SIEMENS

Function Manual

SIMATIC HMI TP900

Operator Panel

Edition 10/2016

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SIEMENS

Medium-voltage converters

SIMATIC
TP900 Function Manual

Function Manual

10/2016
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Legal information

Warning notice system

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

⚠ DANGER

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

⚠ WARNING

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

⚠ CAUTION

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

NOTICE

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

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

Qualified Personnel

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

Proper use of Siemens products

Note the following:

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

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Disclaimer of Liability

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

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Table of contents

Introduction

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1.1 About these instructions

These instructions describe the software and functions of the TP900 operator panel and how to work with it.

These instruction are valid as of software version 1.9.9.2.

Keep these instructions for later use. Read these instructions before you work with the operator panel and follow the instructions.

If you have suggestions for improving the document, please contact our Service Center.

Additional documents

Further information can be found in the following documentation:

- Converter operating instructions
- Converter List Manual

Safety notes

2

It is essential that you follow all the safety instructions listed in the converter operating instructions, for your own safety, to protect other people and to avoid damage to property.

The product/system described in this documentation may only be operated by **personnel qualified** for the specific task in accordance with the relevant documentation for the specific task, in particular its warning notices and safety instructions. Because of their training and experience, qualified personnel can recognize any risks involved with handling these products/systems and avoid any possible dangers.

For your own personal safety and to prevent material damage when carrying out any work, always observe the safety-relevant instructions and the following five safety rules according to EN 50110-1 "Working in a voltage-free state". Apply the five safety rules in the sequence stated before starting work.

Five safety rules

1. Disconnect the system.
   Also disconnect the auxiliary circuits, for example, anti-condensation heating.
2. Secure against reconnection.
3. Verify absence of operating voltage.
4. Ground and short-circuit.
5. Provide protection against adjacent live parts.

To energize the system, apply the measures in reverse order.

Description

3

3.1 TP900 operator panel

The converter is operated and diagnosed using the operator panel.

Figure 3-1 Operator panel

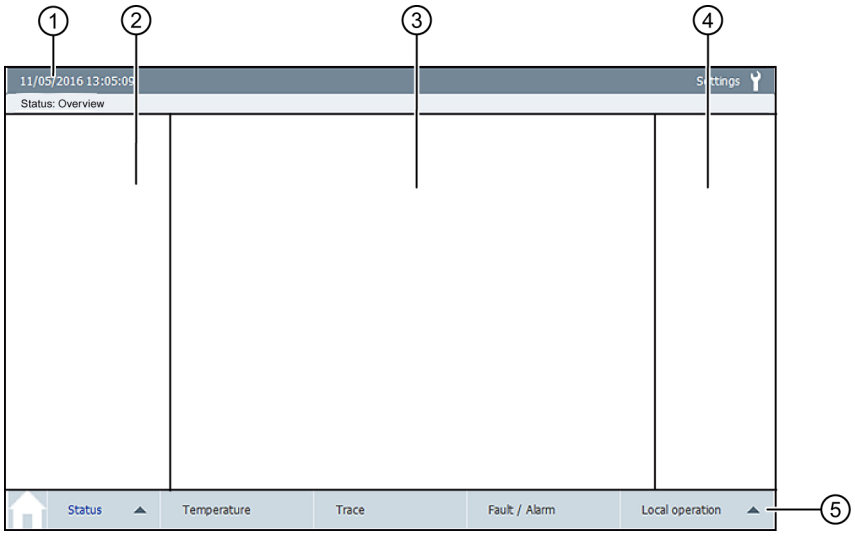
The operator panel communicates with the drive via Ethernet.

The operator panel has the following functions:

- Touch-screen operation
- Screen saver
- Language switching
- Local operation
- TRACE function
- Display of converter faults and alarms
- Fault memory, can be read out via USB

3.2 Screen display areas

The operator panel screen is divided into several areas. Not all areas are displayed depending on the function.



① Header
② Configuration of the converter
③ Main contents area
④ Function keys
⑤ Navigation bar

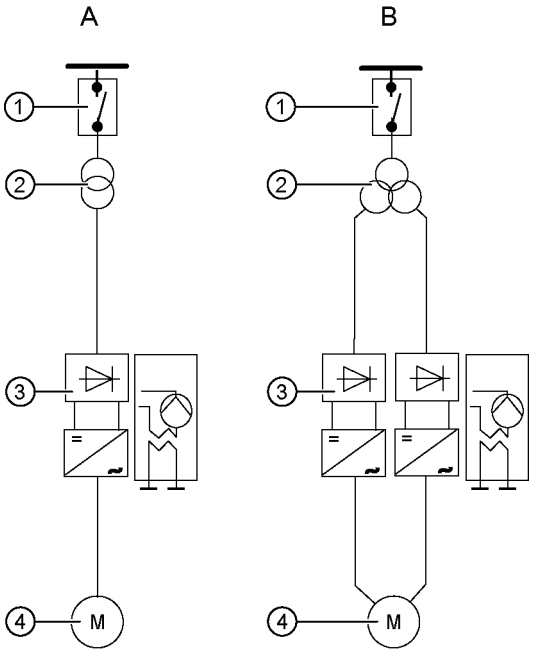
Figure 3-2 Screen display areas

Header

- The top header line displays the current date and time. Time and date are regularly synchronized with the converter. The time of the Control Unit is overwritten with the time of the operator panel.
- The bottom header line displays the name of the currently selected screen.
- If you press the Settings button, the menu for setting the screen appears. You will find information in Section "Setting the screen".

"Configuration of the converter" display

This area displays the configuration of the converter. Additional color information is provided for the operating state of the drive. You will find information in Section "Color information".



A	Single-circuit converter
B	Double-circuit converter
①	Circuit breaker
②	Transformer
③	Drive comprising Basic Line Modules, Motor Modules, cooling unit
④	Motor

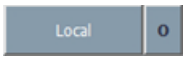
Figure 3-3 Configuration

Main contents area

This area displays the values and states of the converter. The following sections contain a description of the display options.

Function keys

This area contains the buttons for controlling the operator panel and the converter.



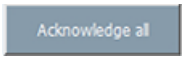
The <Local> button switches the converter to local operation. Operator control is enabled when the converter is in the "Ready for switch on" status. The status display changes from "0" to "1".

To switch the converter back to "Remote operation", press the <Local> button again. The status display changes to "0".

The <Power> button switches the converter in local operation to the "Operation enabled" status. When the converter is in operation, the status display changes from "0" to "1".

If you press the button again, the status changes to "0".

The converter is "Off and ready to switch on".



The <Acknowledge all> button resets the faults of all drive objects. Alarms are hidden automatically. You do not have to acknowledge the alarms.

A Help screen is stored on some screens. The "i" button calls the Help screen.

Navigation bar

You can call the individual functions in this area. You can find the description in the following sections.

Button	Display
	Start page
Status	This button calls the following status displays. • DC link • Recooling unit • Power cells • Drive • Infeed 1 • Infeed 2 (for double-circuit converter)
Temperature	This button displays the temperature of the converter.
Trace	This button records the actual values.

Button	Display
Fault/Alarm	This button calls the detailed fault and alarm messages of the converter.
Local operation	This button controls the local operation of the converter. The following functions are available: • Speed controlled • Parameters • Expert

3.3 Color information

Additional information is displayed for some functions in the form of color fields. The color fields have the following meanings:

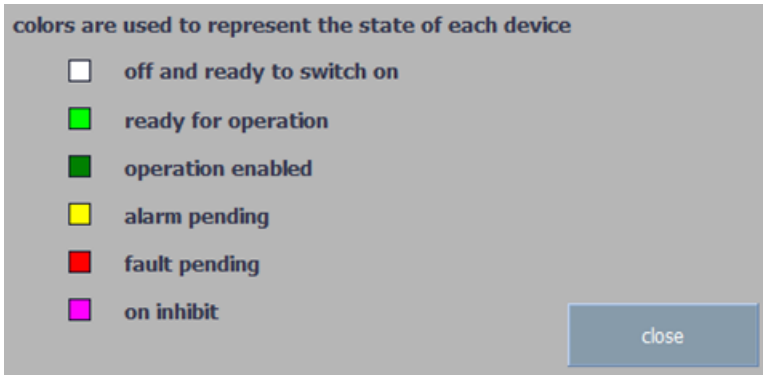


Figure 3-4 Color information

3.4 Setting the screen

Press the <Settings> button on the right side of the header.

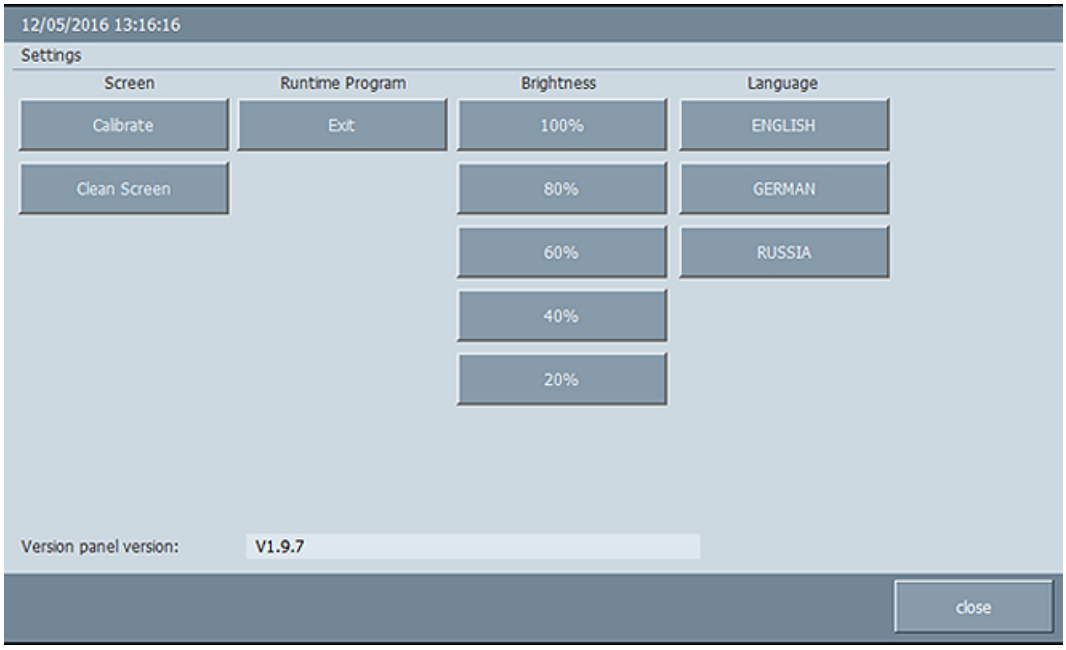


Figure 3-5 Settings

The screen is divided into several areas:

- Screen
  - <Calibrate>:
    Parallax may occur on the touch screen depending on the mounting position and the viewing angle. In order to avoid any resulting operating errors, you must calibrate the touch screen when required.
    Touch the middle of the calibration cross until it is displayed at the next position. The calibration cross is displayed at four other positions. After you have touched the calibration cross at all positions, touch the touch screen within the displayed time.
  - <Clean Screen>:
    You can clean the touch screen of the operator panel while it is switched on and a project is running. After activation, the touch screen is locked for operation within the configured interval. The interval for the lockout can be between 5 and 30 seconds. The time remaining until the end of the lockout is displayed on a progress bar.
- Runtime Program
  You can exit the current application with the <Exit>button.
- Brightness
  Set the brightness of the screen between 20% and 100%.
- Language
  Press the corresponding button to select the desired language.
- Close
  The <Close> button closes the "Settings" screen.

Screens

4

The following sections contain a description of the screens which you can call in the navigation bar.

4.1 Overview screen

The "Overview" screen displays the following information:

- Actual values of the converter
- The current status of the converter.

Calling the screen

Press the "Home" symbol in the navigation bar.

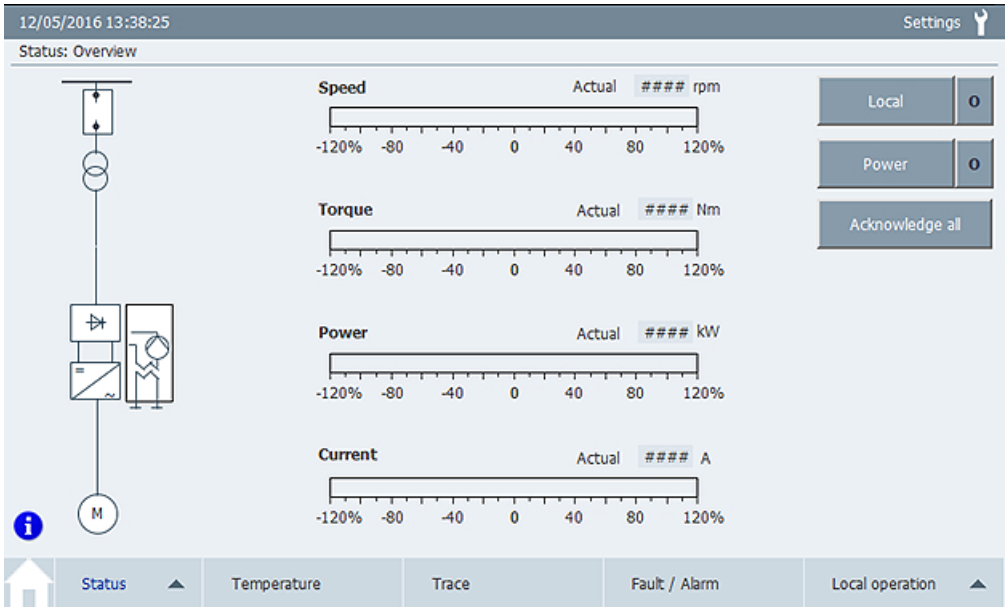


Figure 4-1 "Overview" screen

4.2 "Status" screen selection

4.2.1 "DC Link" screen

The "DC Link" screen displays the following information:

- Actual values of the DC link
- The current status of the pre-charging unit.
- The current status of the transformer
- The VDC value

Calling the screen

Press the "Status" button in the navigation bar. Select the "DC Link" screen.

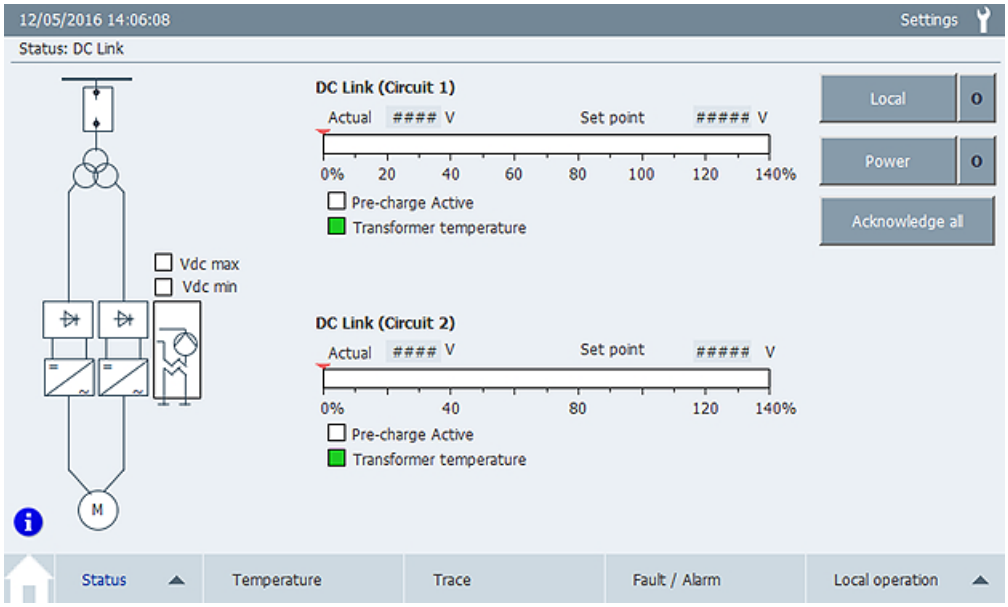


Figure 4-2 Example: "DC Link" screen, double-circuit

The following DC-link limit values are specified:

- The DC-link voltage (r3510) is shown as a bar.
- The DC-link overvoltage (r6631) is shown in red.
- The DC-link undervoltage (r6633) is shown in yellow.

4.2.2 "Recooling Unit" screen

The "Recooling Unit" screen displays the following information:

- The current values of the cooling system
- The current status of the pumps
- The current status of the deionizer
- The current status of the expansion tank

Calling the screen

Press the "Status" button in the navigation bar. Select the "Recooling Unit" screen.

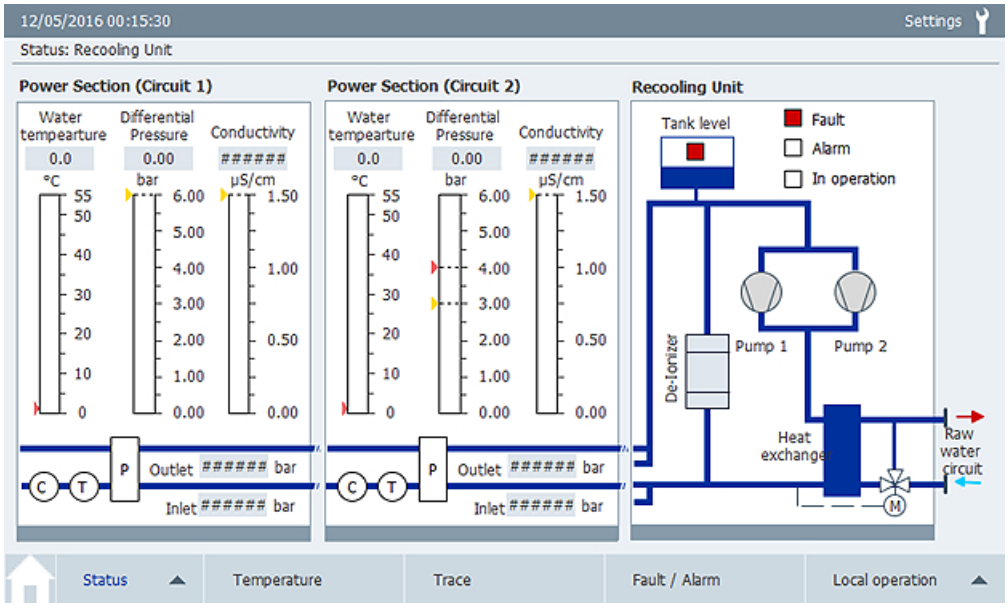


Figure 4-3 Example: "Recooling Unit" screen, double-circuit

The following standard limit values are shown in red. They are fixed values on the screen, not parameters.

- Water temperature: < 10° C, > 46° C. The value can be adapted to the specific project.
- Differential pressure: < 3 bar, > 4 bar
- Conductivity: < -1 µS/cm, > 1.2 µS/cm

4.2.3 "Power Cells" screen

The "Power Cells" screen displays the following information:

- The cell status
- The cell ID
  The cell ID is required for resetting and repairing the cell bypass.

The cell status is displayed as follows:

Color	Cell status
No color	Not charged
Green	Charged
Yellow	Fault pending
Red	Alarm pending
Pink	Bridged (bypass)

Calling the screen

Press the "Status" button in the navigation bar. Select the "Power Cells" screen.

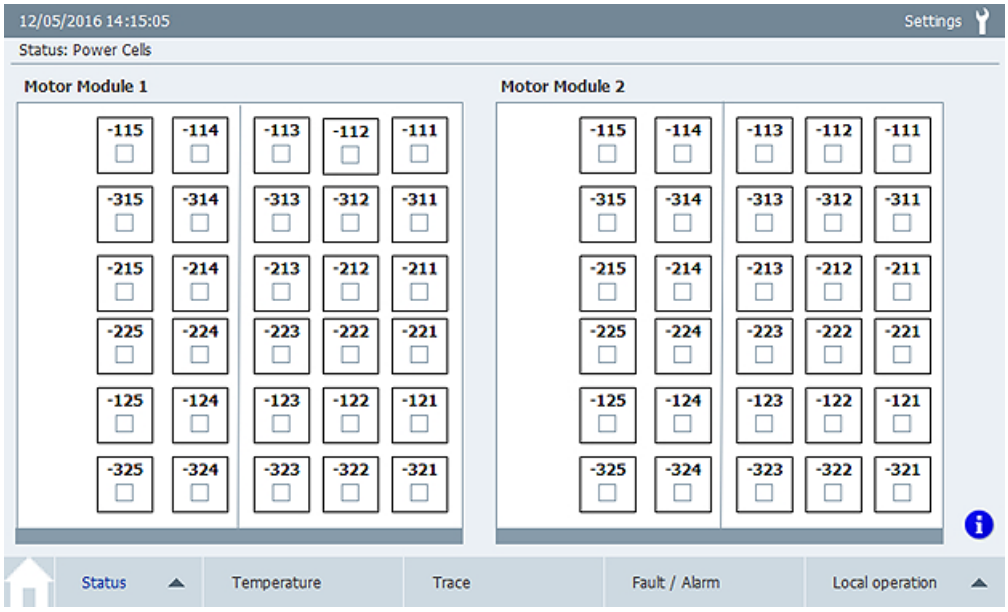


Figure 4-4 Example: "Power Cells" screen, double-circuit

4.2.4 "Drive" screen

The "Drive" screen displays the current status of the control bits. The bit values are displayed as follows:

- High signal = green
- Low signal = white

This screen shows faults in the communication with the automation system. The communication with the drive object (e.g. vector) is shown in the example.

Calling the screen

Press the <Status> button in the navigation bar. Select the "Drive" screen.

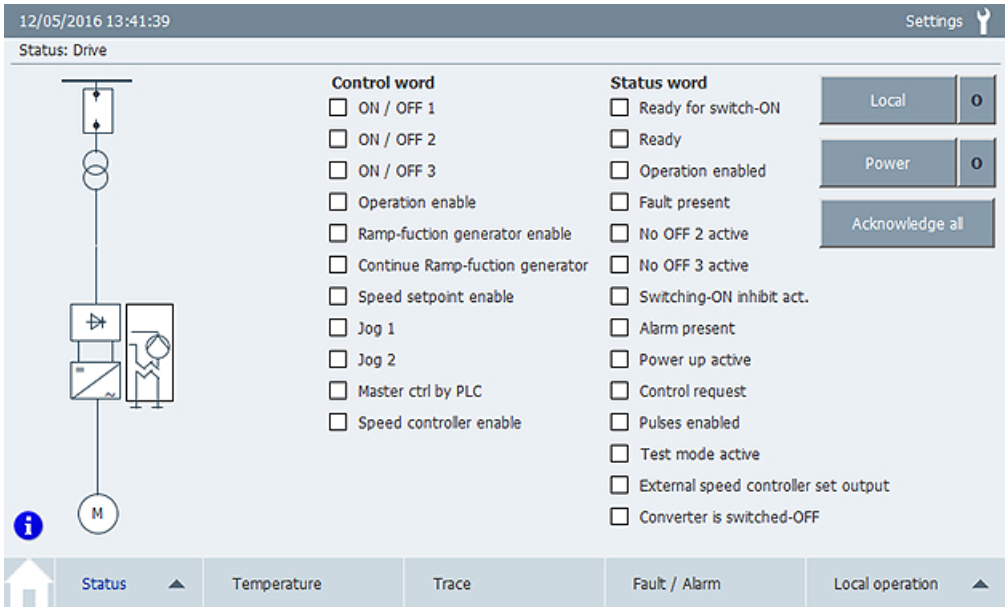


Figure 4-5 Example: "Drive" screen, single-circuit

Further information can be found in the List Manual of the converter, Chapter "PROFIdrive", Section STW1, ZSW1.

4.2.5 "Infeed" screen

The "Infeed" screen displays the current status of the control bits. The bit values are displayed as follows:

- High signal = green
- Low signal = white

This screen shows faults in the communication between the converter and the infeed.

Calling the screen

Press the <Status> button in the navigation bar. Select the "Infeed 1" screen for a single circuit or the "Infeed 2" screen for a double circuit.

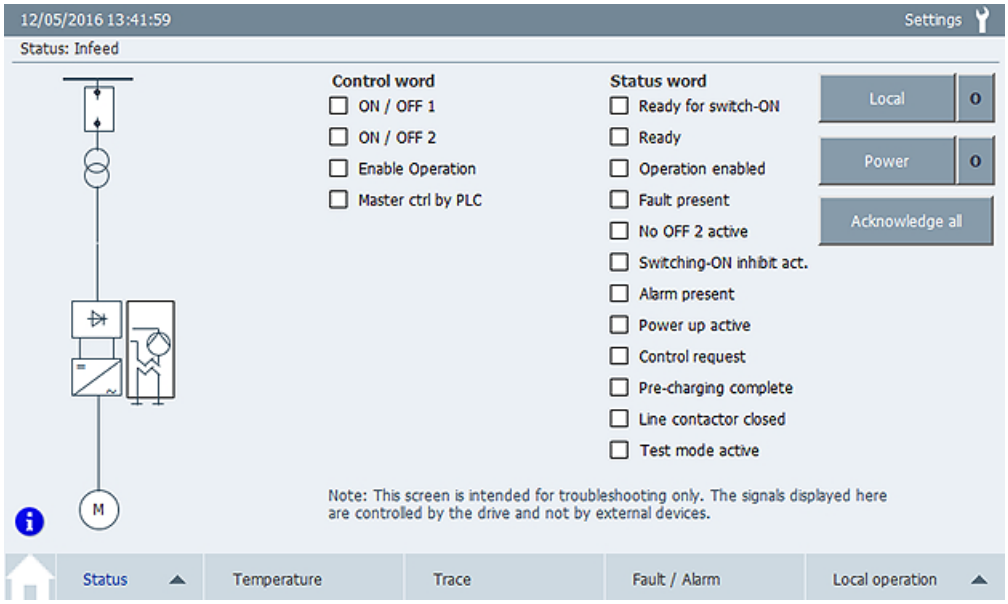


Figure 4-6 Example: "Infeed" screen, single-circuit

4.3 "Temperature" screen selection

4.3.1 "Temperature" screen

The "Temperature" screen displays the following information:

- All temperatures measured in the converter control cabinet
- Fan status during operation

Calling the screen

Press the "Temperature" button in the navigation bar.

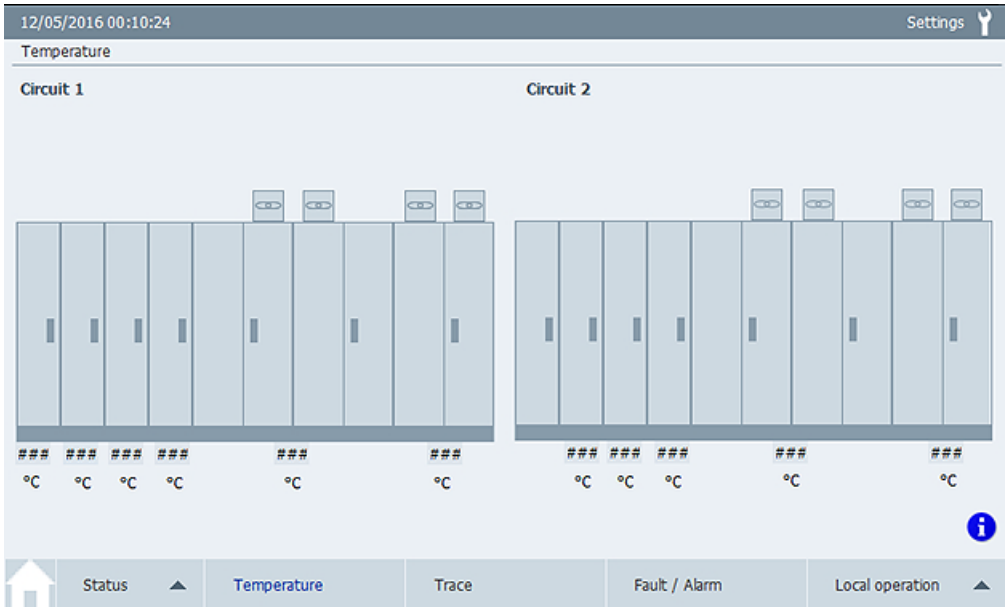


Figure 4-7 Example: "Temperature" screen, double-circuit converter

- When the fan is in operation, the color changes to green. Defective fans are displayed as alarm text
- When the control cabinet temperature is exceeded, the control cabinet color changes to yellow or red.
  The limit values for the color change correspond to the alarm and fault values defined in the converter software. The limit values are specified in the following parameters.
  - Alarm value:
    p6514
    p4102 (if TM150 is used):
  - Fault value:
    r6516
    p4102 (if TM150 is used):

  The display does not contain any tolerances defined in the hysteresis parameter p6514[0].

4.4 "Trace" screen selection

4.4.1 "Trace" screen

The "Trace" screen offers the following options:

- You can track up to eight values.
- The scaling is adjusted automatically
- You can select values from a list of 12 predefined parameters

Calling the screen

Press the <Trace> button in the navigation bar.

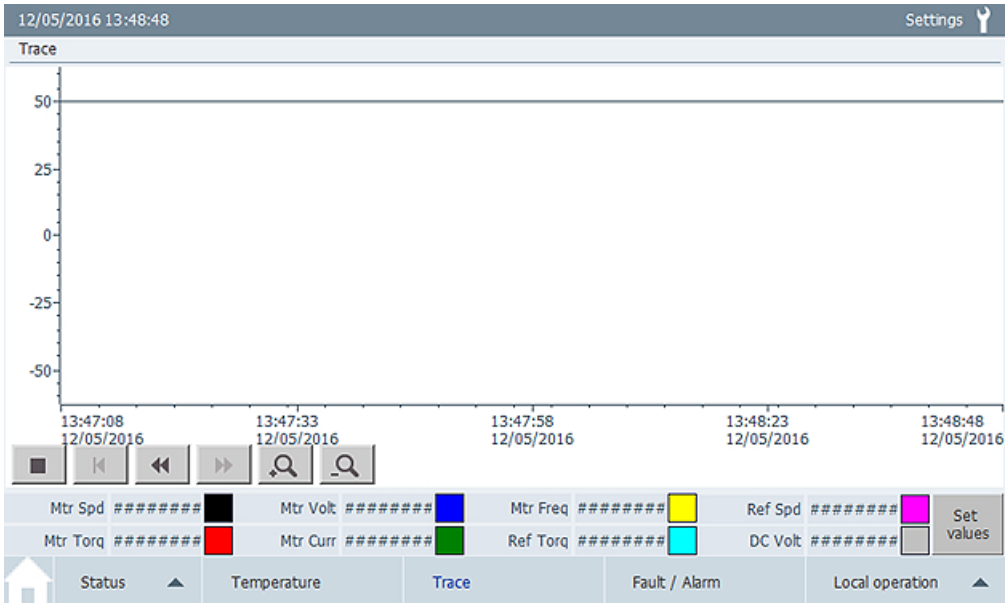


Figure 4-8 Example: "Trace" screen

Selecting values

Press the <Setpoints> button. The overview for selecting the trace signals appears. You can select up to eight signals that you want to record.

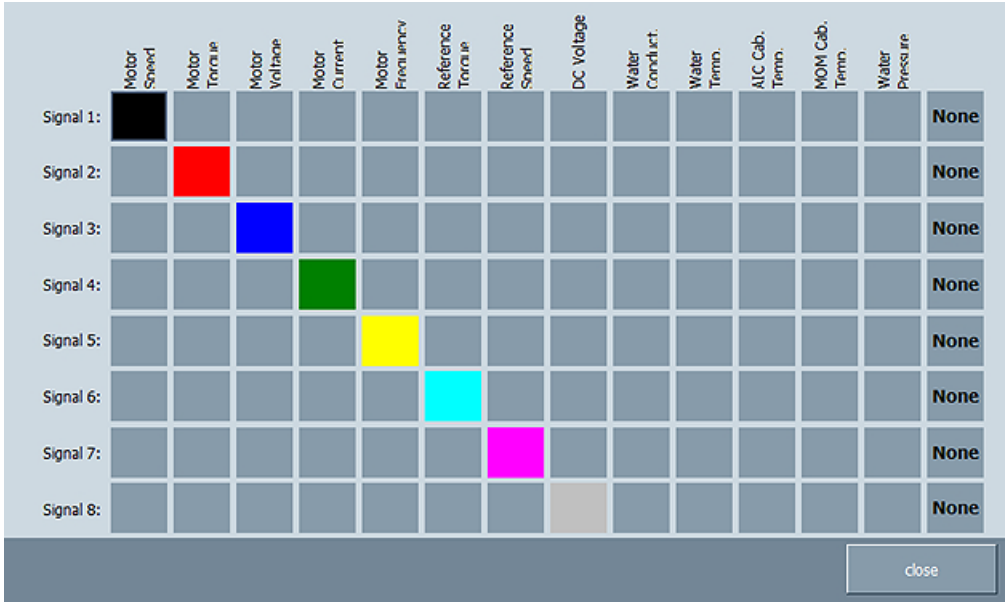


Figure 4-9 Example: Selection of the trace signals

4.5 "Fault/Alarm" screen selection

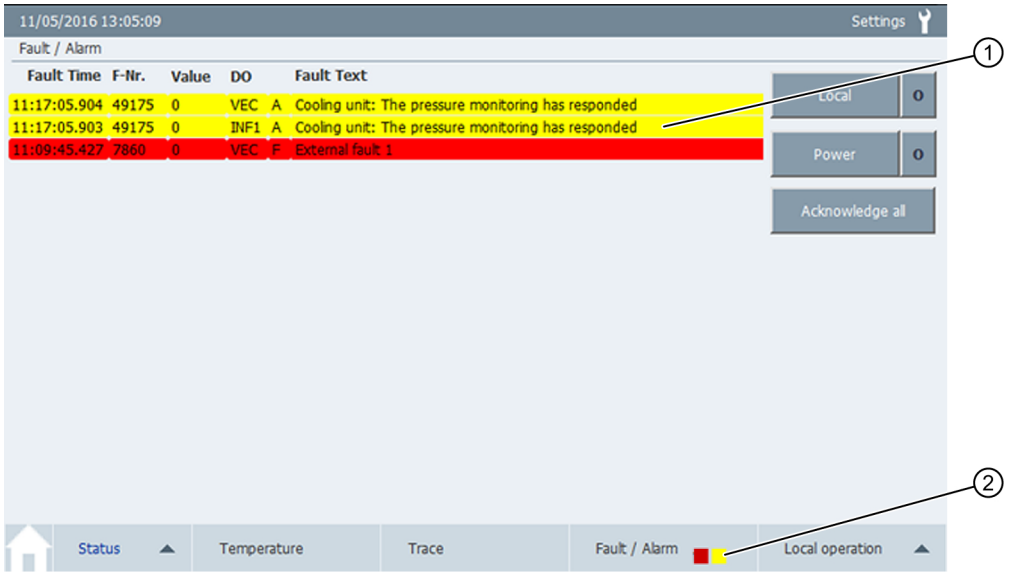
4.5.1 "Fault/Alarm" screen

The "Fault/Alarm" screen displays the following information:

- Faults/alarms are displayed with the fault time, the fault number, the drive object and a fault description.
- An alarm or fault is also displayed in the navigation bar in the "Fault/Alarm" field:
  - A red square for an alarm
  - A yellow square for a fault

Calling the screen

Press the <Fault/Alarm> button in the navigation bar.



① Fault display in the main contents area. A = Alarm, F = Fault

② Fault display in the navigation bar

Figure 4-10 Example: "Fault/Alarm" screen

You can find a description of the causes and the remedy for faults/alarms in the converter List Manual.

4.6 "Local Operation" screen selection

4.6.1 "Speed control" screen

You can change the speed of the motor during local operation in this screen.

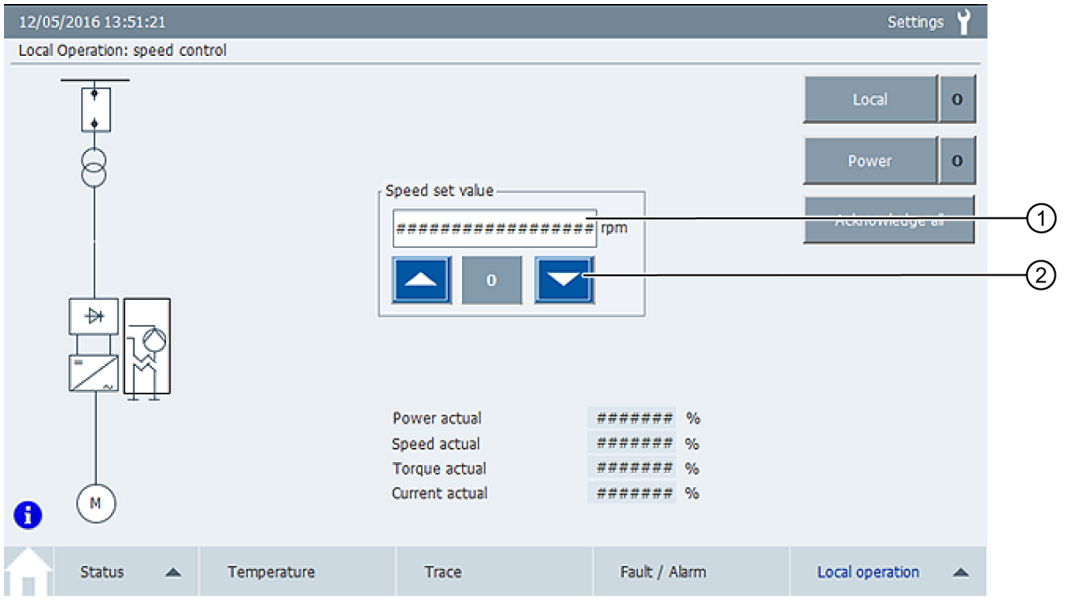
Note

Enabling of the local operation

Local operation can only be enabled when the converter is not in operation.

Calling the screen

Press the <Local operation> button in the navigation bar. Select the "Speed Control" screen.



① Speed change through input with the keypad
② Step-by-step speed change with the arrow keys

Figure 4-11 Example: "Speed Control" screen

Changing the speed

1. Switch the converter on with the <Power> button.
2. Change the speed setpoint of the motor. The following options are available:

- Manual input via the keypad ①.
- Step-by-step with the arrow keys ②.
- The "0" button resets the speed setpoint to zero.

If the communication between the Control Unit and the operator panel is faulty, the converter shuts down. A fault message is displayed in the "Overview" screen.

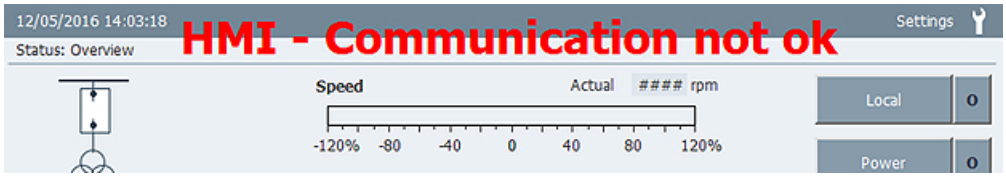


Figure 4-12 Example: Communication fault display

4.6.2 "Parameters" screen

You can change individual parameters with this screen. The screen is password-protected:

- User: gh
- Password: 150

Note

Qualified personnel

The "Parameters" screen must only be used for the specific **Qualified personnel** task.

Observe the documentation to be used, particularly regarding the warning and safety instructions. Qualified personnel are persons who, because of their training and experience, can recognize risks when handling these products/systems and avoid possible hazards.

Calling the screen

Press the <Local operation> button in the navigation bar. Select the "Parameters" screen.

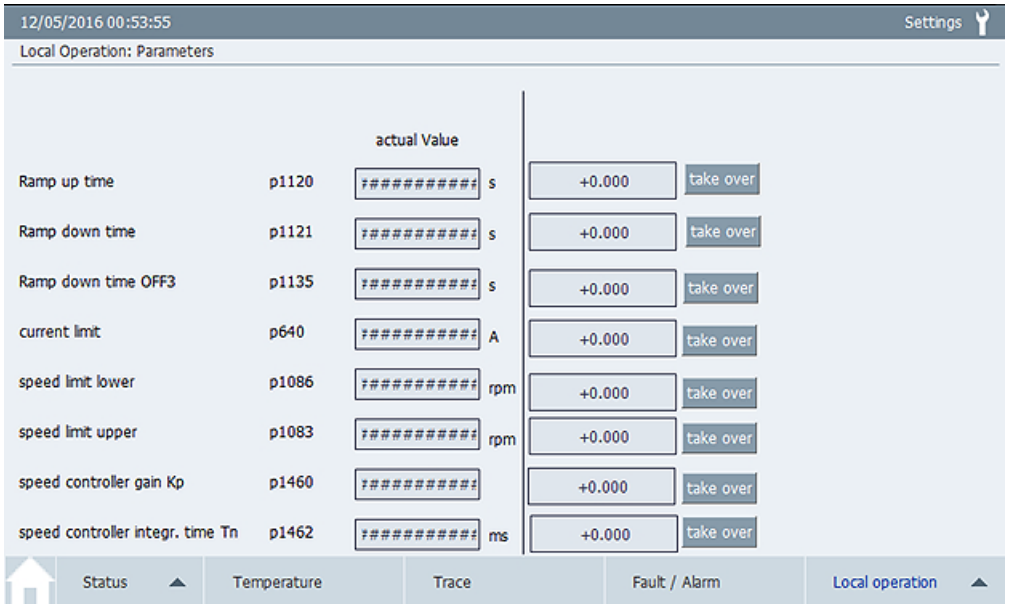


Figure 4-13 Example: "Parameters" screen

Changing values

1. Select the desired value. Enter the value via the keypad.
2. Accept the changed value. Press the respective "Take over" button.

4.6.3 "Expert" screen

This screen is used for the configuration of the operator panel and for troubleshooting. The "Expert" screen is intended for SIEMENS personnel only and is therefore password-protected.

Installing software

5

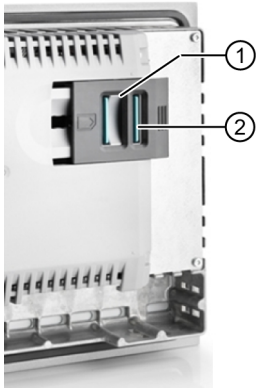
5.1 Setting up the operator panel

To install the software of the operator panel, you require an SD card, e.g. 6AV2181-8XP00-0AX0. Order the SD card via the Industry Mall (https://mall.industry.siemens.com/goos/WelcomePage.aspx?regionUrl=/&language=en).

The software for the operator panel is on the CompactFlash card supplied with the converter.

If you have to install the software for the operator panel, proceed as follows:

1. Copy the HMI software "HMI_software_GH150_V….zip" from the product documentation CD of the converter to your PC.
2. Unpack the file on the SD card. The "SIMATIC.HMI" folder is displayed on the SD card.
3. Insert the SD card in the system slot ① of the operator panel.



① System slot
② Data slot

Figure 5-1 Card slots

4. Start the operator panel by switching on the power supply. The software is installed.
5. Confirm that you want the existing HMI project to be overwritten.
6. After completing the software installation, insert the SD card in the data slot ② of the operator panel.

Service & Support

Technical queries or additional information

If you have any technical queries or you require additional information, please contact Technical Support (https://support.industry.siemens.com/cs/ww/en/sc/2090).

Please have the following data ready:

- Type
- Serial number

You can find this data on the rating plate.

Contact person

If you wish to request on-site service or order spare parts, please contact your local office. This office will contact the responsible service center on your behalf. You can find your contact person in the relevant contact database:

www.siemens.com/yourcontact (www.siemens.com/yourcontact)

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