# Brief Operating Instructions **RIA46**

Field meter



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
- Smartphone/tablet: Endress+Hauser Operations app



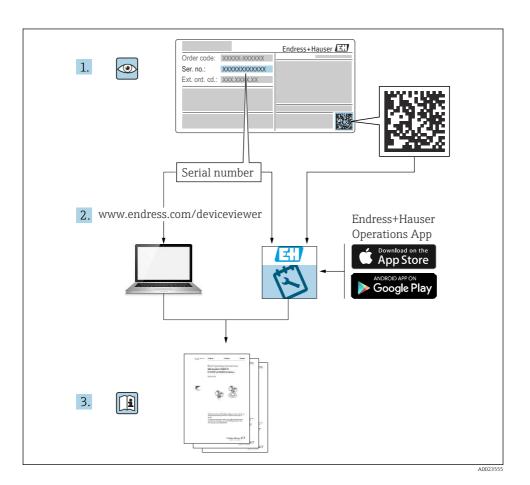


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### 1 About this document

### 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.

#### **A** CAUTION

This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in minor or medium injury.

About this document RIA46

#### **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	4-	Ground connection A grounded terminal which, as far as the operator is concerned, is grounded via a grounding system.

Symbol	Meaning
	Potential equalization connection (PE: protective earth) 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:  Interior ground terminal: potential equalization is connected to the supply network.  Exterior ground terminal: device is connected to the plant grounding system.

### 1.1.3 Symbols for certain types of information

Symbol	Meaning	Symbol	Meaning
<b>✓</b>	Permitted Procedures, processes or actions that are permitted.	<b>✓</b> ✓	Preferred Procedures, processes or actions that are preferred.
X	Forbidden Procedures, processes or actions that are forbidden.	i	Tip Indicates additional information.
	Reference to documentation	A	Reference to page
	Reference to graphic	1., 2., 3	Series of steps
L.	Result of a step		Visual inspection

RIA46 Safety instructions

#### 1.1.4 Symbols in graphics

Symbol	Meaning	Symbol	Meaning
1, 2, 3,	Item numbers	1., 2., 3	Series of steps
A, B, C,	Views	A-A, B-B, C-C,	Sections
EX	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 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 the field.

### 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-theart 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

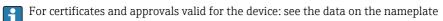
The following options are available for identification of the device:

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

#### 3.2.1 Name and address of manufacturer

Name of manufacturer:	Endress+Hauser Wetzer GmbH + Co. KG	
Address of manufacturer:	Obere Wank 1, D-87484 Nesselwang	
Model/type reference:	RIA46	

### 3.3 Certificates and approvals



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

RIA46 Mounting

#### 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

### **A** WARNING

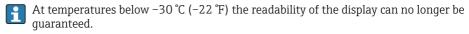
The hazardous area approval is no longer valid if the device is not installed correctly

► Pay attention to the installation conditions in the Ex-related safety instructions pertaining to the device.

### 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 indicator is designed for use in the field. 1)

The orientation is determined by the legibility of the display. The cable entry is located on the bottom of the device.

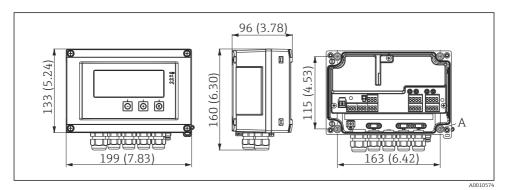
Operating temperature range:

<sup>1)</sup> Panel or surface mountable only, according to UL approval.

Mounting RIA46

-40 to 50 °C (-40 to 122 °F)

#### 4.2 Dimensions

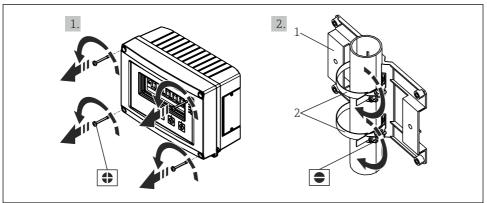


■ 1 Dimensions of the field indicator in mm (in)

A Drill-hole for direct wall mounting or on optional mounting plate with 4 screws Ø 5 mm (0.2 in)

### 4.3 Mounting procedure

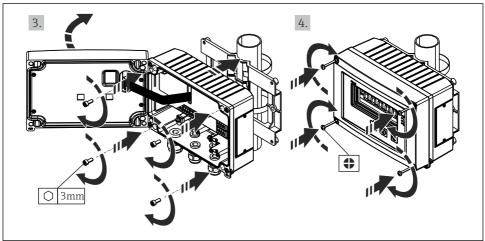
The field indicator can either be secured directly on the wall with 4 screws  $\varnothing$ 5 mm (0.2 in) or mounted on a pipe or wall with the optional mounting kit.



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- 2 Mounting the field indicator on a pipe
- 1 Mounting plate
- 2 Metal strap for pipe mounting

RIA46 Wiring



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■ 3 Mounting the field indicator on a pipe

#### 4.4 Post-installation check

- Is the seal undamaged?
- Is the housing firmly screwed to the wall or mounting plate?
- Are the housing screws firmly tightened?

### 5 Wiring

### **A** 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.

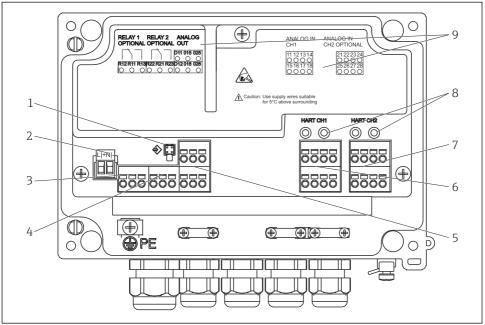


- Observe the terminal designation in the device.
- The mixed connection of safety extra-low voltage and dangerous contact voltage to the relay is permitted.

Wiring RIA46

#### 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.



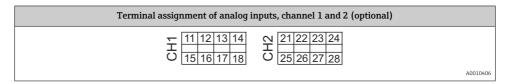
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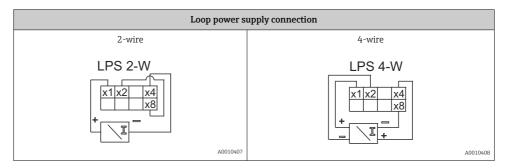
■ 4 Terminal assignment of device (channel 2 and relay optional)

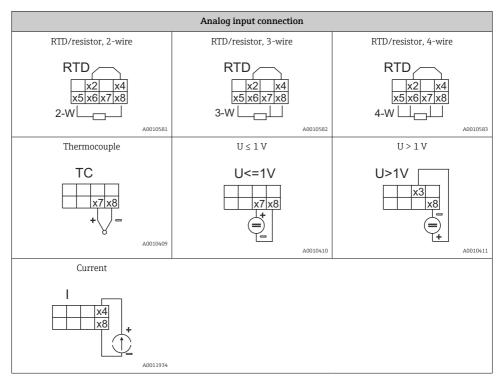
- 1 Connection socket for interface cable
- 2 Terminal for supply voltage
- 3 Terminal for relay 1 (optional)
- 4 Terminal for relay 2 (optional)
- 5 Terminal for analog and status output
- 6 Terminal for analog input 1
- 7 Terminal for analog input 2 (optional)
- 8 HART® connection sockets
- 9 Laser labeling of terminal assignment
- We recommend you connect a suitable surge arrester upstream if high-energy transients can be expected on long signal cables.

RIA46 Wiring

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

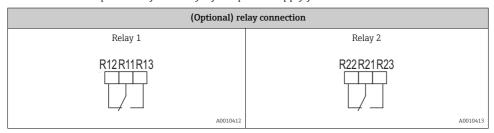


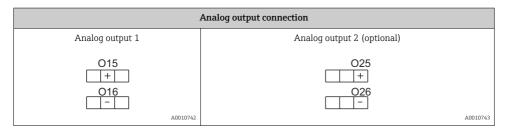


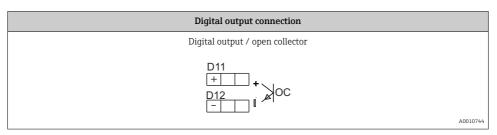


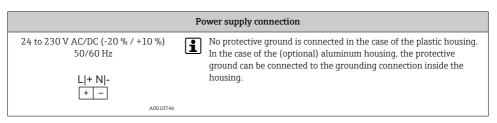
Wiring RIA46

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

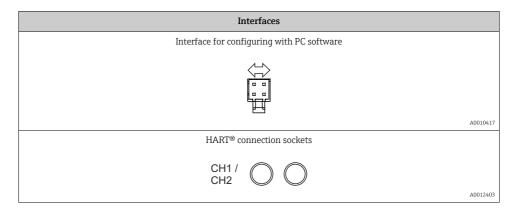




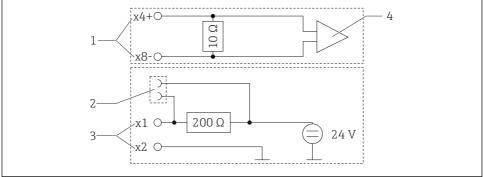




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The HART® terminals are connected to the internal resistor of the loop power supply. There is no internal connection to the current input. If the loop power supply of the device is not used, an external HART® resistor must be used in the 4 to 20 mA current loop.

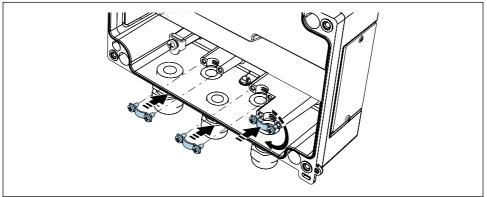


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- 5 Internal circuitry of the HART® connection sockets
- 1 Current input
- 2 HART® connection sockets
- 3 Loop power supply
- 4 A/D converter

Operation RIA46

### 5.2 Connecting the shield grounding (only aluminum housing)



A001/4935

■ 6 Shield grounding connection

#### 5.3 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.

RIA46 Operation

### 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

#### **A** 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:

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

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#### 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.

RIA46 Operation

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.

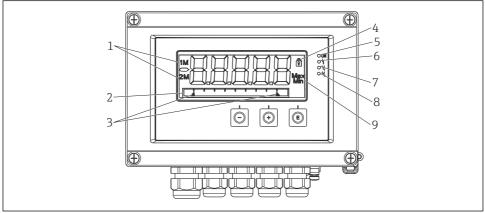
For this, select Menu  $\rightarrow$  Setup / Expert  $\rightarrow$  System  $\rightarrow$  Overfill protect  $\rightarrow$  German WHG and confirm

### 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.



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#### ■ 7 Display of the field 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

Operation RIA46

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:

۶	Symbol for setup
0	Symbol for expert setup
प	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.

RIA46 Operation

Jump one position to the left. If this symbol is selected, the cursor jumps one position to the lef		Jump one position to the left.  If this symbol is selected, the cursor jumps one position to the left.
	H-	Delete backwards.  If this symbol is selected, the character to the left of the cursor position is deleted.
	C	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.



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