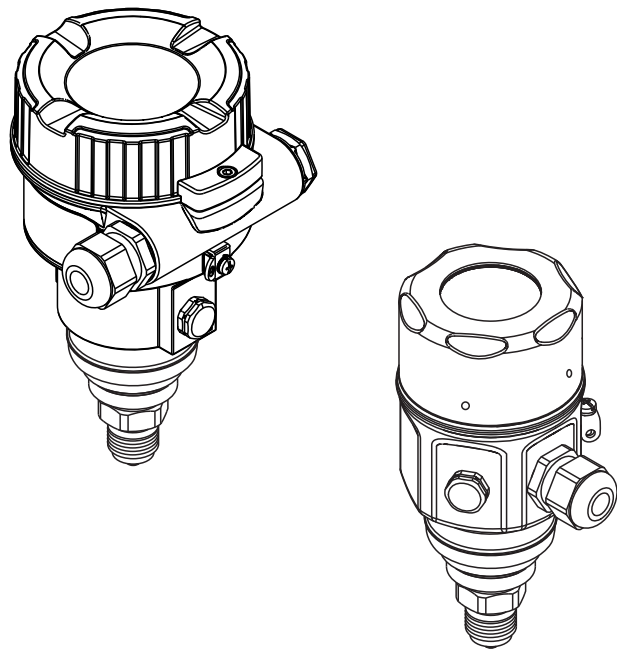


# ***Pressure Transmitter LHC-M51, PPC-M51***

**Process Pressure**

**With Analog Electronics**



Valid from software version:  
01.00.zz

With regard to the supply of products, the current issue of the following document is applicable: The General Terms of Delivery for Products and Services of the Electrical Industry, published by the Central Association of the Electrical Industry (Zentralverband Elektrotechnik und Elektroindustrie (ZVEI) e.V.) in its most recent version as well as the supplementary clause: "Expanded reservation of proprietorship".

## Overview of Documentation

		<b>Content</b>	<b>Remark</b>
Technical Information	TI004360	Technical data	<ul style="list-style-type: none"> <li>• The documentation can be found on the documentation CD.</li> <li>• The documentation is also available on the Internet.  → see: <a href="http://www.peperl-fuchs.com">www.peperl-fuchs.com</a></li> </ul>
Operating Instructions	BA003850	<ul style="list-style-type: none"> <li>• Identification</li> <li>• Installation</li> <li>• Wiring</li> <li>• Operation</li> <li>• Commissioning</li> <li>• Examples of configuration</li> <li>• Description of parameters</li> <li>• Maintenance</li> <li>• Troubleshooting</li> <li>• Appendix</li> </ul>	
Brief Operating Instructions	KA010360	<ul style="list-style-type: none"> <li>• Installation</li> <li>• Wiring</li> <li>• Local operation</li> <li>• Commissioning</li> </ul>	<ul style="list-style-type: none"> <li>• The documentation is supplied with the device.</li> <li>• The documentation can also be found on the documentation CD supplied.</li> <li>• The documentation is also available on the Internet.  → see: <a href="http://www.peperl-fuchs.com">www.peperl-fuchs.com</a></li> </ul>

<b>Overview of Documentation</b> .....	<b>2</b>	<b>5 Operation</b> .....	<b>19</b>
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# 1 Safety Instructions

## 1.1 Designated use

The pressure transmitter is used for measuring pressure and level.

The manufacturer accepts no liability for damages resulting from incorrect use or use other than that designated.

## 1.2 Installation, commissioning and operation

The device is designed to meet state-of-the-art safety requirements and complies with applicable standards and EU regulations. If used incorrectly or for applications for which it is not intended, however, it can be a source of application-related danger, e.g. product overflow due to incorrect installation or configuration. For this reason, installation, connection to the electricity supply, commissioning, operation and maintenance of the measuring system must only be carried out by trained, qualified specialists authorized to perform such work by the facility's owner-operator. The specialist staff must have read and understood these Operating Instructions and must follow the instructions they contain. Modifications and repairs to the devices are permissible only if they are expressly approved in the Operating Instructions. Pay particular attention to the technical data and information on the nameplate.

## 1.3 Operational and process safety





Alternative monitoring measures have to be taken while configuring, testing or servicing the device to ensure the operational and process safety.

 **WARNING** Dismantle device only when depressurized!




## 1.4 Notes on safety conventions and icons







In order to highlight safety-relevant or alternative operating procedures in the manual, the following conventions have been used, each indicated by a corresponding icon in the margin.

### 1.4.1 Safety symbols







Symbol	Meaning
 <b>DANGER</b> P0011189-EN	<b>DANGER!</b> This symbol alerts you to a dangerous situation. Failure to avoid this situation will result in serious or fatal injury.
 <b>WARNING</b> P0011190-EN	<b>WARNING!</b> This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in serious or fatal injury.
 <b>CAUTION</b> P0011191-EN	<b>CAUTION!</b> This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in minor or medium injury.
 <b>NOTICE</b> P0011192-EN	<b>NOTE!</b> This symbol contains information on procedures and other facts which do not result in personal injury.

### 1.4.2 Electrical symbols

Symbol	Meaning
	<b>Explosion-protected, type-examined equipment</b> If the device has this symbol embossed on its nameplate, it can be used in a hazardous area or a non-hazardous area, depending on the approval.
	<b>Hazardous area</b> This symbol is used in the drawings of these Operating Instructions to indicate hazardous areas. <ul style="list-style-type: none"> <li>• Devices used in hazardous areas must possess an appropriate type of protection.</li> </ul>
	<b>Safe area (non-hazardous area)</b> This symbol is used in the drawings of these Operating Instructions to indicate non-hazardous areas. <ul style="list-style-type: none"> <li>• Devices used in hazardous areas must possess an appropriate type of protection. Cables used in hazardous areas must meet the necessary safety-related characteristic quantities.</li> </ul>

Symbol	Meaning
 P0011197	<b>Direct current</b> A terminal to which DC voltage is applied or through which direct current flows.
 P0011198	<b>Alternating current</b> A terminal to which alternating voltage (sine-wave) is applied or through which alternating current flows.
 P0011200	<b>Ground connection</b> A grounded terminal which, as far as the operator is concerned, is grounded via a grounding system.
 P0011199	<b>Protective ground connection</b> A terminal which must be connected to ground prior to establishing any other connections.
 P0011201	<b>Equipotential connection</b> 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
	<b>Connecting cable immunity to temperature change</b> Indicates that the connecting cables have to withstand a temperature of 85 °C at least.

### 1.4.3 Symbols for certain types of information

Symbol	Meaning
 P0011194	<b>Reference to documentation</b> Refers to the corresponding device documentation.
 P0011195	<b>Reference to page</b> Refers to the corresponding page number.
 P0011196	<b>Reference to graphic</b> Refers to the corresponding graphic number and page number.
	<b>Series of steps</b>
<b>1., 2., 3. ...</b>	<b>Several steps</b>
	<b>Result of a sequence of actions</b>
 P0013562	<b>Help in the event of a problem</b>

## 2 Identification

### 2.1 Device designation

#### 2.1.1 Nameplate

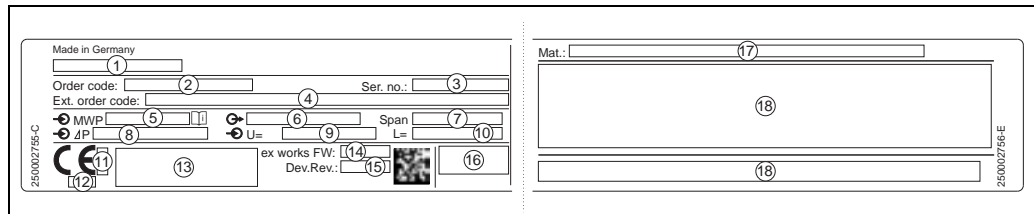
##### NOTICE

- The MWP (maximum working pressure) is specified on the nameplate. This value refers to a reference temperature of 20 °C (68 °F) or 100 °F (38 °C) for ANSI flanges.
- The pressure values permitted at higher temperatures can be found in the following standards:
  - EN 1092-1: 2001 Tab. 18 <sup>1</sup>
  - ASME B 16.5a – 1998 Tab. 2-2.2 F316
  - ASME B 16.5a – 1998 Tab. 2.3.8 N10276
  - JIS B 2220
- The test pressure corresponds to the over pressure limit (OPL) of the device = MWP x 1.5 <sup>2</sup>.
- The Pressure Equipment Directive (EC Directive 97/23/EC) uses the abbreviation "PS". The abbreviation "PS" corresponds to the MWP (maximum working pressure) of the measuring device.

1 With regard to their stability-temperature property, the materials 1.4435 and 1.4404 are grouped together under 13EO in EN 1092-1 Tab. 18. The chemical composition of the two materials can be identical.

2 The equation does not apply for LHC-M51 with a 40 bar (600 psi) or a 100 bar (1500 psi) measuring cell.

#### Aluminium housing



#### 1 Nameplate

- Device name
- Order code (for re-orders)
- Serial number (for identification)
- Extended order code (complete)
- MWP (maximum working pressure)
- Electronic version (output signal)
- Min./max. span
- Nominal measuring range
- Supply voltage
- Unit of length
- No entry
- ID number of notified body with regard to Pressure Equipment Directive (optional)
- Approvals
- Software version
- Device version
- Degree of protection
- Wetted materials
- Approval-specific information

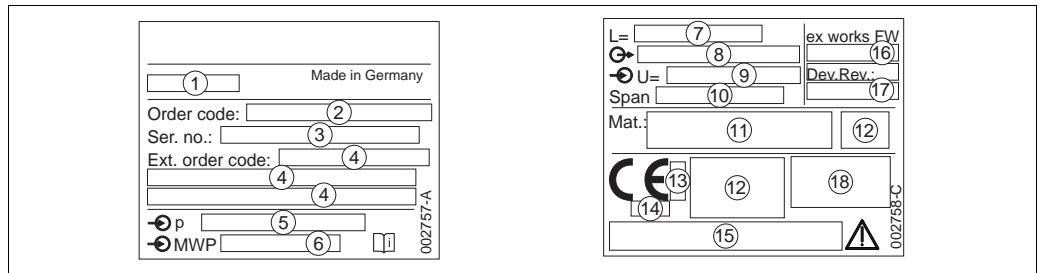
Devices suitable for oxygen applications are fitted with an additional nameplate.



#### 2 Additional nameplate for devices suitable for oxygen application

- Maximum pressure for oxygen applications
- Maximum temperature for oxygen applications
- Layout identification of the nameplate

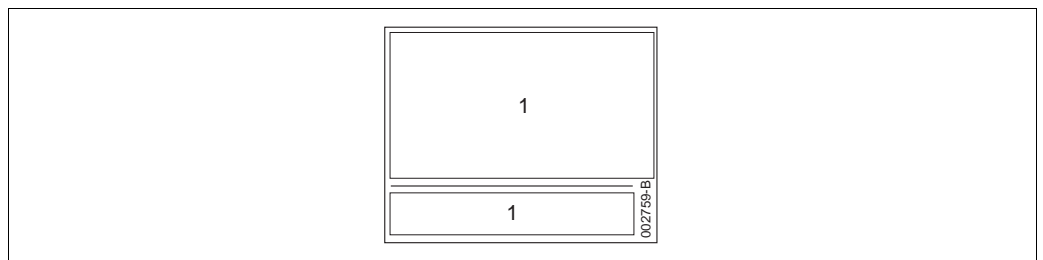
## Stainless steel housing, hygienic



### 3 Nameplate

- 1 Device name
- 2 Order code (for re-orders)
- 3 Serial number (for identification)
- 4 Extended order code (complete)
- 5 Nominal measuring range
- 6 MWP (maximum working pressure)
- 7 Length data
- 8 Electronic version (output signal)
- 9 Supply voltage
- 10 Min./max. span
- 11 Wetted materials
- 12 Approval-specific information
- 13 No entry
- 14 ID number of notified body with regard to Pressure Equipment Directive (optional)
- 15 No entry
- 16 Software version
- 17 Device version
- 18 Degree of protection

Devices with certificates are fitted with an additional plate.



### 4 Additional nameplate for devices with certificates


- 1 Approval-specific information

## 2.2 Scope of delivery

The scope of delivery comprises:

- Device
- CD-ROM with documentation
- Optional accessories

Documentation supplied:

- The Operating Instructions BA00385O, the Technical Information TI00436O and the Brief Operating Instructions can be found on the documentation CD supplied. →  2, "Overview of documentation" section.
- Brief Operating Instructions: KA01036O
- Final inspection report
- Optional: factory calibration form, test certificates

### **2.3 CE mark, Declaration of Conformity**

The devices are designed to meet state-of-the-art safety requirements, have been tested and left the factory in a condition in which they are safe to operate. The devices comply with the applicable standards and regulations as listed in the EC Declaration of Conformity and thus comply with the statutory requirements of the EC Directives. Pepperl+Fuchs confirms the conformity of the device by affixing to it the CE mark.

### **2.4 Registered trademarks**

KALREZ, VITON, TEFLON

Registered trademark of E.I. Du Pont de Nemours & Co., Wilmington, USA

TRI-CLAMP

Registered trademark of Ladish & Co., Inc., Kenosha, USA

GORE-TEX®

Registered trademark of W.L. Gore & Associates, Inc., USA



### 3 Installation

#### 3.1 Incoming acceptance, transport, storage

##### 3.1.1 Incoming acceptance

- ▶ Check the packaging and the contents for damage.
- ▶ Check the shipment, make sure nothing is missing and that the scope of supply matches your order.

##### 3.1.2 Transport

###### CAUTION

- ▶ Follow the safety instructions and transport conditions for devices of more than 18 kg (39.69 lbs).
- ▶ Transport the measuring device to the measuring point in its original packaging or at the process connection.

##### 3.1.3 Storage

- ▶ The device must be stored in a dry, clean area and protected against damage from impact (EN 837-2).

Storage temperature range: See Technical Information for pressure transmitter TI00436O.

#### 3.2 Installation conditions

##### 3.2.1 Dimensions

- ▶ For dimensions, please refer to the Technical Information TI00436O, "Mechanical construction" section. See also → 2, "Overview of Documentation".

#### 3.3 Installation instructions

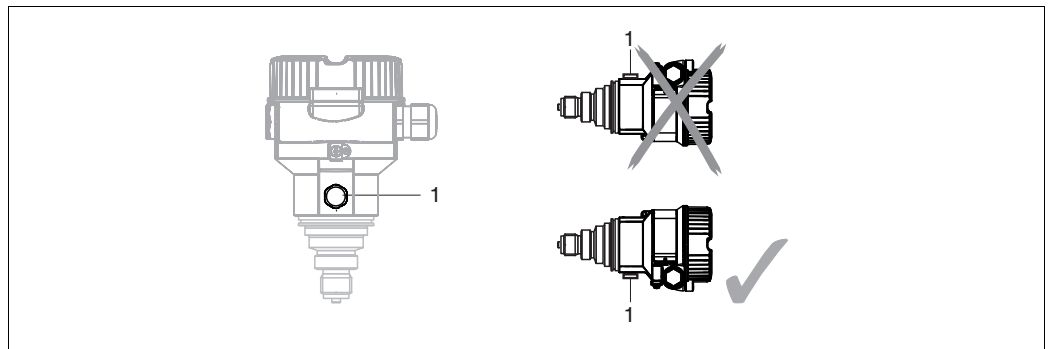
###### NOTICE

- Due to the orientation of the pressure transmitter, there may be a shift in the zero point, i.e. when the container is empty or partially full, the measured value does not display zero. You can correct this zero point shift → 19, "Function of the operating elements".
- Pepperl+Fuchs offers a mounting bracket for installing on pipes or walls.  
→ 12, "Wall and pipe mounting (optional)".

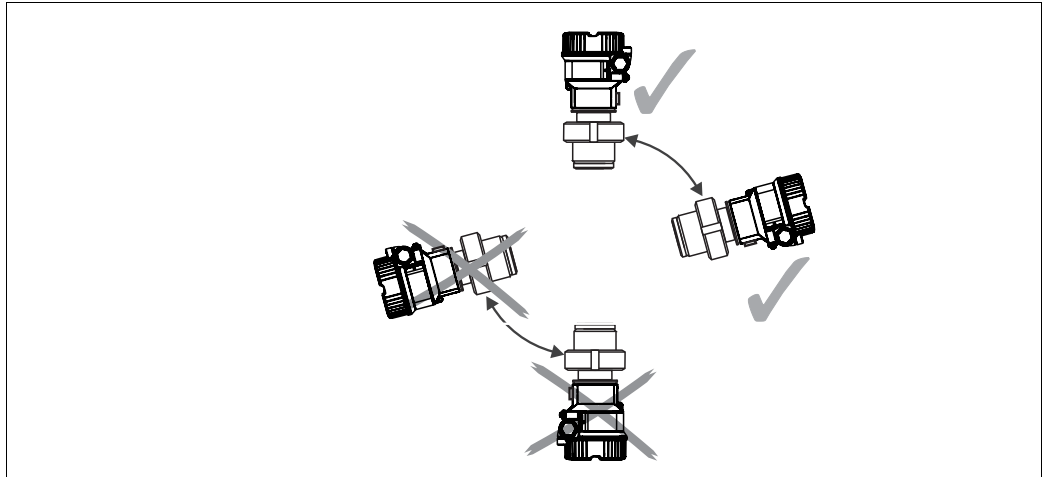
##### 3.3.1 Installation instructions for devices without diaphragm seals

###### NOTICE

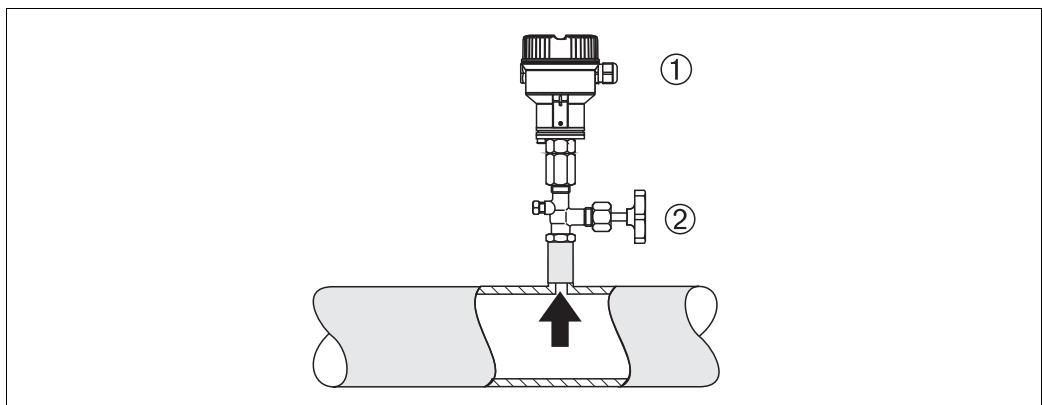
- ▶ If a heated pressure transmitter is cooled during the cleaning process (e. g. by cold water), a vacuum develops for a short time, whereby moisture can penetrate the sensor through the pressure compensation (1). If this is the case, mount the pressure transmitter with the pressure compensation (1) pointing downwards.




- ▶ Keep the pressure compensation and GORE-TEX® filter (1) free from contamination.
- ▶ pressure transmitters without diaphragm seals are mounted as per the norms for a manometer (DIN EN 837-2). We recommend the use of shutoff devices and siphons. The orientation depends on the measuring application.
- ▶ Do not clean or touch process isolating diaphragms with hard or pointed objects.
- ▶ The device must be installed as follows in order to comply with the cleanability requirements of the ASME-BPE (Part SD Cleanability):



### Pressure measurement in gases

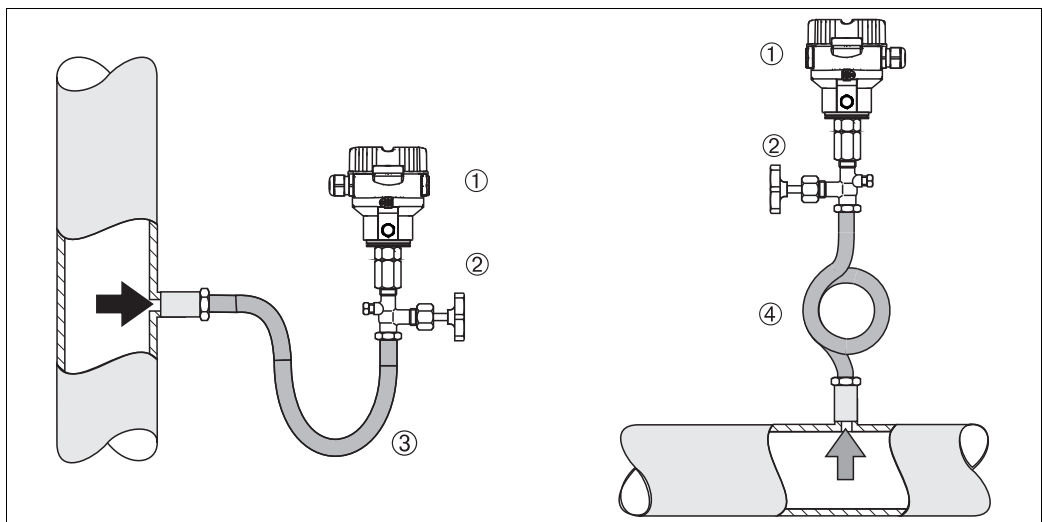



5  Measuring arrangement for pressure measurement in gases

- 1 Pressure transmitter
- 2 Shutoff device

- ▶ Mount the pressure transmitter with the shutoff device above the tapping point so that any condensate can flow into the process.

### Pressure measurement in steams

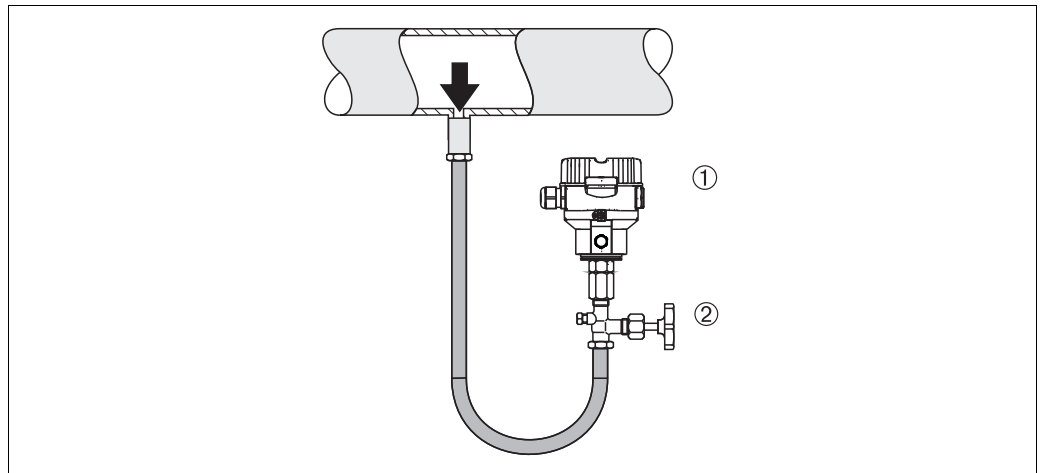



6  Measuring arrangement for pressure measurement in steams

- 1 Pressure transmitter
- 2 Shutoff device
- 3 U-shaped siphon
- 4 Circular siphon

- ▶ Mount the pressure transmitter with siphon above the tapping point.
- ▶ Fill the siphon with liquid before commissioning.  
The siphon reduces the temperature to almost the ambient temperature.

## Pressure measurement in liquids

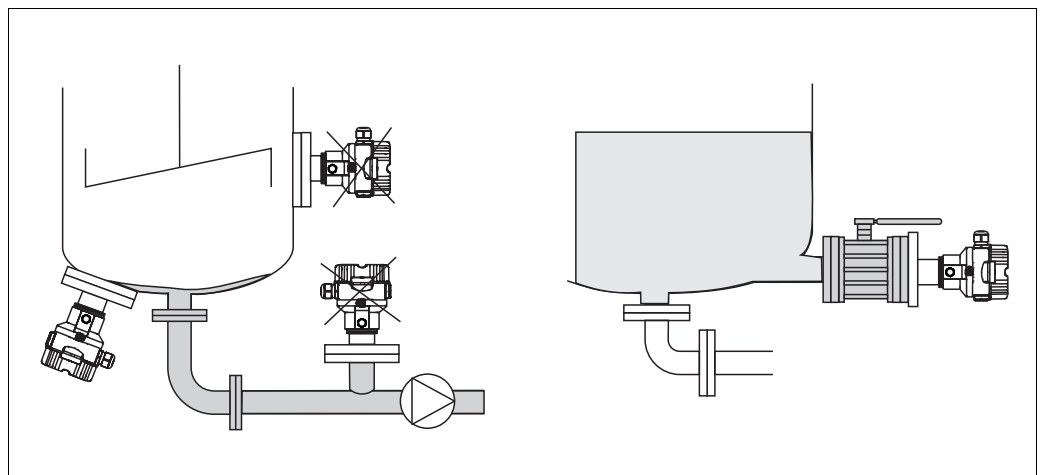



7  Measuring arrangement for pressure measurement in liquids

- 1 Pressure transmitter
- 2 Shutoff device

- ▶ Mount the pressure transmitter with shutoff device below or at the same level as the tapping point.

## Level measurement



8  Measuring arrangement for level

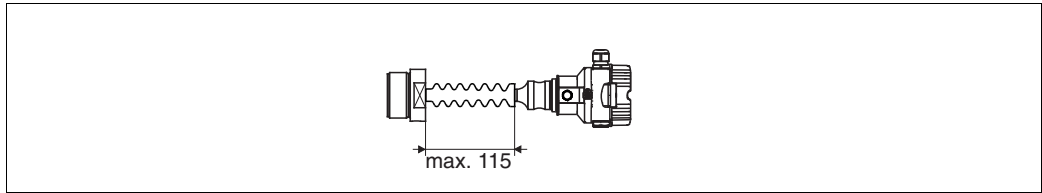
- ▶ Always install the pressure transmitter below the lowest measuring point.
- ▶ Do not mount the device in the filling curtain or at a point in the tank which could be affected by pressure pulses from an agitator.
- ▶ Do not mount the device in the suction area of a pump.
- ▶ The calibration and functional test can be carried out more easily if you mount the device downstream of a shutoff device.

## PVDF interchangeable threaded boss

### NOTICE

A maximum torque of 7 Nm (5.16 lbs ft) is permitted for devices with a PVDF interchangeable threaded boss. The thread connection may become loose at high temperatures and pressures. This means that the integrity of the thread must be checked regularly and may need to be tightened using the torque given above. Teflon tape is recommended for sealing the 1/2NPT thread.

## Mounting with temperature isolator

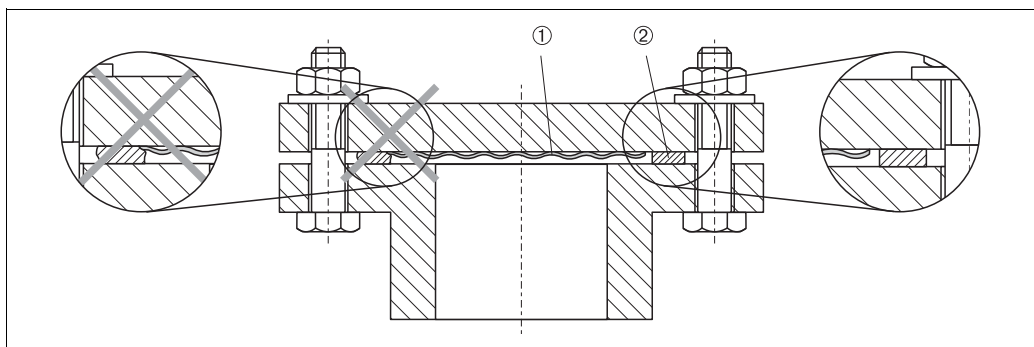


Pepperl+Fuchs recommends the use of temperature isolators in the event of constant extreme medium temperatures which lead to the maximum permissible electronics temperature of +85 °C (+185 °F) being exceeded. To minimize the influence of rising heat, Pepperl+Fuchs recommends the device be mounted horizontally or with the housing pointing downwards.

The additional installation height also brings about a zero point shift of approx. 21 mbar (0.315 psi) due to the hydrostatic column in the temperature isolator. You can correct this zero point shift.

→ 19, "Function of the operating elements".

### 3.3.2 Seal for flange mounting



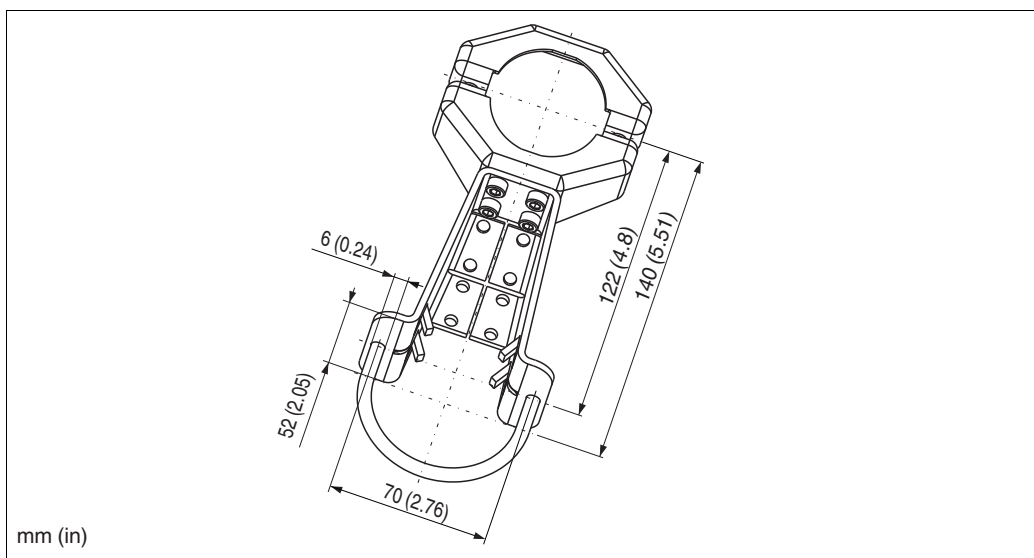
9 Mounting the versions with a flange

- 1 Process isolating diaphragm
- 2 Seal

**WARNING** The seal is not allowed to press against the process isolating diaphragm as this could affect the measurement result.

### 3.3.3 Wall and pipe mounting (optional)

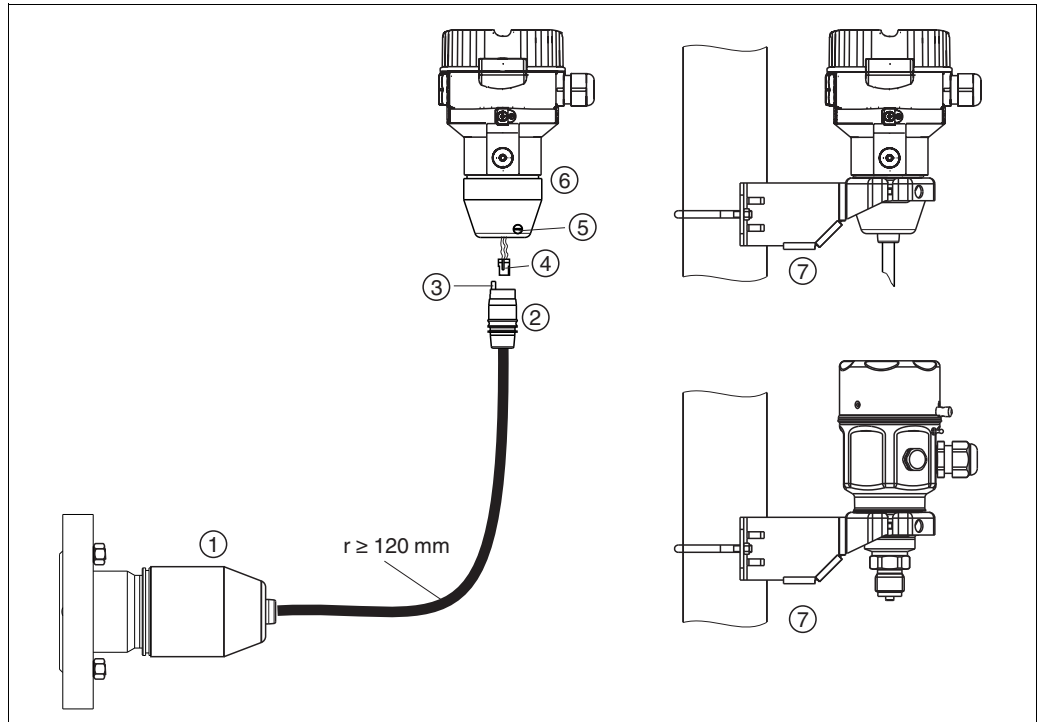
Pepperl+Fuchs offers a mounting bracket for installing on pipes or walls (for pipes from 1-1/4 in up to 2 in diameter).



Please note the following when mounting:

- Devices with capillary tubes: mount capillaries with a bending radius  $\geq 100$  mm (3.94 in).
- When mounting on a pipe, tighten the nuts on the bracket uniformly with a torque of at least 5 Nm (3.69 lbs ft).

### 3.3.4 Assembling and mounting the "separate housing" version



#### 10 "Separate housing" version

- 1 In the case of the "separate housing" version, the sensor is delivered with the process connection and cable ready mounted.
- 2 Cable with connection jack
- 3 Pressure compensation
- 4 Connector
- 5 Locking screw
- 6 Housing mounted with housing adapter, included
- 7 Mounting bracket provided, suitable for pipe and wall mounting (for pipes from 1-1/4 in up to 2 in diameter)

#### Assembly and mounting

1. Insert the connector (4) into the corresponding connection jack of the cable (2).
2. Plug the cable into the housing adapter (6).
3. Tighten the locking screw (5).
4. Mount the housing on a wall or pipe using the mounting bracket (7).  
When mounting on a pipe, tighten the nuts on the bracket uniformly with a torque of at least 5 Nm (3.6 lbs ft).  
Mount the cable with a bending radius ( $r \geq 120$  mm (4.72 in)).



## 4 Wiring

### 4.1 Connecting the device



**WARNING**

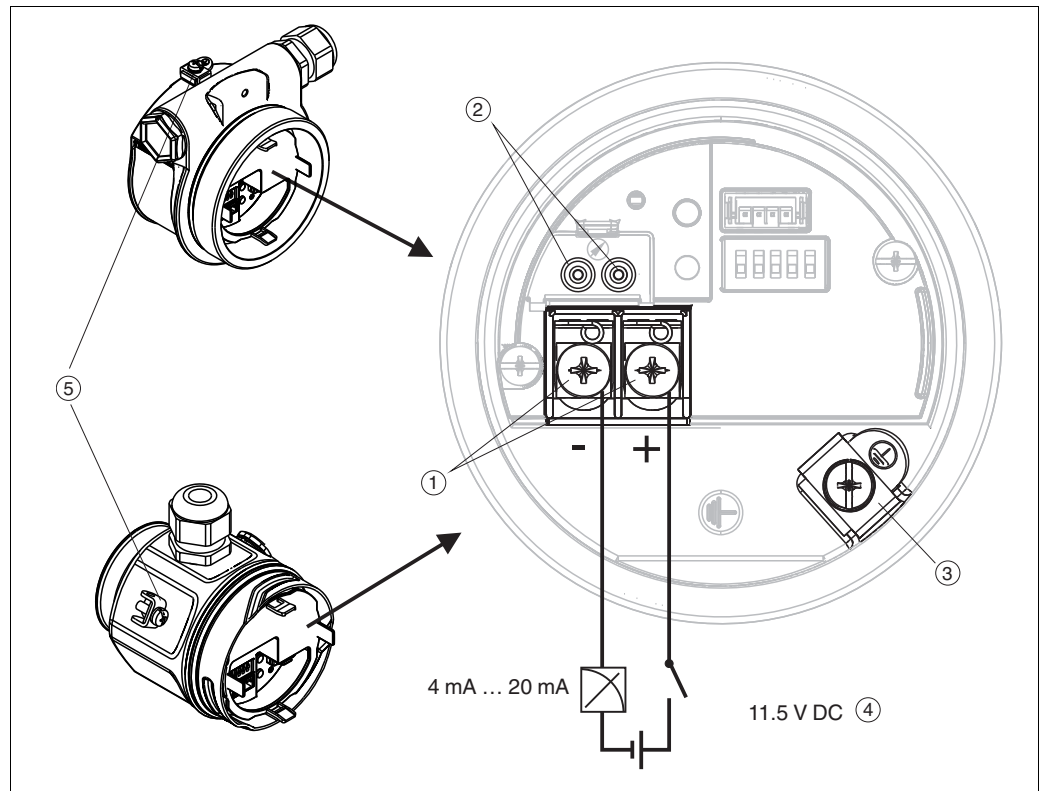
Risk of electric shock and/or explosion in hazardous areas! In a wet environment, do not open the cover if voltage is present.

**NOTICE**

- A suitable circuit breaker must be provided for the device in accordance with IEC/EN 61010.
- Devices with integrated overvoltage protection must be grounded.
- Protective circuits against reverse polarity, HF influences and overvoltage peaks are integrated.

#### The procedure

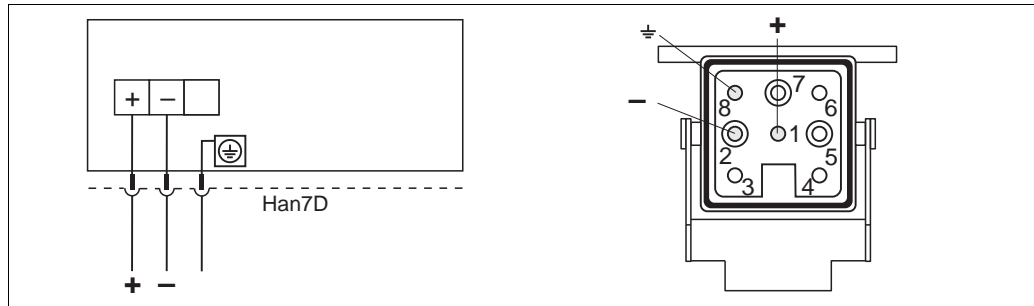
1. Check that the supply voltage corresponds to the supply voltage indicated on the nameplate.
2. Switch off the supply voltage before connecting the device.
3. Remove housing cover.
4. Guide the cable through the gland. Preferably use a twisted, shielded two-wire cable.
5. Connect the device in accordance with the following diagram.
6. Screw down the housing cover.
7. Switch on the supply voltage.



12 Electrical connection 4 mA ... 20 mA

- 1 Terminals for supply and signal
- 2 Test terminals
- 3 Ground terminal
- 4 Supply voltage: 11.5 V DC ... 45 V DC (versions with plug-in connectors: 35 V DC)
- 5 External ground terminal

### 4.1.1 Devices with Harting connector Han7D



13

Left: electrical connection for devices with a Harting connector Han7D  
Right: view of the connection at the device

### 4.1.2 Connecting devices with an M12 connector

PIN assignment for M12 connector

	PIN	Meaning
	1	Signal +
	2	Not assigned
	3	Signal -
	4	Earth

P0011175

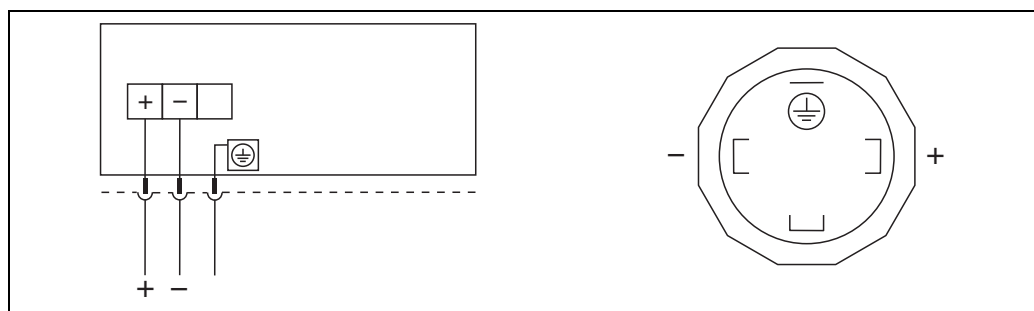
### 4.1.3 Device with 7/8 in plug

PIN assignment for 7/8 in connector

	PIN	Meaning
	1	Signal -
	2	Signal +
	3	Shield
	4	Not assigned

P0011176

### 4.1.4 Devices with valve connector



14

Left: electrical connection for devices with a valve connector  
Right: view of the connector at the device



## 4.2 Connecting the measuring unit

### 4.2.1 Supply voltage

Electronic version	
4 mA ... 20 mA	11.5 V DC ... 45 V DC (versions with plug-in connectors: 35 V DC)

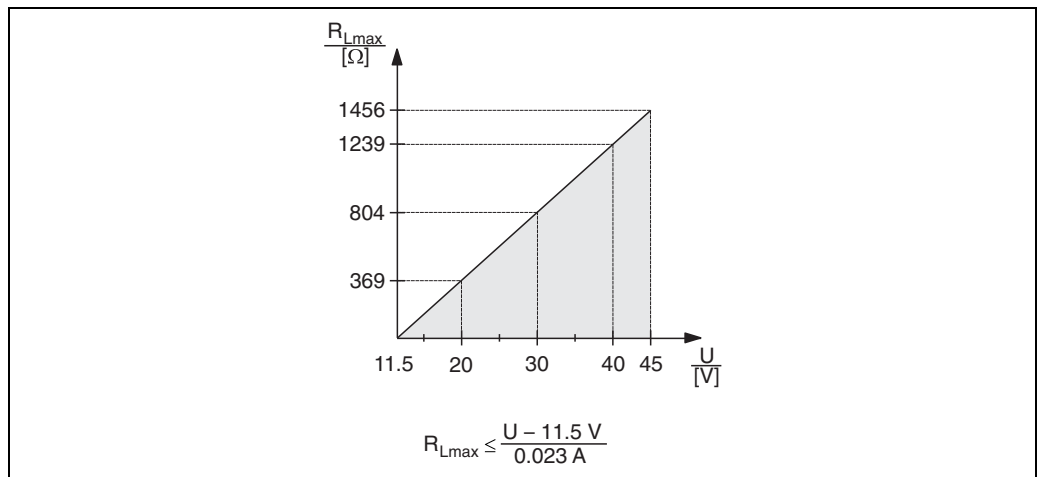
#### Taking 4 mA to 20 mA test signal


A 4 mA to 20 mA test signal may be measured via the test terminals without interrupting the measurement. To keep the corresponding measured error below 0.1 %, the current measuring device should exhibit an internal resistance of < 0.7 Ω

### 4.2.2 Cable specification

- Pepperl+Fuchs recommends using twisted, shielded two-wire cables.
- Terminals for wire cross-sections 0.5 mm<sup>2</sup> ... 2,5 mm<sup>2</sup> (20 AWG ... 14 AWG).
- Cable outer diameter: 5 mm ... 9 mm (0.2 in ... 0.35 in) depends on the used cable gland (see technical information).

### 4.2.3 Load



15  Load diagram, power supply 11.5 V DC ... 45 V DC (versions with plug connectors: 35 V DC) for other types of protection and for uncertified device versions

$R_{Lmax}$  Maximum load resistance  
U Supply voltage

### 4.2.4 Shielding/potential equalization

You achieve optimum shielding against disturbances if the shielding is connected on both sides (in the cabinet and on the device). If potential equalization currents are expected in the plant, only ground shielding on one side, preferably at the transmitter.

## 4.3 Potential equalization

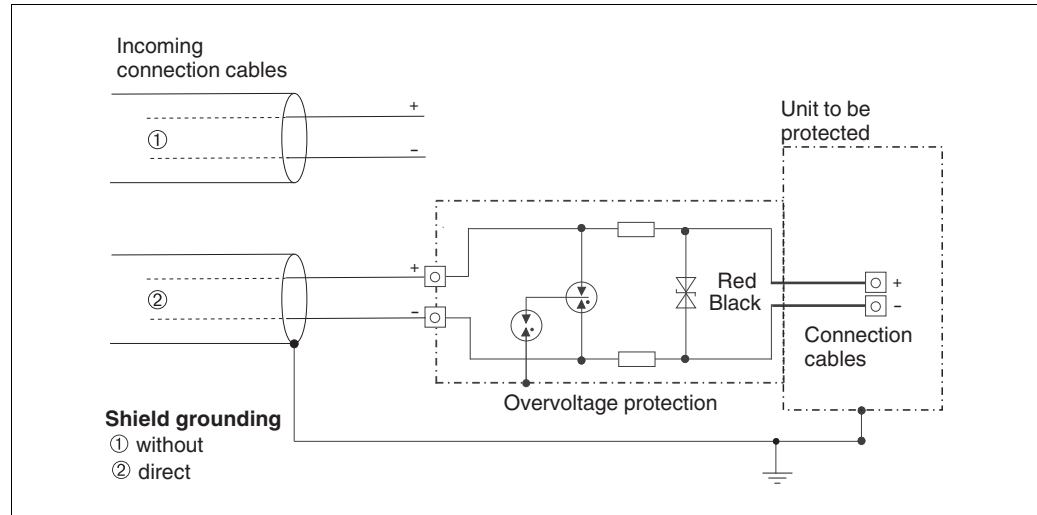
Observe the applicable regulations.

## 4.4 Overvoltage protection (optional)

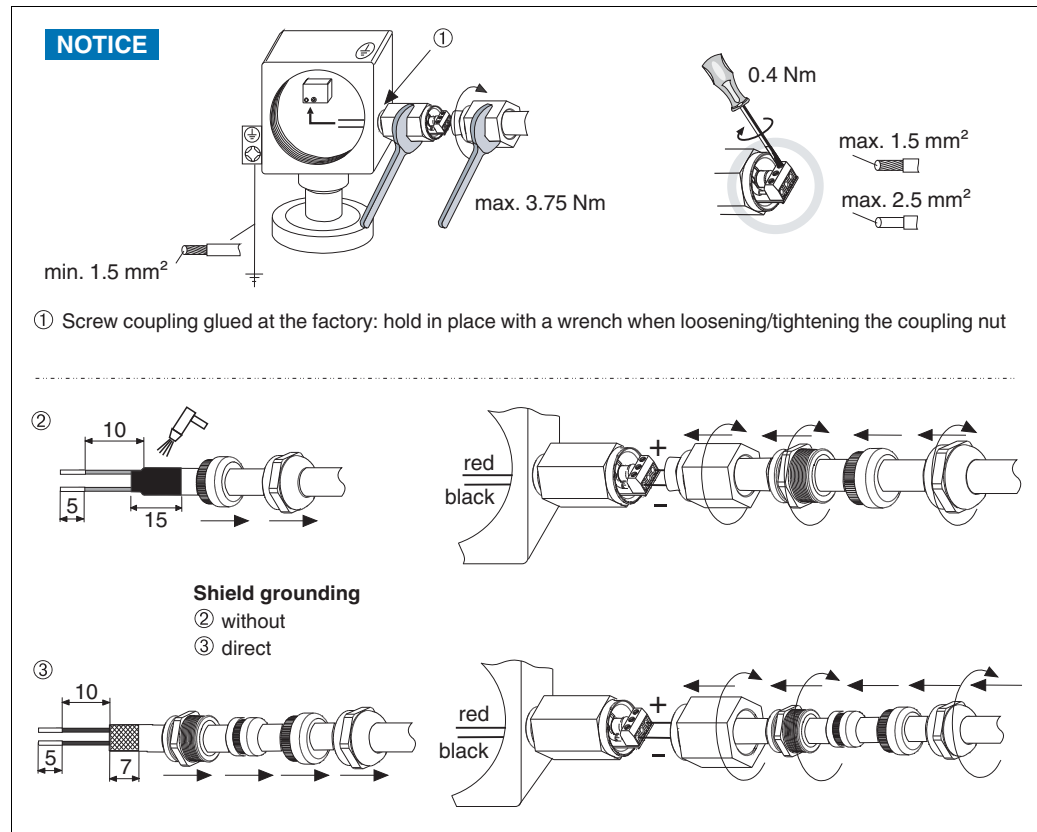
The device can be fitted with overvoltage protection. The overvoltage protection is mounted on the housing thread (M20x1.5) for the cable gland (take additional length into account when installing).

The device is connected as specified in the following graphic.

### 4.4.1 Wiring



### 4.4.2 Installation



### 4.5 Post-connection check

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

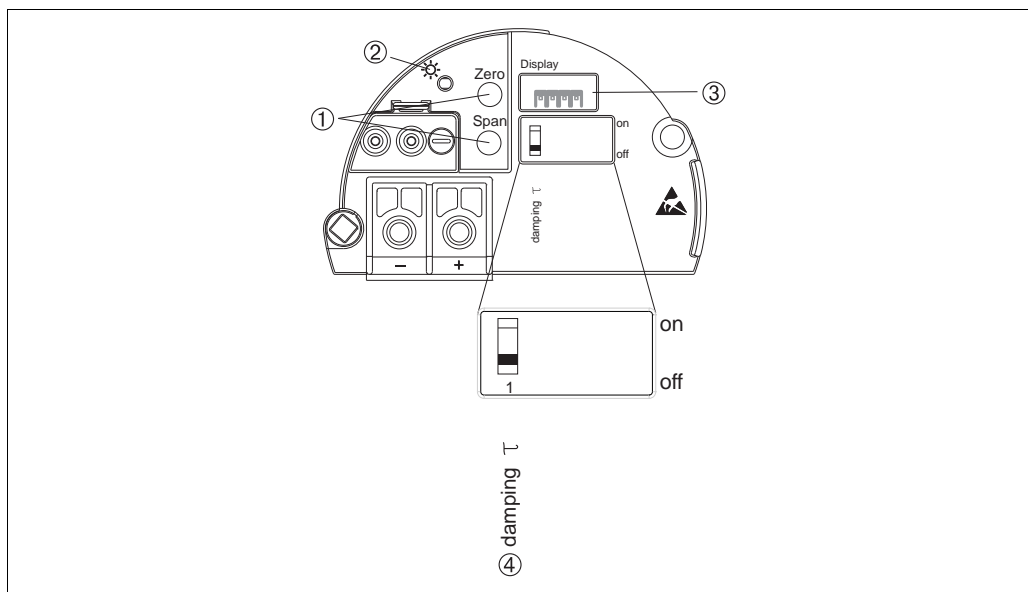
- ▶ Does the supply voltage match the specifications on the nameplate?
- ▶ Is the device connected as per section 4.1?
- ▶ Are all screws firmly tightened?
- ▶ Is the housing cover screwed down tight?

As soon as voltage is applied to the device, the green LED on the electronic insert lights up for a few seconds or the connected local display lights up.

## 5 Operation

### 5.1 Position of operating elements

The operating keys and DIP switch are located on the electronic insert in the device.



Electronic insert Analog

- 1 Operating keys for lower range value (zero) and upper range value (span)
- 2 Green LED to indicate successful operation
- 3 Slot for optional local display
- 4 DIP switch for switching damping on/off

#### 5.1.1 Function of the DIP switch

Switch position	
"off"	"on"
Damping is switched off. The output signal follows measured value changes without any delay.	Damping is switched on. The output signal follows measured value changes with the delay time $\tau$ (Factory setting: $\tau = 2$ s or as per order specifications).

#### 5.1.2 Function of the operating elements

Operating key(s)	Meaning
"Zero" pressed briefly	<b>Display lower range value</b>
"Zero" pressed for at least 3 seconds	<b>Get lower range value</b> The pressure present is accepted as the lower range value (LRV).
"Span" pressed briefly	<b>Display upper range value</b>
"Span" pressed for at least 3 seconds	<b>Get upper range value</b> The pressure present is accepted as the upper range value (LRV).
"Zero" and "Span" pressed together briefly	<b>Display position adjustment</b>
"Zero" and "Span" pressed simultaneously for at least 3 seconds	<b>Position adjustment</b> The sensor characteristic curve is shifted parallel to itself, so that the pressure present becomes the zero value.
"Zero" and "Span" pressed simultaneously for at least 12 seconds	<b>Reset</b> All parameters are reset to the order configuration.

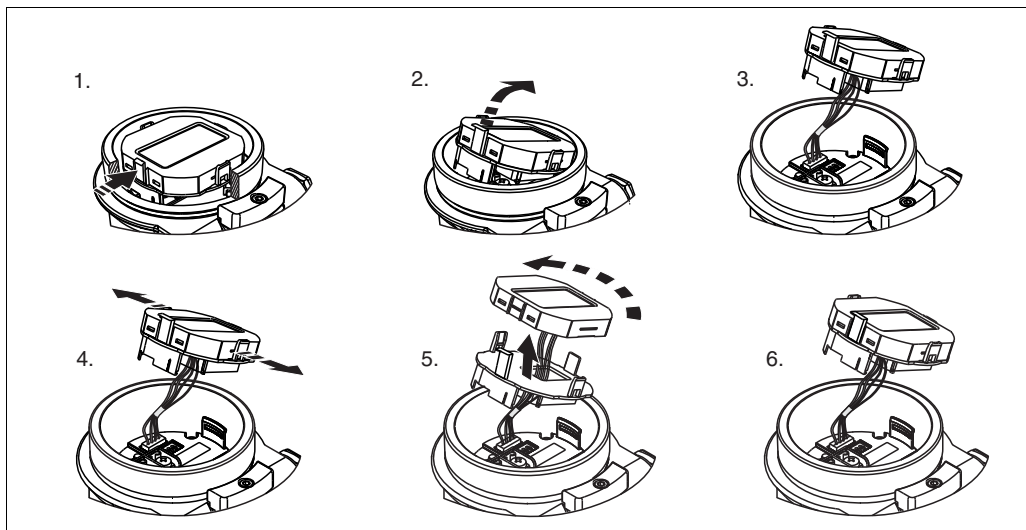
## 5.2 Using the device display (optional)

A 4-line liquid crystal display (LCD) is used. The local display shows measured values, fault messages and notice messages.

The display can be removed for easy operation (see diagram, steps 1 to 3). It is connected to the device via a 90 mm (3.54 in) long cable.

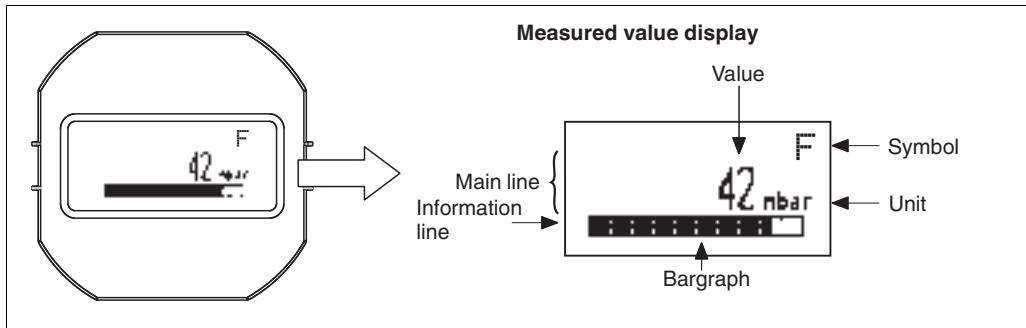
The device display can be rotated in 90° stages (see diagram, steps 4 to 6).

Depending on the orientation of the device, this makes it easy to read the measured values.



Functions:

- 8-digit measured value display including sign and decimal point, bar graph for 4 mA ... 20 mA as current display.
- Diagnostic functions (fault and warning message etc.)



The following table illustrates the symbols that can appear on the local display. Four symbols can occur at one time.

### Error messages

Symbol	Meaning
<b>S</b> P0012088	<b>"Out of specification"</b> The device is being operated outside its technical specifications (e.g. during warm-up or cleaning processes)
<b>C</b> P0012100	<b>"Service mode"</b> The device is in the service mode (during a simulation, for example).
<b>M</b> P0012101	<b>"Maintenance required"</b> Maintenance is required. The measured value remains valid.
<b>F</b> P0012086	<b>"Failure detected"</b> An operating error has occurred. The measured value is no longer valid.

## 6 Commissioning



**WARNING**

If the pressure present at the device is less than the permitted minimum pressure or greater than the permitted maximum pressure, the message "S" and "Warning" are output alternately.



**CAUTION**

The measuring range and the unit in which the measured value is displayed correspond to the specifications on the nameplate.

### 6.1 Function check

Carry out a post-installation and a post-connection check as per the checklist before commissioning the device.

- ▶ "Post-installation check" → 14 checklist
- ▶ "Post-connection check" → 18 checklist

### 6.2 Commissioning

The following functions are possible via the keys on the electronic insert:

- Position adjustment (zero point correction) A pressure shift resulting from the orientation of the measuring device can be corrected by performing the position adjustment.
- Setting lower range value and upper range value
- Device reset



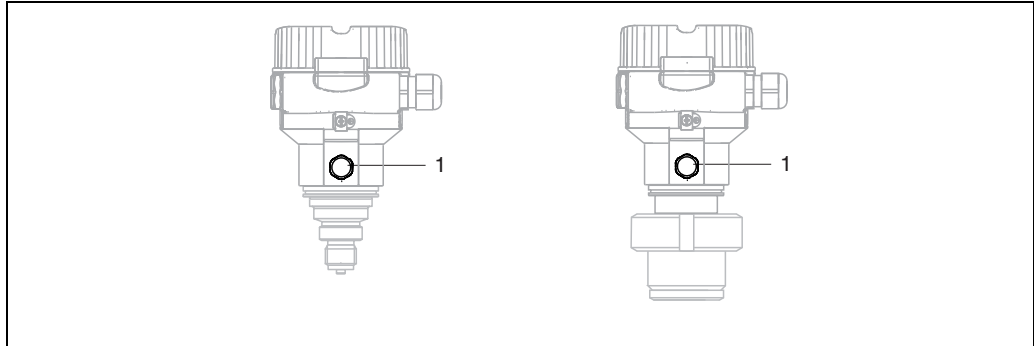
**NOTICE**

The pressure applied must be within the nominal pressure limits of the sensor. See information on the nameplate.

1. Carrying out position adjustment		2. Setting lower range value		3. Setting upper range value		4. Check configuration
Pressure is present at device.		Desired pressure for lower range value is present at device.		Desired pressure for upper range value is present at device.		Press "Zero" key briefly to display the lower range value.
↓		↓		↓		↓
Press the "Zero" and "Span" keys simultaneously for at least 3 s.		Press the "Zero" key for at least 3 s.		Press the "Span" key for at least 3 s.		Press "Span" key briefly to display the upper range value.
↓		↓		↓		↓
Does the LED on the electronic insert light up briefly?		Does the LED on the electronic insert light up briefly?		Does the LED on the electronic insert light up briefly?		Press "Zero" and "Span" keys together briefly to display the calibration offset.
Yes	No	Yes	No	Yes	No	
↓	↓	↓	↓	↓	↓	
Applied pressure for position adjustment has been accepted.	Applied pressure for position adjustment has not been accepted. Observe the input limits.	Applied pressure for lower range value has been accepted.	Applied pressure for lower range value has not been accepted. Observe the input limits.	Applied pressure for upper range value has been accepted.	Applied pressure for upper range value has not been accepted. Observe the input limits.	

## 7 Maintenance

Keep the pressure compensation and GORE-TEX® filter (1) free from contamination.



### 7.1 Exterior cleaning

Please note the following points when cleaning the device:

- ▶ The cleaning agents used should not corrode the surface and the seals.
- ▶ Mechanical damage to the diaphragm, e.g. due to sharp objects, must be avoided.
- ▶ Observe the degree of protection of the device. See the nameplate if necessary (→ 6 ff).

## 8 Troubleshooting

### 8.1 Messages

The following is a list of the messages that can occur. The device has four different status information codes in accordance with NE107:

- F = failure
- M (warning) = maintenance required
- C (warning) = function check
- S (warning) = out of specification (deviations from the permitted ambient or process conditions determined by the device with the self-monitoring function, or errors in the device itself indicate that the measuring uncertainty is greater than what would be expected under normal operating conditions).

### 8.2 Measures

When a message is displayed, the following steps can be taken:

- ▶ Check cable/pressure value
- ▶ Restart device
- ▶ Perform a reset

If these steps do not correct the error, please contact your Pepperl+Fuchs subsidiary.

### 8.3 Response of output to errors

In the event of an error, the current output assumes a value of 3.6 mA.

### 8.4 Repair

The Pepper+Fuchs repair concept assumes that the devices have a modular design and that repairs can be done by the Pepperl+Fuchs service or specially trained customers.

Spare parts are contained in suitable kits. They contain the related replacement instructions.

**NOTICE** For more information on service and spare parts, contact the Service Department at Pepperl+Fuchs.

### 8.5 Spare parts

An overview of the spare parts for your device is available in the Technical Information TI004360. When ordering spare parts, always quote the serial number indicated on the nameplate. As far as necessary, the spare parts also include replacement instructions.

### 8.6 Return

The measuring device must be returned if repairs or a factory calibration are required, or if the wrong measuring device has been ordered or delivered. According to legal regulations, Pepperl+Fuchs, as a ISO-certified company, is required to follow certain procedures when handling returned products that are in contact with process fluids.

To ensure swift, safe and professional device returns, please read the return procedures and conditions on the Pepperl+Fuchs website.

### 8.7 Disposal

When disposing, separate and recycle the device components based on the materials.

## 8.8 Software history

Date	Software version	Software modifications	Documentation	
			CD-ROM	Operating instruction
10.2009	01.00.zz	Original software	CD00512O/98/A2/18.12	BA00385O/98/DE/17.12

## 9 Technical data

For the technical data, please refer to the Technical Information TI00436O.



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# PROCESS AUTOMATION – PROTECTING YOUR PROCESS



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