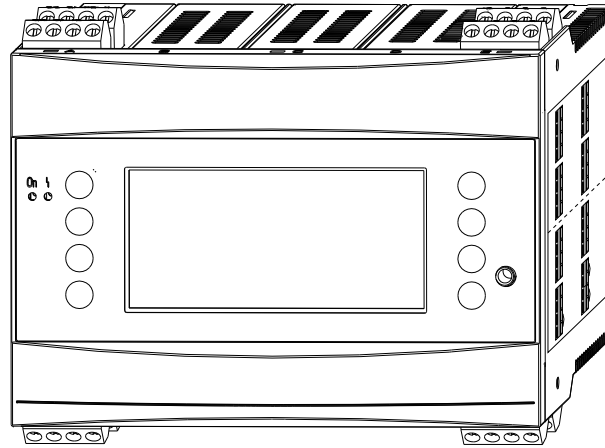
Brief Operating Instructions
RMC621, RMS621

RMC621: Flow and Energy Manager
RMS621: Energy Manager

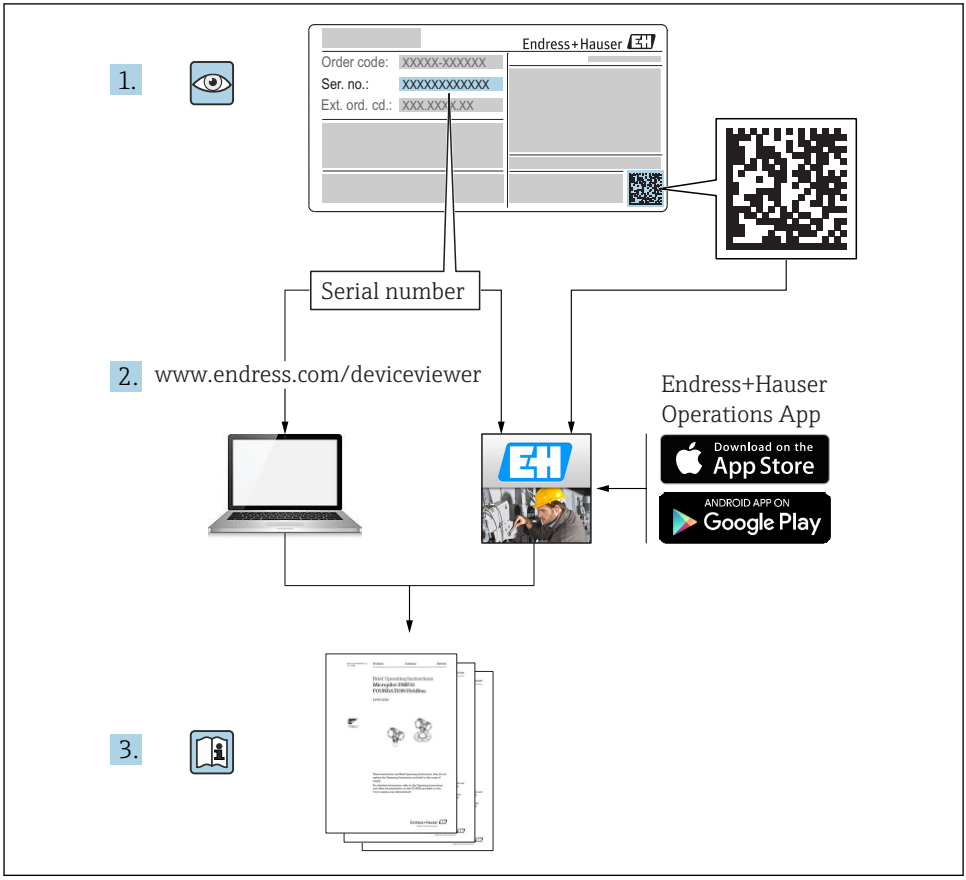


These instructions are Brief Operating Instructions; they do not replace the Operating Instructions included in the scope of supply.

Detailed information can be found in the Operating Instructions and the additional documentation.

Available for all device versions via:
- Internet: www.endress.com/deviceviewer
- Smart phone/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.
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1 About this document

1.1 Safety Instructions (XA)

When using in hazardous areas, the national safety requirements must be met. Separate Ex documentation is contained in these Operating Instructions for measurement systems that are used in hazardous areas. Strict compliance with the installation instructions, ratings and safety instructions as listed in this supplementary documentation is mandatory. Make sure

that you use the right Ex-specific documentation for the right device with approval for use in hazardous areas! The number of the specific Ex documentation (XA...) is provided on the nameplate. If the two numbers (on the Ex documentation and the nameplate) are identical, then you may use this Ex-specific documentation.

1.2 Document conventions

1.2.1 Safety symbols

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

1.2.2 Electrical symbols

Symbol	Meaning
 A0011197	**Direct current** A terminal at which DC is present or through which DC flows.
 A0011198	**Alternating current** A terminal at which (sine-wave) AC is present or through which AC flows.
 A0017381	**Direct and alternating current** ▪ A terminal to which alternating voltage or DC voltage is applied. ▪ A terminal through which alternating current or direct current flows.
 A0011200	**Ground connection** A grounded terminal which, as far as the operator is concerned, is grounded via a grounding system.
 A0011199	**Protective ground connection** A terminal which must be connected to ground prior to establishing any other connections.
 A0011201	**Equipotential connection** A connection that has to be connected to the plant grounding system: This may be a potential equalization line or a star grounding system depending on national or company codes of practice.
 A0012751	**ESD - electrostatic discharge** Protect the terminals from electrostatic discharge. Failure to observe this may result in destruction of parts of the electronics.

1.2.3 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.
	**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

1.2.4 Symbols in graphics

Symbol	Meaning
1, 2, 3,...	Item numbers
1. , 2. , 3. …	Series of steps
A, B, C, ...	Views
A-A, B-B, C-C, ...	Sections
 A0013441	Flow direction
 A0011187	**Hazardous area** Indicates a hazardous area.
 A0011188	**Safe area (non-hazardous area)** Indicates a non-hazardous area.

1.2.5 Tool symbols

Symbol	Meaning
 A0011220	Flat blade screwdriver
 A0011221	Allen key

Symbol	Meaning
 A0011222	Open-ended wrench
 A0013442	Torx screwdriver

1.3 Registered trademarks

HART®
Registered trademark of the HART Communication Foundation, Austin, USA

PROFIBUS®
Registered trademark of the PROFIBUS User Organization, Karlsruhe, Germany

Modbus®
Registered trademark of SCHNEIDER AUTOMATION, INC.

Applicator®, FieldCare®, Field Xpert™, HistoROM®
Registered or registration-pending trademarks of the Endress+Hauser Group

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 Designated use

- 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 designated. It is not permitted to convert or modify the device in any way.
- The device is designed for operation in an industrial environment and may only be operated in an installed state.

Flow and Energy Manager RMC621:

The Flow and Energy Manager is a device for measuring the flow, mass and energy flow of gases, liquids, steam and water. Its multi-channel design allows the simultaneous measurement of media and applications, e.g. the calculation of a gas corrected volumetric flow and/or energy balancing in a heating or cooling system.

A large variety of different flow transmitters, temperature sensors and pressure sensors can be connected to the device.

The Flow and Energy Manager offers users a variety of calculation methods to calculate the desired process values for the specific industrial requirements, real gas equations, editable tables for density, thermal capacity and compressibility, international calculation standards for natural gas (e.g. SGERG88) or steam (IAPWS IF-97), flow differential pressure methods (ISO5167) etc.

The device has been developed in accordance with the requirements of recommendation OIML R75 (heat meters) and the EN-1434 standard (flow measurement).

Energy Manager RMS621:

The Energy Manager is a device for recording energy and material flow in water and steam applications and can be used in both heating and cooling systems.

A large variety of different flow transmitters, temperature sensors and pressure sensors can be connected to the device.

The Energy Manager accepts the current/PFM/pulse or temperature signals from the sensors and from these it calculates the fluid and energy flows, particularly the volume flow and mass flow, heat flow energy, and heat energy differentials according to the international calculation standard IAPWS-IF 97.

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

⚠ CAUTION

Risk of injury!

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

Hazardous area

To eliminate danger to persons or the facility when the device is used in the hazardous area (e.g. explosion protection):

- ▶ Based on the nameplate, check whether the ordered device is permitted for the intended use in the hazardous area.
- ▶ Observe the specifications in the separate supplementary documentation that is an integral part of these Brief Operating Instructions.

2.5 Product safety

This measuring device is designed in accordance with good engineering practice to meet state-of-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 EC directives listed in the device-specific EC Declaration of Conformity. Endress+Hauser confirms this by affixing the CE mark to the device.

2.6 Certificates and approvals

2.6.1 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.

2.6.2 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.

2.6.3 CSA approval

CSA General Purpose

3 Incoming acceptance and product identification

3.1 Incoming acceptance

Unpack the device carefully. Is the packaging or content damaged?

Damaged components may not be installed as the manufacturer can otherwise not guarantee compliance with the original safety requirements or the material resistance, and can therefore not be held responsible for any resulting damage.

3.2 Scope of delivery

Is the delivery complete or is anything missing? Check the scope of delivery against your order.

The scope of delivery of the Energy Manager comprises:
- Energy Manager for DIN rail mounting
- Brief Operating Instructions and Ex documentation (optional) as hard copy
- CD-ROM with PC configuration software and RS232 interface cable (optional)
- Remote display/operating unit for panel mounting (optional)
- Extension cards (optional)

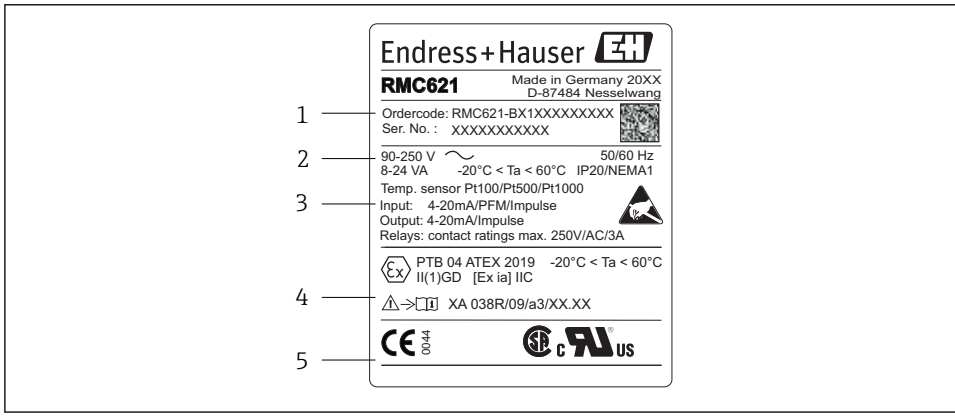
Device accessories, see the "Accessories" section in the Operating Instructions pertaining to the device

3.3 Product identification

The following options are available for identification of the device:
- Nameplate specifications
- Enter the serial number from the nameplate in the *W@M Device Viewer* (**www.endress.com/deviceviewer**): All data relating to the device and an overview of the Technical Documentation supplied with the device are displayed.

3.3.1 Nameplate

Does the nameplate on the device match the ordering information on the delivery note?



1 Nameplate of the Energy Manager (example)

1 Order code and serial number of the device
2 Power supply, degree of protection - temperature sensor input
3 Available inputs/outputs
4 Labeling for hazardous area (if selected)
5 Approvals

3.4 Storage and transport

Pack the device so that it is reliably protected against impact when it is stored (and transported). The original packaging offers the best protection.

4 Installation

4.1 Installation conditions

The permitted ambient temperature (see the "Technical data" section of the Operating Instructions) must be observed during installation and operation. The device must be protected from exposure to heat.

NOTICE

The device can overheat if extension cards are used

► Ensure airflow of at least 0.5 m/s (1.6 ft/s) for cooling and ventilation purposes.

4.1.1 Dimensions

Note that the device's installed length is 135 mm (5.31 in) (corresponds to 8HP). For additional dimensions, see the "Technical data" section of the Operating Instructions.

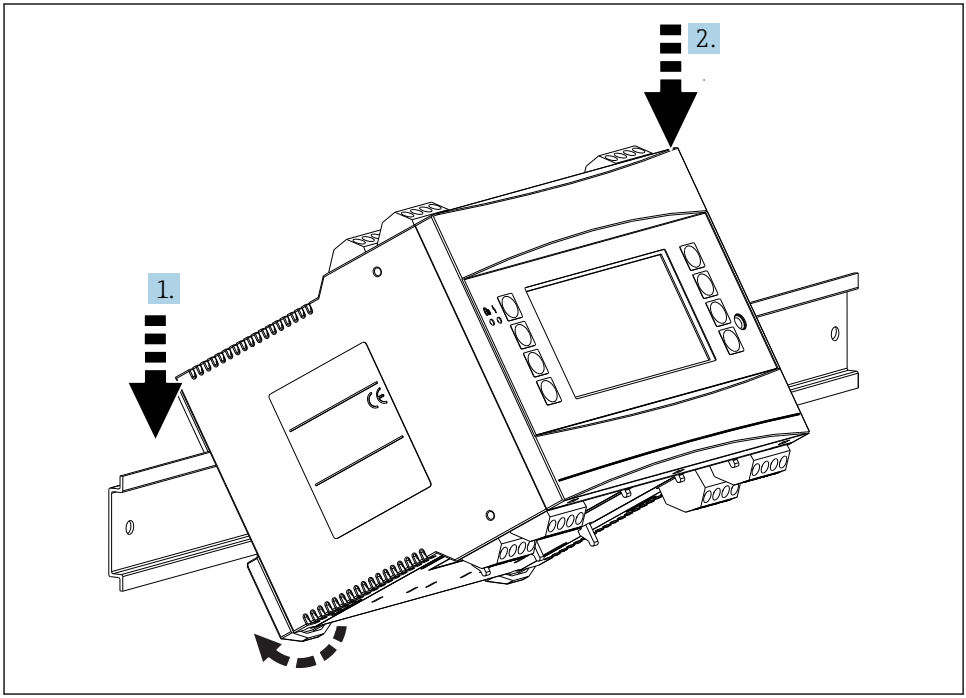
4.1.2 Mounting location

DIN rail mounting as per IEC 60715 in the cabinet. The mounting location must be free from vibrations.

4.1.3 Orientation

No restrictions.

4.2 Mounting the measuring device



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1. Hook the device onto the rail from above
2. At the front, push the device down slightly until it locks into place

4.2.1 Installing extension cards

WARNING

Electric voltage can cause injury

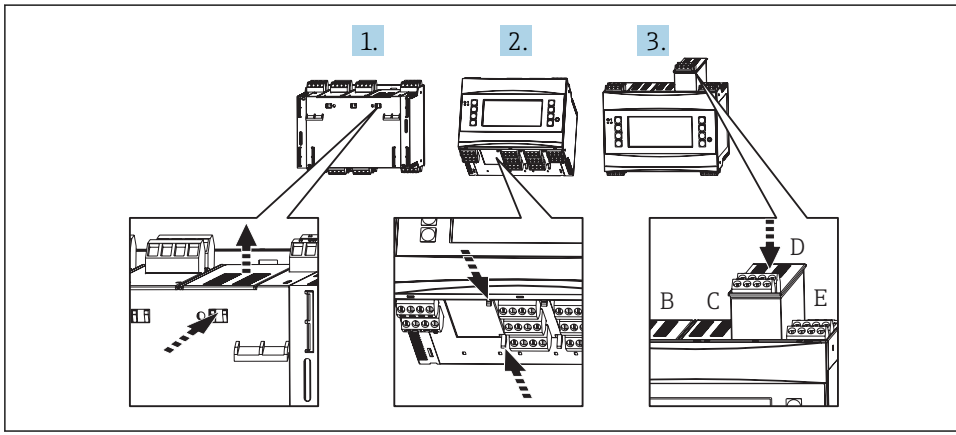
- Always make sure the device is disconnected from the power supply when installing or removing an extension card.

NOTICE

The device can overheat if extension cards are used

- Ensure airflow of at least 0.5 m/s (1.6 ft/s) for cooling and ventilation purposes.

The device can accommodate up to 3 different extension cards. The slots for the extension cards are marked B, C and D on the device.



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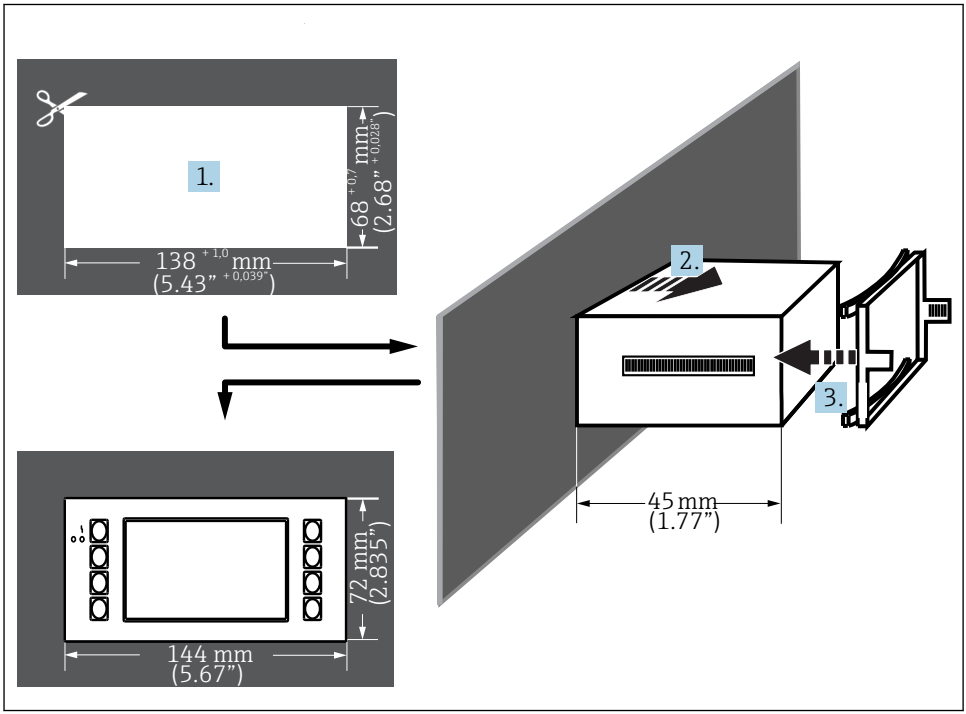
1. Remove the blanking cover from the relevant slot (B, C or D) on the basic device. To do so, squeeze together the catches on the bottom of the Energy Manager.
2. At the same time press in the catch on the rear of the device (e.g. with a screwdriver) and pull the blanking cover up out of the basic device.
3. Slot the extension card into the basic device from above. The extension card is only installed correctly when the catches are engaged on the underside and rear of the device (see 1. and 2.). Make sure that the input terminals of the extension card are at the top and the connection terminals are pointing towards the front, in the same way as the basic device.

The device recognizes the new extension card automatically once the device has been wired correctly and put into operation (see the 'Commissioning' section).

If an extension card is removed and is not replaced by another one, the empty slot must be sealed with a blanking cover.

4.2.2 Mounting the remote display/operating unit

Installation instructions:
- The mounting location must be free from vibrations.
- The permitted ambient temperature during operation is –20 to 60 °C (–4 to 140 °F).
- Protect the device from heat exposure.



Procedure for panel mounting

1. Make a panel cutout measuring $138^{+1.0}$ x $68^{+0.7}$ mm ($5.43^{+0.04}$ x $2.68^{+0.03}$ in) (according to DIN 43700). The installation depth is 45 mm (1.77 in).
2. Push the device, along with the sealing ring, through the panel cutout from the front.
3. Keeping the device horizontal, fit the securing frame over the back of the housing and, applying a uniform pressure, press the frame against the panel until the holding clasps engage.
4. Check that the securing frame is seated symmetrically.

Wiring see → 26

4.3 Post-installation check

If extension cards are used, check that the cards are seated correctly in the slots in the device.

If the device is used as a heat meter, comply with the installation instructions of EN 1434 Part 6 when mounting. This also includes the installation of the flow and temperature sensors.

5 Electrical connection

5.1 Connection conditions

WARNING

Danger of explosion if the device is incorrectly connected in the hazardous area

- When connecting Ex-certified devices, please take special note of the instructions and connection schematics in the Ex-specific supplement to these Operating Instructions. Contact the supplier if you have any questions.

CAUTION

The electronics could be destroyed

- Switch off power supply before installing or connecting the device. Failure to observe this may result in destruction of parts of the electronics.

WARNING

Danger! Electric voltage!

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

A flat-blade screwdriver is needed to wire the device at the terminals.

NOTICE

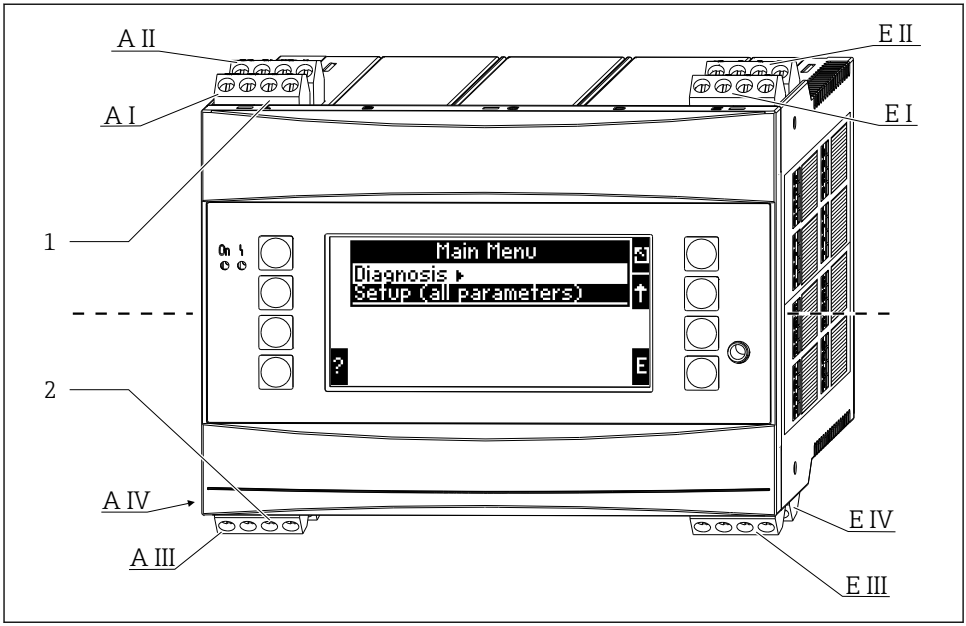
Do not overtighten the screw terminals, as this could damage the device.

- Torque = 0.5 to 0.6 Nm (0.37 to 0.44 lbf ft).

5.2 Connecting the measuring device

NOTICE

- ESD - electrostatic discharge. Protect the terminals from electrostatic discharge. Failure to observe this may result in destruction or malfunction of parts of the electronics.



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1 Terminals at top - Energy Manager inputs
2 Terminals at bottom - Energy Manager outputs

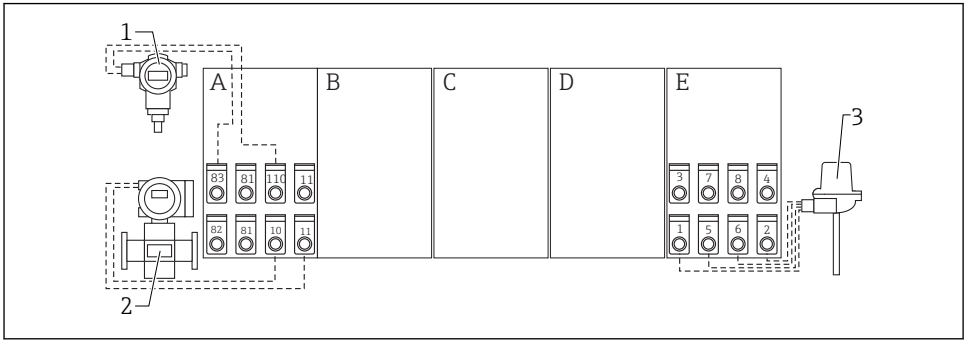
Terminal	Terminal assignment	Slot	Input
10	+ 0/4 to 20 mA/PFM/pulse input 1 [1)]	A at top, front (A I)	Current/PFM/pulse input 1
11	Ground for 0/4 to 20 mA/PFM/pulse input		
81	Ground, sensor power supply 1		
82	24 V sensor power supply 1		
110	+ 0/4 to 20 mA/PFM/pulse input 2 [1)]	A at top, rear (A II)	Current/PFM/pulse input 2
11	Ground for 0/4 to 20 mA/PFM/pulse input		
81	Ground, sensor power supply 2		
83	24 V sensor power supply 2		
1	+ RTD power supply 1	E at top, front (E I)	RTD input 1
2	- RTD power supply 1		
5	+ RTD sensor 1		
6	- RTD sensor 1		
3	+ RTD power supply 2	E at top, rear (E II)	RTD input 2
4	- RTD power supply 2		

Terminal	Terminal assignment	Slot	Input
7	+ RTD sensor 2		
8	- RTD sensor 2		
101	- RxTx 1	E at bottom, front (E III)	RS485
102	+ RxTx 1		
103	- RxTx 1		RS485 (optional)
104	+ RxTx 1		
131	+ 0/4 to 20 mA/pulse output 1	E at bottom, rear (E IV)	Current/pulse output 1
132	- 0/4 to 20 mA/pulse output 1		
133	+ 0/4 to 20 mA/pulse output 2		Current/pulse output 2
134	- 0/4 to 20 mA/pulse output 2		
52	Relay Common (COM)	A at bottom, front (A III)	Relay 1
53	Relay normally open (NO)		
91	Ground, sensor power supply		Additional sensor power supply
92	24 V sensor power supply		
L/L+	L for AC L+ for DC	A at bottom, rear (A IV) Power supply	
N/L-	N for AC L- for DC		

1) Pulse input: signal level 2 to 7 mA low; 13 to 19 mA high with approx. 1.3 kΩ dropping resistor at max. 24 V voltage level

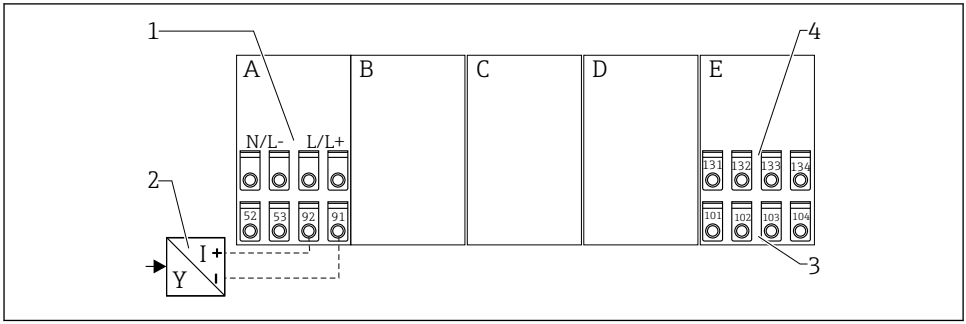
The current/PFM/pulse inputs or RTD inputs in the same slot are not galvanically isolated. There is a separation voltage of 500 V between the aforementioned inputs and outputs in different slots. Terminals of the same name are jumpered internally (terminals 11 and 81).

5.3 Connecting the measuring unit



2 *Connection overview, top (inputs)*

A, E	*Inputs in basic unit*	*1*	*Pressure, e.g. Cerabar S*
B, C, D	*Extension cards (optional)*	*2*	*Flow, e.g. Promag 30/33*
		3	*Temperature, e.g. TR10*



3 *Connection overview, bottom (outputs, interfaces)*

A, E	*Outputs in basic unit*	*1*	*Supply voltage*
B, C, D	*Extension cards (optional)*	*2*	*Transmitter power supply*
		3	*Pulse and current outputs (active)*
		4	*Interfaces, e.g. RS485*

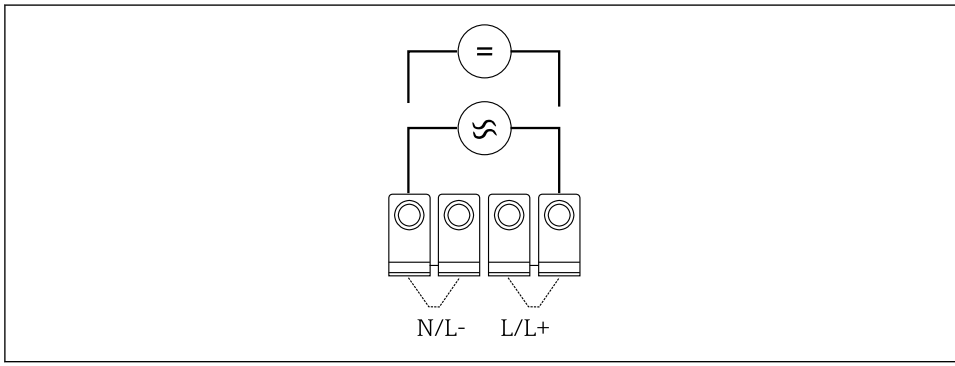
The terminals are jumpered internally and can be used as support terminals for parallel wiring.

5.3.1 Connecting the power supply

NOTICE

Incorrect voltage can destroy the device

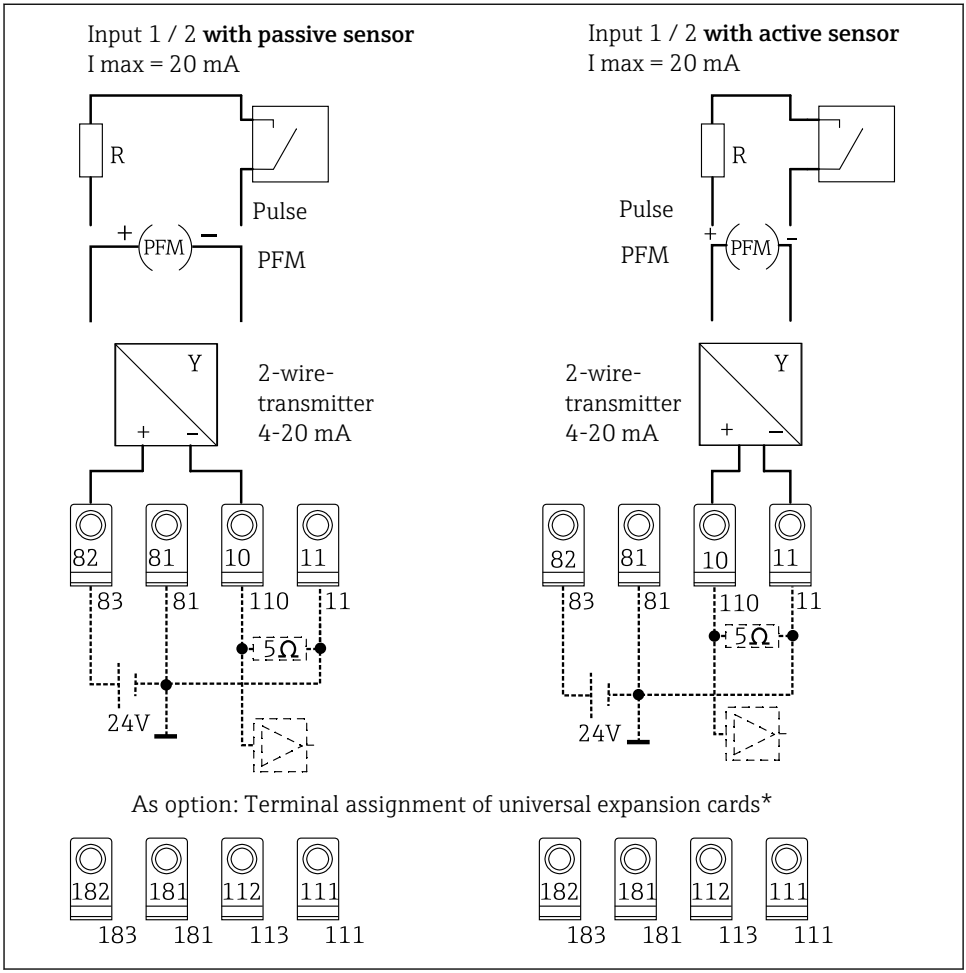
- ▶ Before wiring the device, make sure that the supply voltage matches the specifications on the nameplate.
- ▶ For the 90 to 250 V_{AC} version (mains connection), a switch marked as a circuit breaker, as well as an overload protection device (rated power ≤ 10 A) must be fitted in the supply line near the device (easy to reach).



4 *Connecting the power supply*

Power supply (see nameplate):
- 90 to 250 V_{AC} 50/60 Hz, or
- 20 to 36 V_{DC} or 20 to 28 V_{AC} 50/60 Hz

5.3.2 Connecting the external sensors

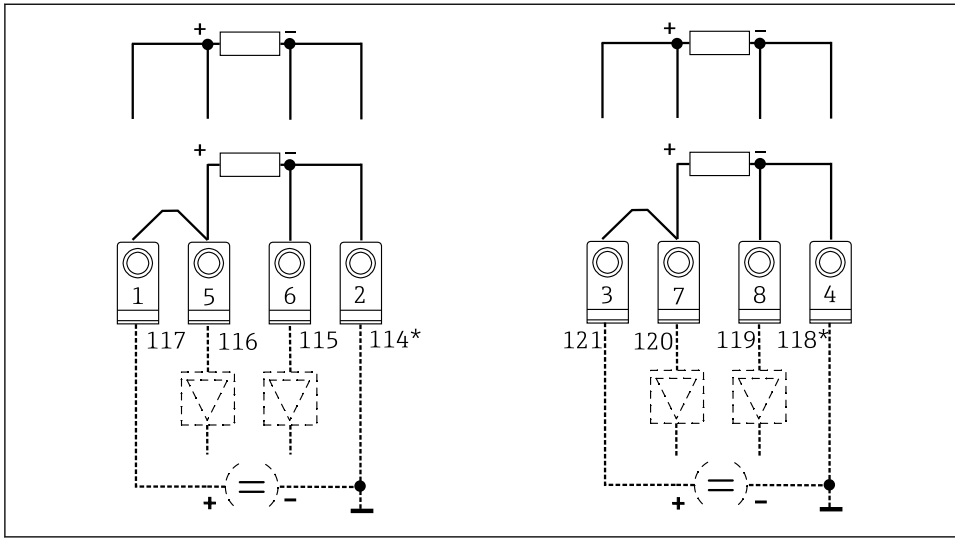


5 PFM, current and pulse inputs of the Energy Manager

***Terminal assignment of the extension cards**

Passive and active sensors are wired as indicated in the connection diagrams "Input 1 / 2".

5.3.3 Connecting the temperature sensors



6 *Temperature inputs of the Energy Manager (4-wire or 3-wire connection)*

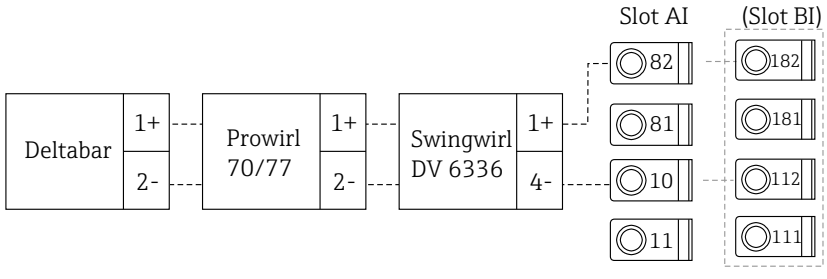
Input 1: terminals 1, 2, 5, 6 (left)
Input 2: terminals 3, 4, 7, 8 (right)
* *Optional: terminal assignment for temperature extension card*

Terminals 1 and 5, or 3 and 7, must be jumpered for 3-wire connections.

5.4 Endress+Hauser-specific devices

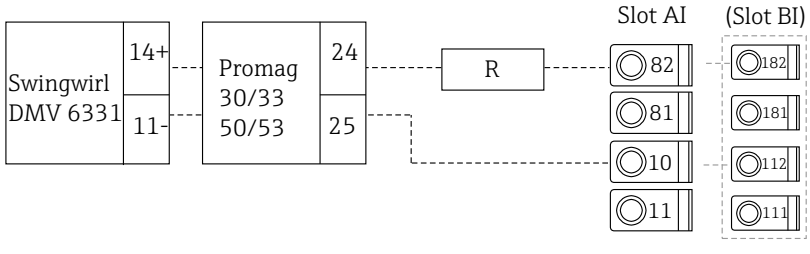
Flow sensors with PFM output

Setting the Prowirl measuring device to the PFM output (→ FU 20: ON, PF)



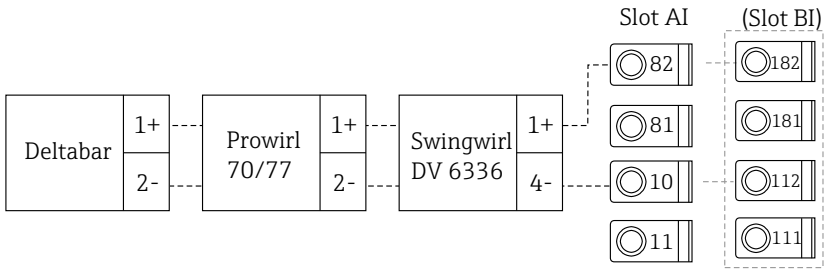
Flow sensor with open collector output

Select the dropping resistor R so that I_{max} = 20 mA is not exceeded.

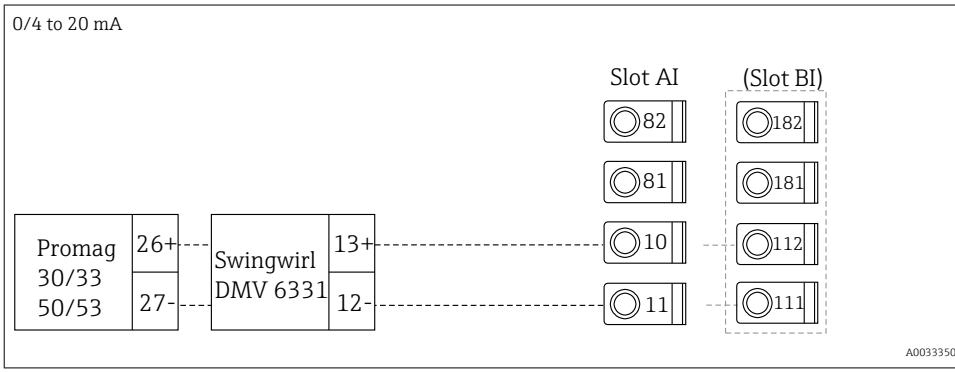


Flow sensor with passive current output

4 to 20 mA

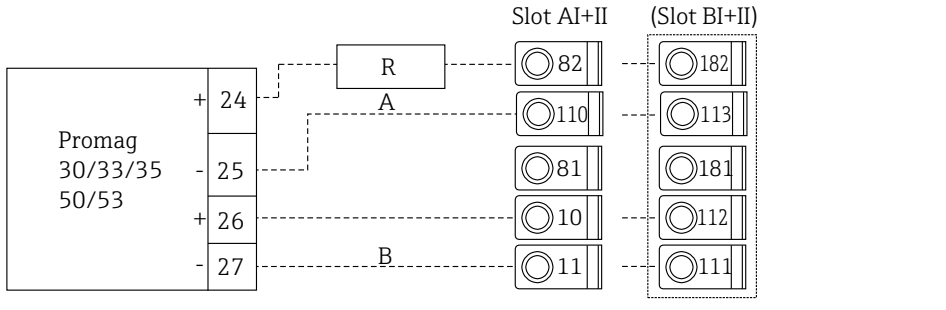


Flow sensor with active current output



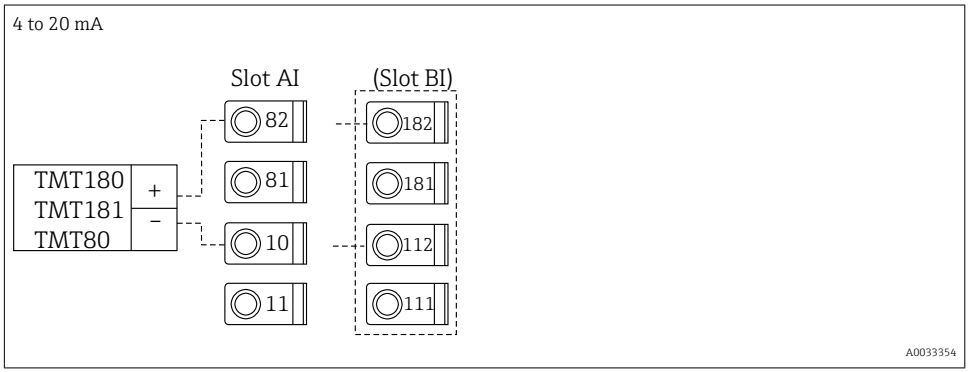
Flow sensor with active current output and status output (relay) for bidirectional flow measurement

Select the dropping resistor R so that I_{max} = 20 mA is not exceeded.
If a direction signal is used, select the dropping resistor R so that the current output I is in the 12 to 20 mA range (e.g. if R = 1 500 Ω, 16 mA flows)

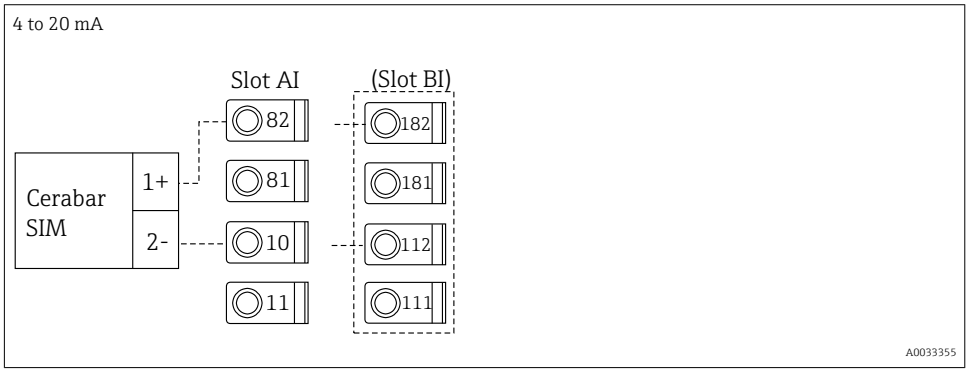


A Direction signal
B Flow

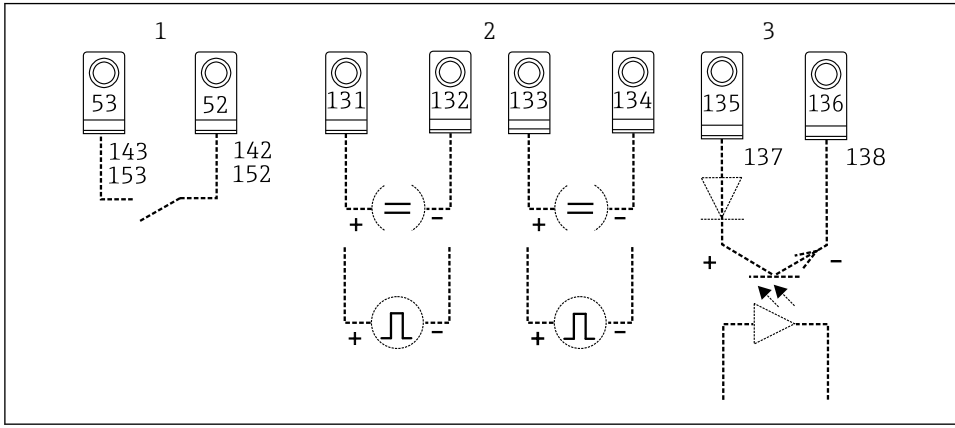
Temperature sensor with temperature head transmitter



Pressure sensor with passive current output



5.5 Connecting the outputs



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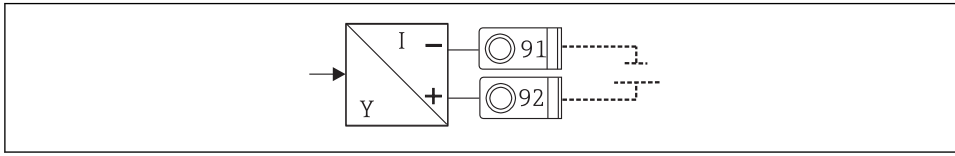
7 Outputs of the Energy Manager

1 Relay 1; terminals 142, 143 (relay 1) and 152, 153 (relay 2) optionally in extension card
2 Pulse and current outputs
3 Pulse outputs (Open Collector) optionally in extension card



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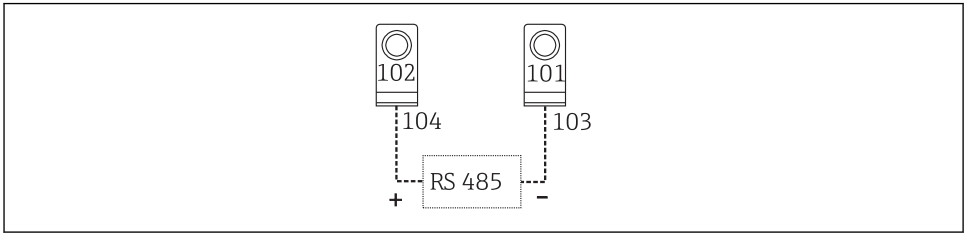
8 Transmitter power supply

5.6 Connecting the interfaces



9 *Interfaces RS485*

- RS232 connection
  The RS232 is connected using the interface cable and the jack socket on the front of the housing.
- RS485 connection
- Optional: additional RS485 interface
  Plug-in terminals 103/104, the interface is only active as long as the RS232 interface is not used.
- PROFIBUS connection
  Optional connection of the Energy Manager to PROFIBUS DP via the serial RS485 interface with the external module HMS AnyBus Communicator for Profibus (see the "Accessories section in the Operating Instructions)
- Optional: MBUS
  Optional connection to MBUS via 2nd RS485 interface
- Optional: Modbus
  Optional connection to Modbus via 2nd RS485 interface

No communication is possible via the RS232 interface (jack socket)if the M-BUS or Modbus interface is enabled. The bus interface must be switched to RS232 on the device if data are transmitted or read out with the PC configuration software.

5.7 Connecting the extension cards

Terminal assignment for universal extension card

Terminal	Terminal assignment	Slot	Input
182	24 V Sensor power supply 1	B, C, D at top, front (B I, C I, D I)	Current/PFM/pulse input 1
181	Ground, sensor power supply 1		
112	+ 0/4 to 20 mA/PFM/pulse input 1 [1)]		
111	Ground for 0/4 to 20 mA/PFM/pulse input		
183	24 V Sensor power supply 2	B, C, D at top, rear (B II, C II, D II)	Current/PFM/pulse input 2
181	Ground, sensor power supply 2		
113	+ 0/4 to 20 mA/PFM/pulse input 2 [1)]		

Terminal	Terminal assignment	Slot	Input
111	Ground for 0/4 to 20 mA/PFM/pulse input		
142	Relay 1 common (COM)	B, C, D at bottom, front (B III, C III, D III)	Relay 1
143	Relay 1 normally open (NO)		
152	Relay 2 Common (COM)		Relay 2
153	Relay 2 normally open (NO)		
131	+ 0/4 to 20 mA/pulse output 1	B, C, D at bottom, center (B IV, C IV, D IV)	Current/pulse output 1 active
132	- 0/4 to 20 mA/pulse output 1		
133	+ 0/4 to 20 mA/pulse output 2		Current/pulse output 2 active
134	- 0/4 to 20 mA/pulse output 2		
135	+ pulse output 3 (open collector)	B, C, D at bottom, rear (B V, C V, D V)	Passive pulse output
136	- pulse output 3		
137	+ pulse output 4 (open collector)		Passive pulse output
138	- pulse output 4		

1) Pulse input: signal level 2 to 7 mA low; 13 to 19 mA high with approx. 1.3 kΩ dropping resistor at max. 24 V voltage level

Terminal assignment for temperature extension card

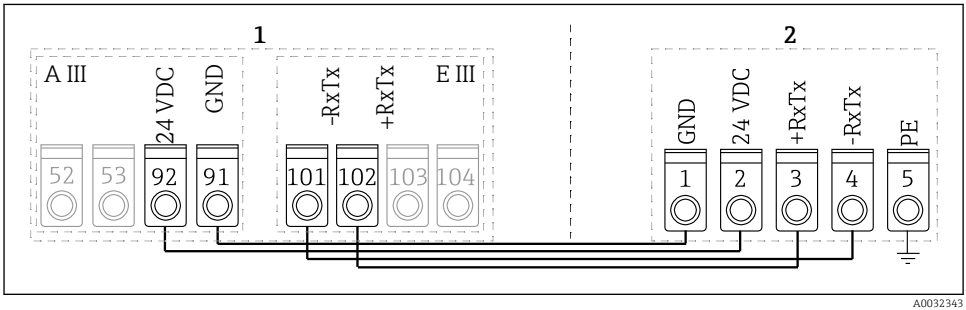
Terminal	Terminal assignment	Slot	Input
117	+ RTD power supply 1	B, C, D at top, front (B I, C I, D I)	RTD input 1
116	+ RTD sensor 1		
115	- RTD sensor 1		
114	- RTD power supply 1		
121	+ RTD power supply 2	B, C, D at top, rear (B II, C II, D II)	RTD input 2
120	+ RTD sensor 2		
119	- RTD sensor 2		
118	- RTD power supply 2		
142	Relay 1 common (COM)	B, C, D at bottom, front (B III, C III, D III)	Relay 1
143	Relay 1 normally open (NO)		
152	Relay 2 Common (COM)		Relay 2
153	Relay 2 normally open (NO)		
131	+ 0/4 to 20 mA/pulse output 1	B, C, D at bottom, center (B IV, C IV, D IV)	Current/pulse output 1 active
132	- 0/4 to 20 mA/pulse output 1		
133	+ 0/4 to 20 mA/pulse output 2		Current/pulse output 2 active

Terminal	Terminal assignment	Slot	Input
134	- 0/4 to 20 mA/pulse output 2		
135	+ pulse output 3 (open collector)	B, C, D at bottom, rear (B V, C V, D V)	Passive pulse output
136	- pulse output 3		
137	+ pulse output 4 (open collector)		Passive pulse output
138	- pulse output 4		

The current/PFM/pulse inputs or RTD inputs in the same slot are not galvanically isolated. There is a separation voltage of 500 V between the aforementioned inputs and outputs in different slots. Terminals of the same name are jumpered internally. (Terminals 111 and 181)

5.8 Connecting the remote display/operating unit (optional)

The remote display/operating unit is directly connected to the basic unit with the cable supplied.



10 *Connecting the remote display/operating unit (optional)*

1 *Energy Manager*
2 *Remote display/operating unit*

If a Modbus, M-BUS or PROFIBUS interface is used, the terminal assignment of the RxTx ports may change (terminals 103/104).

If connected to the terminals 103/104, the display remains out of service during communication with the PC operating software.

Pay particular attention to the information in the supplement to the Operating Instructions for the bus interfaces.

5.8.1 Function description

The remote display is an innovative addition to the powerful RMx621 DIN rail devices. The user can optimally install the arithmetic unit to suit the installation and mount the display and operating unit in a user-friendly way at easily accessible location. The display can be

connected to both a DIN rail device without, as well as a DIN rail device with, an installed display/operating unit. A 4-pin cable is supplied to connect the remote display to the basic unit. No other components are required.

Only one display/operating unit can be attached to a DIN rail device in each case and vice versa (point-to-point).

5.9 Post-connection check

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

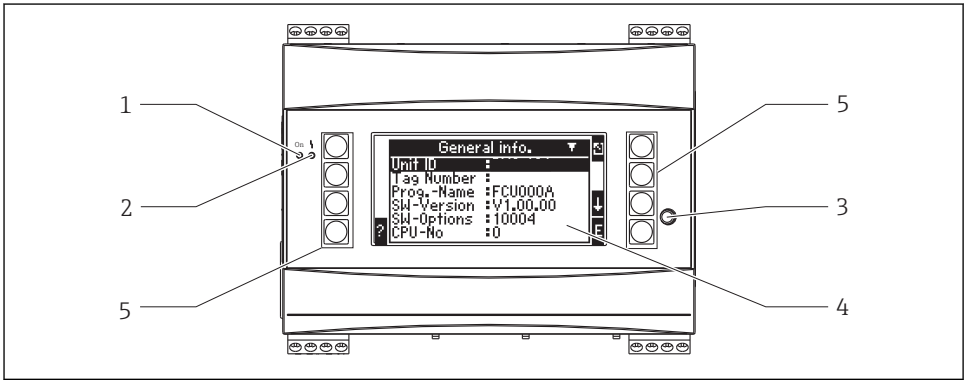
Device condition and specifications	**Notes**
Is the device or cable damaged (visual inspection)?	-
Electrical connection	**Notes**
Does the supply voltage match the specifications on the nameplate?	90 to 250 V_{AC}, 50/60 Hz 20 to 36 V_{DC} 20 to 28 V_{AC}, 50/60 Hz
Are all terminals firmly engaged in their correct slot? Is the coding on the individual terminals correct?	-
Do the mounted cables have adequate strain relief?	-
Are the power supply and signal cables correctly connected?	See wiring diagram on the housing
Are all screw terminals firmly tightened?	-

6 Operation options

The device offers a wide range of configuration options and software functions depending on the application and device version.

If you need assistance when programming the device, help is available for virtually all the operating positions. Simply press the "?" button to display the help. (The Help can be accessed in each menu).

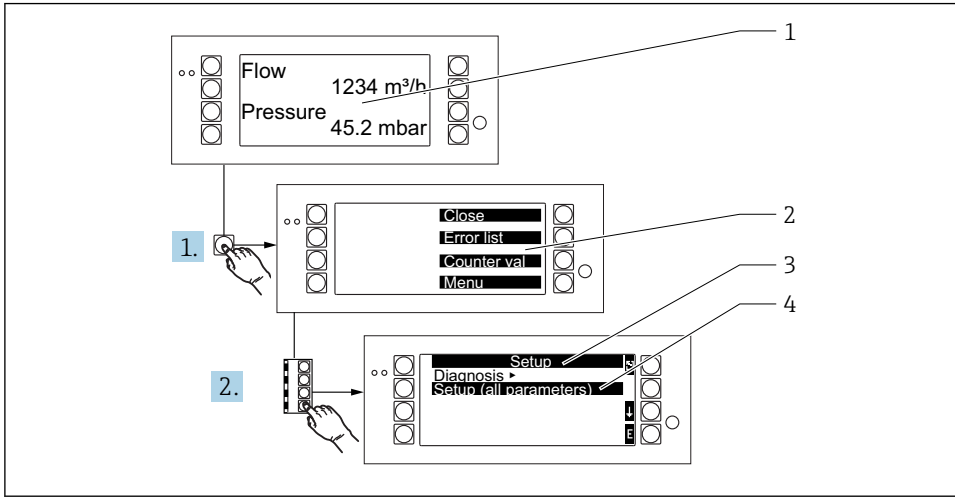
These Brief Operating Instructions describe the configuration options on a basic device (without extension cards). For detailed information see the Operating Instructions for the device.



A0033359

1 *Operational indicator: green LED, is lit when supply voltage is applied*
2 *Fault-signaling indicator: red LED, operating states according to NAMUR NE 44*
3 *Serial port: jack socket for PC connection to configure the device and read out measured values with the PC software*
4 *Display 160 x 80 dot-matrix display with dialog texts for configuring and displaying measured values, limit values and fault messages. The background lighting changes from blue to red in the event of an error. The size of the characters shown depends on the number of measured values to be displayed (see "Configuring the display" in the "Commissioning" section of the Operating Instructions).*
5 *Input keys; eight soft keys that are assigned different functions depending on the menu item. The current function of the keys is shown on the display. Only the keys that are needed in the current operating menu are assigned functions and usable.*

6.1 Display layout



1 *Measured value display*
2 *Choice of main menus: close, error list, counter values, menu (Setup)*
3 *Current configuration menu*
4 *Configuration menu activated for selection (highlighted in black)*

6.2 Key symbols

Symbol	Function
E	Switch to submenus and select operating items. Edit and confirm configured values.
⎋	Leave the current editing screen or the menu item currently active without saving any changes.
↑	Move the cursor up a line or change the selected character.
↓	Move the cursor down a line or change the selected character.
→	Move the cursor one character to the right.
←	Move the cursor one character to the left.
?	If Help is available for an operating item, this is indicated by the question mark. Press this function key to call up the Help.
⌨	Switch to the Edit mode of the Palm keyboard

Symbol	Function
 / 	Keypad for upper/lower case (only for Palm)
	Keypad for numerical entries (only for Palm)
	Accept changes
	Discard updates

7 Commissioning

7.1 Function check

Perform the final checks before commissioning the device:
- Post-installation check → 🖹 13
- Post-connection check→ 🖹 27

7.2 Switching ON the measuring device

7.2.1 Basic device

Once the operating voltage is applied, the green LED is lit (= device in operation) if no error is pending.

When the device is commissioned for the first time, the message "Please setup the device" appears on the display. Program the device as described in the Operating Instructions.

If you are commissioning a device that is already configured or preset, the device starts measuring immediately as defined in the settings. The values of the display group currently configured appear on the display. Press any key to call up the Navigator (quick start) and to go from the Navigator to the main menu.

7.2.2 Extension cards

Once the operating voltage has been applied, the device automatically recognizes the installed and wired extension cards. The device displays the prompt to configure the new connections. This can be done immediately or at a later time.

7.2.3 Remote display and operating unit

Once the supply voltage has been applied and following a brief initialization period, the remote display/operating unit automatically starts communicating with the connected basic

device. Using an autodetect function, the display detects the baud rate and device address set in the basic device.

Press the left and right top button of the display/operating unit for 5 seconds to go to the Setup menu. The baud rate and the display contrast/angle can be set here. Press ESC to exit the Setup menu of the display/operating unit and go to the display window and the main menu to configure the device.

The Setup menu for configuring the basic settings for the display/operating unit is only available in English.

Error messages

After switching on or configuring the device, the remote display/operating unit briefly displays the message **"Communication problem"** until a stable connection is established.

Check the wiring if this error message is displayed during live operation.

7.3 Device configuration

The device configuration is described in detail in the Operating Instructions

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