Füllstand | Druck | Durchfluss | Temperatur | Flüssigkeits-analyse | Registrierung | Systeme Komponenten | Services | Solutions

Brief Operating Instructions

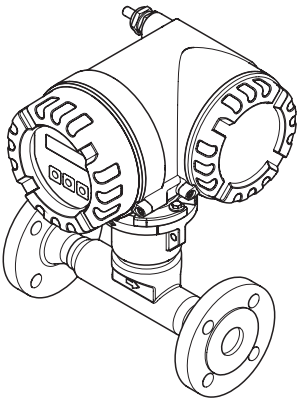
Proline t-mass 65

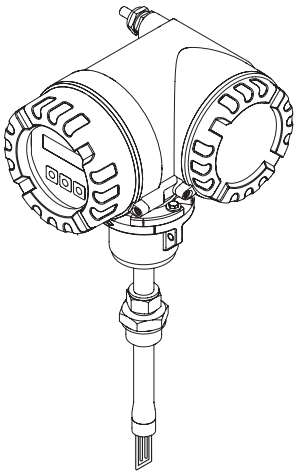
Thermal Mass Flow Measuring System

HART

PROFIBUS

MODBUS





These Brief Operating Instructions are **not** intended to replace the Operating Instructions provided in the scope of supply. Detailed information is provided in the Operating Instructions and the additional documentation on the CD-ROM supplied.

The complete device documentation consists of:
- These Brief Operating Instructions
- Depending on the device version:
  - Operating Instructions and the Description of Device Functions
  - Approvals and safety certificates
  - Additional device-specific information

KA021D/06/en/04.07
71042209

Endress+Hauser

People for Process Automation

Table of contents

1 Safety instructions

1.1 Designated use

- The measuring device works based on the thermal measuring principle and is to be used exclusively for measuring the mass flow of gases.
- The measuring device can be configured to measure pure gases (e.g. oxygen, nitrogen, carbon dioxide, argon etc.) or gas mixtures (e.g. natural gas).
- Any use other than that described here compromises the safety of persons and the entire measuring system and is, therefore, not permitted.
- The manufacturer is not liable for damage caused by improper or non-designated use.

1.2 Installation, commissioning and operation

- The measuring device must only be installed, connected, commissioned and maintained by qualified and authorized specialists (e.g. electrical technicians) in full compliance with the instructions in these Brief Operating Instructions, the applicable norms, legal regulations and certificates (depending on the application).
- The specialists must have read and understood these Brief Operating Instructions and must follow the instructions they contain. If you are unclear on anything in these Brief Operating Instructions, you must read the Operating Instructions (on the CD-ROM). The Operating Instructions provide detailed information on the measuring device.
- The measuring device may only be modified or repaired if such work is expressly permitted in the Operating Instructions (on the CD-ROM).
- If performing welding work on the piping, the welding unit may not be grounded by means of the measuring device.

1.3 Operational safety

- The measuring device is designed 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. Relevant regulations and European standards have been observed.
- Observe the technical data on the nameplate!
- The specialists must ensure that the measuring device has been wired correctly in accordance with the wiring diagrams. The measuring device must be grounded if special protective measures have not been taken, e.g. galvanically isolated power supply, SELV or PELV! (SELV = Safe Extra Low Voltage; PELV = Protective Extra Low Voltage)
- With regard to special fluids, including fluids used for cleaning, Endress+Hauser will be happy to assist in clarifying the corrosion-resistant properties of wetted materials. However, minor changes in temperature, concentration or in the degree of contamination in the process may result in variations in corrosion resistance. For this reason, Endress+Hauser does not accept any responsibility with regard to the corrosion resistance of wetted materials in a specific application. The user is responsible for the choice of suitable wetted materials in the process.

- Hazardous areas
  Measuring devices for use in hazardous areas are labeled accordingly on the nameplate. Relevant national regulations must be observed when operating the device in hazardous areas. The Ex documentation on the CD-ROM is an integral part of the entire device documentation. The installation regulations, connection data and safety instructions provided in the Ex documentation must be observed. The symbol on the front page indicates the approval and certification body (Ex Europe, FM USA, CSA Canada).
  The nameplate also bears the documentation number of this Ex documentation (XA***D/../..).

1.4 Safety conventions

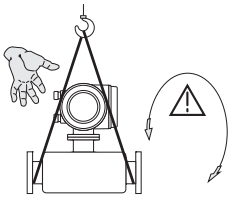
⚠ Warning!
"Warning" indicates an action or procedure which, if not performed correctly, can result in injury or a safety hazard. Comply strictly with the instructions and proceed with care.

☝ Caution!
“Caution” indicates an action or procedure which, if not performed correctly, can result in incorrect operation or destruction of the device. Comply strictly with the instructions.

✎ Note!
"Note" indicates an action or procedure which, if not performed correctly, can have an indirect effect on operation or trigger an unexpected response on the part of the device.

2 Installation

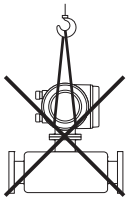
2.1 Transporting to the measuring point



A0007408

Use slings around the process connections.

⚠ Warning!
Risk of injury! The device can slip.
The center of gravity of the measuring device may be higher than the holding points of the slings.
Always ensure that the device cannot slip or turn around its axis.



A0007409

Do not lift measuring devices by the transmitter housing or the connection housing in the case of the remote version. Do not use chains as they could damage the housing.

- Transport the measuring device to the measuring point in the original packaging.
- The covers or caps fitted on the process connections prevent mechanical damage to the sensors during transport and storage. For this reason, do not remove the covers or caps until immediately before installation.

2.2 Installation conditions

- Avoid the formation of condensation in the area of the sensors.
- Take the properties of the gas or gas mixture into account (dryness, cleanliness, stability, components etc.).

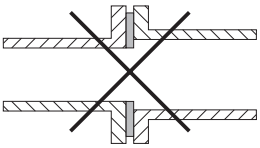
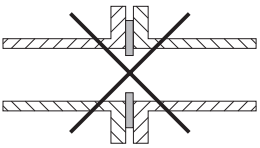
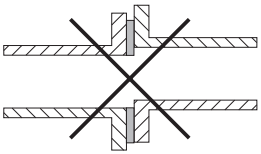
2.2.1 Dimensions

For the dimensions of the measuring device → see associated Technical Information on the CD-ROM.

2.2.2 Pipe/pipe connection requirements

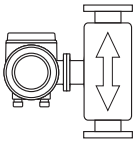
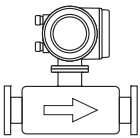
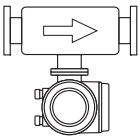
- The aim is to have a smooth inner pipe surface end to end.
  Further information is provided in ISO Standard 14511.

Caution!
The piping must be free from contamination and particles to avoid damage to the sensing elements.

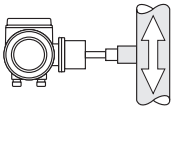
Avoid		
 A0007520	 A0007521	 A0007522
Pipe diameter one is not equal pipe diameter two	Seals with the wrong size	Flanges and seals incorrectly aligned

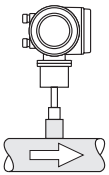
2.2.3 Orientation

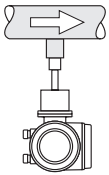
Flanged version

 A0007512		 A0007514		 A0007515	
compact	remote	compact	remote	compact	remote
✔✔	✔✔	✔✔	✔✔	✘	✘
✔✔ = Recommended orientation ✘ = Not recommended					

Insertion version







compact	remote	compact	remote	compact	remote
✔	✔✔	✔✔	✔✔	✘	✘

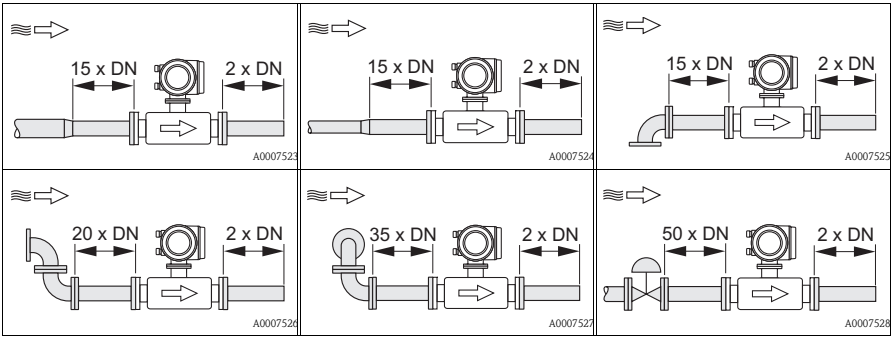
✔✔ = Recommended orientation
✔ = Orientation recommended in certain situations; not recommended for strong vibrations or unstable installations
✘ = Not recommended

2.2.4 Inlet/outlet runs

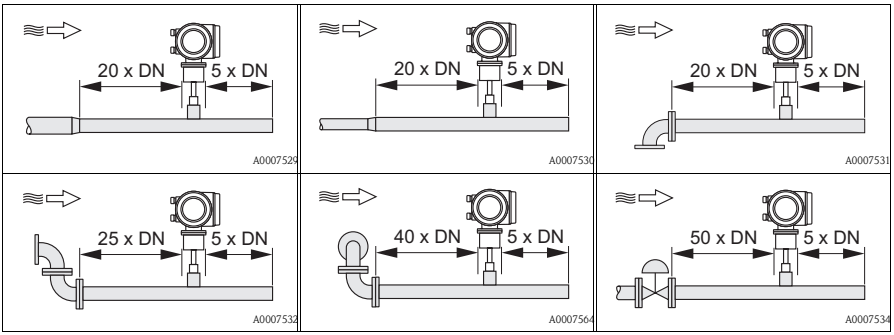
The sensitivity of the thermal measuring principle to low flow rates means the flowmeter can also be sensitive to internal disturbances in the flowing gas stream (e.g. vortex formation), especially in pipes with larger diameters ≥ DN 150 (≥ 6").
As a general rule, the installed thermal flow sensor should always be installed as far away as possible from any flow disturbances Further information is provided in ISO Standard 14511.

Please observe the following recommended minimum values with regard to the inlet and outlet runs.

Flanged version



Insertion version



Regardless of any other consideration, the minimum recommendations for inlet and outlet runs on either side of the sensor are:

Inlet run
15 x DN for the flanged version and 20 x DN for the insertion version

Outlet run
2 x DN for the flanged version and 5 x DN for the insertion version

These are minimum values. The performance of the measuring device is often improved by using longer runs.

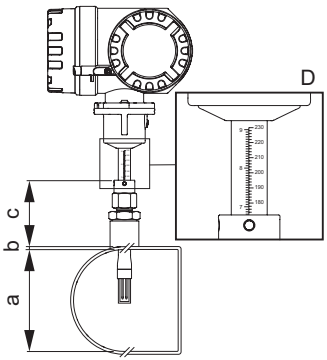
Note!
- Where two or more disturbances are located upstream of the meter, the longest recommended upstream pipe run is to be observed as an absolute minimum.
- It is always recommended to install control valves downstream of the measuring device.
- For very light gases such as Helium and Hydrogen all upstream distances should be doubled.

2.2.5 Perforated plate flow conditioner

It is recommended to install a perforated plate flow conditioner if the recommended inlet runs cannot be observed.
Please refer to the Operating Instructions on the CD-ROM for special details on the perforated plate flow conditioner.

2.2.6 Adjustable insertion depth for the insertion version

Please take the following three dimensions into account when installing the sensor:



A0007535

a. Internal diameter for round pipes.
Duct height for a square duct if the sensor is to be installed vertically or the duct width if it is to be installed horizontally. (a = min. 80 mm / 3")

b. Thickness of the pipe wall or duct wall

c. Depth of the welding nozzle at the pipe or duct including the sensor pipe union and low pressure mounting set (if used).

Detail D:
Insert pipe with scale in millimeters or inches.

Note!
All the guidelines and information on the insertion depth refer to a standard welding nozzle provided by Endress+Hauser.

It is important that the sensor be installed so that the top of the adjustable fitting is aligned with the value on the scale that is equal to the following calculated value:

- (0.3 x a) + b + c + 2 mm (0.079 inch)

2.2.7 Aligning the flanged version

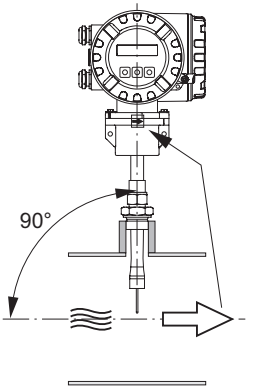
The arrows on the sides of the sensor housing must point in the same direction as the flow.

2.2.8 Aligning the insertion version

Once the sensor is set for the right immersion depth, it now has to be correctly aligned to the flow direction. After aligning, the pipe union must be tightened to secure and seal the insert pipe. Tighten the two safety screws.

Warning!
The following tightening torques must be observed for the pipe union:
- Counter nut: hand-tight, then 1¼ revolutions with a wrench
- Safety screws: 5 Nm (3.89 lbf ft)

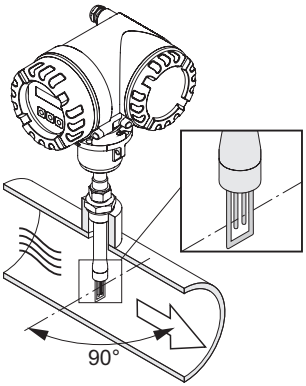
Aligning to flow direction



A0007536

The arrows on either side of the transmitter housing must point in the direction of flow.
The graduated scale on the insert pipe must point to the flow inlet side.

Aligning to pipe



A0007537

Weld the welding nozzle onto the pipeline or duct. Align the sensor (sensing element) at a 90 ° angle to the direction of flow.

✎ Note!
The sensor cannot automatically detect the flow direction. These specifications only ensure that the device is installed and aligned correctly.

2.2.9 Insertion version with low-pressure mounting set

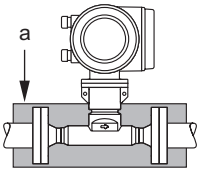
Installation instructions for the insertion version with low-pressure mounting set
→ see Operating Instructions on the CD-ROM.

2.2.10 Temperature range

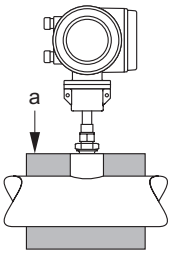
Install the sensor away from direct sunlight and extremes of temperature.

2.2.11 Thermal insulation

If the gas is very moist or saturated with water (e.g. biogas), the piping and the sensor housing should be insulated to prevent droplets of liquid condensing on the pipe wall and/or the sensors.



A0007538



A0007539

a = Maximum insulation height

In the event of extreme moisture and fluctuations in temperatures, it can help to provide a trace heating system for the piping and/or the sensor.

2.2.12 Vibrations

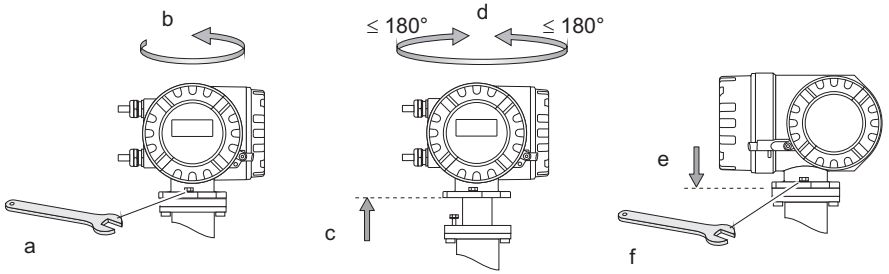
Caution!
Excessive vibrations can result in mechanical damage to the measuring device and its holder.

- Accelerations up to 1 g, 10 to 150 Hz, in accordance with IEC 60068-2-6, are permitted

2.3 Installation instructions

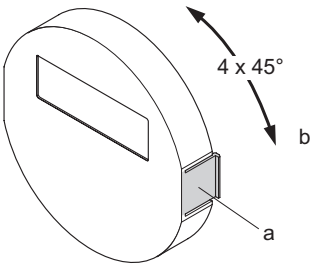
2.3.1 Turning the aluminum transmitter housing

Warning!
The rotating mechanism of measuring devices for hazardous areas Zone 1 (ATEX) or Class I Div. 1 (FM/CSA) differs from that illustrated here. The procedure for turning these housings is described in the Ex-specific documentation.
Associated Ex-specific documentation → CD-ROM.



A0007540

2.3.2 Turning the local display



a. Press in the side latches on the display module and remove the module from the cover plate of the electronics compartment.

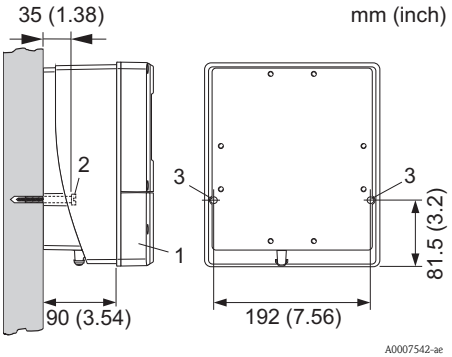
b. Turn the display to the desired position (max. 4 x 45° in both directions) and reset it onto the cover plate of the electronics compartment.

2.3.3 Installing the wall-mount housing

Caution!

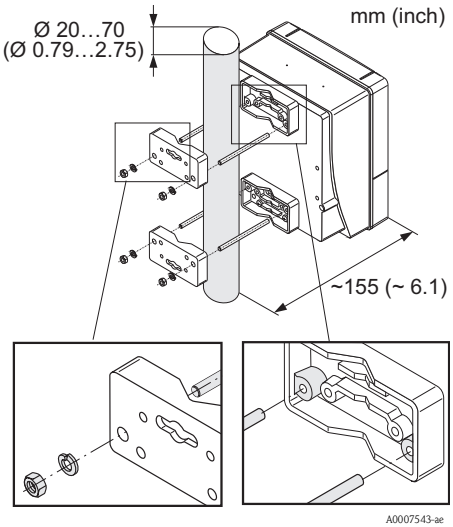
- Make sure that the ambient temperature does not exceed the permitted range.
- Always install the wall-mount housing in such a way that the cable entries point downwards.

Mounted directly on the wall



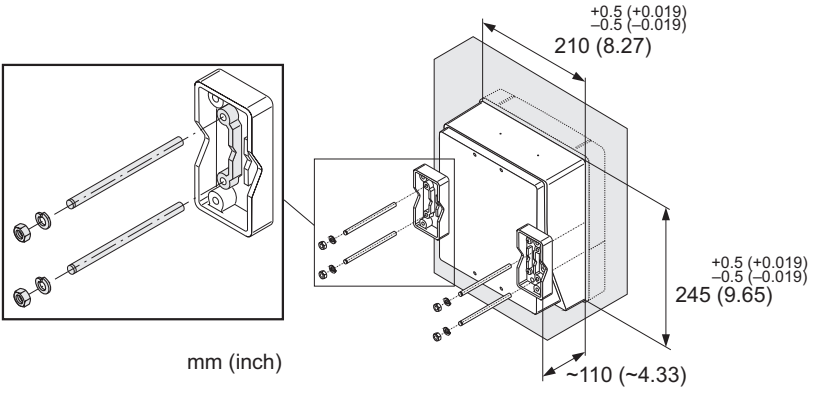
1. Connection compartment
2. Securing screws M6 (max. ø 6.5 mm (0.25"); screw head max. ø 10.5 mm (0.4")
3. Housing bores for securing screws

Pipe mounting



Caution!
Danger of overheating! If the device is mounted on a warm pipe, make sure that the housing temperature does not exceed +60 °C (+140 °F) which is the maximum temperature permitted.

Panel mounting



2.4 Post-installation check

- Is the measuring device damaged (visual inspection)?
- Does the measuring device correspond to the specifications at the measuring point?
- Are the measuring point number and labeling correct (visual inspection)?
- Correct internal diameter and correct surface roughness/quality?
- Correct alignment of the pipe/seal/body of the flow measuring device?
- Has the correct sensor orientation been selected in terms of type, fluid properties, fluid temperature?
- Does the arrow on the sensor point in the direction of the flow in the pipe?
- Are sufficient inlet and outlet runs available before and after the measuring point?
- Flow conditioner correctly installed (if available)?
- Correct sensor immersion depth (only insertion version)?
- Is the measuring device protected against moisture and sunlight?
- Is the measuring device protected against overheating?
- Is the measuring device protected against excessive vibrations?
- Check gas properties (e.g. purity, dryness, cleanliness).

3 Wiring

⚠ Warning!
Risk of electric shock!
- Never mount or wire the measuring device while it is connected to the power supply.
- Prior to connecting the power supply, connect the protective ground to the ground terminal on the housing.

☝ Caution!
Risk of damaging the electronic components!
Connect the power supply in accordance with the specifications on the nameplate.

In addition, for the remote version:

☝ Caution!
Risk of damaging the electronic components!
- Only connect sensors and transmitters with the same serial number
- Observe the cable specifications of the connecting cable → Operating Instructions on the CD-ROM.

✎ Note!
Install the connecting cable securely to prevent movement.

In addition, for measuring devices with fieldbus communication:

☝ Caution!
Risk of damaging the electronic components!
- Observe the cable specification of the fieldbus cable → Operating Instructions on the CD-ROM.
- Keep the stripped and twisted lengths of cable shield as short as possible.
- Screen and ground the signal lines → Operating Instructions on the CD-ROM.
- When using in systems without potential matching → Operating Instructions on the CD-ROM.

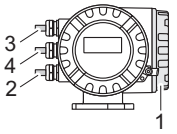
In addition, for Ex-certified measuring devices:

⚠ Warning!
When wiring Ex-certified measuring devices, all the safety instructions, wiring diagrams, technical information etc. of the related Ex documentation must be observed → Ex documentation on the CD-ROM.

3.1 Connecting the various housing types

Wire the unit using the terminal assignment diagram inside the cover.

3.1.1 Compact version

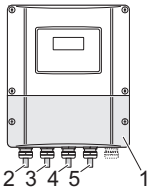


A0007545

Transmitter connection:

1 Connection diagram inside the connection compartment cover
2 Power supply cable
3/4 Signal cable or fieldbus cable

3.1.2 Remote version (transmitter): Ex-free Zone and Ex Zone 2



A0007546

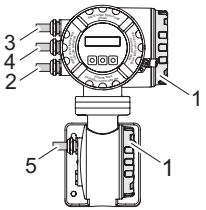
Transmitter connection:

1 Connection diagram inside the connection compartment cover
2 Power supply cable
3 Signal cable
4 Fieldbus cable

Connecting cable connection:

5 Sensor/transmitter connecting cable

3.1.3 Remote version (transmitter): Ex Zone 1



A0007547

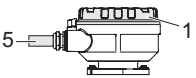
Transmitter connection:

1 Connection diagram inside the connection compartment cover
2 Power supply cable
3/4 Signal cable or fieldbus cable

Connecting cable connection:

5 Sensor/transmitter connecting cable

3.1.4 Remote version (sensor)



A0007548

Transmitter connection:

1 Connection diagram inside the connection compartment cover

Connecting cable connection:

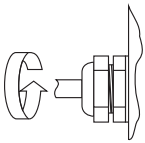
5 Sensor/transmitter connecting cable

3.2 Degree of protection

The devices meet all the requirements for IP 67.

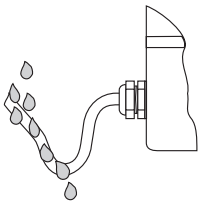
After mounting in the field or service work, the following points have to be observed to ensure that IP 67 protection is retained:
- Install the measuring device in such a way that the cable entries do not point upwards.
- Do not remove the seal from the cable entry.
- Remove all unused cable entries and plug them with drain plugs.

Tighten the cable entries correctly.



A0007549

The cables must loop down before they enter the cable entries (“water trap”).



A0007550

3.3 Post-connection check

- Are cables or the device damaged (visual inspection)?
- Does the supply voltage match the specifications on the nameplate?
- Are the power supply and signal cables correctly connected?
- Do the cables used comply with the necessary specifications?
- Do the mounted cables have adequate strain relief?
- Is the cable type route completely isolated? Without loops and crossovers?
- Are all screw terminals correctly tightened?
- Are all the cable entries installed, correctly tightened and properly sealed?
- Cable routed as a “water trap” in loops?
- Are all housing covers installed and correctly tightened?

Zusätzlich für Messgeräte mit Feldbuskommunikation
- Are all the connecting components (T-boxes, junction boxes, connectors, etc.) connected with each other correctly?
- Has each fieldbus segment been terminated at both ends with a bus terminator?
- Has the max. length of the fieldbus cable and the spurs been observed in accordance with the specifications?
- Is the fieldbus cable fully shielded and correctly grounded?

4 Hardware settings

This section only deals with the hardware settings needed for commissioning. All other settings (e.g. output configuration, write protection, etc.) are described in the associated Operating Instructions on the CD-ROM.

✎ Note!
No hardware settings are needed for measuring devices with HART-type communication.

4.1 Device address

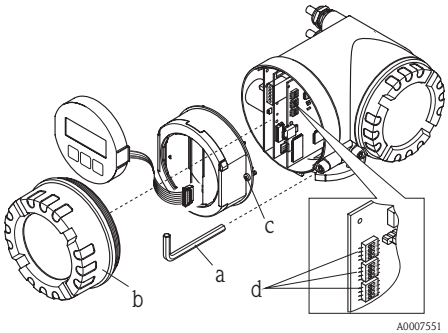
Has to be set for measuring devices with the following communication methods:

- PROFIBUS DP
- MODBUS RS485

The device address can be configured via:
- Miniature switches → see description below
- Local operation → see software settings section

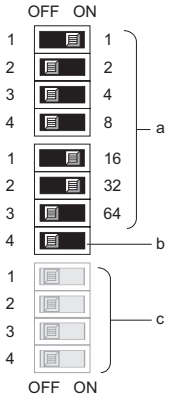
Addressing via miniature switches

⚠ Warning!
Risk of electric shock! Risk of damaging the electronic components!
- All the safety instructions for the measuring device must be observed and all the warnings heeded → Page 3.
- Use a workspace, working environment and tools purposely designed for electrostatically sensitive devices.



a. Loosen the cheese head screw of the securing clamp with an Allen key (3 mm)
b. Unscrew cover of the electronics compartment from the transmitter housing.
c. Loosen the securing screws of the display module and remove the onsite display (if present).
d. Set the position of the miniature switches on the I/O board using a sharp pointed object.
e. Installation is the reverse of the removal procedure.

PROFIBUS



A0007552

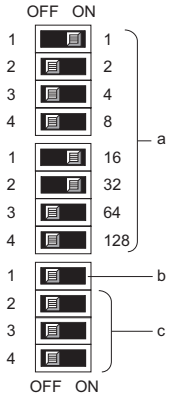
Device address range: 0 to 126
Factory setting: 126

a. Miniature switches for the device address (example shown: 1+16+32 = device address 49)

b. Miniature switches for the addressing mode:
OFF = software addressing via local operation/operating program (factory setting)
ON = hardware addressing via miniature switches

c. Miniature switch not assigned.

MODBUS RS485



A0007554

Device address range: 1 to 247
Factory setting: 247

a. Miniature switches for the device address (example shown: 1+16+32 = device address 49)

b. Miniature switches for the addressing mode:
OFF = software addressing via local operation/operating program (factory setting)
ON = hardware addressing via miniature switches

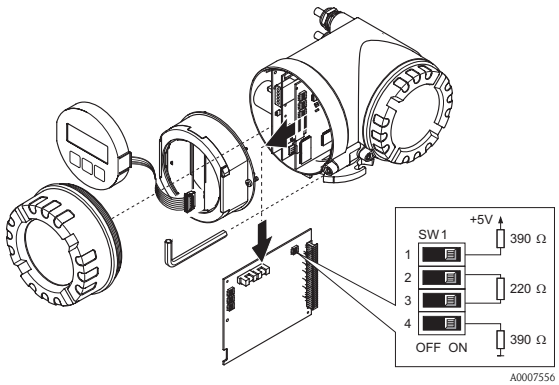
c. Miniature switch not assigned.

4.2 Terminating resistors

Note!
If the measuring device is used at the end of a bus segment, termination is required.
This can be performed in the measuring device by setting the terminating resistors on the I/O board. Generally, however, it is recommended to use an external bus terminator and not perform termination at the measuring device itself.

Has to be set for measuring devices with the following communication methods:
- PROFIBUS DP
  - Baudrate ≤ 1.5 MBaud → Termination can be performed at the measuring device, see graphic
  - Baudrate > 1.5 MBaud → An external bus terminator must be used
- MODBUS RS485 → Termination can be performed at the measuring device, see graphic

Warning!
Risk of electric shock! Risk of damaging the electronic components!
- All the safety instructions for the measuring device must be observed and all the warnings heeded → Page 3.
- Use a workspace, working environment and tools purposely designed for electrostatically sensitive devices.



Setting the terminating switch SW1 on the I/O board:
ON - ON - ON - ON

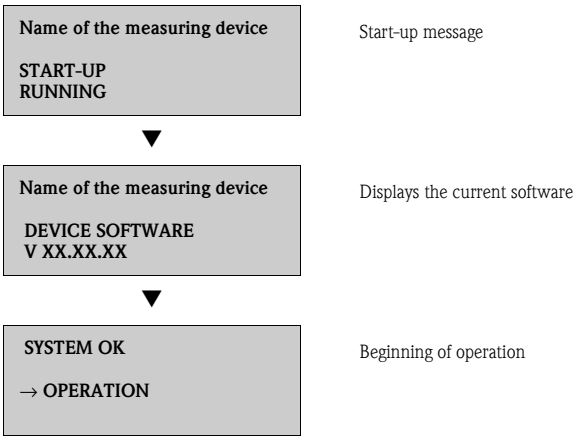
5 Commissioning

5.1 Switching on the measuring device

On completion of the installation (successful post-installation check), wiring (successful post-connection check) and after making the necessary hardware settings, where applicable, the permitted power supply (see nameplate) can be switched on for the measuring device.

When the power supply is switched on, the measuring device performs a number of power-up checks and device self-checks. As this procedure progresses the following messages can appear on the local display:

Display examples:

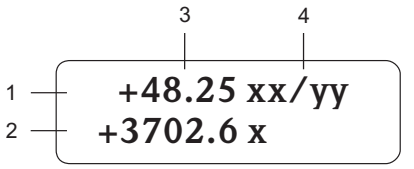


The measuring device starts operating as soon as the startup procedure is complete. Various measured values and/or status variables appear on the display.

✎ Note!
If an error occurs during startup, this is displayed by an error message. The error messages that occur most frequently when a measuring device is commissioned are described in the Troubleshooting section → Page 26.

5.2 Operation

5.2.1 Display elements

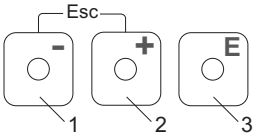


A0007557

Display lines/fields

1. Main line for primary measured values
2. Additional line for additional measured variables/status variables
3. Current measured values
4. Engineering units/time units

5.2.2 Operating elements



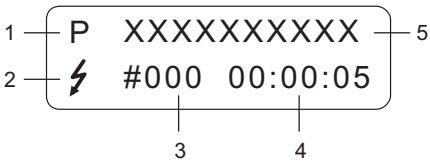
A0007559

Operating keys

1. (–) Minus key for entering, selecting
2. (+) Plus key for entering, selecting
3. Enter key for calling the function matrix, saving

When the +/– keys are pressed simultaneously (Esc):
- Exit the function matrix step-by-step:
- > 3 sec. = cancel data input and return to the measured value display

5.2.3 Displaying error messages

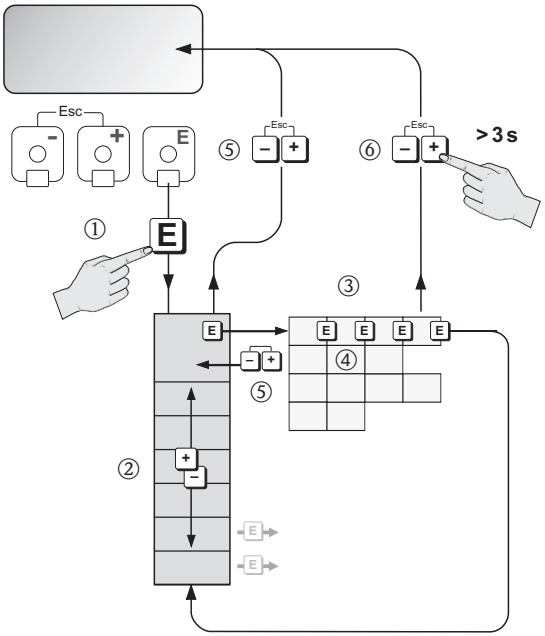


A0007561

1. Type of error:
   P = Process error, S = System error
2. Error message type:
   ϟ = Fault message, ! = Notice message
3. Error number
4. Duration of the last error that occurred:
   Hours: Minutes: Seconds
5. Error designation

- List of the most common error messages during commissioning, see Page 26
- List of all error messages, see associated Operating Instructions on the CD-ROM

5.3 Navigating within the function matrix



1. E → Enter the function matrix (starting with measured value display)
2. ± → Select the group (e.g. OPERATION)
   E → Confirm selection
3. E → Select function (e.g. LANGUAGE)
4. ± → Enter code **65** (only for the first time you access the function matrix)
   E → Confirm entry

   ± → Change function/selection (e.g. ENGLISH)
   E → Confirm selection
5. ± → Return to measured value display step by step
6. ± > 3 s → Return immediately to measured value display

5.4 Calling the Commissioning Quick Setup

All the functions needed for commissioning are called up automatically with the Quick Setup. The functions can be changed and adapted to the process in question.

1. E → Enter the function matrix (starting with measured value display)
2. ⊞ → Select the group QUICK SETUP
   E → Confirm selection
3. QUICK SETUP COMMISSIONING function appears.
4. Intermediate step if configuration is blocked:
   ⊞ → Enter the code **65** (confirm with E) and thus enable configuration
5. ⊞ → Go to Commissioning Quick Setup
6. ⊞ → Select YES
   E → Confirm selection
7. E → Start Commissioning Quick Setup
8. Configure the individual functions/settings:
   – Via ⊞-key, select option or enter number
   – Via E-key, confirm entry and go to next function
   – Via ⊟-key, return to Setup Commissioning function
   (settings already made are retained)

✎ Note!
Observe the following when performing the Quick Setup:
- Configuration selection: Select the Actual Settings option
- Unit selection: This is not offered again for selection after configuring a unit
- Output selection: This is not offered again for selection after configuring an output
- Automatic configuration of the display: select YES
  – Main line = Mass flow
  – Additional line = Totalizer 1
- If asked whether additional Quick Setups should be executed: select NO

All the available functions of the measuring device and their configuration options as well as additional Quick Setups, if available, are described in detail in the "Description of Device Functions" Operating Instructions. The related Operating Instructions can be found on the CD-ROM.

The measuring device is ready for operation on completion of the Quick Setup.

5.5 Software settings

5.5.1 Device address

Has to be set for measuring devices with the following communication methods:
- PROFIBUS DP
  Device address range 0 to 126, factory setting 126
- MODBUS RS485
  Device address range 1 to 247, factory setting 247

The device address can be configured via:
- Miniature switches → see **Hardware settings** section
- Local operation → see "Calling the Communication Quick Setup"

✎ Note!
The COMMISSIONING SETUP must be executed before setting the device address.

Calling the Communication Quick Setup

1. E → Enter the function matrix (starting with measured value display)
2. ± → Select the group QUICK SETUP
   E → Confirm selection
3. ▤ → Select the QUICK SETUP COMMUNICATION function
4. Intermediate step if configuration is blocked:
   ± → Enter the code **65** (confirm with E) and thus enable configuration
5. ± → Go to Communication Quick Setup
6. ± → Select YES
   E → Confirm selection
7. E → Start Communication Quick Setup
8. Configure the individual functions/settings:
   – Via ±-key, select option or enter number
   – Via E-key, confirm entry and go to next function
   – Via ±-key, return to Setup Commissioning function
   (settings already made are retained)

All the available functions of the measuring device and their configuration options as well as additional Quick Setups, if available, are described in detail in the "Description of Device Functions" Operating Instructions. The related Operating Instructions can be found on the CD-ROM.

The measuring device is ready for operation on completion of the Quick Setup.

5.6 Troubleshooting

The error messages that can occur most frequently when a measuring device is commissioned are described here.
A complete description of all the error messages → Operating Instructions on the CD-ROM.

HART

No.	Error message / Type	Cause/remedy
070	S: SENSOR DEFECT ϟ: # 070	Flow sensors are likely to be defect, measurement is no longer possible. Please contact your Endress+Hauser sales organization.
251	S: COMMUNIC. SENS ϟ: # 251	Internal microprocessor communication fault on the amplifier board. Remove the amplifier board. → Operating Instructions on CD-ROM
422	P: FLOW LIMIT ϟ: # 422	The measured flow has exceeded the maximum limit. Reduce the flow rate or replace the instrument with a suitable size for the application. ✎ Note! Error can be configured as a fault or notice message.

PROFIBUS

No.	Device status message (local display)	PROFIBUS measured value status				Extended diagnostic message in the PROFIBUS master	Cause/remedy
		Quality code (hex) Measured value status	Quality status	Quality substatus	Limits		
070	S: SENSOR DEFECT ϟ: # 070	0x13	BAD	Sensor failure	Constant	Sensor failure	Flow sensors are likely to be defect, measurement is no longer possible. Please contact your Endress+Hauser sales organization.
251	S: COMMUNIC. SENS ϟ: # 251	0x0F	BAD	Device failure	Constant	Communication sensor failure	Internal microprocessor communication fault on the amplifier board. Remove the amplifier board. → Operating Instructions on CD-ROM
422	P: FLOW LIMIT ϟ: # 422	0x13	BAD	Sensor failure	Constant	Meas. flow exceeded max limit	The measured flow has exceeded the maximum limit. Reduce the flow rate or replace the instrument with a suitable size for the application. ✎ Note! Error can be configured as a fault or notice message.

MODBUS RS485

Register 6859 Data type: Integer	Register 6821 Data type: String (18 byte)	No.	Error message / Type	Cause/remedy
19	SENSOR DEFECT	**070**	S: SENSOR DEFECT ϟ: # 070	Flow sensors are likely to be defect, measurement is no longer possible. Please contact your Endress+Hauser sales organization.
30	COMMUNIC.AMP.	**251**	S: COMMUNIC. SENS ϟ: # 251	Internal microprocessor communication fault on the amplifier board. Remove the amplifier board. → Operating Instructions on CD-ROM
59	FLOW LIMIT	**422**	P: FLOW LIMIT ϟ: # 422	The measured flow has exceeded the maximum limit. Reduce the flow rate or replace the instrument with a suitable size for the application. ✎ Note! Error can be configured as a fault or notice message.

www.endress.com/worldwide

Endress+Hauser

People for Process Automation

KA021D/06/en/04.07
71042209
FM+SGML 6.0