Brief Operating Instructions **RIA16**

Loop-powered field indicator



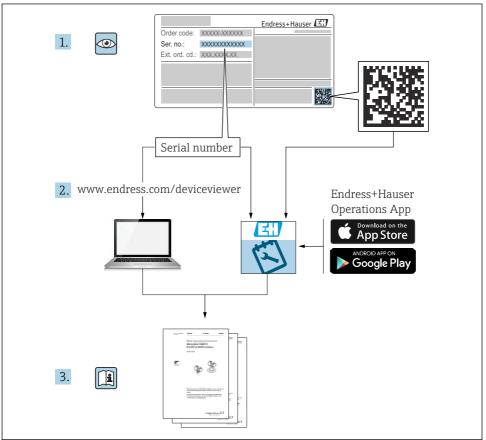
These Brief Operating Instructions are not a substitute for the Operating Instructions pertaining to the device.

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

Available for all device versions via:

- Internet: www.endress.com/deviceviewer
- 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.

ACAUTION

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

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	\sim	Alternating current
~	Direct current and alternating current	<u> </u>	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
	Permitted Procedures, processes or actions that are permitted.		Preferred Procedures, processes or actions that are preferred.
$\mathbf{\times}$	Forbidden Procedures, processes or actions that are forbidden.	i	Tip Indicates additional information.
	Reference to documentation		Reference to page
	Reference to graphic	1., 2., 3	Series of steps
4	Result of a step		Visual inspection

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)

1.2 Documentation

For an overview of the scope of the associated Technical Documentation, refer to the following:

- *Device Viewer* (www.endress.com/deviceviewer): Enter the serial number from the nameplate
- *Endress+Hauser Operations app*: Enter serial number from nameplate or scan matrix code on nameplate.

1.2.1 Document function

The following documentation may be available depending on the version ordered:

Document type	Purpose and content of the document	
Technical Information (TI)	Planning aid for your device The document contains all the technical data on the device and provides an overview of the accessories and other products that can be ordered for the device.	
Brief Operating Instructions (KA)	Guide that takes you quickly to the 1st measured value The Brief Operating Instructions contain all the essential information from incoming acceptance to initial commissioning.	
Operating Instructions (BA)	Your reference document The Operating Instructions contain all the information that is required in the various phases of the life cycle of the device: from product identification, incoming acceptance and storage, to mounting, connection, operation and commissioning through to troubleshooting, maintenance and disposal.	
Description of Device Parameters (GP)	Reference for your parameters The document provides a detailed explanation of each individual parameter. The description is aimed at those who work with the device over the entire life cycle and perform specific configurations.	
Safety Instructions (XA)	Depending on the approval, safety instructions for electrical equipment in hazardous areas are also supplied with the device. The Safety Instructions are an integral part of the Operating Instructions.	
	Information on the Safety Instructions (XA) relevant to the device is provided on the nameplate.	
Supplementary device-dependent documentation (SD/FY)	Always comply strictly with the instructions in the relevant supplementary documentation. The supplementary documentation is an integral part of the device documentation.	

2 Basic 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 device is a configurable field indicator with one sensor input.
- It is designed for mounting in the field.
- The manufacturer accepts no liability for damages resulting from improper or non-intended use.
- Safe operation is only guaranteed if the Operating Instructions are observed.
- Only operate the device in the permitted temperature range.

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

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.

2.5 Product safety

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

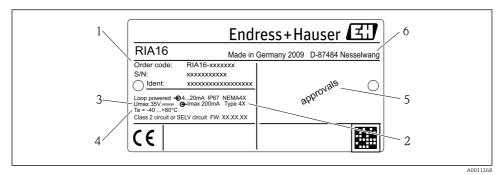
It meets general safety standards and legal requirements. It also complies with the EU directives listed in the device-specific EU Declaration of Conformity. The manufacturer confirms this by affixing the CE mark to the device.

3 Identification

3.1 Nameplate

The correct device?

Compare the order code on the nameplate of the device to the code on the delivery note.



I Nameplate of the field indicator (example)

- 1 Description, order code, serial number and identification number of the device
- 2 Degree of protection
- 3 Power supply and output signal
- 4 Ambient temperature
- 5 Approvals
- 6 Manufacturer name and address

3.2 Scope of delivery

The scope of delivery of the field display unit comprises:

- Field indicator
- Cable shield grounding clamps (only for aluminum housing)
- Hard copy of Brief Operating Instructions
- ATEX safety instructions for use of a device approved for hazardous areas, optional
- Accessories (e.g., pipe mounting bracket), see 'Accessories' section in Operating Instructions $\rightarrow \square$ BA00280R.

3.3 Certificates and approvals

3.3.1 CE mark

The product meets the requirements of the harmonized European standards. As such, it complies with the legal specifications of the EC directives. The manufacturer confirms successful testing of the product by affixing to it the CE-mark.

3.3.2 EAC mark

The product meets the legal requirements of the EEU guidelines. The manufacturer confirms the successful testing of the product by affixing the EAC mark.

3.3.3 UL approval

More information under UL Product iq[™], search for keyword "E225237")

4 Mounting

4.1 Mounting requirements

The device is designed for use in the field.

Its orientation is determined by the readability of the display.

Operating temperature range:

- -40 to +80 °C (-40 to +176 °F)
- -20 to +80 °C (-4 to +176 °F) when the Open Collector output is used

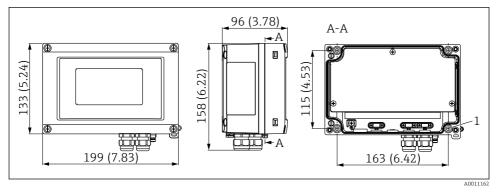
Operating the device in the upper temperature limit range reduces the operating life of the display.

The display may respond slowly at temperatures < -20 °C (-4 °F).

Readability of the display can no longer be guaranteed at temperatures < -30 °C (-22 °F).

Operating altitude	Up to 2 000 m (6 561.7 ft) above sea level
Overvoltage category	Overvoltage category II
Pollution degree	Pollution degree 2

4.1.1 Dimensions



2 Dimensions of the field indicator; dimension in mm (in)

1 Bore hole for mounting directly to wall or optional mounting plate with 4 screws Ø 5 mm (0.2 in)

4.1.2 Mounting location

For information on the conditions that must be present at the mounting location before the device can be mounted correctly (such as ambient temperature, type of protection, climate class etc.), see the "Technical data" section in the Operating Instructions $\rightarrow \square$ BA00280R.

4.2 Mounting the measuring device

The device can either be mounted directly to the wall or mounted to the pipe or wall using the optional mounting kit.

4.2.1 Direct wall mounting

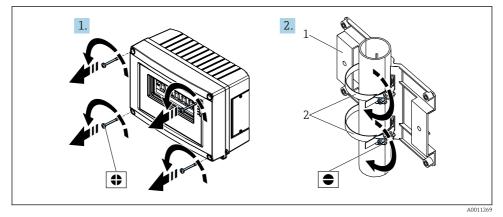
To mount the indicator directly on the wall:

- **1.** Drill 4 holes (see dimensions, $\rightarrow \mathbb{E} 2$, $\cong 8$)
- 2. Attach the device to the wall using 4 screws Ø5 mm (0.2 in).

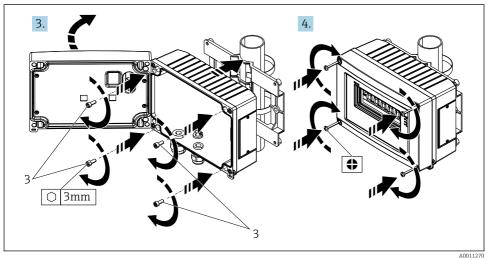
4.2.2 Pipe mounting

The mounting bracket is suitable for pipes with a diameter of 25 to 125 mm (1 to 5 in). The mounting kit comprises a mounting plate (item 1), 2 metal strips (item 2) and 4 screws (item 3), $\rightarrow \blacksquare 3$, $\cong 9$.

To mount the indicator on a pipe:



B 3 Preparing for mounting



Attaching the indicator to the mounting plate

4.3 Post-mounting checks

Perform the following checks after mounting the device:

Device condition and specifications	Note
Is the measuring device damaged?	Visual inspection
Is the seal undamaged?	Visual inspection
Is the device firmly screwed to the wall or mounting plate?	-
Is the housing cover securely fitted?	-
Does the device comply with the measuring point specifications (ambient temperature, measuring range etc.)?	See "Technical data' section".

5 Electrical connection

NOTICE

Destruction or malfunction of parts of the electronics

▶ 🛦 ESD - Electrostatic discharge. Protect the terminals from electrostatic discharge.

Destruction of parts of the electronics

▶ Switch off the power supply before installing and connecting the device.

NOTICE

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Loss of Ex approval in case of improper connection.

When connecting devices certified for use in hazardous areas, ensure compliance with all relevant instructions and connection schematics in the Ex-specific supplement to these Operating Instructions.

First open the device housing.

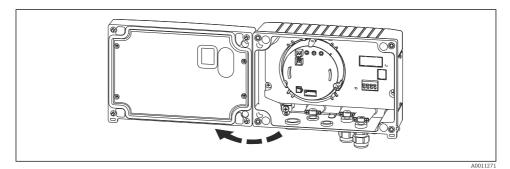
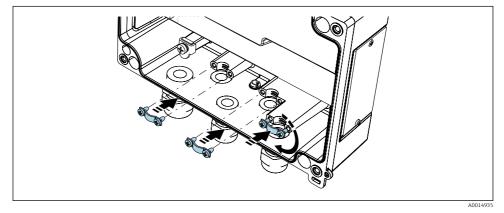
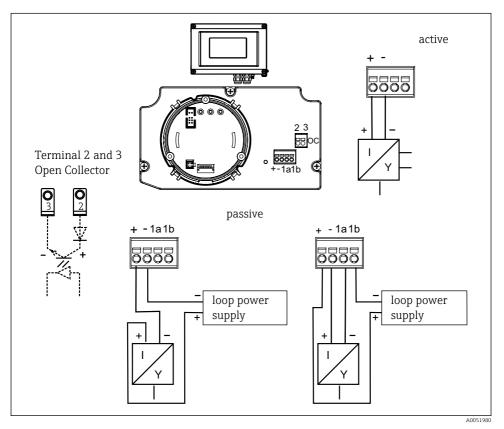


Image: Second Second



☑ 6 Installing the cable shield ground clamps (aluminum housing only)

5.1 Connecting the device



Field indicator terminal assignment

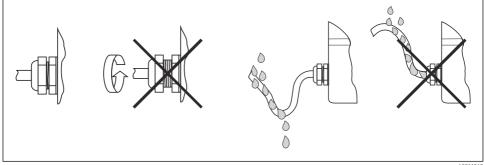
Terminal	Terminal assignment	Input and output
+	Measuring signal (+) 4 to 20 mA	Signal input
-	Measuring signal (-) 4 to 20 mA	Signal input
1	Terminal for further instrumentation	Support terminal
2	Digital limit switch (collector)	Switch output
3	Digital limit switch (emitter)	Switch output

Both the terminal assignment and the connection values of the field indicator correspond to those of the hazardous area version. The device is only designed for operation in a 4 to 20 mA measuring circuit. There must be potential equalization along the measuring circuits (inside and outside the hazardous area).

5.2 Ensuring the degree of protection

The devices meet all the requirements of IP67. In order to guarantee this after mounting or after a service case the following points must be observed.

- The housing seal must be clean and undamaged when inserted into the groove. The seal must be cleaned, dried or replaced if necessary.
- The cables used for connection must have the specified outer diameter (e.g. M20 x 1.5, cable diameter 8 to 12 mm (0.3 to 0.47 in)). If possible, mount the measuring device so that the cable entries point downwards.
- Replace unused cable entries with dummy plugs.
- Do not remove the grommet from the cable entry.
- The housing cover and cable entry must be firmly tightened.



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8 Connection tips to retain IP67 protection

5.3 Post-connection check

Carry out the following checks once the electrical installation is complete:

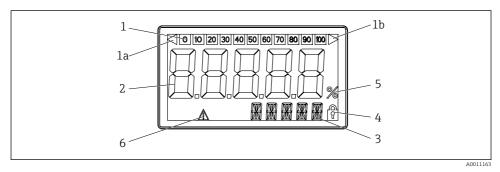
Device condition and specifications	Note
Are cables or the device damaged?	Visual inspection

Electrical connection	Note
Is the cable type route completely isolated? Without loops and crossovers?	-
Are the mounted cables strain-relieved?	-
Is the terminal assignment correct? Compare with the connection diagram of the terminal block.	→ 🖺 12
Are all terminal screws tightened?	Visual inspection
Is the cable gland leak-tight?	Visual inspection
Is the housing cover securely tightened?	Visual inspection

6 Operation options

6.1 Overview of operation options

6.1.1 Display



9 LC display of the field indicator

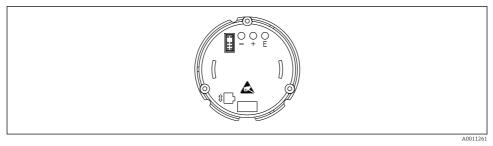
1	Bargraph display	3	14-segment display for units and messages
1a	Indicator for measuring range undershoot	4	'Programming disabled' symbol
1b	Indicator for measuring range overshoot	5	Unit '%'
2	Measured value display Digit height 26 mm (1.02 in)	6	'Failure' warning symbol

6.2 Access to the operating menu via the operating keys

NOTICE

Loss of explosion protection when housing is open

• The device must be configured outside the hazardous area.



■ 10 Operating keys of the field indicator ("-", "+", "E")

During configuration, the display must remain connected to the electronics unit.

- 1. Open the housing cover.
- 2. The operating keys on the device are accessible.

6.2.1 Navigation

The operating panels are split into 2 levels.

Menu: In the Menu level, different menu items can be selected. The individual menu items provide an aggregate of related operating functions.

Operating function: An operating function can be viewed as an aggregate of operating parameters. The operating functions are used to operate and configure the device.

Operating keys:

"E" Enter key: Press and hold down the E key for longer than 3 seconds to access the programming menu.

- Select operating functions.
- Accept values.
- Hold down the E key for longer than 3 seconds to jump to the Home position. A prompt appears beforehand asking whether you want to save the data entered up to this point.
- Save data entered.

Selection keys '+/-':

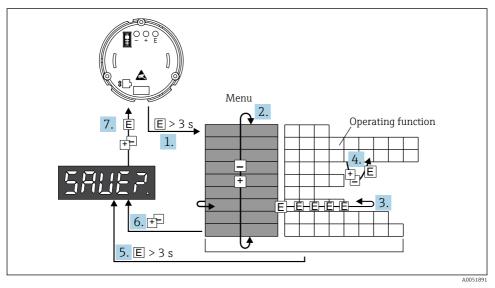
- Select menus.
- Configure parameters and numerical values.
- After you select the operating function, press the + or keys to enter the value or change the setting.



Holding down the keys for an extended period accelerates the speed at which the digits change.

If you press the + or - keys in the "Program Name" and "Program Version" operating positions, the display scrolls horizontally because these positions (7-digit) cannot be displayed completely in the 14-segment display .

6.2.2 Programming in the operating menu



🖻 11 Programming the field indicator

- 1. Go to the operating menu.
- 2. Select the menu using the "+" or "-" key.
- 3. Select the operating function.
- 4. Enter parameters in edit mode (enter/select data with "+" or "-" and accept with "E").
- 5. Go directly to the Home position. A prompt appears beforehand asking whether you want to save the data entered up to this point.
- 6. Exit the menu with "+/-". A prompt appears, asking whether you want to save the data entered up to this point.
- 7. Confirm the prompt asking whether you want to save the data: Select YES/NO with the "+" or "-" key and confirm with "E".

6.3 Device configuration

For detailed information on the device configuration using operating tools, see the Operating Instructions.



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