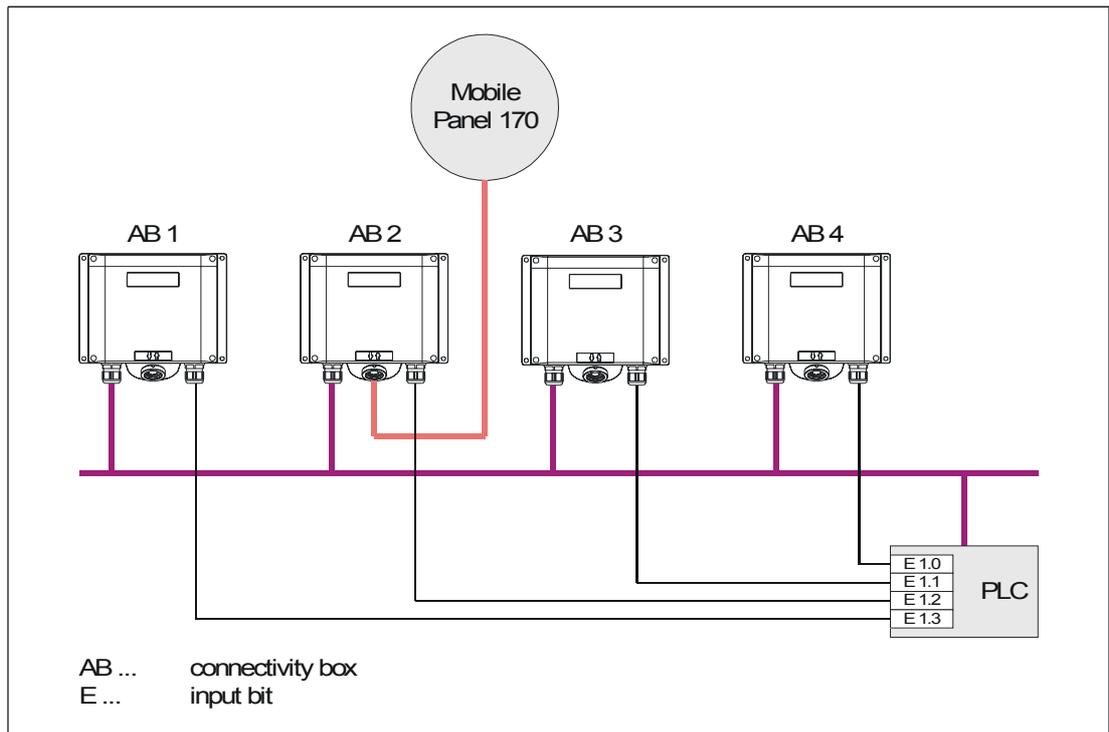


Figure 9-7 Application example 1

#### Requirements

- The terminal boxes are connected to one and the same PLC.
- For each terminal box, a separate input bit must be present in the PLC as a recognition bit.

The recognition bit allows screens and functions of the configuration to be called or displayed dependent on the terminal box.

### 9.2.2.3 Application example 2

#### Example

Four terminal boxes are connected to different PLCs by network. You can connect the HMI device to each terminal box.

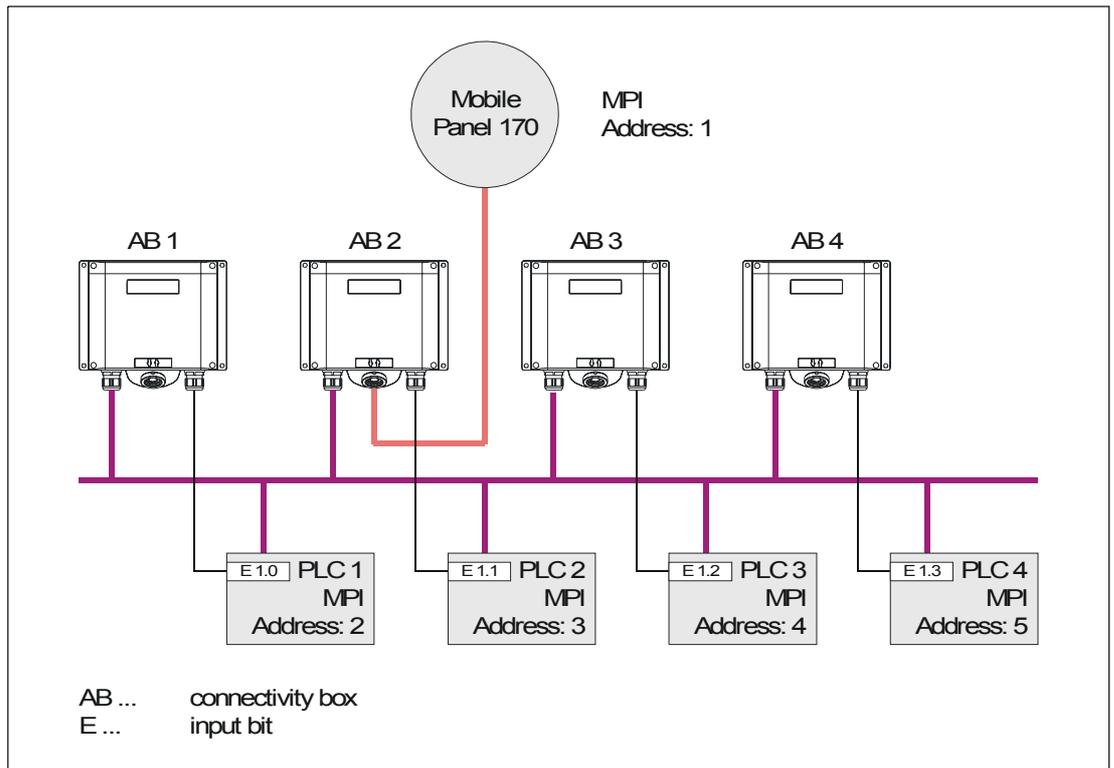


Figure 9-8 Application example 2

#### Requirements

- The PLCs have different MPI addresses and can be of a different type.
- For each terminal box, a separate input bit must be present in the PLC as a recognition bit.

The recognition bit allows screens and functions of the configuration to be called or displayed dependent on the terminal box.

#### Note

If the same screens and functions are used predominantly for all PLCs and the PLCs are of the same type, the configuration can be laid out in such a way that only one PLC connection is configured.

By configuring an operating object, the configuring engineer enables you to switch between the various PLCs.

### 9.2.2.4 Application example 3

#### Example

Four terminal boxes have individual connections to different PLCs. You can connect the HMI device to each terminal box.

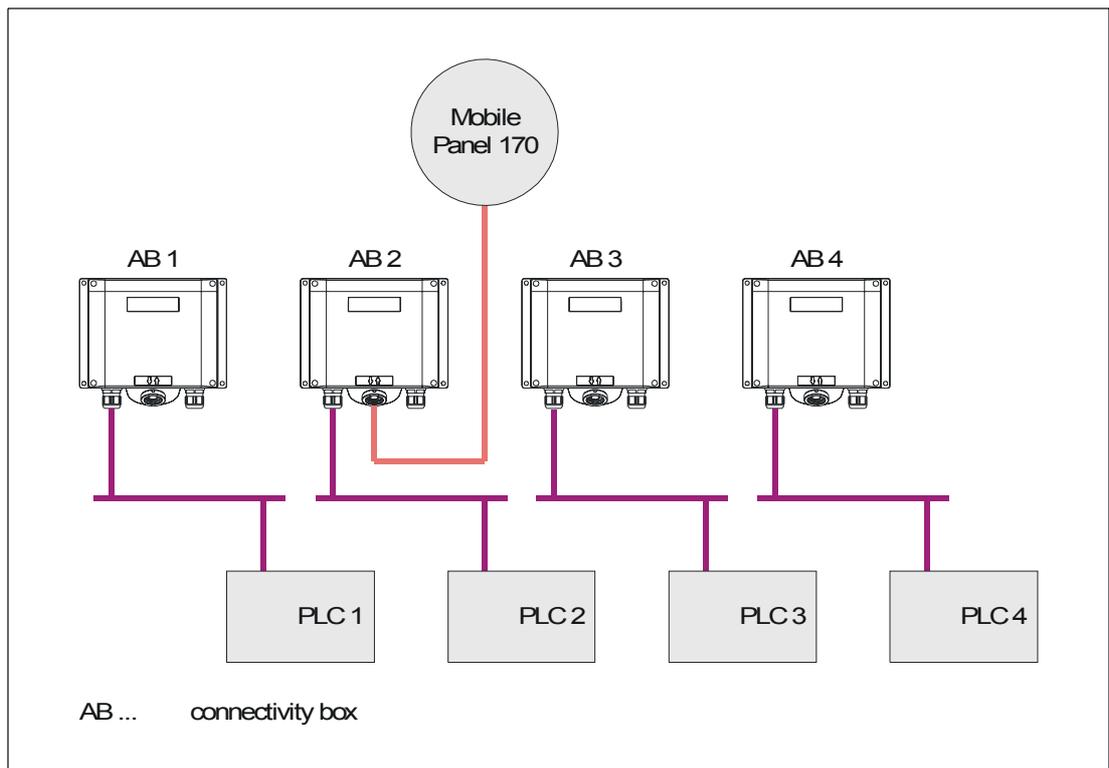


Figure 9-9 Application example 3

#### Requirements

- For such configurations, tags stored in specific PLCs can be used to configure connection point-dependent screens and functions. Recognition bits are not essential for this.
- For the case that PLCs of different types are involved (e.g., S7-300, S7-200, and SIMOTION), it is recommended that all PLCs be configured offline. The "Change connection" system function in a start screen allows the appropriate PLC to be activated according to the connection point.

Recognition bits are not essential for this. Activate the required PLC using the "Set connection mode" system function.

## 9.2.3 Operator control elements via distributed I/O

### 9.2.3.1 Direct keys

#### Direct keys

The following operator control elements of the HMI device can be connected to the PLC as direct keys:

- Function keys
- Handwheel
- Key-operated switch
- Illuminated pushbutton

Configuration of DP direct keys is described in the "WinCC flexible Communication" user manual.

---

#### Notice

The keys and operator control elements of the HMI device can be integrated as a PROFIBUS DP slave in the PROFIBUS DP network.

However, you must note: Removing the connecting cable is equivalent to a PROFIBUS DP slave failure and, thus, causes the CPU to stop. Therefore, take appropriate programming measures in the PLC to prevent this from occurring.

For more detailed information, refer to the PLC manufacturer's documentation.

---

### 9.2.3.2 Evaluation of direction pulses and switch statuses

#### Introduction

Direction pulses of the handwheel and the switch state of the function keys, key-operated switch, or illuminated pushbutton are read out directly from the HMI device and can be communicated to the PLC for evaluation. Five bytes are available for the evaluation.

### Byte assignment

The following figure shows the byte assignment in the input/output area for the operator control elements of the HMI device.

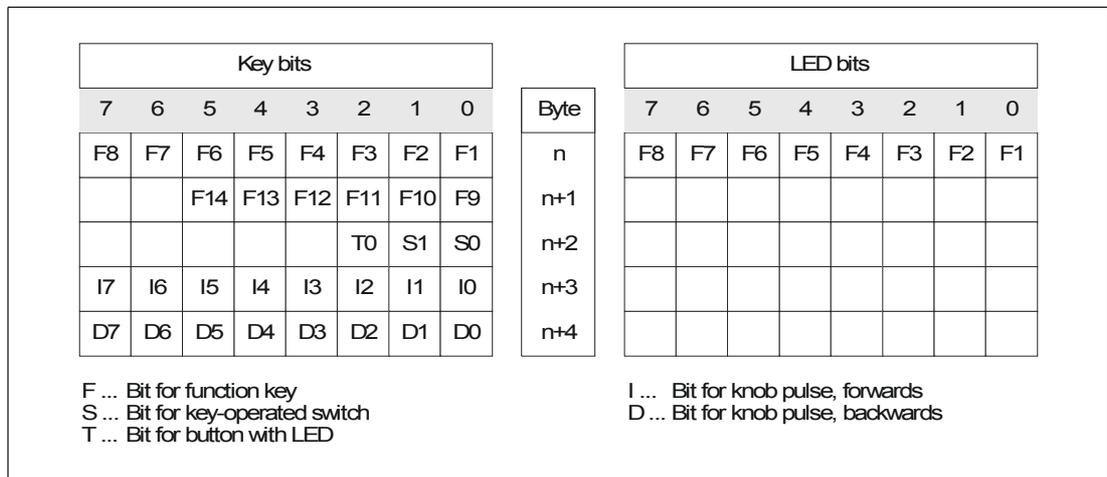


Figure 9-10 Byte assignment of keys and LEDs in the input/output area

### Bit coding

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

- Bit coding of function keys

State	F1 to F14
Not pressed	0
Pressed	1

- Bit coding of LEDs of function keys

State	F1 to F8
LED not illuminated	0
LED illuminated	1

- Bit coding of key-operated switch

State	S1	Key position	Key position
Position 0	0	0	In middle position
Position I	0	1	Turned counterclockwise to the end stop
Position II	1	0	Turned clockwise to the end stop

- Bit coding of illuminated pushbutton

State	T0
Not pressed	0
Pressed	1

- Bit coding of handwheel

- A setpoint is not specified for the handwheel.
- After startup of the HMI device, bytes n+3 to n+4 (see figure) are set to 0.

Rotation of the handwheel produces positive or negative pulses depending on the rotation direction. The number of positive pulses is stored in bits I0-17, and the number of negative pulses is stored in Bits D0-D7.

Values are entered in binary format, whereby Bit 0 is the least significant bit and Bit 7 is the most significant bit.

A complete handwheel revolution yields 50 pulses.

- Each pulse of the handwheel is added to the appropriate byte (n+3 or n+4), depending on the direction or rotation. There are no negative values. If the possible value range is exceeded, an overflow occurs.

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

### Example of bit coding for handwheel

The following table contains an example showing how to determine the rotation direction using pulses stored in Bytes n+3 and n+4 that were measured between time  $t_1$  and  $t_4$ .

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

Evaluation time	Handwheel		Evaluation
	Pulses, forward	Pulses, backward	
$t_1$	255 (^= -1)	245 (^= -11)	--
$t_2$	10	245 (^= -11)	Pulses, forward: 11 Pulses, backward: 0 Resulting value: +11
$t_3$	10	4	Pulses, forward: 0 Pulses, backward: 15 Resulting value: -15
$t_4$	15	5	Pulses, forward: 5 Pulses, backward: 1 Resulting value: +4

Based on the difference in pulses at times  $t_n$  and  $t_{n+1}$ , the resulting value and, thus, the rotation direction can be determined. From the table, take the number of forward pulses and backward pulses

- at  $t_n$  and
- at  $t_{n+1}$ .

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

Resulting value =

pulses, forward,  $t_{n+1}$  - pulses, backward,  $t_n$  - (pulses, backward,  $t_{n+1}$  - pulses, backward,  $t_n$ )

### Response time

Bytes n+3 and n+4 must be scanned on the PLC side within a second and cyclically. This ensures that no more than 256 pulses can be added between two scans of the handwheel. For 256 pulses, approximately 4.5 revolutions of the handwheel are required.

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

---

#### Notice

The input pulses should take effect immediately on the PLC and cause a response in the system being monitored. Therefore, set up a scan cycle  $\leq 100$  ms in the PLC to achieve this.

---

## 9.3 Controlling graphic objects

### 9.3.1 Button

#### 9.3.1.1 Description

##### Purpose

A button is a virtual key on the screen of the HMI device that can have one or more functions.



You can initiate separate, independent functions with the following button operations:

- Press
- Release
- Activate the button in the tab sequence
- Deactivate the button in the tab sequence

## Layout

A button can be labeled, use a graphic symbol or be hidden.

The operation may be followed with a visual feedback. However, note that the optical feedback only indicates a completed operation and not whether the configured functions were actually executed.

### 9.3.1.2 Touch control

#### Procedure

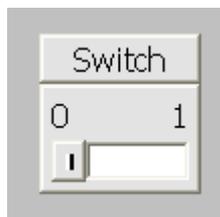
Touch the button on the touch screen of the HMI device.

## 9.3.2 Switch

### 9.3.2.1 Description

#### Purpose

The switch is an control object and display object with two states: "pressed" and "released." Switches can signal the state of a system component that cannot be seen from the HMI device, e.g. a motor. You can also change the status of that system components at the HMI device.



A switch has two stable states: When you actuate the switch, it changes to the other state. The switch retains this status until the next operation.

#### Layout

A switch can be labeled with a descriptive name, e.g. "Motor 2" and/or the names of its two states, e.g. "ON" and "OFF". The switch can be positioned vertically or horizontally.

### 9.3.2.2 Touch control

#### Procedure

Touch operation of a switch differs depending on the switch type:

- If a slider is displayed for the switch:  
Move the slider on the touch screen of the HMI device to the new position, or double-click the slider area.
- If only a text or a graphic is displayed for the switch:  
Touch the switch on the touch screen of the HMI device.

### 9.3.3 IO field

#### 9.3.3.1 Description

#### Purpose

You enter numeric or alphanumeric values in an IO field. An example of a numerical value is the number 80 as setpoint for a temperature. An alphanumeric value is the text "Service" as user name.



#### Layout

The layout of an IO field depends on its configuration in WinCC flexible, e.g.:

- Numeric IO field  
For input of numbers in decimal, hexadecimal or binary format.
- Alphanumeric IO field  
For input of character chains
- IO field for date and time  
For input of calendar dates or time information. The format depends on the language set on the HMI device.
- IO field for password input  
For concealed input of a password. The input character string is displayed with placeholders (\*).

## Behavior

If limit values are configured for the tag that is linked to the IO field, the input value is only applied if the value is within the configured limits.

Any input values which are out of range are rejected. The original value is displayed on the IO field instead, and a system alarm is output on the HMI device.

### 9.3.3.2 Touch control

## Procedure

Press the IO field on the touch screen of the HMI device. The screen keyboard automatically appears. Enter the desired value using the screen keyboard. Confirm your input with <Enter> or cancel it with <Esc>. After the input has been confirmed or canceled, the screen keyboard is automatically closed.

## 9.3.4 Graphic IO field

### 9.3.4.1 Description

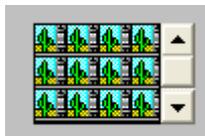
## Purpose

In a graphic IO field, select a predefined image from a selection list. The graphic represents the value of a tag. This can be an internal tag or a tag with a connection to a PLC.

The graphic IO field can also be used merely to output a pure graphic depending on the value of a tag. In this case, you cannot then operate the graphic IO field.

## Layout

If the graphic IO field shows a cactus icon, you have not defined the graphic output of a specific value in your project.



### 9.3.4.2 Touch control

#### Procedure

Touch the graphic IO field on the touch screen of the HMI device. Selection mode is activated.

Select the desired graphic using the scroll bar.

Apply the required graphic by touching it, or reject the selection by touching another screen object.

### 9.3.5 Symbolic IO field

#### 9.3.5.1 Description

#### Purpose

In a symbolic IO field select a predefined entry from a selection list. The entry represents the value of a tag. This can be an internal tag or a tag with a connection to a PLC.



The symbolic IO field can also be used to merely output an entry depending on the value of a tag. In this case, the symbolic IO field can no longer be operated.

#### Layout

If the symbolic IO field contains a blank text line in the drop-down list, you have not defined a relevant entry in the project.

### 9.3.5.2 Touch control

#### Procedure

Touch the symbolic IO field on the touch screen of the HMI device. The predefined entries are displayed in the selection list.

If the selection list has a scroll bar: Touch the scroll bar on the touch screen of the HMI device. Touch the touch screen continuously to move the scroll bar in the desired direction.

Select the desired entry and apply the associated tag value by touching the entry on the touch screen. The selection list is closed and the entry is displayed. The symbolic IO field continues to have the focus.

## 9.3.6 Alarm indicator

### 9.3.6.1 Description

#### Purpose

The alarm indicator is a configurable graphic icon that is displayed on the screen as long as at least one alarm belonging to the specified alarm classes is pending on the HMI device.



#### Behavior

The alarm indicator flashes as long as unacknowledged alarms are pending. The displayed number indicates the number of pending alarms.

---

#### Note

The icons from the symbol library can only be operated by touch screen.

---

### 9.3.6.2 Touch control

#### Procedure

Touch the alarm indicator. An alarm window opens depending on the configuration.

Use the Close icon to close the Alarm window and be able to operate the screens. The alarm window can be opened again by touching the alarm indicator.

### 9.3.7 Alarm view

#### 9.3.7.1 Description

##### Purpose

The Alarm view shows alarms or alarm events selected by the planner from the alarm buffer or, if supported by the HMI device, from the alarm log.



##### Layout

To be able to distinguish between different alarms classes, they are identified in the first column of the Alarm view:

Icon	Alarm class
!	Error
(empty)	Operation
(depending on configuration)	Custom alarm classes
\$	System

In Runtime you can configure the column order and the sorting order of each column.

##### Operator controls

The buttons have the following functions:

Button	Function
	Use this button to call the configured operator note for the selected alarm.
	This button triggers the function assigned to the "Edit" event for the selected alarm.
	This button is used to acknowledge an unacknowledged alarm.

### 9.3.7.2 Touch control

#### Procedure

Touch the desired operating element in the Alarm view on the touch screen of the HMI device.

#### Changing column sequence and sorting sequence

In Runtime you can configure the column order and the sorting order of each column.

- Change column sequence

To reverse the "Time" and "Date" columns, for example, touch the "Date" header on the HMI device touchscreen. Continue to press the touchscreen and drag the column heading to the "Time" heading.

- Change sorting order

To change the chronological order of the alarms, touch the column heading, "Time" or "Date" on the HMI device's touchscreen.

### 9.3.8 Simple alarm view

#### 9.3.8.1 Description

#### Purpose

On an HMI device with a small display, the simple alarm view is used to display and edit alarms.

#### Layout

The display of the simple alarm view depends on the configuration.

- The display shows all current, departed or acknowledged alarms of the selected alarm classes.
- The number of lines per alarm and the visible lines.



**Operator controls**

The buttons have the following functions:

Button	Function
	This button is used to acknowledge an unacknowledged alarm.
	This button triggers the function assigned to the "Edit" event for the selected alarm.
	Use this button to call the configured operator note for the selected alarm.

**9.3.8.2 Touch control**

**Procedure**

Touch the desired control object in the alarm view on the touch screen of the HMI device.

## 9.3.9 Recipe views

### 9.3.9.1 Description

#### Purpose

The recipe view is a screen object that is used in runtime to display and edit recipe records.

#### Layout

The functions of the recipe view can be configured. To use the Recipe view on small panels, a simple view is also available, for example.

Different settings are also possible for whether the recipes available in the recipe view can only be selected or can also be changed.

#### Behavior

If you change to another screen and have not yet saved changes to the recipe data in the recipe view, you will be prompted to save the recipe data. The recipe name and the name of the recipe record are displayed to show which recipe data have not been saved yet.

When you change to a screen that contains a recipe view loaded with recipe data, the recipe data is automatically updated.

#### Operator controls

The following operator controls can be configured in the recipe view:

Operator control element	Function
	Displays the configured operator notes of the given recipe view.
	Creates a new recipe record in the recipe that is displayed in the specified recipe view. The recipe record values are preset with the values that were specified as "Default value" when the recipe was configured.
	Saves the recipe data record which is currently displayed in the recipe view. The storage location is determined during configuration in the properties view for the recipe.

Operator control element	Function
	Saves the recipe record currently being displayed in the recipe view under a new name. The storage location is determined during configuration in the properties view for the recipe.
	Deletes the recipe record that is displayed in the recipe view from the data medium of the HMI device.
	Synchronizes the values of the recipe record that is currently displayed in the recipe view with the associated tags. During synchronization, all values of the recipe record are written to the associated tags. Then the values are read from the tags and used to update the values in the recipe view.
	Transfers the recipe record, which is currently displayed in the recipe view, to the connected PLC.
	Transfers the recipe record, which is currently loaded in the PLC, to the HMI device and displays it in the recipe view.

### 9.3.9.2 Touch control

#### Procedure

Touch the desired operating element in the Recipe view on the touchscreen of the HMI device.

Use the screen keyboard to enter values.

## 9.3.10 Simple recipe view

### 9.3.10.1 Description

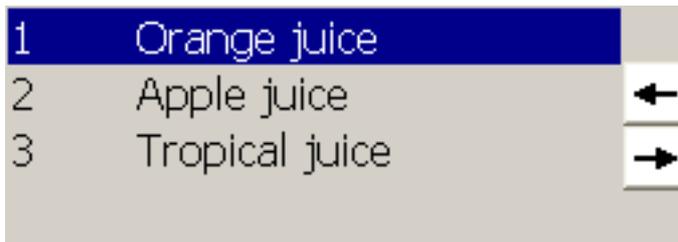
#### Purpose

On an HMI device with a small display, the simple recipe view is used to display and edit recipes.

#### Layout

The simple recipe view consists of three areas:

- Recipe selection
- Recipe data record selection
- Recipe entries



In the simple recipe view, each area is shown separately on the HMI device. The simple recipe view always begins with the recipe selection.

#### Behavior

A command option selection can be called in for each display area by pressing the  button. The command selection lists those commands that are available in the current display area. Each command is assigned a number which you can use to select it directly from the list (without using the <Enter> key).

#### Operator controls

The buttons have the following functions:

Button	Function
	Returns to the previous selection
	Calls up the shortcut menu commands.

### 9.3.10.2 Touch control

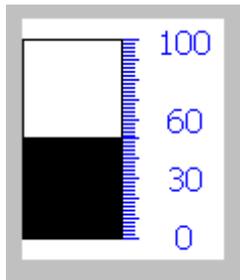
#### Procedure

Touch the desired control object or list entry in the simple recipe view on the touch screen of the HMI device.

### 9.3.11 Bar

#### Purpose

The bar is a dynamic display object. The bar displays a value from the PLC as a rectangular area. The operator at the HMI device can thus see immediately how far the current value is from the configured limit value or whether a setpoint value has been reached. The bar can display values such as fill levels or batch counts.



#### Layout

The layout of the bar is set in the user program. In the bar, for example, lines can identify the configured limit values. Color changes can signal when a limit value has been exceeded or not been met.

#### Operation

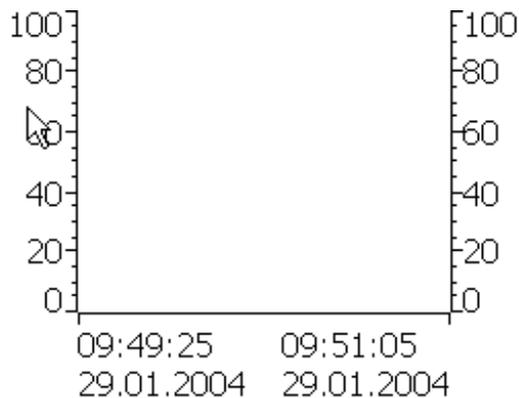
The bar is for display only and cannot be controlled by the operator.

## 9.3.12 Trend view

### 9.3.12.1 Description

#### Purpose

The trend view is a dynamic display object. The Trend view can display actual process data and process data from a log continuously when it is supported by the HMI device.



#### Layout

The layout of the trend view is based on the configuration. A trend view can show multiple curves simultaneously to allow the user, for example, to compare different process sequences. If the displayed process value exceeds or falls below the configured limit values, the violation of the limit can be displayed by a change of color in the curve.

A ruler can also simplify the reading of the process values from the trend view. The ruler displays the Y-value that belongs to an X-value.

#### Operator controls

The trend view is operated by the configured trend display buttons. If no buttons have been configured for the trend view, you can operate the trend view using the keyboard or the function keys of the HMI device. Prerequisite is that the project engineer has configured and documented this type of operation.

Operator control element	Function
	Scrolls back to the beginning of the trend recording. The start values of the trend recording are displayed there.
	Zooms the displayed time section
	Zooms out of the displayed time section

Operator control element	Function
	Moves the ruler backward (to the left).
	Moves the ruler forward (to the right).
	Scrolls one display width backward (to the left).
	Scrolls one display width forward (to the right).
	Shows or hides the ruler. The ruler displays the X-value associated with a Y-value.
	Stops or continues trend recording

### 9.3.12.2 Touch control

#### Procedure

Touch the desired control object in the trend view on the touch screen of the HMI device.

### 9.3.13 Date / time field

#### 9.3.13.1 Description

#### Purpose

The date / time field indicates the system time and data. In Runtime, you may change the system time and data in accordance with the configuration.



#### Layout

The layout in the date/time field depends on the language set in the HMI device.

## Behavior

An input values other than the date and system time are rejected. Instead, the original values (plus the time that has elapsed in the meantime) will appear in the date/time field and a system alarm will be displayed on the HMI device.

### 9.3.13.2 Touch control

## Procedure

Touch the date/time field on the touch screen of the HMI device. The screen keyboard automatically appears. Enter the desired value using the screen keyboard. Confirm your input with <Enter> or cancel it with <Esc>. After the input has been confirmed or canceled, the screen keyboard is automatically closed.

### 9.3.14 User view

#### 9.3.14.1 Description

## Purpose

The user view is used by the administrator to manage user accounts, group assignments and user passwords.

Users can change their passwords and logoff times.

User	Password	Group	Logoff time
Administrator	*****	Administrators	5
Miller	*****	Programmer	5
Smith	*****	Operators	5

## Layout

The user view contains four columns for the user, password, group and log-off time. The passwords are encrypted by means of asterisks.

- The users in the "Administrators" group can view all existing users in the user view, change all entries and create new user accounts.
- Other users only see a single line in the user view showing their own user name.

If the name or password of a logged on user is entered, a system alarm is output.

## Export and import

A user view contains all users, passwords, group assignments and logoff times set up on the HMI device. To eliminate the necessity of reentering all data again on another HMI device, you can export the user view, and then import it to another device. However, this is only possible if this function has been configured.

---

### Note

Do not export the password list immediately after changing it. Exit the "User view" object after making changes and wait until the changes have been written to the internal Flash memory before performing the export.

---

---

### Notice

The currently valid passwords are overwritten during an import. The imported passwords are valid immediately.

---

### 9.3.14.2 Touch control

#### Procedure

To create a new user, touch an empty line. Then use the screen keyboard to type in the user name and confirm your entry with <Enter>. Assign a password and a logoff time in the same way and then select the group.

To change user data, touch the relevant field and make the change.

## 9.3.15 Simple user view

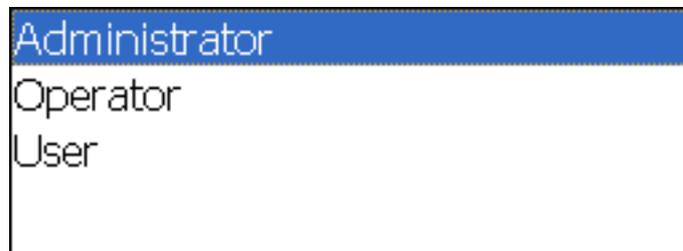
### 9.3.15.1 Description

#### Purpose

On HMI devices with a small display, the simple user view is used to display users on the HMI device.

#### Layout

Users in the "Administrators" group see all existing users in the user view.



Other users only see a single line in the user view showing their own user name.

### 9.3.15.2 Touch control

#### Procedure

Touch the relevant entry in the simple user view on the touch screen of the HMI device.  
Use the screen keyboard to input data.



## Operating recipes

### 10.1 Recipes

#### Overview

Recipes are a collection of associated data, e.g. machine configuration or production data. You can transfer these data, for example, from the HMI device to the controller in a single step in order to change the production variant. If you have programmed directly at the machine, for example, you can transfer the data to your HMI device and write these to the recipe.

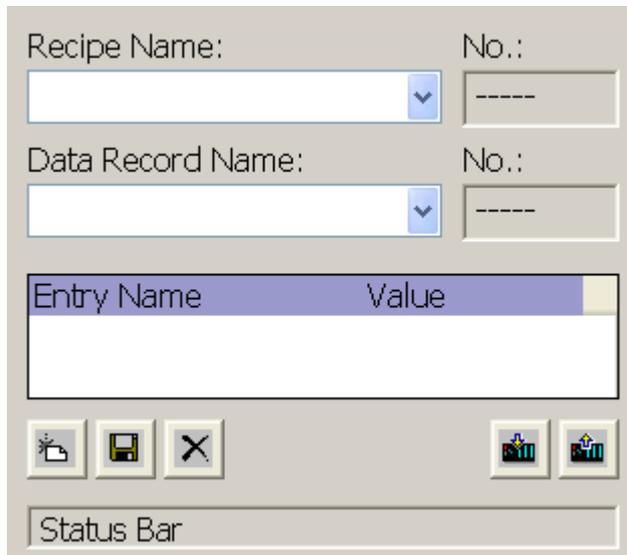
#### Operating recipes in Runtime

WinCC flexible offers two options of viewing and editing recipes and the corresponding recipe data records in Runtime on the HMI device:

- Recipe views
- Recipe screen

### Recipe views

The recipe view is a screen object that is configured in the "Screens" editor. For example, you can specify what operating function the recipe view will have in Runtime:



The screenshot shows a configuration dialog box for a recipe view. It contains the following elements:

- Recipe Name:** A text input field with a dropdown arrow.
- No.:** A numeric input field with a dashed line indicating a range.
- Data Record Name:** A text input field with a dropdown arrow.
- No.:** A numeric input field with a dashed line indicating a range.
- Table:** A table with two columns: "Entry Name" and "Value". The table is currently empty.
- Buttons:** A set of icons for file operations (New, Open, Save, Close) and a set of icons for data visualization (Bar chart, Pie chart).
- Status Bar:** A text input field at the bottom labeled "Status Bar".

The recipe view shows recipe data records in tabular form. The Recipe view is particularly useful if data records are small in size or only a few values are to be modified.

### Recipe screen

A recipe screen represents a process screen which you configured as individual input screen form by means of an individual layout of IO fields and other screen objects in the "Screens" editor. This makes it possible for you to input parameter data in the context of machine visualization. The I/O fields for a recipe can be distributed over multiple recipe screens, with topical organization of recipe elements, for example. The operating functions for the recipe screens must be configured explicitly in the process screens.

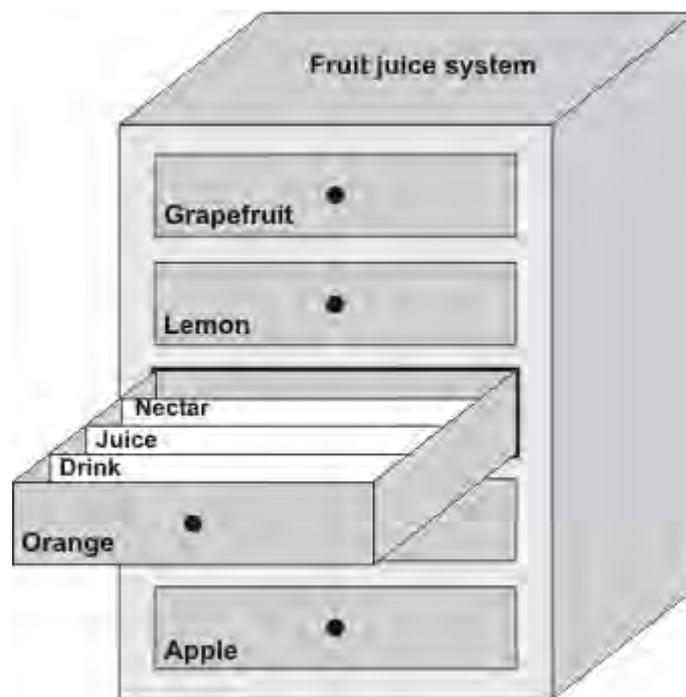
## 10.2 Structure of recipes

### Introduction

A product often has several variants. For example, product variants can differ with respect to size or quality. This condition is accurately reflected in a recipe.

### Principle

A recipe consists of recipe data records containing values. The structure of a recipe is explained using the example of a filing cabinet.



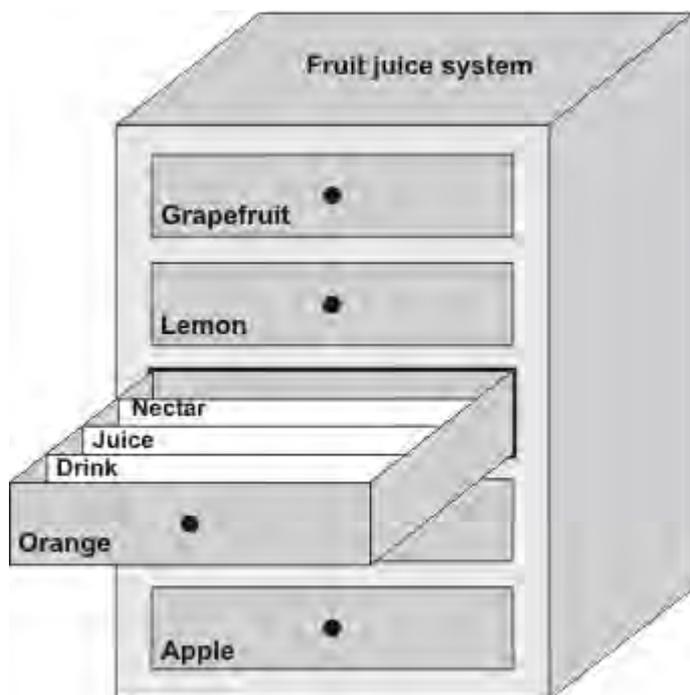
Each recipe represents a drawer of the file cabinet shown, and thus precisely one product. If the fruit juice mixing plant is producing orange, apple, and tropical fruit flavors, you would then configure one recipe for each flavor.

You define the recipe elements in the recipe. A recipe element consists of the display name and a tag. The display names are indicated in the recipe data records and on the HMI device in the recipe view. In Runtime, the appropriate tag value is read from the controller or transferred to the controller.

## 10.3 Structure of recipe data records

### Introduction

A recipe data record corresponds to a file card in an individual drawer and thus to a single product variant. If the fruit juice mixing plant is producing juice, nectar, and fruit drinks, you would then create a recipe data record in the recipe for each product variant. In this case, the product variants consist of the different mixing ratios for the ingredients.



A recipe data record is a set of values for the tags defined in the recipe. You enter the values in the input fields. You can enter the values either during configuration or during runtime on the HMI device or the machine.

Elements		Data records					
	Name	Display name	Numb... ▲	Water	Concentrate	Sugar	Aroma
☰	Beverage	Beverage	1	30	70	45	600
☰	Nektar	Nektar	2	50	50	10	300
☰	Juice	Juice	3	5	95	3	100

To produce a product, you transfer the appropriate recipe data record from the HMI device to the connected controller. The values in the recipe data record cannot be changed on the HMI device unless the configuring engineer has provided for this.

### Editing recipe data records

You can edit recipe data records during configuration or in runtime on the HMI device.

- During configuration, you can define recipes in the "Recipes" editor in the "Elements" tab. You can enter values in the recipe data records in the "Data records" tab.
- During runtime, you have the option of entering recipe data record values directly on the HMI device or importing them via a CSV file. You can also export the recipe data records to a CSV file.

## 10.4 Recipe application

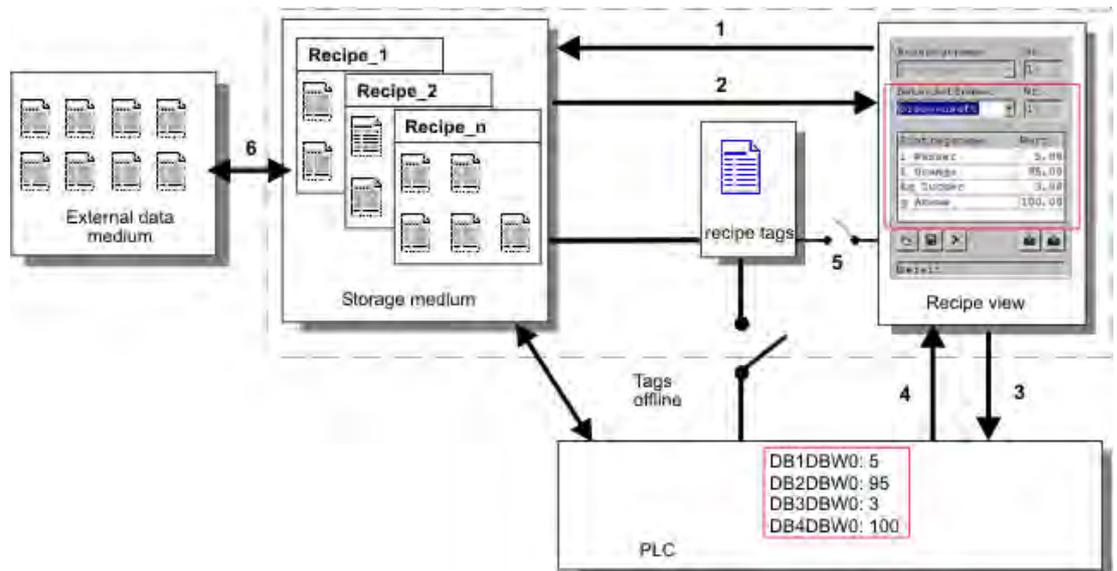
### 10.4.1 Transfer of recipe data records

#### Introduction

Recipe data records can be transferred in Runtime between external data storage media, e.g. a flash memory, an HMI device and a controller.

#### Principle

The figure below shows how recipe data records can be transferred. You configure the appropriate functionality for transferring data records in the recipe view. In a recipe screen, you use the system functions provided for this purpose.



The HMI device stores recipe data records on a storage medium such as a flash memory device or hard disk. You can edit a recipe data record in a recipe view or recipe screen on the HMI device display.

(1) Save: Values you change on the recipe view or recipe screen are written to the recipe data record on the storage medium by executing the "Save" function.

(2) Load: The "Load" function is used to update the values of recipe tags shown on the recipe screen with the values of the recipe data record of the storage medium. The function overwrites any values changed on the recipe screen. The "Load" function is executed for the Recipe view when the data record is selected again.

(3) Write to controller: The values deltas of the recipe view and recipe screen are downloaded to the PLC by calling the "Write to controller" function.

(4) Read from controller: Call the "Read from controller" function to update the indicated values of the recipe view and recipe screen with the controller values. The function overwrites any data changed on the recipe view or screen.

(5) Synchronization with controller: In your configuration, you can decide to synchronize the values in the recipe view with the values of the recipe tags by setting the "Synchronization with controller" function. After this synchronization, both the recipe tags and the recipe view contain the current updated values. When the "Variables offline" setting is disabled for the recipe, the current values are also applied in the controller.

(6) Import, Export: A data record can be exported to an external data carrier in order to process it in MS Excel, for example. The data record is there stored in \*.csv format.

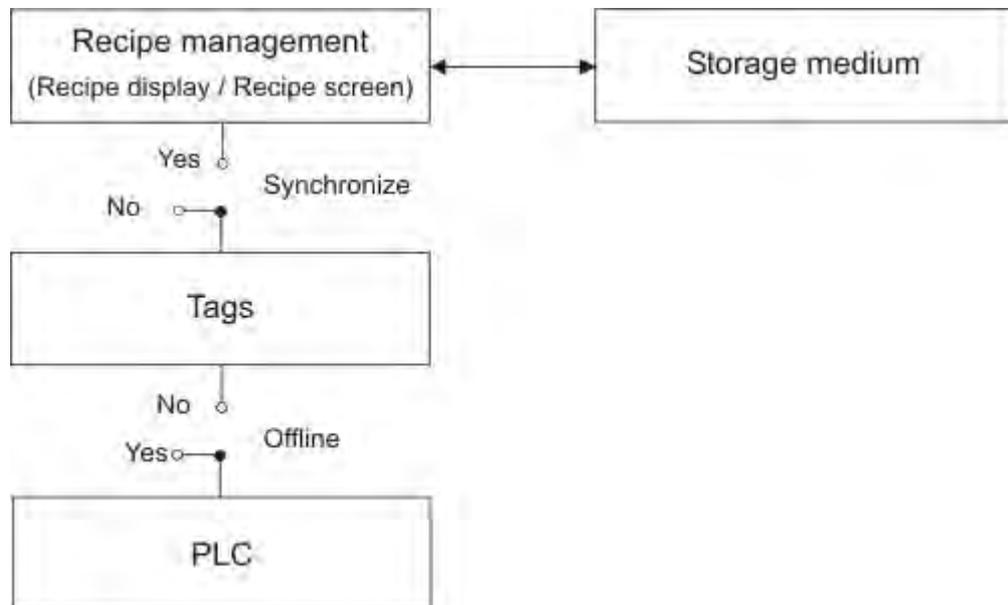
## 10.4.2 Configuration of recipes

### Introduction

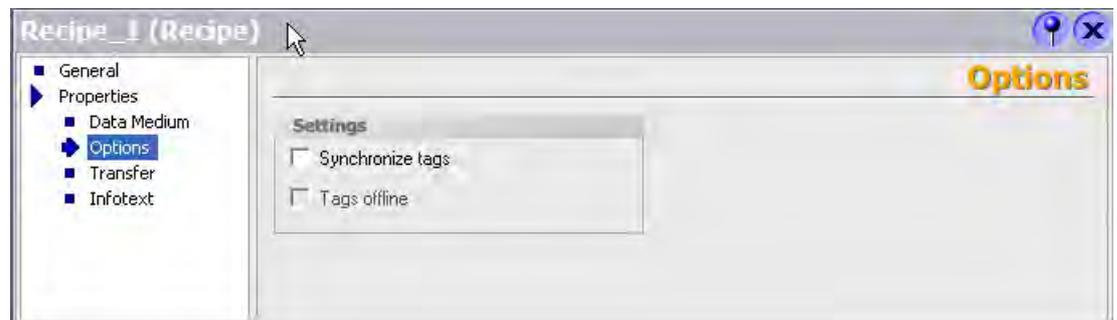
You configure recipes according to your intended application. To write a value to a recipe data record on your HMI device without disturbing the current process, you need configuration settings other than those required for assigning parameters to a machine.

### Principle

In the configuration settings of a recipe, you specify the behavior of the tags you are using in the recipe. The figure below shows the basic differences when working with recipe data records.



These configuration settings are made under "Settings" in the property view:



### Configuration 1: Recipe without "Synchronize tags"

Data of a data record that has been read are only displayed and can only be edited in the recipe view. Using these same tags outside of the recipe view does not affect their values.

### Configuration 2: Recipe with "Synchronize tags" and with "Tags offline"

The "Synchronize tags" option is used to specify that the data of a data record read from the controller or storage medium are to be written to or read from the tags you have configured for the recipe.

The "Offline" option ensures that the input data are written to the tags without being transferred directly to the controller.

### Configuration 3: Recipe with "Synchronize tags" and without "Tags offline"

The "Synchronize tags" option is used to specify that the data of a data record read from the controller or storage medium are to be written to or read from the tags you have configured for the recipe.

The input or read data are transferred immediately to the controller:

### Synchronization with the controller

In the case of synchronous transfer, both the controller and the HMI device set status bits in the shared data compartment. You can use this mechanism to prevent uncontrolled overwriting of data in either direction in your control program. You define the address range of the data compartment separately for each controller on the "Range pointer" tab in the "Connections" editor.

Applications for synchronous transfer of recipe data records:

- The controller is the "active partner" for the transfer of recipe data records.
- The controller evaluates the data containing the recipe number and name, as well as the recipe data record number and name.
- Triggering the transfer of data records by means of system function or PLC job, e.g. with the system functions "SetDataRecordToPLC" and "GetDataRecordFromPLC", or with the PLC jobs "Set\_Data\_Record\_To\_PLC" and "Get\_Data\_Record\_From\_PLC."

In order to synchronize transfer of data records between the HMI device and the controller, the following requirements must be met during configuration:

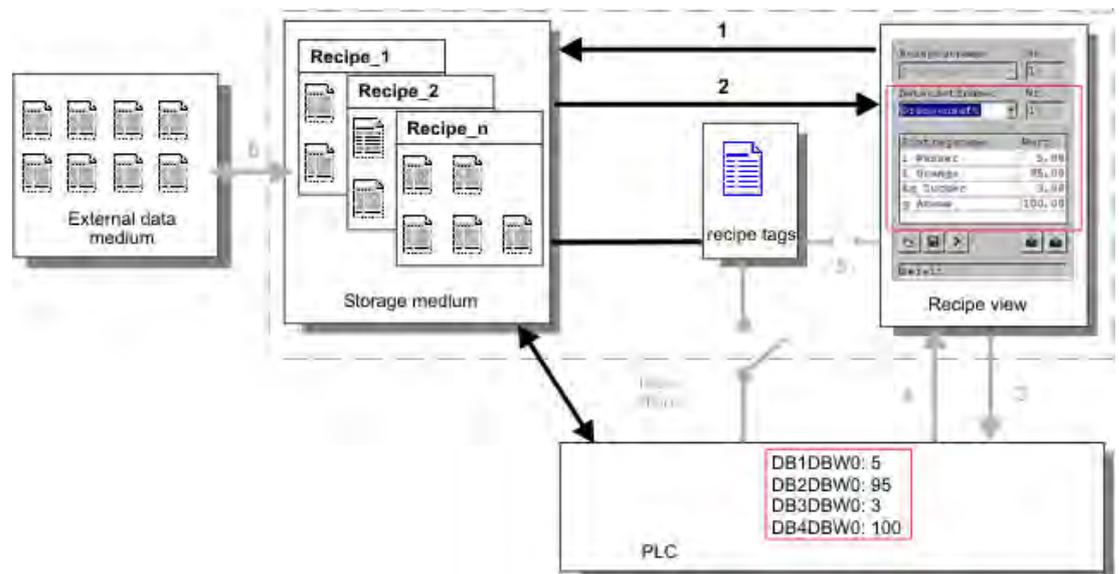
- The "Data mailbox" range pointer is located under "Range pointers" in the project view.
- The controller with which the HMI device synchronizes the data record transfer is specified in the recipe properties.

### 10.4.3 Scenario: Entering recipe data records in Runtime

#### Objective

You want to enter production data on the HMI device without disturbing the process that is currently underway. Therefore, the production data should not be transferred to the PLC.

#### Sequence



You enter the production data in the recipe view or the recipe screen, assign a recipe data record name, and save the new recipe data record on the storage medium of the HMI device.

#### Configuration in WinCC flexible

You configure the recipe along with the associated tags.

Synchronization with the recipe tags is not necessary, because production data (tags) are not intended to be transferred to the PLC. Make the following settings for the recipe in the property view:



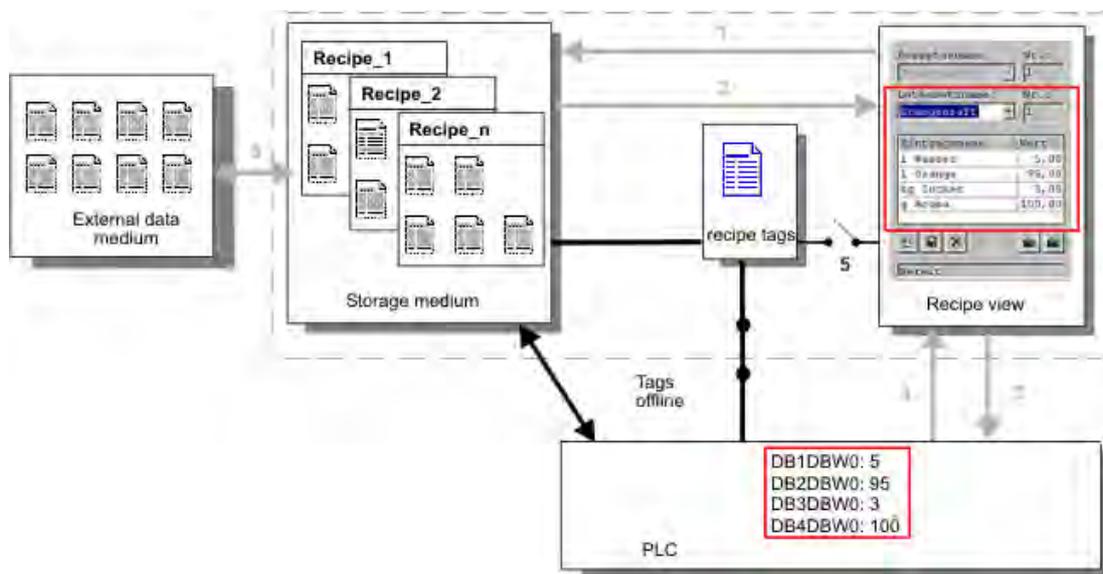
Depending on the extent of the recipe, you either configure a recipe view or create a recipe screen.

### 10.4.4 Scenario: Manual production sequence

#### Objective

The production data are to be requested by the PLC according to the work piece to be processed and displayed on the HMI device for inspection. You want to be able to correct the transferred production data online, if necessary.

#### Sequence

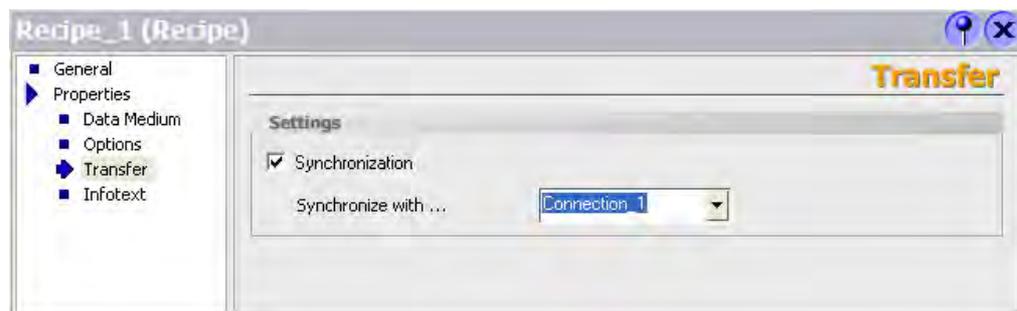
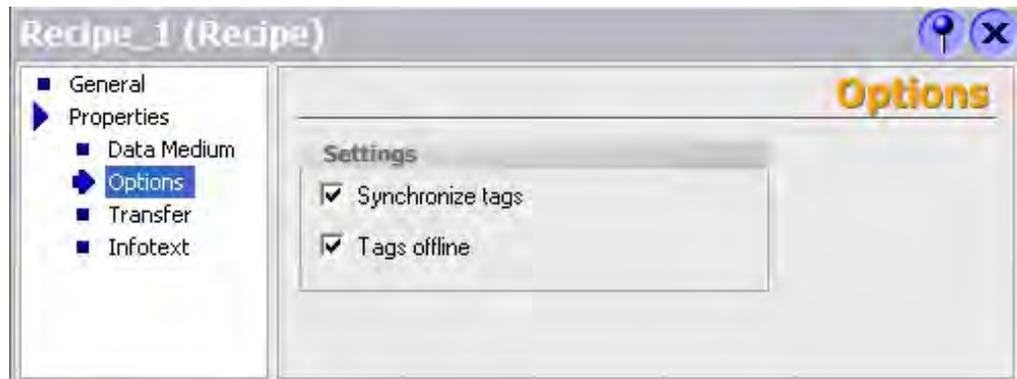


A reading device connected to the PLC reads a bar code on the work piece to be processed. The recipe data record names correspond to the respective bar code names. This will enable the PLC to load the necessary recipe data record from the storage medium of the HMI device. The recipe data record is displayed for inspection. Changes are transferred immediately to the PLC.

## Configuration in WinCC flexible

You configure the recipe along with the associated tags.

Production data are to be transferred to the PLC, so it is necessary to synchronize with the PLC to prevent the data from accidentally overwriting each other. The tags are to be transferred to the PLC. Make the following settings for the recipe in the property view:



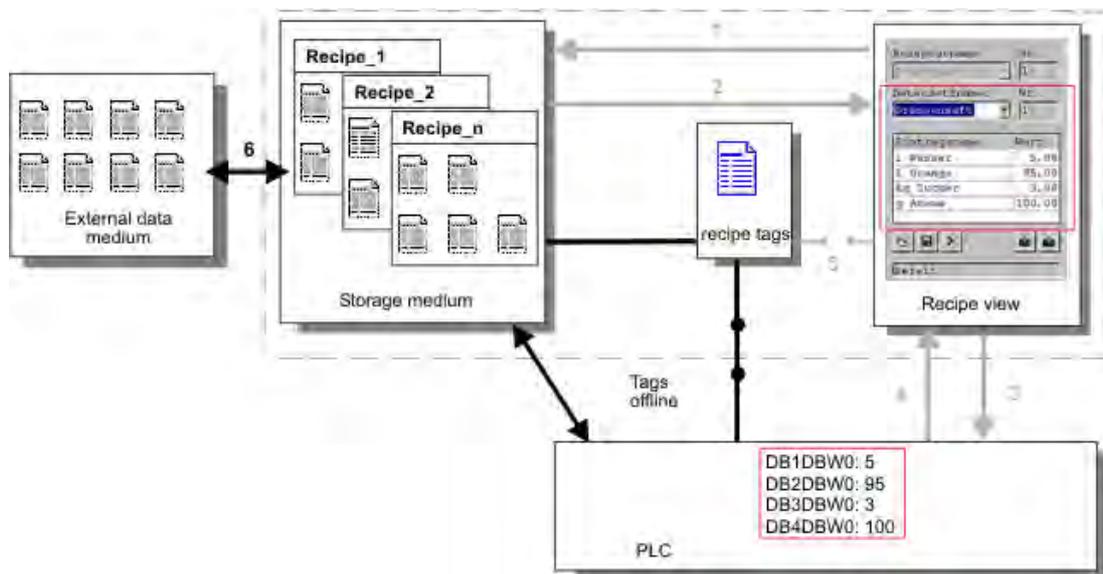
Depending on the extent of the recipe, you either configure a recipe view or create a recipe screen.

### 10.4.5 Scenario: Automatic production sequence

#### Objective

You want production to be executed automatically. The production data should be transferred directly to the PLC either from the data storage medium in the HMI device or from an external data storage medium. The production data do not have to be displayed.

#### Sequence



Production can be controlled using one or more "Scripts", which transfer production data records automatically to the PLC. The sequence can be checked using the return values of the utilized functions.

#### Configuration in WinCC flexible

You can implement the automatic production sequence with available system functions. The "ImportDataRecords" system function loads data records from a CSV file to the data medium. The "SetDataRecordTagsToPLC" system function transfers a data record from the data storage medium to the PLC.

## 10.5 Displaying recipes

### 10.5.1 Viewing and editing recipes in Runtime

#### Introduction

The WinCC flexible ES offers you two configuration options of viewing and editing recipes and their corresponding data records in Runtime on the HMI device:

- Recipe views
- Recipe screen

#### Recipe views

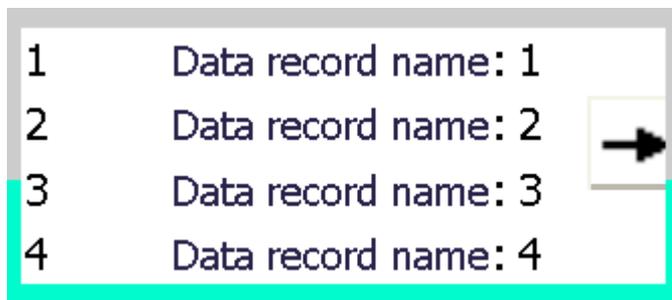
The recipe view is a screen object that is configured in the "Screens" editor. For example, you can specify what operating function the recipe view will have in Runtime:

The screenshot shows a software interface for viewing recipes. It features two rows of input fields. The first row has a 'Recipe Name' dropdown menu and a 'No.:' text box containing '----'. The second row has a 'Data Record Name' dropdown menu and another 'No.:' text box containing '----'. Below these is a table with two columns: 'Entry Name' and 'Value'. The table is currently empty. At the bottom of the interface, there are several icons: a document with a star, a floppy disk, a close button (X), and two bar chart icons. A 'Status Bar' is located at the very bottom.

The recipe view shows recipe data records in tabular form. The Recipe view is particularly useful if data records are small in size or only a few values are to be modified.

### Simple recipe view

On HMI devices which have a display smaller than 6" (e.g. OP 77B), the simple Recipe view is used to display and edit recipes.



The simple recipe view consists of three areas:

- Recipe selection
- Recipe data record selection
- Recipe entries

In the simple recipe view, each area is shown separately on the HMI device. The simple recipe view always begins with the recipe selection.

### Recipe screen

A recipe screen is a process screen with a customized input screen form that you create by setting up input/output fields and other screen objects in the "Screens" editor. This makes it possible for you to input parameter data in the context of machine visualization. The I/O fields for a recipe can be distributed over multiple recipe screens, which allows you a topical organization of recipe elements. The operating functions for the recipe screens must be configured explicitly in the process screens.

Litre Water	50
Litre Concentrate	50
Kilo Sugar	30
Gram Aroma	50

Recipe name	No.:
Orange	1
Data record name	No.:
Nectar	2

Save	Data to PLS
Load	Data from PLS

## 10.5.2 Behavior of the recipe view in Runtime

### Screen change

If you change to another screen and have not yet saved changes to the recipe data in the recipe view, you will be prompted to save the recipe data. The recipe name and the name of the recipe record are displayed to show which recipe data have not been saved yet.

If you change to a process screen that contains a recipe view with loaded recipe data, the recipe data will be automatically updated.

### Operating the recipe view with softkeys

The Recipe view can be operated with function keys, e.g. when the HMI device does not have touch functionality. System functions allow you to assign functions such as "Save data record" to the function keys of the HMI device.

## 10.6 Recipe data record administration

### 10.6.1 Recipe data record administration

#### Recipe data record administration

In Runtime you can, based on the configuration

- Create new recipe data records
- Copy recipe data records
- Edit recipe data records
- lavou recipe data records

That is, you can either edit recipe data records in the recipe view or screen, or import recipe data records from a CSV file.

### Creating new recipe records

1. Select the recipe on the HMI device in which you want to create a new recipe data record.
2. Use the "Add data record" button in the recipe view or the corresponding button on the HMI device that has this function.

A new data record with the next available number will be created. If you change the new data record number of an existing data record number, the data record is overwritten.

3. Enter a name for the recipe data records.
4. Enter the values for the recipe data records.  
The configuration data may already contain default values for the recipe data record.
5. Use the "Save" button in the recipe view or the corresponding button on the HMI device that has this function.

### Result

The new recipe data records will be saved to the selected recipe. If the recipe data records already exists, a system alarm will be output to the screen.

### Copying a recipe data record

You copy a recipe record by saving it under a new name.

1. Select the recipe on the HMI device in which you want to edit an existing recipe data record.
2. Select the recipe data record that you want to edit on the HMI device.
3. Assign a new name to the recipe data record.

As soon as you close the "Recipe data record" input field, the next free recipe data record number will be automatically assigned to the recipe data record. You may change the recipe data record number.

4. Use the "Save" button in the recipe view or the corresponding button on the HMI device that has this function.

### Result

The recipe data record is stored under the new name.

### Modify recipe record

1. Select the recipe on the HMI device in which you want to edit an existing recipe data record.
2. Select the recipe data record that you want to edit on the HMI device.
3. Replace the old values with new ones.
4. Use the "Save" button in the recipe view or the corresponding button on the HMI device that has this function.

**Result**

The modified values are applied to the recipe data record.

**lavou recipe data record**

1. Select the recipe on the HMI device in which you want to delete an existing recipe data record.
2. Select the recipe data record that you want to delete on the HMI device.
3. On the recipe view, select "Delete data record", or use the relevant HMI device button which is assigned this function.

**Result**

The recipe data record is deleted from the data medium of the HMI device.

## 10.6.2 Synchronizing a recipe data record

**Introduction**

In Runtime, differences between the indicated values and the actual values of the recipe tags may arise as a result of data input in recipe views or modification of recipe tags. Depending on the configuration, you can synchronize the values displayed in the recipe view with the recipe tags and values of the PLC. This synchronization is performed for each one of the recipe tags contained in the recipe data record.

**Requirements**

A recipe data record is displayed in the recipe view. The value of recipe tags can be changed, for example by teach-ins.

**Procedure**

1. Use the "Synchronization with controller" button in the recipe view or the corresponding button that has this function.

**Result**

- The system always updates the current value of the recipe view with the up-to-date recipe tag value.
- When the value shown in the recipe view is more recent than the current recipe tag value, the system writes this value to the recipe tag.

### 10.6.3 Exporting and importing recipe data records

#### Introduction

Based on your configuration, you can either export recipe data records to a CSV file for editing in MS Excel, for example, or import these from a CSV file. The extent to which you can influence these processes is determined by the project configuration. Various input boxes may be configured on the user interface:

- Input of the path to the CSV file
- Selection of the recipe data records for export
- Overwriting an existing CSV file

#### Export recipe data record

#### Requirements

Export functions are configured.

#### Procedure

1. Customize the export settings on the user interface of the HMI device, for example, by setting the path to the CSV file.
2. Press the button or the key on the HMI device configured with the "Export recipe records" function.

#### Result

The recipe data record are exported to a CSV file.

---

#### Note

New data records created in Runtime can be exported to an external file.

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#### Importing recipe records

#### Requirements

Import functions are configured.

#### Procedure

1. Customize the import settings on the user interface of the HMI device, for example, by setting the path to the CSV file.
2. Use the button or the key on the HMI device which is assigned the "Import recipe records" function.

## Result

The recipe data record are imported. If the structure of the CSV file is different from the recipe structure, deviations are treated as follows:

- Any additional values in the CSV file will be rejected.
- If the CSV file contains values of the wrong data type, the configured default value is set in the recipe record.

Example:

The CSV file contains values that show the tank contents and were input as floating point numbers. However, the corresponding recipe tag expects an integer value. In this case, the system discards the imported value and uses the configured default.

- The system also applies the configured default value to the recipe data record if the CSV file contains an insufficient number of values.

## 10.6.4 Read recipe data record from PLC

### Introduction

You can read values from the PLC and write them to a recipe data record. For example, you can do this in machine teach-in mode in order to save the positioning data of axes as a recipe data record.

The read values are written to the recipe record that is currently displayed on the HMI device.

### Procedure

1. Select the recipe on the HMI device.
2. On the HMI device, select the recipe data record of which you want to fetch the values from the PLC.
3. Use the "Read from PLC" button in the recipe view or the corresponding button on the HMI device that has this function.
4. Use the "Save" button in the recipe view or the corresponding button on the HMI device that has this function.

## Result

The values are read from the PLC, visualized on the HMI device and saved to the recipe data record.

## 10.6.5 Transfer recipe record to PLC

### Introduction

You can edit recipes offline or online.

- Offline: The data are transferred to the PLC after the relevant command is executed.
- Online: The data are transferred immediately to the PLC

In the recipe view, data are always edited offline. The configuration of the recipe screen determines whether the recipe data are edited offline or online.

When you edit data offline, you have to transfer the changed data to the PLC.

### Procedure

1. Select the recipe on the HMI device.
2. On the HMI device, select the recipe data record of which you want to transfer the values to PLC.
3. Use the "Write to PLC" button in the recipe view or the corresponding button on the HMI device that has this function.

### Result

The values of the recipe record are transferred to the PLC.

## 10.6.6 Reactions to modifications of the recipe structure

### Introduction

Engineering for the purpose of machine retrofitting may also influence the recipe structure. Previously created recipe data records can nevertheless continue to be used.

### Effects

If the structure of the recipe record is different from the defined address ranges in the PLC, deviations are handled as follows:

- Any additional values in the recipe record will be rejected.
- If the recipe record contains values of the incorrect data type, the default will be used in the recipe record.

Example: The recipe record contains values that show the tank contents and were input as floating point numbers. However, the corresponding recipe tag expects an integer value. In this case, the transferred value is rejected and the default value is used.

The system also applies the default value to the recipe data record, if the recipe data record contains an insufficient number of values.

**Caution**

When a tag is renamed, the assignment is lost.

**10.7 Example****10.7.1 Example: Creating a recipe****Task**

In this example, you create three recipes for a fruit juice mixing machine. The fruit juice mixing machine is to be used to produce orange, apple, and tropical fruit flavoured, based on mixing ratios for fruit drinks, nectar, and juice.

**Settings**

The settings relate to an HMI device which is connected to a SIMATIC S7-300 or SIMATIC S7-400 via MPI.

In this example, you need the following tags, flags, recipes, and recipe data record values:

**Tags:**

Name	PLC connection	Address	Type
Liter water	Yes	DB 120, DBW 0	Integer
Liter concentrate	Yes	DB 120, DBW 4	Integer
Kilo sugar	Yes	DB 120, DBW 8	Integer
Gram flavoring	Yes	DB 120, DBW 12	Integer

**Flag:**

Name	Address
Data record	DB 100, DBW 0

**Recipe (basic settings):**

Recipe element	Associated tag
Liter water	Liter water
Liter concentrate	Liter concentrate
Kilo sugar	Kilo sugar
Gram flavoring	Gram flavoring

**Recipe data record values:**

Data record name	Liter water	Liter concentrate	Kilo sugar	Gram flavoring
Fruit drink	30	70	45	600
Nectar	50	50	10	300
Juice	5	95	3	100

**Procedure**

1. Create the following tags with the settings indicated earlier: Liter water, Liter concentrate, Kilo sugar and Gram flavouring.
2. Create the orange, apple, and tropical fruit recipes with the settings indicated above.

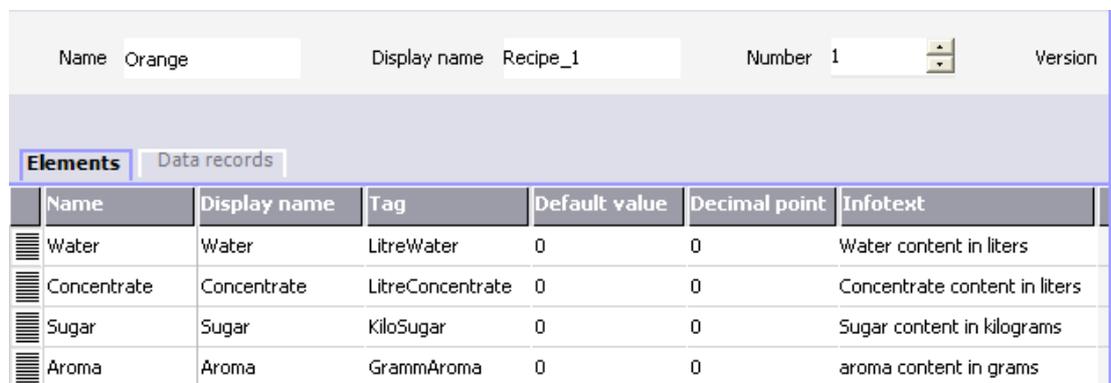


Figure 10-1 Recipe with recipe elements

3. Configure each recipe in such a way that you can edit the recipe data records on a recipe screen. The values of the recipe tags should not be transferred automatically to the PLC.
4. Create the data records indicated above in each recipe. Enter the values indicated above in each of the data records.

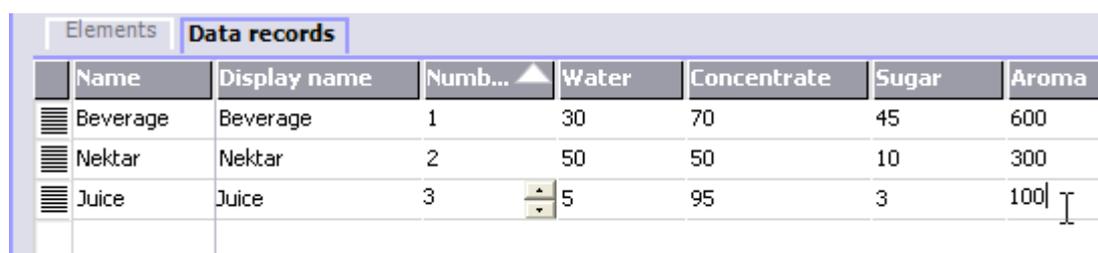


Figure 10-2 Recipe with recipe data record values

**Result**

The orange, apple, and tropical fruit flavour recipes have been created. In the "Configure recipe screen" example, you create a recipe screen in which you create an individual input screen form.

## 10.7.2 Example: Configuring a recipe screen

### Task

In this example, you create a recipe screen for the visualization of values of the fruit juice mixing machine. You use a recipe view to select the recipes and their associated recipe data records. You should be able to load and save the values of the recipe data records, and transfer them to and read them from the PLC.

### Requirements

The "Creating a recipe" sample application has been carried out.

The "Fruit juice mixing machine" process screen has been created and is opened.

### Settings

In this example, you need the following tags and buttons with the indicated settings:

#### Tags:

Name	PLC connection	Type
RecipeNumber	No	Integer
Data record number	No	Integer

#### Buttons:

Labeling	Configured event	System function
Load	Press	LoadDataRecord
Save	Press	SaveDataRecord
Data to PLC	Press	Write data record tags to PLC
Data from the PLC	Press	GetDataRecordTagsFromPLC

## **Procedure**

1. Drag-and-drop the "Liter water", "Liter concentrate", "Kilo sugar", and "Gram flavouring" tags from the object view to the "Fruit juice mixing machine" process screen.  
Four I/O fields are created and linked by the specified tags.
2. Configure a recipe view containing only the drop-down lists for the recipe name and data record name. Link the recipe view to the "Recipe number" and "Data record number" (recipe data record number) tags in the "General" group in the property view.
3. Assign the settings described above to each one of the four buttons. Transfer each "Recipe number" and "Data record number" tag as a parameter for the recipe number and recipe data record number.

## **Result**

In Runtime, you can select the recipe and the associated recipe data record from the recipe view. Click "Load" to load the recipe data record values and display these in the configured I/O fields. Click "To PLC" to write the recipe data record values to the associated tags and to transfer the recipe data record values to the PLC.

## Service and maintenance

### 11.1 General Notes

#### Preparation

Clean the touch screen and keyboard membrane of your HMI device regularly. Use a damp cloth.



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#### Warning

Clean the HMI device only after it has been unplugged. This ensures that you do not inadvertently trigger functions when you touch the keys or the touch screen.

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#### Cleaning agents

Only use water with washing-up liquid or a screen cleaning foam to dampen the cloth. Spray the cleaning agent onto a cloth rather than directly onto the screen. Never use aggressive solvents or scouring powder.

---

#### Caution

When cleaning the touch screen, make sure that no foreign bodies become lodged under the display border. This could damage the seal.

Do not use compressed air or steam jets to clean Mobile Panel 170 or the terminal box.

---

## 11.2 Notes on the touch screen

### Protective foil

A protective membrane is available for Mobile Panel 170 (see Siemens catalog ST 80). The protective foil is not supplied with the HMI device.

The self-adhesive membrane prevents the screen from being scratched and soiled. In addition, the matt surface of the foil reduces reflections.

The protective membrane can be removed as necessary without leaving any adhesive residue on the touch screen.

---

### Caution

Never use sharp or pointed tools to remove the protective membrane, such as a knife for instance. This could cause damage to the touch screen.

---

## Specifications

### 12.1 Dimensional drawings

#### 12.1.1 HMI device

##### Unit dimensions

Dimensions of Mobile Panel 170:

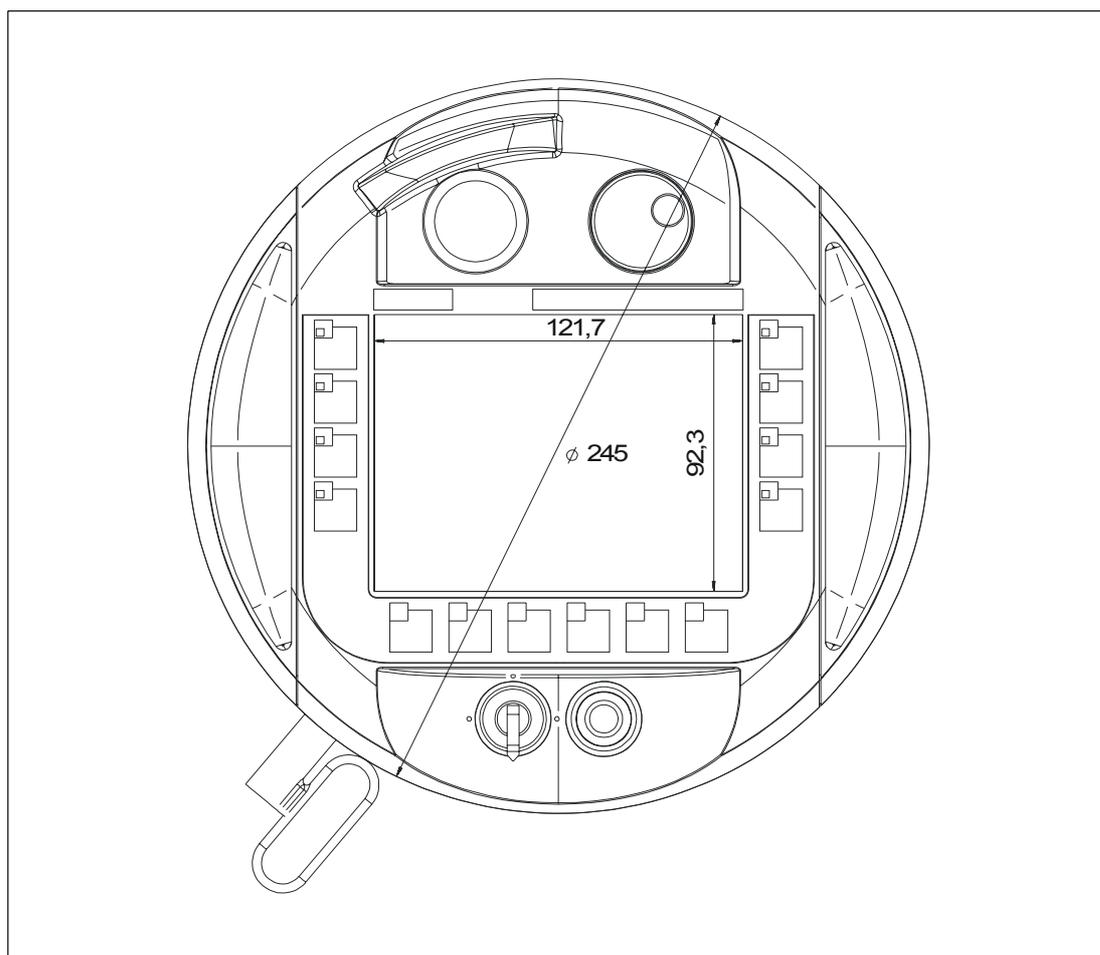


Figure 12-1 Mobile Panel 170, front view

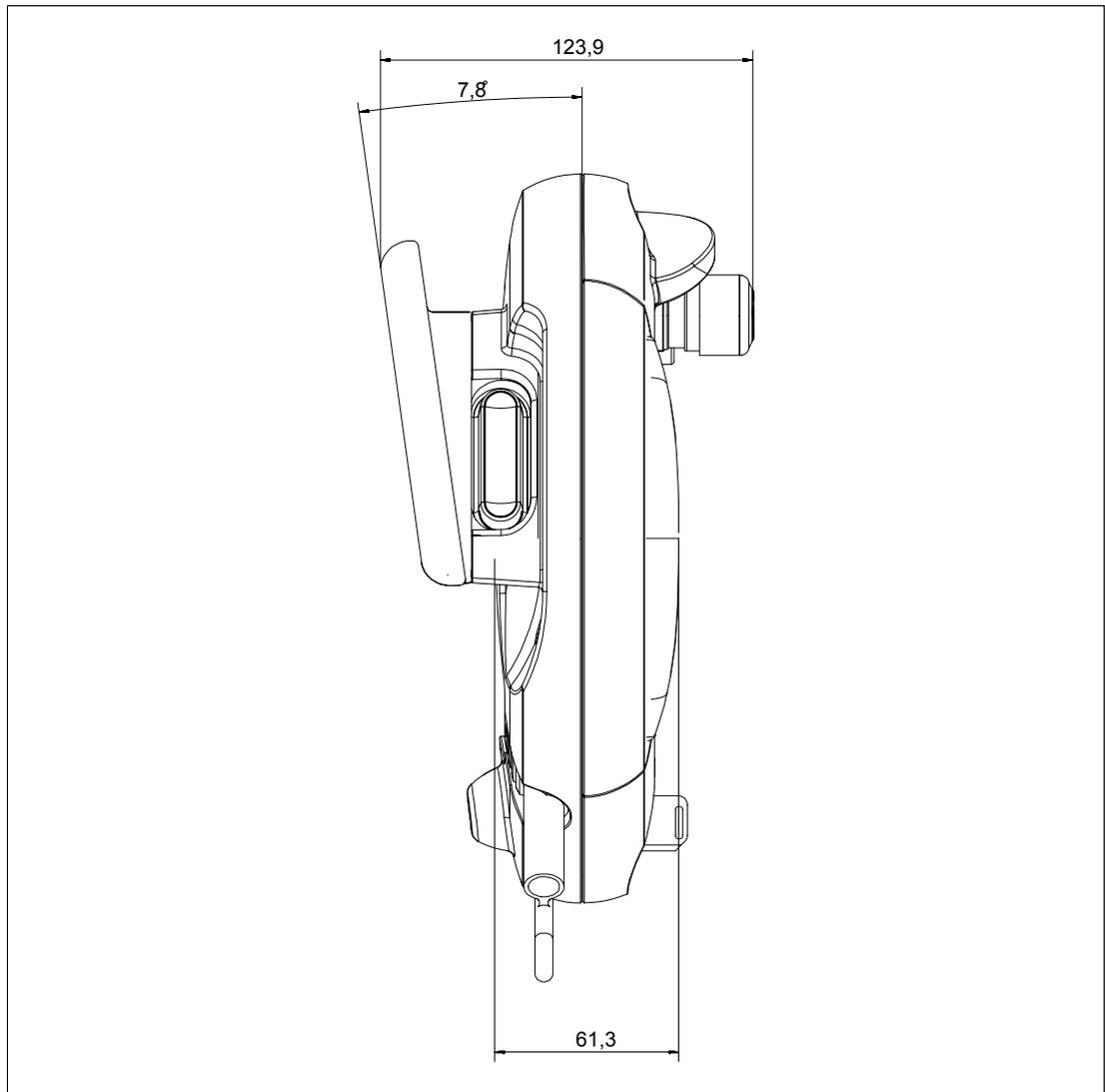


Figure 12-2 Mobile Panel 170, side view

## 12.1.2 Wall holder

### Unit dimensions

Dimensions of wall mount:

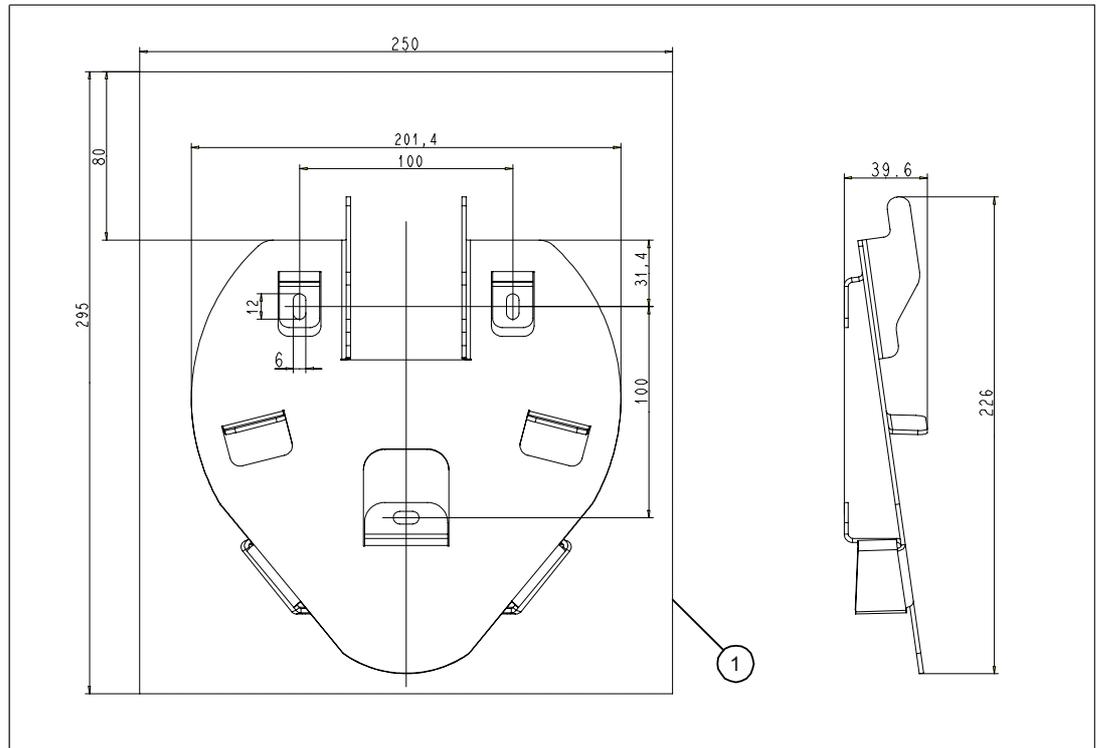


Figure 12-3 Dimensions of wall mount

- 1 Space requirement for mounted Mobile Panel 170

### Note

The mounting surface for the Mobile Panel 170 is inclined.

### 12.1.3 Terminal box

#### Unit dimensions

Dimensions of terminal box:

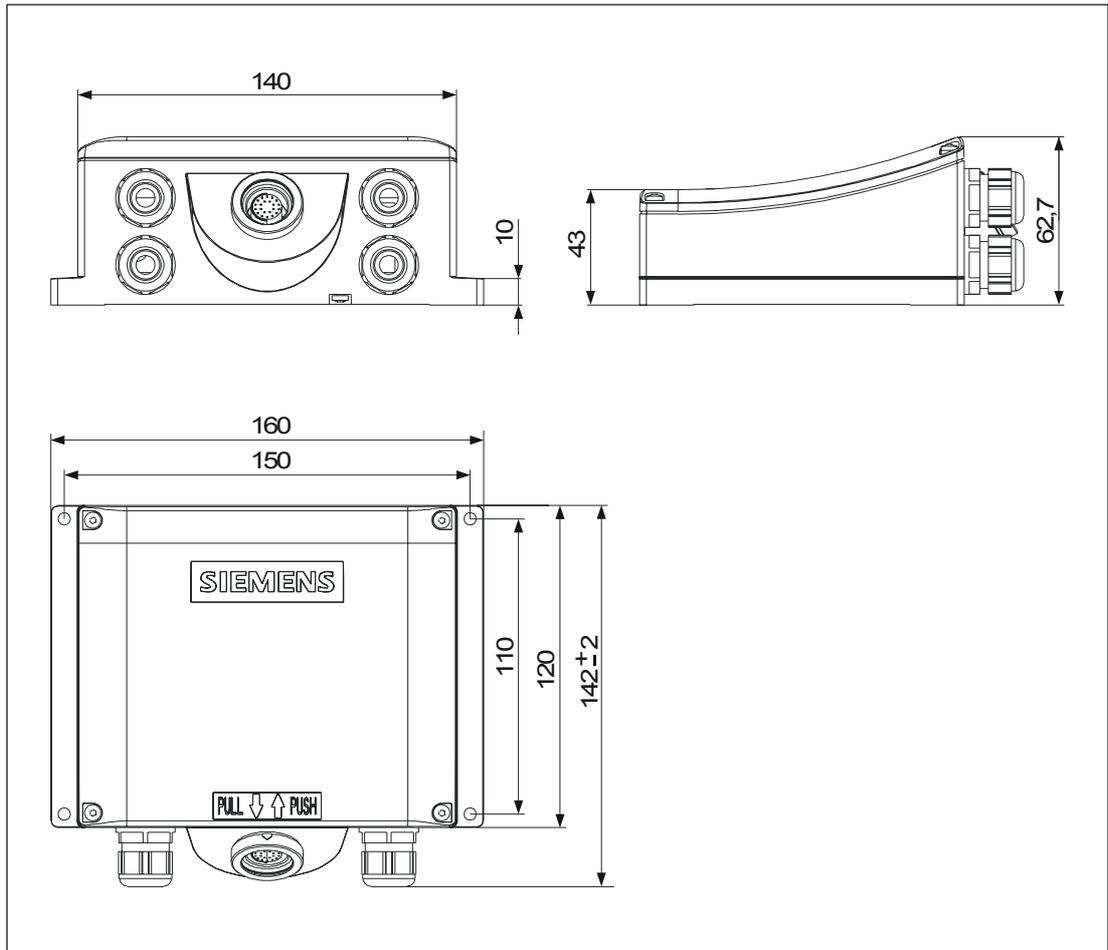


Figure 12-4 Dimensions of terminal box

## 12.2 Specifications

### 12.2.1 HMI device

#### Specifications

<b>Display</b>	
Type	C-STN-LCD
Size in inches / W x H (mm)	5.7"/115 x 86
Resolution (pixels)	320 x 240, Q-VGA
Colors	16
Back-lighting	CCFL tubes
MTFB at 25 °C	50,000 h (corresponds to approximately 6 years of continuous operation)
<b>Input elements</b>	
Type	Touch screen, analog, resistive, Membrane keyboard
Programmable, inscribable function keys	14 (F1 to F8 with LED)
Accept button	2-circuit, 3-level Connection voltage: DC 24 V Current intensity, maximum: 500 mA minimum: 10 mA
STOP button	optional, 2-circuit Connection voltage: DC 24 V Current intensity, maximum: 500 mA minimum: 10 mA These are normally closed contacts.
Handwheel	Optional
Key-operated switch	optional, 3 positions
Illuminated pushbutton	Optional
<b>Interfaces</b>	
CF card	Yes
Printer	IF2 (serial): 1 x RS 232

<b>Additional specifications</b>	
Processor	RISC, 32 bits
Operating system	MS Windows CE
Memory	<ul style="list-style-type: none"> <li>• Flash, integrated 768 kBytes for user data (for WinCC flexible project data)</li> <li>• CF card</li> </ul>
Supply voltage	Via terminal box
Clock	Hardware clock, unbuffered
Dimensions, external	Diameter: 245 Depth: 58
Weight	Approx. 2.7 lb
Temperature	
Operation	0 to +40 °C
Shipping / storage:	-20 to +60 °C
Relative humidity	
Operation	20% to 80%, no moisture condensation
Shipping / storage:	5% to 90%, no moisture condensation
Fall height, max.	1.64 yd
Degree of protection	IP65
Connecting cables	
Bend radius, permissible	> 40 mm

## 12.2.2 Terminal box

### Specifications

<b>Interfaces</b>	
Fast connector	MPI/PROFIBUS DP, 12 Mbaud
Terminal strip 1	<ul style="list-style-type: none"> <li>• IF1 (serial): 1 x RS 232, 1 x RS 422, 1 x RS 485</li> <li>• Power supply</li> </ul>
Terminal strip 2	<ul style="list-style-type: none"> <li>• Safety functions for STOP buttons and enabling switches</li> <li>• PLC-accompanying signals</li> </ul>
Plug connector	Connecting cables
Supply voltage	24 V DC (+20.4 to +28.8 V DC)
Power consumption, typical	Approximately 400 mA, Basic terminal box
Valid for 24 V with connected Mobile Panel 170	Approximately 500 mA, Plus terminal box
Dimensions, W x H x D	160 x 145 x 65

<b>Interfaces</b>	
Weight	Approximately 0.35 kg, Basic terminal box Approximately 0.40 kg, Plus terminal box
Temperature	
Operation	0 to +50 °C
Shipping / storage:	-20 to +70 °C
Relative humidity	
Operation	35% to 85 %, no moisture condensation
Shipping / storage:	35% to 85 %, no moisture condensation
Degree of protection	IP65

### 12.2.3 Ambient conditions

#### Specifications

Table 12-1 Mechanical ambient conditions

Shock loading	
Operation	15 g / 30 ms
Shipping, storage	25 g / 6 ms
Vibration	
Operation	0.075 mm (10–58 Hz) 1 g (58–500 Hz)
Shipping, storage	3.5 mm (5–8.5 Hz) 1 g (8.5–500 Hz)
Barometric pressure	
Operation	706 to 1030 hPa
Shipping, storage	581 to 1030 hPa

## 12.3 EMC requirements

Compliance of the named products with the regulations of Directive 89/336 EEC is verified by conformance with the following standards:

Table 12-2 Noise Immunity

Noise Immunity	Standards and test values
Static discharge (contact discharge/air discharge)	EN 61000-4-2 6 kV/8 kV
RF irradiation	EN 61000-4-3 10 V/m, 80% amplitude modulated, 1 kHz
Pulse modulation	ENV 50204 900 MHz $\pm$ 5 MHz 10 V/m <sub>eff.</sub> , 50% power-on duration, 200 Hz
RF conduction	EN 61000-4-6 150 kHz to 80 MHz 10 V, 80% amplitude modulated, 1 kHz
Burst interference	EN 61000-4-4
<ul style="list-style-type: none"> <li>• Supply lines</li> <li>• Process data lines</li> <li>• Signal lines</li> </ul>	2 kV 2 kV 1 kV
Immunity to high energy pulses (surge)	0.5 kV, symmetric
Supply line complying to EN 61000-4-5	0.5 kV, symmetric

Table 12-3 Emitted interference

Emitted interference	Norms
Radio interference level complying to EN 55011	Class A

Table 12-4 EMC standards

EMC standards	Name
EN 50081-2	EMC radio interference, Australia
EN 61000-6-2	Generic standard noise immunity, industrial range

## 12.4 Interfaces and connection examples

### 12.4.1 Interfaces

#### RJ45 plug connection

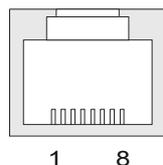


Table 12-5 Assignment of 8-pin RJ45 plug connection

Pin	Signal
1	RxD-B
2	RxD-A
3	CTS-B
4	RTS-B
5	RTS-A
6	CTS-A
7	TxD-B
8	TxD-A

#### Sub-D plug

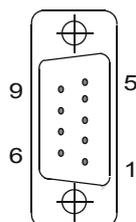


Table 12-6 Assignment of 9-pin sub-D plug (configured via DIP switch)

Pin	IF2
1	DSR
2	RxD
3	TxD
4	DTR
5	GND
6	DCD
7	RTS

Specifications

12.4 Interfaces and connection examples

Pin	IF2
8	CTS
9	not used

Female header

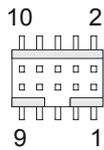


Table 12-7 Assignment of 10-pin female header

Pin	Circuit
1	+24 V Power supply
2	0 V
3	Stop 23 Stop circuit
4	Stop 24
5	Stop 13
6	Stop 14
7	Enable 1+ Enable circuit
8	Enable 1-
9	Enable 2+
10	Enable 2-

## 12.4.2 Terminal box

### Terminal strip position

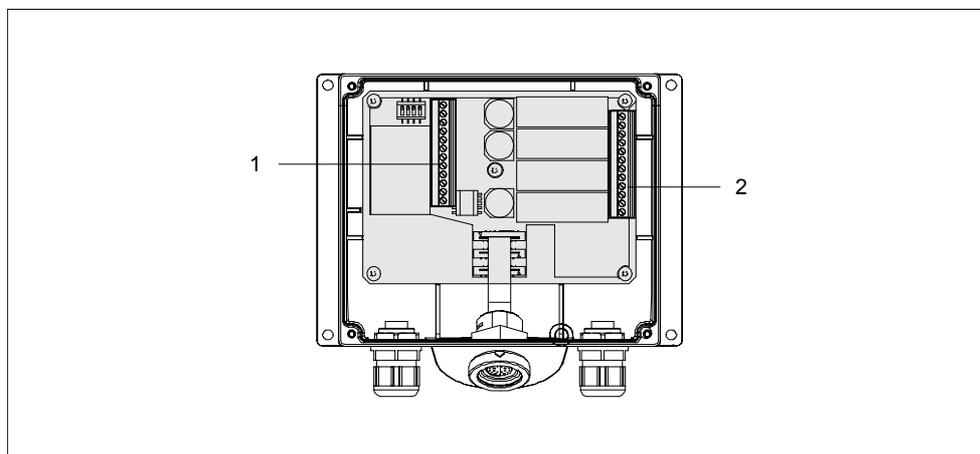


Figure 12-5 Position of terminal strips 1 and 2



#### Caution

When connection terminal strips 1 and 2, ensure that you do not inadvertently switch the assignment specified in the following table. The assignment in the following table is for terminal strip 1 (see figure above).

**IF1 and power supply**

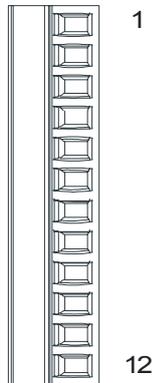


Table 12-8 Assignment of 12-pin terminal strip 1

Pin	RS 232 IF1 A (9-pin, post)	RS 232 IF1 A (15-pin, socket)	RS 422 IF1 B (9-pin, socket)	RS 485 IF1 B (9-pin, socket)	Power supply
1	CTS (8)	CTS (5)	-	-	-
2	RTS (7)	RTS (10)	-	-	-
3	TxD (3)	TxD (4)	-	-	-
4	RxD (2)	RxD (3)	-	-	-
5	M (5)	M (15)	M (5)	M (5)	-
6	-	-	TxD+ (3)	Bus + (B) (3)	-
7	-	-	TxD- (8)	Bus - (A) (8)	-
8	-	-	RxD+ (4)	-	-
9	-	-	RxD- (9)	-	-
10	PI	PI	PI	PI	PI
11	-	-	-	-	M24
12	-	-	-	-	P24

The values in parentheses in the table correspond to the pin numbers of the standard cables described in the WinCC flexible online help for each coupling.

### Safety Functions and Supplemental Functions

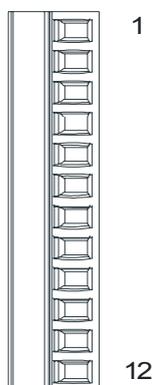


Table 12-9 Assignment of 12-pin terminal strip 2

Pin	Internal interconnection	Name	Circuit
1		Stop 13	STOP button
2		Stop 14	See Female header
3		Stop 23	
4		Stop 24	
5	See tables below	STOP button depressed 31 <sup>1)</sup>	PLC-accompanying signals
6		STOP button depressed 32 <sup>1)</sup>	
7		Mobile Panel 170 plugged in 31	
8		Mobile Panel 170 plugged in 32 <sup>1)</sup>	
9		Enable 2+	Accept button
10		Enable 1-	See Female header
11		Enable 1+	
12		Enable 2-	

1) For Plus terminal box

Table 12-10 Terminal Box Basic

Interconnection	Name	24 V digital input
Not connected 8 ◦	Mobile Panel 170 plugged in	1
to DI-PLC 7 ◦	Mobile Panel 170 unplugged	0

The Terminal Box Basic does not have the "STOP button pressed" signal.

Table 12-11 Terminal Box Plus

Interconnection	Name	24 V digital input
+24 V 8  to DI-PLC 7 	Mobile Panel 170 plugged in	1
	Mobile Panel 170 unplugged	0
+24 V 5  to DI-PLC 6 	STOP button depressed	1
	STOP button released	0

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

**See also**

Connection examples for Enable and STOP buttons (Page 12-14)

Connecting the PLC (Page 4-24)

**12.4.3 Connection examples for Enable and STOP buttons**

**Introduction**

This section presents connection examples for Enable and STOP buttons for safety category 3 in accordance with EN 954-1.

**Notice**

To ensure safety category 3 in accordance with EN 954-1, be sure to follow the operating instructions for the monitoring device you are using.

**Enabling switches with monitoring device ELAN SRB-NA-R-C.27/S1 - for safety category 3 in accordance with EN 954-1.**

The following figure illustrates a connection example for the enabling switch corresponding to safety category 3 in accordance with EN 954-1 with monitoring device ELAN SRB-NA-R-C.27/S1.

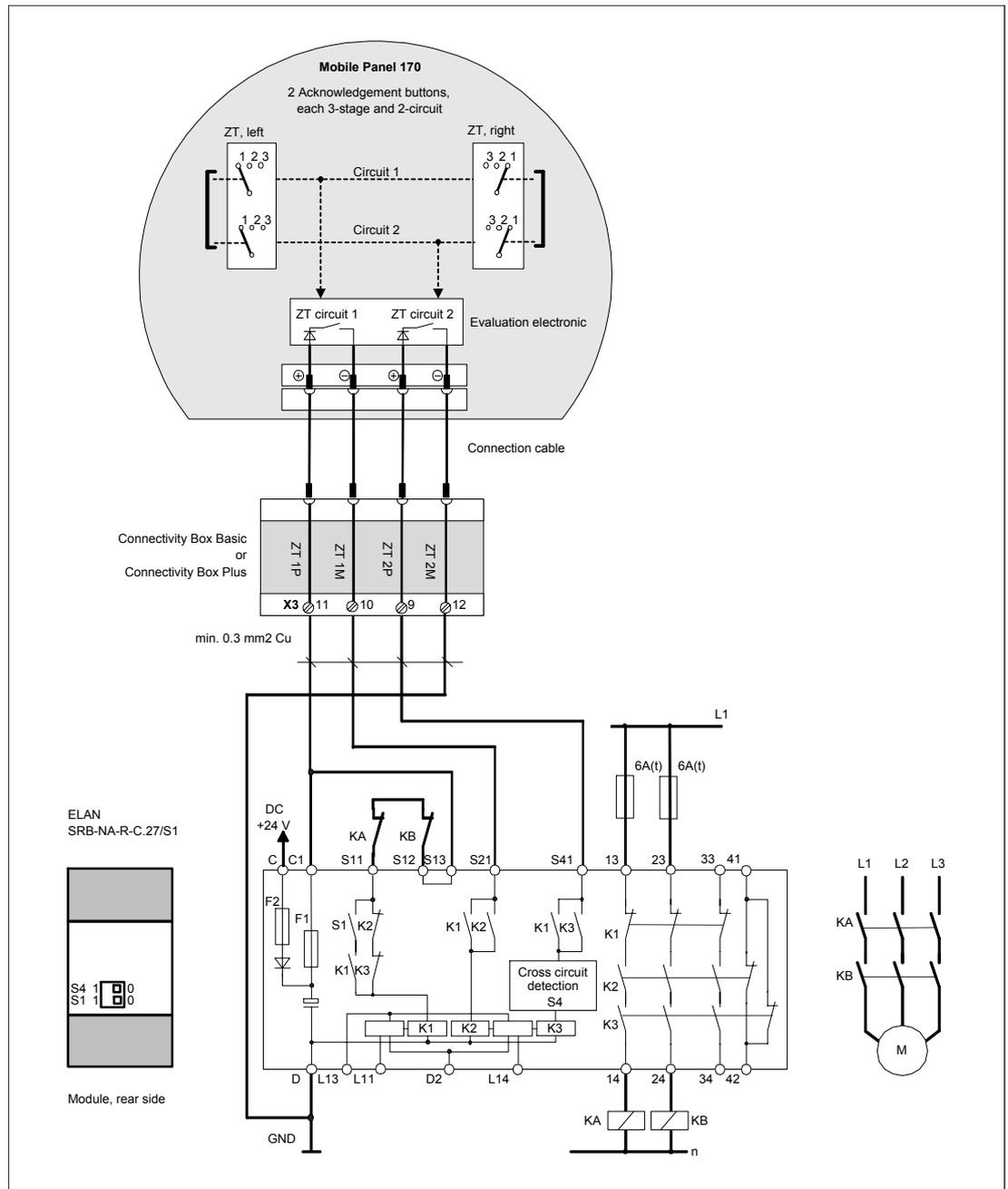


Figure 12-6 Enabling switch on monitoring device ELAN SRB-NA-R-C.27/S1

All KA and KB contacts must be forced. S1 and S4 switches on the backside of the module must be at position 0.

**Enabling switch with monitoring device PILZ PST1 - for safety category 3 in accordance with EN 954-1**

The following figure illustrates a connection example for the enabling switch corresponding to safety category 3 in accordance with EN 954-1 with monitoring device PILZ PST1.

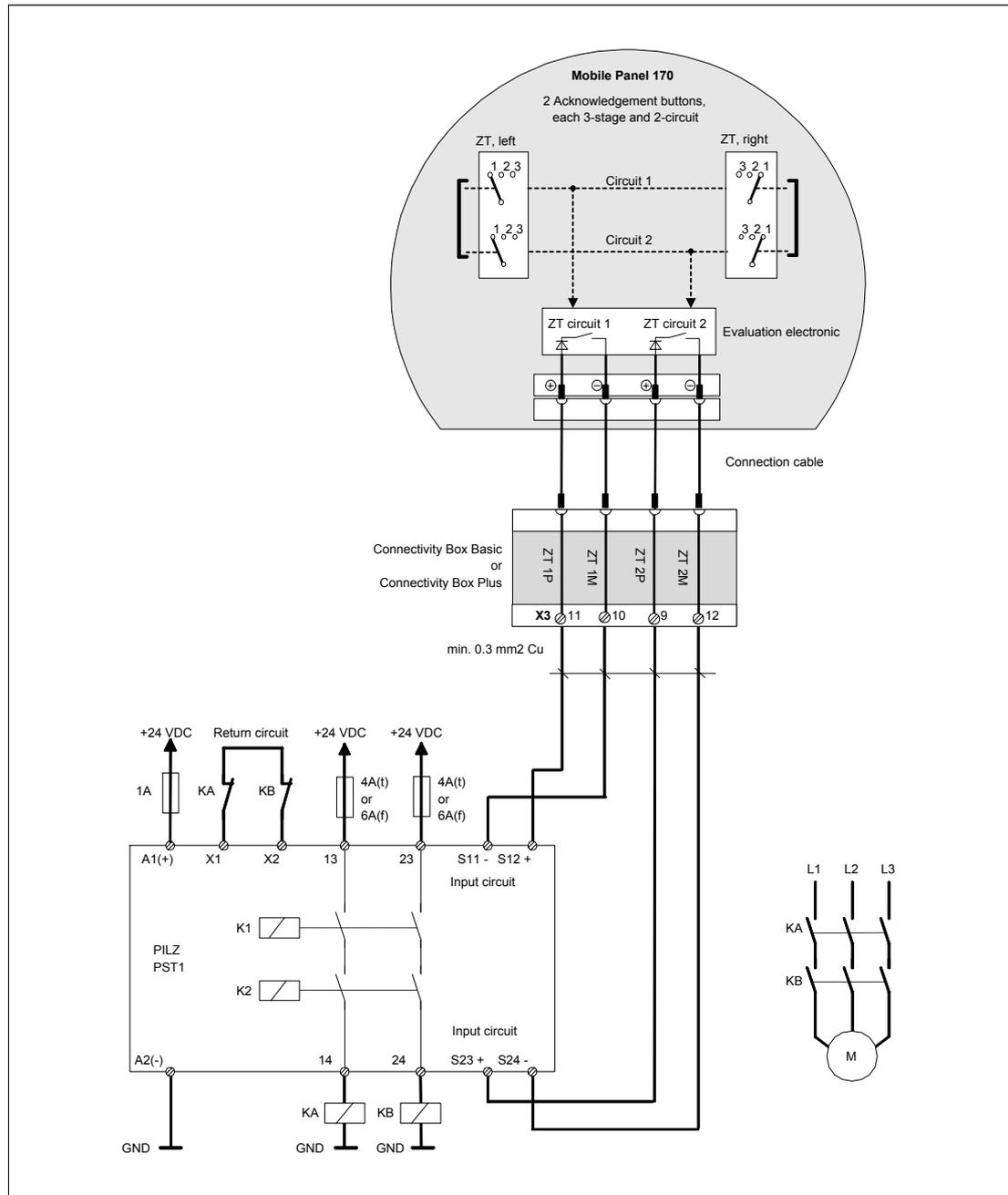


Figure 12-7 Enabling switch on monitoring device PILZ PST1

All KA and KB contacts must be forced.

**STOP button with monitoring device SIGUARD 3TK2840 - for safety category 3 in accordance with EN 954-1**

The following figure illustrates the interconnection of the STOP button corresponding to safety category 3 in accordance with EN 954-1 using the Plus terminal box and the Basic terminal box.

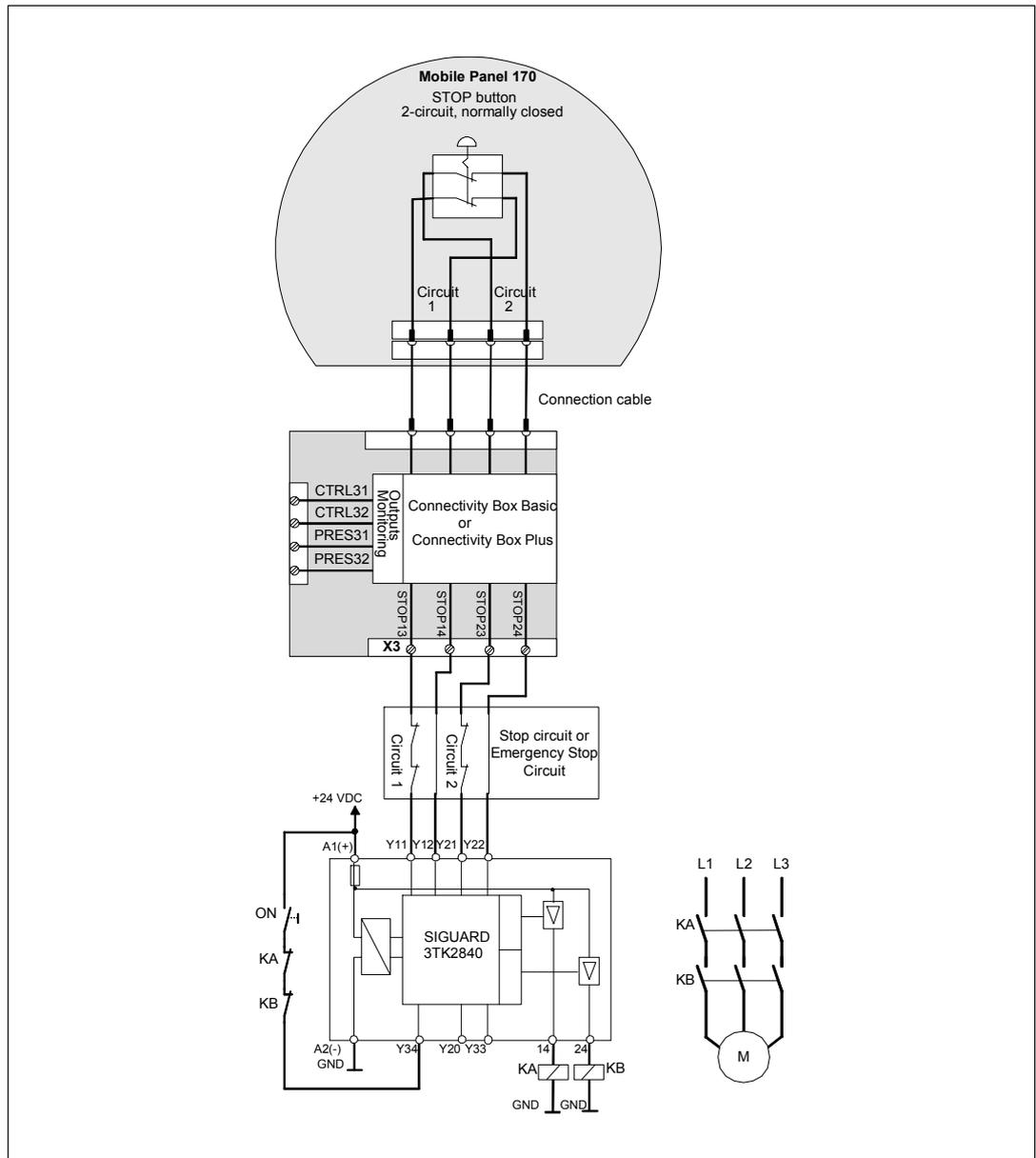


Figure 12-8 STOP button on SIGUARD 3TK2840 monitoring device

All KA and KB contacts must be forced. Monitoring outputs may not be used for safety-related functions.



## Appendix

### A.1 Certificates and guidelines

#### A.1.1 Approvals

##### Approvals for Mobile Panel 170 and terminal box

The following approvals have been applied for or already granted on supply. For the current status, refer the the ID on the rating plate.

Approbation	Norms
CE conformity	Machine guideline 98/97/EG EMC Guideline 89/336/EEC
cULus General safety and fireproofing (USA,Canada)	UL 508
SIBE Switzerland EU prototype certificate	EN 60204-1:1997 EN 954-1:1996

#### A.1.2 ESD guideline

##### What does ESD mean?

Virtually all present-day, electronic modules incorporate highly integrated MOS devices or components. For technological reasons, these electronic components are very sensitive to overvoltages and, consequently, to electrostatic discharge. Therefore, they are identified as follows:

- **ESD** – Electrostatically **S**ensitive **D**evelopments
- **ESD** – Electrostatic Sensitive Devices

The following symbol on plates on cabinets, mounting racks or packages draws attention to the use of ESD and, thus, to the contact sensitivity of the assemblies concerned:



Figure A-1 Symbol for ESD

ESDs may be destroyed by voltages and energies well below the perception threshold of persons. Voltages of this kind occur as soon as a device or an assembly is touched by a person who is not electrostatically discharged. ESDs exposed to such overvoltages cannot immediately be detected as defective in the majority of cases since faulty behavior may occur only after a long period of operation.

### Precautions against electrostatic discharge

Most plastics are capable of carrying high charges and it is therefore imperative that they be kept away from ESDs.

When working with electrostatically sensitive components, make sure that the person, the workstation and the packaging are properly grounded.

### Handling ESD assemblies

A general rule is that ESDs should be touched only when this cannot be avoided owing to the work that has to be performed on them.

Only touch devices if

- you are grounded by permanently wearing an ESD wrist strap or
- you are wearing ESD shoes or ESD shoe-grounding protection straps in conjunction with an ESD floor.

Before you touch an electronic assembly, your body must be discharged. The simplest way of doing this is to touch a conductive, grounded object immediately beforehand, e.g. bare metal parts of a cabinet, water pipe etc.

ESDs should not be brought into contact with charge-susceptible and highly insulating materials such as plastic films, insulating table tops and items of clothing etc. containing synthetic fibers.

Assemblies should be deposited only on conductive surfaces, e.g. tables with an ESD coating, conductive ESD cellular material, ESD bags, ESD shipping containers.

Do not place ESDs near visual display units, monitors or television sets (minimum distance to screen > 10 cm).

Never touch ESDs so that contact is made with module connections or conductor rails.

## Measuring ESD assemblies

Perform measurements on ESD assemblies only when

- the measuring instrument is grounded, e.g. by means of a grounded conductor or
- the measuring head has been briefly discharged before measurements are made with a potential-free measuring instrument, e.g. by touching a bare metal control cabinet.

When soldering, use only grounded soldering irons.

## Shipping ESD assemblies

Always store and ship ESD assemblies and devices in conductive packing, e.g. metallized plastic boxes, metal boxes.

- Packing ESD

If packing is not conductive, ESDs must be conductively wrapped before they are packed. Use conductive foam rubber, ESD bags, domestic aluminum foil or paper, for example; never use plastic bags or foils.

- ESD with fitted battery

With assemblies containing fitted batteries, make sure that the conductive packing does not come into contact with or short-circuit battery connectors. If necessary, cover the connectors beforehand with suitable insulating material.

## A.1.3 CE conformity

### Guidelines

This identifier indicates that Mobile Panel 170 complies with the EMC guidelines of the European Union.. In addition, this HMI device also complies with machine guideline 98/37/EU as a safety component.



### Warning

This is a Class A product, which can cause HF interference in household usage. This could require corrective measures by the user.

### Norms

Mobile Panel 170 complies with the following standards:

General standards	
EN 614-1	Ergonomic design principles
EN 894-1, -2, -3	Ergonomics and display of control actuators
EN ISO 9241-10	Dialog display
UL 508	Industrial control equipment
CSA C22.2 No.14	Industrial control equipment

<b>General standards</b>	
prEN 1921	Industrial automation systems - safety of integrated manufacturing systems
EN 12417:2001	Machine tools - safety - machining centers
EN 60947-5-1:1997, Section 2.2	Low-voltage switchgear, positive opening contacts

<b>Operating safety</b>	
EN 61131-1 (IEC 61131-1)	General
EN 61131-2 (IEC 61131-2)	Hardware
EN 60204-1	Safety of Machinery - Electrical Equipment of Machines

<b>Machine guideline</b>	
EN 954-1:1996	Safety-related parts of control systems
EN 954-1:1997	Machine safety - safety-related parts of control systems - general principles of design
prEN 954-2:2000	Machine safety - safety-related parts of control systems - validation
EN 292-1:1991	Basic concepts, general principles of design
EN 292-2: 1991/A1:1995	Technical principles and specifications
EN 60204-1:1997	Electrical equipment of machines General requirements

## A.2 System alarms

### Introduction

System alarms on the HMI device provide information about internal conditions of the HMI device and controller.

The following is an overview of when system alarms occur, their causes and the remedies available.

---

#### Note

System alarms are only displayed if an alarm window was configured. System alarms are output in the language currently set on the HMI device.

---

### System alarm parameters

System alarms may contain encrypted parameters which are relevant for error tracking, because they provide a reference to the source code of the Runtime software. These parameters are output after the text "Error code:".

### Meaning of the system alarms

Number	Effect/cause	Remedy
10000	The print job cannot be started or was canceled due to an unknown cause. The printer is not correctly configured. Or: There is no authorization for a network printer. The power supply failed during data transfer.	Check the printer settings, cable connections and the power supply. Set up the printer once again. Obtain a network printer authorization. If the error persists, contact the Hotline!
10001	No printer is installed or a default printer has not been set up.	Install a printer and/or select it as the default printer.
10002	The graphics buffer for printing is full. Up to two images are buffered.	Allow sufficient intervals between successive print jobs.
10003	Images can now be buffered again.	-
10004	Overflow of the buffer for printing lines in text mode (e.g.alarms). Up to 1000 lines are buffered.	Allow sufficient intervals between successive print jobs.
10005	Text lines can now be buffered again.	-
10006	The Windows printing system reports an error. Refer to the output text and the error ID to determine the possible causes. Nothing is printed or the print is faulty.	Repeat the action if necessary.
20010	An error has occurred in the specified script line. The execution of the script was therefore aborted. Note the system alarm that may have occurred prior to this.	Select the specified script line in the configuration. Ensure that the tags used are of the allowed types. Check system functions for the correct number and types of parameters.

Number	Effect/cause	Remedy
20011	An error has occurred in a script that was called by the specified script. The execution of the script was therefore aborted in the called script. Take the system event that may have occurred prior to this into account.	In the configuration, select the script that has been called directly or indirectly by the specified script. Ensure that the tags used are of the allowed types. Check the system functions for the correct number and type of parameters.
20012	The configuration data are inconsistent. The script could therefore not be generated.	Recompile the configuration.
20013	The scripting component of WinCC flexible Runtime is not correctly installed. Therefore, no scripts can be executed.	Reinstall WinCC flexible Runtime.
20014	The system function returns a value that is not written in any return tag.	Select the specified script in the configuration. Check whether the script name has been assigned a value.
20015	Too many successive scripts have been triggered in short intervals. When more than 20 scripts are queued for processing, any subsequent scripts are rejected. In this case, the script indicated in the alarm is not executed.	Find what is triggering the scripts. Extend the times, e.g. the polling time of the tags which trigger the scripts.
30010	The tag could not accept the function result, e.g. when it has exceeded the value range.	Check the tag type of the system function parameter.
30011	A system function could not be executed because the function was assigned an invalid value or type in the parameter.	Check the parameter value and tag type of the invalid parameter. If a tag is used as a parameter, check its value.
40010	The system function could not be executed since the parameters could not be converted to a common tag type.	Check the parameter types in the configuration.
40011	The system function could not be executed since the parameters could not be converted to a common tag type.	Check the parameter types in the configuration.
50000	The HMI device is receiving data faster than it is capable of processing. Therefore, no further data are accepted until all current data have been processed. Data exchange then resumes.	-
50001	Data exchange has been resumed.	-
60000	This alarm is generated by the "DisplaySystemEvents" function. The text to be displayed is transferred to the function as a parameter.	-
60010	The file could not be copied in the direction defined because one of the two files is currently open or the source/target path is not available. It is possible that the Windows user has no access rights to one of the two files.	Restart the system function or check the paths of the source/target files. Using Windows NT/2000/XP: The user executing WinCC flexible Runtime must be granted access rights for the files.
60011	An attempt was made to copy a file to itself. It is possible that the Windows user has no access rights to one of the two files.	Check the path of the source/target file. Using Windows NT/2000/XP with NTFS: The user executing WinCC flexible Runtime must be granted access rights for the files.

Number	Effect/cause	Remedy
70010	The application could not be started because it could not be found in the path specified or there is insufficient memory space.	Check whether the application exists in the specified path or close other applications.
70011	The system time could not be modified. The error message only appears in connection with area pointer "Date/time controller". Possible causes: <ul style="list-style-type: none"> <li>• An invalid time was transferred in the job mailbox.</li> <li>• The Windows user has no right to modify the system time.</li> </ul> If the first parameter in the system event is displayed with the value 13, the second parameter indicates the byte containing the incorrect value.	Check the time which is to be set. Using Windows NT/2000/XP: The user executing WinCC flexible Runtime must be granted the right to change the system time of the operating system.
70012	An error occurred when executing the function "StopRuntime" with the option "Runtime and operating system". Windows and WinCC flexible Runtime are not closed. One possible cause is that other programs cannot be closed.	Close all programs currently running. Then close Windows.
70013	The system time could not be modified because an invalid value was entered. Incorrect separators may have been used.	Check the time which is to be set.
70014	The system time could not be modified. Possible causes: <ul style="list-style-type: none"> <li>• an invalid time was transferred.</li> <li>• the Windows user has no right to modify the system time.</li> <li>• Windows rejects the setting request.</li> </ul>	Check the time which is to be set. Using Windows NT/2000/XP: The user executing WinCC flexible Runtime must be granted the right to change the system time of the operating system.
70015	The system time could not be read because Windows rejects the reading function.	-
70016	An attempt was made to select a screen by means of a system function or job. This is not possible because the screen number specified does not exist. Or: a screen could not be generated due to insufficient system memory.	Check the screen number in the function or job with the screen numbers configured. Assign the number to a screen, if necessary.
70017	Date/Time is not read from the area pointer because the address set in the controller is either not available or has not been set up.	Change the address or set up the address in the controller.
70018	Acknowledgment that the password list has been successfully imported.	-
70019	Acknowledgment that the password list has been successfully exported.	-
70020	Acknowledgment for activation of alarm reporting.	-
70021	Acknowledgment for deactivation of alarm reporting.	-
70022	Acknowledgment to starting the Import Password List action.	-

Number	Effect/cause	Remedy
70023	Acknowledgment to starting the Export Password List action.	-
70024	The value range of the tag has been exceeded in the system function. The calculation of the system function will not be performed.	Check the desired calculation and correct it if necessary.
70025	The value range of the tag has been exceeded in the system function. The calculation of the system function will not be performed.	Check the desired calculation and correct it if necessary.
70026	No other screens are stored in the internal screen memory. No other screens can be selected.	-
70027	The backup of the RAM file system has been started.	-
70028	The files from the RAM have been copied in the Flash memory. The files from the RAM have been copied in the Flash memory. Following a restart, these saved files will be copied back to the RAM file system.	-
70029	Backup of the RAM file system has failed. No backup copy of the RAM file system has been made.	Check the settings in the "Control Panel > OP" dialog and save the RAM file system using the "Save Files" button in the "Persistent Storage" tab.
70030	The parameters configured for the system function are faulty. The connection to the new controller was not established.	Compare the parameters configured for the system function with the parameters configured for the controllers and correct them as necessary.
70031	The controller configured in the system function is not an S7 controller. The connection to the new controller was not established.	Compare the S7 controller name parameter configured for the system function with the parameters configured for the controller and correct them as necessary.
70032	The object configured with this number in the tab order is not available in the selected screen. The screen changes but the focus is set to the first object.	Check the number of the tab order and correct it if necessary.
70033	An e-mail cannot be sent because a TCP/IP connection to the SMTP server no longer exists. This system event is generated only at the first attempt. All subsequent unsuccessful attempts to send an e-mail will no longer generate a system event. The event is regenerated when an e-mail has been successfully sent in the meantime. The central e-mail component in WinCC flexible Runtime attempts, in regular intervals (1 minute), to establish the the connection to the SMTP server and to send the remaining e-mails.	Check the network connection to the SMTP server and re-establish it if necessary.
70034	Following a disruption, the TCP/IP connection to the SMTP server could be re-established. The queued e-mails are then sent.	-

Number	Effect/cause	Remedy
70035	The e-mail queue of the central component in WinCC flexible Runtime responsible for sending e-mails is full. The e-mail could therefore not be entered into the queue and therefore not sent. The cause may be a broken connection to the SMTP server or an overload resulting from too much e-mail traffic. This system event is generated only at the first attempt. The next system event is only generated when at least one e-mail has been successfully sent to the queue in the meantime.	Check if <ul style="list-style-type: none"> <li>the network connection still exists or</li> <li>the connection is overloaded (for example, due to reoccurring system events resulting from disruptions).</li> </ul>
70036	No SMTP server for sending e-mails is configured. An attempt to connect to an SMTP server has failed and it is not possible to send e-mails. WinCC flexible Runtime generates the system alarm after the first attempt to send an e-mail.	Configure an SMTP server: In WinCC flexible Engineering System using "Device settings > Device settings" In the Windows CE operating system using "Control Panel > Internet Settings > E-mail > SMTP Server"
70037	An e-mail cannot be sent for unknown reasons. The contents of the e-mail are lost.	Check the e-mail parameters (recipient etc.).
70038	The SMTP server has rejected sending or forwarding an e-mail because the domain of the recipient is unknown to the server or because the SMTP server requires authentication. The contents of the e-mail are lost.	Check the domain of the recipient address or deactivate the authentication on the SMTP server if possible. SMTP authentication is currently not used in WinCC flexible Runtime.
70039	The syntax of the e-mail address is incorrect or contains illegal characters. The contents of the e-mail are discarded.	Check the e-mail address of the recipient.
70040	The syntax of the e-mail address is incorrect or contains illegal characters.	-
80001	The log specified is filled to the size defined (in percent) and must be stored elsewhere.	Store the file or table by executing a 'move' or 'copy' function.
80002	A line is missing in the specified log.	-
80003	The copying process for logging was not successful. In this case, it is advisable to check any subsequent system events, too.	-
80006	Since logging is not possible, this causes a permanent loss of the functionality.	In the case of databases, check whether the corresponding data source exists and start up the system again.
80009	A copying action has been completed successfully.	-
80010	Since the storage location was incorrectly entered in WinCC flexible, this causes a permanent loss of the functionality.	Configure the storage location for the respective log again and restart the system when the full functionality is required.
80012	Log entries are stored in a buffer. If the values are read to the buffer faster than they can be physically written (using a hard disk, for example), overloading may occur and recording is then stopped.	Archive fewer values. Or: Increase the logging cycle.
80013	The overload status no longer applies. Archiving resumes the recording of all values.	-

Number	Effect/cause	Remedy
80014	The same action was triggered twice in quick succession. Since the process is already in operation, the action is only carried out once.	-
80015	This system event is used to report DOS or database errors to the user.	-
80016	The logs are separated by the system function "CloseAllLogs" and the incoming entries exceed the defined buffer size. All entries in the buffer will be deleted.	Reconnect the logs.
80017	The incoming entries exceed the defined buffer size. This can be caused, for example, by several copying actions being activated at the same time. All copy jobs will be deleted.	Stop the copy action.
80018	All connections between WinCC flexible and the logs have been reestablished, for example, after executing the system function "OpenAllLogs". Entries will be written into the logs again.	-
80019	All connections between WinCC flexible and all logs have been severed, for example, after executing the system function "CloseAllLogs". Entries will be written to the buffer and written into the logs when a connection is re-established. There is no connection to the storage location and the data medium may be being exchanged.	-
80020	The maximum number of simultaneously activated copy actions has been exceeded. Copying is not executed.	Wait until the current copying actions have been completed and restart the last copy action.
80021	An attempt was made to delete a log which is still involved with a copy action. Deletion has not been executed.	Wait until the current copying actions have been completed and restart the last action
80022	An attempt was made to start a sequence log, which is not a sequence log, from a log using the system function "StartSequenceLog". No sequence log is created.	Check the project for the following: <ul style="list-style-type: none"> <li>Was the system function "StartSequenceLog" configured correctly?</li> <li>Were the tag parameters being supplied correctly on the HMI device?</li> </ul>
80023	An attempt was made to copy a log to itself. The log is not copied.	Check the project for the following: <ul style="list-style-type: none"> <li>Was the system function "CopyLog" configured correctly?</li> <li>Were the tag parameters being supplied correctly on the HMI device?</li> </ul>
80024	The system function "CopyLog" is configured not to permit copying when the target log already contains data (Parameter: "Mode"). The log is not copied.	Modify the system function "CopyLog" in the project, if necessary. Before initiating the system function, delete the target log.
80025	You have interrupted the copy process. Data written up to this point is retained. Deletion of the target log (if configured) is not executed. The cancellation is documented by an error entry \$RT_ERR\$ at the end of the target log.	-

Number	Effect/cause	Remedy
80026	This notification is issued after all the logs have been successfully initialized. Values are written to the logs from this moment on. Prior to this, no entries are written to the logs even though WinCC flexible Runtime is running.	-
80027	The internal Flash memory has been specified as the storage location for a log. This is not permissible. No values will be logged for this log and the log will not be created.	Configure "Storage Card" or a network path as the storage location.
80028	The event serves as a status acknowledgment that initialization of the logs is currently running. No values are logged until system event 80026 is issued.	-
80029	The number of logs specified in the event could not be initialized. Initialization of the logs has been completed. The faulty logs are not available for logging jobs.	Evaluate the additional system event, related to this alarm which is also generated. Check the configuration, the ODBC (Open Database Connectivity) and the specified drive.
80030	The structure of existing log does not match the expected log structure. The logging process is stopped for this log.	Delete the existing log data manually, in advance.
80031	The log in CSV format is corrupted. The log cannot be used.	Delete the corrupt file.
80032	Logs can be configured with events. These are triggered as soon as the log is full. If WinCC flexible Runtime is started and the log is already full, the event will not be triggered. The log specified no longer logs data because it is full.	Stop the WinCC flexible Runtime, delete the log and restart the WinCC flexible Runtime again. Or: Configure a button which contains the same actions as the event and press it.
80033	"System Defined" is selected in the data log as the data source name. This results in an error. No logging is made to the database log whereas the logging to the CSV logs works.	Install MSDE again.
80034	An error has occurred in the initialization of the logs. An attempt has been made to create tables as a backup. This did not work. A backup has been made of the tables of the corrupt log and the log has been newly started (empty)	No action is necessary. However, it is recommended to save the backups or delete them to free up memory.
80035	An error has occurred in the initialization of the logs. An attempt has been made to create backups of the tables and this has failed. No logging or backup has been performed.	It is recommended to save the backups or delete them to free up memory.
110000	The operating mode has been changed. The operating mode is now 'offline'.	-
110001	The operating mode has been changed. The operating mode is now "online".	-
110002	The operating mode cannot be changed.	Check the connection to the controllers. Check whether the address area for the area pointer 88 "Coordination" in the controller is available.

Number	Effect/cause	Remedy
110003	The operating mode of the specified controller has been changed by the system function "SetConnectionMode". The operating mode is now "offline".	-
110004	The operating mode of the specified controller has been changed by the system function "SetConnectionMode". The operating mode is now "online".	-
110005	An attempt was made to use the system function SetConnectionMode to switch the specified controller to the online operating mode although the entire system is in the offline mode. This switch-over is not permissible. The controller remains in operating mode "offline".	Switch the complete system to operating mode "online" and execute the system function again.
110006	The content of the area pointer "User version" does not match the user version configured in WinCC flexible. WinCC flexible Runtime is therefore closed.	Check: <ul style="list-style-type: none"> <li>the user version entered on the controller</li> <li>the user version entered in WinCC flexible</li> </ul>
120000	The trend is not displayed because an incorrect axis to the trend, or incorrect trend, has been configured.	Change the configuration.
120001	The trend is not displayed because an incorrect axis to the trend, or incorrect trend, has been configured.	Change the configuration.
120002	The trend is not displayed because the tag assigned tries to access an invalid controller address.	Check whether the data area for the tag exists in the controller, the configured address is correct or the value range for the tag is correct.
130000	The action was not executed.	Close the other programs. Delete files no longer required from the hard disk.
130001	The action was not executed.	Delete files no longer required from the hard disk.
130002	The action was not executed.	Close the other programs. Delete files no longer required from the hard disk.
130003	No data medium is inserted. The process is stopped.	Check, for example, if <ul style="list-style-type: none"> <li>the correct data medium is being accessed</li> <li>the data medium is inserted</li> </ul>
130004	The data medium is write-protected. The process is stopped.	Check whether access has been made to the correct data carrier. Remove any write protection.
130005	The file is write-protected. The process is stopped.	Check whether access has been made to the correct file. Modify the file attributes, if necessary.
130006	No access to file is possible. The process is stopped.	Check, for example, if <ul style="list-style-type: none"> <li>the correct file is being accessed</li> <li>the file exists</li> <li>another action is preventing simultaneous access to the file</li> </ul>
130007	The network connection is interrupted. Data records cannot be saved or read over the network connection.	Check the network connection and correct the reason for the disruption.
130008	The storage card is not available. Data records cannot be saved or read to the storage card.	Insert the storage card.

Number	Effect/cause	Remedy
130009	The specified directory is not on the storage card. The files that are saved in this directory are not saved when the HMI device is switched off.	Insert the storage card.
130010	The maximum nesting depth can be exhausted when, for example, a value change in a script results in the call of another script and the second script in turn has a value change that results in the call of another script etc. The configured functionality is not provided.	Check the configuration.
140000	Online connection to the controller has been successfully established.	-
140001	Online connection to the controller has been disconnected.	-
140003	No tag updating or writing is executed.	Check the connection and whether the controller is switched on. Check the parameter definitions in the Control Panel using "Set PG/PC interface". Restart the system.
140004	No tag updating or writing is executed because the access point or the module configuration is faulty.	Verify the connection and check whether the controller is switched on. Check the access point or the module configuration (MPI, PPI, PROFIBUS) in the Control Panel with "Set PG/PC interface". Restart the system.
140005	No tag updating or writing is executed because the address of the HMI device is incorrect (possibly too high).	Use a different HMI device address. Verify the connection and check whether the controller is switched on. Check the parameter definitions in the Control Panel using "Set PG/PC interface". Restart the system.
140006	No tag updating or writing is executed because the baud rate is incorrect.	Select a different baud rate in WinCC flexible (according to module, profile, communication peer, etc.).
140007	Tag are not updated or written because the bus profile is incorrect (see %1). The following parameters cannot be entered in the registry: 1: Tslot 2: Tqui 3: Tset 4: MinTsdr 5: MaxTsdr 6: Trdy 7: Tid1 8: Tid2 9: Gap Factor 10: Retry Limit	Check the user-defined bus profile. Check the connection and whether the controller is switched on. Check the parameter definitions in the Control Panel using "Set PG/PC interface". Restart the system.

Number	Effect/cause	Remedy
140008	No tag updating or writing is executed because baud rate is incorrect. The following parameters cannot be entered in the registry: 0: General error 1: Incorrect version 2: Profile cannot be entered in the registry. 3: Subnet type cannot be entered in the registry. 4: Target rotation time cannot be entered in the registry. 5: Highest address (HSA) incorrect.	Check the connection and whether the controller is switched on. Check the parameter definitions in the Control Panel using "Set PG/PC interface". Restart the system.
140009	No tag updating or writing is executed because the module for the S7 communication was not found.	Reinstall the module in the Control Panel using "Set PG/PC interface".
140010	No S7 communication peer could be found because the controller is switched off. DP/T: The option "Is not active as the only master" is set in the Control Panel under "Set PG/PC interface".	Switch the controller on. DP/T: If only one master is connected to the network, deactivate the option "Is not active as the only master" in "Set PG/PC interface". If there is more than one master connected to the network, activate them. Do not change any settings otherwise the bus will be disrupted.
140011	No tag updating or writing is executed because the communication is interrupted.	Check the connection and that the communication peer is switched on.
140012	There is an initialization problem (e.g. when WinCC flexible Runtime has been terminated in the Task Manager). Or: another application (e.g. STEP7) is active with different bus parameters and the driver cannot be started with the new bus parameters (e.g. baud rate).	Restart the HMI device. Or: Start WinCC flexible Runtime first and then the other applications.
140013	The MPI cable is not plugged in and, thus, there is no power supply.	Check the connections.
140014	"Configured bus address already assigned."	Modify the HMI device address in the configuration in controller.
140015	Incorrect baud rate Or: incorrect bus parameter (e.g. HSA) Or: OP address > HSA or: incorrect interrupt vector (interrupt does not arrive at the driver)	Correct the incorrect parameters.
140016	Configured interrupt is not supported by the hardware.	Change the interrupt number.
140017	Configured interrupt in use by another driver.	Change the interrupt number.
140018	The consistency check was deactivated by SIMOTION Scout. Only one appropriate note appears.	Activate the consistency check with SIMOTION Scout again and load the configuration in the project once more.
140019	SIMOTION Scout downloads a new project to the controller. Connection to the controller is interrupted.	Wait until the end of the reconfiguration.

Number	Effect/cause	Remedy
140020	The version in the PLC and that in the configuration (FWX file) do not match. Connection to the PLC is interrupted.	The following remedies are available: Download the current version to the controller using SIMOTION Scout. Regenerate the project using WinCC flexible ES, close WinCC flexible Runtime and restart with a new configuration.
150000	No more data are read or written. Possible causes: <ul style="list-style-type: none"> <li>• The cable is defective.</li> <li>• The controller does not respond, is defective, etc.</li> <li>• The connection is established via the wrong interface.</li> <li>• The system is overloaded.</li> </ul>	Check that the cable is plugged in, the controller is operational, the correct interface is being used. Restart the system if the system event is displayed persistently.
150001	Connection is reestablished because the cause of the interruption has been eliminated.	-
160000	No more data are read or written. Possible causes: <ul style="list-style-type: none"> <li>• The cable is defective.</li> <li>• The controller does not respond, is defective, etc.</li> <li>• Connection has been established via the wrong interface.</li> <li>• The system is overloaded.</li> </ul>	Check that the cable is plugged in, the controller is operational, the correct interface is being used. Restart the system if the system event is displayed persistently.
160001	Connection is reestablished because the cause of the interruption has been eliminated.	-
160010	There is no connection to the server because the server identification (CLS-ID) cannot be established. Values cannot be read or written.	Check the access rights.
160011	There is no connection to the server because the server identification (CLS-ID) cannot be established. Values cannot be read or written.	Check, for example, if <ul style="list-style-type: none"> <li>• the server name is correct</li> <li>• the computer name is correct</li> <li>• the server is registered</li> </ul>
160012	There is no connection to the server because the server identification (CLS-ID) cannot be established. Values cannot be read or written.	Check, for example, if <ul style="list-style-type: none"> <li>• the server name is correct</li> <li>• the computer name is correct</li> <li>• the server is registered</li> </ul> Note for experienced users: Interpret the value from HRESULT.
160013	The specified server was started as InProc Server. This has not been released and may possibly lead to incorrect behavior because the server is running in the same process area as the WinCC flexible Runtime software.	Configure the server as OutProc Server or Local Server.

Number	Effect/cause	Remedy
160014	Only one OPC server project can be started on a PC/MP. An error message appears when an attempt is made to start a second project. The second project has no OPC server functionality and cannot be located as an OPC server from external sources.	Do not start a second project with OPC server functionality on the computer.
170000	S7 diagnostics events are not displayed because it is not possible to log on to the S7 diagnostics with this unit. The service program is not supported.	-
170001	The S7 diagnostics buffer cannot be displayed because communication with the controller has been switched off.	Switch the controller online.
170002	The S7 diagnostics buffer cannot be displayed because reading in the diagnostics buffer (SSL) was terminated due to an error.	-
170003	The display of an S7 diagnostics event is not possible. An internal error %2 has been reported.	-
170004	The display of an S7 diagnostics event is not possible. An internal error with error class %2, error number %3 has been reported.	-
170007	It is not possible to read in the S7 diagnostics buffer (SSL) because it was terminated with an internal error class %2 and error code %3.	-
180000	A component/OCX receives configuration data with a version identification which is not supported.	Install a newer component.
180001	The system is overloaded because too many actions have been activated simultaneously. Not all the actions can be executed, some are rejected.	Several remedies are available: <ul style="list-style-type: none"> <li>• Increase the configured cycle times or basic clock.</li> <li>• Generate the alarms slower (polling).</li> <li>• Trigger the scripts and functions at greater intervals.</li> </ul> If the alarm appears more frequently: Restart the HMI device.
180002	The on-screen keyboard could not be activated. Possible cause: The file "TouchInputPC.exe" was not registered due to an incorrectly executed Setup.	Reinstall WinCC flexible Runtime.
190000	It is possible that the tag will not be updated.	-
190001	The tag is updated following an error status after the cause of the last error state has been eliminated (return to normal operation).	-
190002	The tag is not updated because communication with the controller has been terminated.	Switch on communication via the system function "SetOnline".
190004	The tag is not updated because the configured address is not available for this tag.	Check the configuration.
190005	The tag is not updated because the configured controller type does not exist for this tag.	Check the configuration.
190006	The tag is not updated because it is not possible to map the controller type in the data type of the tag.	Check the configuration.

Number	Effect/cause	Remedy
190007	The tag values are not modified because the connection to the controller has been terminated or the tag is offline.	Switch to online mode or re-establish connection to the controller.
190008	The threshold values configured for the tag have been violated, e.g. by <ul style="list-style-type: none"> <li>• an entered value</li> <li>• a system function</li> <li>• a script</li> </ul>	Observe the configured or current threshold value of the tag.
190009	An attempt has been made to assign a value to a tag which is outside the value range permitted for this data type. E.g., a value of 260 entered for a byte tag or a value of -3 for a word tag without a sign.	Observe the value range for the data type of the tags.
190010	The tag is described with values too often (e.g. in a loop triggered by a script). Values are lost because the maximum of 100 actions have been stored in the buffer.	Increase the time interval between the multi-writing tasks.
190011	Possible cause 1: The value entered could not be written to the configured controller tag because it was either above or below the value range. The input is rejected and the original value is reset. Possible cause 2: The connection to the controller has been terminated.	Make sure that the value entered is within the value range of the controller tags.  Check the connection to the controller.
190012	It is not possible to convert a value from a source format to a target format, e.g.: An attempt is being made to assign a value to a counter that is outside the valid, controller-dependent value range. A tag of the type Integer should be assigned a value of the type String.	Check the value range or the data type of the tags.
190100	The area pointer is not updated because the configured address for this area pointer is not available. Type 1 System events 2 Alarms 3 Controller acknowledgment 4 HMI device acknowledgment 5 LED mapping 6 Trend request 7 Trend transfer 1 8 Trend transfer 2 No.: is the consecutive number displayed in WinCC flexible ES.	Check the configuration.
190101	The area pointer is not updated because it is not possible to map the controller type in the area pointer type. Parameter type and no.: see alarm 190100	-

Appendix

A.2 System alarms

Number	Effect/cause	Remedy
190102	The area pointer is updated following an error status after the cause of the last error state has been eliminated (return to normal operation). Parameter type and no.: See alarm 190100.	-
200000	Coordination is not executed because the address configured in the controller does not exist/has not been set up.	Change the address or set up the address in the controller.
200001	Coordination is not executed because the address configured in the controller does not exist/has not been written.	Change the address or set up the address in the controller in an area which can be written.
200002	Coordination is not carried out at the moment because the address format of the area pointer does not match the internal storage format.	Internal error
200003	Coordination can be executed again because the last error status has been eliminated (return to normal operation).	-
200004	The coordination may not be executed.	-
200005	No more data are read or written. Possible causes: <ul style="list-style-type: none"> <li>• The cable is defective.</li> <li>• The controller does not respond, is defective, etc.</li> <li>• The system is overloaded.</li> </ul>	Check that the cable is plugged in and the controller is operational. Restart the system if the system event is displayed continuously.
200100	Coordination is not executed because the address configured in the controller does not exist/has not been set up.	Change the address or set up the address in the controller.
200101	Coordination is not executed because the address configured in the controller does not exist/has not been written.	Change the address or set up the address in the controller in an area which can be written.
200102	Coordination is not carried out at the moment because the address format of the area pointer does not match the internal storage format.	Internal error
200103	Coordination can be executed again because the last error status has been eliminated (return to normal operation).	-
200104	The coordination may not be executed.	-
200105	No more data are read or written. Possible causes: <ul style="list-style-type: none"> <li>• The cable is defective.</li> <li>• The controller does not respond, is defective, etc.</li> <li>• The system is overloaded.</li> </ul>	Check that the cable is plugged in and the controller is operational. Restart the system if the system event is displayed continuously.
210000	Jobs are not processed because the address configured in the controller does not exist/has not been set up.	Change the address or set up the address in the controller.
210001	Jobs are not processed because the address configured in the controller cannot be written to/read from.	Change the address or set up the address in the controller in an area that can be written to/read from.
210002	Commands are not executed because the address format of the area pointer does not match the internal storage format.	Internal error

<b>Number</b>	<b>Effect/cause</b>	<b>Remedy</b>
210003	The job mailbox is processed again because the last error status has been eliminated (return to normal operation).	-
210004	It is possible that the job mailbox is not processed.	-
210005	A job mailbox with an illegal number was triggered.	Check the controller program.
210006	An error occurred while attempting to execute the job mailbox. As a result, the job mailbox will not be executed. Observe the subsequent/previous system event, if appropriate.	Check the parameters in the job mailbox. Recompile the configuration.
220001	The tag is not downloaded because the associated communication driver / HMI device does not support downloading the data type oolean/bit.	Change the configuration.
220002	The tag is not downloaded because the associated communication driver / HMI device does not support the data type byte when writing.	Change the configuration.
220003	The communication driver cannot be loaded. The driver may not be installed.	Install the driver by reinstalling WinCC flexible Runtime.
220004	Communication is terminated and no update is executed because the cable is not connected or is defective etc.	Check the connection.
220005	Communication is running.	-
220006	The connection is established to the specified controller on the specified interface.	-
220007	The connection to the specified controller on the specified interface is disrupted.	Check if <ul style="list-style-type: none"> <li>• the cable is plugged in</li> <li>• the controller is OK</li> <li>• the correct interface is used</li> <li>• the configuration is OK (interface parameters, protocol settings, controller address).</li> </ul> Reboot the system if the system event is displayed persistently.
220008	The communication driver cannot access the specified interface or open it. It is possible that another program is using this interface or an interface is being used which is not available on the target device. There is no communication with the controller.	Close all the programs which access the interface and restart the computer. Use another interface available in the system.
230000	The value entered could not be accepted. The entered value is rejected and the previous value is restored. Either the value range has been exceeded or impermissible characters were entered.	Enter a permissible value.
230002	Since the user currently logged on does not have the proper authorization, the input is rejected and the previous value is restored.	Log on as a user with sufficient rights.
230003	Changeover to the specified screen is not executed because the screen is not available/configured. The current screen remains selected.	Configure the screen and check the selection function.

Number	Effect/cause	Remedy
230005	The value range of the tag has been exceeded in the I/O field. The original value of the tag is retained.	Take the value range of the tag into consideration when entering value.
230100	During navigation in the web browser, a message which may be of interest to the user is issued. The web browser continues to run, but may not (fully) display the new page but it.	Navigate to another page.
230200	The connection to the HTTP channel was interrupted due to an error. This error is explained by another system event. Data are no longer exchanged.	Check the network connection. Check the configuration of the server.
230201	The connection to HTTP channel has been reestablished. Data are exchanged.	-
230202	WININET.DLL has detected an error. This error usually occurs when it is not possible to make a connection to the server or the server rejects the attempt to make a connection because the client lacks the authorization. An unknown server certificate can also be the cause when the connection is encoded through SSL. The text of the error message provides more information. This text is always in the language of the Windows installation since it originates from Windows. Process values are no longer exchanged.	Depending on the cause: When a connection cannot be made or a timeout occurs: <ul style="list-style-type: none"> <li>• Check the network connection and the network.</li> <li>• Check the server address.</li> <li>• Check if the web server is actually running on the target computer.</li> </ul> In the absence of an authorization: <ul style="list-style-type: none"> <li>• Configured user name and/or password do not match those on the server. Match them.</li> </ul> When the server certificate is rejected: Certificate signed by an unknown CA ( ): <ul style="list-style-type: none"> <li>• Either set the configuration to ignore this point or</li> <li>• install a certificate that has been signed with a root certificate known to the client computer.</li> </ul> If the date of the certificate is invalid: <ul style="list-style-type: none"> <li>• Either set the configuration to ignore this point or</li> <li>• Install a certificate with a valid date on the server.</li> </ul> If there is an invalid CN (Common Name or Computer Name): <ul style="list-style-type: none"> <li>• Either set the configuration to ignore this point or</li> <li>• Install a certificate with a name that corresponds to that of the server address.</li> </ul>
230203	Although a connection can be made to the server, the HTTP server rejects the connection because <ul style="list-style-type: none"> <li>• WinCC flexible Runtime is not running on the server or</li> <li>• The HTTP channel is not supported (503 Service unavailable).</li> </ul> Other errors may occur if the web server does not support the HTTP channel. The language of the error text depends on the web server. Data are not exchanged.	For error 503 Service unavailable: Check if: WinCC flexible Runtime is running on the server The HTTP channel is supported.

Number	Effect/cause	Remedy
230301	An internal error has occurred. An English text explains the error somewhat more specific. One possible cause is insufficient memory, for example. OCX does not work.	-
230302	The name of the remote server cannot be determined. No connection can be established.	Check the configured server address. Check if the DNS service of the network is activated.
230303	The remote server is not running on the addressed computer. The server address is incorrect. No connection can be established.	Check the configured server address. Check if the remote server is running on the target computer.
230304	The remote server on the addressed computer is incompatible to VNCOCX. No connection can be established.	Use a compatible remote server.
230305	The authentication has failed because the password is incorrect. No connection can be established.	Configure the correct password.
230306	The connection to the remote server has been interrupted. This may occur during network problems. No connection can be established.	Check if <ul style="list-style-type: none"> <li>• the cable is plugged in</li> <li>• there are network problems.</li> </ul>
230307	The connection to the remote server was ended because <ul style="list-style-type: none"> <li>• the remote server was shut down or</li> <li>• the user instructed the server to close all connections.</li> </ul> The connection is closed.	-
230308	This notification informs you about the establishment of the connection. A connection has just been established.	-
240000	WinCC flexible Runtime is operating in demo mode. You have no authorization or your authorization is corrupt.	Load the authorization.
240001	WinCC flexible Runtime is operating in demo mode. Too many tags are configured for the installed version.	Load an adequate authorization / powerpack.
240002	WinCC flexible Runtime is operating with a time-limited standby authorization.	Restore the full authorization.
240003	Authorization cannot be executed. Without authorization, WinCC will run in demo mode.	Restart WinCC flexible Runtime or reinstall it.
240004	Error while reading the standby authorization. WinCC flexible Runtime is operating in demo mode.	Restart WinCC flexible Runtime, install the authorization or repair the authorization (see Commissioning Instructions Software Protection).
250000	The tag in the specified line in "Status/Control" is not updated because the address configured for this tag is not available.	Check the set address and then check that the address has been set up in the controller.
250001	The tag in the specified line in "Status/Control" is not updated because the controller type configured for this tag does not exist.	Check the set address.

Number	Effect/cause	Remedy
250002	The tag in the specified line in "Status/Control" is not updated because it is not possible to map the controller type in the tag type.	Check the set address.
250003	No connection could be established to the controller. The tags will not be updated.	Check the connection to the controller. Check that the controller is switched on and is online.
260000	An unknown user or an unknown password has been entered in the system. The current user is logged off from the system.	Log on to the system as a user with a valid password.
260001	The logged on user does not have sufficient authorization to perform the protected functions on the system.	Log on to the system as a user with sufficient authorization.
260002	This notification is triggered by the system function "TrackUserChange".	-
260003	The user has logged off from the system.	-
260004	The user name entered into the user display already exists in the user administration.	Select another user name because user names have to be unique in the user administration.
260005	The entry is rejected.	Use a shorter user name.
260006	The entry is rejected.	Use a shorter or longer password.
260007	The log-off time you entered is outside the valid range of 0 to 60 minutes. The entered value will be discarded and the original value is retained.	Enter a value between 0 and 60 minutes for the log-off time.
260008	An attempt was made to read a PTProRun.pwl file created with ProTool V 6.0 in WinCC flexible. Reading the file was interrupted due to incompatibility of the format.	-
270000	A tag is not displayed in the alarm because it attempts to access an invalid address in the controller.	Check whether the data area for the tag in the controller exists, whether the configured address is correct and whether the value range for the tag is correct.
270001	There is a unit-dependent limit as to how many alarms may be queued simultaneously in order to be displayed (see GHB). This limit has been exceeded. The display no longer contains all the alarms. However, all the alarms are recorded in the alarm buffer.	-
270002	Alarms are displayed from a log, for which there is no data in the current project. Placeholders are issued for the alarms.	Delete older log data, if necessary.
270003	The service cannot be set up because too many devices want to set up this service. A maximum of four devices may execute this action.	Connect fewer HMI devices which want to use the service.
280000	Connection is reestablished because the cause of the interruption has been eliminated.	-

Number	Effect/cause	Remedy
280001	No more data are read or written. Possible causes: <ul style="list-style-type: none"> <li>• The cable is defective.</li> <li>• The controller does not respond, is defective, etc.</li> <li>• Connection has been established via the wrong interface.</li> <li>• The system is overloaded.</li> </ul>	Check if <ul style="list-style-type: none"> <li>• the cable is plugged in</li> <li>• the controller is OK</li> <li>• the correct interface is used.</li> </ul> Reboot the system if the system event is displayed persistently.
280002	A connection is being used that requires a function module in the controller. The function block has replied. Communication can now proceed.	-
280003	A connection is used that requires a function module in the controller. The function block has not replied.	Check if: <ul style="list-style-type: none"> <li>• the cable is plugged in</li> <li>• the controller is OK</li> <li>• the correct interface is used.</li> </ul> Restart the system if the system event is displayed persistently. Remedy depends on the error code: <ol style="list-style-type: none"> <li>1: The function block must set the COM bit in the response container.</li> <li>2: The function block must not set the ERROR bit in the response container.</li> <li>3: The function block must respond within the specified time (timeout).</li> <li>4: Establish an online connection to the controller.</li> </ol>
280004	The connection to the controller is interrupted. There is no data exchange at present.	Check the connection parameters in WinCC flexible. Check that the cable is plugged in, the controller is operational, the correct interface is being used. Restart the system if the system event is displayed persistently.
290000	The recipe tag could not be read or written. It is assigned the start value. The alarm can be entered in the alarm buffer for up to four more failed tags, if necessary. After that, the alarm number 290003 is issued.	Check in the configuration that the address has been set up in the controller.
290001	An attempt has been made to assign a value to a recipe tag which is outside the value range permitted for this type. The alarm can be entered in the alarm buffer for up to four more failed tags, if necessary. After that, the alarm number 290004 is issued.	Observe the value range for the tag type.
290002	It is not possible to convert a value from a source format to a target format. The alarm can be entered in the alarm buffer for up to four more failed recipe tags, if necessary. After that, the alarm number 290005 is issued.	Check the value range or type of the tag.
290003	This alarm is issued when alarm number 290000 is triggered more than five times. In this case, no further individual alarms are generated.	Check in the configuration that the tag addresses have been set up in the controller.

Number	Effect/cause	Remedy
290004	This alarm is issued when alarm number 290001 is triggered more than five times. In this case, no further individual alarms are generated.	Observe the value range for the tag type.
290005	This alarm is issued when alarm number 290002 is triggered more than five times. In this case, no further individual alarms are generated.	Check the value range or type of the tag.
290006	The threshold values configured for the tag have been violated by values entered.	Observe the configured or current threshold value of the tag.
290007	There is a difference between the source and target structure of the recipe currently being processed. The target structure contains an additional data recipe tag which is not available in the source structure. The data recipe tag specified is assigned its start value.	Insert the specified data recipe tag in the source structure.
290008	There is a difference between the source and target structure of the recipe currently being processed. The source structure contains an additional data recipe tag which is not available in the target structure and therefore cannot be assigned. The value is rejected.	Remove the specified data recipe tag in the specified recipe from the project.
290010	The storage location configured for the recipe is not permitted. Possible causes: Impermissible characters, write protected, data medium full or does not exist.	Check the configured storage location.
290011	The data record with the specified number does not exist.	Check the source for the number (constant or tag value).
290012	The recipe with the specified number does not exist.	Check the source for the number (constant or tag value).
290013	An attempt was made to save a data record under a data record number which already exists. The action is not executed.	The following remedies are available: <ul style="list-style-type: none"> <li>• Check the source for the number (constant or tag value).</li> <li>• First, delete the data record.</li> <li>• Change the "Overwrite" function parameter.</li> </ul>
290014	The file specified to be imported could not be found.	Check the following: <ul style="list-style-type: none"> <li>• Check the file name.</li> <li>• Ensure that the file is in the specified directory.</li> </ul>
290020	Acknowledgment that downloading of data records from HMI device to controller has started.	-
290021	Acknowledgment that downloading of data records from HMI device to controller was completed without errors.	-
290022	Acknowledgment that downloading of data records from HMI device to controller was aborted due to an error.	Check in the configuration whether: <ul style="list-style-type: none"> <li>• The tag addresses are configured in the controller</li> <li>• The recipe number exists</li> <li>• The data record number exist?</li> <li>• The "Overwrite" function parameter is set</li> </ul>

Number	Effect/cause	Remedy
290023	Acknowledgment that downloading of data records from the controller to the HMI device has started.	-
290024	Acknowledgment that downloading data records from the controller to the HMI device was completed without errors.	-
290025	Acknowledgment that downloading of data records from the controller to the HMI device was aborted due to an error.	Check in the configuration whether: <ul style="list-style-type: none"> <li>• The tag addresses are configured in the controller</li> <li>• The recipe number exists</li> <li>• The data record number exist?</li> <li>• The "Overwrite" function parameter is set</li> </ul>
290026	An attempt has been made to read/write a data record although the data record is not free at present. This error may occur in the case of recipes for which downloading with synchronization has been configured.	Set the data record status to zero.
290027	No connection to the controller can be established at present. As a result, the data record can neither be read nor written. Possible causes: No physical connection to the controller (no cable plugged in, cable is defect) or the controller is switched off.	Check the connection to the controller.
290030	This alarm is issued after reselecting a screen that contains a recipe display in which a data record is already selected.	Reload the data record from the storage location or retain the current values.
290031	While saving, it was detected that a data record with the specified number already exists.	Overwrite the data record or cancel the action.
290032	While exporting data records it was detected that a file with the specified name already exists.	Overwrite the file or cancel the process.
290033	Confirmation request before deleting data records.	-
290040	A data record error with error code %1 that cannot be described in more detail occurred. The action is canceled. It is possible that the data record was not installed correctly on the controller.	Check that the storage location, the data record, the "Data record" area pointer and, if necessary, the connection to the controller. Start the action again after waiting a short period. If the error persists, contact Customer Support. Provide them with the error code that occurs.
290041	A data record or file cannot be saved because the storage location is full.	Delete files no longer required.
290042	An attempt was made to execute several recipe actions simultaneously. The last action was not executed.	Trigger the action again after waiting a short period.
290043	Confirmation request before storing data records.	-
290044	The data store for the recipe has been destroyed and will be deleted.	-
290050	Acknowledgment that the export of data records has started.	-
290051	Acknowledgment that the export of data records was completed successfully.	-

Appendix

A.2 System alarms

Number	Effect/cause	Remedy
290052	Acknowledgment that the export of data records was aborted due to errors.	Ensure that the structure of the data records at the storage location and the current recipe structure on the HMI device are identical.
290053	Acknowledgment that the import of data records has started.	-
290054	Acknowledgment that the import of data records was completed successfully.	-
290055	Acknowledgment that the import of data records was aborted due to errors.	Ensure that the structure of the data records at the storage location and the current recipe structure on the HMI device are identical.
290056	The value in the specified line/column could not be read/written without errors. The action was cancelled.	Check the specified line/column.
290057	The tags of the recipe specified were switched from operating mode "offline" to "online". Each modification of a tag in this recipe is now immediately transferred to the controller.	-
290058	The tags of the recipe specified were switched from operating mode "online" to "offline". Modifications to tags in this recipe are no longer immediately transferred to the controller but must be transferred there explicitly if necessary, by downloading a data record.	-
290059	Acknowledgment that the specified data record was stored successfully.	-
290060	Acknowledgment that the data record memory was cleared successfully.	-
290061	Acknowledgment that clearing the data record memory was aborted due to errors.	-
290062	The data record number is above the maximum of 65536. This data record cannot be created.	Select another number.
290063	This occurs with the system function "ExportDataRecords" when the parameter "Overwrite" is set to No. An attempt has been made to save a recipe with a file name that already exists. The export is cancelled.	Check the system function "ExportDataRecords".
290068	Request to confirm whether all data records in the recipe should be deleted.	-
290069	Request to confirm whether all data records of all recipes should really be deleted.	-
290070	The data record specified is not in the import file.	Check the source of the data record number or data record name (constant or tag value).
290071	During the editing of data record values, a value was entered that was below the lower limit of the recipe tag. The entry is rejected.	Enter a value within the limits of the recipe tag.

<b>Number</b>	<b>Effect/cause</b>	<b>Remedy</b>
290072	During the editing of data record values, a value was entered that was above the upper limit of the recipe tag. The entry is rejected.	Enter a value within the limits of the recipe tag.
290073	An action (e.g. saving a data record) was not possible due to an unknown reason. The error corresponds to the status alarm IDS_OUT_CMD_EXE_ERR in the large recipe view.	-
290074	While saving, it was detected that a data record with the specified number already exists but under another name.	Overwrite the data record, change the data record number, or cancel the action.
290075	A data record with this name already exists. The data record will not be saved.	Please select a different data record name.
300000	Process monitoring (e.g. using PDiag or S7-Graph) has been incorrectly programmed: More alarms are queued than specified in the technical data of the CPU. No further ALARM_S alarms can be managed by the controller and reported to HMI devices.	Change the controller configuration.
300001	The registration for ALARM_S will not be made on this controller.	Select a controller that supports the ALARM_S service.
310000	An attempt is being made to print too many reports simultaneously. Since only one report can be printed at a time, the print job is rejected.	Wait until the printout of the previous active report has finished. Repeat the print job if necessary.
310001	An error occurred on triggering the printer. The report is either not printed or printed with errors.	Evaluate the additional system event, related to this alarm which is also generated. Repeat the print job if necessary.
320000	The movements have already been indicated by another device. The movements can no longer be controlled.	Select the movements on the other display units and select the movement screen on the required display unit.
320001	The network is too complex. The defective operands cannot be displayed.	Display the network in STL.
320002	No diagnostics-capable alarm have been selected. The units related to the alarm could not be selected.	Select a diagnostics-capable alarm in the screen ZP_ALARM.
320003	No alarms exist in respect of the selected unit. No network can be displayed in the detail view.	Select the defective unit in the general view screen.
320004	The required signal statuses could not be read by the controller. The defective operands cannot be determined.	Check the consistency between the configuration on the display unit and the controller program loaded.
320005	The project contains ProAgent partitions which are not installed. No ProAgent diagnostics can be performed.	In order to run the project, install the ProAgent option packet.
320006	You have attempted to execute a function that is not possible with the current configuration.	Check the type of the selected unit.
320007	No operands causing a fault have been found in the networks. ProAgent cannot display any blocked operands.	Switch the Detail Screen to STL display mode and check the status of the operands and exclusion operands.

Number	Effect/cause	Remedy
320008	The diagnostic data saved in the configuration is not synchronized with that in the controller. ProAgent can only display the diagnostic units.	Recompile the project and download it to the HMI device again.
320009	The diagnostic data saved in the configuration is not fully synchronized with that in the controller. The diagnostic screens can be operated normally. ProAgent may be unable to display all diagnostic texts.	Recompile the project and download it to the HMI device again.
320010	The diagnostic texts saved in the configuration are not synchronized with that in the STEP7. The ProAgent diagnostics data are not up-to-date.	Recompile the project and download it to the HMI device again.
320011	There is no unit with the DB number and FB number concerned. The function cannot be executed.	Check the parameters of function "SelectUnit" and the units selected in the project.
320012	The "Step sequence mode" dialog box is no longer supported.	Use Step Sequence Screen ZP_STEP from the appropriate standard project for your project. Instead of calling function Overview_Step_Sequence_Mode, call the function "FixedScreenSelection" using ZP_STEP as the screen name.
320014	The selected controller cannot be evaluated for ProAgent. The alarm display configured with the system function "EvaluateAlarmDisplayFault" could not be found.	Check the parameters of the system function "EvaluateAlarmDisplayFault".

## Abbreviations

CPU	Central Processing Unit
CSV	Comma Separated Values
CTS	Clear To Send
DC	Direct Current
DCD	Data Carrier Detect
DIL	Dual-in-Line (electronic chip housing design)
DP	Distributed I/Os
DSN	Data Source Name
DSR	Data Set Ready
DTR	Data Terminal Ready
ESD	Electrostatic Discharge, the components and modules endangered by such.
EMC	Electromagnetic Compatibility
EN	European standard
ES	Engineering System
ESD	Electrostatic Sensitive Device
GND	Ground
HF	High Frequency
HMI	Human Machine Interface
IEC	International Electronic Commission
IF	Interface
LED	Light Emitting Diode
MMC	Multi-Media Card
MOS	Metal Oxide Semiconductor
MPI	Multipoint Interface (SIMATIC S7)
MS	Microsoft
MTBF	Mean Time Between Failures
n. c.	Not connected
OP	Operator Panel
PC	Personal Computer
PG	Programming device
PLC	Programmable Logic Controller
PPI	Point to Point Interface (SIMATIC S7)
RAM	Random Access Memory
RTS	Request To Send
RxD	Receive Data
SELV	Safety Extra Low Voltage
SP	Service pack

## *Abbreviations*

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STN	Super Twisted Nematic
Sub-D	Subminiature D (plug)
TAB	Tabulator
TCP/IP	Transmission Control Protocol/Internet Protocol
TFT	Thin Film Transistor
TxD	Transmit Data
UL	Underwriter's Laboratory

## Glossary

### Acknowledge

Acknowledgement of an alarm confirms that it has been noted.

### AG

Is a PLC in the SIMATIC S5 series, the AG S5-115U for example

### Alarm, acknowledging

Acknowledgement of an alarm confirms that it has been noted.

### Alarm, arriving

Moment at which an alarm is triggered by the PLC or HMI device.

### Alarm, departing

Moment at which the triggering of an alarm by the PLC is reset.

### Alarm logging

Is the printout of user-defined alarms parallel to output on the HMI device screen.

### Alarm, user-defined

A user defined alarm can be assigned to one of the following alarm classes:

- Error
- Operation
- User-defined alarm classes

A user-defined alarm makes reference to a certain operating status of the system being monitors which is connected to the HMI device via the PLC.

### AS

Is a PLC in the SIMATIC S7 series, the SIMATIC S7-300 for example

## **AS 511**

Is the protocol of the programming unit interface to the PLC SIMATIC S5

## **Booting**

Also refer to Starting

## **Bootloader**

Used to start up the operating systems and is automatically started when the HMI device is switched on. A start graphic is displayed during startup. Once the operating system is loaded, the loader or the Control Panel is displayed, depending on the HMI device.

## **Bootstrapping**

An option for updating the operating system. When a functional operating system is available, updating can be carried out without booting. Otherwise, updating with booting is necessary. In this case, the configuration computer communicates with the HMI device via the bootloader.

## **Configuration computer**

Is the general term for programming units and PCs on which projects are created, using a configuration software, for use monitoring a system.

## **Configuration software**

Is a software to create projects which serves for process visualization – also refer to project, process visualization and runtime software.

## **Controller**

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

## **Display duration**

Defines whether and how long a system event is displayed on the HMI device.

## **Event**

Functions are triggered by the arrival of defined events. Events can be configured. Events which can be configured for a button include 'press button' and 'release button'.

## **Fault time**

This relates to the time interval between the arrival and departure of an alarm.

## Field

Is an area reserved in configured screens for entering input and output values.

## Flash memory

Is a memory with non-volatile memory chips which is used as a mobile storage medium in the form of a memory card or installed permanently on the main board. The mobile storage medium market is determined by Flash memories: CompactFlash and SmartMedia are predominant.

CompactFlash and SmartMedia differ in their basic, inner design. In the case of CF cards, the control electronics is in the card whereby, with SM cards, the control electronics is installed in the associated device.

## Function

A function is linked to an icon in the Control Panel or an operating element in the project.

## Function key / Softkey

Is a key on the HMI device which can be configured as required. A function is assigned to the key during the configuration. The assignment of the function keys may be dependent on the screen being displayed or independent of the screen displayed.

## Half brightness life

Time period after which the brightness of the lighting tube only achieves 50% of its original value, for example. The specified value is dependent on the operating temperature.

## Hardcopy

Represents a printout of the current screen content on a connected printer.

## Image

Is a file which can be transferred from the configuration computer to the HMI device. The Image contains the operating system for the HMI device and parts of WinCC flexible runtime required to run a project.

## IO field

The I/O field enables values to be entered or output on the HMI device which are then transferred to the PLC.

## Job mailbox

This triggers a function via the PLC.

## Notation

Is a system of characters, symbols and rules - particularly used in data processing when defining how the programming language should be written.

## Object

Is a component part of a project, e.g. a screen or alarm. Objects serve to display or enter texts and values on the HMI device.

## Operating element

Is a component part of a project to enter values and trigger functions. A button, for example, is an operating element.

## Operator note

Configurable information on objects in a project. The operator note concerning an alarm can, for example, contain information on the cause of the fault and methods of elimination.

## Process visualization

Is the representation of processes from the areas of production, logistics and services using texts and graphics. Configured elements enable the data to be read from and written to processes running on systems being monitored and, thus, to actively intervene in them.

## Project

Is the result of a configuration using a configuration software. The project contains system-specific objects, basic settings and alarms in the form of screens. The project is saved in the project file with the file name extension \*.hmi if it has been configured with WinCC flexible.

It is necessary to distinguish between the project on the configuration computer and that on an HMI device. A project on the configuration computer can be available in more several languages than can be managed on the HMI device. The project on the configuration computer can be set up for different HMI devices. Only the project set up for a particular HMI device can be transferred to that HMI device.

## Project file

Is the compiled file which is created after the configuration from a source file for a specific HMI device. The project file is transferred to the associated HMI device and serves for operating and monitoring the system to be monitored. Refer to Source file.

## Recipe

A combination of tags to a fixed data structure. The data structure configured can be assigned data on the HMI device and is then referred to as a data record. The use of recipes ensures that when a data record is downloaded, all the assigned data is transferred to the PLC together and synchronously.

### **Remote on/off**

Is an option in the "Loader" menu which enables and disables remote control of the HMI device from the PLC.

### **Runtime**

Instantiation for a project on an HMI device. Refer to project file.

### **Runtime software**

Is a software for process visualization with which a project on a configuration computer can be tested – also refer to project and configuration software.

### **Screen**

A screen displays all the logically related process data on the HMI device. The display of the process data can be supported by graphic objects.

### **Screen object**

Is a configured object for displaying or operating the system being monitored, e.g. a rectangle, an I/O field or Recipe View.

### **Source file**

Is the file from which various project files can be created, depending on the configuration. The source file is not transferred and remains on the configuration computer.

The file extension of a source file is \*.hmi. Refer to Source file, compressed and Project file.

### **Source file, compressed**

Is the compressed form of the source file. It can be transferred, in addition to the project file, to the associated HMI device. "Enable BackTransfer" must be activated in the project on the configuration computer. The file extension of a compressed source file is \*.pdz. The standard memory location for a compressed source file is the external memory card. Refer to Source file.

To restore a source file, it is necessary to use the same WinCC flexible version which was used to configure the project.

### **Start**

A project can be called in by means of a button in the Loader. This procedure is referred to as "starting".

### **STEP 7**

Programming software for SIMATIC S7, SIMATIC C7 and SIMATIC WinAC.

### **Symbolic IO field**

Is a field for the input/output of a parameter. I.e. it contains a list of predefined entries from which one can be selected.

### **System alarms**

Is assigned to the "System" alarm class. A system event makes reference to internal states in the HMI device and the PLC.

### **System, to be monitored**

Is a general term for machines, processing centers, systems and plants as well as processes which are to be operated and observed by an HMI device.

### **Tab order**

Is defined during the configuration to set the sequence in which objects are focused on pressing the <TAB> key.

### **Tag**

Is a defined memory location in which values can be written to and read from. This can be done from the PLC or via the HMI device. Depending on whether the tags have a connection to the PLC or not determines the difference between "external" tags (process tags) and "internal" tags.

### **Transfer**

The transfer of a run-capable project to the HMI device.

### **Transfer mode**

Is an operating mode on the HMI device used for transferring a run-capable project from the configuration computer to the HMI device. Refer to Transfer mode.

Activates Transfer mode. Setting the HMI device to Transfer mode is a condition for transferring data from the configuration computer to the HMI device and vice versa. A logical connection via the data line does not exist. Refer to Transfer mode.

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