



Level



Pressure



Flow



Temperature



Liquid
Analysis



Registration



Systems
Components



Services

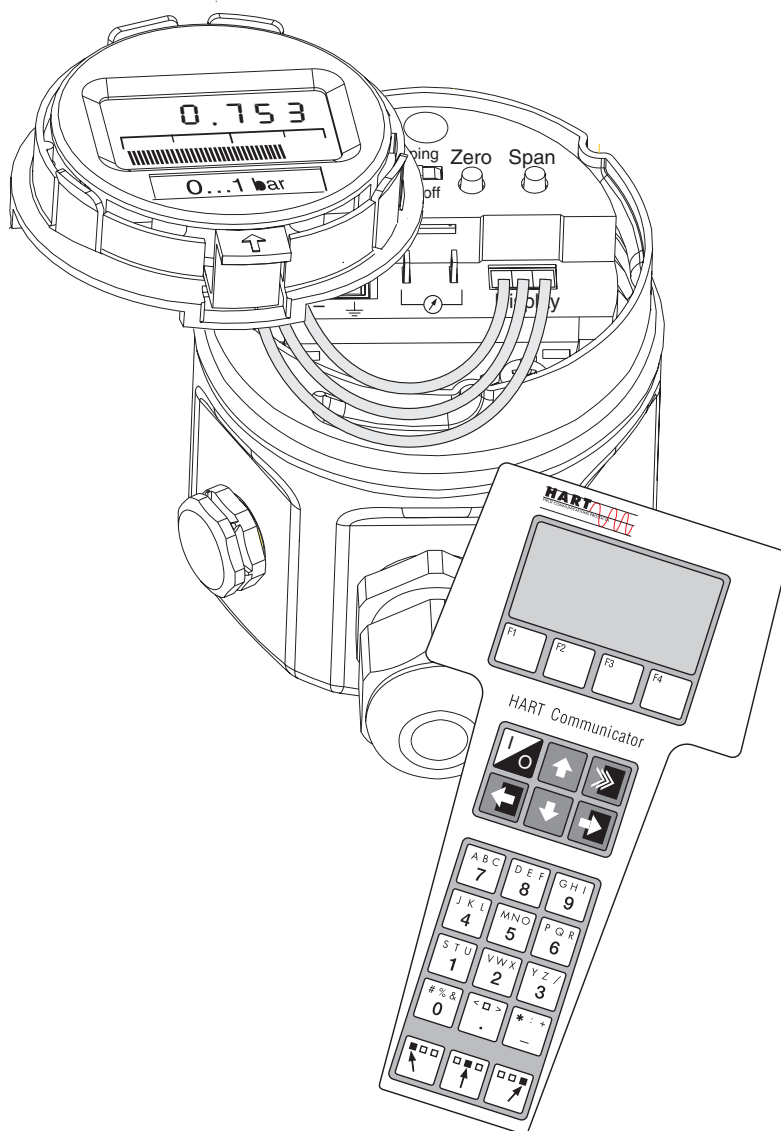


Solutions

Operating Instructions

Cerabar M PMC41/45, PMP41/45/46/48

Process pressure measurement



Overview of documentation

Device	Documentation	Contents
Cerabar M 4 to 20 mA HART	Technical Information TI399P	Technical data
	Operating Instructions BA201P	– Identification – Installation – Wiring – Operation – Commissioning – Maintenance – Troubleshooting and spare parts – Appendix: illustration of menus

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1 Safety instructions

1.1 Designated use

The Cerabar M is a pressure transmitter 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 EC regulations. If used incorrectly or for anything other than the designated use, the device can, however, be a source of danger e.g. product overflow due to incorrect installation or configuration. Consequently, installation, connection to the electricity supply, commissioning, operation and maintenance of the measuring system must be carried out by trained, qualified specialists authorized to perform such work by the facility's owner-operator. The specialists must have read and understood these Operating Instructions and must follow the instructions they contain. Modifications and repairs to the device are permissible only if they are expressly approved in the manual. Pay particular attention to the information and instructions on the nameplate.

1.3 Operational safety

1.3.1 Hazardous areas (optional)

Devices for use in hazardous areas are fitted with an additional nameplate (→ see from Page 6, Section 2.1.1 "Nameplates"). If the measuring system is to be used in hazardous areas, applicable national standards and regulations must be observed. The device is accompanied by separate "Ex documentation", which is an integral part of this documentation. The installation regulations, connection values and safety instructions listed in this Ex document must be observed. The documentation number of the related safety instructions is also indicated on the additional nameplate.

- Ensure that all personnel are suitably qualified.

1.4 Notes on safety conventions and icons

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

Symbol	Meaning
	Warning! A warning highlights actions or procedures which, if not performed correctly, will lead to serious personal injury, a safety hazard or the destruction of the device.
	Caution! A caution highlights actions or procedures which, if not performed correctly, may lead to personal injury or the incorrect operation of the device.
	Note! A note highlights actions or procedures which, if not performed correctly, can have an indirect effect on operation or trigger an unexpected response on the part of the device.

	Explosion-protected, type-examined equipment 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.
	Hazardous area Symbol used in drawings to indicate hazardous areas. – Devices used in hazardous areas must possess an appropriate type of protection.
	Safe area (non-hazardous area) Symbol used in drawings to indicate non-hazardous areas. – 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.

	Direct current A terminal to which DC voltage is applied or through which direct current flows.
	Alternating current A terminal to which alternating voltage (sine-wave) is applied or through which alternating current flows.
	Ground connection A grounded terminal which, as far as the operator is concerned, is grounded by means of a grounding system.
	Protective ground terminal A terminal which must be connected to ground prior to establishing any other connections.
	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.

2 Identification

2.1 Device designation

2.1.1 Nameplates



Note!

- The MWP (maximum working pressure) is specified on the nameplate. This value refers to a reference temperature of 20°C (68°F), or a temperature of 100°F for ANSI flanges.
- The pressure values permitted at higher temperatures can be found in the following standards:
 - EN 1092-1: 2001 Tab. 18¹⁾
 - ASME B 16.5a – 1998 Tab. 2-2.2 F316
 - ASME B 16.5a – 1998 Tab. 2.3.8 N10276
 - JIS B2230
- The test pressure corresponds to the overpressure limit (OPL) of the device = MWP x 1.5²⁾.
- 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.

Nameplate of the aluminum housing

Fig. 1: Nameplate for Cerabar M with aluminium housing

- ① Order code
See the specifications on the order confirmation for the meanings of the individual letters and digits.
- ② Serial number
- ③ Nominal measuring range
- ④ Minimum/maximum span
- ⑤ MWP (Maximum working pressure)
- ⑥ Electronic version (output signal)
- ⑦ Supply voltage
- ⑧ Wetted materials
- ⑨ Wetted materials
- ⑩ Wetted materials
- ⑪ Maximum pressure for oxygen applications (optional for devices, suitable for oxygen applications)
- ⑫ Maximum temperature for oxygen applications (optional for devices, suitable for oxygen applications)
- ⑬ ID number of notified body with regard to Pressure Equipment Directive (optional)
- ⑭ ID number of notified body with regard to ATEX (optional)
- ⑮ SIL-symbol for devices with SIL2/IEC 61508 Declaration of conformity (optional)
- ⑯ Degree of protection
- ⑰ CRN number (optional)

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 PMP41, PMP45 and PMP48 with a 100 bar measuring cell.

Nameplate of the stainless steel housing

Endress+Hauser 

Cerabar M Made in Germany, D-79689 Maulburg

Order Code: (1)

Ser.-No.: (2)

⊖ p (3)

Span (4)

⊖ M.W.P.: (5)

⊖ Vmax. (6)

Mat. (8) (9) (10)

Bei Sauerstoffeinsatz for oxygen service

Pmax. (11) Tmax. (12)

⚠ (13)

CE (15)

(16) (17) (18)

P01-PMx4xP15-18-xx-xx-xx-000

Fig. 2: Nameplate for Cerabar M with stainless steel housing

- ① Order code
See the specifications on the order confirmation for the meanings of the individual letters and digits.
- ② Serial number
- ③ Nominal measuring range
- ④ Minimum/maximum span
- ⑤ MWP (maximum working pressure)
- ⑥ Electronic version (output signal)
- ⑦ Supply voltage
- ⑧ Wetted materials
- ⑨ Wetted materials
- ⑩ Wetted materials
- ⑪ Maximum pressure for oxygen applications (optional for devices, suitable for oxygen applications)
- ⑫ Maximum temperature for oxygen applications (optional for devices, suitable for oxygen applications)
- ⑬ Degree of protection
- ⑭ CRN number (optional)
- ⑮ ID number of notified body with regard to ATEX (optional)
- ⑯ ID number of notified body with regard to Pressure Equipment Directive (optional)
- ⑰ A3 symbol for devices with A3 (optional)
- ⑱ SIL-symbol for devices with SIL2/IEC 61508 Declaration of conformity (optional)

Additional nameplate

Devices for use in hazardous areas are fitted with an additional nameplate.

2.2 Scope of delivery

The scope of delivery comprises:

- Cerabar M pressure transmitter
- Optional accessories

Documentation supplied:

- Operating Instructions BA201P (this document)
- Final inspection report
- Optional: factory calibration certificate
- Devices that are suitable for use in hazardous areas:
additional documentation such as Safety Instructions, Control or Installation Drawings

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. Endress+Hauser confirms the successful testing of the device by affixing to it the CE mark.

2.4 Registered trademarks

KALREZ, VITON, TEFLON

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

TRI-CLAMP

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

HART

Registered trademark of the HART Communication Foundation, Austin, USA

GORE-TEX®

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

3 Installation

3.1 Incoming acceptance and 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 Storage

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

Storage temperature range:

- -40 to +100°C (-40 to +212°F)
- Onsite display: -40 to +80°C (-40 to +176°F)

3.2 Installation conditions

3.2.1 Dimensions

→ For dimensions, please refer to the Technical Information for Cerabar M TI399P, "Mechanical construction" section.

3.3 Installation instructions



Note!

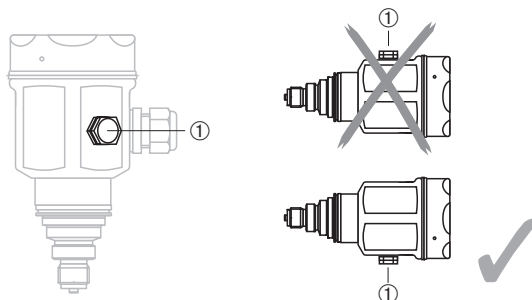
- Due to the orientation of the Cerabar M, there may be a shift in the zero point, i.e. when the container is empty, the measured value does not indicate zero. The position-dependent zero point shift can be corrected directly at the device via 2 keys → see Page 29, Section 6.2.5 "Position adjustment - only display (bias pressure)" (onsite operation) or via communication → see Page 33, Section 6.3.7 "Position adjustment - only display (bias pressure)".
- For PMP46 and PMP48, please pay attention to Page 13, Section 3.3.2 "Installation instructions for devices with diaphragm seals – PMP46, PMP48".
- The onsite display can be rotated in 90° stages.
- Endress+Hauser offers a mounting bracket for installation on pipes or walls. (→ See Page 16, Section 3.3.4 "Wall and pipe-mounting (optional)").

3.3.1 Installation instructions for devices without a diaphragm seal – PMC41, PMC45, PMP41, PMP45



Note!

- If a heated Cerabar M is cooled during a 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 Cerabar M with the pressure compensation ① pointing downwards.



- Keep the pressure compensation and GORE-TEX® filter ① free from dirt.
- Cerabar M devices without diaphragm seals are mounted as per the norms for a manometer (DIN EN 839-2). We recommend the use of shutoff devices and siphons. The orientation depends on the measuring application.
- Do not clean or press the diaphragm with hard or pointed objects.

Pressure measurement in gases

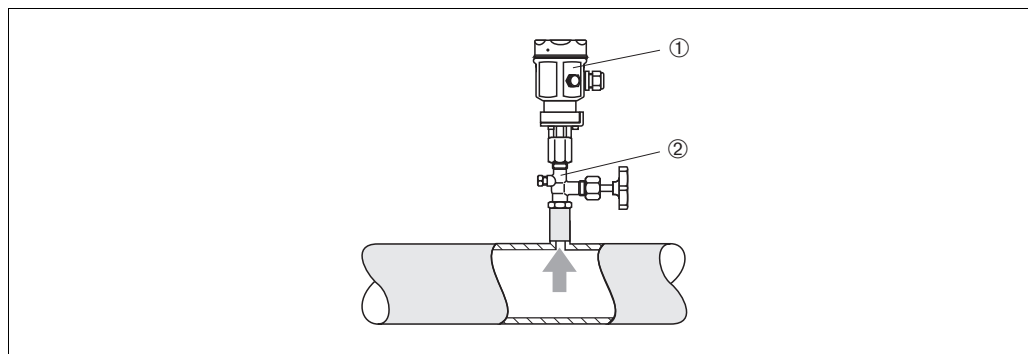


Fig. 3: Measuring arrangement for pressure measurement in gases

- ① Cerabar M
- ② Shutoff device

- Mount Cerabar M with shutoff device above the tapping point so that the condensate can flow into the process.

Pressure measurement in steam

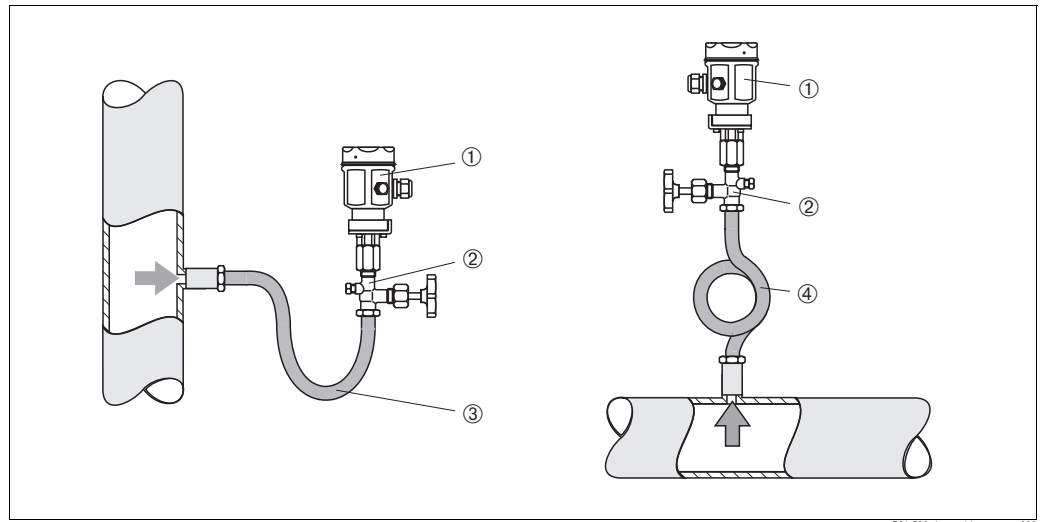


Fig. 4: Measuring arrangement for pressure measurement in steam

- ① Cerabar M
- ② Shutoff device
- ③ U-shaped siphon
- ④ Circular siphon

- Mount Cerabar M with siphon above the tapping point.
The siphon reduces the temperature to almost ambient temperature.
- Fill the siphon with liquid before commissioning.

Pressure measurement in liquids

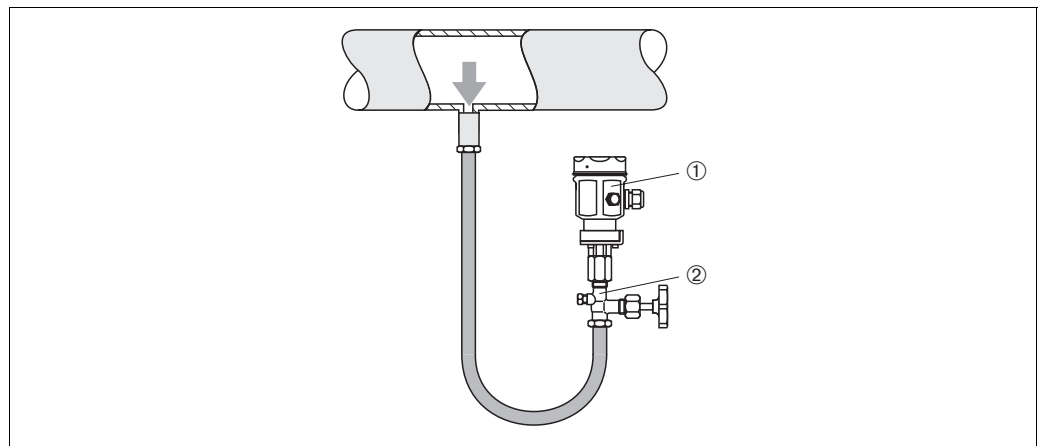


Fig. 5: Measuring arrangement for pressure measurement in liquids

- ① Cerabar M
- ② Shutoff device

- Mount Cerabar M with shutoff device below or at the same level as the tapping point.

Level measurement

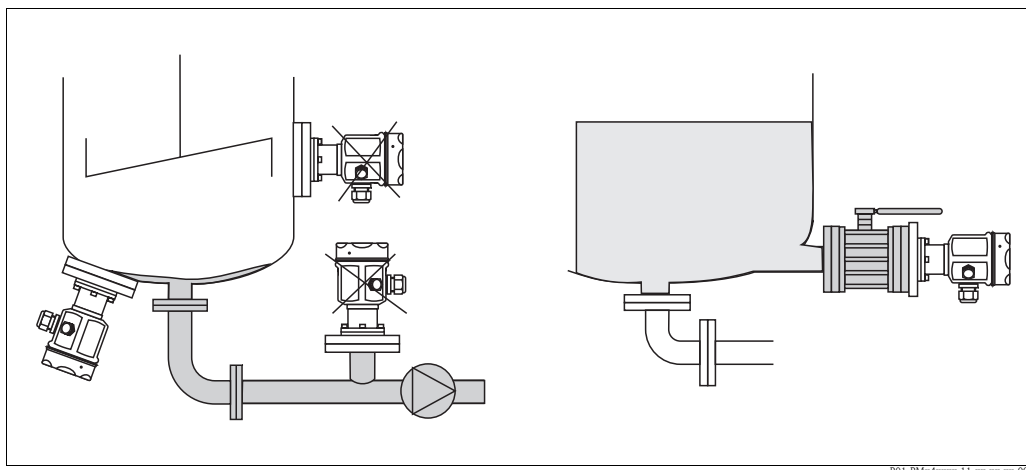


Fig. 6: Measuring arrangement for level

- Always mount Cerabar M below the lowest measuring point.
- Do not mount the device at the following positions:
In the filling curtain, in the tank outlet 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 after a shutoff device.

PMP41 mounting

PMP41 is available with a flush-mounted diaphragm or an adapter and an internal diaphragm. The adapter can be screwed on or welded in. A seal is enclosed depending on the version and material used.

Threaded version:

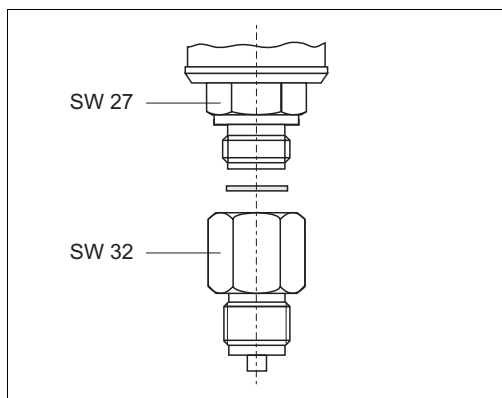


Fig. 7: The flush-mounted version is screwed together with the adapter using a torque of 50 Nm. Screw the complete device into the process thread with max. 80 Nm (at AF 32).

Welded version:

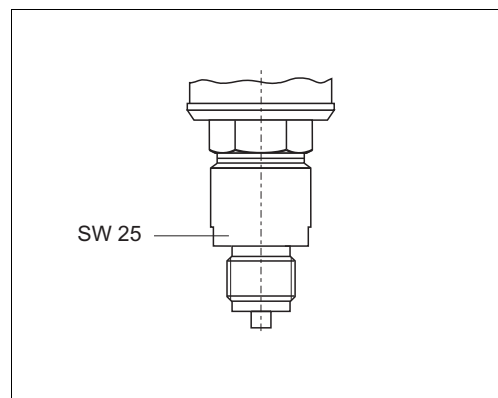


Fig. 8: Screw the complete device into the process thread with max. 80 Nm (at AF 25).

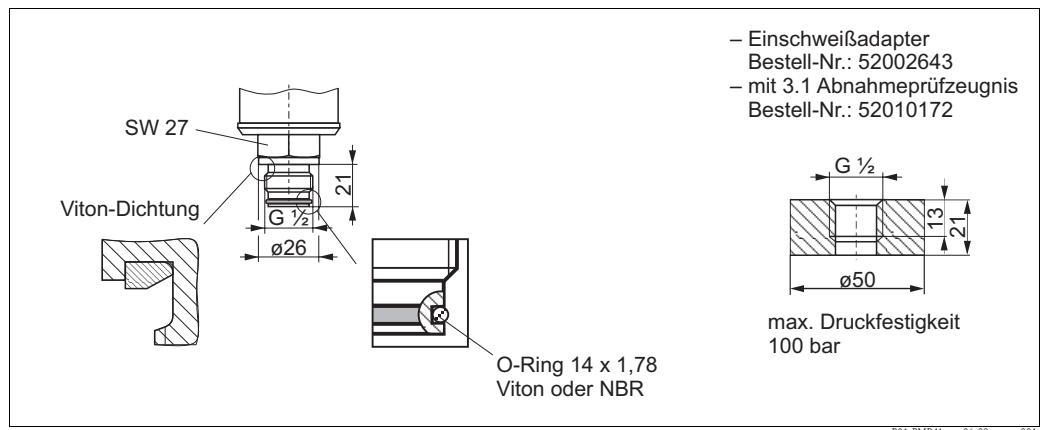
Threaded connection, flush-mounted diaphragm

Fig. 9: The flush-mounted version is screwed into the process thread with max. 50 Nm $\pm$ 5 Nm (at AF 27).

3.3.2 Installation instructions for devices with diaphragm seals – PMP46, PMP48



Note!

- The Cerabar M with a diaphragm seal is screwed in, flanged or clamped, depending on the type of diaphragm seal.
- Together, a diaphragm seal and the pressure transmitter form a closed, calibrated system which is filled with oil. The filling hole is sealed and should not be opened.
- Do not clean or press the diaphragm of the diaphragm seals with hard or pointed objects.
- Do not remove diaphragm protection until shortly before installation.
- When using a mounting bracket, sufficient strain relief must be ensured for the capillaries in order to prevent the capillary from buckling (bending radius $\geq$ 100 mm).
- Please note that the hydrostatic pressure of the liquid columns in the capillaries can cause zero point shift. You can correct this zero point shift → see Page 29, Section 6.2.5 "Position adjustment - only display (bias pressure)" (onsite operation) or via communication → see Page 33, Section 6.3.7 "Position adjustment - only display (bias pressure)".
- Please note the application limits of the diaphragm seal filling oil as detailed in the Technical Information for Cerabar M TI399P, "Planning instructions for diaphragm seal systems" section.

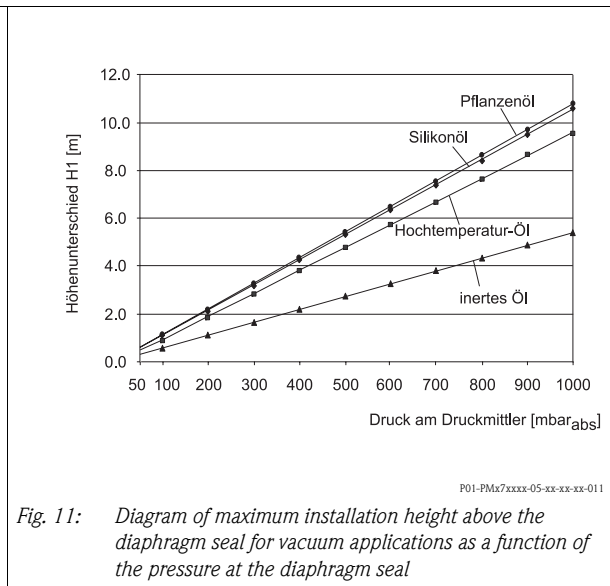
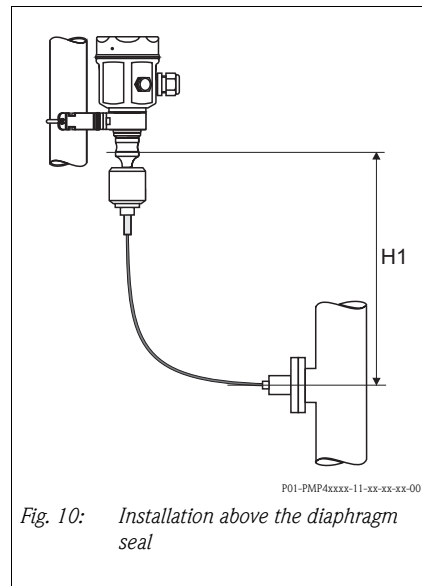
In order to obtain more precise measurement results and to avoid a defect in the device, mount the capillaries as follows:

- Vibration-free (in order to avoid additional pressure fluctuations)
- Not in the vicinity of heating or cooling pipes
- Insulate if the ambient temperature is below or above the reference temperature
- With a bending radius of $\geq$ 100 mm.

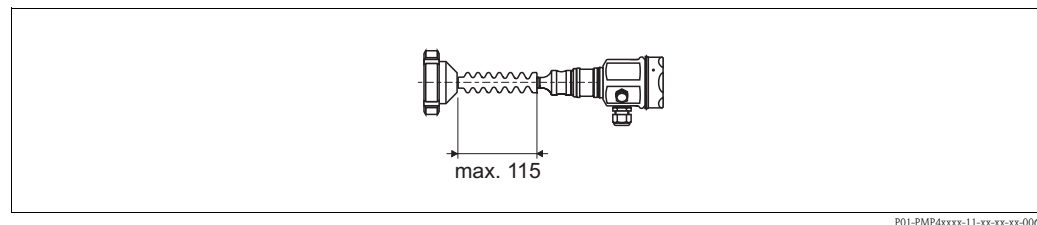
Vacuum application

For applications under vacuum, Endress+Hauser recommends mounting the pressure transmitter below the diaphragm seal. This prevents a vacuum load of the diaphragm seal caused by the presence of filling oil in the capillaries.

When the pressure transmitter is mounted above the diaphragm seal, the maximum height difference H_1 – as illustrated in the diagram below left – must not be exceeded. The maximum height difference depends on the density of the filling oil and the lowest pressure that is permitted to occur at the diaphragm seal (empty tank), see the following illustration.



Mounting with temperature isolator



Endress+Hauser recommends the use of temperature isolators in the event of constant extreme fluid temperatures which lead to the maximum permissible electronics temperature of +85°C (+185°F) being exceeded. To minimize the influence of rising heat, Endress+Hauser 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 due to the hydrostatic column in the temperature isolator. You can correct this zero point shift → see Page 29, Section 6.2.5 "Position adjustment - only display (bias pressure)" (onsite operation) or via communication → see Page 33, Section 6.3.7 "Position adjustment - only display (bias pressure)".

Mounting with capillary tube

The housing of the Cerabar M can be mounted with a capillary tube to one side of the measuring point to protect from high temperatures, moisture or vibration, or in cases where the mounting point is not easily accessible.

A bracket for mounting on a wall or pipe is available for this purpose.

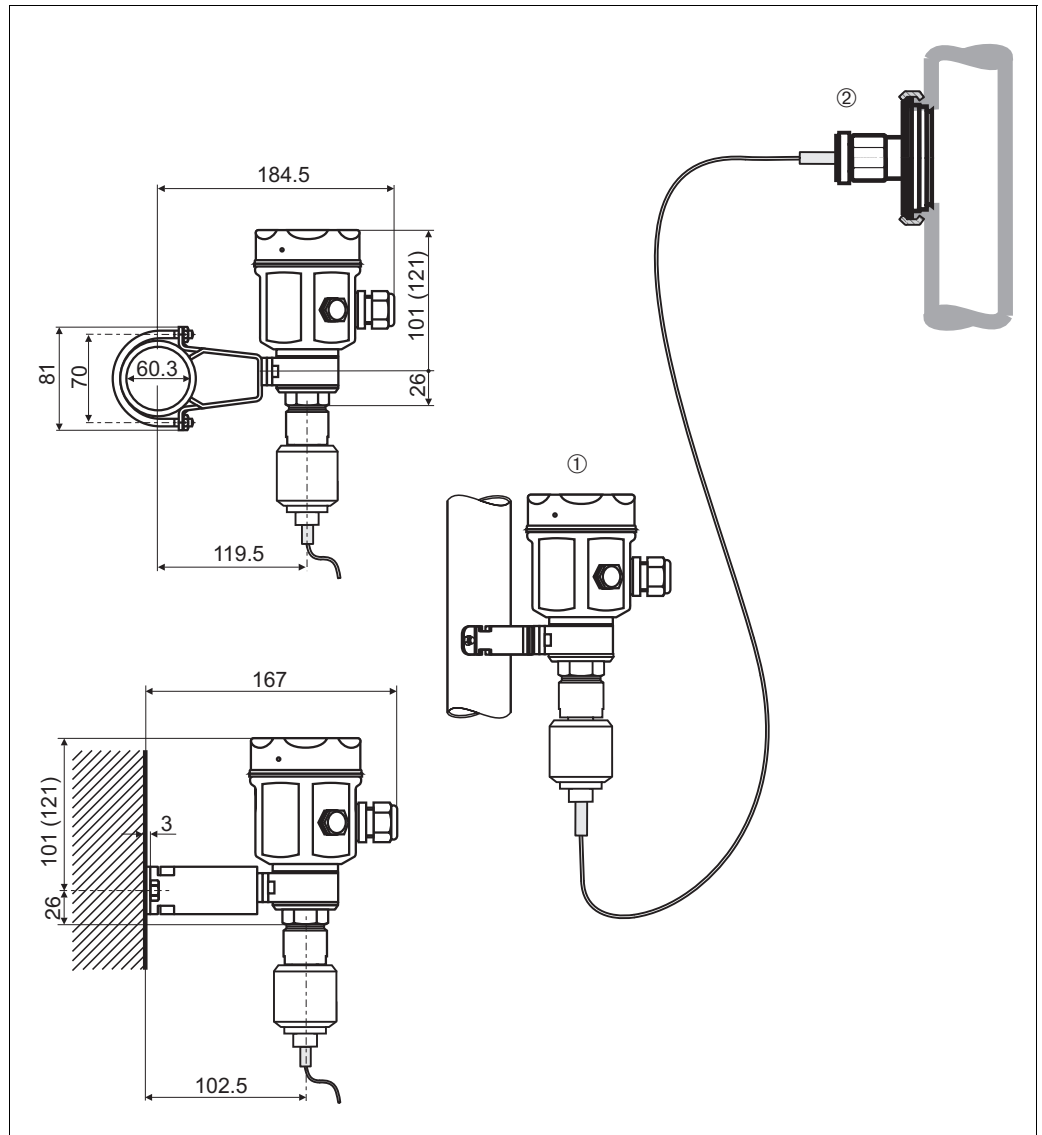


Fig. 12: Mounting with capillary tube and bracket away from the measuring point. Values in brackets apply to devices with a raised cover.

① Mounting location away from the measuring point.

② Measuring point: very humid, hot, with strong vibrations or difficult to access

3.3.3 Seal for flange mounting

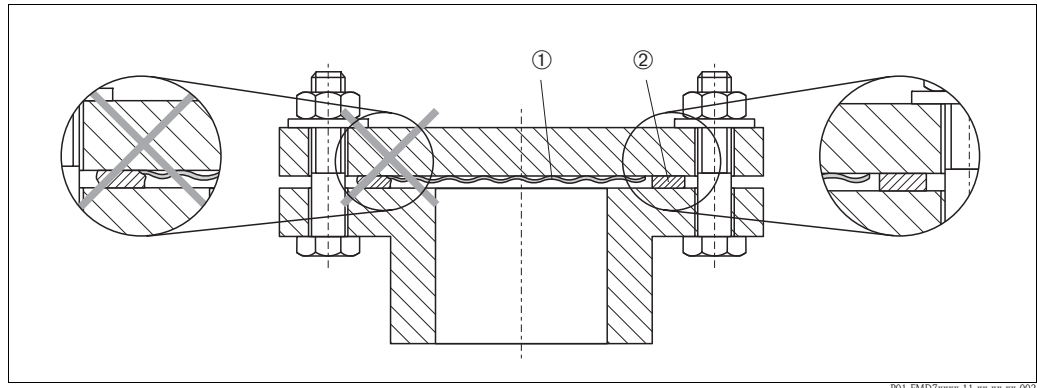


Fig. 13: Mounting the versions with flange or diaphragm seal

- ① Diaphragm
- ② Seal



Warning!

The seal is not allowed to press down on the diaphragm as this could affect the measurement result.

3.3.4 Wall and pipe-mounting (optional)

Endress+Hauser offers a mounting bracket for installing on pipes or walls for PMC41, PMP41, PMP46 and PMP48. You can order the mounting brackets either via the order code or separately as an accessory.

PMC41

- Order number: 919806-0000
- Material: AISI 304 (1.4301)

PMP41, PMP46 and PMP48

- Order number: 52001402
- Material: AISI 304 (1.4301)

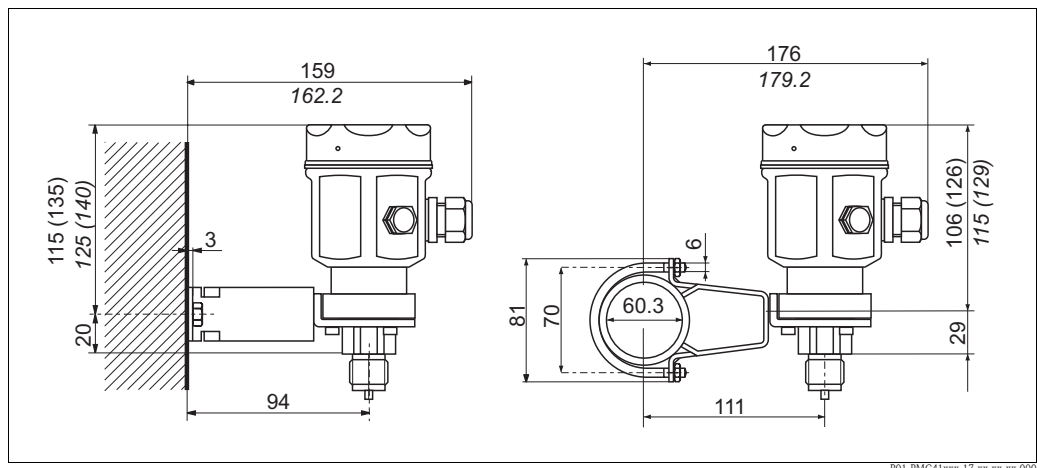
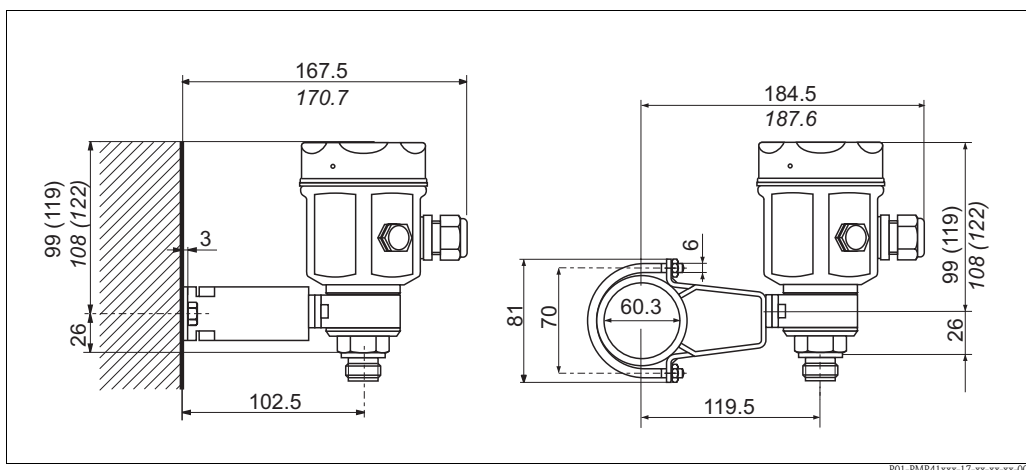


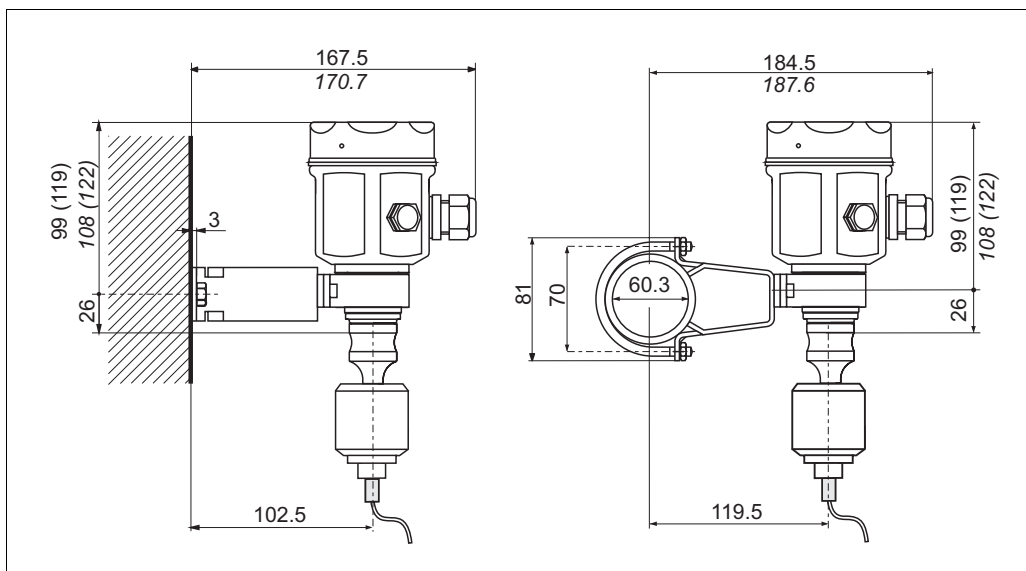
Fig. 14: Wall and pipe-mounting PMC41



P01-PMP41xxx-17-xx-xx-xx-000

Fig. 15: Wall and pipe-mounting PMP41

The dimensions in brackets apply to housings with a raised cover (for optional display). Dimensions written in italics apply to devices with an aluminum housing.



P01-PMP4xxxx-17-xx-xx-xx-000

Fig. 16: Wall and pipe-mounting PMP46/PMP48

The dimensions in brackets apply to housings with a raised cover (for optional display). Dimensions written in italics apply to devices with an aluminum housing.

3.4 Post-installation check

After installing the device, carry out the following checks:

- Are all the screws firmly tightened?
- Are the housing covers screwed down tight?

4 Wiring

4.1 Connecting the device



Note!

- When using the measuring device in hazardous areas, installation must comply with the corresponding national standards and regulations and the Safety Instructions or Installation or Control Drawings.
- Protective circuits to prevent reverse polarity, HF influences and overvoltage peaks are installed.
- The shield or grounding (if present) must always be connected to the internal ground terminal ④ in the housing.
- The supply voltage must match the power supply on the nameplate (→ see Page 6, Section 2.1.1 "Nameplates").
- Switch off the supply voltage before connecting the device.
- Unscrew the housing cover.
- If present, remove the retaining ring with the onsite display.
 - Push up the latch with the arrow until the grip of the retaining ring is audibly released.
 - Release the retaining ring carefully to prevent damage to the display cables. The connector of the display can remain plugged in.
- Guide the cable through the gland. Preferably use twisted, shielded two-wire cable.
- Connect the device in accordance with the following diagram.
- Where applicable, refit the retaining ring with the onsite display. The grip of the retaining ring clips in with an audible click.
- Screw down housing cover.
- Switch on supply voltage.

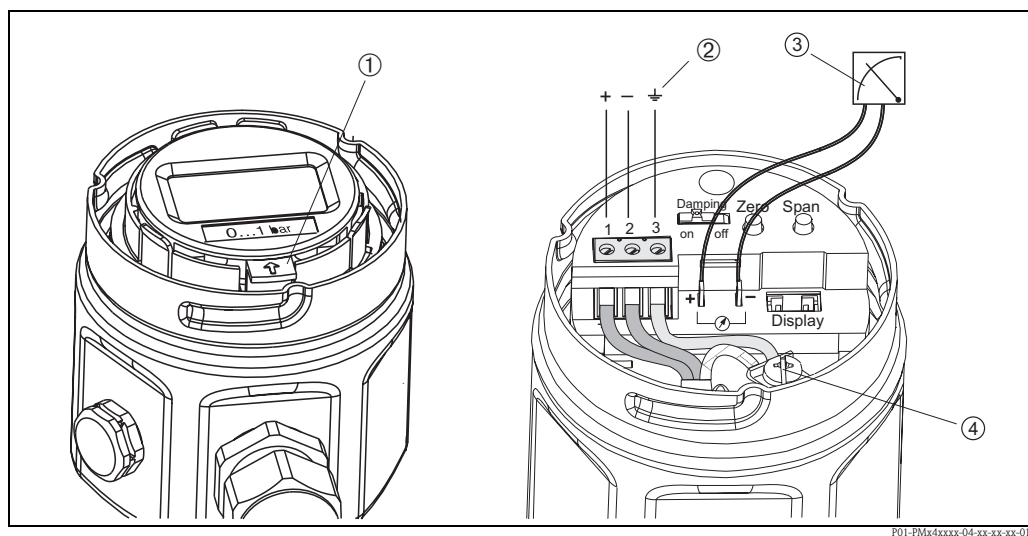


Fig. 17: Electrical connection 4 to 20 mA

- ① Disassembling the onsite display: To release the retaining ring from the electronic insert, push up the latch with the arrow.
- ② The terminal ② on the electronic insert is for grounding and is already wired internally. If the connecting cable also has a shielding or ground cable within it, then this may only be connected to the internal ground terminal ④ of the housing, not to terminal ②. The terminals are designed to take one wire each.
- ③ 4 to 20 mA test signal: you can take a 4 to 20 mA test signal via the terminal lugs without interrupting the measurement.

4.1.1 Connecting devices with Harting connector Han7D

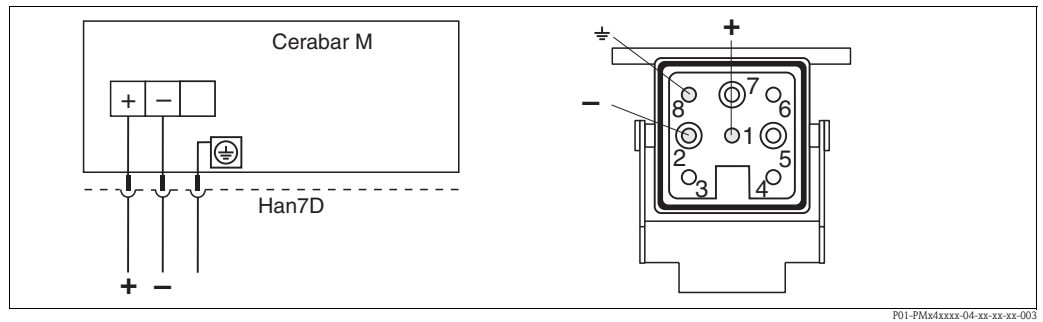


Fig. 18: Left: electrical connection for devices with Harting connector Han7D
Right: view of the connector at the device

4.1.2 Connecting devices with M12 connector

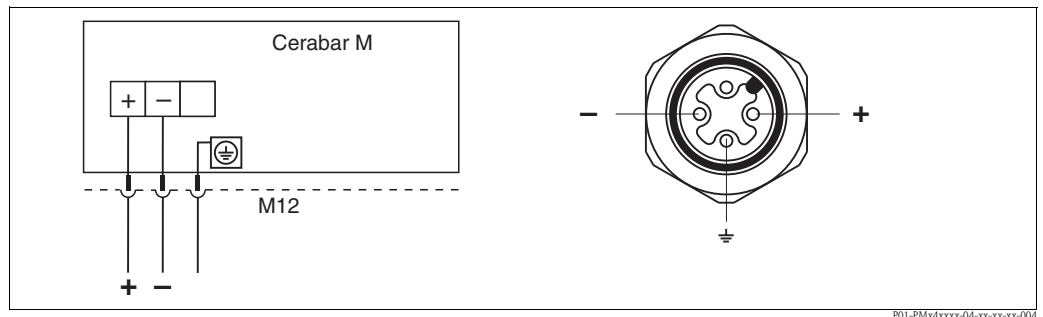


Fig. 19: Left: electrical connection for devices with M12 connector
Right: view of the connector at the device

4.1.3 Connecting the cable version

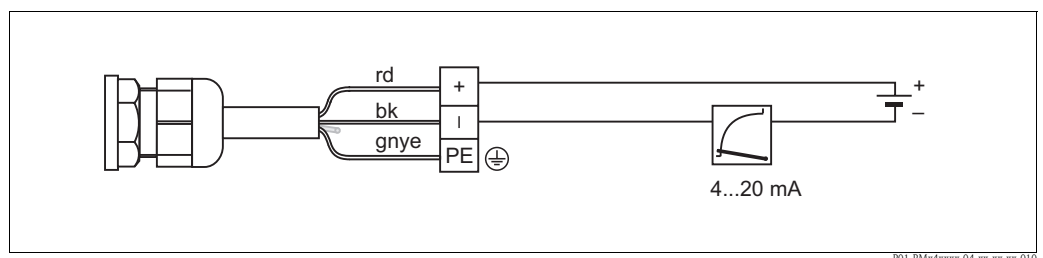
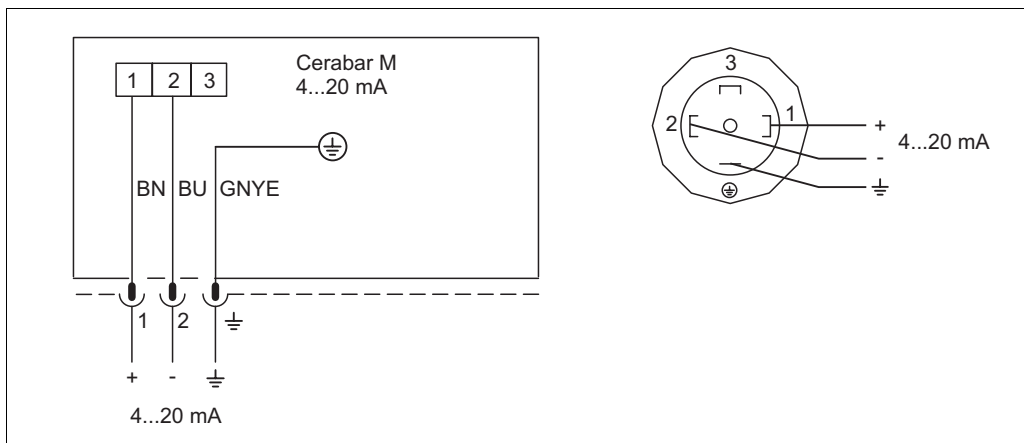


Fig. 20: rd = red, bk = black, gnye = green-yellow

4.1.4 Connecting the valve connector M16, ISO4400

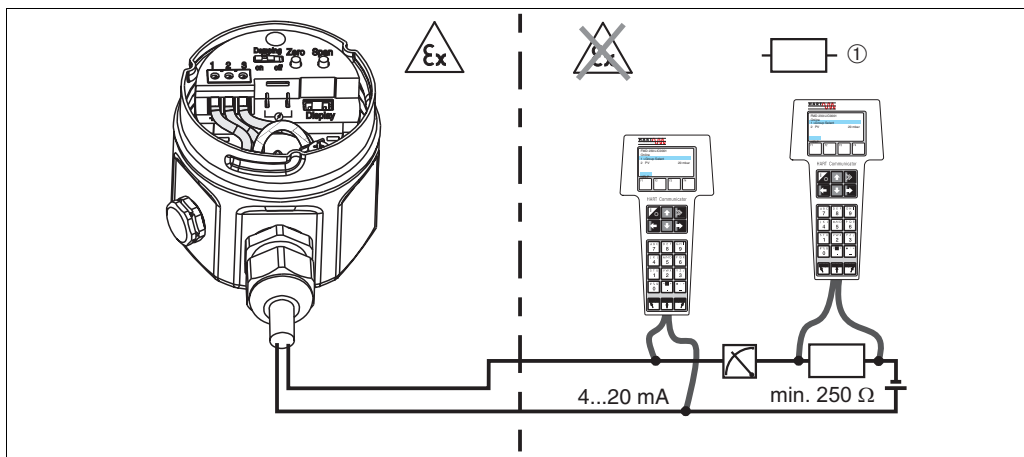


P01-PMx4xxxx-04-xx-xx-xx-009

Fig. 21: BN = brown, BU = blue, GNYE = green/yellow

4.2 Connecting the DXR375 handheld terminal

- For a Cerabar M with an FM or CSA certificate, perform the electrical connection in accordance with the "control drawing" (provided in the packaging for Cerabar M).
- To transfer the communication signal without errors, there must be a communication resistor of at least $250\ \Omega$ between the connection points and the power supply.



P01-PMx4xxxx-04-xx-xx-xx-014

Fig. 22: ① Any connection devices.

The handheld terminal can be connected anywhere along the 4 to 20 mA cable. Use an intrinsically safe voltage source in Ex ia areas (e.g. RN221N).

4.3 Connecting Commubox FXA191/FXA195

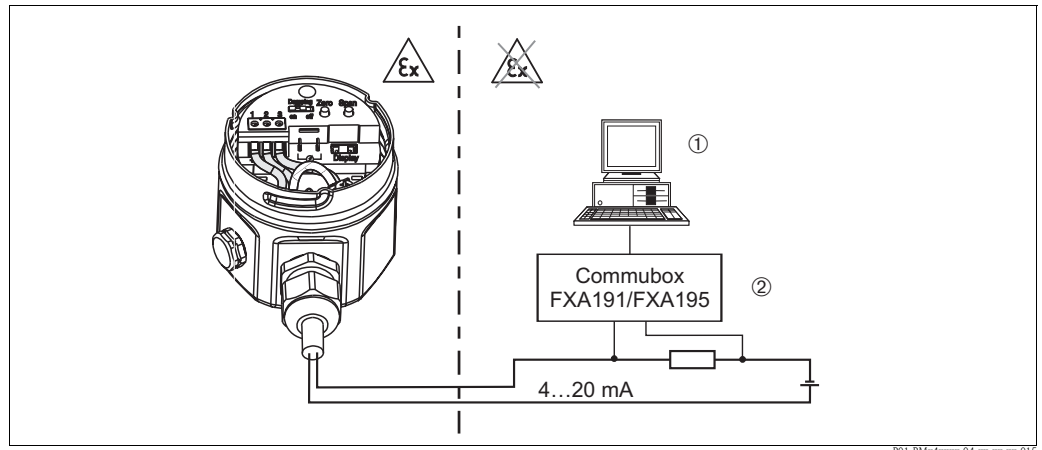


Fig. 23: ① Personal computer with Endress+Hauser operating program. ② Minimum total resistance 250 Ω.
The Commubox can be connected anywhere along the 4 to 20 mA cable.

4.3.1 Connecting Commubox FXA191

The Commubox FXA191 connects intrinsically safe transmitters to a computer's serial interface (RS 232C) using the HART protocol. This allows remote operation of the measuring transmitter using Endress+Hauser operating programs. The Commubox is supplied with power through the serial interface. The Commubox is also suitable for connection to intrinsically safe circuits. → See Technical Information TI404F for further information.

4.3.2 Connecting Commubox FXA195

The Commubox FXA195 connects intrinsically safe transmitters to a computer's USB port using the HART protocol. This allows remote operation of the measuring transmitter using Endress+Hauser operating programs. The Commubox is supplied with power through the USB port. The Commubox is also suitable for connection to intrinsically safe circuits. → See Technical Information TI237F for further information

4.4 Connecting the measuring unit

4.4.1 Supply voltage



Note!

- When using the measuring device in hazardous areas, installation must comply with the corresponding national standards and regulations and the Safety Instructions or Installation or Control Drawings.
- All explosion protection data are given in separate documentation which is available upon request. The Ex documentation is supplied as standard with all devices approved for use in hazardous areas.

Supply voltage

- For non-hazardous areas: 11.5 to 45 V DC

4.4.2 Cable specification

- Endress+Hauser recommends using twisted, shielded two-wire cables.
- Terminals for wire cross-sections: 0.14 to 2.5 mm²
- Cable outer diameter: 5 to 9 mm

4.4.3 Load

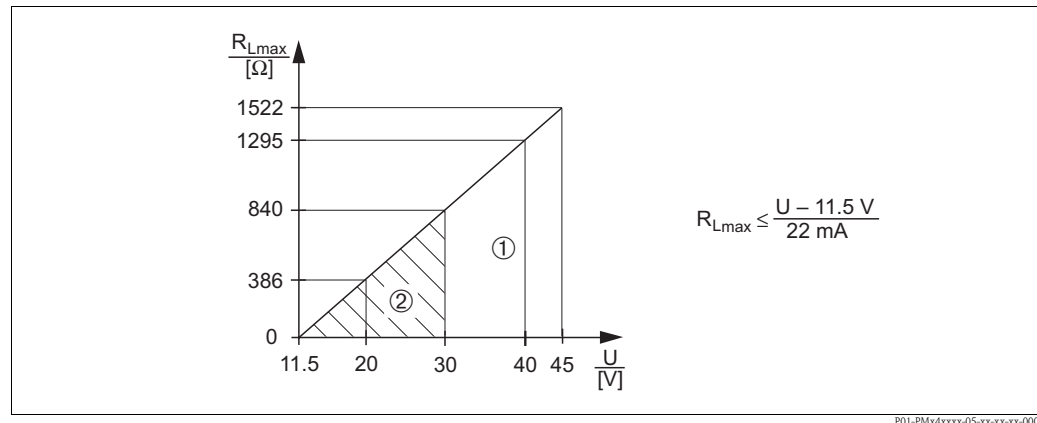


Fig. 24: Load diagram, observe explosion protection.

① Power supply 11.5 to 45 V DC for devices for non-hazardous areas, 1/3 D, EEx d, EEx nA, FM XP, FM DIP, CSA XP and CSA Dust-Ex

② Power supply 11.5 to 30 V DC for EEx ia, 1 D, 1/2 D 1/2G, FM IS and CSA IS

R_{Lmax} Maximum load resistance

U Supply voltage



Note!

When operating via a handheld terminal or PC with an operating program, a minimum communication resistance of 250 Ω must be taken into account.

4.4.4 Shielding/potential matching

- You achieve optimum shielding against interference influences if the shielding is connected on both sides (in the cabinet and at the device). If potential equalization currents are expected in the plant, only ground the shielding on one side, preferably at the transmitter.
- When using in hazardous areas, you must observe the applicable regulations. Separate Ex documentation with additional technical data and instructions is included with all Ex devices as standard.

4.5 Potential equalization

Ex applications: Connect all devices to the local potential equalization system. Observe the applicable regulations.

4.6 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 the screws firmly tightened?
- Are the housing covers screwed down tight?

The connected onsite display lights up as soon as voltage is applied to the device.

5 Operation

5.1 Onsite display (optional)

A plug-in onsite display is used as the display unit. The display can be rotated in 90° stages.

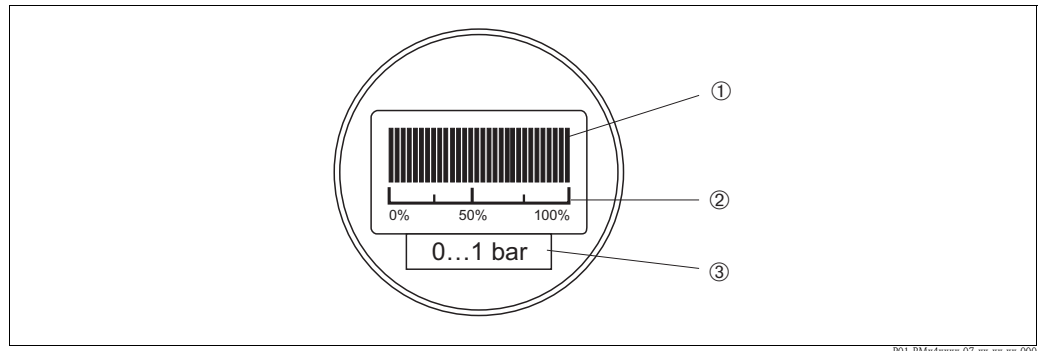


Fig. 25: Onsite display

- ① 4-digit display of measured values and input parameters
- ② Bar graph, display of current measured value
- ③ Nominal measuring range

5.1.1 Function of the onsite display

The onsite display has two display modes:

- Display in measurement mode: This is shown as standard.
- Display in calibration mode: This is shown after pressing the Zero or Span key once. It returns automatically to measurement mode display after 2 seconds.

The bar graph displays the current value (4 to 20 mA) belonging to the pressure value.

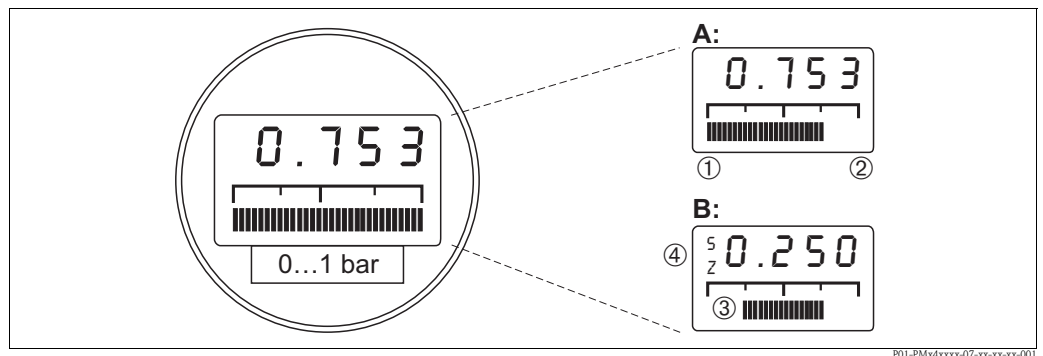


Fig. 26: Function of the onsite display

- A Display in measuring mode
- B Display in calibration mode
- ① Lower-range value
- ② Upper-range value
- ③ Set measuring range in measuring limits
- ④ Display of calibration point (Z (Zero) = lower-range value (LRV) or S (Span) = upper-range value (URV))

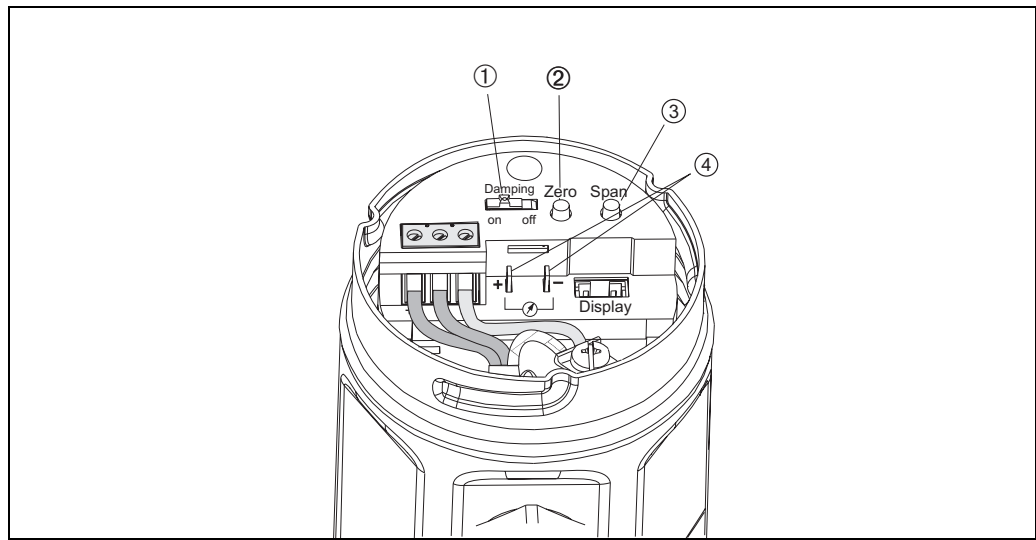
5.2 Operating elements

5.2.1 Position of the operating elements on the electronic insert

The onsite display is supplied ready-mounted if it is ordered with the device. In such instances, the onsite display with the retaining ring must be released from the electronic insert before operating.

Removing the display:

- Push up the latch with the arrow until the grip of the retaining ring on the electronic insert is audibly released.
- Release the retaining ring and lift off carefully to prevent damage to the display cables.
- During operation, you can fit the display onto the edge of the housing.



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Fig. 27: Position of operating elements

- ① Switch for damping on/off
- ② Key for calibrating the lower-range value (Zero = Lower-range value (LRV))
- ③ Key for calibrating the upper-range value (Span = Upper-range value (URV))
- ④ Terminal lugs for measuring the signal current

5.2.2 Function of the operating elements

Use the "Zero" and "Span" keys to set the lower-range value and upper-range value of the bar graph in the display module. These settings do not have any effect on the digital output value (OUT value) and the "measured value" in the matrix field V0H0.

No.	Operating element	Function
①	Damping switch	Switch position "off": damping 0 s Switch position "on": damping 2 s It is possible to enter a damping value between 0 and 40 s via communication, e.g. with the handheld terminal.
②	Key for lower-range value	The value currently saved for the lower-range value, e.g. 4 mA (zero point), is displayed and the pressure present is accepted as the lower-range value.
③	Key for upper-range value	The value currently saved for the upper-range value, e.g. 20 mA, is displayed and the pressure present is accepted as the upper-range value.
② + ③	Bias key combination: Key for lower-range value and Key for upper-range value	The value currently saved for the bias pressure is displayed and the pressure present is accepted as the bias pressure.
② + ③	Reset key combination: Key for lower-range value and Key for upper-range value	The reset is triggered if the two keys are pressed and held for at least 7 seconds.

If the display does not show zero after calibrating the lower-range value at zero operating pressure (position-dependent), it can be corrected to zero by adopting a bias pressure.

5.3 Operation via Endress+Hauser operating program

5.3.1 FieldCare

FieldCare is an Endress+Hauser asset management tool based on FDT technology. With FieldCare, you can configure all Endress+Hauser devices as well as devices from other manufacturers that support the FDT standard.

FieldCare supports the following functions:

- Configuration of transmitters in online operation
- Loading and saving device data (upload/download)
- Documentation of the measuring point

Connection options:

- HART via Commubox FXA195 and the USB interface of a computer



Note!

- → See also Page 21, Section 4.3.2 "Connecting Commubox FXA195".
- For more information, see → www.endress.com.

5.3.2 Commuwin II

With the Commuwin II display and operating program, Cerabar M can be configured and operated as follows:

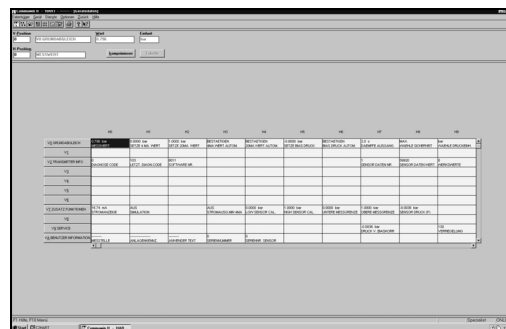
- Via matrix operation or
- Via graphic operation

For this, the corresponding server (e.g. HART or ZA672) must be activated. For a description of the Commuwin II operating program, see Operating Instructions BA124F.

Matrix operation (Device parameter menu)

You can access the extended functions of the Cerabar M using the "Device parameter/matrix operation" menu.

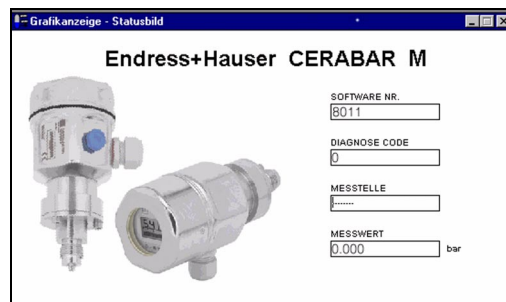
- Each row is assigned to a function group.
- Every field represents a parameter.
- The setting parameters are entered in the appropriate fields and confirmed with ↵.



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Graphic operation

Commuwin II offers graphic templates for certain configuration procedures which you can access via the "Device parameter/graphic operation" menu. The parameter changes are entered directly here and confirmed with ↵.



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5.4 Operation via Universal HART Communicator DXR375

When operating via the HART protocol, a menu operation system derived from the matrix is used (see also Operating Instructions for the handheld terminal).

- The "Select group" menu calls up the matrix.
- The menu headers are displayed on the individual rows.
- The parameters are set via sub-menus.

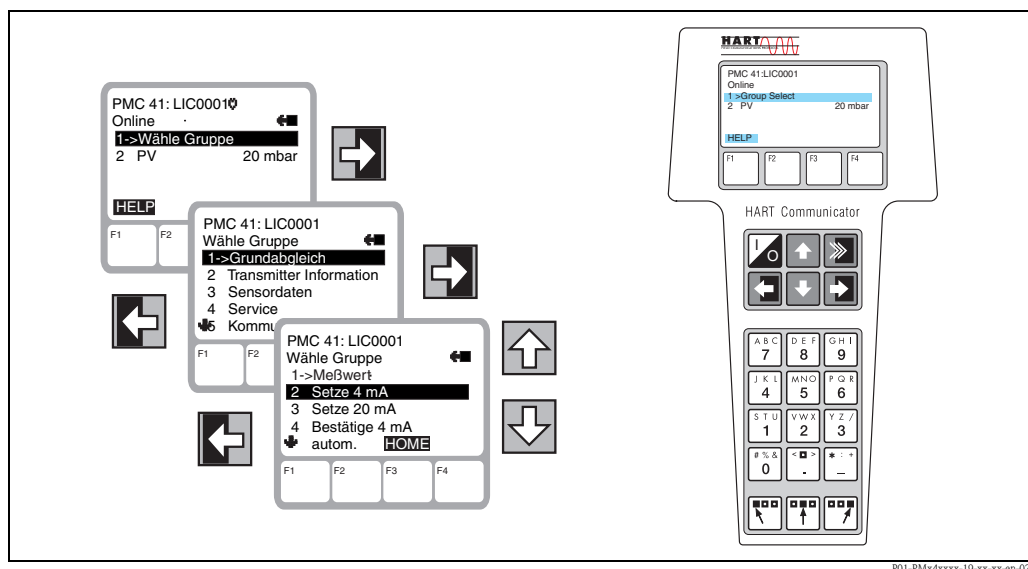


Fig. 28: Left: Menu operation with the DXR375; right: Universal HART Communicator DXR375 handheld terminal

The electrical connection of the Universal HART Communicator DXR375 handheld terminal is described in Section 4.2, and the step-by-step commissioning of the measuring point in Section 6.

6 Commissioning

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" checklist (→ see Page 17, Section 3.4 "Post-installation check")
- "Post-connection check" checklist (→ see Page 22, Section 4.6 "Post-connection check")

6.2 Onsite commissioning

6.2.1 Preparatory work

- Connect Cerabar M to the power supply (Section 4.1 "Connecting the device").
- Ensure that a pressure can be specified within the required measuring range.
- If you have not installed an onsite display, connect a multimeter (4 to 20 mA) to the terminal lugs provided for this purpose.
- If you have installed an onsite display, the calibration values appear there.

6.2.2 Configuring the damping

The damping τ affects the speed at which the output signal and the onsite display react to changes in pressure. The DIP switch for setting the damping is located on the electronic insert.

- Switch position **off**: damping 0 s
- Switch position **on**: damping 2 s

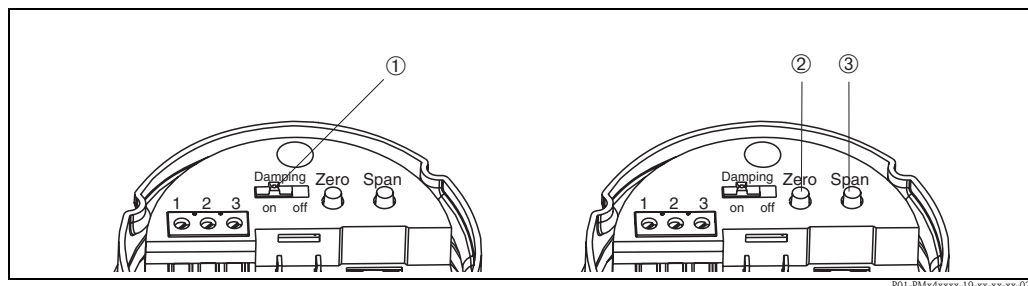


Fig. 29: ① Damping switch. ② Key for lower-range value. ③ Key for upper-range value.

6.2.3 Lower-range value calibration

Use the "Zero" key to query the lower-range value currently saved or to calibrate the lower-range value.

- To query the lower-range value:
Press the "Zero" key. The current calibration value appears on the optional onsite display and remains on the display for another 2 seconds approximately once the key is released.
- To calibrate the lower-range value:
 1. Specify the exact pressure for the lower-range value (zero point).
 2. Press the "Zero" key. The calibration value currently saved appears on the optional onsite display.
 3. Release the key and press the key a second time within approx. 2 seconds. Hold down the key for 3 to 4 seconds until the "Z" symbol stops flashing. The pressure present is now adopted as the new lower-range value.

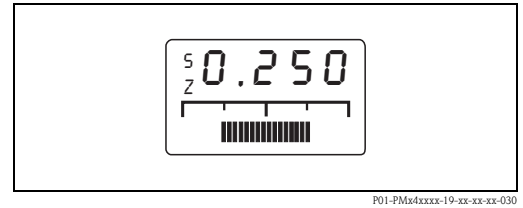


Fig. 30: Optional onsite display: the "S" and "Z" symbol on the left

6.2.4 Upper-range value calibration

The upper-range value is calibrated using the "Span" key:

1. Specify the exact pressure for the upper-range value.
2. Press the "Span" key. The calibration value currently saved appears on the optional onsite display.
3. Release the key and press the key a second time within 2 seconds. Hold down the key for 3 to 4 seconds until the "S" symbol stops flashing. The pressure present is now adopted for the new upper-range value.

6.2.5 Position adjustment - only display (bias pressure)

If the display does not show zero after calibrating the lower-range value at zero operating pressure (position-dependent), it can be corrected to zero by adopting the available bias pressure (position adjustment).

- The bias pressure is calibrated via the Zero and Span keys:
 1. Press the Zero and Span keys simultaneously. The bias pressure currently saved appears on the optional onsite display.
 2. Release the keys and press the keys a second time within 2 seconds. Hold down the keys until the "Z" and "S" symbol stop flashing. The pressure present is now adopted as the new bias pressure.



Caution!

Do not hold Zero and Span down for longer than 6 seconds, otherwise the system is reset – see next section.

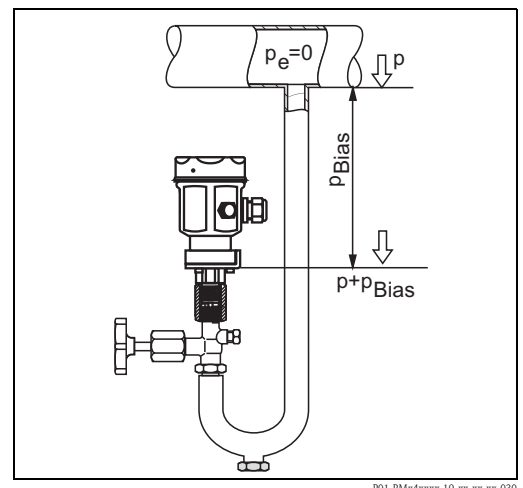


Fig. 31: Optional onsite display: the "S" and "Z" symbol on the left

6.2.6 **Reset to factory setting (reset)**

The upper-range value is calibrated using the "Span" key:

Use the Zero and Span keys to reset to the factory setting:

- To the lower-range value (Zero) = lower sensor measuring limit
 - To the upper-range value (Span) = upper sensor measuring limit
 - The bias pressure to zero = 0.0 pressure unit
1. Press the Zero and Span keys simultaneously.
 2. Release the keys, press them a second time within 2 seconds and hold them for at least 7 seconds. Any reset that has taken place is confirmed on the optional onsite display with "Res".

6.3 **Commissioning via communication**

6.3.1 **Preparatory work**

- Connect Cerabar M to the power supply (Section 4.1 "Connecting the device").
- Decide which tool you want to use to operate the Cerabar M and establish the connection (Operating program see Section 5.3, Universal HART Communicator DXR375 see Section 4.2).

6.3.2 **Reset to factory setting (reset)**

By entering a certain code, the matrix entries can be reset partially or completely to the factory settings. Further information on the various types of reset and their effects is given in Section 8.5 "Reset".

Main group: Transmitter information			
#	Matrix (VH position)	Path through the menus	Entry
1	Reset to factory setting (reset)		
	V2H9	► Default Values	e.g. 2380 Enter

6.3.3 Configuring the damping

The damping τ affects the speed at which the output signal and the onsite display damping react to changes in pressure. To set the damping using the handheld terminal, the damping switch on the electronic insert must be set to "on". With the handheld terminal, values between 0 and 40 seconds can be then selected for the damping.

Main group: Basic calibration			
#	Matrix (VH position)	Path through the menus	Entry
1	Set the damping switch to "on"		
2	Suppress fluctuations in the measured value		
	V0H7	► Output damping $\tau = 0$ to 40 s	e.g. 20 s Enter

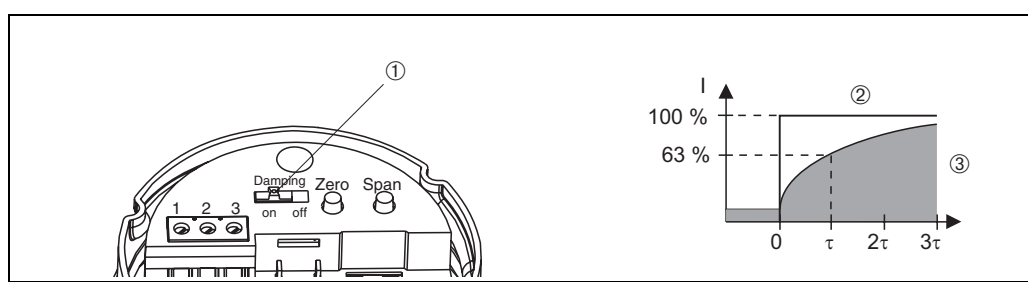


Fig. 32: ① Damping switch. ② Jump in pressure. ③ Output signal.

6.3.4 Selecting a pressure unit

By selecting the pressure unit you define in which unit the pressure-specific "Select pressure unit" parameters are displayed. The pressure units in the table below can be selected. After selecting a new pressure unit, all entries for pressure are converted to the new unit e.g. 0 to 1 bar = 0 to 14.5 psi.

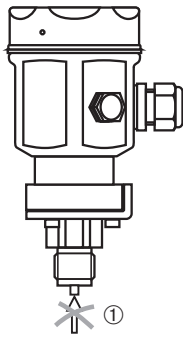
Main group: Basic calibration			
#	Matrix (VH position)	Path through the menus	Entry
1	Select pressure unit		
	V0H7	► Select pressure unit	e.g. psi Enter

Unit	Unit	Unit	Unit	Unit
mbar	kPa	in H ₂ O	kg / cm ²	Torr
bar	MPa	ft H ₂ O	kgf / cm ²	mm Hg
Pa	mm H ₂ O	psi	atm	in Hg
hPa	m H ₂ O	g / cm ²	lb / ft ²	

6.3.5 Lower-range and upper-range value: setting without reference pressure

The desired pressure for the lower-range value (zero point) and the upper-range value is set using the handheld terminal without specifying a reference pressure.

Main group: Basic calibration			
#	Matrix (VH position)	Path through the menus	Entry
1	Enter known pressure for the lower-range value		
	V0H1	➤ Set 4 mA	e.g. 0 psi Enter
2	Enter known pressure for the upper-range value		
	V0H2	➤ Set 20 mA	e.g. 14.5 psi Enter



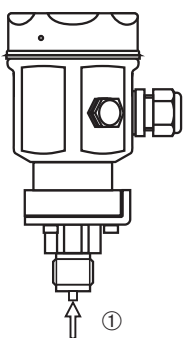
P01-PMx4xxxx-19-xx-xx-xx-033

Fig. 33: ① No reference pressure

6.3.6 Lower-range and upper-range value: setting with reference pressure

A reference pressure is available which corresponds exactly to the desired lower-range value (zero point) and the desired upper-range value.

Main group: Basic calibration			
#	Matrix (VH position)	Path through the menus	Entry
1	Accept pressure present for the lower-range value		
	V0H3	➤ Confirm 4 mA automatically	e.g. 0 psi Enter
2	Accept pressure present for the upper-range value		
	V0H4	➤ Confirm 20 mA automatically	e.g. 14.5 psi Enter



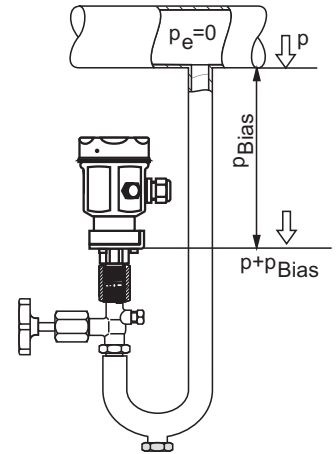
P01-PMx4xxxx-19-xx-xx-xx-034

Fig. 34: ① Reference pressure

6.3.7 Position adjustment - only display (bias pressure)

If the display does not show zero after calibrating the zero point at zero operating pressure (position-dependent), the display value can be corrected to zero by entering or adopting a bias pressure (position adjustment).

Main group: Basic calibration			
#	Matrix (VH position)	Path through the menus	Entry
1	Set display to zero by entering a known bias pressure (position-dependent pressure).		
	V0H5	► Set bias pressure	e.g. 5 psi Enter
Alternatively			
2	Set display to zero. A bias pressure present (position-dependent pressure) is accepted as zero pressure.		
	V0H6	► Confirm bias pressure automatically	Enter



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6.3.8 4 mA threshold (current output min. 4 mA)

The signal current in interference-free operation is set to 3.8 to 20.5 mA as standard. Selecting the 4 mA threshold guarantees that a minimum signal current of 4 mA is not undershot.

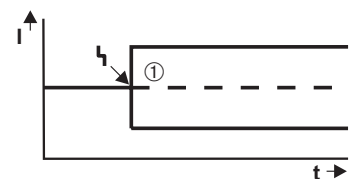
Main group: Sensor data			
#	Matrix (VH position)	Path through the menus	Entry
1	Select pressure unit		
	V7H3	► Off current output min. 4 mA	e.g. On Enter

6.3.9 Safety alarm

To signal an error, an error code is transmitted with the measured value. Safety alarm: The bar graph on the onsite display also assumes the value you have selected. The following values can be selected:

- MIN: 3.6 mA
- MAX: 22 mA
- CONTINUE: continue measuring

Main group: Basic calibration			
#	Matrix (VH position)	Path through the menus	Entry
1	Select safety alarm		
	V0H8	► Select safety	e.g. MAX. Enter



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Fig. 35: ① continue measurement

6.4 Locking/unlocking operation

After calibration or after entering all the parameters, operation can be locked using a three-digit code number other than 130. This locks all the fields and functions except V9H9 "Security locking". Entering 130 deactivates the locking.

Main group: Service			
#	Matrix (VH position)	Path through the menus	Entry
1	Locking operation		
	V9H9	► Security locking	e.g. 131 Enter
2	Disable locking		
	V9H9	► Security locking	130 Enter

6.5 Information on the measuring point

The following information on the measuring point can be called up with the handheld terminal or using the operating program:

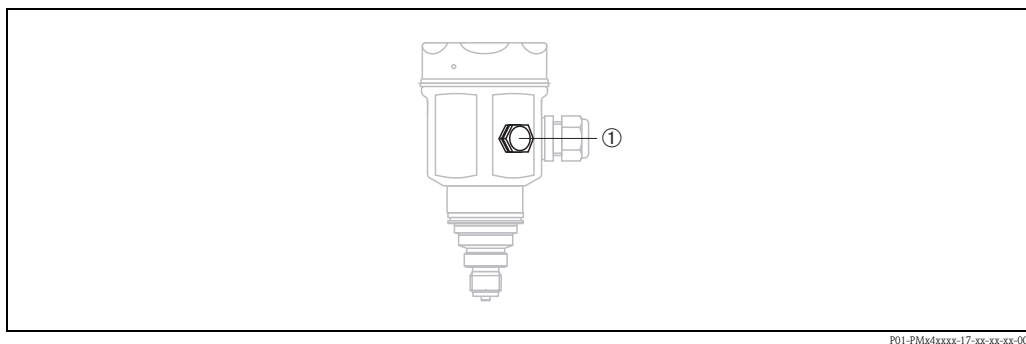
Matrix field	Display or entry
Measured values	
V0H0	Pressure primary value
V7H0	Current display: present current in mA
V7H8	Sensor pressure (unit in V0H9) can be selected
V9H7	Current damped pressure without bias correction
Sensor data	
V7H4	Lower calibration pressure
V7H5	Upper calibration pressure
V7H6	Low sensor limit (unit can be selected in V0H9)
V7H7	High sensor limit (unit can be selected in V0H9)
Information on the transmitter	
V2H2	8011/8012 = software number
V2H7	Sensor data number: Number of the entry in the sensor table (1 to 10), please take from sensor pass
V2H8	Sensor data value: Entry in sensor table, contains all sensor-specific data. Please take from sensor pass.
Error response mode	
V2H0	Current diagnostic code
V2H1	Last diagnostic code

6.5.1 Communication layer

Matrix field	Display
VAH0	Name of the measuring point. Here you can name the measuring point using max. 8 characters.
VAH1	System identification (descriptor) Here you can enter max. 16 characters.
VAH2	User text Here you can enter max. 8 characters.
VAH3	Device serial number
VAH4	Sensor serial number

7 Maintenance

Keep the pressure compensation and GORE-TEX® filter ① free from dirt.



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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 pointed objects, must be avoided.
- Observe the degree of protection of the device. → See Page 6, Section 2.1.1 "Nameplates".

8 Troubleshooting

8.1 Fault

If the Cerabar M detects an error, the following occurs:

- An error code is generated and flashes on the onsite display
- When the onsite display is connected, the bar graph accepts the selected value for the error message (MIN, MAX, CONTINUE)
- The display value and the bar graph flash
- Error codes can be read in the "Transmitter information" main group or in matrix fields V2H0 and V2H1

8.2 Warning

If the Cerabar M detects a warning, the following occurs:

- An error code is generated: Cerabar M continues to measure
- The scale flashes when the onsite display is connected
- Error codes can be read in the "Transmitter information" main group or in matrix fields V2H0 and V2H1

8.3 Error codes in V2H0 and V2H1

Code	Type	Cause and remedial action	Priority
E101	Fault	Sensor table checksum error ■ Appears when the sensor data are being entered. The error message disappears when the sensor data are entered completely and correctly. ■ Checksum is incorrect Check sensor data – see "Sensor data no." (V2H7) and "Sensor data value" (V2H8) parameters.	2
E103	Fault	Initialization active ■ The electronics are initialized after connecting the device. Wait for the initialization process to complete	1
E104	Warning	Sensor calibration ■ The values in V7H4 and V7H5 (Low sensor cal and High sensor cal) are too close to one another, e.g. following sensor recalibration ■ Perform a reset (code 2380) and recalibrate the sensor	8
E106	Fault	Upload/download active ■ Wait for download to complete.	5
E115	Fault	Sensor overpressure ■ Overpressure present. Reduce pressure until message disappears. ■ Cable connection sensor – electronic insert disconnected. Check cable connection. ■ Sensor defective. Replace sensor	3
E116	Fault	Download error (PC-transmitter) ■ During the download, the data are not correctly transmitted to the processor, e.g. because of open cable connections, spikes (ripple) on the supply voltage or EMC effects. Check cable connection PC – transmitter. Perform "5140" reset. Start download again.	6
E120	Fault	Sensor low pressure ■ Pressure too low. Increase pressure until message disappears. ■ Cable connection sensor – electronic insert disconnected. Check cable connection. ■ Sensor defective. Replace sensor.	4
E613	Warning	Current simulation active ■ Remains until the simulation is complete – see also Section 8.4.	7
E620	Warning	Measured value outside lower-range value/upper-range value	9

8.4 Current simulation

If the function or certain reactions of connected switching units need to be checked, a signal current can be simulated independently of the operating pressure present.

Main group: Additional functions			
#	Matrix (VH position)	Path through the menus	Entry
1	V7H1	► Simulation	ON
2	V7H2	► Simulate current	e.g. 22 mA

8.5 Reset

8.5.1 Reset via onsite operation

Use the Zero and Span keys to reset to the factory setting:

- To the lower-range value (Zero) = lower sensor measuring limit
- To the upper-range value (Span) = upper sensor measuring limit
- The bias pressure to zero = 0.0 pressure unit

1. Press the Zero and Span keys simultaneously.
2. Release the keys, press them a second time within 2 seconds and hold them for at least 7 seconds. Any reset that has taken place is confirmed on the onsite display (optional) with "Res".

8.5.2 Reset via communication

By entering a certain code, the matrix field entries can be reset partially or completely to the factory settings.

Main group: Additional functions			
#	Matrix (VH position)	Path through the menus	Entry
1	V2H9	► Reset	e.g. 2380

The Cerabar M makes a distinction between four different reset code numbers with different effects. See the following table to find out which parameters are reset by reset code numbers 5140, 2380, 2509 or 731.

Table of parameters that can be reset by the reset code numbers.

	H0	H1	H2	H3	H4	H5	H6	H7	H8	H9
V0 5140 2380 2509 731	Measured value	Set 4 mA = V7H6 = V7H6 = V7H6	Set 20 mA = V7H7 = V7H7 = V7H7	4 mA automat. deleted deleted deleted	20 mA automat. deleted deleted deleted	Set bias pressure 0.0 0.0 0.0	Bias pressure automat. deleted deleted deleted	Output damping 0.0 0.0 0.0	Select safety max. max. max.	Pressure unit bar
V2 5140 2380 2509 731	Diagnostic code	Last diag. code 0 0	Software no.							
V3 to V6										
V7 5140 2380 2509 731	Current display	Simulation Off	Simulate current deleted	Current min. 4 mA Off Off Off	Low Sen. Calibration = V7H6 = V7H6	High Sen. Calibration = V7H7 = V7H7	Lower Measuring Limit	Upper Measuring Limit	Sensor Pressure	
V8										
V9 5140 2380 2509 731							Pressure before bias corr.			Security locking 130
VA 5140 2380 2509 731	Measuring point deleted deleted	System ID deleted deleted	User text deleted	Serial number	Serial No. Sensor					

8.6 Repair

The Endress+Hauser repair concept provides for measuring devices to have a modular design and that the customer may also carry out repairs.

The "Spare parts" section contains all the spare parts, and their order numbers, which you can order from Endress+Hauser to repair the Cerabar M. Where necessary, the spare parts also include replacement instructions.



Note!

- For certified devices, please refer to the "Repair of Ex-certified devices" section.
- For more information on service and spare parts contact Endress+Hauser Service.
→ See www.endress.com/worldwide.
- Only the process connection on the PMC41 can be exchanged by the customer. For all other models, a device without a display and housing can be ordered. → See Technical Information TI399P, "Ordering information" section.

8.7 Repair of Ex-certified devices



Warning!

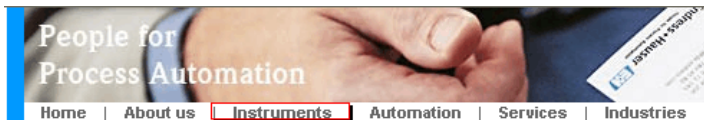
When repairing Ex-certified devices, please note the following:

- Only specialist personnel or Endress+Hauser may undertake repairs to certified devices.
- Relevant standards, national hazardous area regulations and safety instructions and certificates must be observed.
- Only use genuine spare parts from Endress+Hauser.
- When ordering spare parts, please check the device designation on the nameplate. Identical parts may only be used as replacements.
- Electronic inserts or sensors already in use in a standard device may not be used as spare parts for a certified device.
- Carry out repairs according to the instructions. After a repair, the device must fulfill the requirements of the specified individual tests.
- A certified device may only be converted to another certified version by Endress+Hauser.
- All repairs and modifications must be documented.

8.8 Spare Parts

An overview of the spare parts for your device is available in the internet at www.endress.com. To obtain information on the spare parts, proceed as follows:

1. Go to "www.endress.com" and select your country.
2. Click "Instruments".



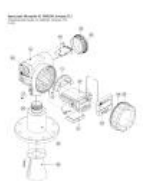
3. Enter the product name into the "product name" field.

Endress+Hauser product search

Via product name
Enter the product name

4. Select the device.
5. Click the "Accessories/Spare parts" tab.

General information	Technical information	Documents/ Software	Service	Accessories/ Spare parts
► Accessories ▼ All Spare parts ► Housing/housing accessories ► Sealing ► Cover ► Terminal module ► HF module ► Electronic ► Power supply ► Antenna module				
Advice Here you'll find a list of all available accessories and spare parts. To only view accessories and spare parts specific to your product(s), please contact us and ask about our Life Cycle Management Service.				



◀ | 1 / 2 | ▶ | 🔍

6. Select the required spare parts (You may also use the overview drawing on the right side of the screen.)

When ordering spare parts, always quote the serial number indicated on the nameplate. As far as necessary, the spare parts also include replacement instructions.

8.9 Return

Before you send in a device for repair or inspection, perform the following:

- Remove all traces of the fluid. Pay special attention to the grooves for seals and crevices which could contain fluid residues. This is especially important if the fluid is hazardous to health. Please refer also to the "Declaration of Hazardous Material and Decontamination".

Please enclose the following when returning the device:

- The duly completed and signed "Declaration of Hazardous Material and Decontamination". Only then can Endress+Hauser inspect or repair the returned device.
- The chemical and physical properties of the fluid.
- A description of the application.
- A description of the error which occurred.
- Special instructions on handling, if necessary, e.g. safety data sheet as per EN 91/155/EEC.

8.10 Disposal

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

8.11 Software history

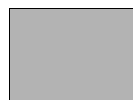
Date	Software version	Changes to software	Operating Instructions
04.1999	1.0	Original software. Compatible with: – Commuwin II – HART Communicator 375 – FieldCare – AMS – PDM	BA201P/00/en/05.99 52002513
02.2001/ 02.2002	1.1/1.2	Reset onsite of Upper-range value, Lower-range value, bias pressure/Adjusted for OEM manufacturers	BA201P/00/en/04.02 52013871
			BA201P/00/en/11.03 52013871
			BA201P/00/en/12.03 52022183
			BA201P/00/en/06.08 71064502

9 Technical data

For technical data, please refer to the Technical Information TI399P for Cerabar M.

10 Operating matrix

	H0	H1	H2	H3	H4	H5	H6	H7	H8	H9
V0 Basic calibration	Measured value	Set 4 mA	Set 20 mA	Confirm 4 mA automat.	Confirm 20 mA automat.	Set bias pressure	Confirm bias pressure automat.	Set output damping 0 to 40 s	Select safety MIN. MAX. CONTINUE	Select pressure unit
V1										
V2 Transmitter information	Diagnostic code	Last diagnostic	8011/8012 Software No.					Sensor data No.	Sensor data value	Reset
V3 to V6										
V7 Sensor data	Current display	Off Simulation	Simulate current	Off Current output min. 4 mA	Low sensor calibration	High sensor calibration	Lower measuring limit	Upper measuring limit	Sensor pressure	
V8										
V9 Service								Pressure before bias correction		Security locking: ≠ 130 Unlocking device: 130 Release V2H7, V2H8: 333
VA Communication	Measuring point	System identification	User text	Serial number	Serial number sensor					



= display field

The following matrix gives an overview of the factory settings.
You can also enter your values here.

	H0	H1	H2	H3	H4	H5	H6	H7	H8	H9
V0	—	0.0	V7H7	—	—	0.0	—	0.0	MAX.	bar
V1										
V2		0	xxxx							0
V3 to V6										
V7	—	OFF	—	OFF			—	—	—	0
V8										
V9								—		130
VA	—	—								

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Declaration of Hazardous Material and De-Contamination

Erklärung zur Kontamination und Reinigung

RA No.

Please reference the Return Authorization Number (RA#), obtained from Endress+Hauser, on all paperwork and mark the RA# clearly on the outside of the box. If this procedure is not followed, it may result in the refusal of the package at our facility.
Bitte geben Sie die von E+H mitgeteilte Rücklieferungsnummer (RA#) auf allen Lieferpapieren an und vermerken Sie diese auch außen auf der Verpackung. Nichtbeachtung dieser Anweisung führt zur Ablehnung ihrer Lieferung.

Because of legal regulations and for the safety of our employees and operating equipment, we need the "Declaration of Hazardous Material and De-Contamination", with your signature, before your order can be handled. Please make absolutely sure to attach it to the outside of the packaging.

Aufgrund der gesetzlichen Vorschriften und zum Schutz unserer Mitarbeiter und Betriebseinrichtungen, benötigen wir die unterschriebene "Erklärung zur Kontamination und Reinigung", bevor Ihr Auftrag bearbeitet werden kann. Bringen Sie diese unbedingt außen an der Verpackung an.

Type of instrument / sensor

Geräte-/Sensortyp _____

Serial number

Seriennummer _____

☐ Used as SIL device in a Safety Instrumented System / Einsatz als SIL Gerät in Schutzeinrichtungen

Process data / Prozessdaten

Temperature / Temperatur _____ [°F] _____ [°C]

Pressure / Druck _____ [psi] _____ [Pa]

Conductivity / Leitfähigkeit _____ [µS/cm]

Viscosity / Viskosität _____ [cp] _____ [mm²/s]

Medium and warnings

Warnhinweise zum Medium



	Medium / concentration Medium / Konzentration	Identification CAS No.	flammable entzündlich	toxic giftig	corrosive ätzend	harmful/ irritant gesundheitsschädlich/ reizend	other * sonstiges*	harmless unbedenklich
Process medium Medium im Prozess								
Medium for process cleaning Medium zur Prozessreinigung								
Returned part cleaned with Medium zur Endreinigung								

* explosive; oxidising; dangerous for the environment; biological risk; radioactive

* explosiv; brandfördernd; umweltgefährlich; biogegefährlich; radioaktiv

Please tick should one of the above be applicable, include safety data sheet and, if necessary, special handling instructions.

Zutreffendes ankreuzen; trifft einer der Warnhinweise zu, Sicherheitsdatenblatt und ggf. spezielle Handhabungsvorschriften beilegen.

Description of failure / Fehlerbeschreibung _____

Company data / Angaben zum Absender

Company / Firma _____	Phone number of contact person / Telefon-Nr. Ansprechpartner: _____
Address / Adresse _____	Fax / E-Mail _____
_____	Your order No. / Ihre Auftragsnr. _____

"We hereby certify that this declaration is filled out truthfully and completely to the best of our knowledge. We further certify that the returned parts have been carefully cleaned. To the best of our knowledge they are free of any residues in dangerous quantities."

"Wir bestätigen, die vorliegende Erklärung nach unserem besten Wissen wahrheitsgetreu und vollständig ausgefüllt zu haben. Wir bestätigen weiter, dass die zurückgesandten Teile sorgfältig gereinigt wurden und nach unserem besten Wissen frei von Rückständen in gefahrbringender Menge sind."

(place, date / Ort, Datum)

Name, dept./ Abt. (please print / bitte Druckschrift)

Signature / Unterschrift

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