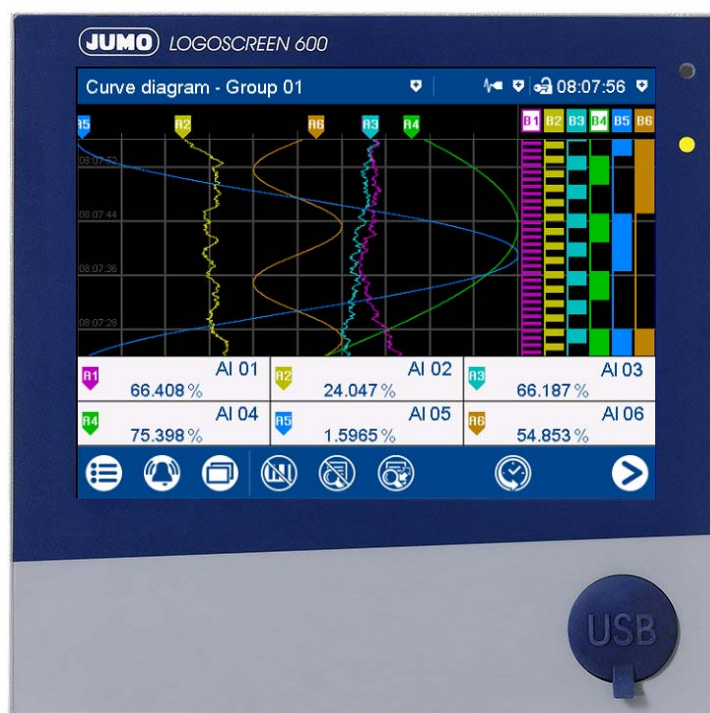


JUMO LOGOSCREEN 600

Paperless Recorder with Touchscreen

OneTemp[®] Pty Ltd
MEASURE | CONTROL | RECORD
www.onetemp.com.au
1300 768 887



Brief Instructions



70652000T97Z001K000

V2.00/EN/00625186

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1.1 Safety information

1.1.1 Warning symbols



DANGER!

This symbol indicates that **personal injury caused by electrical shock** may occur if the respective precautionary measures are not carried out.



WARNING!

This symbol in connection with the signal word indicates that personal injury may occur if the respective precautionary measures are not carried out.



CAUTION!

This symbol in connection with the signal word indicates that **damage to assets or data loss** will occur if the respective precautionary measures are not taken.



CAUTION!

This symbol indicates that **components could be destroyed** by electrostatic discharge (ESD = Electro Static Discharge) if the respective cautionary measures are not taken. Only use the ESD packages intended for this purpose to return device inserts, assembly groups, or assembly components.



READ DOCUMENTATION!

This symbol – placed on the device – indicates that the associated **device documentation has to be observed**. This is necessary to recognize the kind of the potential hazards as well as the measures to avoid them.

1.1.2 Note symbols



NOTE!

This symbol refers to **important information** about the product, its handling, or additional use.



REFERENCE!

This symbol refers to **further information** in other sections, chapters, or manuals.



FURTHER INFORMATION!

This symbol is used in the tables and refers to **further information** in connection with the table.



DISPOSAL!

This device and the batteries (if installed) must not be disposed in the garbage can after use! Please ensure that they are disposed properly and in an **environmentally friendly manner**.

1 Introduction

1.1.3 Intended use

The device is designed for use as a paperless recorder in an industrial environment as specified in the technical data. Other uses or uses beyond those defined are not viewed as intended uses.

The device has been manufactured in compliance with applicable standards and directives as well as applicable safety regulations. Nevertheless, personal injury or material damage may occur in the event of improper use.

To avoid danger, the device may only be used:

- For the intended use
- When in good order and condition
- When taking into account the technical documentation provided

Risks resulting from the application may arise, e.g. as the result of missing safety provisions or wrong settings, even when the device is used properly and as intended.

1.1.4 Qualification of personnel

This document contains the necessary information for the intended use of the device to which it relates.

It is intended for staff with technical qualifications who have been specially trained and have the appropriate knowledge in the field of automation technology.

The appropriate level of knowledge and the technically fault-free implementation of the safety information and warnings contained in the technical documentation provided are prerequisites for risk-free mounting, installation, and startup as well as for ensuring safety when operating the described modules. Only qualified personnel have the required specialist knowledge to correctly interpret and implement the safety information and warnings contained in this document in specific situations.

1.2 Acceptance of goods, storage, and transport

1.2.1 Checking the delivery

- Ensure that the packaging and contents are not damaged
- Check that the delivery is complete using the delivery papers and the order details
- Inform the supplier immediately if there is any damage
- Store damaged parts until clarification is received from the supplier

1.2.2 Notes on storage and transport

- Store the device in a dry, clean environment. Observe the admissible environmental conditions (see "Technical data")
- Protect the device from shock during transport
- The original packaging provides optimum protection for storage and transport

1.2.3 Returning goods

In the event of repair, return the complete device in clean condition.
Use the original packaging to return goods.

Accompanying letter for repair

Please include the completed accompanying letter for repair when returning goods.
Do not forget to state the following:

- Description of the application and
- Description of the error that has occurred

The accompanying letter for repair can be downloaded online from the manufacturer's homepage (use the search function if necessary).

Protection against electrostatic discharge (ESD)

(ESD = electrostatic discharge)

To prevent damage due to ESD, electronic modules or components must be handled, packaged, and stored in an ESD-protected environment. Measures against electrostatic discharge and electrical fields are described in DIN EN 61340-5-1 and DIN EN 61340-5-2 "Protection of electronic devices from electrostatic phenomena".

When returning electronic modules or components, please note the following:

- Pack sensitive components only in an environment providing protection against ESD. Workspaces such as this divert electrostatic charges to ground in a controlled manner and prevent static charges due to friction.
- Use only packaging intended specifically for ESD-sensitive modules/components. These must consist of conductive plastics.

No liability can be assumed for damage caused by ESD.

1 Introduction



CAUTION!

Electrostatic charges occur in non-ESD-protected environments.
Electrostatic discharges can damage modules or components.
For transport purposes, use only the ESD packaging provided.

1.2.4 Disposal

Disposing of the device



DISPOSAL!

Devices and/or replaced parts should not be placed in the refuse bin at the end of their useful life as they consist of materials that can be recycled by specialist recycling plants.

Dispose of the device and the packaging material in a proper and environmentally friendly manner.

For this purpose, observe the country-specific laws and regulations for waste treatment and disposal.

Disposing of the packaging material

The entire packaging material (cardboard packaging, inserts, plastic film, and plastic bags) is fully recyclable.

1.3 Identifying the device version

1.3.1 Nameplate

The nameplate is affixed to the case.

Contents

The nameplate contains important information. This includes:

Description	Description on the nameplate	Example
Device type	Type	706520/18-100-25/260
Part no.	PN	00XXXXXX
Serial number	F-no.	0070033801215510006
Voltage supply	-	DC 24 V +25/-20 %

Device type (type)

Compare the specifications on the nameplate with the order.

Identify the supplied device version using the order details (order code).

Part no. (PN)

The part no. clearly identifies an article in the catalog. It is important for communication between the customer and the sales department.

Fabrication no. (F-no.)

Among other things, the fabrication number contains the date of production (year/week).

Example: F-no. = 00700338012**155**10006

The characters in question are in positions 12, 13, 14, and 15 (from the left).

The device was therefore produced in the 51st calendar week of 2015.

1 Introduction

1.3.2 Order details

(1) Basic type	
706520	Paperless recorder with 1x Ethernet, 2x USB (1x host, 1x device), and 1x RS232/485 interface and one relay
(2) Basic type extension	
0	Without software package
1	With software package (setup program incl. USB cable, PC Evaluation Software PCA3000, PCA Communication Software PCC)
(3) Language	
8	Set per default (German/English)
9	Set according to customer specifications
(4) Option 1 (expansion slot 1)¹	
0	Not used
1	3 analog and 6 digital inputs, 1 analog output
(5) Option 2 (expansion slot 2)^a	
0	Not used
1	3 analog and 6 digital inputs, 1 analog output
(6) Option 3 (expansion slot 3)^a	
0	Not used
1	12 digital inputs/outputs (independently configurable as input or output)
(7) Voltage supply	
23	AC 110 to 240 V +10/-15 %, 48 to 63 Hz
25	AC/DC 20 to 30 V, 48 to 63 Hz
(8) Extra code	
.	Not used
260	Math and logic module (6 channels each)

¹ Subsequent expansion is only possible in JUMO Central Services.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)				
Order code	<input type="text"/>	/	<input type="text"/>	<input type="text"/>	-	<input type="text"/>	<input type="text"/>	<input type="text"/>	-	<input type="text"/>	/	<input type="text"/>
Order example	706520	/	1	8	-	1	0	0	-	25	/	260

1.3.3 Scope of delivery

1 paperless recorder in the ordered version
1 brief instructions
4 mounting elements
1 CD with detailed operating manual and supplementary documentation

1.3.4 Accessories

Description	Part no.
Setup program	00645110
USB cable, A-plug to micro-B-plug, 3 m	00616250
PC Evaluation Software PCA3000	00431882
PCA Communication Software PCC	00431879
USB memory stick, 2 GB ¹	00505592
Activation for math and logic module (setup program required)	00393217

¹ The USB memory stick indicated has been tested and is designed for industrial applications. No liability is assumed for other brands.

1 Introduction

1.4 Content of the technical documentation

The documentation for this device is addressed to equipment manufacturers (OEMs) and users with appropriate technical expertise; it consists of the following documents.

1.4.1 Device documentation in printed form

70652000T97...

Brief instructions

A hard copy of the brief instructions is part of the scope of delivery of the device.

The brief instructions describe the installation, the electrical connection and the operation of the device. They also contain the order details and a list of technical data.

The brief instructions are an excerpt from the operating manual.

1.4.2 Device documentation in the form of PDF files

The documents specified below are stored as PDF files on the CD contained in the scope of delivery of the device. They can also be downloaded from the manufacturer's website.

70652000T10...

Data sheet

The data sheet contains general information about the device, the order details, and the technical data. It forms the basis for selecting the device and making a purchasing decision.

70652000T90...

Operating manual

The operating manual contains full details on installation, the electrical connection, operation, parameterization and configuration of the device. In addition, it contains the order details and a list of technical data.

In the case of the present device, the operating manual also describes the use of the setup program (PC program) with which the device can also be configured.

70652000T92...

Interface description (Modbus)

The interface description provides information on communication with other devices or super-ordinate systems using the Modbus protocol (Modbus RTU, Modbus/TCP).

In the case of the present device, the interface description contains specifications on communication via Ethernet.

70652000T97...

Brief instructions

The brief instructions are also available as a PDF file and have the same scope as the printed document.

1.4.3 Documentation for optional software

The following manuals in the form of PDF files are available for download from the manufacturer's website. They also form part of the scope of delivery of the respective software.

B 709701.0

PC Evaluation Software PCA3000

The operating manual describes the operation and the features of the PC Evaluation Software. The PC Evaluation Software helps to visualize and evaluate the recorded registration data (measurement data, batch data, messages, etc.).

B 709702.0

PCA Communications Software PCC

The operating manual describes the operation and the features of the PCA Communication Software. The PCA Communication Software is responsible for the data transfer from a device or system to a PC or to a network.

1 Introduction

2.1 Brief description

The JUMO LOGOSCREEN 600 paperless recorder features a resistive touchscreen and an intuitive, icon-based operation and visualization concept that makes it very easy to use.

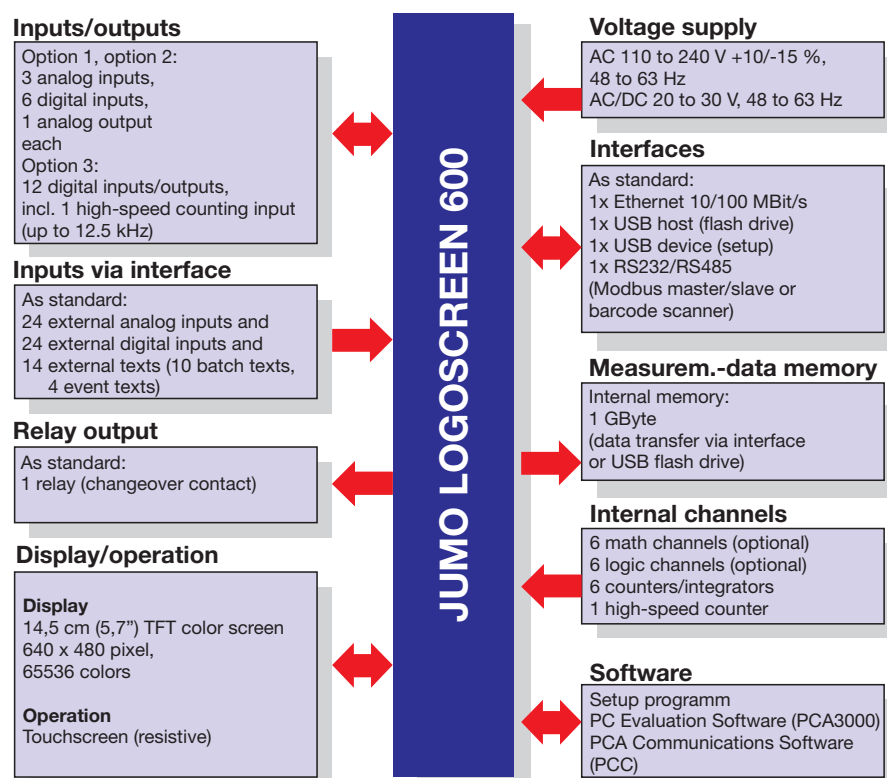
There are different versions of the JUMO LOGOSCREEN 600 available for process data recording. These range from the device version without measuring input in which up to 24 process values are read (master) or received (slave) from external systems via Modbus, through to a device version with six measuring inputs (universal analog inputs), two analog outputs, 12 digital inputs, and 12 individually switchable digital inputs/outputs.

The JUMO LOGOSCREEN 600 can display data using the default visualizations, such as curve diagram (vertical or horizontal), bar graph, text image (numerical), or digital diagram. For batch-related processes a special batch recording is available which allows the storage of additional information. In addition, users can create up to six individual process screens with up to 100 objects per process screen to fit their requirements using the setup program.

High-performance PC programs are available to evaluate archived data.

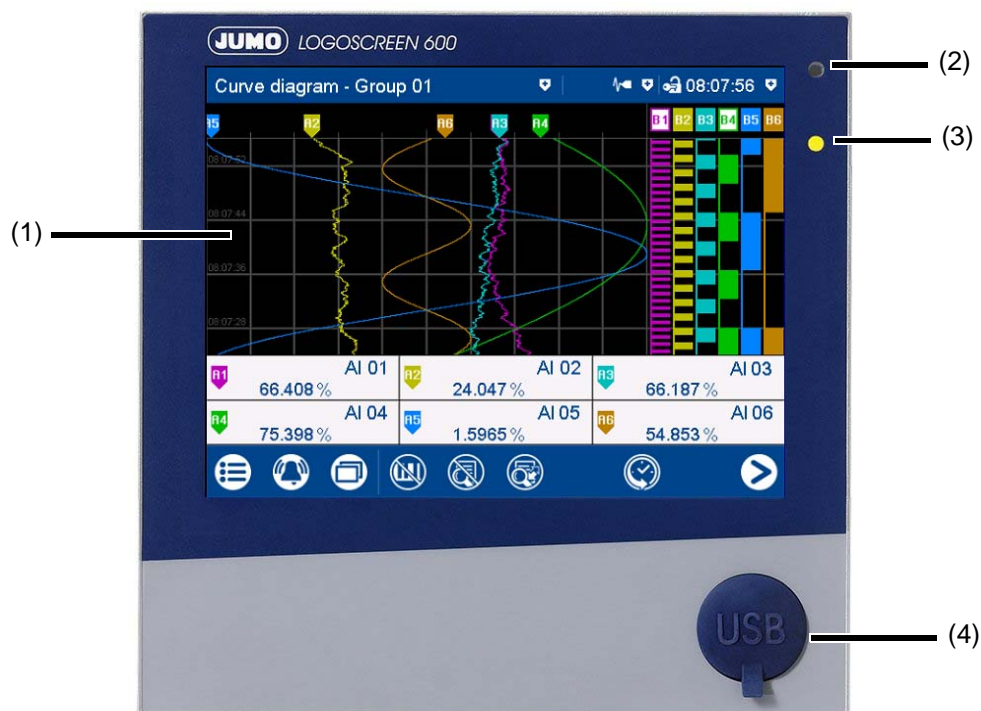
In addition to the setup program which enables time-saving startup and documentation on the PC, there are two high-performance PC programs for read-out, archiving and evaluation of process data (PCC and PCA3000).

2.2 Block diagram



2 Description

2.3 Display and control elements



- (1) Touchscreen (TFT color screen)

Technical data:

⇒ Chapter 6.1.7 "Screen", page 68

The screen appearance is described in the "Operation" chapter.

⇒ Chapter 5.1.1 "Touchscreen", page 31

- (2) Alarm LED

The LED is lit while an alarm is pending.

- (3) Power LED

The LED flashes after switching on the device until the startup process is completed. It is then permanently lit.

- (4) USB host interface with cover

To remove the cover, take hold of the lug and pull it out.



CAUTION!

Protection type IP65 (front-side) only with closed USB host interface.

Protection type IP65 is only guaranteed with the available default cover of the USB host interface.

Only remove the cover to use the interface; then remount the cover immediately (the cover must be flush with the front of the device).

2.4 Connection elements

The connecting elements on the rear of the device and the front-side USB host interface are described in the "Electrical connection" chapter.

⇒ Chapter 4.3 "Connection elements", page 25

3.1 General information on installation

**WARNING!**

The device is not designed for use in potentially explosive areas.
There is the risk of an explosion.
Only deploy the device outside of potentially explosive areas.

Mounting site

The device is designed for installation in a panel cut-out. The front of the device and housing have different protection types (see technical data).

Climatic conditions

The ambient temperature and the relative humidity at the mounting site must correspond to the technical data. Aggressive gases and vapors have a negative effect on the operating life of the device. The mounting site must be free from dust, powder, and other suspended matter.

Installation position

The installation position is not specified, however the screen view angle must be taken into consideration (see technical data).

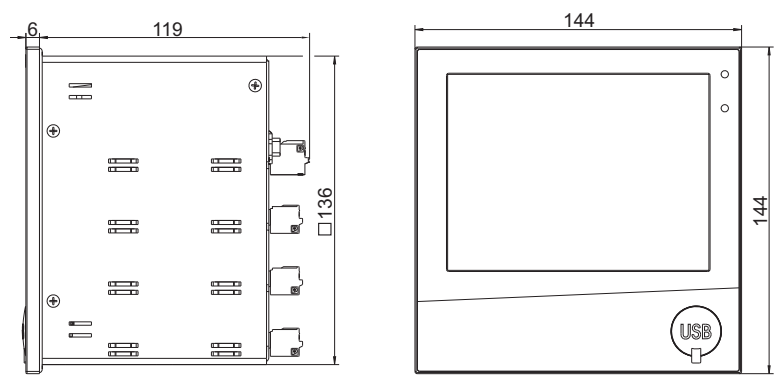
Technical data

⇒ Chapter 6.1 "Technical data", page 63

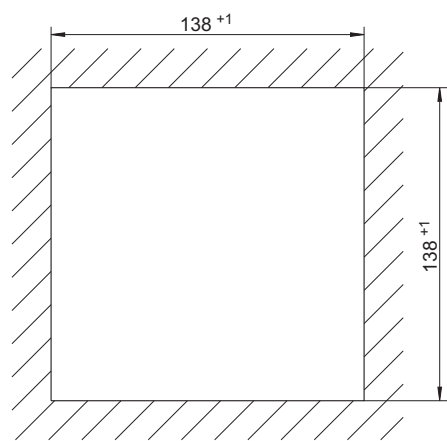
3 Installation

3.2 Dimensions

Device



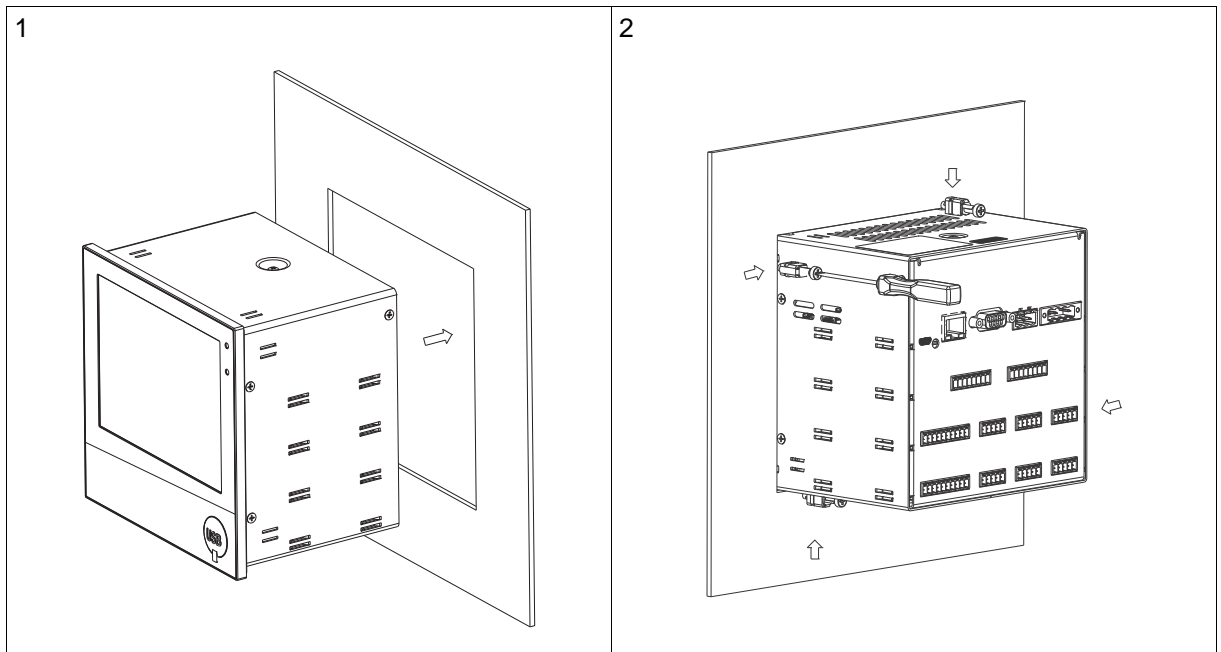
Panel cut-out



Close mounting

Distance between panel cut-outs	Horizontal	Vertical
Minimum clearance	20 mm	20 mm
Recommended distance (easier installation of fastening elements)	50 mm	50 mm

3.3 Panel mounting



Step	Activity
1	Insert the device into the panel cut-out from the front until the seal is flush with the panel.
2	Insert the fastening elements into the recesses of the housing (one element on each corner, see figure) and use a screwdriver to evenly clamp them against the rear side of the panel with a torque of 1.0 Nm.



CAUTION!

The front of the device and case have different protection types.
The protection type IP65 (front-side) is only guaranteed if the seal is flush and even.
The four supplied fastening elements must all be used and distributed evenly as shown in the figure.

3 Installation

3.4 Handling the front of the device

Cleaning

The front of the device (front foil) can be cleaned with standard detergents, rinsing and cleaning agents.

**CAUTION!**

The front of the device is not resistant to aggressive acids and lyes, scouring agents, and cleaning with a pressure cleaner.

Use of these media can cause damage.

Only clean the front of the device with suitable agents.

Operation

The screen (resistive touchscreen) can be operated by finger pressure or with a commercially available touchscreen stylus.

**CAUTION!**

Sharp or hard objects are not suitable for operating the screen.

They can cause scratches and damage the front foil.

Only operate the screen with your finger or with a suitable stylus.

4.1 Installation notes

Requirements for personnel

- Work on the device must only be carried out to the extent described and, like the electrical connection, only by qualified personnel.
- Before plugging and unplugging connecting cables, it must be ensured that the acting person is electrostatically discharged (by touching grounded metallic parts, for example).

Cables, shielding, and grounding

- When selecting the electrical wiring material as well as when installing and connecting the device electrically, comply with the requirements of DIN VDE 0100 "Low-voltage electrical installations" and the applicable country-specific regulations (for example, based on IEC 60364).
- Route input, output, and supply cables separately and not parallel to one another.
- Only use shielded and twisted probe and interface cables. Do not route the lines close to current-carrying components or cables.
- For temperature probes, ground the shielding on one side in the control cabinet.
- Do not perform loopthroughs on the grounding cables, but route the cables individually to a shared grounding point in the control cabinet; in doing so, ensure that the cables are as short as possible.
Ensure that the potential equalization is correct.

Electrical safety

- The device is intended to be installed in control cabinets or plants. Ensure that the customer's fuse protection does not exceed 20 A. Disconnect the device from the mains voltage on all poles prior to starting service or repair work.
- The relay's load circuit can be operated with a hazardous electrical voltage (e.g., 230 V). De-energize the load circuit during mounting/dismounting and electrical connection.
- To prevent the relay contacts being destroyed in the case of an external short-circuit in the load circuit, the latter must be fuse-protected as per the maximum admissible relay current (see technical data).
- The device is not suitable for installation in potentially explosive areas.
- In addition to a faulty installation, incorrectly set values on the device can also impair the correct function of the downstream process. Therefore, ensure that safety devices independent of the device, e.g., overpressure valves or temperature limiters/monitors, are available and that it is only possible for qualified personnel to define settings. Please observe the corresponding safety regulations in this context.

References to other information

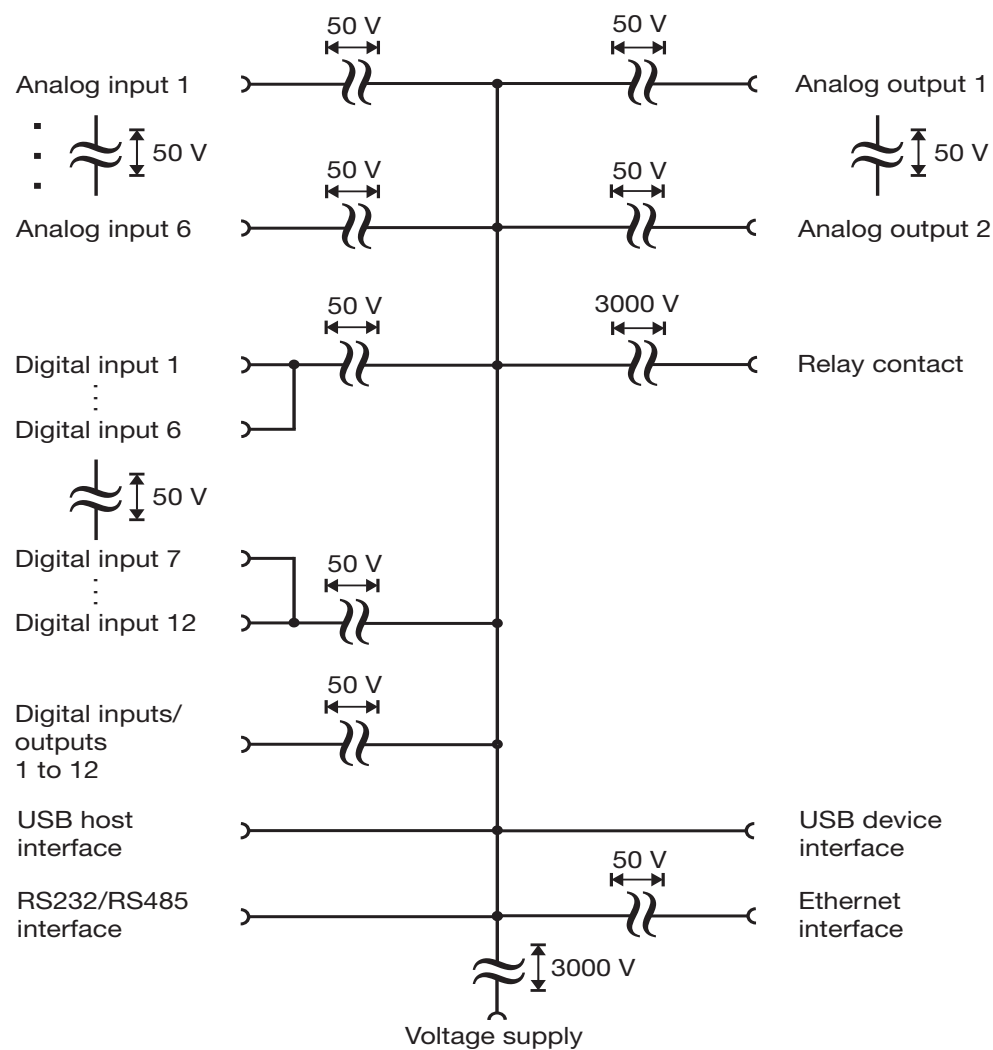
- Electromagnetic compatibility meets the standards and regulations cited in the technical data (see technical data).
- In general, please observe the specifications regarding galvanic isolation.

Technical data

- ⇒ Chapter 6.1 "Technical data", page 63

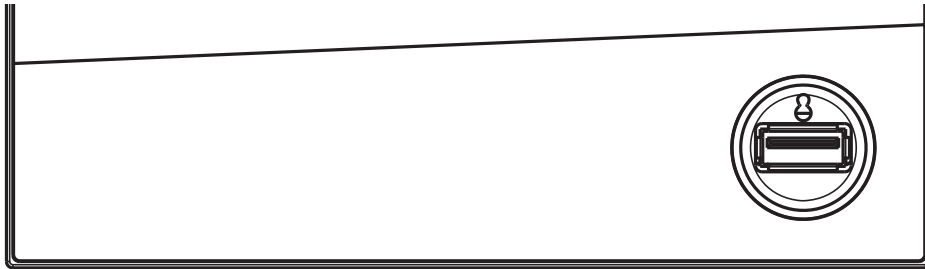
4 Electrical connection

4.2 Galvanic isolation

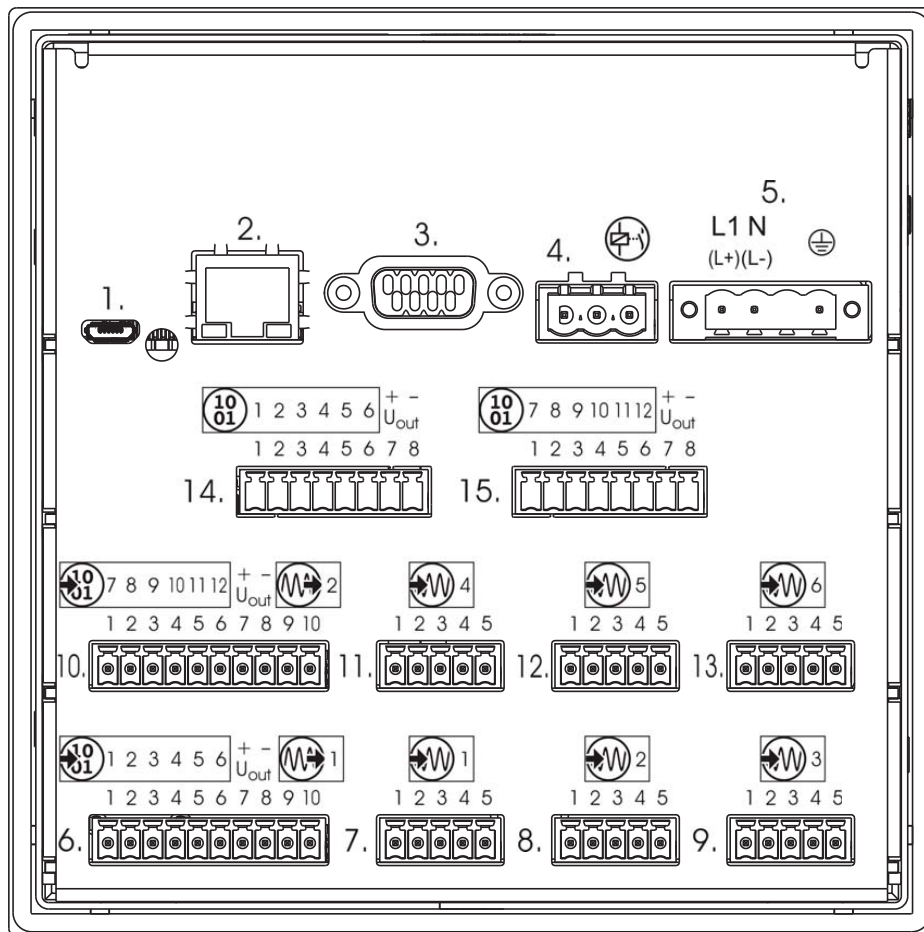


4.3 Connection elements

Front USB host interface (without cover)



Back connection elements



Connection element and assignment

1. USB device interface
3. RS232/RS485 interface
5. Voltage supply
7. Analog input 1
9. Analog input 3
11. Analog input 4
13. Analog input 6
15. Digital inputs/outputs 7 to 12

Connection element and assignment

2. Ethernet interface
4. Relay
6. Digital inputs 1 to 6, analog output 1
8. Analog input 2
10. Digital inputs 7 to 12, analog output 2
12. Analog input 5
14. Digital inputs/outputs 1 to 6

4 Electrical connection



NOTE!

The front-side USB host interface is intended for connecting a USB flash drive. Any other use is not admissible.



NOTE!

The quality of the USB cable and the USB flash drive has an influence on the correct function of the device. It is recommended to use the components provided by the manufacturer (accessories).



CAUTION!

The device is not suitable for connecting to a PoE (Power over Ethernet) port. There is a risk of damage to the device. Connect the device to an Ethernet port without PoE.

4.4 Connection diagram

4.4.1 Analog inputs 1 to 6 (options 1 and 2)

Measuring probe	Connection element / Assignment	Terminals and connection symbol
Thermocouple	7. / Analog input 1 8. / Analog input 2 9. / Analog input 3	
RTD temperature probe two-wire circuit	11. / Analog input 4 12. / Analog input 5 13. / Analog input 6	
RTD temperature probe three-wire circuit		
RTD temperature probe four-wire circuit		
Resistance transmitter		
Resistance/potentiometer two-wire circuit		

4 Electrical connection

Measuring probe	Connection element / Assignment	Terminals and connection symbol
Resistance/potentiometer three-wire circuit	7. / Analog input 1 8. / Analog input 2 9. / Analog input 3	
Resistance/potentiometer four-wire circuit	11. / Analog input 4 12. / Analog input 5 13. / Analog input 6	
Voltage DC -10(0) to +10 V		
Voltage DC -1(0) to +1 V		
Voltage DC 0 to 70 mV		
Current DC 0(4) to 20 mA		

4 Electrical connection

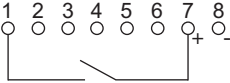
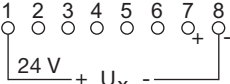
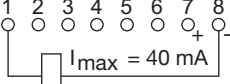
4.4.2 Digital inputs 1 to 12 (options 1 and 2)

Version	Connection element.Terminal / Assignment	Terminals and connection symbol
Digital input DC 0/24 V, auxiliary voltage (output) DC 24 V (50 mA, per option)	6.1 / Digital input 1 6.2 / Digital input 2 6.3 / Digital input 3 6.4 / Digital input 4 6.5 / Digital input 5 6.6 / Digital input 6 6.7 / +24 V 6.8 / GND 10.1 / Digital input 7 10.2 / Digital input 8 10.3 / Digital input 9 10.4 / Digital input 10 10.5 / Digital input 11 10.6 / Digital input 12 10.7 / +24 V 10.8 / GND	<p>Example: potential-free contact at input 1 and +24 V (auxiliary voltage)</p> <p>Example: external voltage at input 1 and GND</p>


4.4.3 Analog outputs 1 and 2 (options 1 and 2)

Version	Connection element.Terminal / Assignment	Terminals and connection symbol
Analog output DC 0 to 10 V or DC 0(4) to 20 mA (configurable)	6.9 / Analog output 1 + 6.10 / Analog output 1 - 10.9 / Analog output 2 + 10.10 / Analog output 2 -	<p>U_x, I_x</p>

4.4.4 Digital inputs/outputs 1 to 12 (option 3)

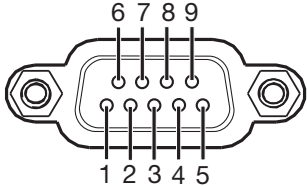
Version	Connection element.Terminal / Assignment	Terminals and connection symbol
Digital input DC 0/24 V or digital output DC 0/24 V (individually switchable), auxiliary voltage (output) DC 24 V (100 mA, sum of the currents at the terminals 14.7 and 15.7)	14.1 / Digital input/output 1 14.2 / Digital input/output 2 14.3 / Digital input/output 3 14.4 / Digital input/output 4 14.5 / Digital input/output 5 14.6 / Digital input/output 6 14.7 / +24 V 14.8 / GND 15.1 / Digital input/output 7 15.2 / Digital input/output 8 15.3 / Digital input/output 9 15.4 / Digital input/output 10 15.5 / Digital input/output 11 15.6 / Digital input/output 12 15.7 / +24 V 15.8 / GND	 <p>Example: potential-free contact at input 1 and +24 V (auxiliary voltage)</p>  <p>Example: external voltage at input 1 and GND</p>  <p>Example: external relay at output 1 and GND (max. 40 mA per output, max. 100 mA on the whole)</p>

4.4.5 Relay

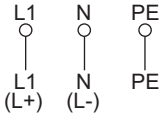
Version	Connection element.Terminal / Assignment	Terminals and connection symbol
Relay (changeover contact) (max. 3 A at AC 230 V, resistive load)	4.1 / Normally open contact (NO) 4.2 / Joint contact (C) 4.3 / Normally closed contact (NC)	

4 Electrical connection

4.4.6 RS232/RS485 interface

Version	Connection element.Pin / Assignment	Connection element
RS232 9-pin SUB-D socket (switchable to RS485)	3.2 / RxD (received data) 3.3 / TxD (transmission data) 3.5 / GND (ground)	
RS485 9-pin SUB-D-socket (switchable to RS232)	3.3 / TxD+/RxD+ (transmission/ received data +) 3.5 / GND (ground) 3.8 / TxD-/RxD- (transmission/ received data -)	

4.4.7 Voltage supply

Version	Connection element.Terminal / Assignment	Terminals and connection symbol
AC 110 to 240 V +10/-15 %, 48 to 63 Hz or AC/DC 20 to 30 V, 48 to 63 Hz Observe order details!	5.L1 / Line conductor (for DC: positive terminal L+) 5.N / Neutral conductor (for DC: negative terminal L-) 5.PE / Protection conductor	

5.1 Operating concept

The device is equipped with a resistive touchscreen; the operation is menu-driven. User management protects the device against unauthorized access. The different users can be assigned different privileges so that they can only access specific functions.

In addition to the visualizations available per default, the setup program can be used to create individual process screens for presenting process data.

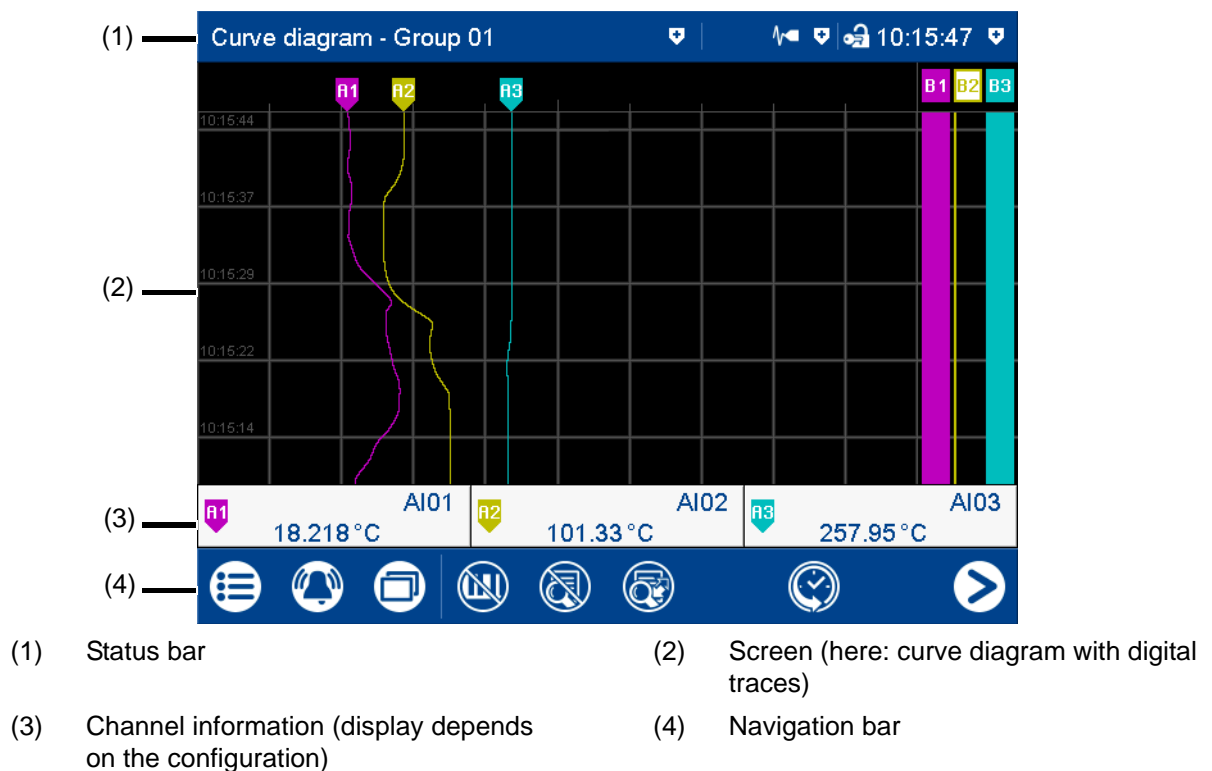
Thanks to the integrated web server, certain visualizations can also be rendered in a web browser.

5.1.1 Touchscreen

The visualization screen shown after switching on the device depends on the configuration (Device: Main menu > Configuration > Display > Generally > Image after reset).

The example shown here is the curve diagram (vertical, with digital traces).

View



Status bar



The status bar consists of three areas which are delimited by vertical lines. Each area is an active button which can be used to display (+) and hide additional information again (-).






The **area on the left** shows you the diagram type and group number. Tapping the button displays the alarm list.

The **area in the center** is used to display the status, logging operation, and communication types based on icons. The button displays details of the group operating mode (depending on

5 Operation



the screen), the batch logging status, and the status of data transmission via the PCC software as a text display.

Icons used:

Position	Meaning	Icon
Left	Data transmission via PCC software	
	- Transmission active	
	- Transmission not active	No icon
Center	Batch recording	
	- Recording active	
	- Recording not active (or batch not configured)	No icon
Right	Operating mode	
	- Standard operation	
	- Event operation	
	- Time operation	

The **area on the right** shows the logon status as an icon and the time. The button additionally shows the weekday, date, user name, and memory usage.

Icons used:


Position	Meaning	Symbol
Left	Logon status	
	- User not logged in	
	- User logged in	

The status bar is also used as an **alarm display**. In the event of an alarm, the alarm text (red background) and the normal text (blue background) are alternately displayed.

Image

The image area displays the current visualization, menu (e.g., Main menu) with its menu items, or a list (e.g., event list).

Channel information

 AI1 18.218 °C	 AI02 101.33 °C	 AI03 257.95 °C
--	---	---

The channel information display in the curve diagram can be switched on and off (configuration). The description (pointer) of the analog signal (e.g., A1) is displayed along with the abbreviation of the analog or digital signal (e.g., AI01 for analog input 1) and the analog value.

Navigation bar



The navigation bar consists of three areas which are delimited by vertical lines.

The **area on the left** contains the buttons (icons) for calling up

- the main menu (left),
- the alarm and event menu (center), and
- the visualization menu (right).

The **area in the center** contains buttons (icons) whose function depends on the screen currently being displayed.

The **area on the right** contains buttons (icons) for screen navigation:

The "Home" button takes the user directly to a specific screen (configurable).

Pressing the "Next" button (right arrow) selects the next screen on a specific level (e.g., toggle to the next active group).

5.1.2 LED displays

The device is equipped with two LEDs on its front side that display the device status.

Green LED

The green LED (power LED) flashes after switching on the device until the startup process is completed. It is then permanently lit.

Red LED

The red LED (alarm LED) is permanently lit while an alarm is pending.

Acknowledging the collective alarm in the alarm list does not reset the alarm display.

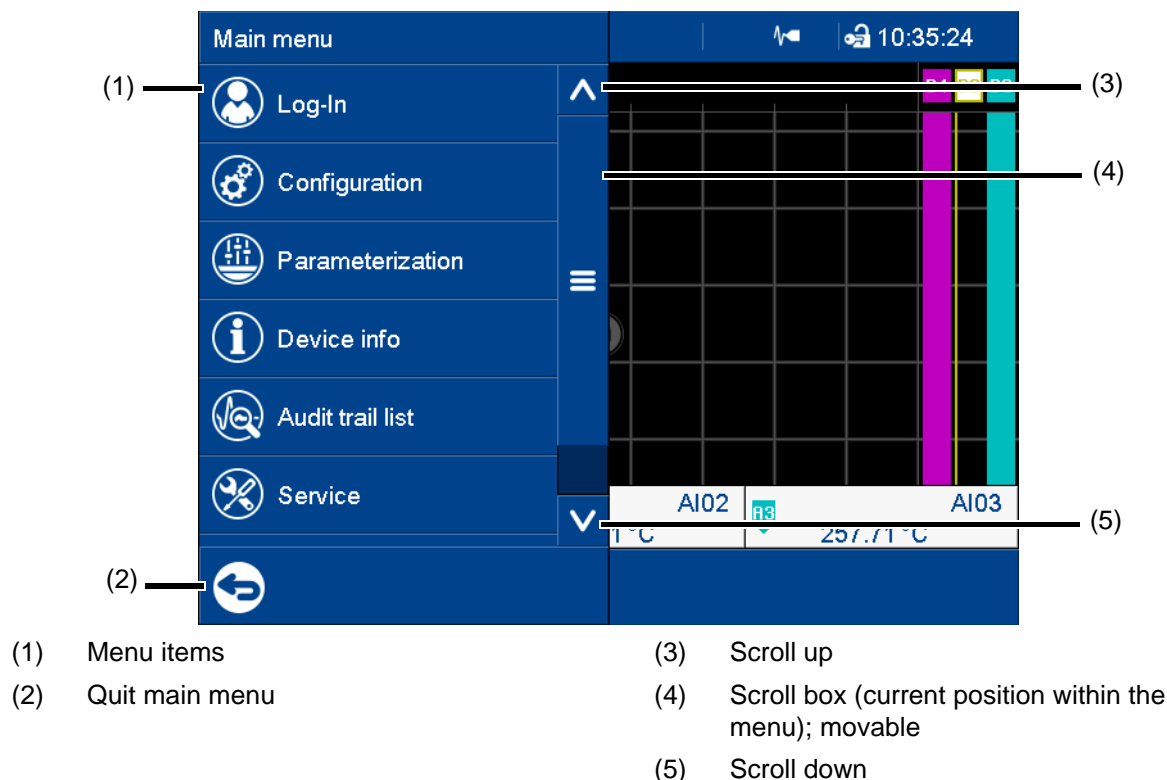
5 Operation

5.2 Main menu



view

The main menu contains functions for configuring, parameterizing, and operating the device.



5.2.1 Log-In



This is the menu in which users log on and off, and change their passwords. Please refer to the operating manual (chapter "Configuration - only in setup program" > "User list" > "Default user settings") for the default user IDs and passwords.

5.2.2 Configuration



This menu contains functions for configuring the device. The functions are available both on the device and in the setup program (see the "Configuration" chapter in the operating manual). In addition to this, there are functions that can only be configured with the setup program (see the operating manual, chapter "Configuration - in setup program only" and "Online parameters").

5.2.3 Parameterization



This menu contains the functions for parameterizing the device (see the "Parameterization" chapter in the operating manual).

5.2.4 Device info



This menu contains information about the device (name, versions), the current process values (inputs, outputs, internal functions), and Ethernet interface.

5.2.5 Audit trail list



This menu lists the audit trail messages generated by the device.

All user intervention with the device is automatically recorded and stored in the audit trail list of the device. The audit trail list is managed independently of the event list.

The audit trail list is designed as a ring buffer which can contain a maximum of 150 entries. When the list is full, each new entry causes the oldest entry to be deleted from the list.

5.2.6 Service



This menu contains various service functions.

Default configuration

You can store the current device configuration with this function.

Similarly, a previously stored configuration can be loaded as the current configuration.

5.2.7 Calibrating the touchscreen



This menu enables you to calibrate the touchscreen (position calibration). To do so, you need to tap the center of the crosshairs shown in the corners of the screen one after another.

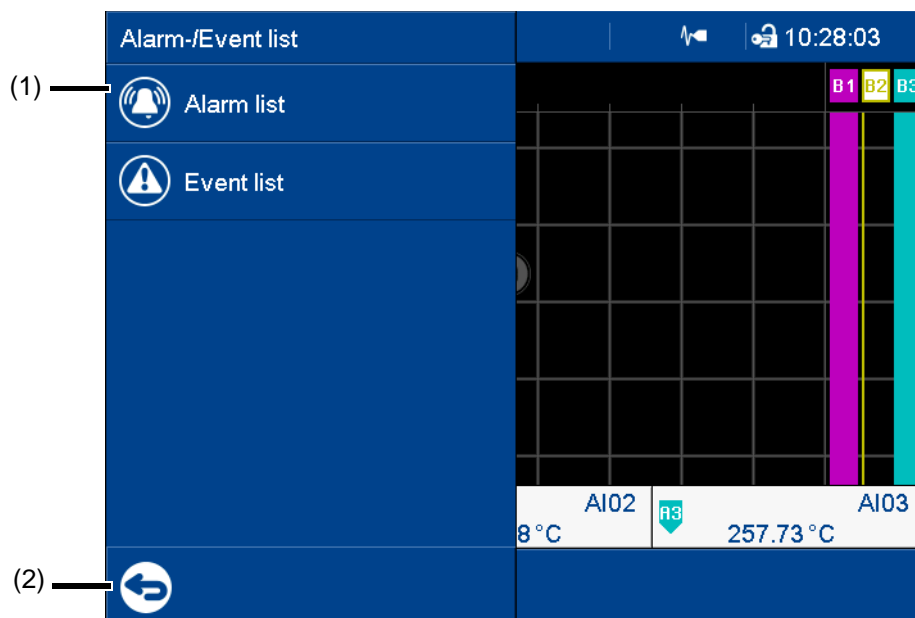
5 Operation

5.3 Alarm and event menu



The alarm and event menu enables you to call up the alarm list and event list.

View



- (1) Menu items
- (2) Quit the alarm and event menu

5.3.1 Alarm list

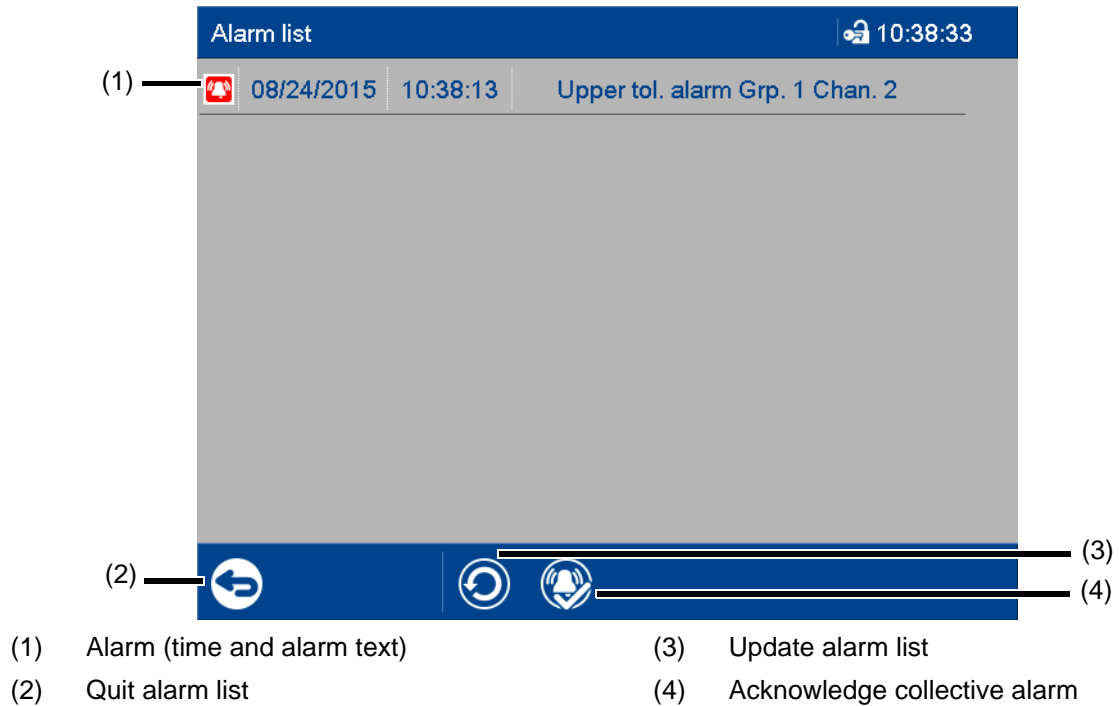


The alarm list shows all pending alarms in their order of occurrence. If an alarm is no longer pending, its entry is automatically removed from the alarm list. The alarm list is rebuilt after power on.

Each alarm represents an event. For this reason, the time at which an alarm occurs and disappears again is recorded in the event list.

A pending alarm is additionally shown by the red LED in the status bar.

View



Collective alarm

The following collective signals are created and are available in the digital selector:

- Collective alarm
This signal is active while an alarm is pending (the alarm list is not empty).
- Collective alarm acknowledged
This signal is activated when an alarm occurs; it remains active until acknowledged even if the alarm disappears in the meantime.

5 Operation

5.3.2 Event list



The event list contains event entries in chronological order. A maximum of 150 entries are stored and displayed. When new entries are added, the oldest entries are deleted. The event list is kept after power off.

As with process data, events are transferred to the PC Evaluation Software PCA3000 for evaluation.

Events include:

- System messages (e.g., power on, configuration change, time sync)
- Device alarms (malfunctions; e.g., battery discharged, data loss, input not calibrated)
- Configured alarms
- Configured events
- Counter messages (counter status and counter reset)
- Batch messages (start and end of batch recording)
- General messages (e.g., comments, error messages from the interfaces, USB flash drive plugged in/removed, collective alarm acknowledged)

View

Event list				10:39:55
(1)		08/24/2015	10:38:13	Upper tol. alarm Grp. 1 Chan. 2 on
		08/24/2015	10:38:12	New configuration

(2)

(3)

(3)

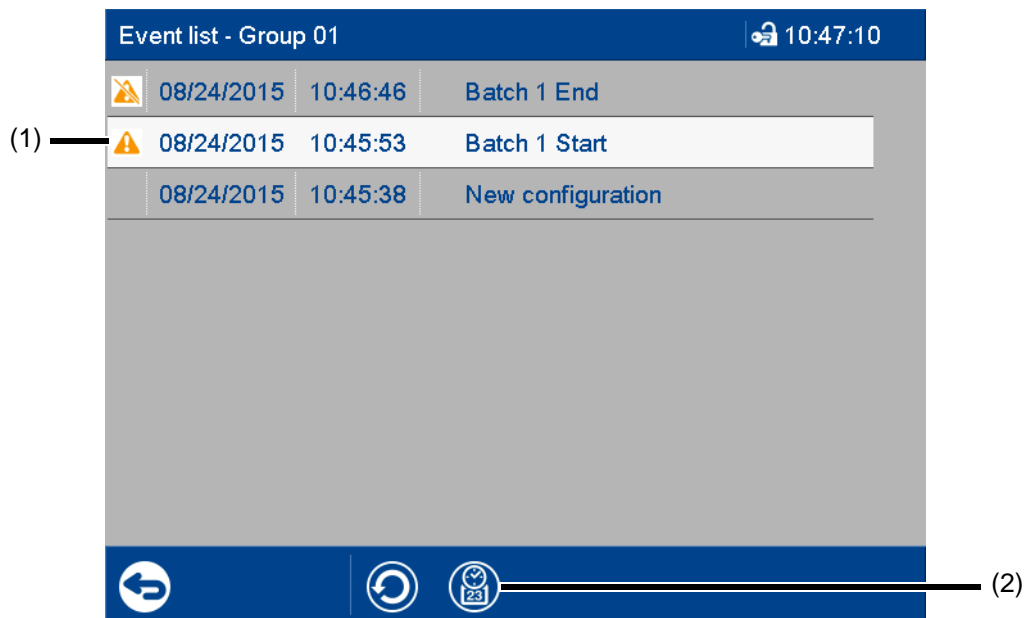
(1) Event (here: alarm) with time and event text (configurable)

(2) Quit event list

(3) Update event list

Event list in memory display

If the alarm and event menu is called up from the memory display (history) (or from the curve presentation of a completed batch), the event list is opened directly. An additional button is available here which lets you mark the time of a specific event in the memory display with the cursor position.



- (1) Selected event
The event is selected by tapping.

- (2) Show memory display
In the memory display, the cursor is moved to the position (time) at which the event occurred.
If the respective point in time is no longer in the memory display, the cursor is moved to the start of the memory display (oldest point in time).

5 Operation

5.4 Visualization menu (display)



In the visualization menu, the view type and group that should be currently displayed on the device are selected. Up to 6 analog channels and 6 digital channels of a group can be shown on one screen.

View

Display

(1) Curve diagram

Digital diagram

Bargraph

2.15 Text image

Actual batch

Completed batch

(2)

▲

≡

▼

▲

▼

AI02

AI03

6 °C

257.70 °C

(3)

(4)

(5)

(1) Menu items

(2) Quit visualization menu

(3) Scroll up

(4) Scroll box (current position within the menu); movable

(5) Scroll down

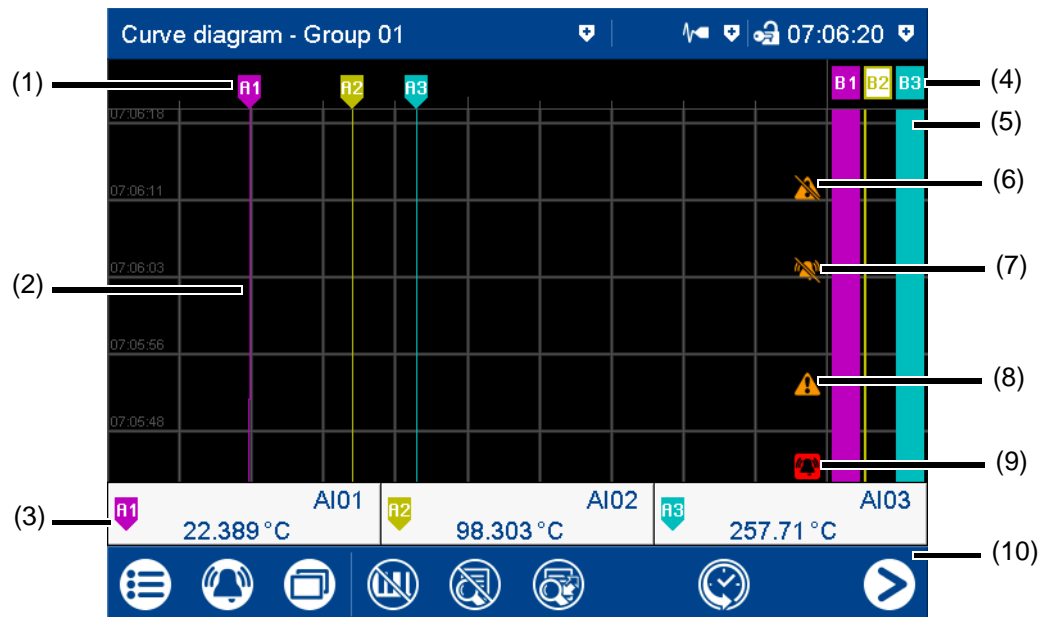
5.4.1 Curve diagram



In the curve diagram, the analog and digital signals configured for the relevant group are displayed as analog curves or digital traces. Digital traces and channel information can be hidden in the group configuration.

The diagram type (horizontal, vertical) is selected individually for each group in the configuration. The following view shows the vertical diagram. Accordingly, the description also applies to the horizontal diagram (see the example later on).

Group view



- | | |
|---|--|
| (1) Description (point) of the analog curve | (4) Description (point) of the digital trace |
| (2) Analog curve (color change with alarm) | (5) Digital trace |
| (3) Channel information: description (pointer), short signal description (configurable), and current value of analog signal (color change with alarm) | (6) Event off |
| | (7) Alarm off |
| | (8) Event on |
| | (9) Alarm on |
| | (10) Navigation bar |

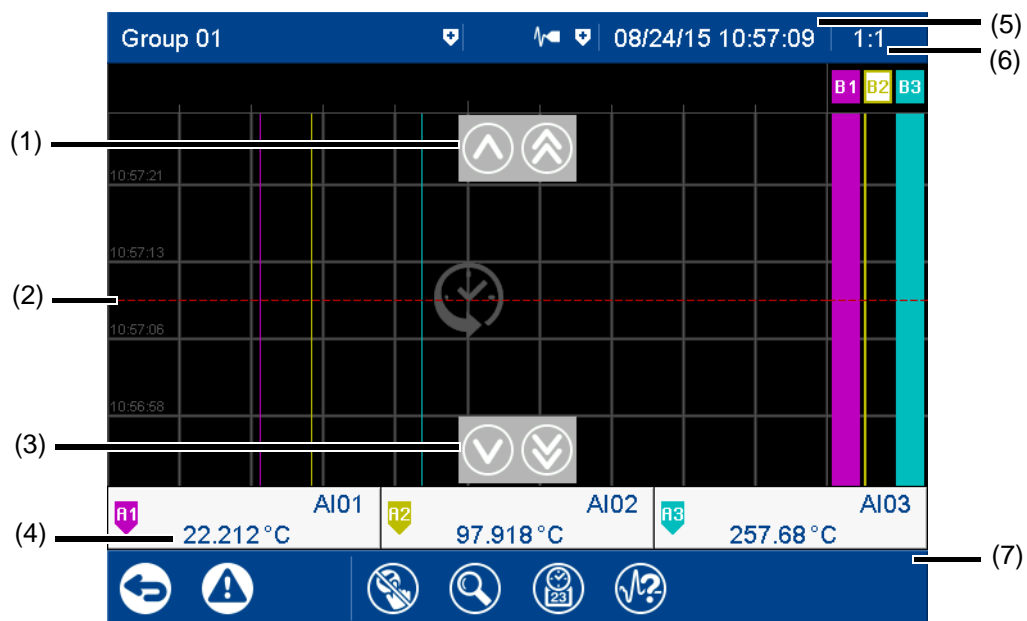
Navigation bar



- | | |
|-----------------------------------|--------------------------------------|
| (1) Hide/show digital traces | (4) Call up memory display (history) |
| (2) Hide/show channel information | (5) Go to next active group |
| (3) Hide/show analog values | |

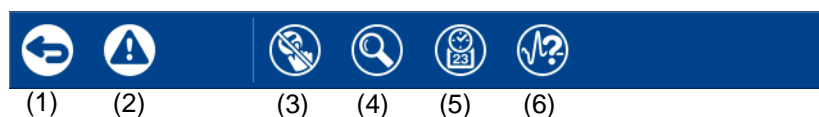
5 Operation

Memory display (history)



- | | |
|---|---|
| (1) Move time for memory values forward (later memory values) | (5) Time of memory values (cursor position) |
| (2) Cursor (time of numeric memory values) | (6) Zoom factor |
| (3) Move time for memory values back (earlier memory values) | (7) Navigation bar |
| (4) Analog value at selected time | |

Navigation bar

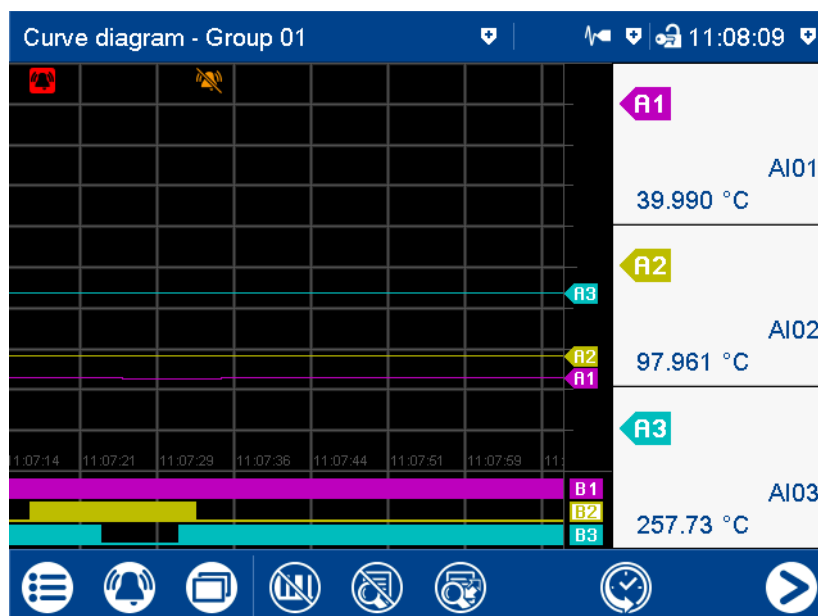


- | | |
|---------------------------|--|
| (1) Quit history | (4) Change zoom factor |
| (2) Access event list | (5) Find memory values (enter time) |
| (3) Hide/show cursor keys | (6) Curve selection (activate/deactivate view) |

Horizontal diagram

In the horizontal diagram, the analog curves and digital traces run from right to left. The channel information is shown on the right edge of the screen; the icons for event and alarm at the top edge of the screen.

Digital traces and channel information can be hidden in the group configuration, as in the vertical view.



5 Operation

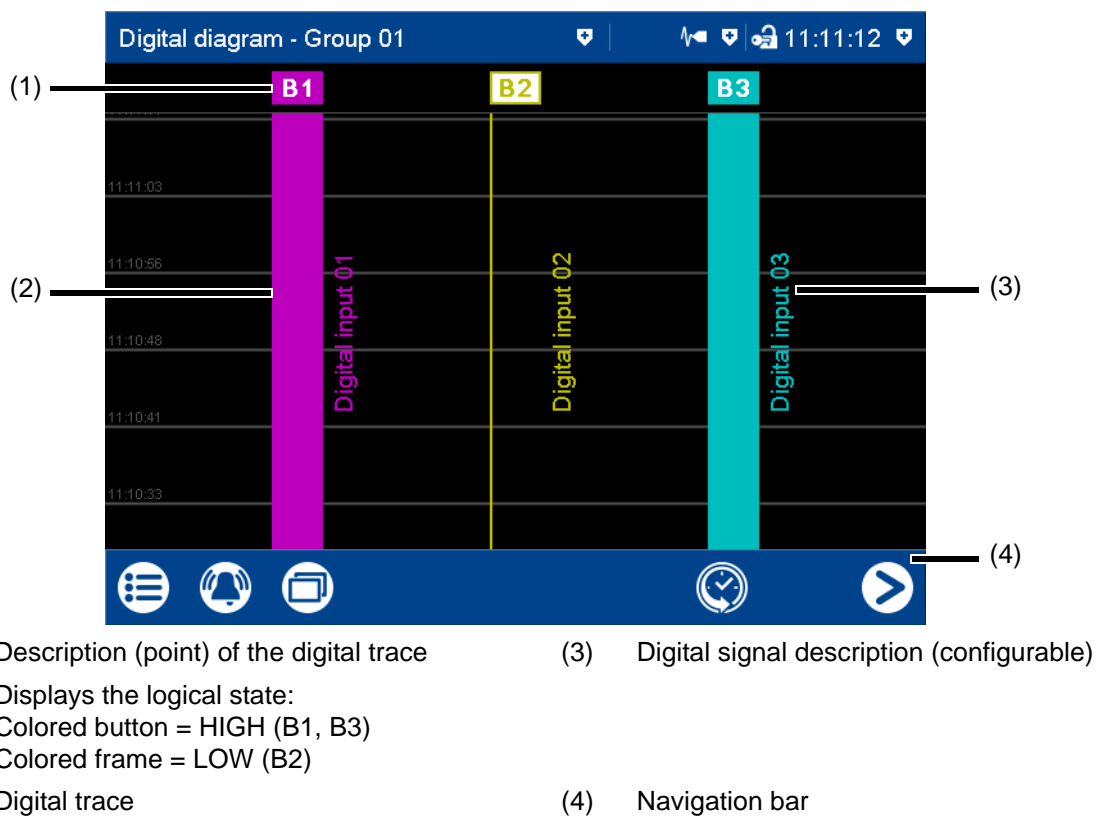
5.4.2 Digital diagram



In the digital diagram, the digital signals configured for the relevant group are displayed as digital traces.

The diagram type (horizontal, vertical) is selected individually for each group in the configuration. The following view shows the vertical diagram. Accordingly, the description also applies to the horizontal diagram.

Group view



Navigation bar



(1) Call up memory display (history)

(2) Go to next active group

Memory display

See memory display in the curve diagram.

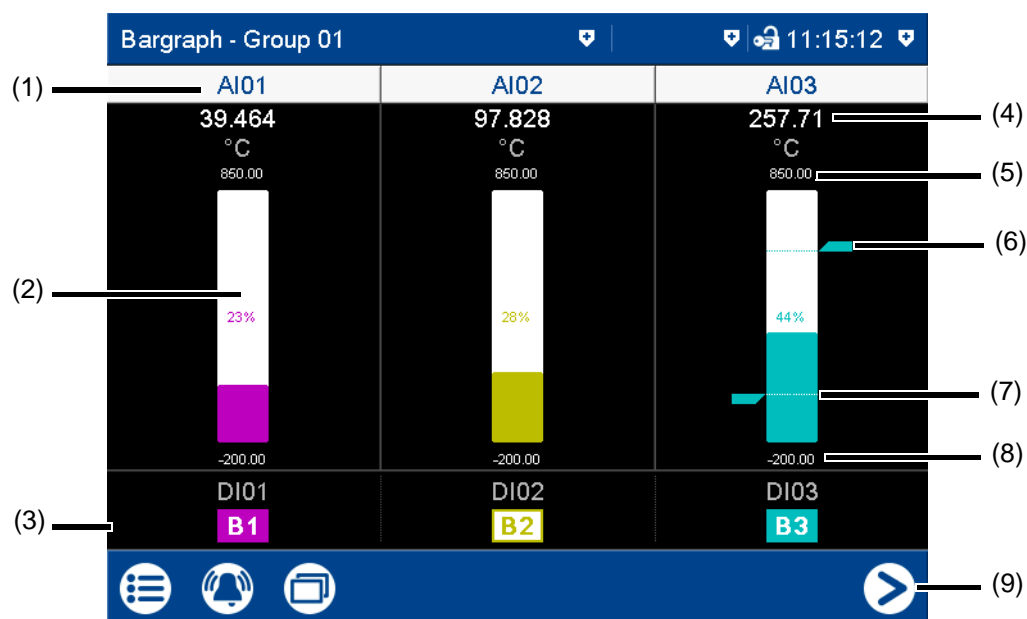
⇒ Chapter 5.4.1 "Curve diagram", page 41

5.4.3 Bar graph



In the bar graph view, the analog signals configured for the relevant group are shown as bar graphs, and the digital signals – depending on their logical state – as colored areas or frames. The diagram type selected for the group (horizontal, vertical) is irrelevant for the bar graph view. The view is always as a column diagram (vertical) and not as a bar diagram (horizontal).

Group view



- | | |
|---|--|
| <p>(1) Short analog signal description (configurable)
Call up individual view of analog signal (numerical view and bar graph); see text image - individual view.</p> <p>(2) Bar diagram of the analog signal (color change with alarm)</p> <p>(3) Digital signal with short signal description (configurable) and designation (pointer)
Displays the logical state:
Colored button = HIGH (B1, B3)
Colored frame = LOW (B2)</p> | <p>(4) Current analog value (color change with alarm)</p> <p>(5) End value of scaling (display range, configurable)</p> <p>(6) Limit value for max. alarm (configurable)</p> <p>(7) Limit value for min. alarm (configurable)</p> <p>(8) Start value of scaling (display range, configurable)</p> <p>(9) Go to next active group</p> |
|---|--|

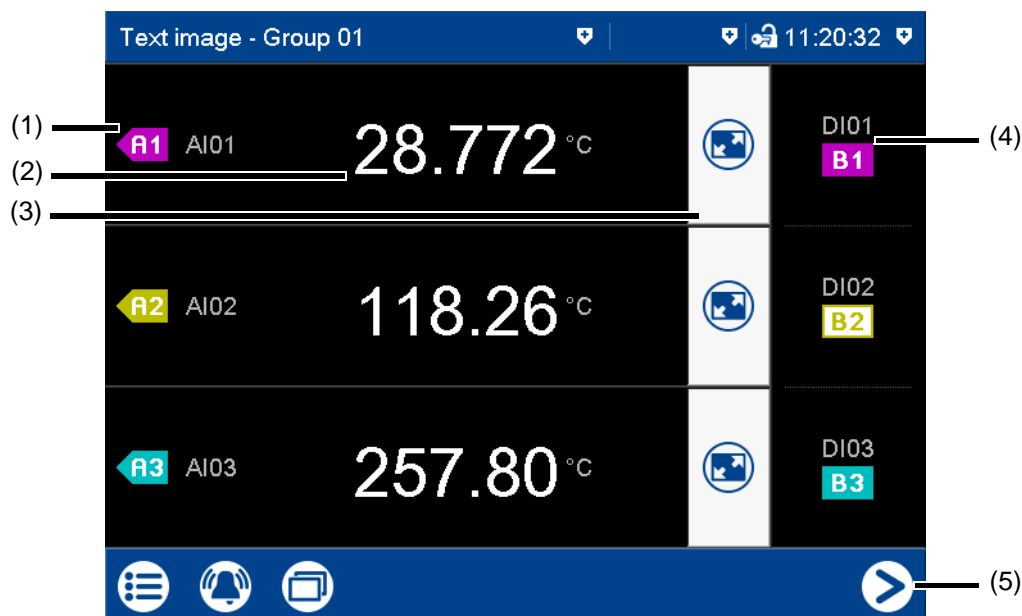
5 Operation

5.4.4 Text image



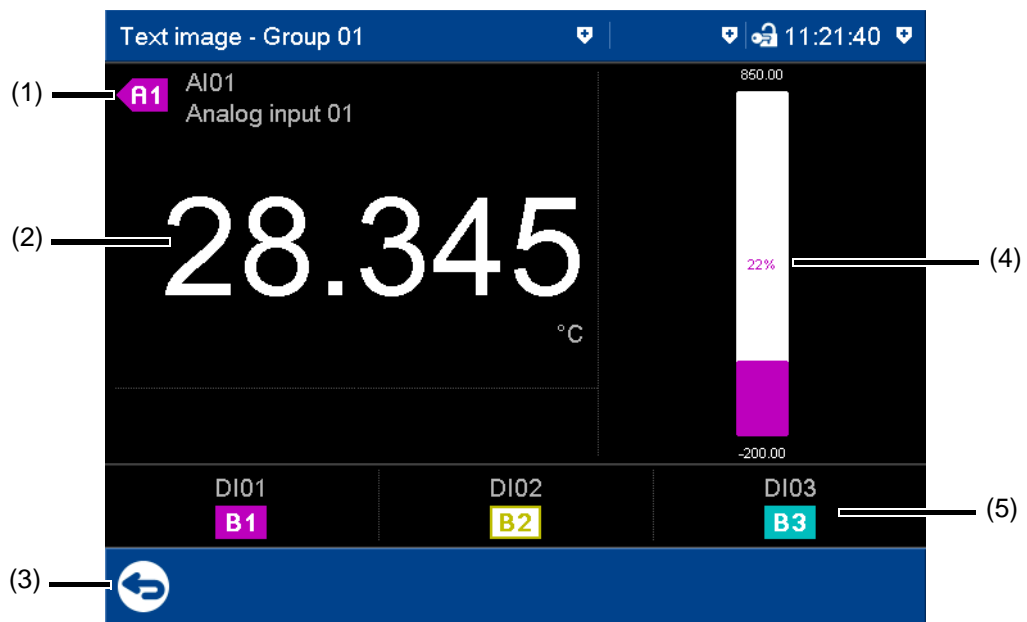
The text image shows the current values for the analog signals configured for the relevant group as numbers. The digital signals – depending on their logical state – are shown as colored areas or frames.

Group view



- | | |
|---|--|
| (1) Description (pointer) and short analog signal description (configurable) | (4) Digital signal with short signal description (configurable) and designation (pointer)
Displays the logical state:
Colored button = HIGH (B1, B3)
Colored frame = LOW (B2) |
| (2) Current value of analog signal | |
| (3) Call up individual view of analog signal (numerical view and bar graph)
In the individual view, all digital signals of the group are also displayed. | (5) Go to next active group |

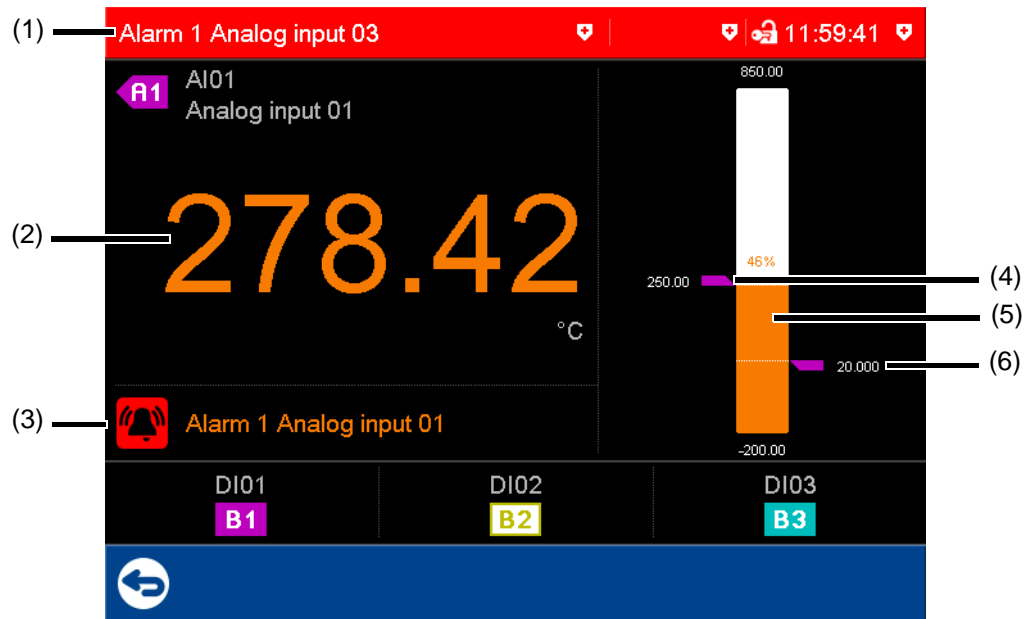
Individual view



- | | |
|---|---|
| <p>(1) Designation (pointer), short signal description (configurable), and signal description (configurable) of the analog signal</p> <p>(2) Current value of the analog signal</p> <p>(3) Back to group view</p> | <p>(4) Bar graph of the analog signal</p> <p>(5) Digital signal with short signal description (configurable) and designation (pointer)</p> <p>Displays the logical state:
Colored button = HIGH (B1, B3)
Colored frame = LOW (B2)</p> |
|---|---|

5 Operation

Individual view with alarms



- | | | | |
|-----|--|-----|--|
| (1) | Last alarm to have occurred (here: from analog input 03) | (4) | Limit value for max. alarm (configurable) |
| (2) | Current value of analog signal with color change (alarm) | (5) | Bar graph of analog signal with color change (alarm) |
| (3) | Alarm text of analog input | (6) | Limit value for min. alarm (configurable) |

5.4.5 Report



A report shows the statistical information for the relevant group. A report contains the maximum, minimum, and mean values of the analog signals during the recording time (the recording period is configurable). A distinction is made between the current (on-going) report and the completed report.

To create a report, it must be activated in the configuration for the relevant group.

View

Report - Group 01					12:04:01
(1)	A1 AI01	Maximum value °C	Minimum value °C	Average value °C	
(2)					
(3)	External	297.25	53.689	175.49	
					(4)
					(5)

(1) Description (pointer) and short analog signal description (configurable)

(2) Values of analog signal in the current (not completed) report

The type (configurable; here: external) decides when the report is stored and thus completed.

(3) Call up detailed view of analog signal

(4) Go to the next analog signal within the group

(5) Go to the report for the next group

5 Operation

Detailed view

Report - Group 01			13:38:33
(1) External AI01	Current °C	(4) Completed °C	
Maximum value	200.76	292.60	
(2) Time	08/24/2015 13:38:22	08/24/2015 13:37:51	
Minimum value	84.126	80.773	
Time	08/24/2015 13:38:18	08/24/2015 13:37:40	
Average value	114.45	174.49	
(3) Timestamp start	08/24/2015 13:38:13	08/24/2015 13:37:23	
Timestamp end	08/24/2015 13:38:34	08/24/2015 13:38:10	
			(6)

- (1)

Description (pointer) and short analog signal description (configurable); report type (configurable; here: external)
- (2)

Time at which the max. value (or min. value) occurred
- (3)

Time stamp for current report: beginning of recording and current time
Time stamp for completed report: beginning and end of reporting period
- (4)

Completed report
- (5)

Current (on-going) report
- (6)

Back to previous view

5.4.6 Current batch



This function opens the protocol for the current batch recording. Batch recording can be started and stopped (depending on the configuration).

The protocol layout is defined in the batch configuration. This is where the individual lines of the protocol are defined, and the text for the left column, and content of the right column, are specified (Device: Main menu > Configuration > Batch > Batch line x; see also the "Configuration" chapter in the operating manual).

View

Actual batch - Batch 1	
Program name	Text 1
Customer info	Text 3
Batch name	Text 5
Batch number	000000020Text 7
Batch start	08/24/2015 13:43:08
Batch end	08/24/2015 13:43:32
Batch duration	00:25

(1) Left column

(2) Right column

(3) Editable text (depending on the configuration)

(4) Batch number and non-editable text (depending on the configuration)

(5) Stop/start batch recording (only for configured "Batch start via touchscreen")

5 Operation

5.4.7 Completed batch



This function displays the report for the completed batch recording. Recorded data can be shown as a report and as a curve diagram. If necessary, the report can also display the data from current batch recording.

View

Completed batch - Batch 1

Program name

Text 1

Customer info

Text 3

Batch name

Text 5

Batch number

000000020Text 7

Batch start

08/24/2015 13:43:08

Batch end

08/24/2015 13:44:48

Batch duration

01:41

(1) Open report (statistical information for the completed batch recording, and, if necessary, the current batch recording)

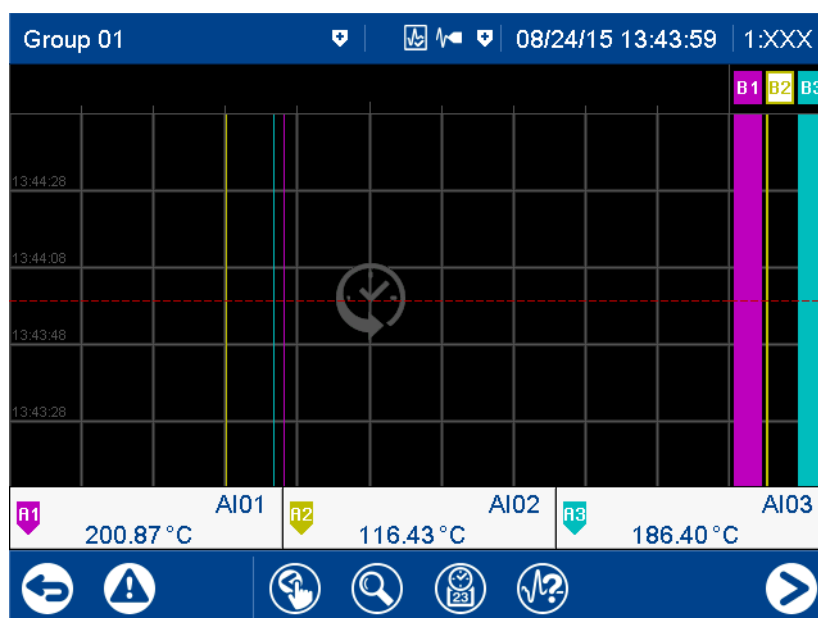
(2) Open curve presentation (analog curves and digital traces of the completed batch recording)

Report for batch

Report - Group 01		
(1) Batch AI01	Current °C	Completed °C (4)
Maximum value	200.99	200.92 (5)
Time	08/24/2015 13:46:54	08/24/2015 13:44:46
Minimum value	200.93	200.76
Time	08/24/2015 13:46:46	08/24/2015 13:43:07
Average value	200.98	200.85
Timestamp start	08/24/2015 13:46:44	08/24/2015 13:43:07
Timestamp end	08/24/2015 13:47:12	08/24/2015 13:44:48
(2) (3)		(6)

- (1) Description (pointer) and short analog signal description (configurable)
 - (2) Go to the next analog signal within the group
 - (3) Back to the batch report view
 - (4) Data (statistical information) for the completed batch recording
 - (5) Data (statistical information) for the current (on-going) batch recording
 - (6) Go to next group
- ⇒ Chapter 5.4.5 "Report", page 49

Curve presentation for the batch



The functions are identical with those of the memory display in the "Curve diagram" visualization.

⇒ Chapter 5.4.1 "Curve diagram", page 41

When opening the curve presentation, the zoom factor is computed so as to display the data of the entire batch recording on the screen.

5 Operation

5.4.8 Process screen



This visualization shows the individual process screens. You can use the arrow keys in the navigation bar to change to the next process screen.

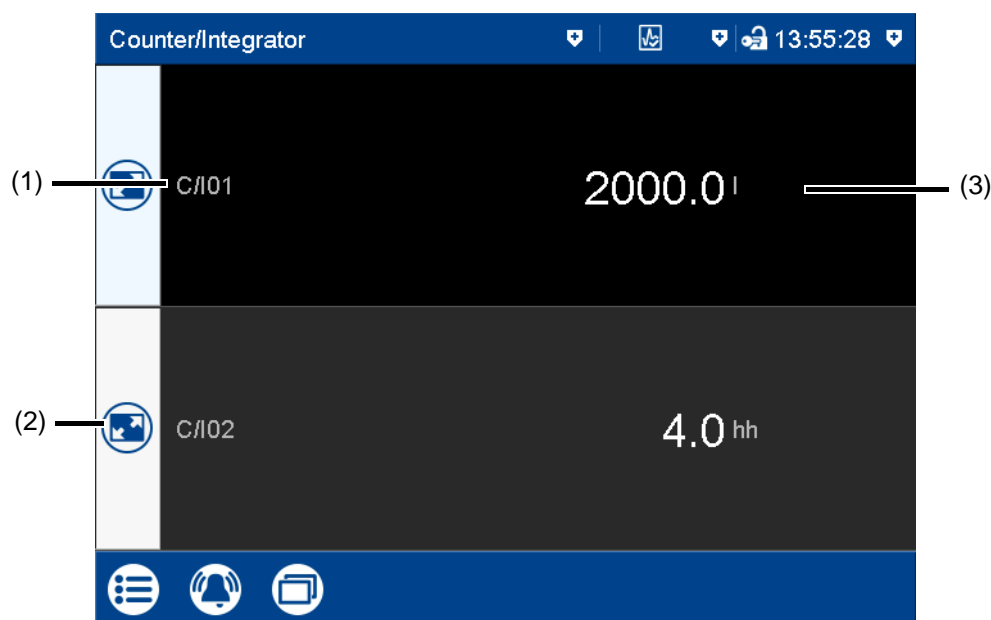
Up to 6 process screens can be created with the setup program and uploaded to the device. For a process screen to be displayed, it must be activated (configuration parameters in the setup program; see operating manual, chapter "Configuration - in setup program only" > "Process screens").

5.4.9 Counter/Integrator



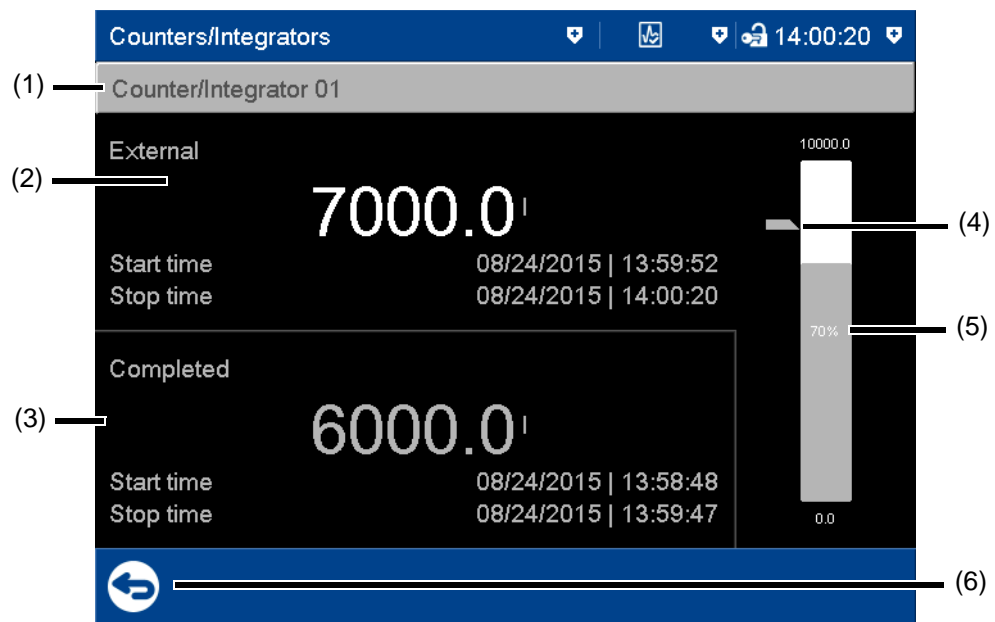
This visualization shows all activated counters/integrators. Up to 6 counters/integrators can be configured on the device.

View



- | | | | |
|-----|--|-----|--|
| (1) | Short description (configurable) of the counter/integrator | (3) | Current status of the counter/integrator (unit configurable) |
| (2) | Open detailed view of the counter/integrator | | |

Detailed view



- | | |
|--|--|
| (1) Description (configurable) of the counter/integrator | (4) Limit value for max. alarm (configurable) |
| (2) Details of current counter/integrator
The type (configurable; here: external) decides when the status of the counter/integrator is stored and thus completed. | (5) Bar graph view of the current counter/integrator
Start and end of the display range are configurable. |
| (3) Details of the completed counter/integrator | (6) Back to view of all activated counters/integrators |

5.4.10 Comment text



This function can be used to enter a text (max. 31 characters) that is entered after completing the entry in the event list.

⇒ Chapter 5.5 "Text input dialog", page 56




5 Operation

5.5 Text input dialog

The text input dialog is used for all functions in which the user can enter or edit text.

Example: Configuration of an analog input

Analog input 1		🕒 14:02:06
Channel designation	AI01	(1)
Channel description	Analog input 01	(2)
Sensor	Inactive	(3)
Temperature input		
Unit		
Linearization		
Resistance measuring range		
Measuring range-Start		
Measuring range-End		

(1) Text editable

(3) Drop-down menu (text not editable)

(2) Text editable

Tap the text box to edit the text.

Text input dialog

(1) Channel description

(2) Open text list (history of last 20 text entries)
The text from the list replaces the text in the input box.

(3) Shift key (toggle to the second level of the current keyboard layout, e.g., upper-case)
To hold, you need to press the key for longer. To reset, (briefly) press the key again.

(4) Cancel text entry (input is not applied)

(5) Input box with current text
After changing to the text input dialog, the current text is fully selected. Tapping on the input box displays a cursor. Tapping and dragging the cursor lets you select multiple characters.

(6) Backspace key
The character to the left of the cursor is deleted. If multiple characters are selected, they are deleted.

(7) Cursor keys (move cursor left or right)

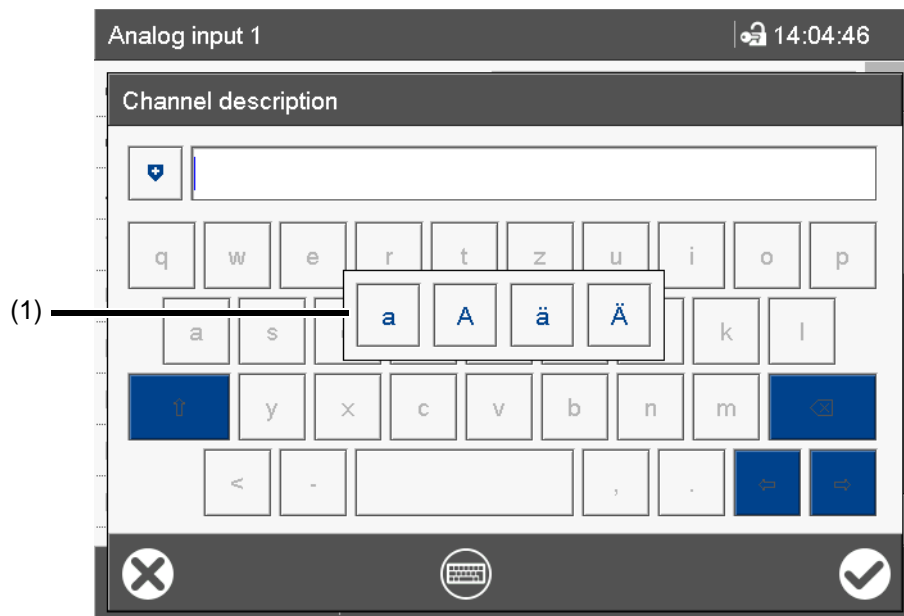
(8) Complete text entry (input is applied)

(9) Toggle keyboard layout (letters, digits, non-standard characters)

5 Operation

Keyboard mappings

Each of the 30 keys in the default keyboard layout can be mapped with up to 10 characters. The Shift key toggles between the first two characters. To select more characters, you need to hold down the relevant key for longer. This displays a selection window in which you can select the desired character by tapping.



- (1) Multiple assignment of the "a" key
To leave the selection window without selecting a character, tap on the screen outside of the selection window.

More examples of multiple assignments of individual keys:

q Q @

s S ß

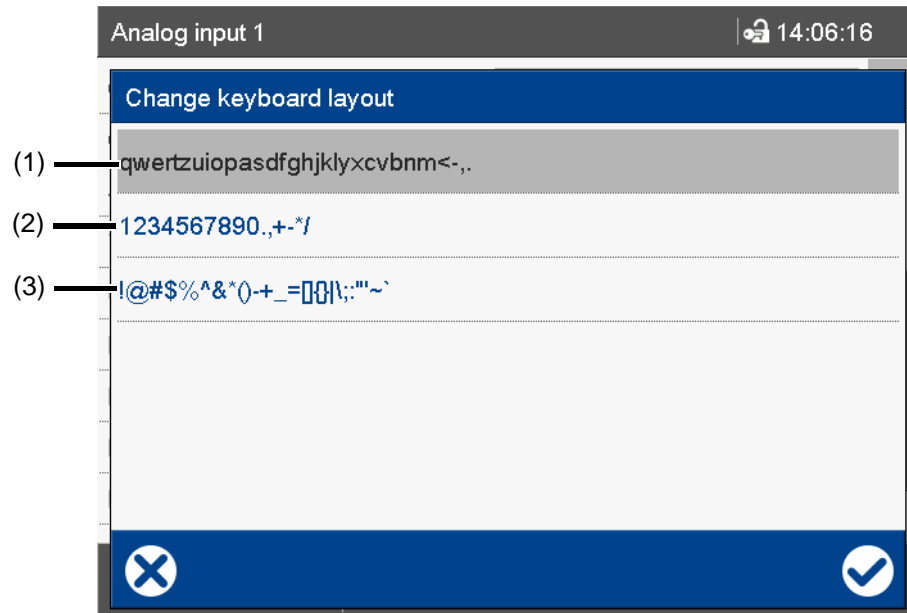
< > | '

Keyboard layout

The "Keyboard layout" key enables you to switch between the various keyboard layouts (keyboard assignments) (e.g., letters, digits, non-standard characters).

In the default keyboard layout (e.g., letters), each key can be assigned up to 10 characters. In the other keyboard layouts, only one character per key is possible.

The keyboard can be assigned individually for each language with the setup program (max. 6 layouts).



- (1) Keyboard layout 1
(default keyboard layout)
- (2) Keyboard layout 2
- (3) Keyboard layout 3

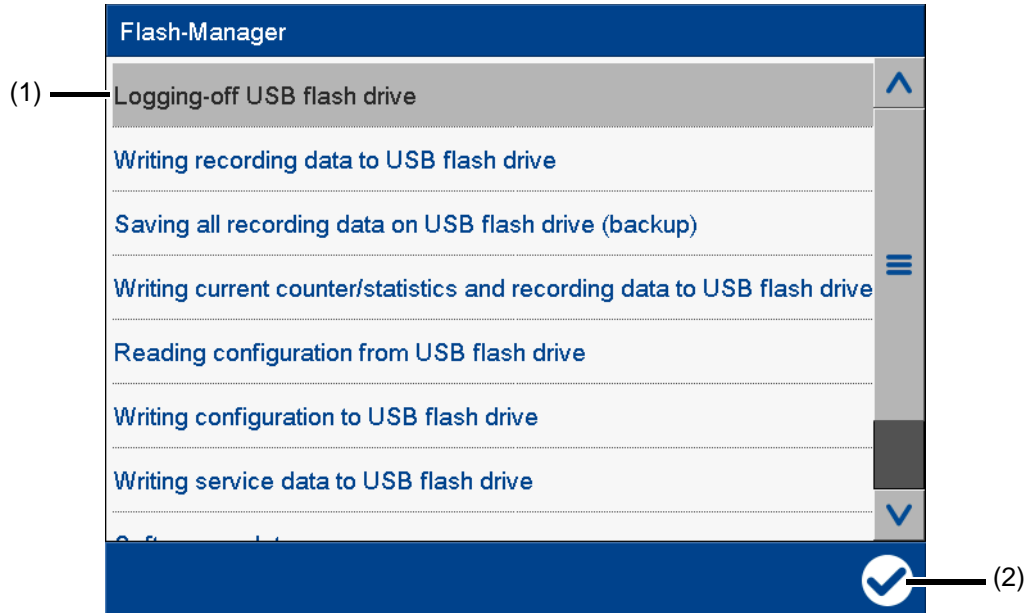
The default keyboard layout always has top priority.

5 Operation

5.6 Flash manager

The Flash manager menu automatically opens when the device is in basic status and a USB flash drive is plugged into the front USB port. If the device is in a menu (main menu, alarm-/event list, display), the Flash manager is opened only after leaving the menu.

Device dialog



(1) Flash manager functions

(2) "Apply" button

The selected function is grayed out.

The Flash manager provides functions for transferring specific data between the device and a USB flash drive. The available functions depend on the logged in user's rights, or on the public rights. The selected function is performed by pressing the "Apply" button (check mark).



CAUTION!

Do not remove the USB flash drive without ejecting it.

There is a risk of losing data.

Before removing the USB flash drive, make sure to run the "Logging-off USB flash drive" function. Do not remove the USB flash drive until you see the "Hardware can now be removed!" message.

Flash manager functions

- **Logging-off USB flash drive:**
Function for safely removing the USB flash drive to avoid data loss
- **Writing recording data to USB flash drive:**
Any recorded data not yet backed up is written to the USB flash drive (retrieving the data). When this function is called up again, only the newly-added recorded data since the last run is transferred to the USB flash drive.
- **Saving all recording data on USB flash drive (Backup):**
All recorded data available on the device (including previously backed up data) is transferred to the USB flash drive (data backup). This function can take up to 30 minutes to complete.

When you run the "Writing recording data to USB flash drive" function after this, only the newly-added recorded data is transferred to the USB flash drive.

- **Writing current counter/statistics and recording data to USB flash drive:**
The current counter and integrator statuses, as well as the statistics (report) are read out, and written to the USB flash drive along with the newly recorded data.
- **Reading configuration from USB flash drive:**
The configuration data (except the user list) is transferred from the USB flash drive to the device. This reconfigures the device and data recording is restarted.
- **Writing configuration to USB flash drive:**
The configuration data (incl. the user list) is transferred from the device to the USB flash drive.
- **Writing service data to USB flash drive:**
Internal service data is transferred to the USB flash drive and can be sent to the device manufacturer for diagnosis.
- **Software update:**
Function for updating the device software; the USB flash drive must contain specific data provided by the device manufacturer.
- **Reading user list from USB flash drive:**
The user list is transferred from the USB flash drive to the device and activated.



CAUTION!

Data loss due to software update.

A software update deletes all recorded data stored on the device (incl. counters/integrators and statistics).

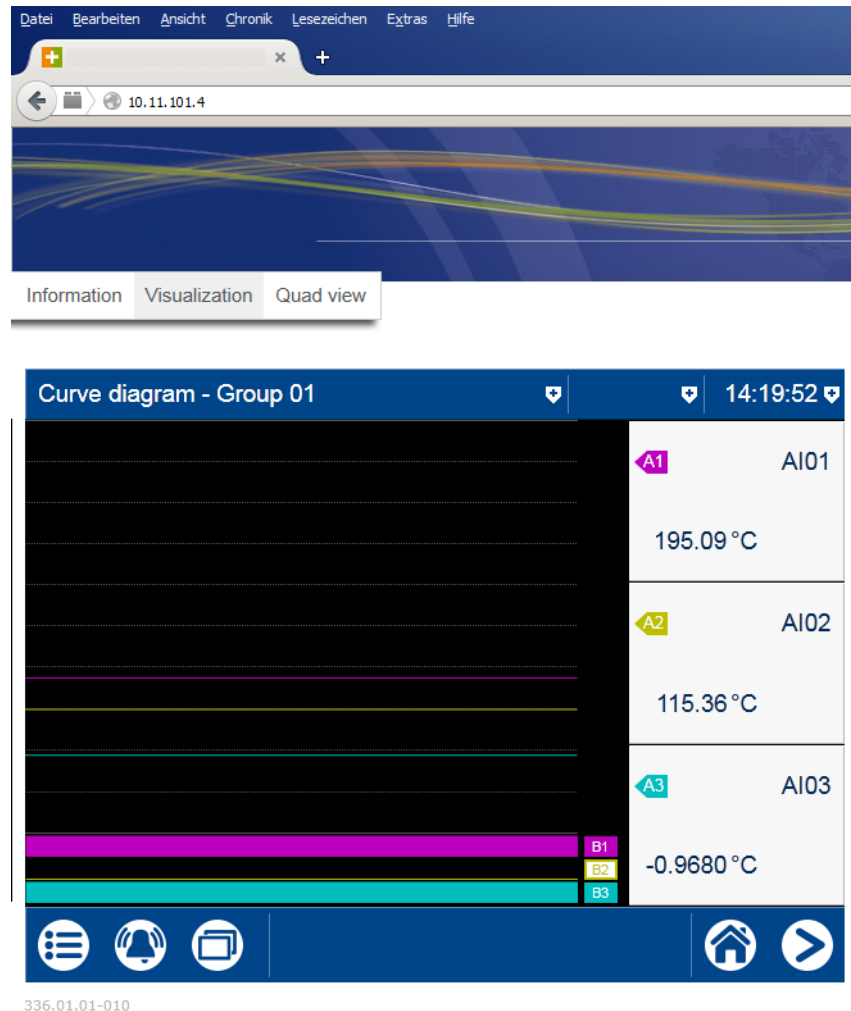
Before updating the software, back up the recorded data on a USB flash drive.

5 Operation

5.7 Web server

The device includes a built-in web server which supports online visualization with the help of a web browser. The user can access the process values, various visualizations, and the device's alarm and event list.

For access, you need to enter the device's IP address in the address line of the web browser. If needed, you can also use the DNS device name.



The start page, index.htm, exists by default; more HTML pages can be transferred to the device using the setup program. To prevent unauthorized access, you can enable a logon procedure with user name and password.

The web server is configured with the setup program (see the operating manual chapter "Configuration - in setup program only" > "Web server").

The web server is also enabled with the setup program (see the operating manual chapter "Configuration" > "Device": Version of online visualization):



NOTE!

The view depends on the web browser you use.

Supported web browsers: Microsoft® Internet Explorer¹, Mozilla Firefox²

¹ Microsoft® and Internet Explorer are registered trademarks of Microsoft® Corporation.

² Mozilla and Firefox are registered trademarks of the Mozilla Foundation.

6.1 Technical data

6.1.1 Analog inputs (options 1 and 2)

General information

Quantity	0, 3, or 6
Connector number (back of device)	7 to 9, 11 to 13

Thermocouples

Description	Type	Standard	ITS	Measuring range	Accuracy ¹
Fe-CuNi	"L"	DIN 43710	ITPS-68	-200 to +900 °C	≤ 0.25 %
Fe-CuNi	"J"	IEC 60584-1	ITS-90	-210 to +1200 °C	≤ 0.25 % from -100 °C
Cu-CuNi	"U"	DIN 43710	ITPS-68	-200 to +600 °C	≤ 0.25 % from -100 °C
Cu-CuNi DIN	"T"	IEC 60584-1	ITS-90	-270 to +400 °C	≤ 0.25 % from -150 °C
NiCr-Ni DIN	"K"	IEC 60584-1	ITS-90	-270 to +1372 °C	≤ 0.25 % from -80 °C
NiCr-CuNi	"E"	IEC 60584-1	ITS-90	-270 to +1000 °C	≤ 0.25 % from -80 °C
NiCrSi-NiSi	"N"	IEC 60584-1	ITS-90	-270 to +1300 °C	≤ 0.25 % from -80 °C
Pt10Rh-Pt	"S"	IEC 60584-1	ITS-90	-50 to 1768 °C	≤ 0.25 % from 20 °C
Pt13Rh-Pt	"R"	IEC 60584-1	ITS-90	-50 to 1768 °C	≤ 0.25 % from 50 °C
Pt30Rh-Pt6Rh	"B"	IEC 60584-1	ITS-90	0 to 1820 °C	≤ 0.25 % from 400 °C
W5Re/W26Re	"C"	ASTM E230M-11	ITS-90	0 to 2315 °C	≤ 0.25 % from 500 °C
W3Re/W25Re	"D"	ASTM E1751M-09	ITS-90	0 to 2315 °C	≤ 0.25 % from 500 °C
W5Re/W20Re	"A1"	GOST R 8.585-2001	ITS-90	0 to 2500 °C	≤ 0.25 % from 500 °C
Chromel-Copel	"L"	GOST R 8.585-2001	ITS-90	-200 to +800 °C	≤ 0.25 % from -80 °C
Chromel-Alumel		GOST R 8.585-2001	ITS-90	-270 to 1372 °C	≤ 0.25 % from -80 °C
Ambient temperature influence	≤ 100 ppm/K				
Smallest measuring span	Type L (Fe-CuNi), J, U, T, K, E, N, Chromel-Alumel: 100 K Type S, R, B, C, D, A1, Chromel-Copel: 500 K				
Measuring range start/end	Freely programmable within the limits in steps of 0.1 K				
Cold junction	Internal (Pt100) or external (constant)				
Reference point accuracy (internal)	± 1 K				
Reference point temperature (external)	-30 to +85 °C (adjustable)				
Sampling rate	3 or 6 channels: 125 ms				
Input filter	Digital filter, 2nd order; filter constant can be set from 0 to 100.0 s				
Galvanic isolation	See "Galvanic isolation"				
Base measuring range	20 to 70 mV				

¹ The accuracy value refers to the maximum measuring range. Small measuring ranges lead to reduced linearization accuracy.

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RTD temperature probe

Description	Standard	ITS	Connection type	Measuring range	Accuracy ¹	Measuring current
Pt50	IEC 751: 2008	ITS-90	2-/3-/4-wire	-200 to +850 °C	≤ 0.1 %	500 µA
Pt100	IEC 751: 2008	ITS-90	2-/3-/4-wire	-200 to +850 °C	≤ 0.1 %	500 µA
Pt500	IEC 751: 2008	ITS-90	2-/3-/4-wire	-200 to +850 °C	≤ 0.1 %	100 µA
Pt1000	IEC 751: 2008	ITS-90	2-/3-/4-wire	-200 to +850 °C	≤ 0.1 %	100 µA
Pt100	JIS 1604		2-/3-/4-wire	-200 to +650 °C	≤ 0.1 %	500 µA
Pt50	GOST 6651-2009 A.2	ITS-90	2-/3-/4-wire	-200 to +850 °C	≤ 0.1 %	500 µA
Pt100	GOST 6651-2009 A.2	ITS-90	2-/3-/4-wire	-200 to +850 °C	≤ 0.1 %	500 µA
Cu50	GOST 6651-2009 A.3	ITS-90	2-/3-/4-wire	-180 to +200 °C	≤ 0.4 %	500 µA
Cu100	GOST 6651-2009 A.3	ITS-90	2-/3-/4-wire	-180 to +200 °C	≤ 0.4 %	500 µA
Ni100	DIN 43760	ITPS-68	2-/3-/4-wire	-60 to +250 °C	≤ 0.2 %	500 µA
Ni100	GOST 6651-2009 A.5	ITPS-68	2-/3-/4-wire	-60 to +180 °C	≤ 0.2 %	500 µA
Ambient temperature influence		≤ 50 ppm/K				
Smallest measuring span		15 K				
Sensor lead wire resistance		Max. 10 Ω per lead for two-wire circuit Max. 30 Ω per lead for three/four-wire circuit				
Measuring range start/end		Freely programmable within the limits in steps of 0.1 K				
Sampling rate		3 or 6 channels: 125 ms				
Input filter		Digital filter, 2nd order; filter constant can be set from 0 to 100.0 s				
Galvanic isolation		See "Galvanic isolation"				

¹ The accuracy value refers to the maximum measuring range. Small measuring ranges lead to reduced linearization accuracy.

Resistance transmitter and resistor/potentiometer

Description	Measuring range	Accuracy ¹	Measuring current
Resistance transmitter	0 to 4000 Ω	$\leq 0.1 \%$	100 μA
Resistance/potentiometer	0 to 400 Ω	$\leq 0.1 \%$	500 μA
	0 to 4000 Ω	$\leq 0.1 \%$	100 μA
Ambient temperature influence	$\leq 100 \text{ ppm/K}$		
Connection type			
Resistance transmitter	Three-wire circuit		
Resistance/potentiometer	Two/three/four-wire circuit		
Smallest measuring span	60 Ω		
Sensor lead wire resistance	Max. 10 Ω per cable for two-wire and three-wire circuits		
Resistance values	Freely programmable within the limits in steps of 0.1 Ω		
Sampling rate	3 or 6 channels: 125 ms		
Input filter	Digital filter, 2nd order; filter constant can be set from 0 to 100.0 s		
Galvanic isolation	See "Galvanic isolation"		

¹ The linearization accuracy value refers to the maximum measuring range. Small measuring ranges lead to reduced linearization accuracy.

Voltage, current (standard signals)

Description	Measuring range	Accuracy ¹	Input resistance or burden voltage
Voltage	0 to 70 mV	$\leq 0.1 \%$	> 500 k Ω
	0 to 10 V	$\leq 0.05 \%$	> 500 k Ω
	-10 to +10 V	$\leq 0.05 \%$	> 500 k Ω
	-1 to +1 V	$\leq 0.08 \%$	> 500 k Ω
	0 to 1 V	$\leq 0.08 \%$	> 500 k Ω
Current	4 to 20 mA	$\leq 0.1 \%$	< 2 V
	0 to 20 mA	$\leq 0.1 \%$	< 2 V
Ambient temperature influence	$\leq 100 \text{ ppm/K}$		
Smallest measuring span			
Voltage	5 mV		
Current	0.5 mA		
Measuring range start/end			
Voltage	Freely programmable within the limits in steps of 0.01 mV		
Current	Freely programmable within the limits in steps of 0.01 mA		
Deviation below/above the measuring range	According to NAMUR recommendation NE 43 (only current input 4 to 20 mA)		
Sampling rate	3 or 6 channels: 125 ms		
Input filter	Digital filter, 2nd order; filter constant can be set from 0 to 100.0 s		
Galvanic isolation	See "Galvanic isolation"		

¹ The accuracy value refers to the maximum measuring range. Small measuring ranges lead to reduced linearization accuracy.

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Measuring circuit monitoring

The device response in the event of a fault is configurable.

Measuring probe	Probe break	Short-circuit	Polarity
Thermocouple	is detected	is not detected	is detected in certain conditions ¹
RTD temperature probe	is detected	is detected	is not detected
Resistance transmitter	is detected	is not detected	is not detected
Resistance/potentiometer	is detected	is not detected	is not detected
Voltage 0 to 70 mV	is detected	is not detected	is detected
Voltage 0 to 10 V	is not detected	is not detected	is detected
Voltage -10 to +10 V	is not detected	is not detected	is not detected
Voltage 0 to 1 V	is detected	is not detected	is detected
Voltage -1 to +1 V	is detected	is not detected	is not detected
Current 0 to 20 mA	is not detected	is not detected	is not detected
Current 4 to 20 mA	is detected	is detected	is detected

¹ dependent on the set characteristic line

6.1.2 Digital inputs (options 1 and 2)

Quantity	0, 6, or 12
Connector number (back of device)	6 and 10
Input	
Level	Logic level "0": < 3.5 V; logic level "1": > 10 V
Sampling rate	125 ms (max. counting frequency: 8 Hz)
Potential-free contact	R _{ON} : < 1 kΩ; R _{OFF} : > 50 kΩ (use of the auxiliary voltage 24 V)
Auxiliary voltage	DC 24 V +10/-15 %, max. 50 mA per option

6.1.3 Digital inputs/outputs (option 3)

Quantity	0 or 12
Connector number (back of device)	14 and 15
Input or output	Individually configurable as input or output
Input	
Level	Logic level "0": < 3.5 V; logic level "1": > 10 V
Sampling rate	125 ms (max. counting frequency: 8 Hz)
Potential-free contact	R _{ON} : < 1 kΩ; R _{OFF} : > 50 kΩ (use of the auxiliary voltage 24 V)
High-speed input	Input 1
Function	Counts each positive edge of the input signal
Max. counting frequency	12.5 kHz
Mark-to-space ratio	30 to 70 % (high-pulse ≥ 30 μs, low-pulse ≥ 30 μs)
Accuracy in flow measurement	0.5 % of measured value; ambient temperature influence: 50 ppm/K
Output	
Output signal	DC 0/24 V +10/-15 %; galvanically isolated
Current	Max. 40 mA per output, max. 100 mA on the whole
Auxiliary voltage	DC 24 V +10/-15 %, max. 100 mA (incl. current of digital outputs)

6.1.4 Analog outputs (options 1 and 2)

Quantity	0, 1, or 2
Connector number (back of device)	6 and 10
Voltage	
Output signal	DC 0 to 10 V
Load resistance	> 500 Ω
Current	
Output signal	DC 0(4) to 20 mA
Load resistance	< 450 Ω
Accuracy	0.5 %
Ambient temperature influence	150 ppm/K

6.1.5 Relay

Quantity	1
Connector number (back of device)	4
Relay (changeover contact)	
Switching capacity	3 A at AC 230 V, resistive load
Contact life	30,000 switching operations at rated load

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6.1.6 Interfaces

RS232/RS485	
Quantity	1 (can be switched between RS232 and RS485)
Connector type	SUB-D 9-pin (socket)
Baud rate	9600, 19200, 38400, 115200
Data format	8/1n, 8/1e, 8/1o
Protocol	Modbus RTU as master or slave; barcode scanner
Application	Communication with Modbus master/slave, connection of a barcode scanner
External inputs	Via Modbus master/slave functionality: 24 analog and 24 digital inputs, 10 batch texts, 4 event texts
Ethernet	
Quantity	1
Connector type	RJ45 (socket)
Transfer rate	10 Mbit/s, 100 Mbit/s
Protocol	IPv4; TCP, UDP; DHCP, DNS, HTTP, SMTP, SNTP, Modbus/TCP
Application	Communication with PC (setup program, data archiving, web server), email server, SNTP server, and Modbus master/slave
External inputs	Via Modbus master/slave functionality: 24 analog and 24 digital inputs, 10 batch texts, 4 event texts
Max. cable length	100 m
USB host	
Quantity	1 (on front with cover)
Connector type	A (socket)
Standard	USB 2.0 (high speed)
Application	To connect to USB memory stick (see accessories)
Max. current	100 mA
USB device	
Quantity	1 (on the back)
Connector type	Micro-B (socket)
Standard	USB 2.0 (high speed)
Application	To connect to a PC (setup program, PCC/PCA3000)
Max. cable length	5 m

6.1.7 Screen

Type	TFT color screen/touchscreen (resistive)
Size	14.5 cm (5.7")
Resolution	640 × 480 pixels (VGA)
Number of colors	65536
Frame rate	60 Hz (type)
Brightness setting	Adjustable on the device
Screen saver (switch-off)	After waiting period or control signal

6.1.8 Electrical data

Voltage supply	AC 110 to 240 V +10/-15 %, 48 to 63 Hz or AC/DC 20 to 30 V, 48 to 63 Hz
Electrical safety	According to DIN EN 61010-1 Overvoltage category II, pollution degree 2
Protection rating	I with internal isolation from SELV
Power consumption AC 110 to 240 V AC/DC 20 to 30 V	< 30 VA < 18 VA
Data backup	Internal flash memory
Data buffering	Battery (operating life > 7 years); additionally, storage capacitor for buffering during battery change (buffer time approx. 6 minutes)
Clock	Battery-buffered real-time clock
Electrical connection	On the back via push-in spring-cage terminals
Conductor cross section Wire or strand without ferrule Strand with ferrule 2 × strand with twin ferrule with plastic collar	At plug connector 4 and 5 (voltage supply and relay) Min. 0.2 mm ² , max. 2.5 mm ² Min. 0.25 mm ² , max. 2.5 mm ² Min. 0.5 mm ² , max. 1.5 mm ² (both strands with identical cross section)
Conductor cross section Wire or strand without ferrule Strand with ferrule	At plug connector 6 to 15 (inputs and outputs) Min. 0.14 mm ² , max. 1.5 mm ² Without plastic collar: min. 0.25 mm ² , max. 1.5 mm ² With plastic collar: min. 0.25 mm ² , max. 0.5 mm ²
Voltage supply influence	< 0.1 % of the measuring range

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6.1.9 Environmental influences

Ambient temperature range	
Storage	-20 to +60 °C
Operation	0 to +50 °C
Site altitude	Up to 2000 m above sea level
Climatic environmental conditions	According to DIN EN 60721-3 with extended temperature range
Resistance to climatic conditions	≤ 85 % rel. humidity without condensation
Storage	According to class 1K2
Operation	According to class 3K3
Mechanical environmental conditions	According to DIN EN 60721-3
Storage	According to class 1M2
Transport	According to class 2M2
Operation	According to class 3M3
Electromagnetic compatibility (EMC)	According to DIN EN 61326-1
Interference emission	Class A – only for industrial use –
Interference immunity	Industrial requirements

6.1.10 Case

Case type	Flush-mounted case according to DIN IEC 61554 made of zinc-plated steel sheet (indoor use)
Case front	Made of diecast zinc with decor foil
Front frame dimensions	144 mm x 144 mm (front frame depth approx. 8 mm incl. seal)
Mounting depth	119 mm (incl. spring-cage terminals)
Panel cut-out	138 ^{+1.0} mm x 138 ^{+1.0} mm
Panel thickness	2 to 8 mm
Case fastening	In panel, using the four supplied mounting elements
Operating position	Any, with due consideration for the viewing angle of the screen, horizontal ±50°, vertical ±30°
Protection type	According to DIN EN 60529, IP65 on the front, IP20 on the back
Weight	Max. 1.6 kg

6.1.11 Approvals / approval marks

Approval mark	Testing agency	Certificates/certification numbers	Inspection basis	Valid for
c UL us	Underwriters Laboratories	Submitted	UL 61010-1 (3rd Ed.), CAN/CSA-22.2 No. 61010-1 (3rd Ed.)	All types

6.2 Barcode


NOTE!

The batch control via barcode scanner requires the appropriate configuration of the paperless recorder. The right „Enter batch texts“ is required.

Initialize the barcode scanner

The barcode scanner must be initialized once before use. Example:

Step	Activity
1	Scan the „Factory Default Settings“ barcode.
2	Scan the „RS-232 Standard“ barcode („Select RS-232 Standard“).

Information and bar codes can be found in the manual of the barcode scanner used.

Display the batch report

This function requires the appropriate display configuration (Configuration > Display > Generally: Barcode -> Batch image = Yes).

Step	Activity
1	Scan the BATCH1 barcode.



The batch report is displayed.

Enter the batch texts

Step	Activity
1	Scan the barcodes for the batch text of each line one after the other (starting from the first line).

All batch lines which were configured for barcode input are successively filled with the scanned text. The last line will be overwritten at the next entry.


NOTE!

The codes for batch control (BATCH1, START, STOP, RESET) can not be read as a batch text.

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Reset the texts

Step	Activity
1	Scan the RESET barcode.



The entered batch texts are reset. The default texts are shown and the first line is prepared again for the text input.

The default text is defined in the configuration of the batch line (Configuration > Batch > Batch line: Default text).

Start the batch reporting

Step	Activity
1	Scan the START barcode.



The batch reporting is started.

Stop the batch reporting

Step	Activity
1	Scan the STOP barcode.



The batch reporting is stopped.

In the current batch report, depending on the configuration of the batch line, texts that have been read via barcode are either reset to the default text (Configuration > Batch > Batch line: Delete line = Yes) or maintained.

In the completed batch report, the texts are saved.

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