KA00289K/09/EN/05.25-00
71744308
2025-09-30

Brief Operating Instructions **EngyCal RH33**

Calibratable BTU meter for one measuring point with one pulse/analog input for flow and two RTD/ analog inputs for temperature/pressure

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

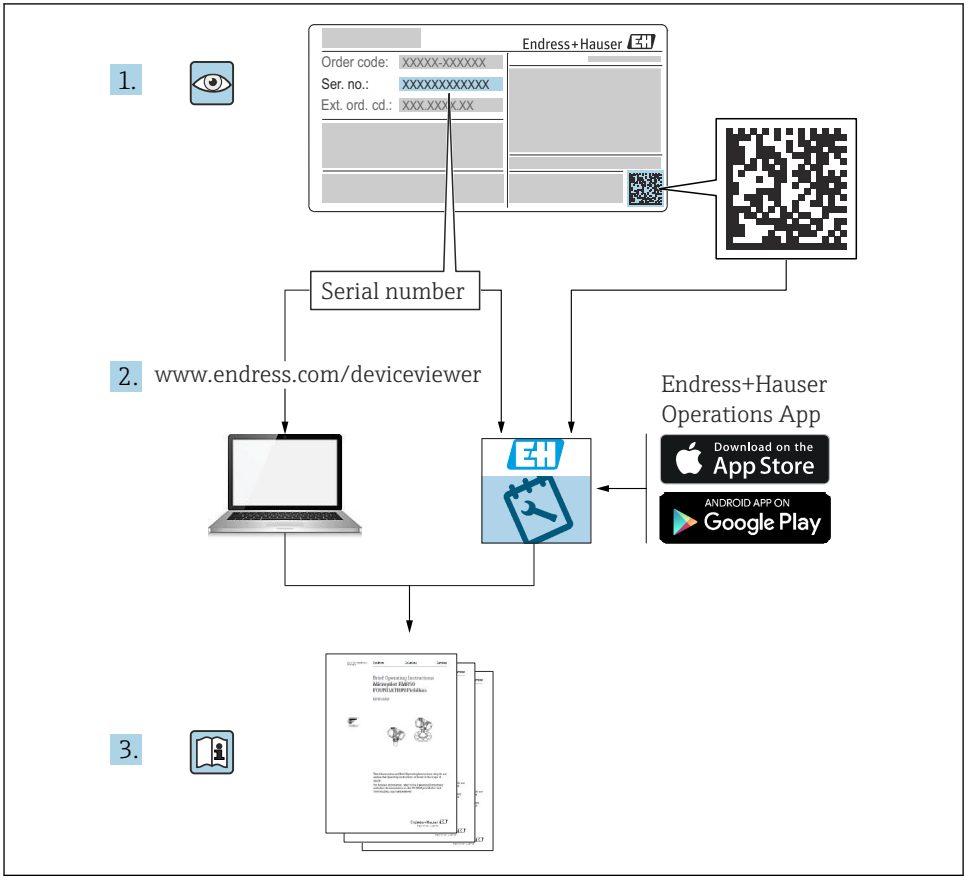
1.
Endress+Hauser
Order code: XXXXX-XXXXXX
Ser. no.: XXXXXXXXXXXX
Ext. ord. cd.: XXX.XXX-XXX
Serial number
2.
www.endress.com/deviceviewer
Endress+Hauser
Operations App
Download on the
App Store
ANDROID APP ON
Google Play
3.

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Table of contents

1 About this document

1.1 Document function

The Brief Operating Instructions contain all the essential information from incoming acceptance to initial commissioning.

1.2 Symbols

1.2.1 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 potentially dangerous situation. Failure to avoid this situation can result in serious or fatal injury.

⚠ CAUTION

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

NOTICE

This symbol alerts you to a potentially harmful situation. Failure to avoid this situation can result in damage to the product or something in its vicinity.

1.2.2 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

1.2.3 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.

1.2.4 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
	Hazardous area		Safe area (non-hazardous area)

2 Basic safety instructions

Safe and reliable operation of the device is only ensured if the Operating Instructions have been read and the safety instructions contained therein are observed.

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 BTU meter is a device for measuring energy flow in heating and cooling systems. The mains-powered arithmetic unit can be used universally in industry, district heating and building systems.

- The manufacturer is not liable for harm caused by improper or unintended use. The device must not be converted or modified in any way.
- The device may only be operated when installed.

2.3 Workplace safety

For work on and with the device:
- ▶ Wear the required personal protective equipment according to federal/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 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

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.

3.1.1 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.

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)

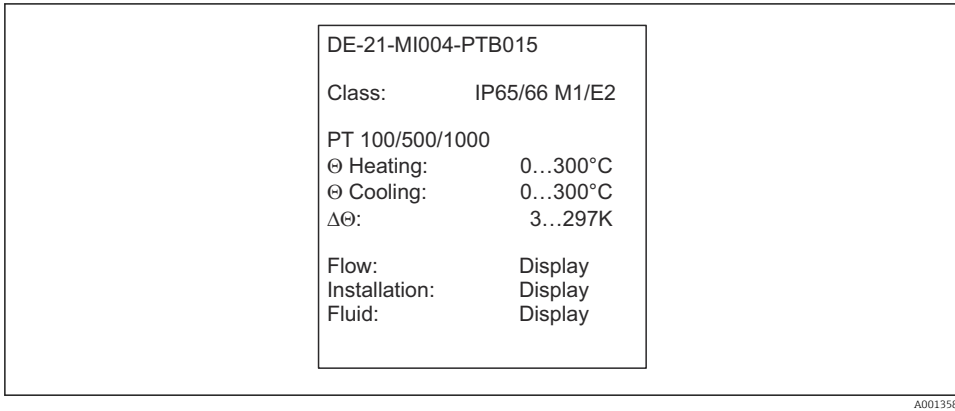
► Compare the information on the nameplate with the order.

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

3.1.2 Front foil for devices with custody transfer approval

For devices with the option of approval for custody transfer, the front foil is imprinted with the following information:



1 Labeling of front foil for devices with custody transfer approval

3.1.3 Storage and transport

Storage temperature: −30 to +70 °C (−22 to +158 °F)

Maximum relative humidity 80 % for temperatures up to 31 °C (87.8 °F), decreasing linearly to 50 % relative humidity at 40 °C (104 °F).

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

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

4 Installation

4.1 Installation conditions

With the appropriate accessories, the device with field housing is suitable for wall mounting, pipe mounting, panel mounting and DIN rail installation.

The orientation is determined by the readability of the display. Connections and outputs are fed out of the bottom of the device. The cables are connected via coded terminals.

Operating temperature range: −20 to +60 °C (−4 to +140 °F)

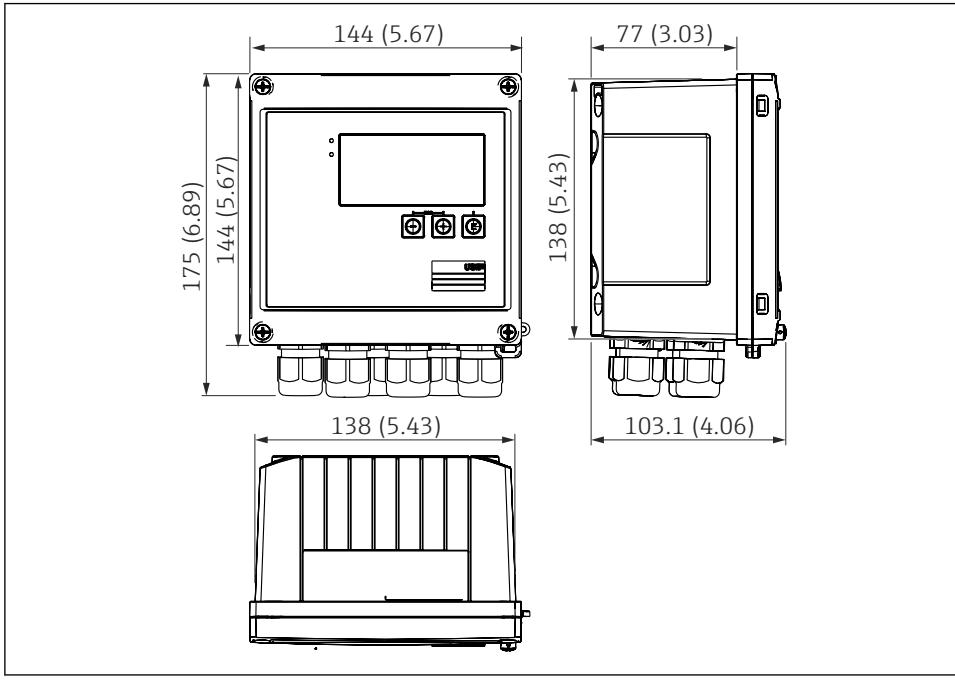
For further information, see the "Technical data" section of the Operating Instructions.

NOTICE

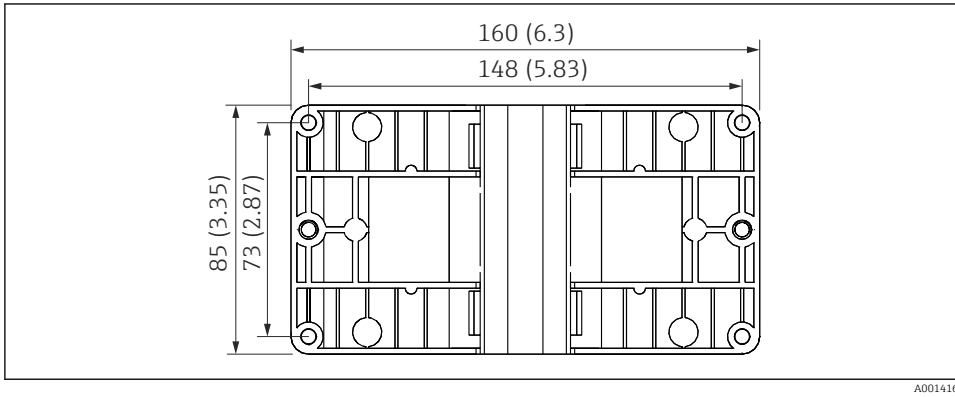
Overheating of the device due to insufficient cooling

▶ Always ensure adequate cooling of the device to prevent heat accumulation. Operating the device in the upper temperature limit range decreases the operating life of the display.

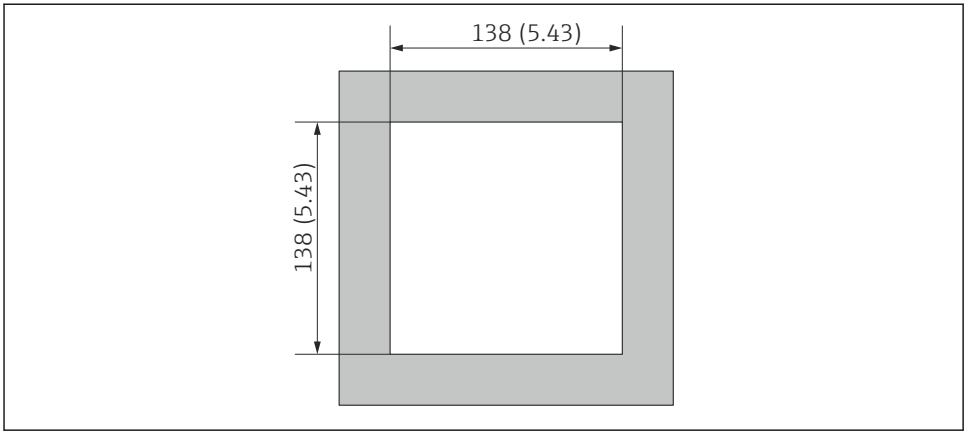
4.2 Dimensions



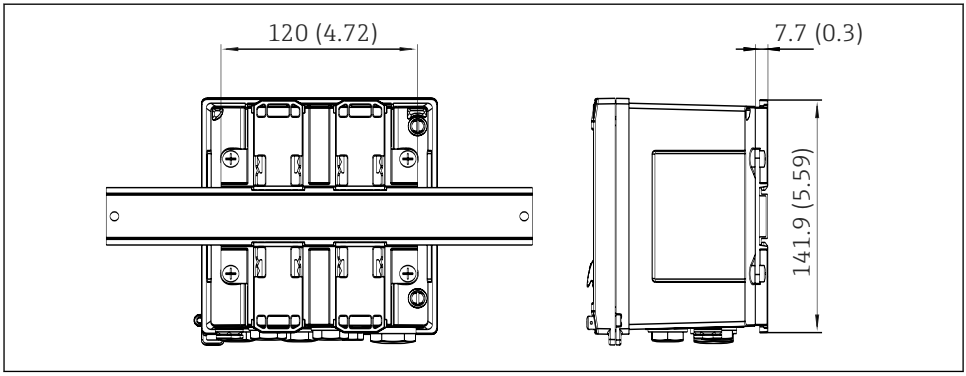
2 Dimensions of the device in mm (in)



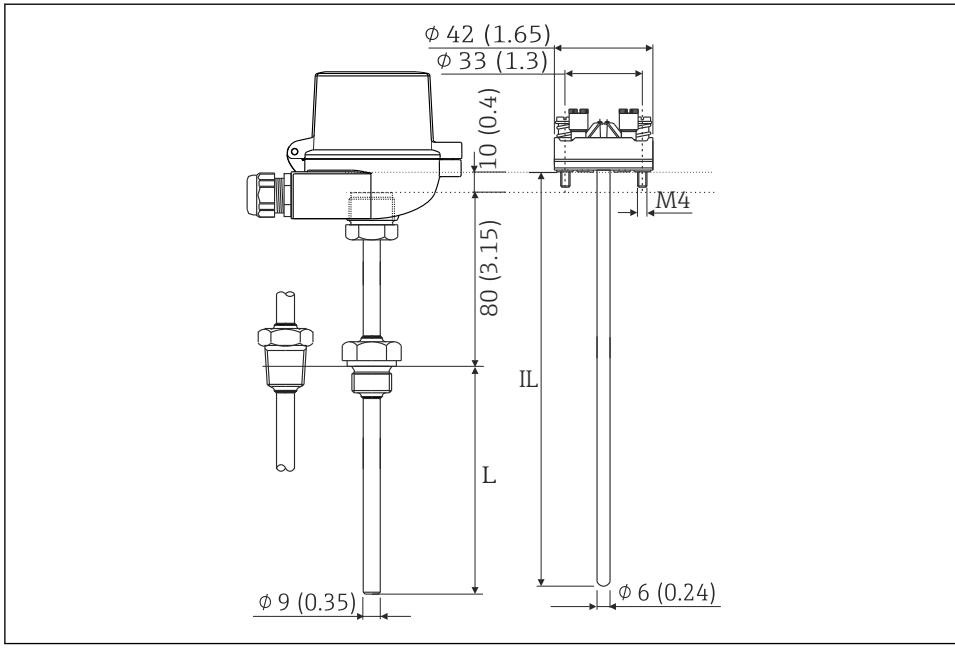
3 Dimensions of the mounting plate for wall, pipe and panel mounting in mm (in)



4 Dimensions of the panel cutout in mm (in)



5 Dimensions of DIN rail adapter in mm (in)



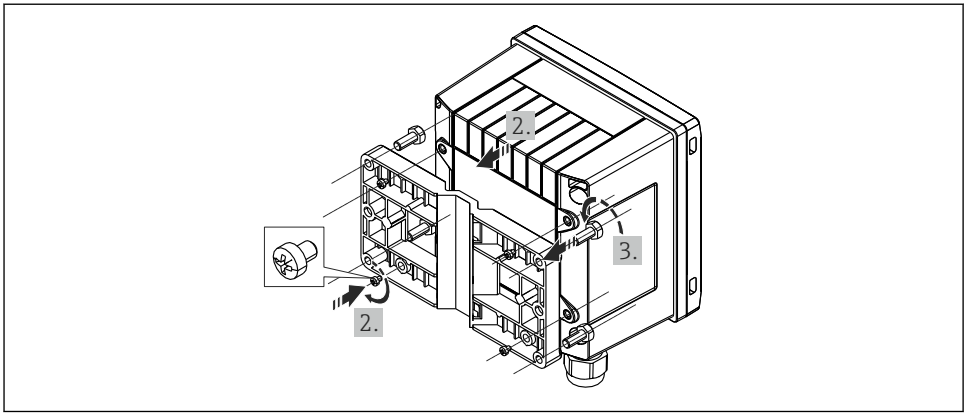
6 RTD assembly (optional accessory), dimensions in mm (in)

L Immersion length, specified when ordered
IL Insertion length = L + extension neck length (80 mm (3.15 in)) + 10 mm (0.4 in)

4.3 Installing the device

4.3.1 Wall mounting

1. Use the mounting plate as the template for drilled holes, dimensions → 3, 9
2. Attach the device to the mounting plate and fasten it in place from the rear using 4 screws.
3. Fasten the mounting plate to the wall using 4 screws.



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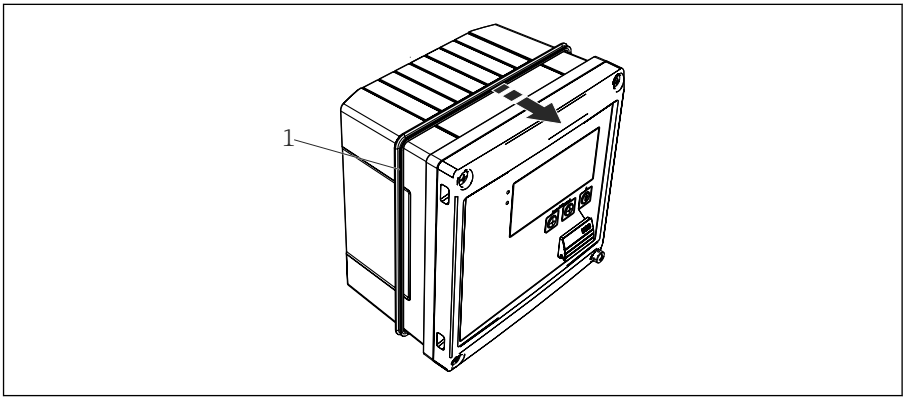
7 Wall mounting

4.3.2 Panel mounting

1. Make the panel cutout in the required size, dimensions → 4, 10
2. 

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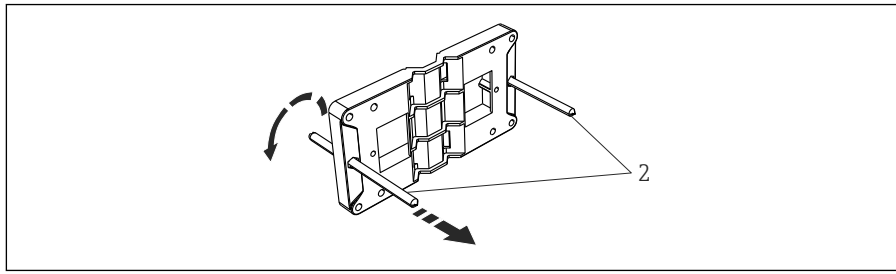
8 Panel mounting

Attach the seal (item 1) to the housing.

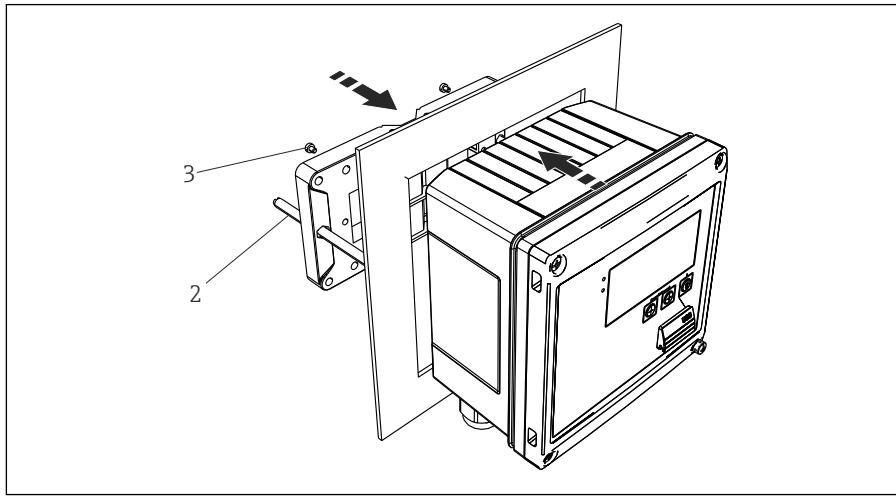
3.



9 Preparing the mounting plate for panel mounting

Screw the threaded rods (item 2) into the mounting plate (dimensions → 3, 9).

4.



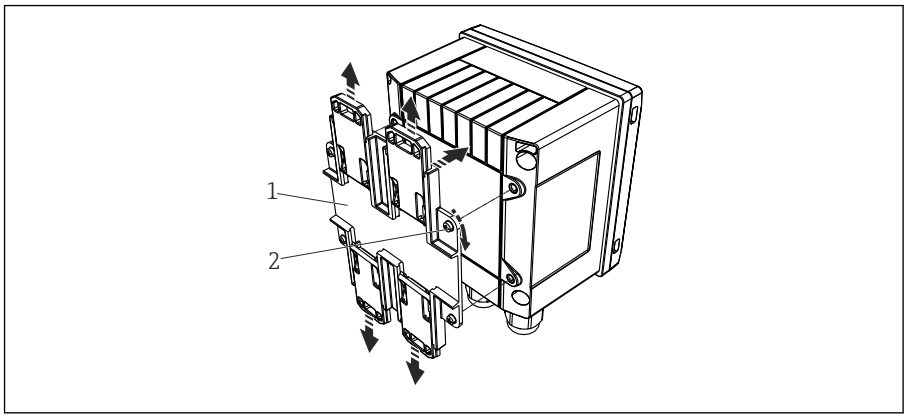
10 Panel mounting

Push the device into the panel cutout from the front and attach the mounting plate to the device from the rear using the 4 screws provided (item 3).

5. Fasten the device in place by tightening the threaded rods.

4.3.3 Support rail/DIN rail (as per EN 50 022)

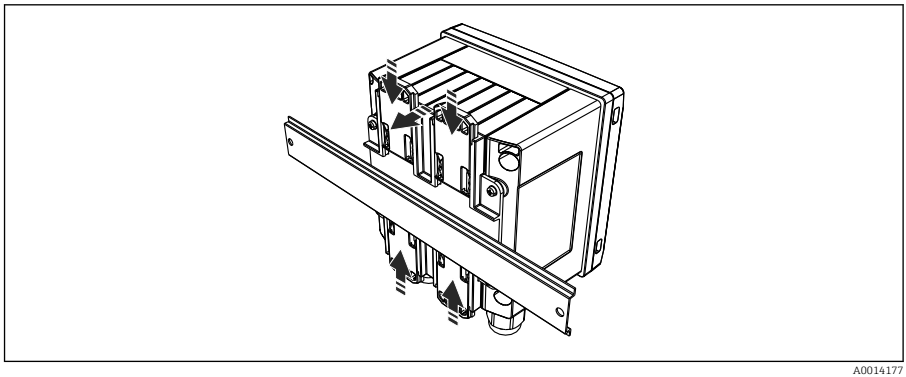
1.



11 *Preparing for DIN rail mounting*

Fasten the DIN rail adapter (item 1) to the device using the screws provided (item 2) and open the DIN rail clips.

2.

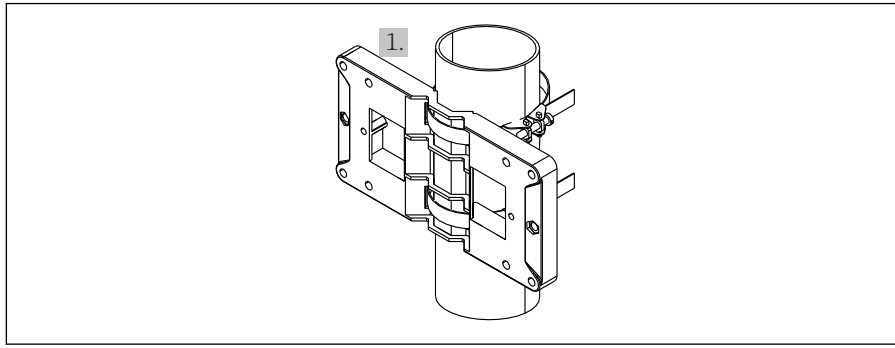


12 *DIN rail mounting*

Attach the device to the DIN rail from the front and close the DIN rail clips.

4.3.4 Pipe mounting

1.

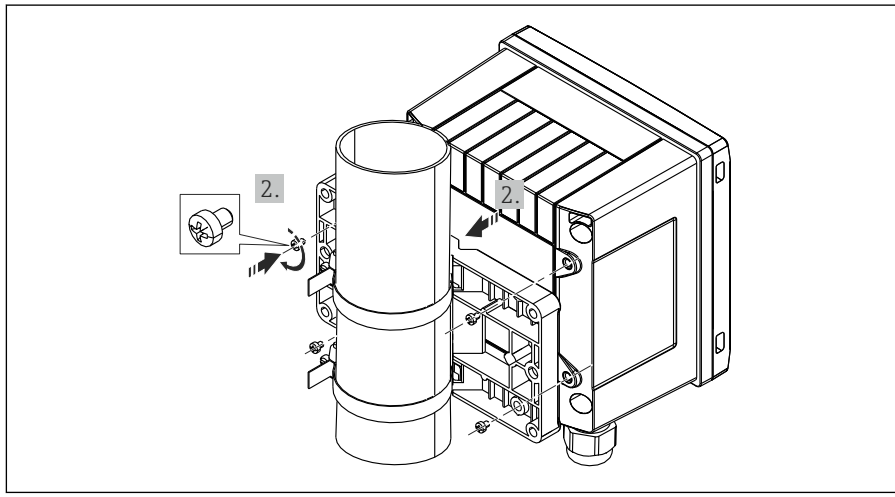


A0014178

13 Preparing for pipe mounting

Pull the steel belts through the mounting plate (dimensions → 3, 9) and fasten them to the pipe.

2.



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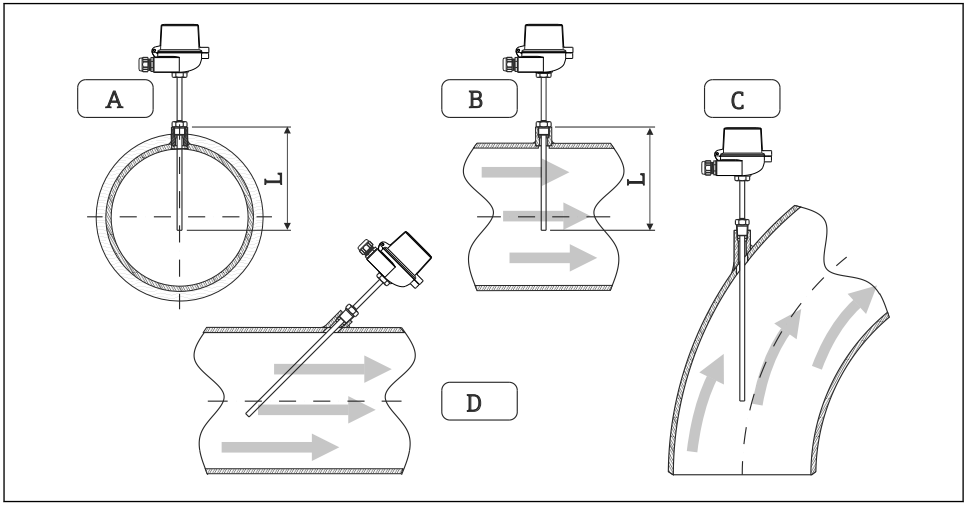
14 Pipe mounting

Attach the device to the mounting plate and fasten it in place using the 4 screws provided.

4.4 Installation instructions for temperature sensors



15 Installation types for temperature sensors

A - B For pipelines with a small cross-section, the sensor tip must reach as far as the piping axis or a little farther (=L).
C - D Slanted orientation.

The installation depth of the thermometer can influence the measurement accuracy. If the installation depth is insufficient, heat conduction via the process connection and the container wall can cause measurement errors. For installation in a pipe, therefore, the recommended installation depth ideally corresponds to half of the pipe diameter.

- Installation options: Pipes, tanks or other plant components
- Minimum immersion depth = 80 to 100 mm (3.15 to 3.94 in)
  The immersion depth should correspond to at least 8 times the thermowell diameter.
  Example: Thermowell diameter 12 mm (0.47 in) x 8 = 96 mm (3.8 in). We recommend a standard immersion depth of 120 mm (4.72 in).

For pipes with small nominal diameters, ensure that the tip of the thermowell extends far enough into the process so that it also protrudes past the axis of the pipe (→ 15, 16, item A and B). Another solution may be diagonal installation (→ 15, 16, item C and D). When determining the immersion length and installation depth, all parameters of the thermometer and of the process to be measured must be taken into account (e.g. flow velocity, process pressure).

Refer also to the installation recommendations EN 1434-2 (D), Figure 8.

Detailed information: BA01915T

4.5 Requirements for sizing

To avoid systematic faults, the temperature sensors must be installed shortly upstream and shortly downstream from the heat exchanger. If the pressure difference between the temperature measuring points is too large, this can result in an excessively large systematic fault, see the table below.

	Temperature differential in [K]							
Diff in [bar]	**3**	**5**	**10**	**20**	**30**	**40**	**50**	**60**
0.5	0.2	0.2	0.1	0.1	0.1	0	0	0
1	0.5	0.4	0.3	0.2	0.1	0.1	0.1	0.1
2	0.9	0.7	0.5	0.3	0.2	0.2	0.1	0.1
3	1.4	1.1	0.8	0.5	0.3	0.2	0.2	0.2
4	1.8	1.5	1.0	0.6	0.4	0.3	0.3	0.2
5	2.3	1.9	1.3	0.8	0.5	0.4	0.3	0.3
6	2.7	2.2	1.5	0.9	0.6	0.5	0.4	0.3
7	3.2	2.6	1.9	1.1	0.7	0.6	0.5	0.4
8	3.6	3.0	2.0	1.2	0.9	0.7	0.5	0.4
9	4.1	3.3	2.3	1.4	1.0	0.7	0.6	0.5
10	4.5	4.0	2.5	1.5	1.1	0.8	0.7	0.5

The values are indicated as factors of the maximum permitted error of the BTU meter (with $\Delta\Theta_{min}$ = 3 K (5.4 °F)). The values below the gray line are higher than 1/3 of the maximum permitted error of the BTU meter (with $\Delta\Theta_{min}$ = 3 K (5.4 °F)).

If two different heat carriers (e.g. space heating and domestic hot water) are combined shortly before the temperature sensor, the optimal position of this sensor is directly downstream of the flow measuring point.

4.6 Post-installation check

Perform the following checks after installing the device:

Device condition and specifications	Notes
Is the device undamaged?	Visual inspection
Is the seal undamaged?	Visual inspection
Is the device fixed securely to the wall or mounting plate?	-
Is the housing cover firmly mounted?	-
Do the ambient conditions match the device specification (e.g. ambient temperature, measuring range etc.)?	See "Technical data" section.

For the installation of the BTU meter and the associated temperature sensors, observe the general installation instructions according to EN 1434 Part 6 and Technical Guideline TR-K 9 of the PTB (the German National Metrology Institute). TR-K 9 is available to download from the PTB website.

5 Electrical connection

5.1 Connecting requirements

⚠ WARNING

Danger! Electric voltage

- ▶ The entire connection of the device must take place while the device is de-energized.

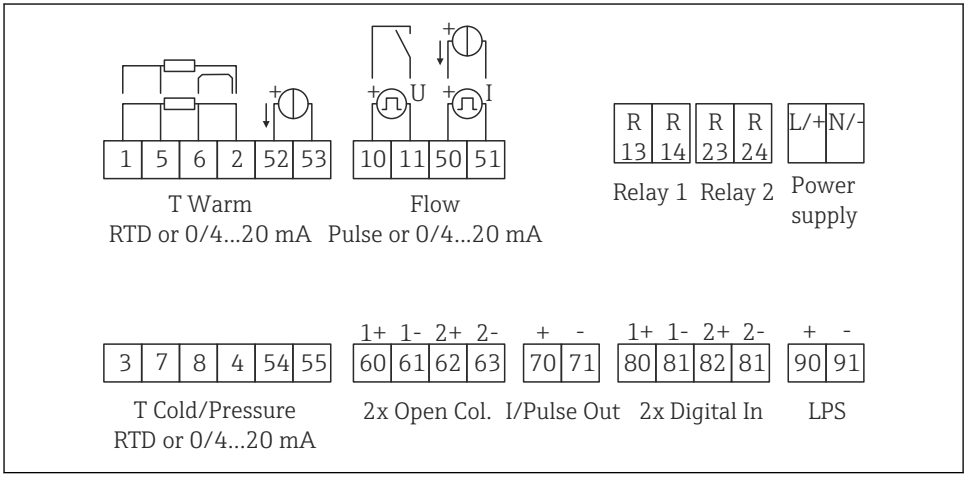
⚠ CAUTION

Pay attention to additional information provided

- ▶ Before commissioning the device, make sure that the supply voltage matches the voltage specifications on the nameplate.
- ▶ Provide a 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.

For installation of the thermal energy meter and the associated components, observe the general instructions according to EN 1434 Part 6.

5.2 Connecting the device



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16 *Connection diagram of the device*

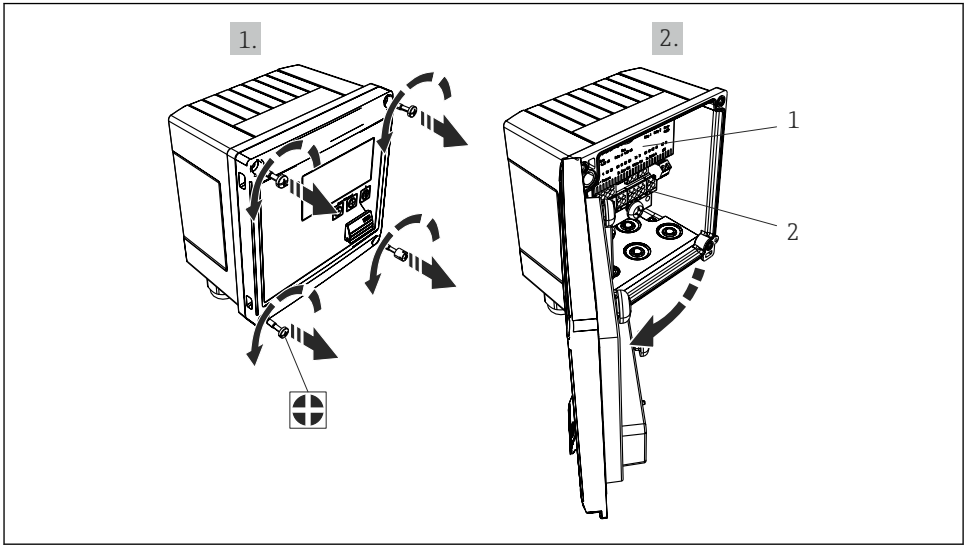
Terminal assignment

- In the case of heat differential /T measurement, the temperature sensor for T condensate must be connected to the T Warm terminals and the temperature sensor for T steam to the T Cold terminals.
- In the case of heat differential /p measurement, the temperature sensor for T condensate must be connected to the T Warm terminals.

Terminal	Terminal assignment	Inputs
1	+ RTD power supply	Temperature warm (Optionally RTD or current input)
2	- RTD power supply	
5	+ RTD sensor	
6	- RTD sensor	
52	+ 0/4 to 20 mA input	
53	Signal ground for 0/4 to 20 mA input	
3	+ RTD power supply	Temperature cold (Optionally RTD or current input)
4	- RTD power supply	
7	+ RTD sensor	
8	- RTD sensor	
54	+ 0/4 to 20 mA input	
55	Signal ground for 0/4 to 20 mA input	
10	+ pulse input (voltage)	Flow (Optionally pulse or current input)
11	- pulse input (voltage)	
50	+ 0/4 to 20 mA or current pulse (PFM)	
51	Signal ground for 0/4 to 20 mA input flow	
80	+ digital input 1 (switch input)	▪ Start tariff counter 1 ▪ Time synchronization ▪ Lock the device
81	- digital input (terminal 1)	
82	+ digital input 2 (switch input)	▪ Start tariff counter 2 ▪ Time synchronization ▪ Lock the device ▪ Change flow direction
81	- digital input (terminal 2)	
		Outputs
60	+ pulse output 1 (open collector)	Energy, volume or tariff counter. Alternative: limit values/alarms
61	- pulse output 1 (open collector)	
62	+ pulse output 2 (open collector)	
63	- pulse output 2 (open collector)	
70	+ 0/4 to 20 mA/pulse output	Current values (e.g. power) or counter values (e.g. energy)
71	- 0/4 to 20 mA/pulse output	

13	Relay normally open (NO)	Limit values, alarms
14	Relay normally open (NO)	
23	Relay normally open (NO)	
24	Relay normally open (NO)	
90	24 V Sensor power supply (LPS)	24 V Power supply (e.g. for sensor power supply)
91	Power supply ground	
		Power supply
L/+	L for AC + for DC	
N/-	N for AC - for DC	

5.2.1 Open the housing



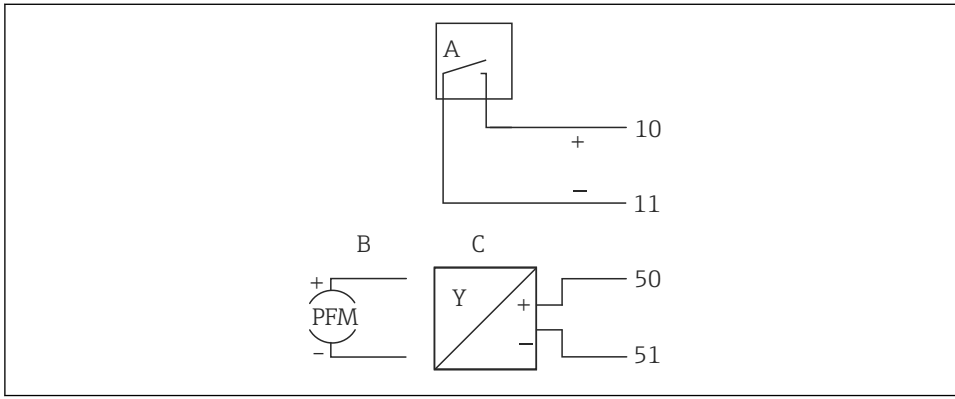
17 Opening the housing of the device

1 Terminal assignment labeling
2 Terminals

5.3 Connecting the sensors

5.3.1 Flow

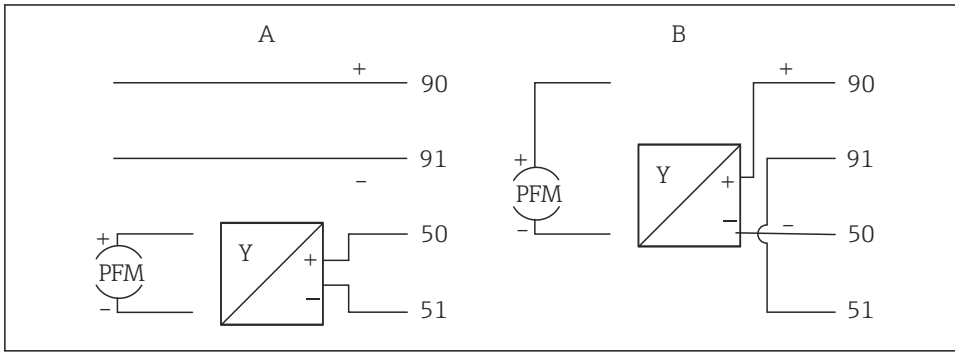
Flow sensors with external power supply



18 *Connecting a flow sensor*

A Voltage pulses or contact sensors including EN 1434 Type IB, IC, ID, IE
B Current pulses
C 0/4 to 20 mA signal (not in combination with MID approval option)

Flow sensors with power supply via the BTU meter

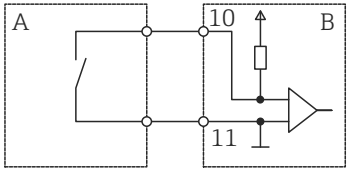
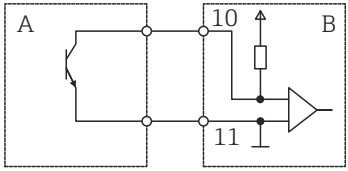
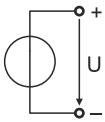
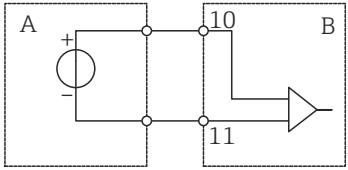


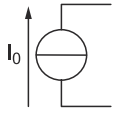
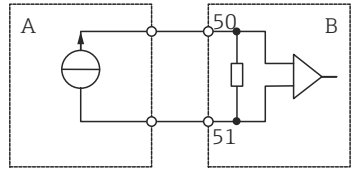
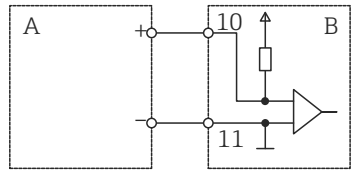
19 *Connecting active flow sensors*

A 4-wire sensor
B 2-wire sensor

Settings for flow sensors with pulse output

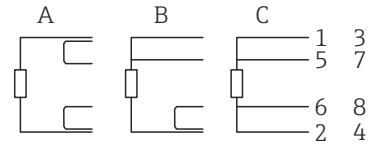
The input for voltage pulses and contact sensors is divided into different types according to EN 1434 and provides a supply for switching contacts.

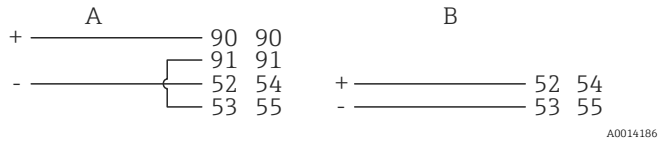
Pulse output of the flow sensor	Setting at the Rx33	Electrical connection	Comment
Mechanical contact  A0015360	Pulse ID/IE up to 25 Hz	 A0015354 *A Sensor* *B Rx33*	As an alternative, it is possible to choose "Pulse IB/IC+U" up to 25 Hz. The current flow via the contact is then lower (approx. 0.05 mA instead of approx. 9 mA). Advantage: lower power consumption, disadvantage: less immunity to interference.
Open collector (NPN)  A0015361	Pulse ID/IE up to 25 Hz or up to 12.5 kHz	 A0015355 *A Sensor* *B Rx33*	As an alternative, it is possible to choose "Pulse IB/IC+U". The current flow via the transistor is then lower (approx. 0.05 mA instead of approx. 9 mA). Advantage: lower power consumption, disadvantage: less immunity to interference.
Active voltage  A0015362	Pulse IB/IC+U	 A0015356 *A Sensor* *B Rx33*	The switching threshold is between 1 V and 2 V

Pulse output of the flow sensor	Setting at the Rx33	Electrical connection	Comment
Active current  A0015363	Pulse I	 A0015357 *A Sensor* *B Rx33*	The switching threshold is between 8 mA and 13 mA
Namur sensor (as per EN 60947-5-6)	Pulse ID/IE up to 25 Hz or up to 12.5 kHz	 A0015359 *A Sensor* *B Rx33*	No monitoring for short circuit or line break takes place.

Voltage pulses and transmitters according to Class IB and IC (low switching thresholds, small currents)	≤ 1 V corresponds to Low level ≥ 2 V corresponds to High level U max 30 V, U no-load: 3 to 6 V	Floating contacts, reed transmitters
Transmitters to Class ID and IE for higher currents and power supplies	≤ 1.2 mA corresponds to Low level ≥ 2.1 mA corresponds to High level U no-load: 7 to 9 V	

5.3.2 Temperature

Connecting the RTD sensors	 A0014185 A = 2-wire connection B = 3-wire connection C = 4-wire connection Terminals 1, 2, 5, 6: T warm Terminals 3, 4, 7, 8: T cold

Temperature transmitter connection	 A = without external power supply of the transmitter B = with external power supply of the transmitter Terminals 90, 91: transmitter power supply Terminals 52, 53: T warm Terminals 54, 55: T cold

To ensure the highest level of accuracy, we recommend using the RTD 4-wire connection, as this compensates for measurement errors caused by the mounting location of the sensors or the line length of the connecting cables.

Temperature measurement using an RTD 3-wire connection is not permitted for devices with MID approval.

5.4 Outputs

5.4.1 Analog output (active)

This output can be used either as a 0/4 to 20 mA current output or as a voltage pulse output. The output is galvanically isolated. Terminal assignment, → 18.

5.4.2 Relay

The two relays can be switched in case of fault messages or a limit value violation.

Relay 1 or 2 can be selected under **Setup** → **Advanced setup** → **System** → **Fault switching**.

Limit values are assigned under **Setup** → **Advanced setup** → **Application** → **Limits**. Possible settings for limit values are described in the "Limit values" section of the Operating Instructions.

5.4.3 Pulse output (active)

Voltage level:
- 0 to 2 V corresponds to Low level
- 15 to 20 V corresponds to High level

Maximum output current: 22 mA

5.4.4 Open collector output

The two digital outputs can be used as status or pulse outputs. Make the selection in the following menus **Setup** → **Advanced setup** or **Expert** → **Outputs** → **Open collector**

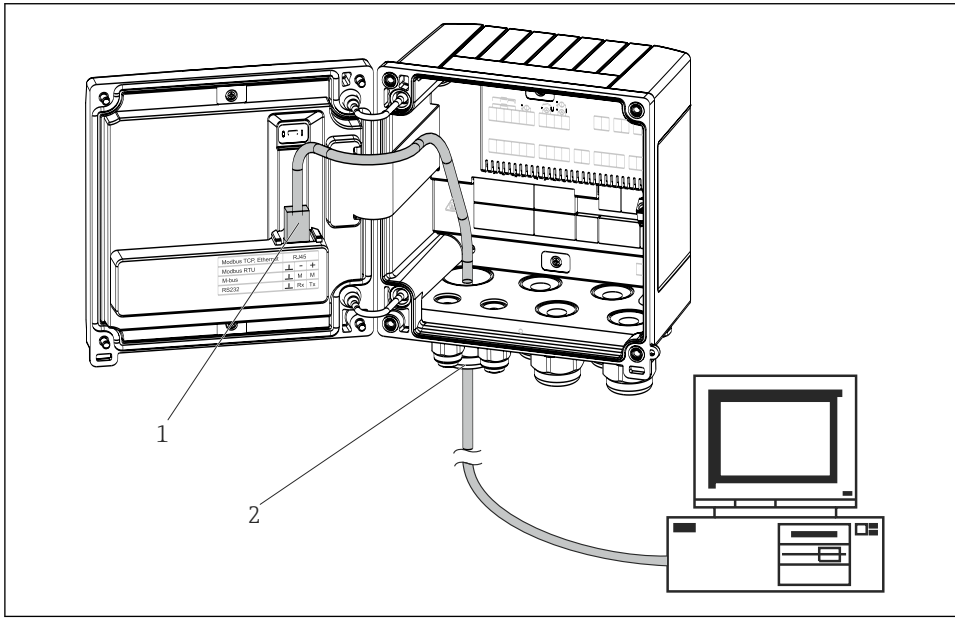
5.5 Communication

The USB interface is always active and can be used independently of other interfaces. Parallel operation of multiple optional interfaces, e.g. fieldbus and Ethernet, is not possible.

5.5.1 Ethernet TCP/IP (optional)

The Ethernet interface is galvanically isolated (test voltage: 500 V). A standard patch cable (e.g. CAT5E) can be used to connect the Ethernet interface. A special cable gland is available for this purpose which allows users to guide pre-terminated cables through the housing. Via the Ethernet interface, the device can be connected using a hub or a switch or directly to office equipment.

- Standard: 10/100 Base T/TX (IEEE 802.3)
- Socket: RJ-45
- Max. cable length: 100 m



A0014600

20 *Connection of Ethernet TCP/IP, Modbus TCP*

1 Ethernet, RJ45
2 Cable entry for Ethernet cable

5.5.2 Modbus TCP (optional)

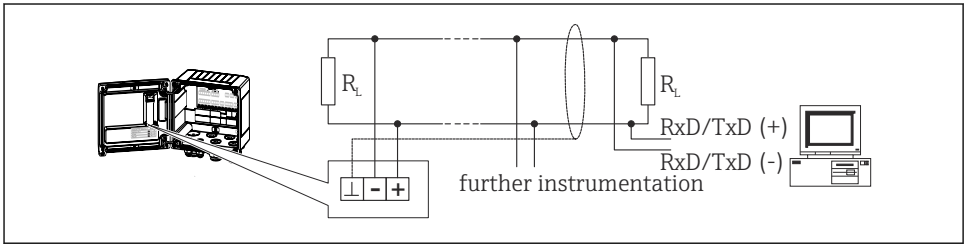
The Modbus TCP interface is used to connect the device to higher-order systems to transmit all measured values and process values. The Modbus TCP interface is physically identical to the Ethernet interface → 20, 25

The device can only be read by a Modbus master.

Detailed information for Modbus register assignment: www.endress.com

5.5.3 Modbus RTU (optional)

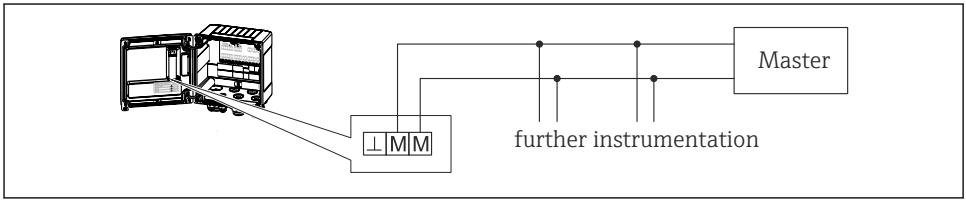
The Modbus RTU (RS-485) interface is galvanically isolated (test voltage: 500 V) and used to connect the device to higher-level systems to transmit all measured values and process values. The connection is made via a 3-pole pluggable terminal in the housing cover.



21 Connection of Modbus RTU

5.5.4 M-Bus (optional)

The M-Bus (Meter Bus) interface is galvanically isolated (test voltage: 500 V) and used to connect the device to higher-level systems to transmit all measured values and process values. The connection is made via a 3-pole pluggable terminal in the housing cover.



22 Connection of M-Bus

5.6 Post-connection check

Perform the following checks after completing electrical installation of the device:

Device conditions and specifications	**Notes**
Is the device or cable damaged (visual inspection)?	-
Electrical connection	**Notes**
Does the supply voltage match the information on the nameplate?	100 to 230 V AC/DC (±10 %) (50/60 Hz) 24 V DC (−50 % / +75 %) 24 V AC (±50 %) 50/60 Hz
Are the mounted cables strain-relieved?	-
Are the power supply and signal cables connected correctly?	See wiring diagram on the housing

6 Operation options

6.1 Overview of operation options

The device can be configured using operating keys or with the help of the "FieldCare" operating software.

The operating software, including interface cable, is available as an order option.

Parameter configuration is locked if the device is locked by the write protection switch → 29, the custody transfer switch, the user code or digital input. For devices locked by the custody switch, custody transfer-related parameters can only be changed a maximum of three times. After that, these parameters can no longer be accessed.

For details, see "Access protection" in the "Commissioning" section of the Operating Instructions.

6.2 Structure and function of the operating menu

A complete overview of the operating matrix, incl. all of the configurable parameters, can be found in the appendix of the Operating Instructions.

Language	Picklist with all available operating languages. Select the language of the device.

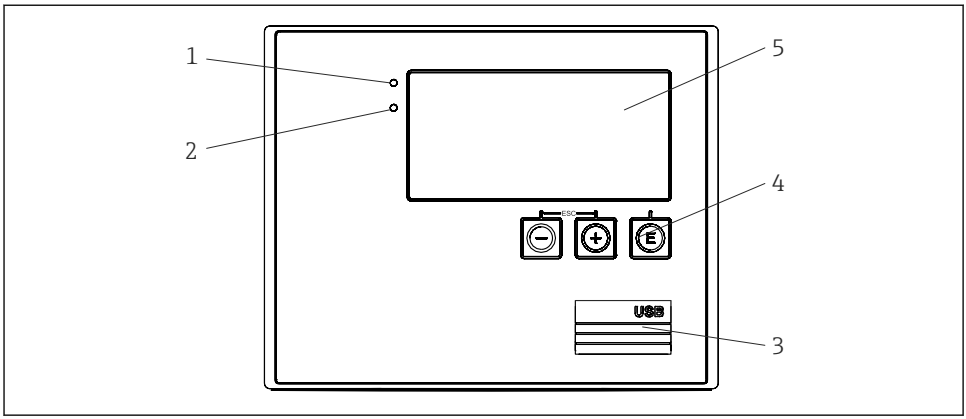
Display/operation menu	▪ Select the group for display (alternate automatically or fixed display group) ▪ Configure brightness and contrast of display ▪ Display saved analyses (day, month, year, billing date, totalizer)

Setup menu	The parameters for quick commissioning of the device can be configured in this setup. The advanced setup contains all of the essential parameters for configuring the device function. ▪ Units ▪ Pulse value, value ▪ Mounting location of flow sensor ▪ Date and time Parameters for quick commissioning Advanced setup (settings that are not essential for basic operation of the device) Special settings can also be configured via the "Expert" menu.

Diagnostics menu	Device information and service functions for a quick device check ▪ Diagnostic messages and list ▪ Event and verification logbook ▪ Device information ▪ Simulation ▪ Measured values, outputs

Expert menu	The Expert menu provides access to all of the operating positions of the device, including fine-tuning and service functions. ▪ Skip directly to the parameter via Direct Access (on device only) ▪ Service code to display service parameters (via PC operating software only) ▪ System (settings) ▪ Inputs ▪ Outputs ▪ Application ▪ Diagnostic

6.3 Display and operating elements



A0013444

23 Display and operating elements of the device

1 Green LED, "Operation"
2 Red LED, "Fault message"
3 USB connection for configuration
4 Operating keys: -, +, E
5 160x80 dot-matrix display

Green LED if voltage present, red LED in the event of an alarm/error. Green LED is always lit once the device is supplied with power.

Red LED flashing slowly (approx. 0.5 Hz): The device has been set to the bootloader mode.

Red LED flashing quickly (approx. 2 Hz): In normal operation: maintenance required. During firmware update: data transmission in progress.

Red LED remains lit: Device error.

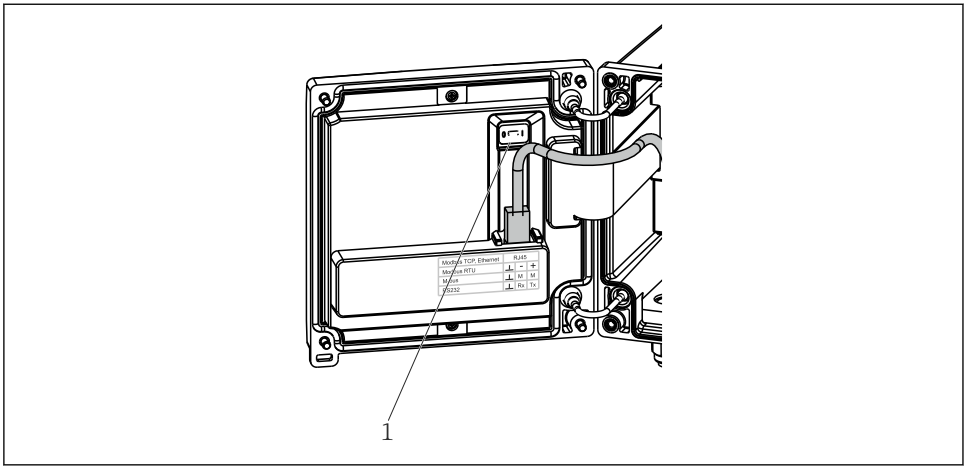
6.3.1 Operating elements

3 operating keys, "-", "+", "E"

Esc/Back function: Press "-" and "+" simultaneously.

Enter/Confirm entry function: Press "E"

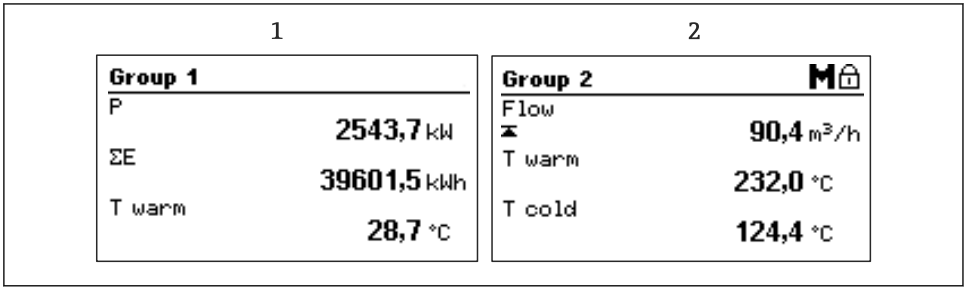
Write protection switch



24 Write protection switch

1 Write protection switch on rear of housing cover

6.3.2 Display



25 BTU meter display (example)

1 Group 1 display

2 Group 2 display, maintenance required, setup is locked, upper limit value for flow was violated

6.4 Access to the operating menu via "FieldCare Device Setup"

To configure the device using the FieldCare Device Setup software, connect the device to your PC via the USB interface.

Establishing the connection

1. Start FieldCare.
2. Connect the device to the PC via USB.
3. Create project in File/New menu.
4. Select Communication DTM (CDI Communication USB).
5. Add device EngyCal RH33.
6. Click Connect.
7. Start parameter configuration.

Continue with device configuration in accordance with the 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 FieldCare Device Setup.

NOTICE

Undefined switching of outputs and relays

▶ During configuration with FieldCare, the device may assume undefined statuses! This may result in the undefined switching of outputs and relays.

7 Commissioning

7.1 Post-installation check

Perform the following checks prior to commissioning the device:

- See "Post-installation check" section, → 17.
- Post-connection check using the checklist in the "Post-connection check" section, → 26.

7.2 Switching on the device

After the operating voltage is applied, the display and the green LED are illuminated. The device is now operational and can be configured via the keys or the "FieldCare" parameterization software .

Remove the protective film from the device as this would otherwise affect the readability of the display.

7.3 Quick commissioning

For quick commissioning of the "standard" BTU meter application, you only have to enter five operating parameters in the **Setup** menu.

Prerequisites for quick commissioning:

- Flow transmitter with pulse output
- RTD temperature sensor, 4-wire direct connection

Menu/setup
- **Units**: Select unit type (SI/US)
- **Pulse value**: Select the unit of the pulse value of the flow transmitter
- **Value**: Enter the pulse value of the flow sensor
- **Mounting location**: Determine the mounting location of the flow transmitter
- **Date/time**: Set the date and time

The device is now operational and ready to measure heat energy (cold energy).

The device functions—such as data logging, tariff function, bus integration, and scaling of current inputs for flow or temperature are configured in the **Advanced setup** or **Expert** menu.

For further details on commissioning, see the Operating Instructions.

- Inputs/flow:
  Select the signal type and enter the start and end of the measuring range (for current signal) or the pulse value of the flow transmitter.
- Inputs/temperature warm
- Inputs/temperature cold

8 Maintenance

No special maintenance work is required for the device.

8.1 Cleaning

A clean, dry cloth can be used to clean the device.

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