rexroth
A Bosch Company

Oil Treatment System ABVCM

Size 50

User and display interface

Short description
RE 51474-KB/04.21

Replaces: RE 51462-KB
English

The data specified above only serve to describe the product. No statements concerning a certain condition or suitability for a certain application can be derived from our information. The information given does not release the user from the obligation of own judgment and verification. Please note that our products are subject to a natural process of wear and aging.

The cover shows an example configuration. The product supplied may therefore differ from the photo shown.

The original operating instructions were prepared in German.

Contents

1 About this documentation

1.1 Validity of the documentation

These instructions apply to the following product:

- ABVCM oil treatment system, size 50, ABVCM50-2X/

These instructions are intended for assemblers, system operators, service engineers and system end-users.
These instructions contain important information on safe and proper commissioning, operation, use and maintenance and simple troubleshooting of the ABVCM.
Paying attention to the instructions helps you to prevent risks, reduce repair costs and failure times and increase the reliability and service life of the system.

▶ Read this documentation completely before working with the product.

1.2 Necessary and amending documentation

▶ The ABVCM must not be commissioned until you have been provided with the documentation marked with the book symbol 🕮 and you have understood and observed it.

Table 1: Necessary and amending documentation

	Title	Document number	Document type
🕮	Operating Instructions for L-BL2, Elmo Rietschle Company	Elmo_Rietschle_2BL2_141_Vakuumpumpe.pdf	Operating instructions
🕮	Oil Treatment System ABVCM	51474	Data sheet
🕮	Oil Treatment System ABVCM	51474-B	Operating instructions
🕮	Assembly, Commissioning and Maintenance of Hydraulic Systems	07900	Data sheet
🕮	List of Fault Messages	51474-KB_ANH1 Fehlermeldungen.pdf	List
🕮	List of Warning Messages	51474-KB_ANH2 Warnmeldungen.pdf	List
🕮	List of Messages	51474-KB_ANH3 Hinweismeldungen.pdf	List
🕮	Project-specific documentation: • Hydraulic circuit diagram • Electrical circuit diagram • Assembly drawing • Parts list		Circuit diagrams, assembly drawing, parts list

1.3 Illustration of information

Uniform symbols, terms and abbreviations are used so that you can quickly and safely work with your product using this documentation. For a better understanding, they are explained in the following sections.

1.3.1 Symbols

The following symbols indicate notices which are not safety-relevant but increase the comprehensibility of the documentation.

Table 2: Meaning of the symbols

Symbol	Meaning
	If this information is not observed, the product cannot be optimally used and/or operated.
▶	Individual independent action
1. 2. 3.	Numbered instruction: The numbers indicate that the actions are carried out one after the other.

1.3.2 Abbreviations

The following abbreviations are used in this documentation:

Table 3: Abbreviations

Abbreviation	Meaning
AUTO	Automatic
Figure	Screen mask
Iw	Actual value
KP	Proportional gain
PLC	Programmable logic control
Sw	Set value
TN	Reset time

2 Operator terminal

The operator terminal consists of the operator panel and the pushbutton field.

For further information about the pushbutton field, refer to Section 5.5.1.4 in the “Oil Treatment System ABVCM” operating instructions, see Section 1.2 “Necessary and amending documentation”. Necessary and amending documentation

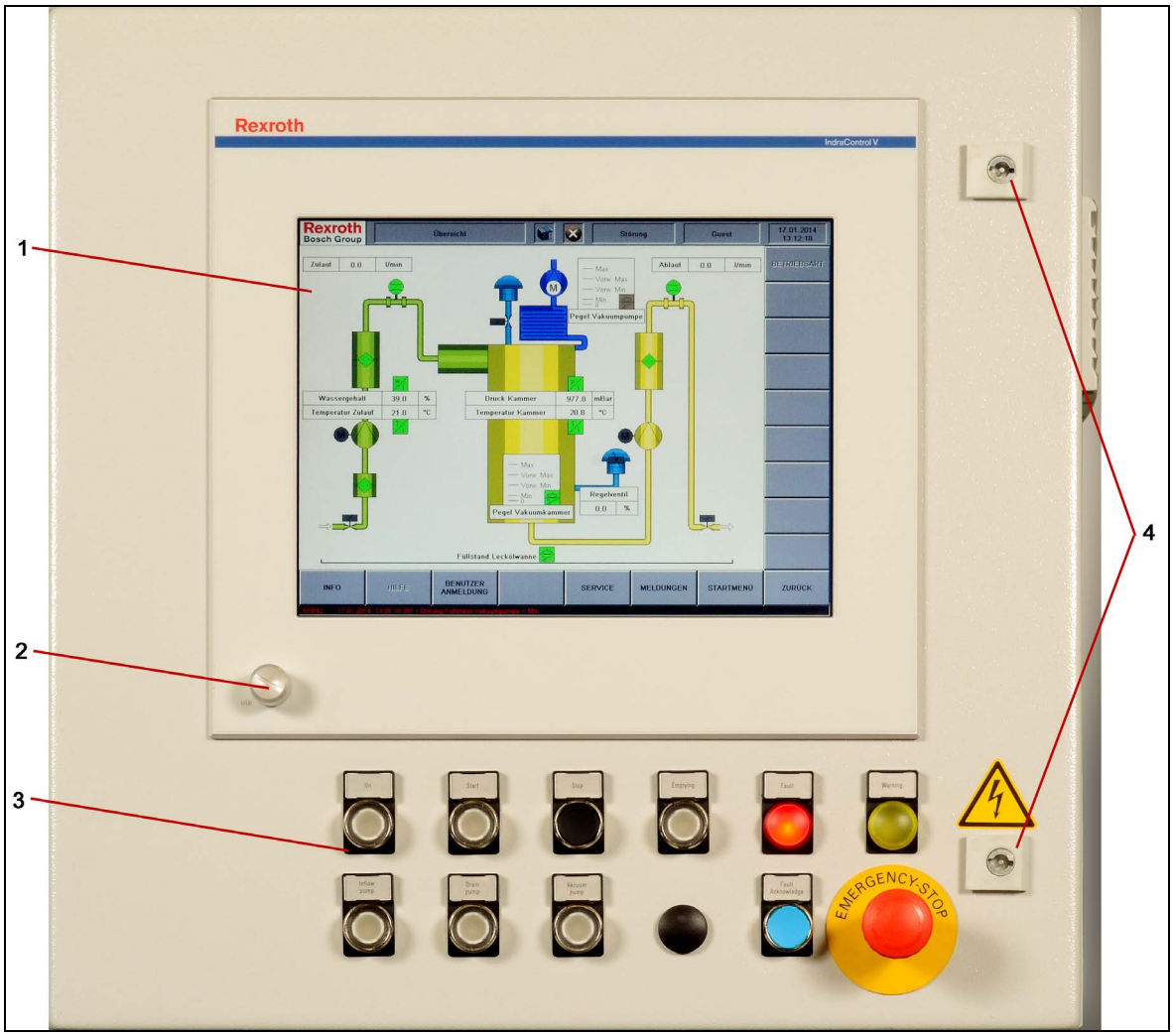


Fig. 1: Operator terminal

1 Operator panel
2 USB slot
3 Pushbutton field
4 Control cabinet lock

3 Basic structure of the display

3.1 Display structure

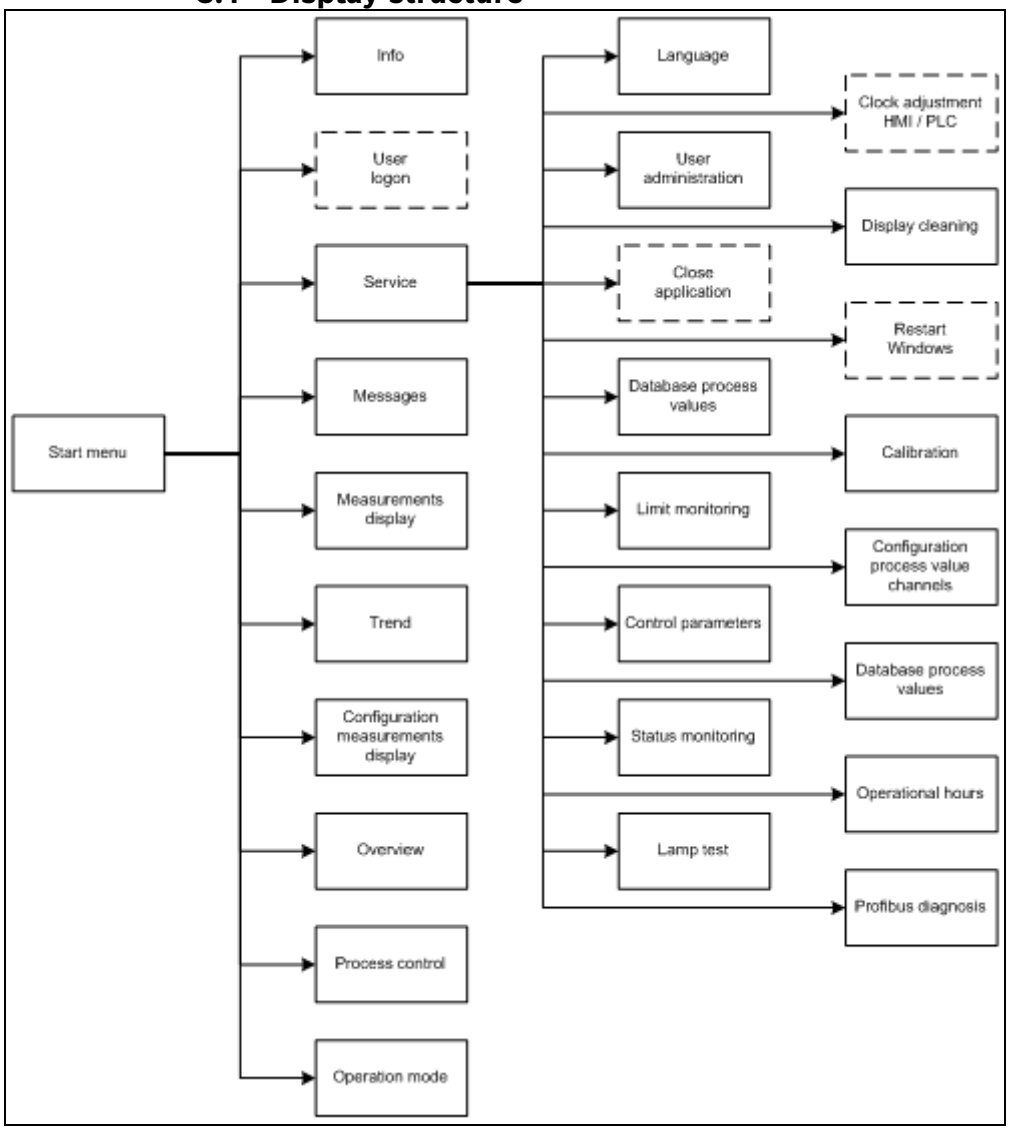


Fig. 2: Hierarchy of the screens

Visualization contains the following screens:

- Start menu
- Info
- Service
- Messages
- Measured value display
- Configuration of measured value display
- Trend
- Overview
- Process control
- Operating mode
- Language selection dialog
- User manager
- Cleaning
- Calibration
- Process values database
- Configuration of process value channels
- Limit value monitoring
- Control parameters
- Status monitoring
- Profibus diagnosis
- Operating hours
- Lamp test

3.2 General screen structure

Each screen consists of a header, function keys, a message line and the actual contents of the screen.

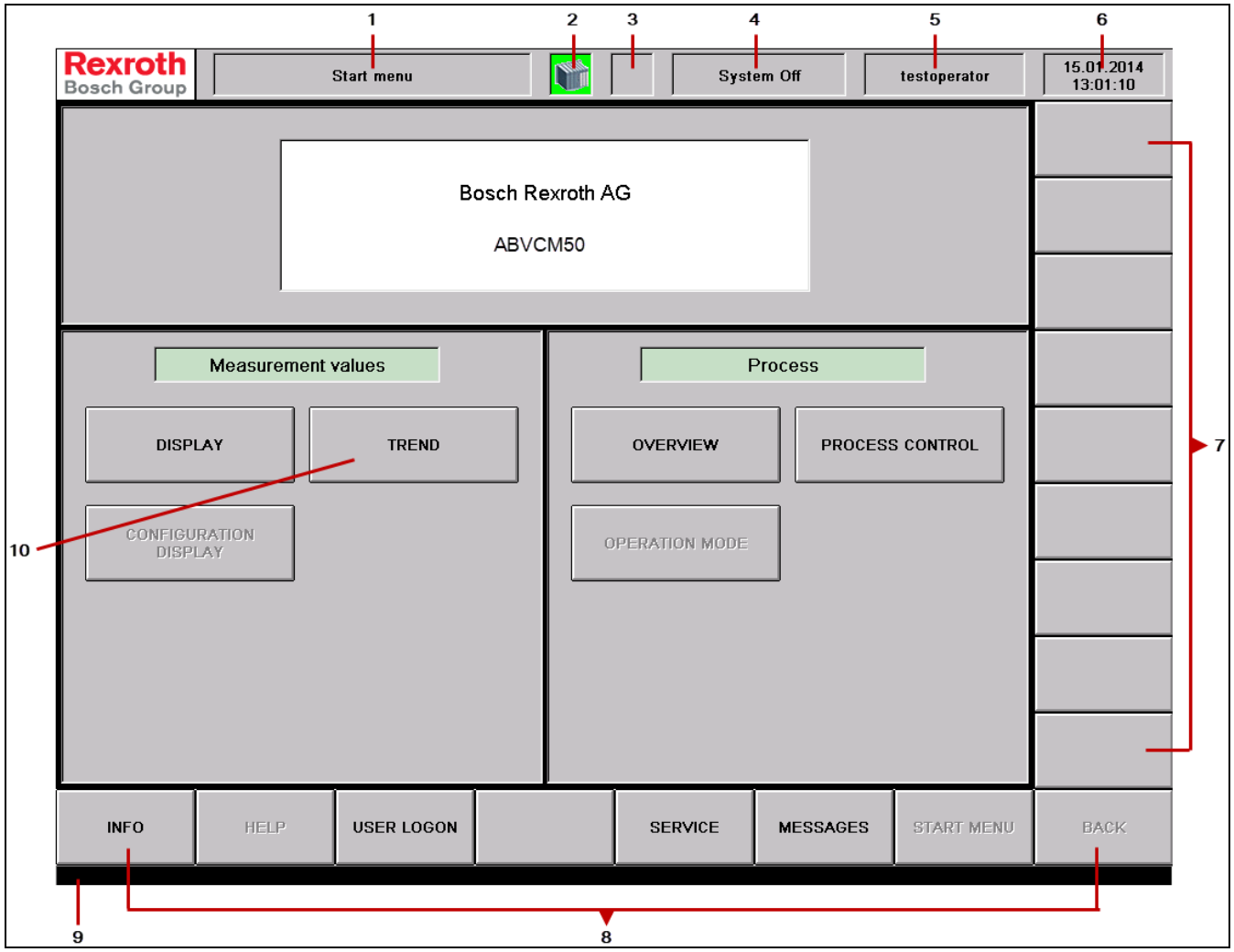


Fig. 3: Basic structure of the screens using the START MENU screen as an example

1 Designation of the displayed screen
2 PLC heartbeat
3 Symbolic status information
4 System status information
5 Currently logged on user
6 Date and time
7 Screen-dependent function keys
8 Screen-independent function keys
9 Message line
10 Screen-dependent function key in the screen content

3.2.1 Header

The header contains the following elements:

- Designation of the displayed screen
- Heartbeat signal of the PLC
  (flashes if the PLC is in “RUN” mode and communicating with the operator terminal)
- Symbolic status information for error-free operation, warning and fault
- Plant status information in text form
- Display of the user who is currently logged on
- Date and time of the Windows operating system

3.2.2 Functional keys

With the function keys, a differentiation is made between screen-dependent and screen-independent ones.
The screen-dependent function keys at the right-hand edge or in the screen content change their functions on each screen, whereas the screen-independent function keys at the bottom edge are available on every screen.

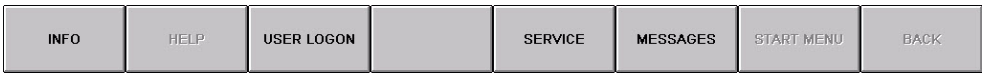


Fig. 4: Screen-independent function keys

Info	Display of the plant's electronic nameplate
Help	Display of help information about the current content of the screen (if available)
User logon	Opens the dialog to log users on and off
Service	Opens the service menu
Messages	Display of all the active messages for errors, faults, warnings and operating instructions
Back	Goes back to the previous screen

Access to the function keys can change due to user actions, running background tasks or lack of user authorization.

3.2.3 Message line

Displays an active, unacknowledged message. The system switches cyclically to the next pending message. When the last message is reached (the one with the highest active message number), the display cycle starts again with the lowest pending message number.

4 Operation and display screens

4.1 START MENU screen

After switching on the plant and starting up the operating system, the operating interface starts by displaying the start menu:

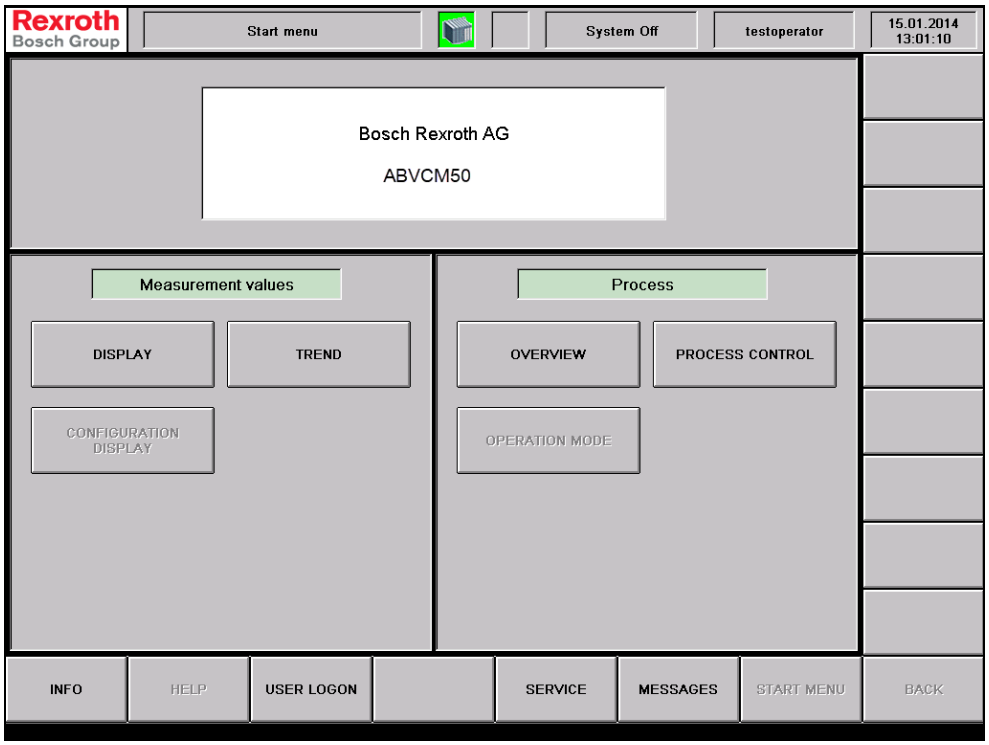


Fig. 5: START MENU screen

The system displays the following:

- System status on the header
- Logged-on user
- System designation
- Screen-independent and screen-dependent function keys

The start menu is divided into the following categories:

- Measured values
- Process

Confirming the corresponding function keys allows you to open the following screens:

- Measured value display (see chapter 4.5)
- Configuration of measured value display (see chapter 4.6)
- Trend (see chapter 4.7)
- Overview (see chapter 4.8)
- Operating mode (see chapter 4.10)
- Process control (see chapter 4.9)

4.2 INFO screen

▶ Press the INFO function key on the START MENU screen.
The system displays the following screen:

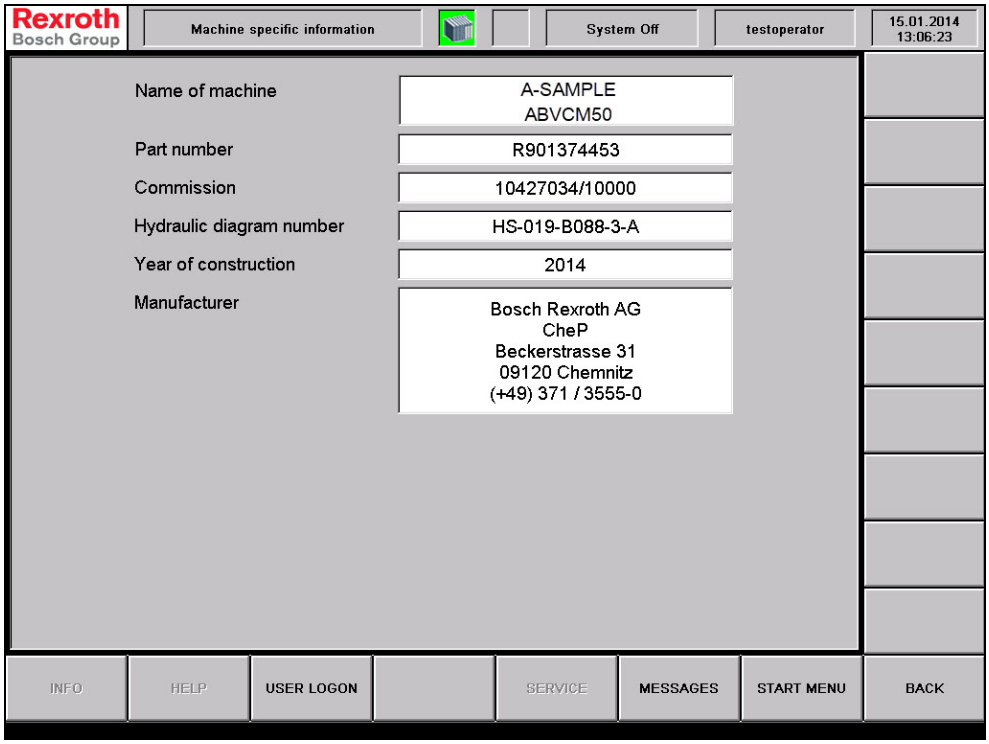


Fig. 6: INFO screen

The system displays the electronic nameplate that has the following content:

- System designation
- Information about the system
  - Material number
  - The hydraulic circuit diagram number
  - Year of construction
- Information about the manufacturer

4.3 SERVICE screen

▶ Press the SERVICE function key on the START MENU screen.
The system displays the following screen:

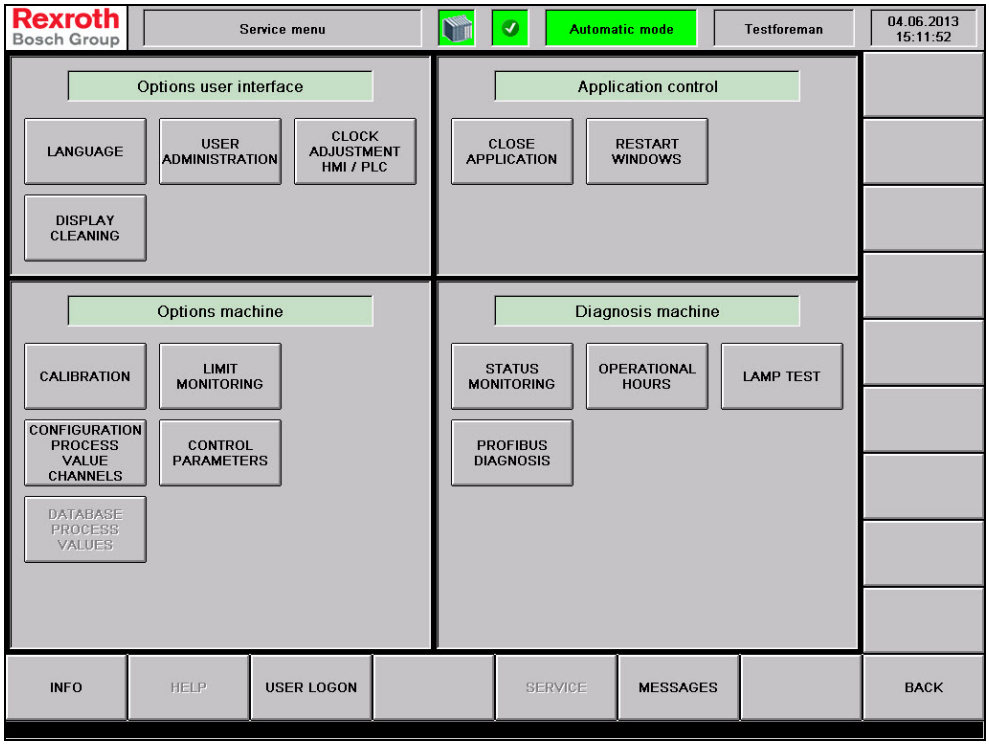


Fig. 7: SERVICE MENU screen

By means of the SERVICE MENU screen, you can access the service functions of the system and the operating interface. Generally, you need higher security clearance to access these functions.

Chapter 5 contains a more detailed description of the service functions.

END APPLICATION function key

You can use the END APPLICATION function key to shut down the operating interface and enable access to the operating system level of the operator terminal.

Ending the application also terminates the communication connection with the PLC. If the maximum communication failure time set in the PLC is exceeded, the system is shut down with an emergency stop.

Changes to specific settings on the operating system level or to the file system can result in malfunctions or the failure of the operating interface or visualization device. Any changes should only be carried out by appropriately trained specialists.

RESTART WINDOWS function key

You can use the RESTART WINDOWS function key to boot the operating system.

4.4 MESSAGES screen

- Press the MESSAGES function key on the START MENU screen.
  The system displays the following screen:

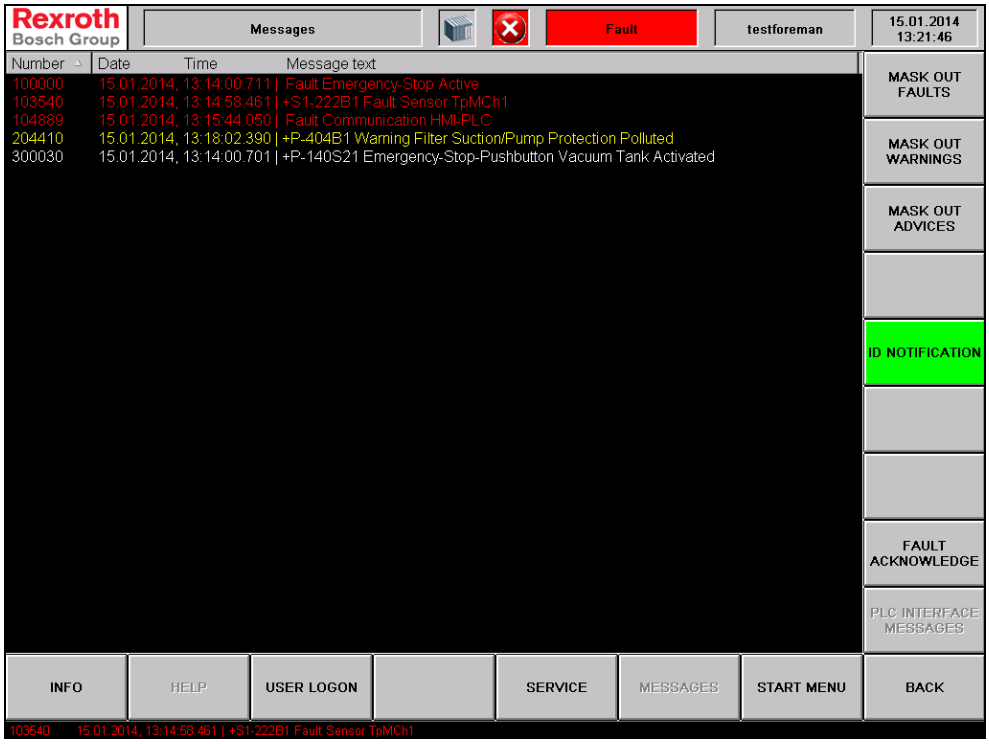


Fig. 8: MESSAGES screen

The system displays active messages that have not yet been acknowledged with the error number, the time stamp of the message event and the message text in different colors to match their meanings:

Red: A fault has occurred that led to a system shutdown.
- Remedy the cause of the fault.
- Acknowledge the fault.
- Switch the system back on.

Yellow: A pre-warning has occurred. The system continues working.
- Take suitable action to avert the threat of the system coming to a standstill.

White: Operating instruction
- Observe the information on operating the system.

The function keys at the sides have the following functions:

Hiding the corresponding message category

Using these function keys, the system filters the associated messages out of the display; tapping the key again redisplays the messages.

BMK DISPLAY function key

The BMK display key is for hiding/displaying the electrical equipment labels that belong to the pending messages for diagnostic purposes.

ACKNOWLEDGE FAULT function key

You can use this function key to send a request to the PLC to acknowledge a fault.

PLC INTERFACE function key

This function key allows you to diagnose the PLC interface for message management (requires administrator rights).

4.5 MEASUREMENTS DISPLAY screen

▶ Press the DISPLAY function key on the START MENU screen.
The system displays the following screen:

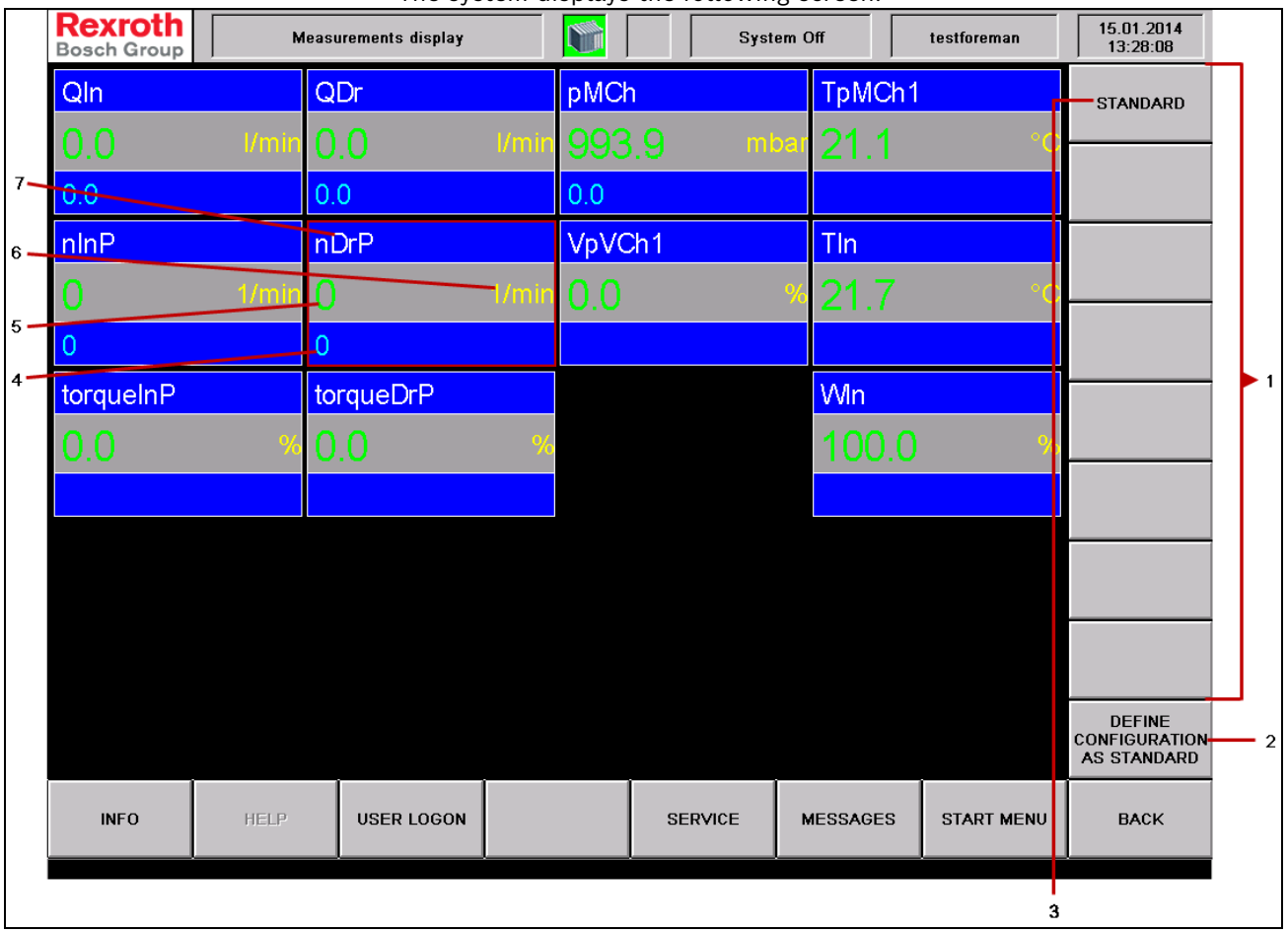


Fig. 9: MEASUREMENTS DISPLAY screen

1 Available display configuration
2 Defines the current configuration as the start configuration
3 Selected display configuration

Display field:
4 Set value (if available)
5 Actual value
6 Physical unit of the process value
7 Designation of the process value

This screen is for showing up to 42 PLC process values (set and actual values).

A display field comprises the designation of the process value, the actual value of the physical unit and the associated set value, if available.

Eight different display configurations are available that you can select using the function keys on the right-hand side of the screen.

You put together this configuration on the MEASUREMENTS DISPLAY CONFIGURATION screen that is described in chapter 4.6.

You can define one of the eight configurations as the start configuration (STANDARD). It is displayed when you open the measured value display for the first time after starting up the operating interface. Each time you call the MEASUREMENTS DISPLAY screen again, the system loads the configuration that was displayed when you left the screen.

4.6 MEASUREMENTS DISPLAY CONFIGURATION screen

- ▶ Press the CONFIGURATION DISPLAY function key on the START MENU screen. The system displays the following screen:

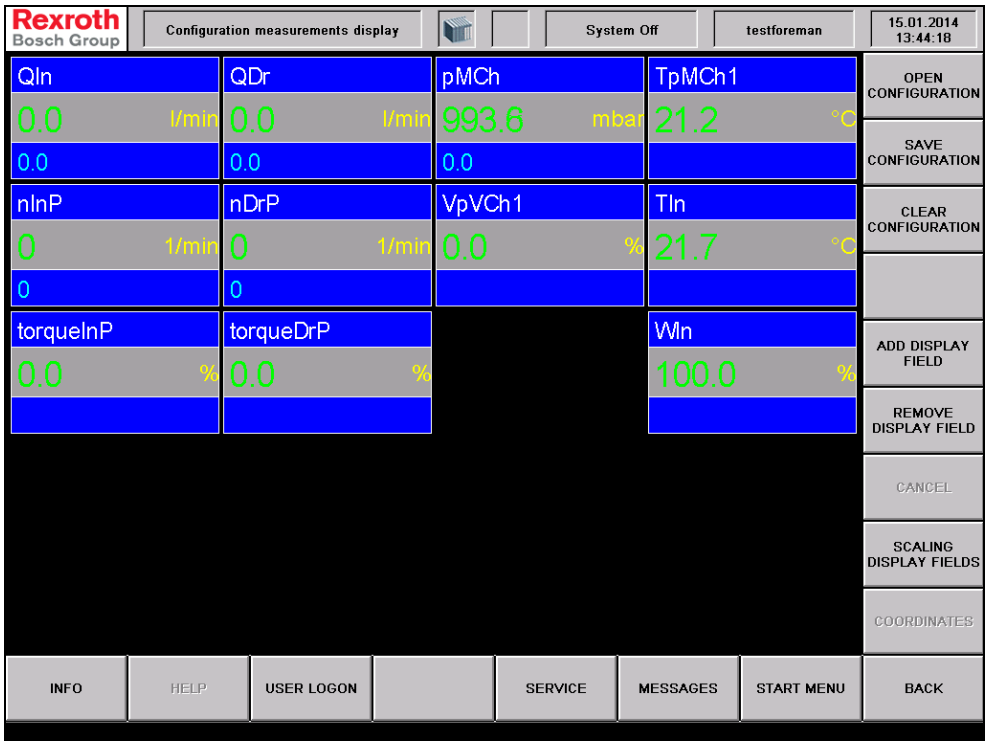


Fig. 10: MEASUREMENTS DISPLAY CONFIGURATION screen

In the measurements display configuration menu, you can create and edit user-specific display configurations.

4.6.1 Editing display configurations

OPEN CONFIGURATION function key

▶ Use the OPEN CONFIGURATION function key to open existing display configurations. The system displays the following dialog:

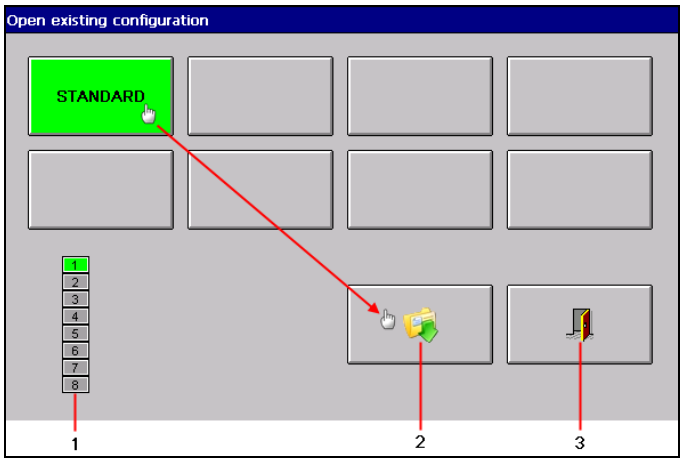


Fig. 11: OPEN EXISTING CONFIGURATION dialog

1 Position of the selected configuration function key on the MEASUREMENTS DISPLAY screen

2 OPEN CONFIGURATION function key

3 BACK function key

SAVE CONFIGURATION function key

▶ Use the SAVE CONFIGURATION function key to save the new display configurations that you have created or the ones that you have changed so they are available for selection on the measured value display. The system displays the following dialog:

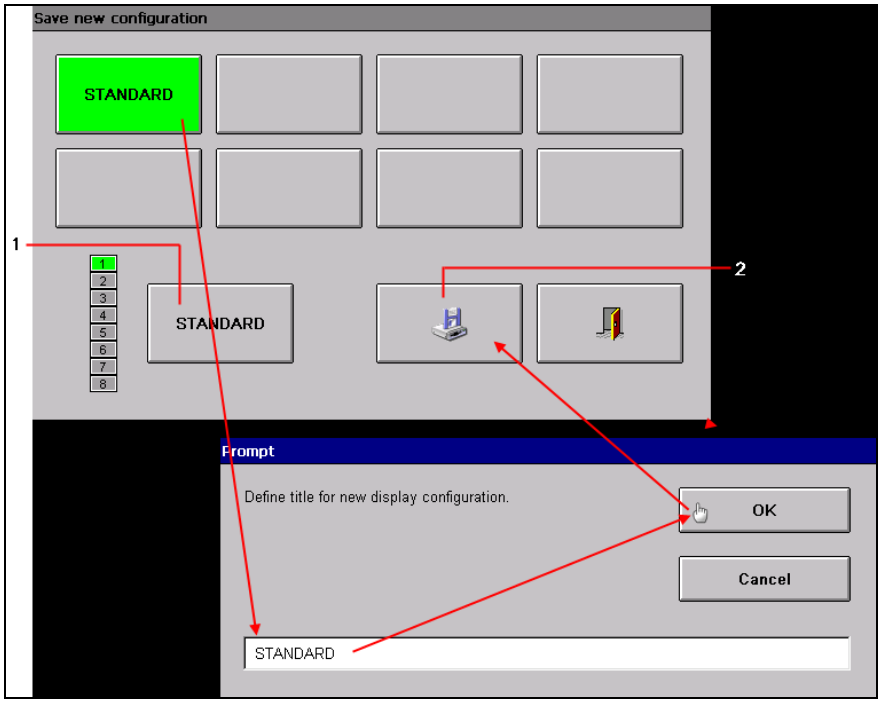


Fig. 12: SAVE NEW CONFIGURATION dialog

1 Preview of the function key labeling with new designation

2 SAVE CONFIGURATION function key

After selecting the configuration in the OPEN EXISTING CONFIGURATION dialog, the system opens the prompt to determine the new designation. The system displays a preview of the function key labeling next to the prompt. Inserting spaces in the designation allows you to create carriage returns in the designation.

DELETE CONFIGURATION function key

- Use the DELETE CONFIGURATION function key to delete display configurations that you no longer need.

4.6.2 Selecting process values

- Actuate the ADD DISPLAY FIELD or REMOVE DISPLAY FIELD function key. The system displays the following dialog:

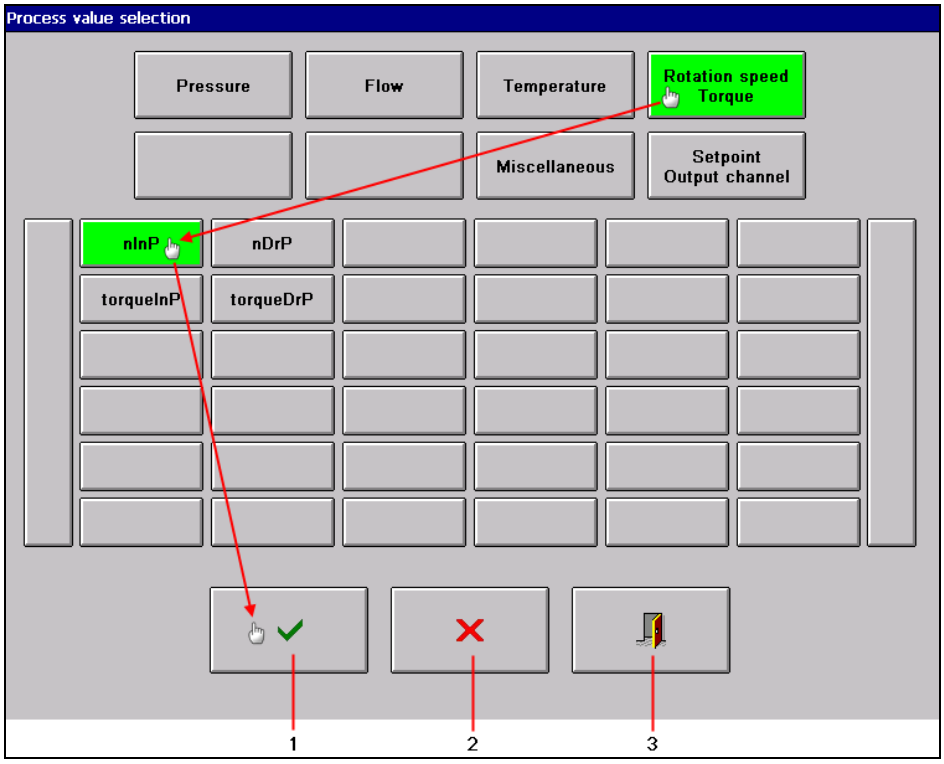


Fig. 13: SELECT PROCESS VALUE dialog

1 Functional key to confirm the selection of the process value
2 Functional key to cancel the selection of the process value
3 BACK function key

- After pre-selecting the process value category, select the desired process value and confirm your selection using the confirmation function key (green check mark).

The function keys to the left and right of the displayed process values offer access to further process values in the selected category, if any are available.
The dialog for selecting process values is also used in other parts of the application. You use the dialog in exactly the same way.

4.6.3 Assigning a display field

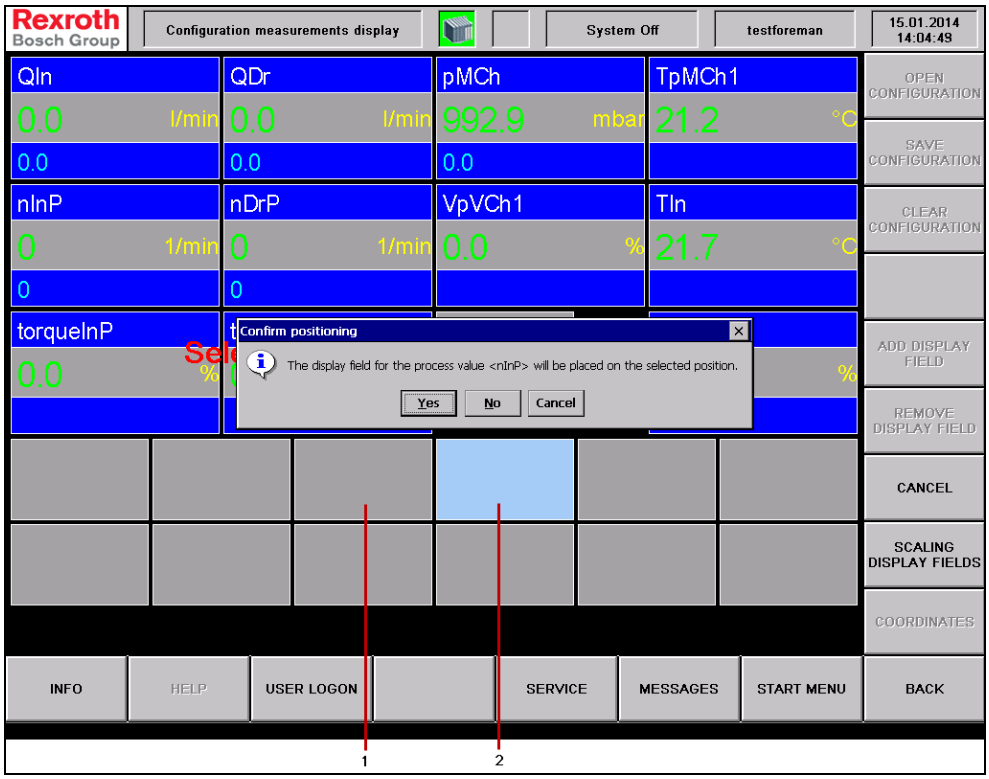


Fig. 14: Assigning a display field

1 Placeholder **2** Selected field for placement

After you have selected a process value, the system calculates the spaces that are still free for the assignment of a display field, depending on the set scaling, and displays it as a gray placeholder.

When you click on a placeholder, it starts to flash light-blue and the system displays a message prompting you to confirm the placement of the display field. On confirming this, the system assigns the selected process value to the specified display field.

You can use the CANCEL function key to cancel the display field placement.

4.6.4 Scaling a display field

- To scale the display fields that you want to place, actuate the SCALING OF DISPLAY FIELDS function key. The system displays the following dialog:

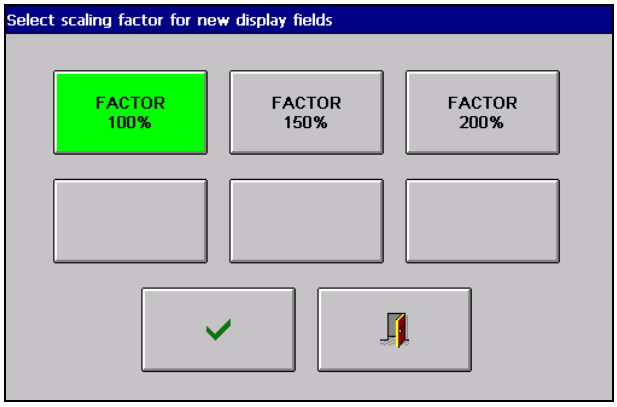


Fig. 15: SCALING OF DISPLAY FIELDS dialog

You can still change the scaling after the system has calculated the placeholder positions.

4.7 TREND screen

▶ Press the TREND function key on the START MENU screen. The system displays the following screen:

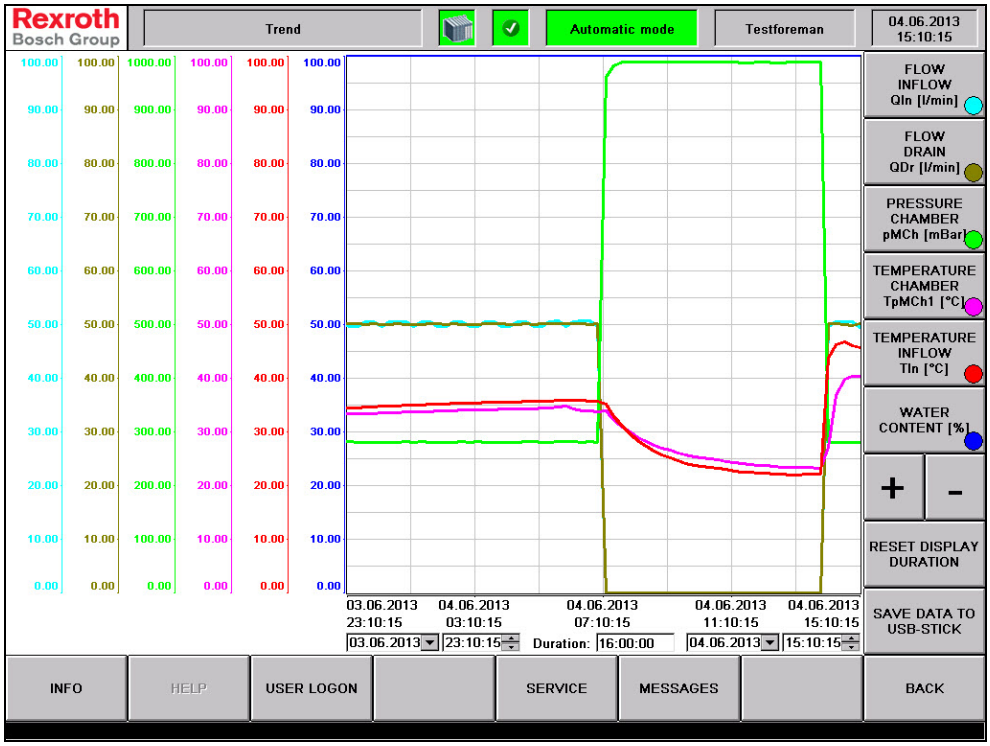


Fig. 16: TREND screen

In this dialog, the system displays the measured values in graphic form.
You can hide/display all the measured values using their respective function key.

You can change how long the display lasts using the function keys and reset this time back to the standard value. You can also change the duration of display using the selection function keys below the graphic display.

It is also possible to copy the data that is saved on the operator terminal to a USB flash drive. To do this, you need to plug a USB flash drive into the USB port on the front of the operator terminal and actuate the SAVE DATA TO USB STICK function key. After this, the system opens a file browser and you can choose the location where you want to save the measured value file. The system displays the USB flash drive in the file browser as a “hard disk”. The data is saved in CSV format.

4.8 OVERVIEW screen

▶ Press the OVERVIEW function key on the START MENU screen.
The system displays the following screen:

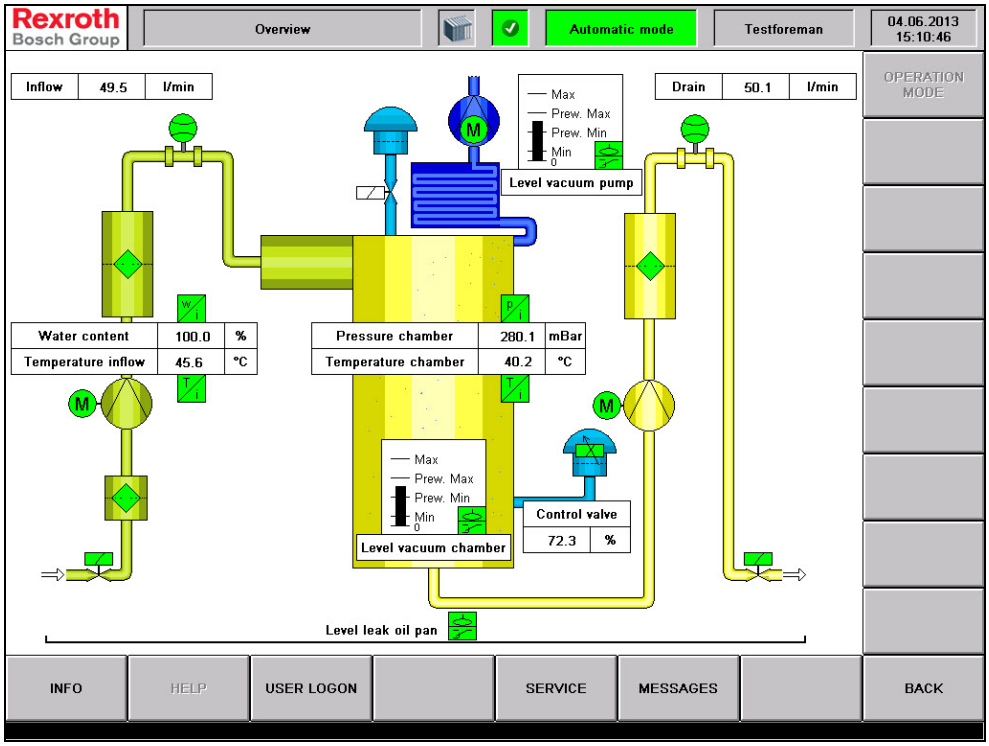


Fig. 17: OVERVIEW screen

This screen shows a simplified representation of the system containing all the relevant system parts.
In manual mode, you can manually control individual system parts here.
When you do this, the system adds a few elements to this screen.

4.9 PROCESS CONTROL screen

▶ Press the PROCESS CONTROL function key on the START MENU screen.
The system displays the following screen:

Fig. 18: PROCESS CONTROL screen

On this screen, you can set the set values for the flow and chamber pressure. The new set values are applied when you actuate the WRITE SETPOINT VALUES TO PLC function key.

Apart from this, the system displays information about the supply and discharge pumps as well as about the level switch in the vacuum chamber and the vacuum pump.

4.10 MODE SELECTION dialog

- Press the OPERATION MODE function key on the START MENU screen.
  The system displays the following screen:

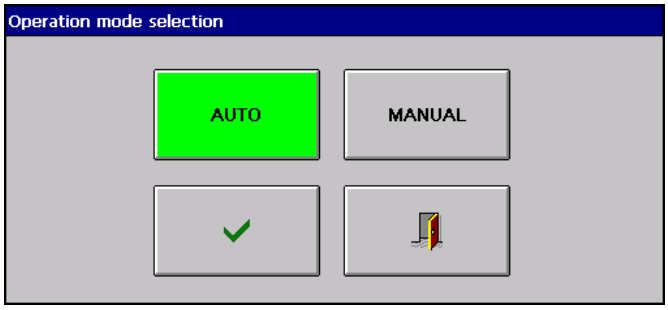


Fig. 19: MODE SELECTION dialog

This dialog is used to select the desired operation mode.

AUTOMATIC mode is set for normal operation. MANUAL mode is necessary for all adjustment, service and maintenance work.

5 Service functions

You can use the buttons on the SERVICE MENU screen (see Fig. 7) to navigate to the dialogs in the “Settings of Operating Interface”, “Application Control”, “Settings of System” and “Diagnosis of System” screen areas.

5.1 LANGUAGE SELECTION dialog

- Press the LANGUAGE function key on the START MENU screen.
  The system displays the following screen:

Fig. 20: LANGUAGE SELECTION dialog

You use this dialog to switch the languages of the operating interface. After you confirm your selection, the system displays all the texts, labels and messages in the new language.

The set default language on (re)starting the application is German.

5.2 USER MANAGER screen

▶ Press the USER MANAGER function key on the START MENU screen.
The system displays the following screen:

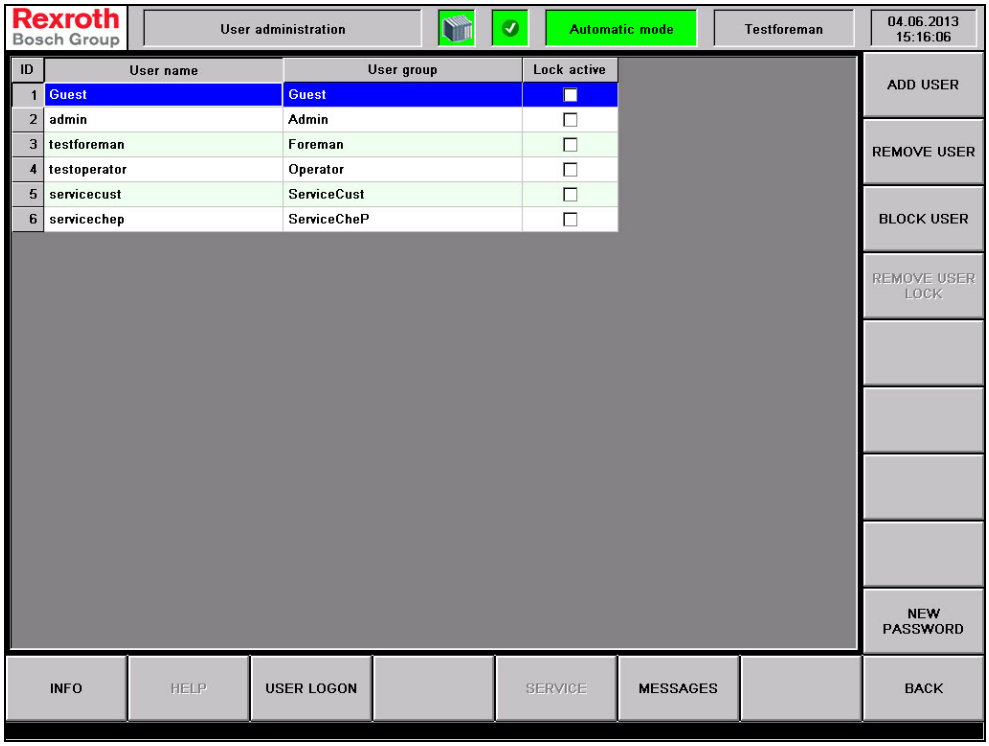


Fig. 21: USER MANAGER screen

This screen gives you access to local user manager. It is possible to add, remove, block and release users.

The number of possible users is currently limited to 30. If you exceed the number, the system displays a warning message.

The group to which you assign newly created users determines the authorization level of new users and the range of functions that are associated with it.
The application contains the user groups below, sorted in ascending order by the authorization level:

Guest: Guest
Access to screens/screen functions

Operator: Operator
Access to operating/control functions in the system

Foreman: Master craftsman/foreman
Access to user manager

ServiceCust: Customer's service personnel
Access to specific service functions

ServiceCheP: Chemnitz service personnel
Access to all service and diagnosis functions

Admin: Administrator
Access to all functions

The remove, block and release actions always refer to the user who is selected in the table. To carry them out, the logged on user needs an authorization level which, on the one hand, allows processing of user data (at least foreman) and, on the other hand, matches at least the level of the user group that is affected by the actions (e.g. a user in the “Foreman” group is not allowed to process the “ServiceCust” group).

The dialogs used to create a new user account and change the user password are shown in the figure below. The User Full Name is not used in the application. These means that you do not need to make an input.

From user group “Operator” onwards, it is possible for each user to change their own password using the NEW PASSWORD function key. You must log on first. The system displays the respective user name in the header of the dialog.

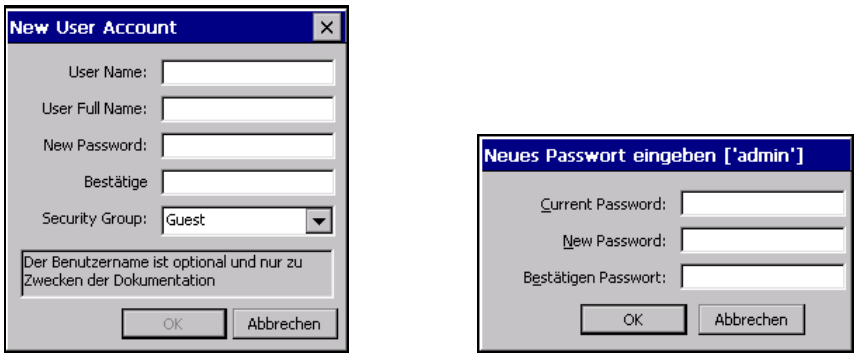


Fig. 22: Dialogs for “Create User” and “Change Password”

5.3 DATE AND TIME dialog

When you actuate the HMI/PLC TIME SYNCHRONIZATION function key in the service menu, the system synchronizes the date and time of the PLC with the setting in the operator terminal's operating system.

You can press an emergency stop button in the system as an easy test to determine the time deviation between the HMI and the PLC. You can estimate the time deviation based on the difference between the time stamp of the fault message that the system issues and the operating system time at the instant that you carry out the emergency stop. If this difference is too big, you should carry out time synchronization.

- To set the operating system time, close the application using the END APPLICATION function key and open the DATE AND TIME dialog using the task bar or the system control.

5.4 CLEANING screen

- Press the CLEANING function key on the SERVICE MENU screen.
  The system displays the following screen:

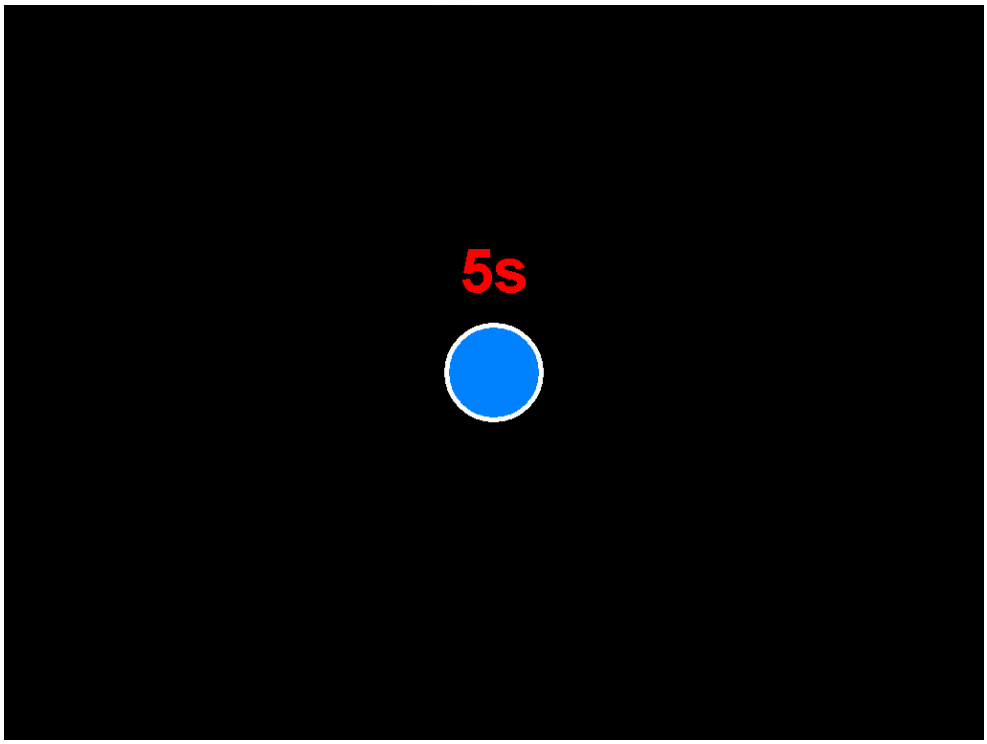


Fig. 23: CLEANING screen

- While cleaning the screen with the system running, open the CLEANING screen to avoid function keys being activated accidentally.
- To leave the screen, touch the dot in the middle and hold it down for the displayed time.

5.5 CALIBRATION screen

▶ Press the CALIBRATION function key on the SERVICE MENU screen.
The system displays the following screen:

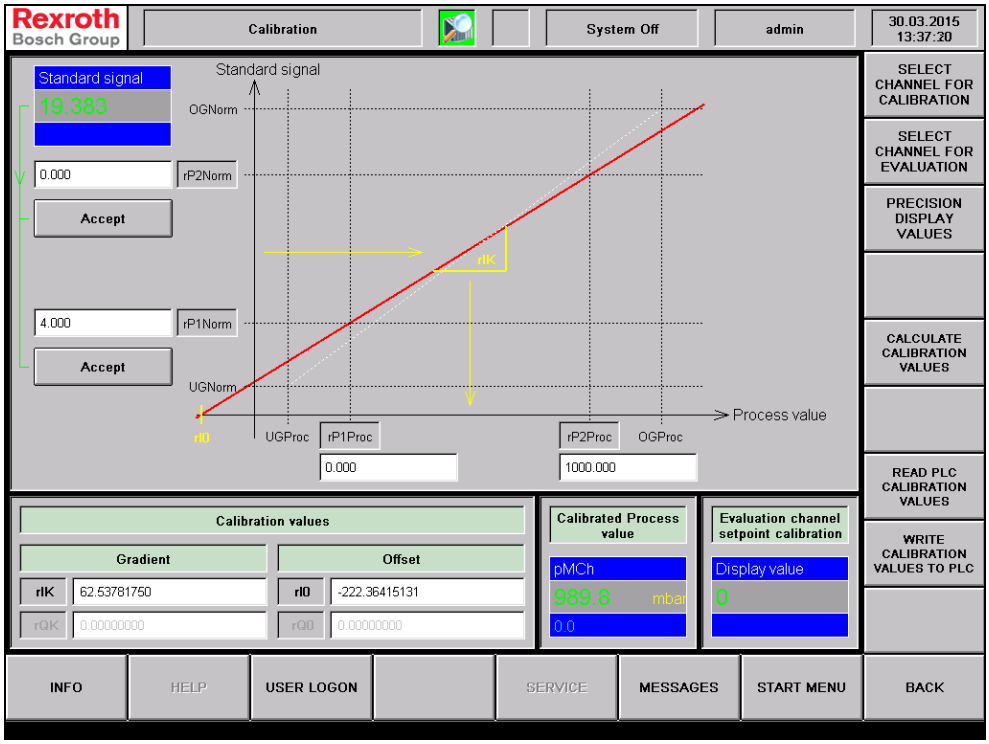


Fig. 24: CALIBRATION screen

On this screen, you calibrate all the process value channels in the system.

Calibration makes it possible to overwrite sensitive data in the control; this means that only appropriately qualified specialists are allowed to carry out calibration.

Depending on the type of calibration channel – actual value or set value – a differentiation is made between the procedures used to determine the calibration points.

You choose the calibration channel or one of the process values that may be required to evaluate the set value calibration by means of the PROCESS VALUE SELECTION dialog (c.f. chapter 4.6.1).

In the figure, the calibration channel has already been selected (process actual value pA1). The relevant calibration values and the calculation direction in the controller are shown in yellow in the diagram.

5.5.1 Process actual value calibration

- Use an appropriate standard reference to generate the process value used to calibrate process actual values and enter it at grid points “rP1Proc” or “rP2Proc”.
  The system shows the resulting analog input signal for the respective process value in the “standard signal” display field.
- Press the APPLY function key to apply the displayed value in the “rP1Norm” or “rP2Norm” value that is associated with the calibration point.

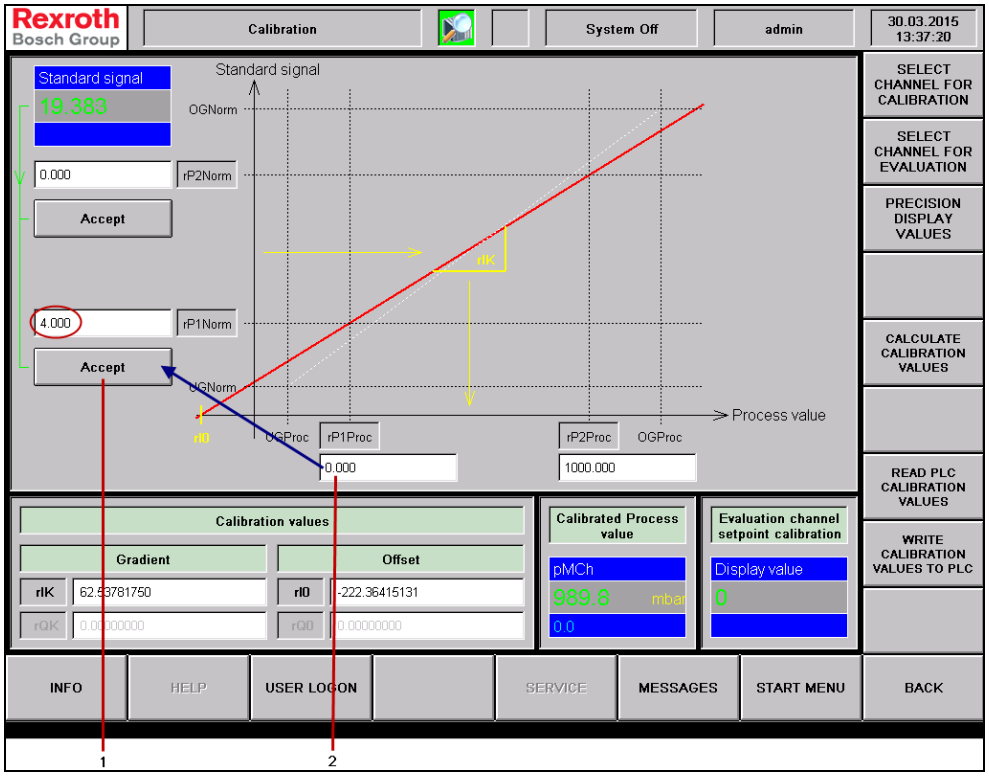


Fig. 25: PROCESS ACTUAL VALUE CALIBRATION screen

1 Apply value of standard signal **2** Input value according to standard reference

You can read out the valid calibration values from the PLC at any time. When you do this, the system only overwrites the corresponding values of the rise and shift on the PROCESS ACTUAL VALUE CALIBRATION screen. The input fields of the calibration points remain unchanged.

If plausible data has been entered for both calibration points, it is possible to calculate the new calibration values and then write them to the PLC. When the values are written, the system applies the calibration in the PLC and switches the CALIBRATED PROCESS VALUE display field to the new calibration.

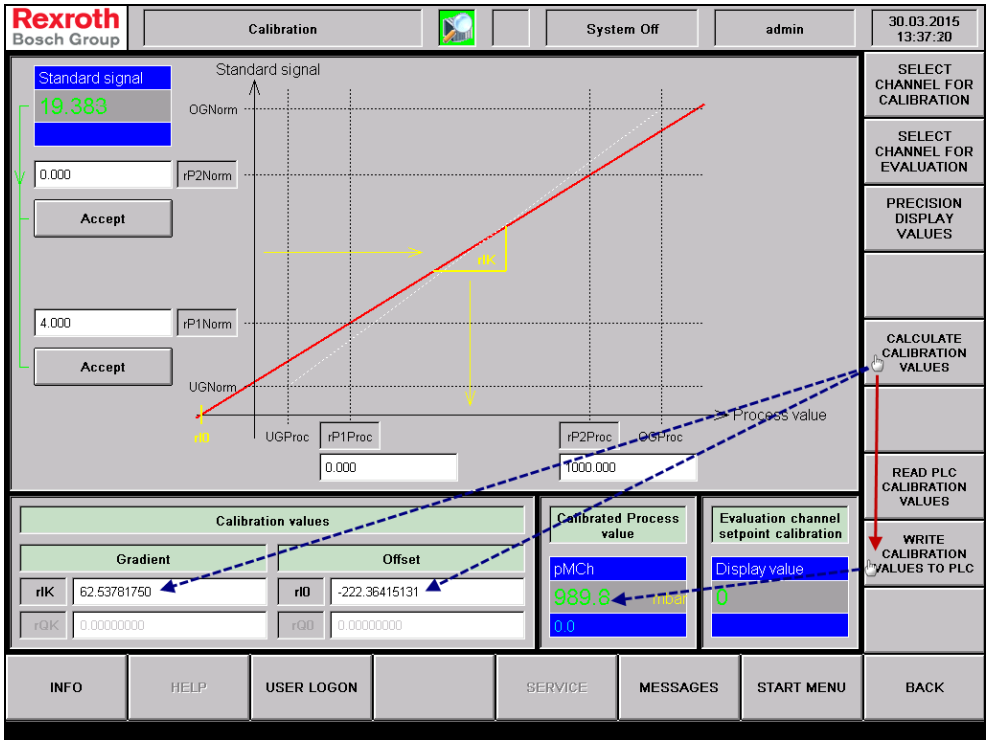


Fig. 26: CALCULATION OF CALIBRATION VALUES screen

It is possible to manually correct the calibration points and also the calibration values or to enter them directly (e.g. to enter the theoretical calibration points/values).

Summary of the steps for process actual value calibration:

- Select the process value channel to be calibrated.
- Specify the process values for calibration points “rP1Proc” and “rP2Proc” and enter them in the associated input fields.
- Create the process actual value for calibration point 1 by means of a standard reference.
- Apply the resulting standard signal for calibration point 1 (rP1Norm).
- Create the process actual value for calibration point 2 by means of a standard reference.
- Apply the resulting standard signal for calibration point 2 (rP2Norm).
- Calculate the calibration values.
- Write the calibration values to the PLC.

5.5.2 Process set value calibration

- When calibrating process set values, specify the standard signal for the associated actuating element and determine the resulting process value using an external measuring instrument or based on an evaluation channel.

You specify the standard signal via the input fields.

- To carry out specification via the input fields, press the “Activate standard signal specification via input fields” function key.
  In this case, enter the specified calibration points in fields “rP1Norm” and “rP2Norm” and press the APPLY function key.
  This outputs them to the corresponding output channel.

The figure below shows, as an example, the analog output calibration of the proportional valve control used to create the control pressure pYAux1.

The control range of analog outputs is not limited during calibration.
After applying the standard signal from the corresponding input field (“rP1Norm” or “rP2Norm”), it is output at the PLC analog output that belongs to the calibration channel. This can lead to a response of the assigned actuating element.
This means that before carrying out output calibration, you must ensure that direct standard signal specification cannot result in a hazard to people or the system.
After leaving the calibration menu, set values that may have been set before opening the menu are reactivated. This means that if you make changes to the output calibration, you should reset or deactivate the active set values.
After carrying out the output calibration, check the limit values that are set for the calibrated channel (see Fig. 28) and adjust them if necessary.

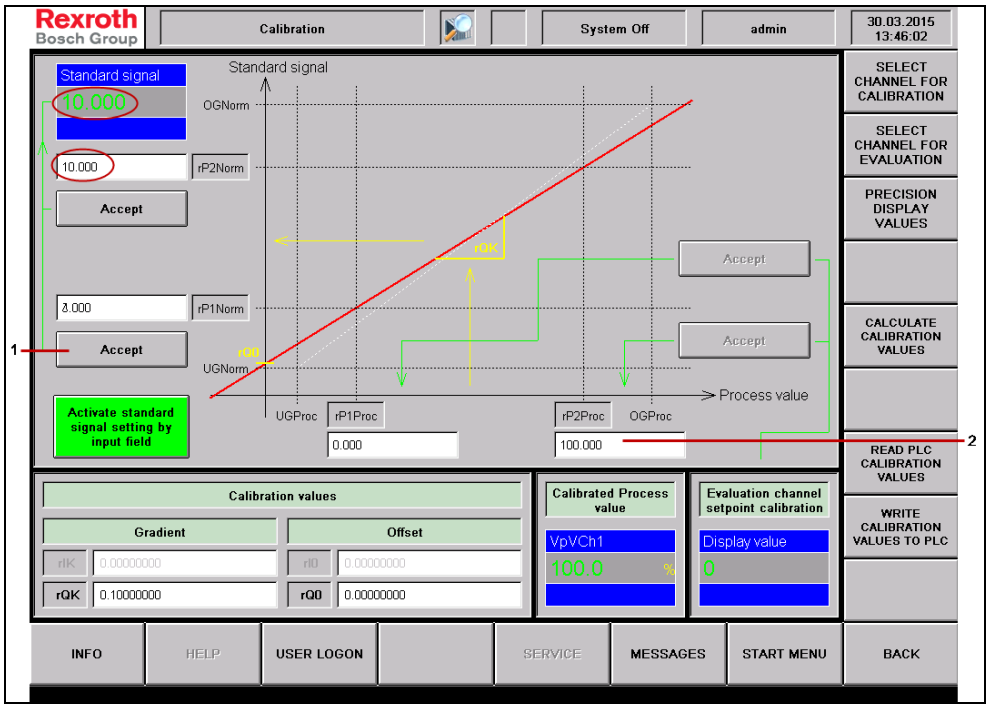


Fig. 27: PROCESS SET VALUE CALIBRATION screen

1 Set value specification as a standard signal to the PLC

2 Entry of the resulting process value or application of the value from evaluation channel

Summary of the steps for process set value calibration:

- Deactivate any set values that may still be active for the process value channels to be calibrated.
- Select the process value channel to be calibrated.
- If necessary, select a suitable evaluation channel.
- Specify the standard signal value for calibration point 1 and enter it in the “rP1Norm” input field.

Pay attention to the possible effects of direct set value output to the controlled system components.
Bosch Rexroth recommends approaching the specified calibration points step-by-step.

- Apply the standard signal for calibration point 1 (rP1Norm).
- Enter the process value for calibration point 1 in the input field for “rP1Proc” or apply the process value from the evaluation channel.
- Specify the standard signal value for calibration point 2 and enter it in the “rP2Norm” input field.
- Apply the standard signal for calibration point 2 (rP2Norm).
- Enter the process value for calibration point 2 in the input field for “rP2Proc” or apply the process value from the evaluation channel.
- Calculate the calibration values.
- Write the calibration values to the PLC.
- After leaving the calibration menu, check the set limit values for newly calibrated outputs and adjust them if necessary.

5.5.3 Resolution of display values

It may well be that the set resolution of the process values is not adequate to check a calibration. When you press the RESOLUTION OF DISPLAY VALUES function key, the system opens the dialog below in which you can increase and reduce the number of places after the decimal point that are displayed for the process value and the evaluation channel.

The setting expires as soon as you choose a new channel or leave the CALIBRATION screen.

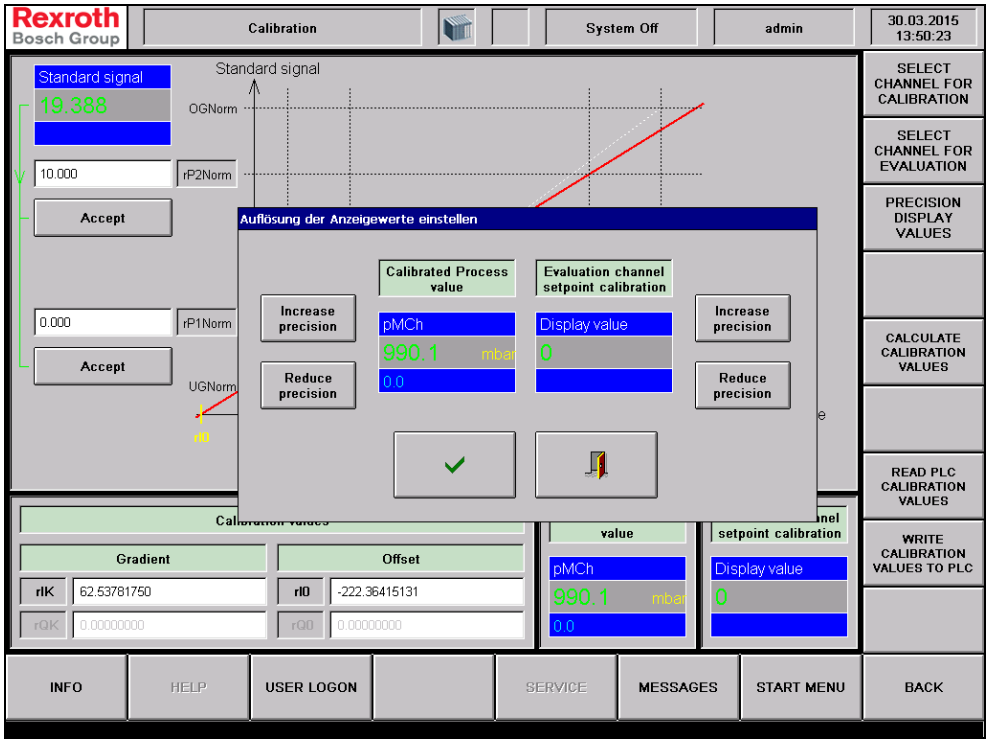


Fig. 28: RESOLUTION OF DISPLAY VALUES dialog on the CALIBRATION screen

5.6 LIMIT MONITORING screen

▶ Press the LIMIT MONITORING function key on the SERVICE MENU screen.
The system displays the following screen:

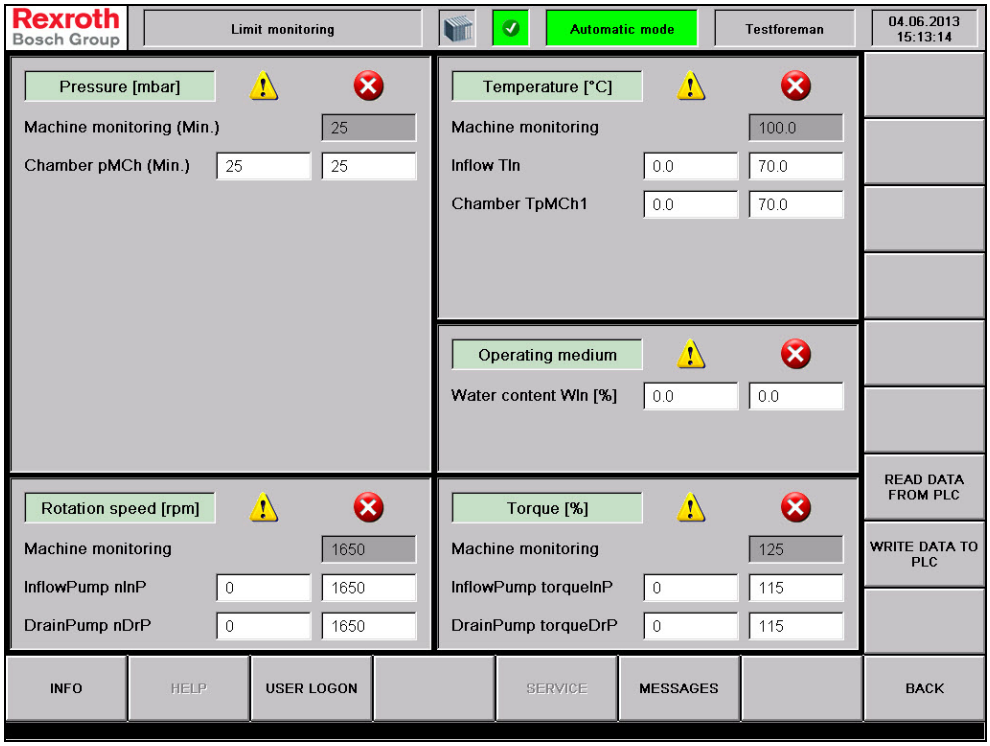


Fig. 29: LIMIT MONITORING screen

The system displays the following:

- Limit value categories:
  - Pressure
  - Temperature
  - Speed
  - Torque
  - Operating medium
- Limit values for system monitoring
  - Absolute limit for the corresponding category
- Limit values for individual system parts

On the basis of their effect, a differentiation is made between limit values by warnings and faults.

Warning limit value:
Exceeding the limit leads to the output of a warning message.

Fault limit value:
Exceeding the limit leads to a shutdown of the system and output of a fault message.

Depending on the authorization level of the logged on user, certain input fields are inactive (grayed-out) for limit values and you cannot change them. To set the values for system monitoring, you need to have at least the “ServiceCust” authorization level. To set the values of the individual channels (warning and fault), you need to have at least the “Operator” authorization level.
After changing settings, you must write them to the PLC. If a setting exceeds the maximum possible value, the PLC carries out limitation automatically. This is shown, as illustrated below, by the affected fields being colored yellow and the system displaying an information message.

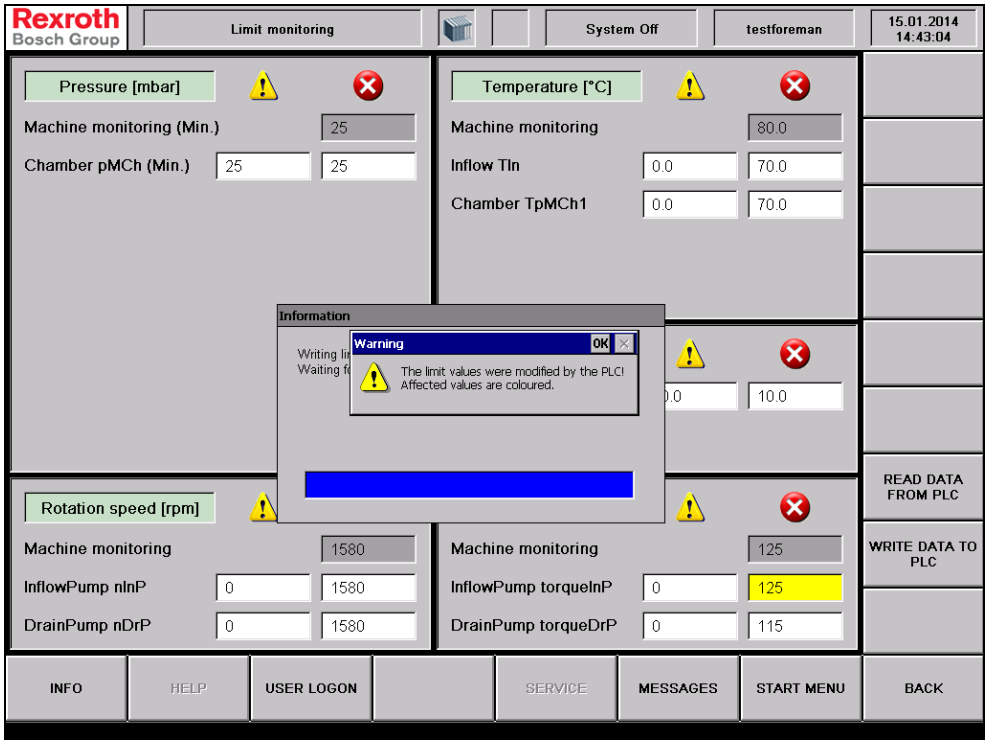


Fig. 30: Limit value adjustment by PLC

Zeroing a limit value has the effect of switching off the adjustable monitoring. However, there is still an emergency stop if the maximum possible setting is exceeded.

5.7 CONFIGURATION OF PROCESS VALUE CHANNELS screen

- Press the CONFIGURATION OF PROCESS VALUE CHANNELS function key on the START MENU screen. The system displays the following screen:

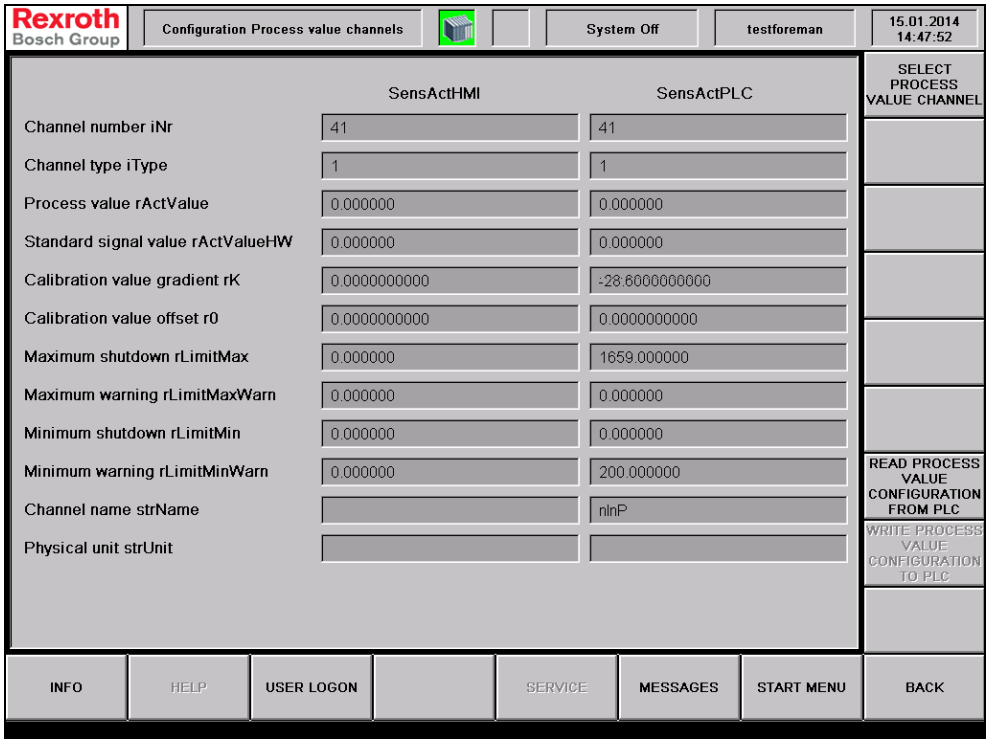


Fig. 31: CONFIGURATION OF PROCESS VALUE CHANNELS screen

The screen allows you to diagnose the configuration interface for process value channels between the PLC and the HMI and hence also obtain read access to the channel data that is stored in the PLC.

You choose the process value channel by pressing the SELECT PROCESS VALUE CHANNEL function key using the process value selection dialog that is described in chapter 4.6.2.

We will not go into any further detail about the meanings of the individual parameters here. However, if errors occur for specific process value channels during the measured value display or limit value monitoring, it is possible to use the parameters to check whether appropriate configuration data is present at all and whether cyclical updating of the process and standard signal value is being carried out.

- In a case like this, contact Bosch Rexroth-Service for further diagnostics and troubleshooting.

5.8 CONTROL PARAMETERS screen

▶ On the SERVICE MENU screen, press the CONTROL PARAMETERS function key. The system displays the following screen:

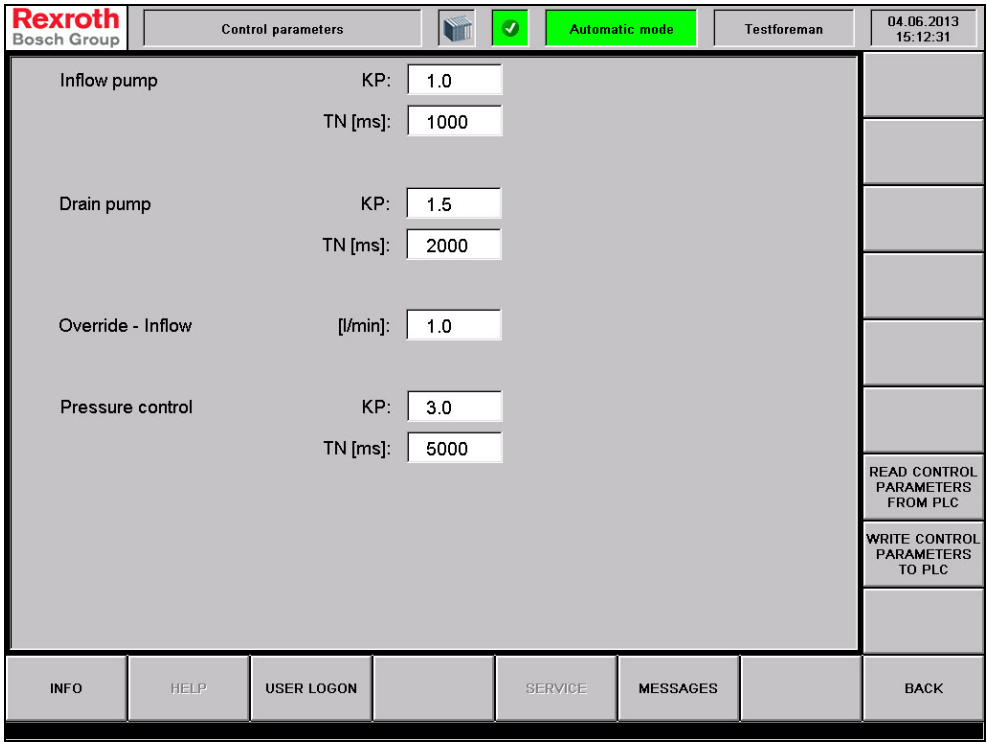


Fig. 32: CONTROL PARAMETERS screen

The system displays the control parameters below for the supply and discharge pump and for the pressure control:

- KP (proportional gain)
- TN (reset time)

Apart from this, the system displays the following set value:

- Override – supply

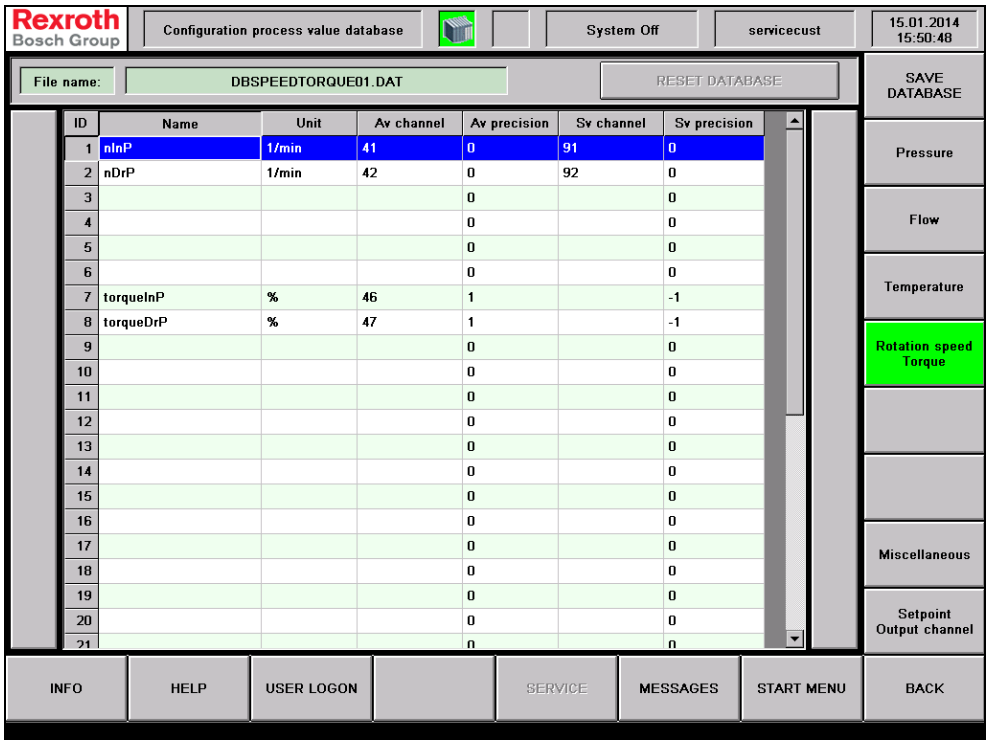
It is not possible to change these settings. To do this, you need an authorization level of “Operator” at least.

After changing settings, you must write them to the PLC. If a setting exceeds the minimum/maximum possible value, the PLC carries out limitation automatically. This is shown in a similar way to the LIMIT MONITORING screen by the affected fields being colored yellow and the system displaying an information message.

Depending on the authorization level of the logged on user, certain input fields are inactive (grayed out) and you cannot change them.

5.9 CONFIGURATION OF PROCESS VALUE DATABASE screen

▶ On the START MENU screen, press the CONFIGURATION OF PROCESS VALUE DATABASE function key. The system displays the following screen:



ID	Name	Unit	Av channel	Av precision	Sv channel	Sv precision
1	nInP	1/min	41	0	91	0
2	nDrP	1/min	42	0	92	0
3				0		0
4				0		0
5				0		0
6				0		0
7	torqueInP	%	46	1		-1
8	torqueDrP	%	47	1		-1
9				0		0
10				0		0
11				0		0
12				0		0
13				0		0
14				0		0
15				0		0
16				0		0
17				0		0
18				0		0
19				0		0
20				0		0
21				0		0

Fig. 33: CONFIGURATION OF PROCESS VALUE DATABASE screen

This configuration menu allows access to the process values database. The data contains all the channel-specific information for display on the measured value display and assignment to the PLC interface.

Name: Process value designation for display field and selection dialogs

Unit: Unit of the process value displayed in the display field

Iw channel: Channel number of the process value for interface communication with the PLC

Iw resolution: Number of displayed decimal places of the process value in the display field

Sw channel: Channel number of a set value that is assigned to the process value

Sw resolution: Number of displayed decimal places of the set value in the display field

The database is the basis of many display and configuration functions in conjunction with the process values. Since changes to the database can result in malfunctions of the operating interface and the system, only users with authorization level “ServiceCheP” and above are allowed to make them.

It is possible to restore missing or damaged database files to the factory settings once you have chosen a category and if you have authorization level “ServiceCust” or above by pressing the RESET DATABASE function key.

5.10 SYSTEM STATUS screen

▶ On the SERVICE MENU screen, press the STATUS MONITORING function key.
The system displays the following screen:

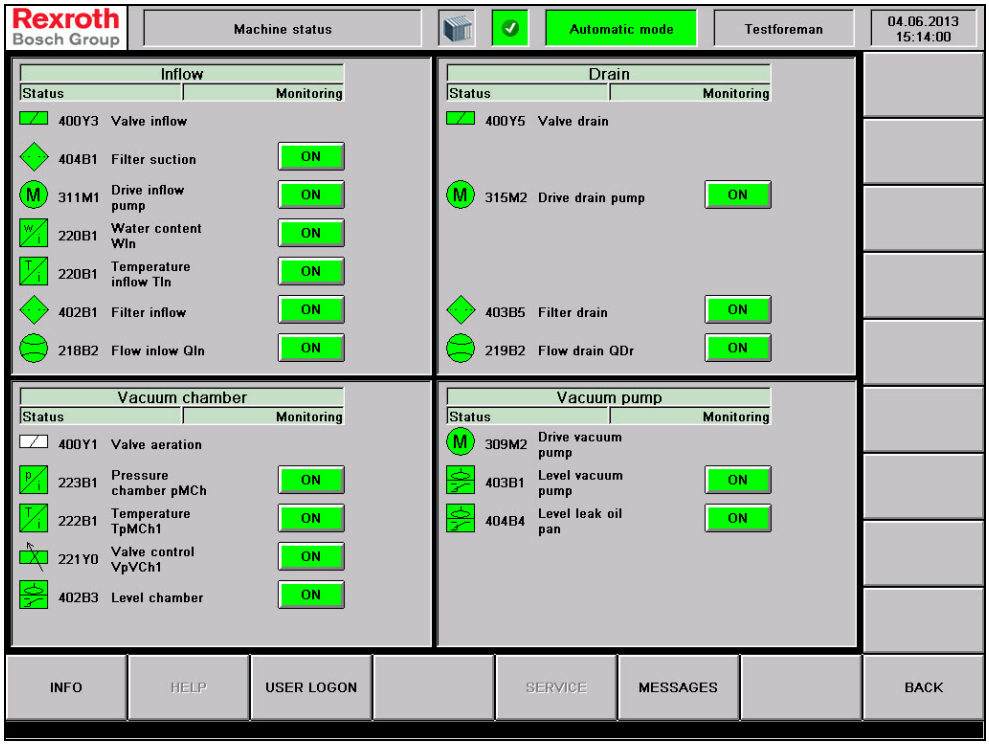


Fig. 34: SYSTEM STATUS screen

The status screens show colored symbols indicating the status of the relevant components for the selected system component.

The colors of the component status have the following meanings:

Gray: Deactivated/no voltage supply

White: Switched off

Green: Switched on, trouble-free operation

Yellow: Warning

Red: Fault

In manual mode, you can deactivate the monitoring of individual system parts. The system only issues warnings instead of errors for these system parts. This means that it is possible to continue operation of the system in an error case.

5.11 OPERATING HOURS screen

▶ On the SERVICE MENU screen, press the OPERATING HOURS function key.
The system displays the following screen:

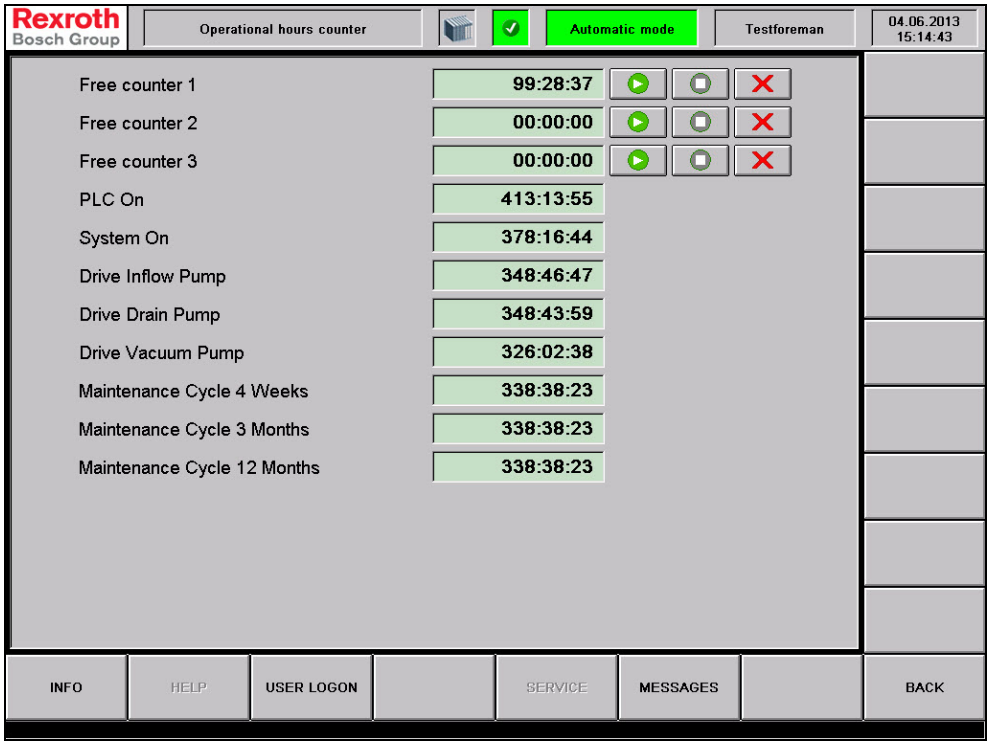


Fig. 35: OPERATING HOURS screen

The OPERATING HOURS screen displays the following operating hours counters:
- Free counters 1, 2, 3
- PLC switched on
- System switched on
- Drive of inflow pump
- Drive of discharge pump
- Drive of vacuum pump
- Maintenance cycle of 4 weeks
- Maintenance cycle of 3 months
- Maintenance cycle of 12 months

Operators can start, stop and reset the free counters. The PLC directly controls all the other counters. From the “ServiceCust” authorization level onwards, manual resetting is possible.

5.12 LAMP TEST function key

▶ On the SERVICE MENU screen, press the LAMP TEST function key.
Using this function key, all the lamps on the front of the control cabinet light up for 10 s. This allows you to see which lamps are defective.

5.13 PROFIBUS DIAGNOSIS screen

▶ On the START MENU screen, press the PROFIBUS DIAGNOSIS function key.
The system displays the following screen:

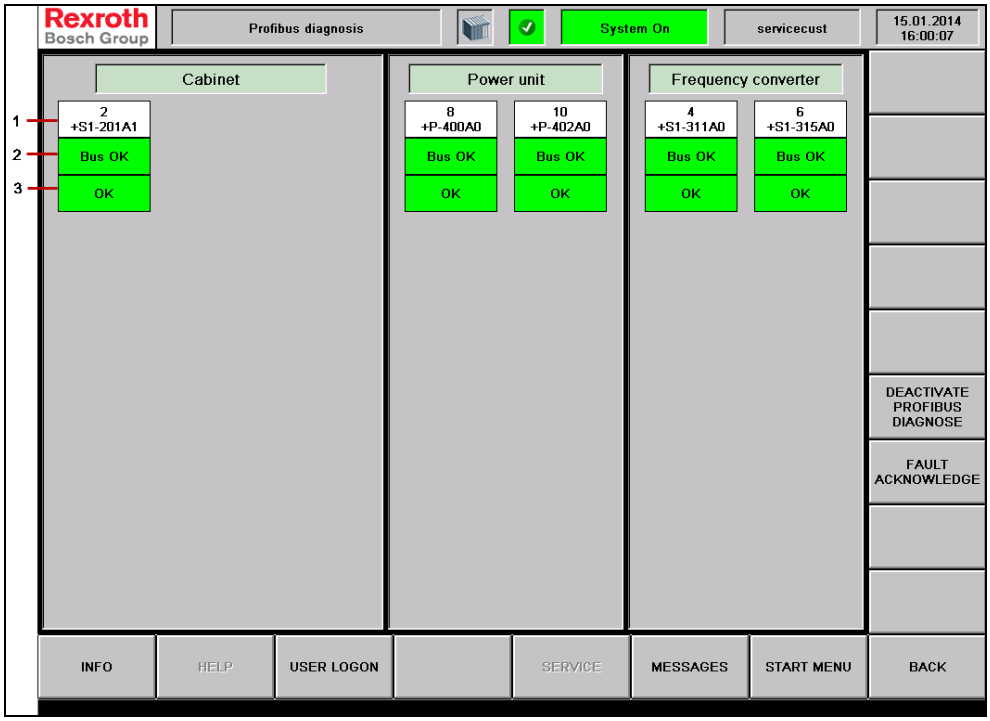


Fig. 36: PROFIBUS DIAGNOSIS screen

1 Profibus address electrical BMK
2 Current bus bus status
3 Current system status

The PROFIBUS DIAGNOSIS screen displays the status of the Profibus nodes in the selected system component:
- Profibus address with electrical equipment label
- Current bus status
- Current system status

The status image below is available for the listed system parts:
- Control cabinet
- Power unit
- Frequency converter

5.13.1 Bus status

Not configured (white)
The slave with the address in question was not configured in the master; no data exchange is possible.

Bus disrupted (yellow)
The slave with the address in question was configured in the master; it is possible to exchange data. However, the node reports an error state. You must check in each case whether the error state results in the function being limited.

Causes for the node being disrupted might be:
- Missing supply voltage
- Faulty bus cable (short-circuit, break, terminating resistor)
- Wrong device type or configuration

Bus OK (green)
The slave with the address in question was configured in the master; it is possible to exchange data. The node is fault-free.

5.13.2 System status

OK (green or white)
The current bus status (see above) does not represent an error state for the system.

Error active (red)
The current bus status represents an error state for the system. Only a limited range of functions is available.

Disrupted saved (yellow)
The current bus status does not represent an error state for the system. In the past however, the DISRUPTED bus status was registered which represented an error for the system when it occurred.

Failed saved (yellow)
The current bus status does not represent an error state for the system. In the past however, the FAILED bus status was registered, which represented an error for the system when it occurred.

By saving system error statuses, it is also possible to diagnose errors that were only present for a very short time (e.g. loose contacts).

5.13.3 Deactivating Profibus diagnostics

You can deactivate the evaluation of the Profibus statuses by pressing the DEACTIVATE PROFIBUS DIAGNOSTICS function key. The color of the function key indicates the status of the diagnosis:

Gray:
Profibus diagnosis activated

Green:
Profibus diagnosis deactivated

Permanently deactivated Profibus diagnosis would not detect error states; this can lead to malfunctions and represent a hazard to people and the system.

6 Alphabetical index

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Änderungen vorbehalten
Printed in Germany
RE 51474-KB/04.21