

# Brief Operating Instructions

## RIA45

Process indicator

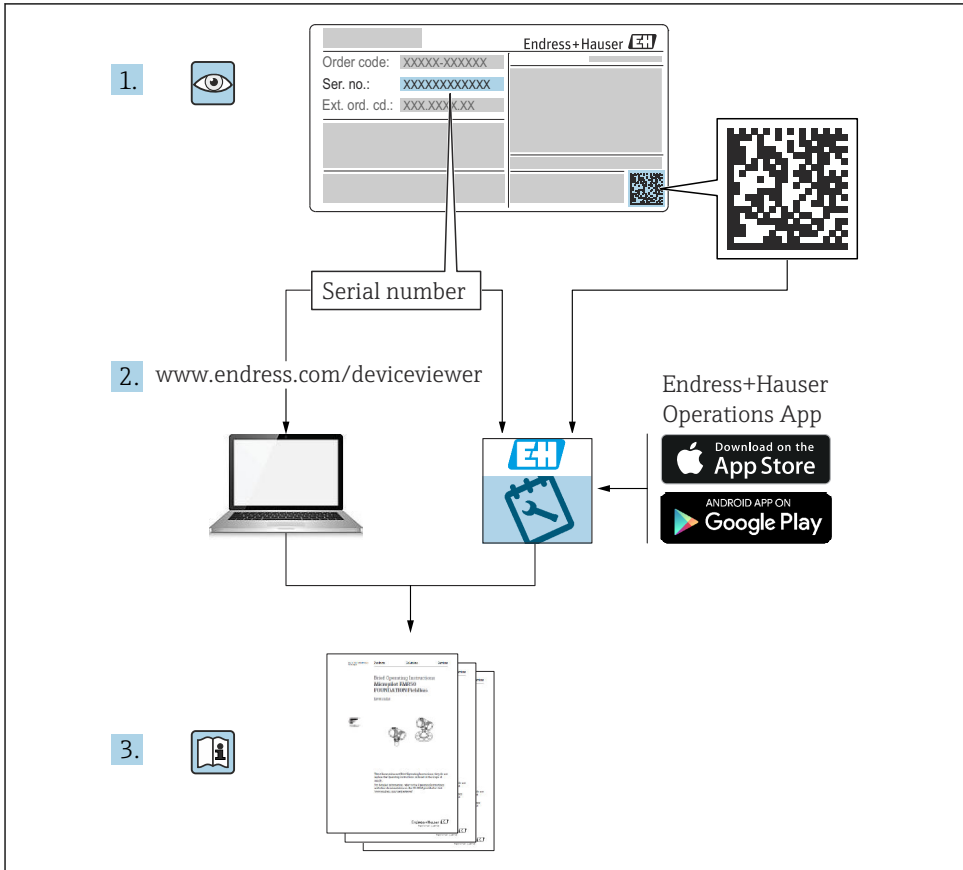


These Brief Operating Instructions are not a substitute for the Operating Instructions pertaining to the device.

Detailed information is provided in the Operating Instructions and other documentation.

Available for all device versions via:

- Internet: [www.endress.com/deviceviewer](http://www.endress.com/deviceviewer)
- Smartphone/tablet: Endress+Hauser Operations app



A0023555

# Table of contents

<b>1</b>	<b>About this document</b>	<b>3</b>
1.1	Symbols	3
<b>2</b>	<b>Safety instructions</b>	<b>5</b>
2.1	Requirements for the personnel	5
2.2	Intended use	5
2.3	Workplace safety	5
2.4	Operational safety	5
2.5	Product safety	6
<b>3</b>	<b>Incoming acceptance and product identification</b>	<b>6</b>
3.1	Incoming acceptance	6
3.2	Product identification	6
3.3	Certificates and approvals	6
3.4	Storage and transport	7
<b>4</b>	<b>Mounting</b>	<b>7</b>
4.1	Installation requirements	7
4.2	Dimensions	7
4.3	Mounting procedure	8
4.4	Post-installation check	9
<b>5</b>	<b>Wiring</b>	<b>9</b>
5.1	Electrical connection	9
5.2	Post-connection check	12
<b>6</b>	<b>Operation</b>	<b>13</b>
6.1	Operating elements	13
6.2	Display and device status indicator / LED	15
6.3	Symbols	16
6.4	Device configuration	17

## 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 Electrical symbols**




Symbol	Meaning	Symbol	Meaning
	Direct current		Alternating current
	Direct current and alternating current		<b>Ground connection</b> A grounded terminal which, as far as the operator is concerned, is grounded via a grounding system.

Symbol	Meaning
	<b>Potential equalization connection (PE: protective earth)</b> Ground terminals that must be connected to ground prior to establishing any other connections.  The ground terminals are located on the interior and exterior of the device: <ul style="list-style-type: none"> <li>▪ Interior ground terminal: potential equalization is connected to the supply network.</li> <li>▪ Exterior ground terminal: device is connected to the plant grounding system.</li> </ul>

**1.1.3 Symbols for certain types of information**

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

### 1.1.4 Symbols in graphics

Symbol	Meaning	Symbol	Meaning
1, 2, 3,...	Item numbers		Series of steps
A, B, C, ...	Views	A-A, B-B, C-C, ...	Sections
	Hazardous area		Safe area (non-hazardous area)

## 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 incorrect use or use other than that intended. It is not permitted to convert or modify the device in any way.
- The device is designed for installation in a panel and must only be operated in an installed state.

### 2.3 Workplace safety

When working on and with the device:

- ▶ Wear the required personal protective equipment as per national regulations.

### 2.4 Operational safety

Risk of injury!

- ▶ Operate the device only if it is in proper technical condition, free from errors and faults.
- ▶ The operator is responsible for the interference-free operation of the device.

## 2.5 Product safety

This product is designed in accordance with good engineering practice to meet state-of-the-art safety requirements and has been tested and left the factory in a condition in which it is safe to operate.

# 3 Incoming acceptance and product identification

## 3.1 Incoming acceptance

Proceed as follows on receipt of the device:

1. Check whether the packaging is intact.
2. If damage is discovered:  
Report all damage immediately to the manufacturer.
3. Do not install damaged material, as the manufacturer cannot otherwise guarantee compliance with the safety requirements and cannot be held responsible for the consequences that may result.
4. Compare the scope of delivery to the contents of the order.
5. Remove all the packaging material used for transportation.

## 3.2 Product identification

The following options are available for identification of the device:

- Nameplate specifications
- Extended order code with breakdown of the device features on the delivery note

### 3.2.1 Name and address of manufacturer

<b>Name of manufacturer:</b>	Endress+Hauser Wetzer GmbH + Co. KG
<b>Address of manufacturer:</b>	Obere Wank 1, D-87484 Nesselwang
<b>Model/type reference:</b>	RIA45

## 3.3 Certificates and approvals



For certificates and approvals valid for the device: see the data on the nameplate



Approval-related data and documents: [www.endress.com/deviceviewer](http://www.endress.com/deviceviewer) → (enter the serial number)


### 3.3.1 Other standards and guidelines

- IEC 60529:  
Degrees of protection provided by enclosures (IP code)
- IEC 61010-1:  
Safety requirements for electrical equipment for measurement, control and laboratory use
- EN 60079-11:  
Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i" (optional)

## 3.4 Storage and transport

Please note the following:

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 and transport:

- Direct sunlight
- Vibration
- Aggressive media

# 4 Mounting

## 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 legibility 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

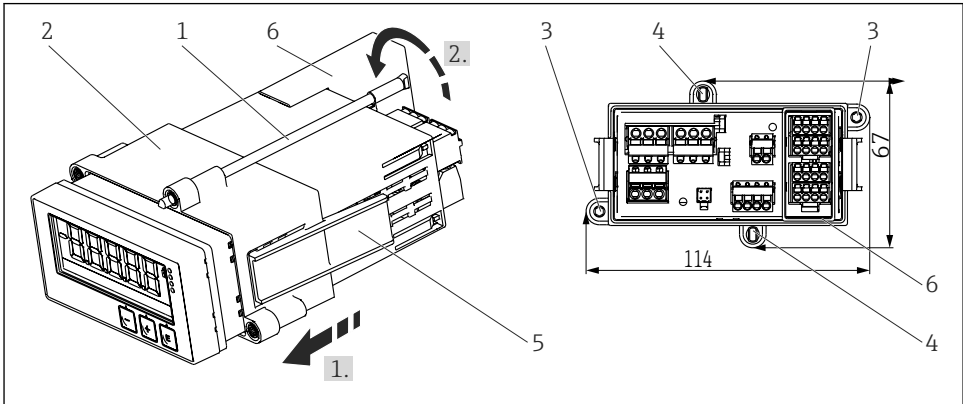
Observe the installation depth of approx. 150 mm (5.91 in) for the device incl. terminals and fastening clips.

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. For more dimensions please refer to 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 Mounting procedure

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



A0010404

#### 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 8) 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 Wiring

### WARNING

#### **Danger! Electric voltage!**

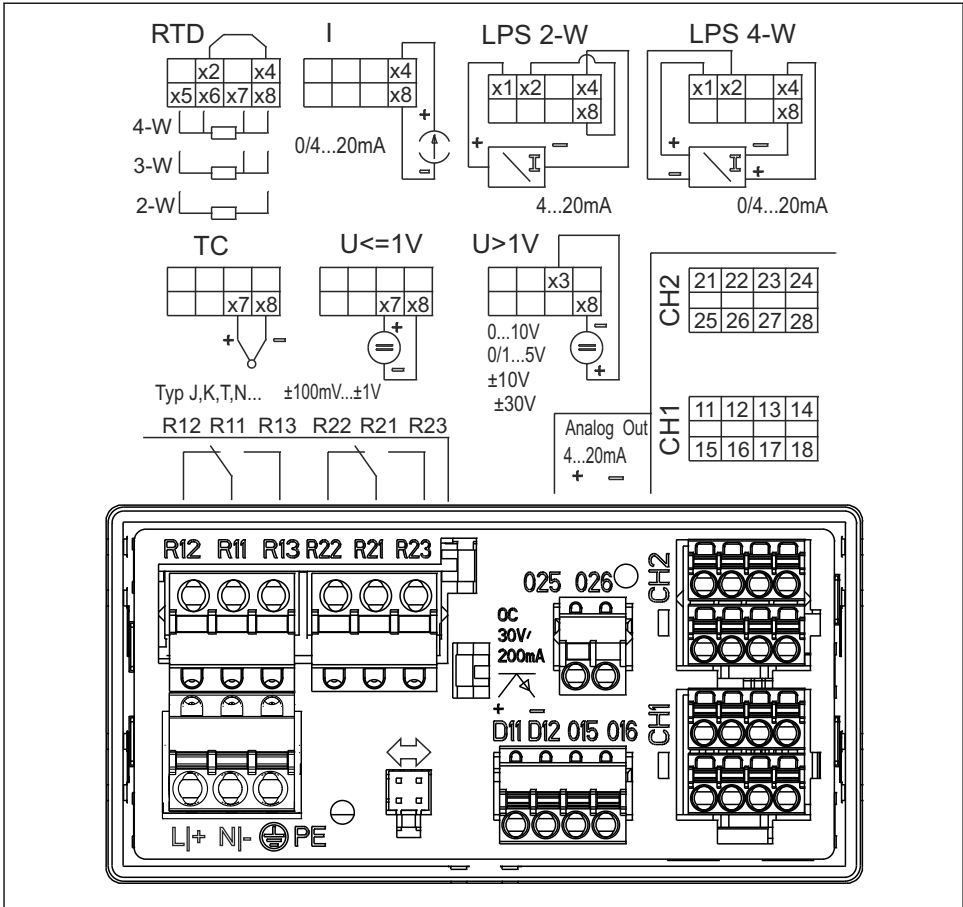
- ▶ The entire connection of the device must take place while the device is de-energized.
- ▶ The protective ground connection must be established before all other connections. If the protective ground is disconnected, this can be a source of danger.
- ▶ Before commissioning the device, make sure that 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  $\leq 10$  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 Electrical connection

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.



A0010228

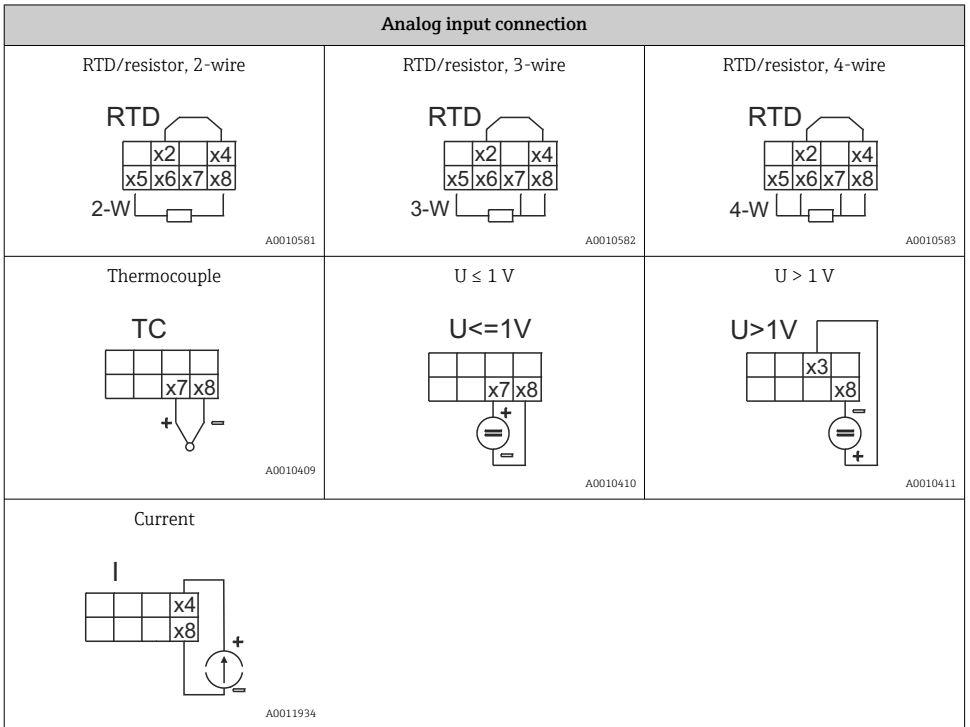
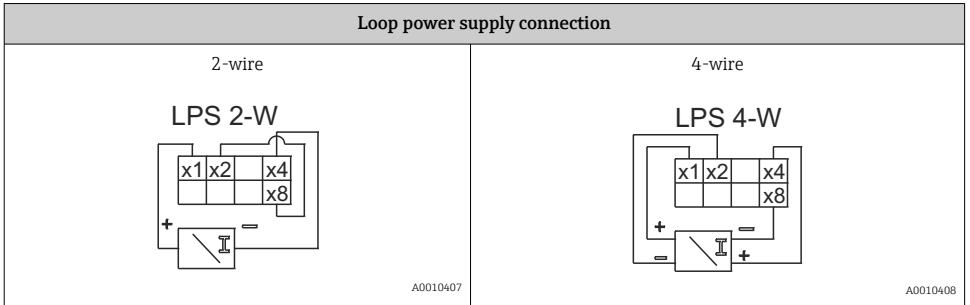
2 Terminal assignment of device (channel 2 and relays optional). Note: Illustrated contact position of the relays if the power supply fails.

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

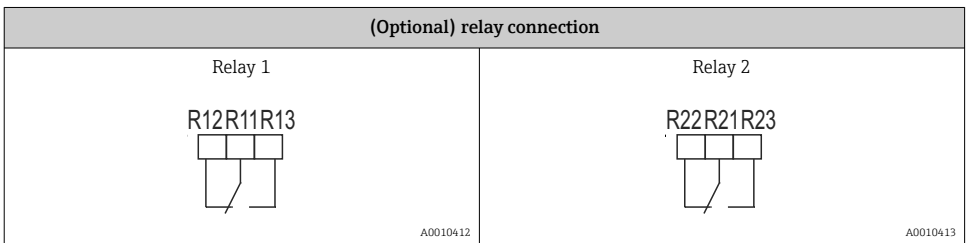
### 5.1.1 Overview of possible connections on the process indicator

Terminal assignment of analog inputs, channel 1 and 2 (optional)													
CH1	11	12	13	14	CH2	21	22	23	24				
	15	16	17	18		25	26	27	28				

A0010406

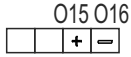


*Illustrated contact position of the relays if the power supply fails:*



**Analog output connection**

Analog output 1



A0010416

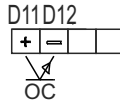
Analog output 2 (optional)



A0010414

**Digital output connection**

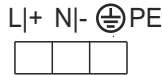
Digital output / open collector



A0010415

**Power supply connection**

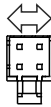
24 to 230 V AC/DC (-20 % / +10 %) 50/60 Hz



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

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



	<ul style="list-style-type: none"> <li>▪ Open the Configuration menu</li> <li>▪ Confirm an entry</li> <li>▪ Select a parameter or submenu offered in the menu</li> </ul>
	<p>Within the Configuration menu:</p> <ul style="list-style-type: none"> <li>▪ Scroll step-by-step through the parameters/menu items/characters offered</li> <li>▪ Change the value of the selected parameter (increase or decrease)</li> </ul> <p>Outside the Configuration menu:</p> <p>Display enabled and calculated channels, as well as min. and max. values for all the active channels.</p>

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.

Then install the FieldCare device driver 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.

## Establishing the connection

Proceed as follows to establish the 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 these Operating Instructions for the device. The complete Setup menu, i.e. all of the parameters listed in these Operating Instructions, can also be found in the FieldCareDevice 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.

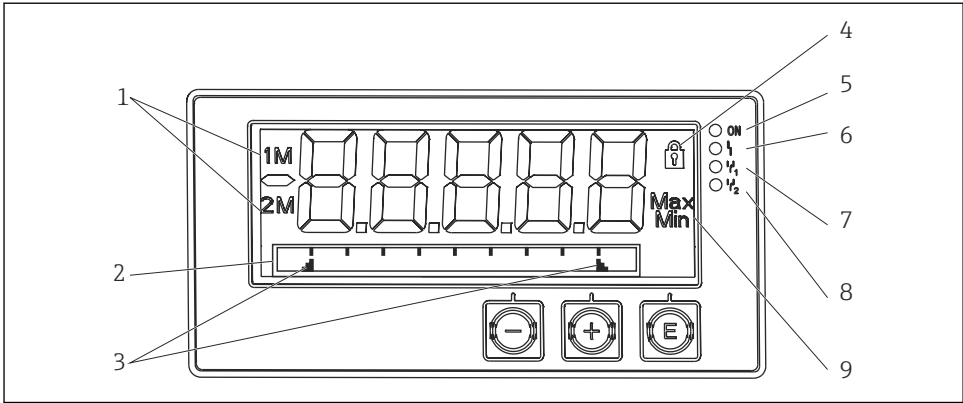
For this, select Menu → Setup / Expert → System → Overfill protect → German WHG and confirm.

## 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.



A0010223


**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 Device configuration**

Detailed information on the device configuration can be found in the Operating Instructions.







71573626

[www.addresses.endress.com](http://www.addresses.endress.com)

---