KA00271R/09/EN/18.25-00
71705712
2025-01-13

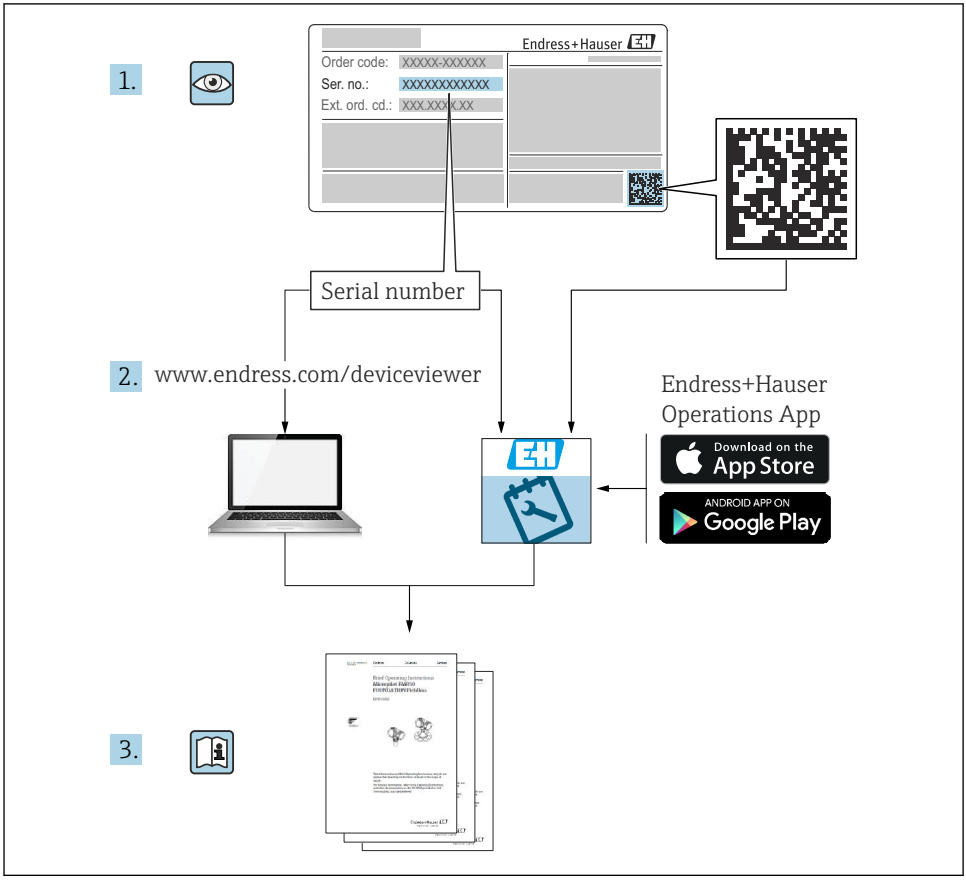
Brief Operating Instructions **RIA45**

Process indicator with control unit

These Brief Operating Instructions are not a substitute for the Operating Instructions pertaining to the device.
Detailed information can be found in the Operating Instructions and the additional documentation.

Available for all device versions via:
- Internet: www.endress.com/deviceviewer
- Smartphone/tablet: Endress+Hauser Operations app

Endress+Hauser
People for Process Automation


1.
Endress+Hauser
Order code: XXXXX-XXXXXX
Ser. no.: XXXXXXXXXXXX
Ext. ord. cd.: XXX.XXX-XXX
Serial number
2.
www.endress.com/deviceviewer
Endress+Hauser
Operations App
Download on the
App Store
ANDROID APP ON
Google Play
3.

A0023555

Table of contents

1 About this document

1.1 Symbols

1.1.1 Safety symbols

DANGER This symbol alerts you to a dangerous situation. Failure to avoid this situation will result in serious or fatal injury.	WARNING This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in serious or fatal injury.
CAUTION This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in minor or medium injury.	NOTICE This symbol contains information on procedures and other facts which do not result in personal injury.

1.1.2 Symbols for certain types of information

Symbol	Meaning	Symbol	Meaning
	**Permitted** Procedures, processes or actions that are permitted.		**Preferred** Procedures, processes or actions that are preferred.
	**Forbidden** Procedures, processes or actions that are forbidden.		**Tip** Indicates additional information.
	Reference to documentation		Reference to page
	Reference to graphic	1., 2., 3....	Series of steps
	Result of a step		Visual inspection

1.1.3 Electrical symbols

	Direct current		Alternating current
	Direct current and alternating current		**Ground connection** A grounded terminal which, as far as the operator is concerned, is grounded via a grounding system.

1.1.4 Symbols in graphics

1, 2, 3,...	Item numbers	**A, B, C, ...**	Views

2 Safety instructions

2.1 Requirements for the personnel

The personnel must fulfill the following requirements for its tasks:
- Trained, qualified specialists must have a relevant qualification for this specific function and task.
- Are authorized by the plant owner/operator.
- Are familiar with federal/national regulations.
- Before starting work, read and understand the instructions in the manual and supplementary documentation as well as the certificates (depending on the application).
- Follow instructions and comply with basic conditions.

2.2 Intended use

The process indicator evaluates analog process variables and displays them on its multicolored screen. Processes can be monitored and controlled with the device's outputs and limit relays. The device is equipped with a wide array of software functions for this purpose. Power can be supplied to 2-wire sensors with the integrated loop power supply.

- The device is an associated apparatus and may not be installed in the hazardous area.
- The manufacturer accepts no liability for damages resulting from improper or non-intended use. The device must not be converted or modified in any way.
- The device is designed for installation in a panel and must only be operated in an installed state.

2.3 Product liability

The manufacturer does not accept any responsibility for damage that results from non-designated use and from failure to comply with the instructions in this manual.

2.4 Workplace safety

For work on and with the device:

- ▶ Wear the required personal protective equipment according to federal/national regulations.

2.5 Operational safety

Damage to the device!

- ▶ Operate the device in proper technical condition and fail-safe condition only.
- ▶ The operator is responsible for the interference-free operation of the device.

2.6 Product safety

This state-of-the-art device is designed and tested in accordance with good engineering practice to meet operational safety standards. It left the factory in a condition in which it is safe to operate.

It meets general safety standards and legal requirements. It also complies with the EU directives listed in the device-specific EU declaration of conformity. The manufacturer confirms this by affixing the CE mark.

3 Incoming acceptance and product identification

3.1 Incoming acceptance

On receipt of the delivery:

1. Check the packaging for damage.
   - ↳ Report all damage immediately to the manufacturer.
     Do not install damaged components.

2. Check the scope of delivery using the delivery note.
3. Compare the data on the nameplate with the order specifications on the delivery note.
4. Check the technical documentation and all other necessary documents, e.g. certificates, to ensure they are complete.

If one of the conditions is not satisfied, contact the manufacturer.

3.2 Product identification

The device can be identified in the following ways:
- Nameplate specifications
- Enter the serial number from the nameplate into *Device Viewer* (www.endress.com/deviceviewer): all the information about the device and an overview of the Technical Documentation supplied with the device are displayed.
- Enter the serial number from the nameplate into the *Endress+Hauser Operations App* or scan the 2-D matrix code (QR code) on the nameplate with the *Endress+Hauser Operations App*: all the information about the device and the technical documentation pertaining to the device is displayed.

3.2.1 Nameplate

Do you have the correct device?

The nameplate provides you with the following information on the device:
- Manufacturer identification, device designation
- Order code
- Extended order code
- Serial number
- Tag name (TAG) (optional)
- Technical values, e.g. supply voltage, current consumption, ambient temperature, communication-specific data (optional)
- Degree of protection
- Approvals with symbols
- Reference to Safety Instructions (XA) (optional)

▶ Compare the information on the nameplate with the order.

3.2.2 Name and address of manufacturer

Name of manufacturer:	Endress+Hauser Wetzer GmbH + Co. KG
Address of manufacturer:	Obere Wank 1, D-87484 Nesselwang or www.endress.com

3.3 Storage and transport

Note the following points:
The permitted storage temperature is −40 to 85 °C (−40 to 185 °F); it is possible to store the device at borderline temperatures for a limited period (48 hours maximum).

Pack the device for storage and transportation in such a way that it is reliably protected against impact and external influences. The original packaging offers the best protection.

Avoid the following environmental influences during storage:
- Direct sunlight
- Proximity to hot objects
- Mechanical vibration
- Aggressive media

4 Installation

4.1 Installation requirements

NOTICE

High temperatures reduce the life-time of the display
- ▶ To avoid heat accumulation, ensure the device is sufficiently cooled.
- ▶ Do not operate the device in the upper temperature range over a longer period of time.

The process indicator is designed for use in a panel.

The orientation is determined by the readability of the display. The connections and outputs are provided on the rear. The cables are connected via coded terminals.

Operating temperature range:

Non-Ex/Ex devices: −20 to 60 °C (−4 to 140 °F)

UL devices: −20 to 50 °C (−4 to 122 °F)

4.2 Dimensions

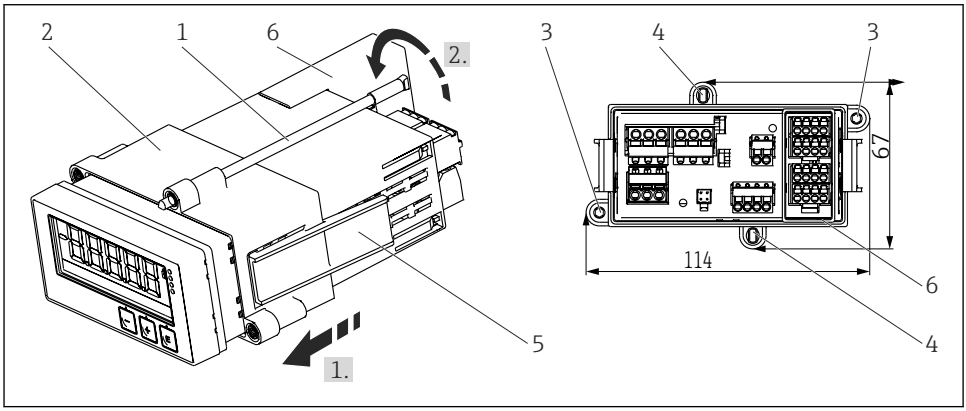
Observe an installation depth of 150 mm (5.91 in) for devices incl. terminals and fastening clips.

In the case of devices with an Ex approval, the Ex frame is required and an installation depth of 175 mm (6.89 in) must be taken into consideration. Further dimensions can be found in the "Technical data" section in the Operating Instructions.

- Panel cutout: 92 mm (3.62 in) x 45 mm (1.77 in).
- Panel thickness: max. 26 mm (1 in).
- Max. viewing angle range: 45° to the left and right from the central display axis.
- If the devices are arranged horizontally beside one another in the X-direction, or arranged vertically on top of one another in the Y-direction, the mechanical distance (specified by the housing and front section) must be observed.

4.3 Installing the device

The necessary panel cutout is 92 mm (3.62 in) x 45 mm (1.77 in)



1 Installation in a panel

1. Screw the threaded rods (item 1) into the positions provided on the mounting frame (item 2). Four opposing screw positions (item 3/4) are available for this purpose.
2. Push the device through the panel cutout from the front.
3. To secure the casing in the panel, hold the device level and push the mounting frame (item 2), with the threaded rods screwed in, over the casing until the frame locks into position (1).
4. Then tighten the threaded rods to fix the device in place (2.).
5. For the Ex option, mount the spacer (item 6) for the terminals.

To remove the device, the mounting frame can be unlocked at the locking elements (item 5) and then removed.

4.4 Post-installation check

- Is the seal undamaged?
- Is the mounting frame securely fastened on the housing of the device?
- Are the threaded rods properly tightened?
- Is the device located in the center of the panel cutout?
- Is the spacer mounted (Ex option)?

5 Electrical connection

WARNING

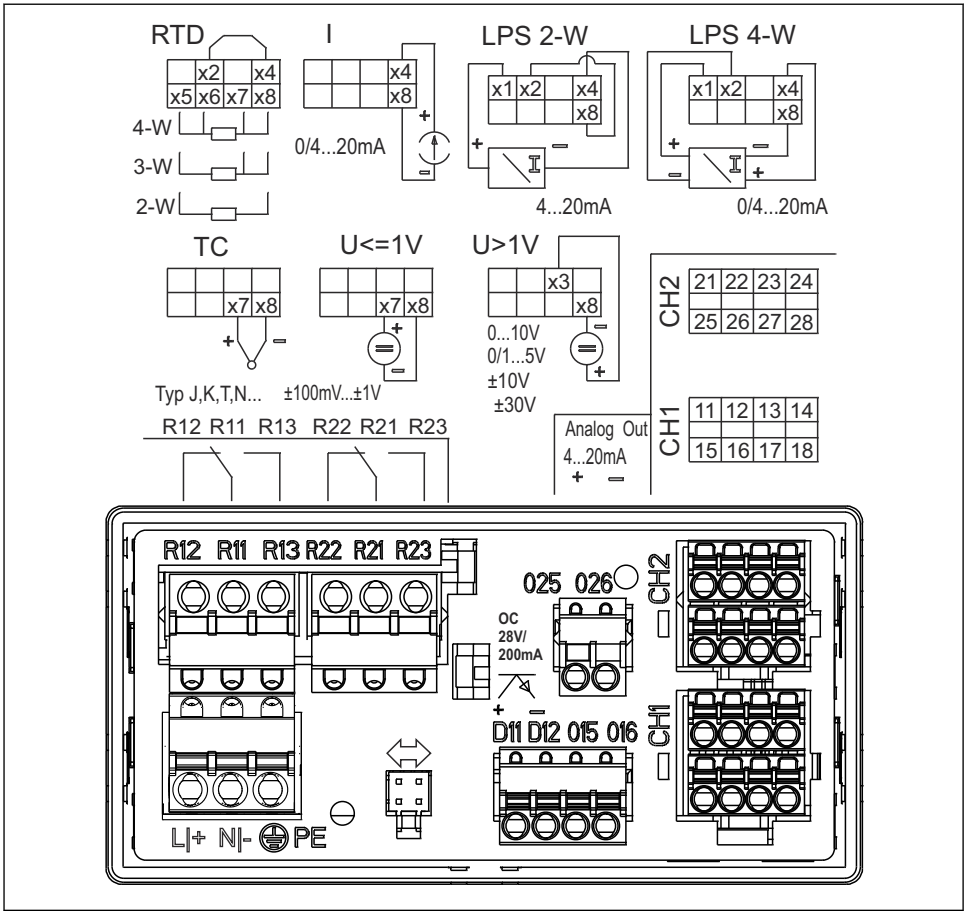
Danger! Electric voltage

- The entire connection of the device must take place while the device is de-energized.
- Before commissioning the device, make sure that the supply voltage matches the voltage specifications on the nameplate.
- Provide suitable switch or circuit breaker in building installation. This switch must be provided close to the device (within easy reach) and marked as a circuit breaker.
- An overcurrent protection element (rated current ≤ 10 A) is required for the power cable.

- Observe the terminal designation on the front of the device.
- The mixed connection of safety extra-low voltage and dangerous contact voltage to the relay is permitted.

5.1 Connecting the device

A loop power supply (LPS) is provided for every input. The loop power supply is primarily designed to supply power to 2-wire sensors and is galvanically isolated from the system and the outputs.

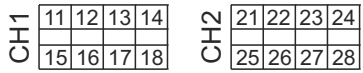


2 *Terminal assignment of device (channel 2 and relays optional). Note: Illustrated contact position of the relays if the power supply fails.*

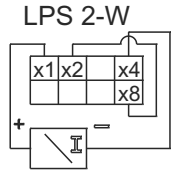
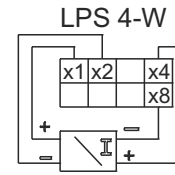
We recommend you connect a suitable surge arrester upstream if high-energy transients can be expected on long signal cables.

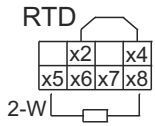
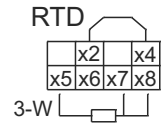
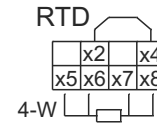
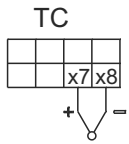
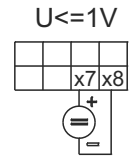
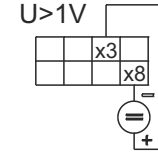
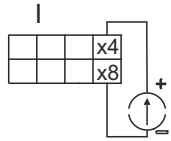
5.1.1 Overview of possible connections on the process indicator

Terminal assignment of analog inputs, channel 1 and 2 (optional)

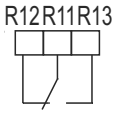
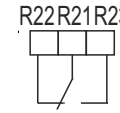


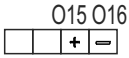
A0010406

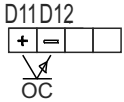
Loop power supply connection	
2-wire	4-wire
	

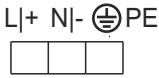
Analog input connection		
RTD/resistor, 2-wire	RTD/resistor, 3-wire	RTD/resistor, 4-wire
		
Thermocouple	U ≤ 1 V	U > 1 V
		
Current		
		

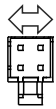
Illustrated contact position of the relays if the power supply fails:

(Optional) relay connection	
Relay 1	Relay 2
	

Analog output connection	
Analog output 1	Analog output 2 (optional)
 A0010416	 A0010414

Digital output connection
Digital output / open collector
 A0010415

Power supply connection
24 to 230 V AC/DC (-20 % / +10 %) 50/60 Hz
 A0010418

Interfaces
Interface for configuring with PC software
 A0010417

5.2 Post-connection check

Device condition and specifications	**Notes**
Are cables or the device damaged?	Visual inspection
Electrical connection	**Notes**
Does the supply voltage match the specifications on the nameplate?	24 to 230 V AC/DC (-20 % / +10 %) 50/60 Hz
Are all terminals firmly engaged in their correct slot? Is the coding on the individual terminals correct?	-

Are the mounted cables strain-relieved?	-
Are the power supply and signal cables correctly connected?	See the wiring diagram on the housing.

6 Operation options

Thanks to the device's simple operating concept, it is possible to commission the device for many applications without a printed set of Operating Instructions.

The FieldCare operating software is a quick and convenient way of configuring the device. It contains brief explanatory (help) texts that provide additional information on individual parameters.

6.1 Operating elements

6.1.1 Local operation at the device

The device is operated by means of the three keys integrated in the front part of the device

	▪ Open the Configuration menu ▪ Confirm an entry ▪ Select a parameter or submenu offered in the menu
	Within the Configuration menu: ▪ Scroll step-by-step through the parameters/menu items/characters offered ▪ Change the value of the selected parameter (increase or decrease) Outside the Configuration menu: Display enabled and calculated channels, as well as min. and max. values for all the active channels.

You can always exit menu items / submenus by selecting "x Back" at the end of the menu.

Leave the setup directly without saving the changes by pressing the '-' and '+' keys simultaneously for longer (> 3 s).

6.1.2 Configuration via interface & PC configuration software

⚠ CAUTION

Undefined states and switching of outputs and relays while configuring with the configuration software

▶ Do not configure the device when the process is running.

To configure the device using the FieldCare Device Setup software, connect the device to your PC. You need a special interface adapter for this purpose, e.g. the Commubox FXA291.

Installing the communication DTM in FieldCare

Before the indicator can be configured, FieldCare Device Setup must be installed on your PC. The installation instructions can be found in the FieldCare instructions.

Install FieldCare device drivers according to the following instructions:

1. First install the device driver "CDI DTMlibrary" in FieldCare. It can be found in FieldCare under "Endress+Hauser Device DTMs → Service / Specific → CDI".
2. The DTM catalog in FieldCare must then be updated. Add the new installed DTMs to the DTM catalog.

Installation of the Windows driver for TXU10/FXA291

Administrator rights are required to install the driver in Windows. Proceed as follows:

1. Connect the device to the PC using the TXU10/FXA291 interface adapter.
   ↳ A new device is detected and the Windows installation wizard opens.
2. In the installation wizard, do not allow the device to automatically search for software. For this, select "No, not this time" and click "Next".
3. In the next window, select "Install software from a list or specific location" and click "Next".
4. In the next window, click "Browse" and select the directory where the driver for the TXU10/FXA291 adapter is saved.
   ↳ The driver is installed.
5. Click "Finish" to finish the installation.
6. Another device is detected and the Windows installation wizard starts again. Again, choose "No, not this time" and click "Next".
7. In the next window, select "Install software from a list or specific location" and click "Next".
8. In the next window, click "Browse" and select the directory where the driver for the TXU10/FXA291 adapter is saved.
   ↳ The driver is installed.
9. Click "Finish" to finish the installation.

This completes the driver installation for the interface adapter. The COM port that has been assigned can be seen in the Windows device manager.

Connecting the device

Proceed as follows to establish a connection with FieldCare:

1. Firstly, edit the connection macro. For this, start a new project and in the window that is displayed, right-click the symbol for "Service (CDI) FXA291" and select "Edit".
2. In the next window, to the right of "Serial interface", select the COM port which was assigned during the installation of the Windows driver for the TXU10/FXA291 adapter.
   ↳ The macro is now configured. Select "Finish".

3. Start the "Service (CDI) FXA291" macro by double-clicking it and confirm the subsequent query with "Yes".
   ↳ A search for a connected device is performed and the suitable DTM is opened. Online configuration is started.

Continue with device configuration in accordance with the Operating Instructions for the device. The complete Setup menu, i.e. all of the parameters listed can be found in FieldCare Device Setup.

In general, it is possible to overwrite parameters with the FieldCare PC software and the appropriate device DTM even if access protection is active.

If access protection by means of a code should be extended to the software, this function should be activated in the extended device setup.

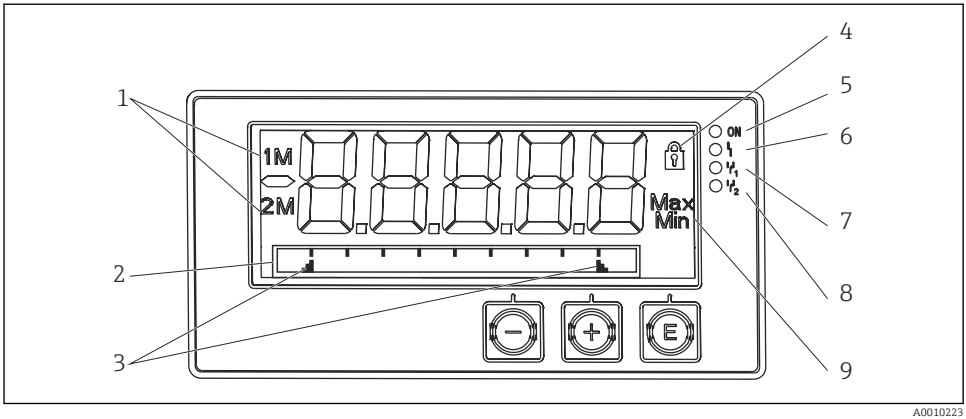
For this, select Menu → Setup / Expert → System → Overfill protect → German WHG and confirm.

6.2 Display and device status indicator / LED

The process indicator provides an illuminated LC display which is split into two sections. The segment section displays the value of the channel and additional information and alarms.

In the dot matrix section, additional channel information, such as the TAG, unit or bar graph, is displayed in the display mode. Operating text in English is displayed here during operation.

The parameters for configuring the display are described in detail in the "Configuring the device" section of the Operating Instructions.



3 Display of the process indicator

1 Channel indicator: 1: analog input 1; 2: analog input 2; 1M: calculated value 1; 2M: calculated value 2
2 Dot matrix display for TAG, bar graph, unit
3 Limit value indicators in the bar graph
4 "Operation locked" indicator
5 Green LED; on - supply voltage applied
6 Red LED; on - error/alarm
7 Yellow LED; on - relay 1 energized
8 Yellow LED; on - relay 2 energized
9 Minimum/maximum value indicator

In the event of an error, the device switches automatically between displaying the error and displaying the channel, see the "Device self-diagnosis, ..." and "Troubleshooting" sections of the Operating Instructions.

6.3 Symbols

6.3.1 Display symbols

🔒	The device is locked/operator lock; the device setup is locked for changes to parameters; the display can be changed.
1	Channel one (Analog in 1)
2	Channel two (Analog in 2)
1M	First calculated value (Calc value 1)
2M	Second calculated value (Calc value 2)
Max	Maximum value/value of the maximum indicator of the channel displayed
Min	Minimum value/value of the minimum indicator of the channel displayed

In the event of an error:

The display shows: -----, the measured value is not displayed

Underrange/overrange: -----

The error and the channel identifier (TAG) are specified in the dot matrix section.

6.3.2 Icons in the editing mode

The following characters are available for entering customized text:

'0-9', 'a-z', 'A-Z', '+', '-', '*', '/', '\', '%', '°', '2', '3', 'm', '.', ',', ';', ':', '!', '?', '_', '#', '$', '"', ''', '(', ')', '~'

For numerical entries, the numbers '0-9' and the decimal point are available.

Furthermore, the following icons are used in the editing mode:

	Symbol for setup
	Symbol for expert setup
	Symbol for diagnostics
	Accept entry. If this symbol is selected, the entry is applied at the position specified by the user, and you quit editing mode.
	Reject entry. If this symbol is selected, the entry is rejected and you quit editing mode. The previously set text remains.
	Jump one position to the left. If this symbol is selected, the cursor jumps one position to the left.
	Delete backwards. If this symbol is selected, the character to the left of the cursor position is deleted.
	Delete all. If this symbol is selected, the entire entry is deleted.

6.4 Commissioning

Detailed information on commissioning can be found in the Operating Instructions.

www.addresses.endress.com

Endress+Hauser

People for Process Automation