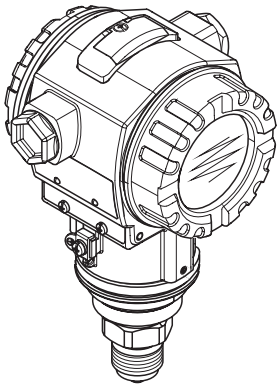
Level Pressure Flow Temperature Liquid Analysis Registration Systems Components Services Solutions

Brief Operating Instructions

# Cerabar S

## PMC71, PMP71, PMP72, PMP75

Process pressure measurement



These are Brief Operating Instructions.
For more detailed information, please refer to the Operating Instructions and the additional documentation on the CD-ROM provided.
These Brief Operating Instructions are not intended to replace the Operating Instructions provided in the scope of supply.

The complete device documentation consists of:
- these Brief Operating Instructions
- a CD-ROM with:
  - the Operating Instructions
  - Technical Information

KA1022P/00/EN/06.09
71095442

Endress+Hauser

People for Process Automation

# Table of contents

# 1 Safety instructions

## 1.1 Designated use

The Cerabar S 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 must only be installed, connected, commissioned and maintained by qualified and authorized specialists (e.g. electrical technicians) in full compliance with the instructions in this manual, the applicable norms, legal regulations and certificates (depending on the application).
- The specialist must have read and understood this manual and must follow the instructions it contains. If you are unclear on anything in these Brief Operating Instructions, you must read the Operating Instructions (on the CD-ROM). The Operating Instructions provide detailed information on the device/measuring system.
- The device may only be modified or repaired if such work is expressly permitted in the Operating Instructions (→ see CD-ROM).
- If faults cannot be rectified, the device must be taken out of service and secured against unintentional commissioning.
- Do not operate damaged devices. Mark them as defective.

## 1.3 Operational safety and process safety

- Alternative monitoring measures must be taken to ensure operational safety and process safety during configuration, testing and maintenance work on the device.
- The device is safely built and tested according to state-of-the-art technology and has left the factory in perfect condition as regards technical safety. The applicable regulations and European standards have been taken into account.
- Pay particular attention to the technical data on the nameplate.
- Devices for use in hazardous areas are fitted with an additional nameplate. If the device is to be installed in an explosion hazardous area, then the specifications in the certificate as well as all national and local regulations must be observed. The device is accompanied by separate "Ex documentation", which is an integral part of this Operating Instructions. 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.

## 1.4 Return

Follow the instructions on returning the device as outlined in the Operating Instructions on the CD-ROM provided.

## 1.5 Safety icons

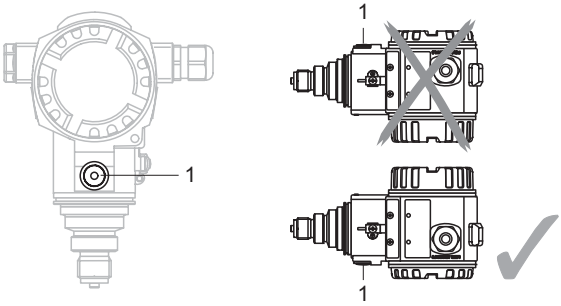
| Symbol | Meaning |
|---|---|
| ⚠ | **Warning!**<br>A warning highlights actions or procedures which, if not performed correctly, will lead to personal injury, a safety hazard or destruction of the instrument. |
| ☝ | **Caution!**<br>Caution highlights actions or procedures which, if not performed correctly, may lead to personal injury or incorrect functioning of the instrument. |
| ✎ | **Note!**<br>A note highlights actions or procedures which, if not performed correctly, may indirectly affect operation or may lead to an instrument response which is not planned. |

# 2 Installation

## 2.1 General installation instructions

⚠ Warning!
The process seal is not allowed to press on the process isolating diaphragm as this could affect the measurement result.

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




- Keep the pressure compensation and GORE-TEX® filter (1) free from contaminations.
- Do not clean or touch process isolating diaphragm of the diaphragm seals with hard or pointed objects..

- Due to the orientation of the Cerabar S, there may be a shift in the measured value, i.e. when the container is empty, the measured value does not display zero. You can correct this zero point shift either via the "zero" key on the electronic insert, or on the outside of the device or via the on-site display. → See Page 13, Section 4.2.1 "Position of operating elements", Page 14, Section 4.2.2 "Function of the operating elements" and Page 23, Section 5.1 "Position adjustment".
- For PMP75, please refer to Section 2.3 "Installation instructions for devices with diaphragm seals", Page 6.
- The PMC71 High temperature version, the PMP72 and the PMP75 must only be insulated up to a certain height.
- To ensure optimal readability of the on-site display, it is possible to rotate the housing up to 380°.
- The on-site display can be rotated in 90° stages.
- Endress+Hauser offers a mounting bracket for installing on pipes or walls.

## 2.2 Installation instructions for devices without diaphragm seals PMP71, PMP72, PMC71

Cerabar S without diaphragm seal are mounted as per the norms for a manometer (DIN EN 837-2). We recommend the use of shut-off devices and siphons. The orientation depends on the measuring application.

### 2.2.1 Pressure measurement

**Pressure measurement in gases**

- Mount Cerabar S with shut-off device above the tapping point so that the condensate can flow into the process.

**Pressure measurement in steams**

- Mount Cerabar S with siphon below the tapping point. The siphon reduces the temperature to almost ambient temperature.
- Fill the siphon with fluid before commissioning.

**Pressure measurement in liquids**

- Mount Cerabar S with shut-off device below or at the same level as the tapping point.

### 2.2.2 Level measurement

- Mount Cerabar S below the lowest measuring point.
- Do not mount the device at the following positions:
  In the fill flow, in the tank outlet or at a point in the container which could be affected by pressure pulses from an agitator.
- The calibration and functional test can be carried out more easily if you mount the device after a shut-off device.

## 2.3 Installation instructions for devices with diaphragm seals PMP75

Note!

- The diaphragm seal, together with the pressure transmitter, forms a closed, calibrated system, which is filled through openings in the diaphragm seal and in the measurement system of the pressure transmitter. This openings are sealed and must not be opened.
- Do not remove the protection of the process isolating diaphragm until shortly before installation.
- When using a mounting bracket, sufficient strain relief must be ensured for the capillaries in order to prevent the capillary bending down (bending radius ≥ 100 mm).
- Please note that the hydrostatic pressure of the liquid column in the capillary can cause zero point shift. The zero point shift can be corrected. → See Page 13, Section 4.2.1 "Position of operating elements", Page 14, Section 4.2.2 "Function of the operating elements" and Page 23, Section 5.1 "Position adjustment".
- Please note the application limits of the diaphragm seal filling oil as detailed in the Technical Information for TI383P (PMP75), TI438P (PMP72), Section "Planning instructions for diaphragm seal systems" or at "www.endress.com/applicator".

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 lines
- insulate if the ambient temperature is below ore above the reference temperature
- with a bending radius of ≥100 mm.

### 2.3.1 Vacuum application

For applications under vacuum, Endress+Hauser recommends mounting the pressure transmitter underneath the diaphragm seal. A vacuum load of the diaphragm seal caused by the presence of filling oil in the capillary is hereby prevented.

When the pressure transmitter is mounted above the diaphragm seal, the maximum height difference H1 in accordance with the illustration below on the left must not be exceeded. The maximum height difference is dependent on the density of the filling oil and the smallest ever pressure that is permitted to occur at the diaphragm seal (empty container), see illustration below, on the right.

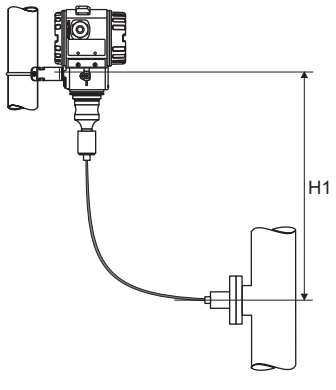



*Fig. 1: Installation above the diaphragm seal*

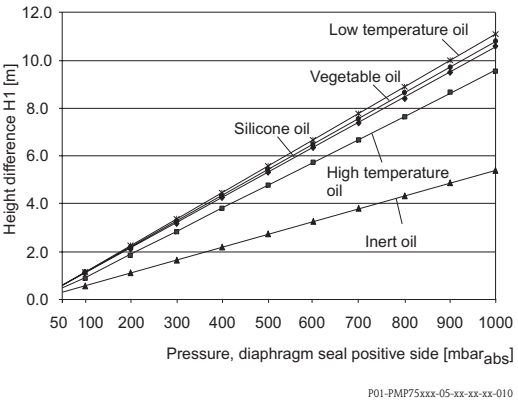



*Fig. 2: Diagram of maximum installation height above the diaphragm seal for vacuum applications dependent on the pressure at the diaphragm seal*

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

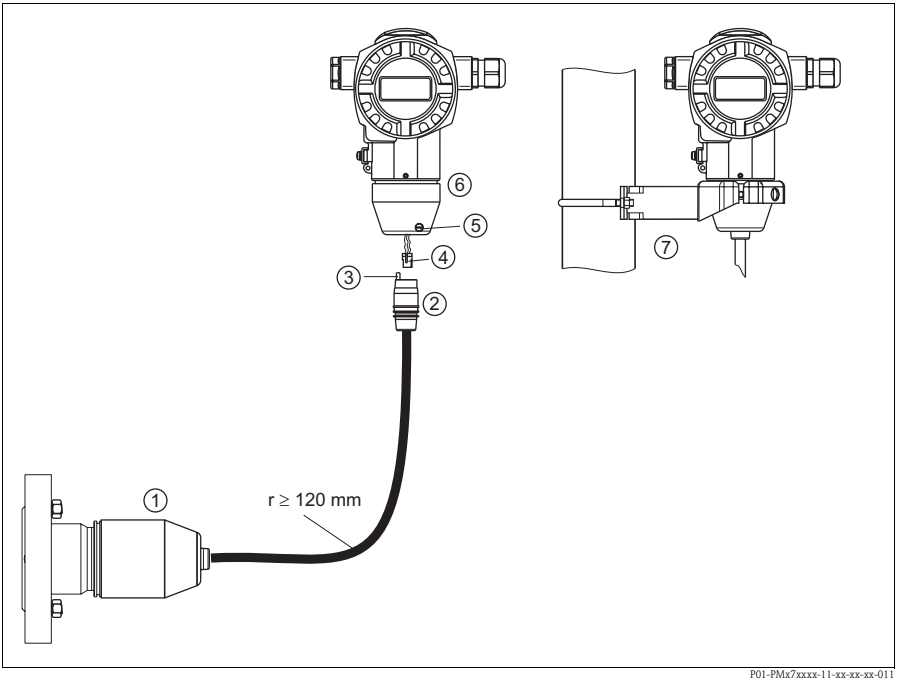



*Fig. 3: "Separate housing" version*

*1 In the "separate housing" version, the sensor is supplied with process connection and cable fitted.*
*2 Cable with connection jack*
*3 Pressure compensation*
*4 Plug*
*5 Locking screw*
*6 Housing fitted with housing adapter, included*
*7 Mounting bracket suitable for wall and pipe mounting, included*

### Assembly and mounting

1. Connect plug (item 4) into the corresponding connection jack of the cable (item 2).
2. Plug the cable into the housing adapter (item 6).
3. Tighten the locking screw (item 5).
4. Mount the housing on a wall or pipe using the mounting bracket (item 7). When mounting on a pipe, tighten the nuts on the bracket uniformly with a torque of at least 5 Nm.
   Mount the cable with a bending radius (r) ≥ 120 mm.

# 3 Wiring

⚠ Warning!
- 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.

## 3.1 Connecting the device

✎ Note!
- Devices with integrated overvoltage protection must be earthed.
- Protective circuits against reverse polarity, HF influences and overvoltage peaks are installed.

- The supply voltage must match the supply voltage on the nameplate.
- Switch off the supply voltage before connecting the device.
- Remove housing cover of the terminal compartment.
- Guide cable through the gland. Preferably use twisted, screened two-wire cable.
- Connect device in accordance with the following diagram.
- Screw down housing cover.
- Switch on supply voltage.

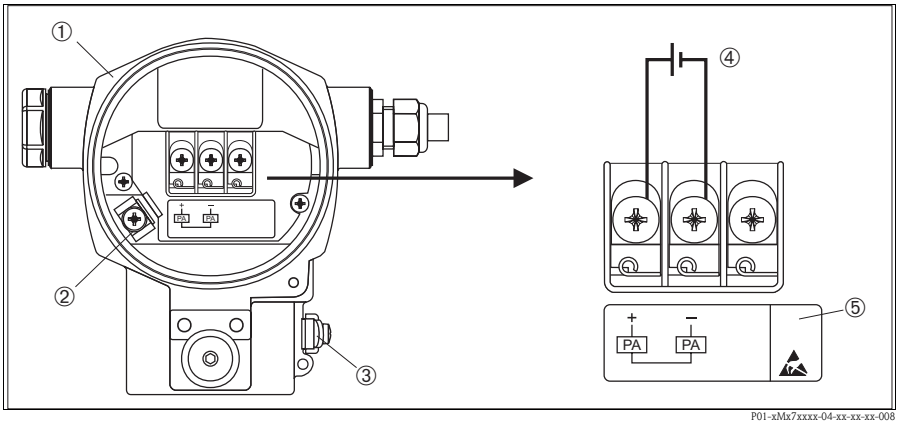



*Fig. 4: Electrical connection PROFIBUS PA → Observe also the following section. For devices with 7/8" or M12 plug see Operating Instructions.*

*1 Housing*
*2 Internal earth terminal*
*3 External earth terminal*
*4 Supply voltage, for version in non-hazardous area = 9...32 V DC*
*5 Devices with integrated overvoltage protection are labelled OVP (overvoltage protection) here.*

## 3.2 Connecting the measuring unit

### 3.2.1 Supply voltage

- Version for non-hazardous area: 9...32 V DC

### 3.2.2 Current consumption

Up to HW Version 1.10:
11 mA ±1 mA, switch-on current corresponds to IEC 61158-2, Clause21.

As of HW Version 02.00:
13 mA ±1 mA, switch-on current corresponds to IEC 61158-2, Clause 21.

As of Hardware Version 1.10, you will find a label in the device on the electronic insert.

### 3.2.3 Cable specification

- Use a twisted, screened two-wire cable, preferably cable type A.
- Terminals for wire cross-sections: 0.5...2.5 $mm^2$
- Outer cable diameter: 5...9 mm

Note!
For further information on the cable specifications, see Operating Instructions BA034S "Guidelines for planning and commissioning PROFIBUS DP/PA", PNO Guideline 2.092 "PROFIBUS PA User and Installation Guideline" and IEC 61158-2 (MBP).

### 3.2.4 Earthing and screening

Cerabar S must be earthed, for example by means of the external earth terminal.

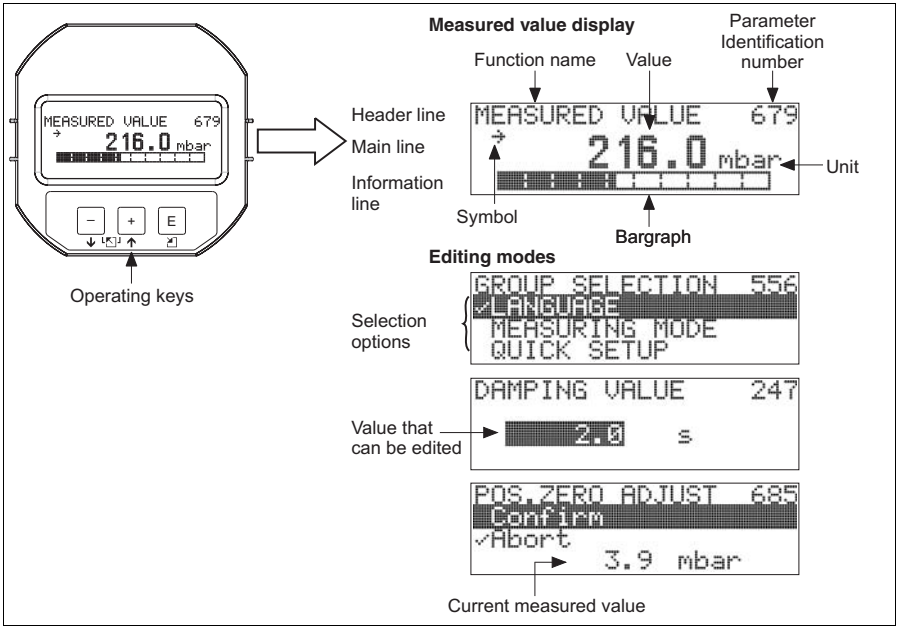
Different earthing and screening installation methods are available for PROFIBUS PA networks such as:

- Isolated installation (see also IEC 61158-2)
- Installation with multiple earthing
- Capacitive installation

# 4 Operation

## 4.1 On-site display (optional)

A 4-line liquid crystal display (LCD) is used for display and operation. The on-site display shows measured values, dialog texts, fault messages and notice messages.
The display of the device can be turned in 90° steps.
Depending on the installation position of the device, this makes it easy to operate the device and read the measured values.



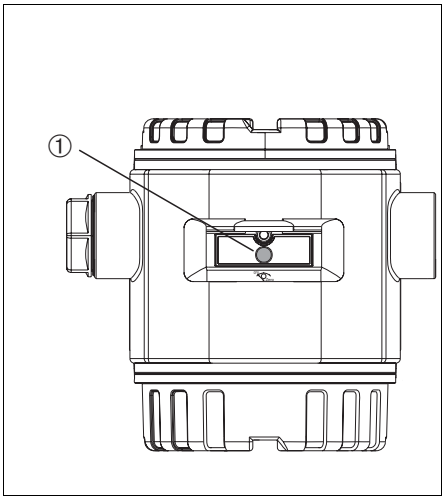
The following table illustrates the symbols that can appear on the on-site display. Four symbols can occur at one time.

| Symbol | Meaning |
|---|---|
|  | **Alarm symbol**<br>– Symbol flashing: warning, device continues measuring.<br>– Symbol permanently lit: error, device does not continue measuring.<br>*Note:* The alarm symbol may overlie the tendency symbol. |
|  | **Lock symbol**<br>The operation of the device is locked. Unlock device, → see Page 21, Section 4.5. |
|  | **Communication symbol**<br>Data transfer via communication |
|  | **Tendency symbol (increasing)**<br>The primary value of the Transducer Block is increasing. |
|  | **Tendency symbol (decreasing)**<br>The primary value of the Transducer Block is decreasing. |
|  | **Tendency symbol (constant)**<br>The primary value of the Transducer Block has remained constant over the past few minutes. |

## 4.2 Operating elements

### 4.2.1 Position of operating elements

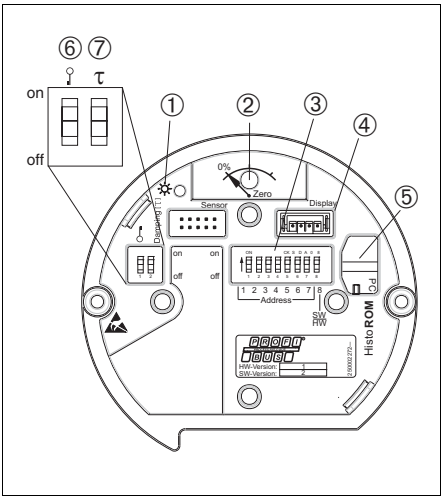
With regard to aluminium housings and stainless steel housing (T14), the operating key is located either outside the device under the protection cap or inside on the electronic insert. In hygenic stainless housings (T17), the operating key is always located inside on the electronic insert. Additionally, three operating keys are located on the optional on-site display.




P01-PMx7xxxx-19-xx-xx-xx-075

*Fig. 5: Operating key external, under the protective flap*

*1 Operating key for position adjustment (zero point-correction) or total reset*

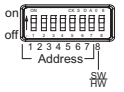
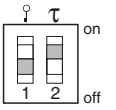



P01-xxxxxxxx-19-xx-xx-xx-105

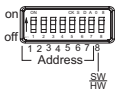
*Fig. 6: Operating key and operating elements, internal*

*1 Green LED to indicate value is accepted*
*2 Operating key for position adjustment (zero point-correction) or total reset*
*3 DIP switch for hardware address*
*4 Slot for optional display*
*5 Slot for optional HistoROM®/M-DAT*
*6 DIP-switch for locking/unlocking measured-value-relevant parameters*
*7 DIP-switch for damping on/off*

### 4.2.2 Function of the operating elements – on-site display not connected

| Operating key(s) | Meaning |
|---|---|
|  P02-xxxxxxxx-19-xx-xx-xx-107 | – Position adjustment (zero point correction): Press key for at least 3 seconds. If the LED on the electronic insert lights up briefly, the pressure applied has been accepted for position adjustment.<br>→ See also Page 25 (Pressure measuring mode) or Page 28 (Level measuring mode).<br>– Total reset: Press key for at least 12 seconds. If the LED on the electronic insert lights up briefly, the reset is being carried out. |
|  P01-xxxxxxxx-19-xx-xx-xx-109 | Set address in the bus. → See also Page 19, Section 4.4 "Configuring the device address". |
|  P01-xxxxxxxx-19-xx-xx-xx-108 | – DIP-switch 1: for locking/unlocking measured-value-relevant parameters<br>Factory setting: off (unlocked)<br>– DIP switch 2: damping on/off<br>Factory setting: on (damping on) |

### 4.2.3 Function of the operating elements – on-site display connected

| Operating key(s) | Meaning |
|---|---|
| + | – Navigate upwards in the picklist<br>– Edit the numerical values and characters within a function |
| − | – Navigate downwards in the picklist<br>– Edit the numerical values and characters within a function |
| E | – Confirm entry<br>– Jump to the next item |
| + and E | Contrast setting of on-site display: darker |
| − and E | Contrast setting of on-site display: brighter |
| + and − | ESC functions:<br>– Exit edit mode without saving the changed value.<br>– You are in a menu within a function group. The first time you press the keys simultaneously, you go back a parameter within the function group. Each time you press the keys simultaneously after that, you go up a level in the menu.<br>– You are in a menu at a selection level. Each time you press the keys simultaneously, you go up a level in the menu.<br>*Note:* The terms function group, level and selection level are explained in Section 4.3.1, Page 16. |
|  P01-xxxxxxxx-19-xx-xx-xx-109 | Set address in the bus. → See also Page 19, Section 4.4 "Configuring the device address". |

## 4.3 On-site operation via on-site display

### 4.3.1 Structure of the operating menu

The menu is split into four levels. The three upper levels are used to navigate while you use the bottom level to enter numerical values, select options and save settings.
→ For the entire menu see CD-ROM, Operating Instructions BA295P.
The structure of the OPERATING MENU depends on the measuring mode selected, e.g. if the "Pressure" measuring mode is selected, only the functions necessary for this mode are displayed.

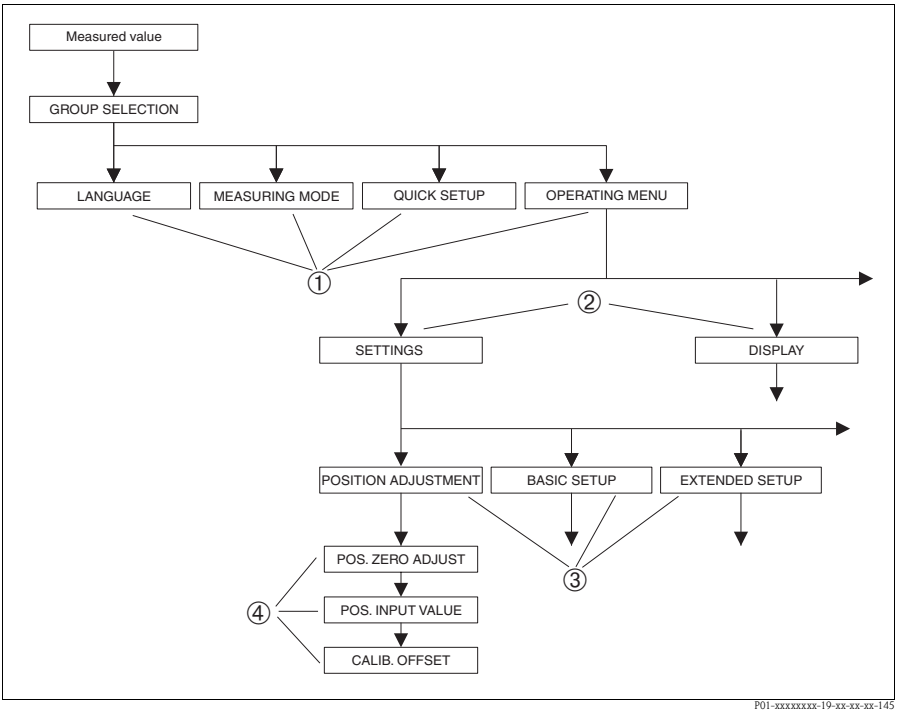
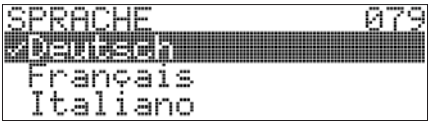
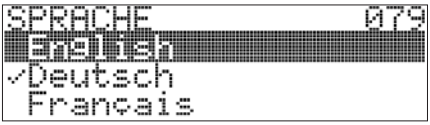
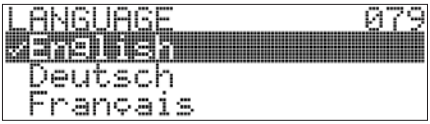



*Fig. 7: Structure of the operating menu*

*1 1. Selection level*
*2 2. Selection level*
*3 Function groups*
*4 Parameter*

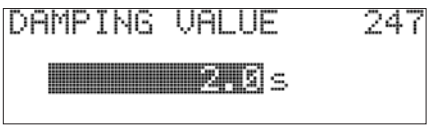
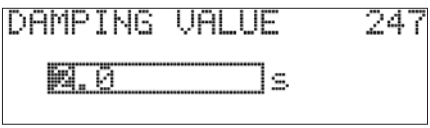
### 4.3.2 Selecting an option

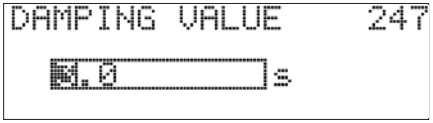
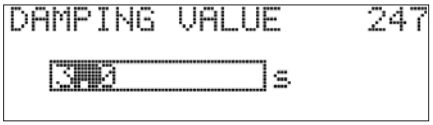
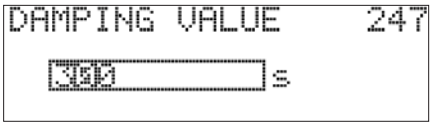
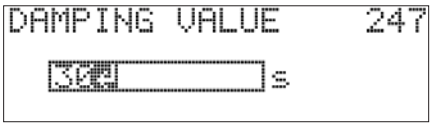
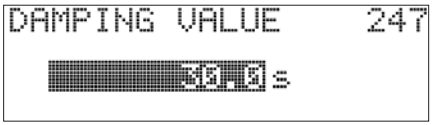
Example: select "English" as the language of the menu.

| On-site display | Operation |
|---|---|
|  P01-xxxxxxxx-19-xx-xx-xx-017 | German is selected as the language. A ✓in front of the menu text indicates the active option. |
|  P01-xxxxxxxx-19-xx-xx-xx-033 | Select English with "+" or "–". |
|  P01-xxxxxxxx-19-xx-xx-xx-034 | 1. Confirm your choice with "E". A ✓ in front of the menu text indicates the active option. (English is now selected as the menu language.)<br>2. Jump to the next item with "E". |

### 4.3.3 Editing a value

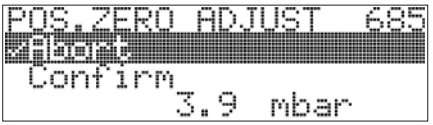
Example: adjusting DAMPING VALUE function from 2.0 s to 30.0 s. → See also Page 15, Section 4.2.3 "Function of the operating elements".

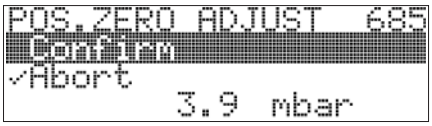
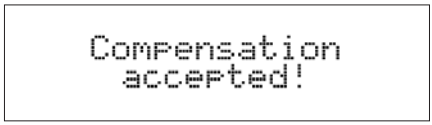
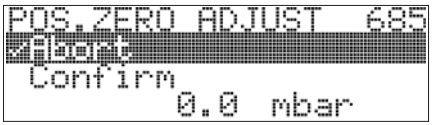
| On-site display | Operation |
|---|---|
|  P01-xxxxxxxx-19-xx-xx-xx-023 | The on-site display shows the parameter to be changed. The value highlighted in black can be changed. The "s" unit is fixed and cannot be changed. |
|  P01-xxxxxxxx-19-xx-xx-xx-027 | 1. Press "+" or "–" to get to the editing mode.<br>2. The first digit is highlighted in black. |

| On-site display | Operation |
|---|---|
|  P01-xxxxxxxx-19-xx-xx-xx-028 | 1. Use "+" to change "2" to "3".<br>2. Confirm "3" with "E". The cursor jumps to the next position (highlighted in black). |
|  P01-xxxxxxxx-19-xx-xx-xx-029 | The decimal point is highlighted in black, i.e. you can now edit it. |
|  P01-xxxxxxxx-19-xx-xx-xx-030 | 1. Keep pressing "+" or "–" until "0" is displayed.<br>2. Confirm "0" with "E".<br>The cursor jumps to the next position. ↵ is displayed and is highlighted in black. → See next graphic. |
|  P01-xxxxxxxx-19-xx-xx-xx-031 | Use "E" to save the new value and exit the editing mode. → See next graphic. |
|  P01-xxxxxxxx-19-xx-xx-xx-032 | The new value for the damping is now 30.0 s.<br>– Jump to the next parameter with "E".<br>– You can get back to the editing mode with "+" or "–". |

### 4.3.4 Taking pressure applied at device as value

Example: performing position adjustment.

| On-site display | Operation |
|---|---|
|  P01-xxxxxxxx-19-xx-xx-xx-158 | The bottom line on the on-site display displays the pressure present, here 3.9 mbar. |

| On-site display | Operation |
|---|---|
|  P01-xxxxxxxx-19-xx-xx-xx-159 | Use "+" or "–" to switch to the "Confirm" option. The active selection is highlighted in black. |
|  P01-xxxxxxxx-19-xx-xx-xx-037 | Use "E" to assign the value (3.9 mbar) to the POS. ZERO ADJUST parameter. The device confirms the calibration and jumps back to the parameter, here POS. ZERO ADJUST (see next graphic). |
|  P01-xxxxxxxx-19-xx-xx-xx-160 | Switch to the next parameter with "E". |

## 4.4 Configuring the device address

Note the following points:
- An address must be assigned to every PROFIBUS PA device. Only when the address is configured correctly will the device be recognised by the control system/master.
- Each address may only be assigned once in each PROFIBUS PA network.
- Valid device addresses are in the range from 0 to 125.
- The address 126 set at the factory can be used to check the function of the device and to connect to a PROFIBUS PA network already in operation. This address then has to be changed in order to integrate additional devices.
- All devices have the address 126 and software addressing on leaving the factory.
- The FieldCare operating program is delivered from the factory with the address 1.

There are two ways of assigning the device address to Cerabar S:
- Using a DP Class 2 master operating program, such as FieldCare or
- On site using the DIP switches

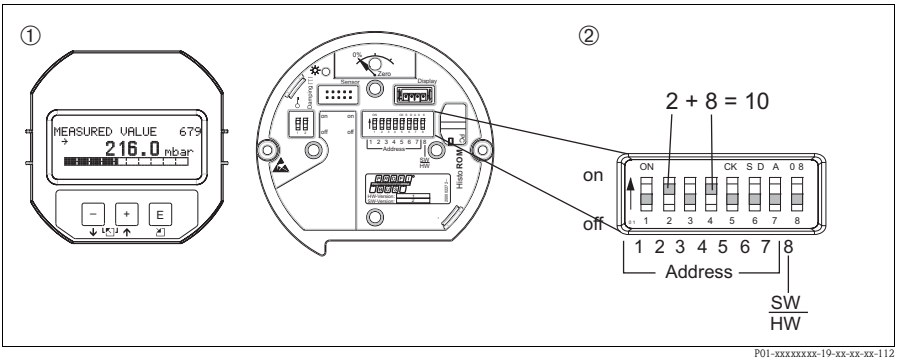



*Fig. 8: Configuring the device address using the DIP switches*

*1 If necessary, remove on-site display (optional)*
*2 Set the hardware address via the DIP switches*

### 4.4.1 Hardware addressing

Hardware addressing is configured as follows:

1. Set DIP switch 8 (SW/HW) to "Off".
2. Configure the address with DIP switches 1 to 7.
3. You have to wait 10 seconds for a change in address to take effect. The device is restarted.

| **DIP switch** | **1** | **2** | **3** | **4** | **5** | **6** | **7** |
|---|---|---|---|---|---|---|---|
| Weighting in Position "On" | 1 | 2 | 4 | 8 | 16 | 32 | 64 |
| Weighting in Position "Off" | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

## 4.5 Locking/unlocking operation

Once you have entered all the parameters, you can lock your entries against unauthorised and undesired access.

You have the following possibilities for locking/unlocking the operation:
- Via a DIP-switch on the electronic insert, locally on the display (→ see Page 13, Fig. 6).
- Via the on-site display (optional)
- Via communication e.g. FieldCare.

The -symbol on the on-site display indicates that operation is locked. Parameters which refer to how the display appears, e.g. LANGUAGE and DISPLAY CONTRAST can still be altered.

Note!
- If operation is locked by means of the DIP-switch, you can only unlock operation again by means of the DIP-switch. If operation is locked by means of remote operation e.g. FieldCare, you can only unlock operation again by means of remote operation.

The table provides an overview of the locking functions:

| **Locking via** | **View/ read parameter** | **Modify/write via**[1] | | **Unlocking via** | | |
|---|---|---|---|---|---|---|
| | | **On-site display** | **Remote operation** | **DIP-Switch** | **On-site display** | **Remote operation** |
| DIP-Switch | yes | no | no | yes | no | no |
| On-site display | yes | no | no | no | yes | yes |
| Remote operation | yes | no | no | no | yes | yes |

1) Parameters which refer to how the display appears, e.g. LANGUAGE and DISPLAY CONTRAST can still be altered.

| | **Locking/Unlocking operation via on-site display or remote operation** |
|---|---|
| Locking operation | 1. Select INSERT PIN NO. parameter,<br>Menu path: GROUP SELECTION → OPERATING MENU → OPERATION → INSERT PIN NO.<br>2. To lock operation, enter "0" for this parameter. |
| Unlocking operation | 1. Select INSERT PIN NO. parameter.<br>2. To unlock operation, enter "2457" for the parameter. |

# 5 Commissioning

⚠ Warning!

- If a pressure smaller than the minimum permitted pressure is present at the device, the messages "E120 Sensor low pressure" and "E727 Sensor pressure error – overrange" are output in succession.
- If a pressure greater than the maximum permitted pressure is present at the device, the messages "E115 Sensor overpressure" and "E727 Sensor pressure error – overrange" are output in succession.
- Messages E727, E115 and E120 are "Error"-type messages and can be configured as a "Warning" or an "Alarm". These messages are configured as "Warning" messages at the factory. These messages are configured as "Warning" messages at the factory. In applications where the user is consciously aware of the fact that the sensor range can be exceeded (e.g. cascade measurement), this setting prevents the transference of status BAD.
- We recommend setting messages E727, E115 and E120 to "Alarm" in the following instances (→ see Operating Instructions BA295P):
  – The sensor range does not have to be exceeded for the measuring application.
  – Position adjustment has to be carried out that has to correct a large measured error as a result of the orientation of the device (e.g. devices with a diaphragm seal).

## 5.1 Position adjustment

Due to the orientation of the device, there may be a shift in the measured value, i.e. when the container is empty, the measured value parameter does not display zero. There are three options to choose from when performing position adjustment.
(Menu path: GROUP SELECTION → OPERATING MENU → SETTINGS → POSITION ADJUSTMENT)

| Parameter name | Description |
|---|---|
| POS. ZERO ADJUST (685)<br>Entry | Position adjustment – the pressure difference between zero (set point) and the measured pressure need not be known. (A reference pressure is present at the device.)<br>**Example:**<br>– MEASURED VALUE = 2.2 mbar<br>– Correct the MEASURED VALUE via the POS. ZERO ADJUST parameter with the "Confirm" option. This means that you are assigning the value 0.0 to the pressure present.<br>– MEASURED VALUE (after pos. zero adjust) = 0.0 mbar<br>The CALIB. OFFSET parameter displays the resulting pressure difference (offset) by which the MEASURED VALUE was corrected.<br>**Factory setting:**<br>0 |
| POS. INPUT VALUE (563)<br>Entry | Position adjustment – the pressure difference between zero (set point) and the measured pressure need not be known. (A reference pressure is present at the device.)<br>**Example:**<br>– MEASURED VALUE = 0.5 mbar<br>– For the POS. INPUT VALUE parameter, specify the desired set point for the MEASURED VALUE, e.g. 2 mbar.<br>(MEASURED $VALUE_{new}$ = POS. INPUT VALUE)<br>– MEASURED VALUE (after entry for POS. INPUT VALUE) = 2.0 mbar<br>– The CALIB. OFFSET parameter displays the resulting pressure difference (offset) by which the MEASURED VALUE was corrected.<br>CALIB. OFFSET = MEASURED $VALUE_{old}$ – POS. INPUT VALUE,<br>here: CALIB. OFFSET = 0.5 mbar – 2.0 mbar = – 1.5 mbar)<br>**Factory setting:**<br>0 |
| CALIB. OFFSET (319)<br>Entry | Position adjustment – the pressure difference between zero (set point) and the measured pressure is known.<br>**Example:**<br>– MEASURED VALUE = 2.2 mbar<br>– Via the CALIB. OFFSET parameter, enter the value by which the MEASURED VALUE should be corrected. To correct the MEASURED VALUE to 0.0 mbar, you must enter the value 2.2 here.<br>(MEASURED $VALUE_{new}$ = MEASURED $VALUE_{old}$ – CALIB. OFFSET)<br>– MEASURED VALUE (after entry for calib. offset) = 0.0 mbar<br>**Factory setting:**<br>0 |

## 5.2 Pressure measurement

### 5.2.1 Quick Setup menu for Pressure measuring mode – on-site display

Note!
See also Page 15, Section 4.2.3 "Function of the operating elements" and Page 16, 4.3 "On-site operation via on-site display".

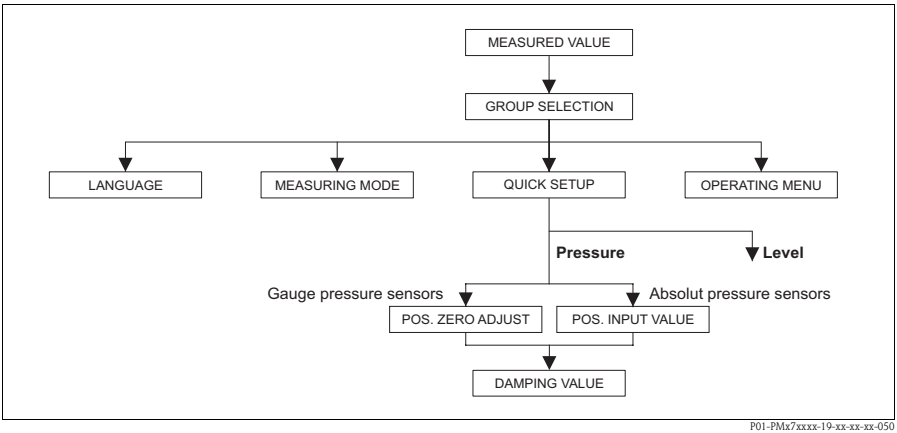



*Fig. 9: Quick Setup menu for Pressure measuring mode*

| **On-site operation** |
|---|
| **Measured value display**<br>On-site display: Switch from the measured value display to GROUP SELECTION with E. |
| **GROUP SELECTION**<br>Select MEASURING MODE. |
| **MEASURING MODE**<br>Select "Pressure" option. |
| **GROUP SELECTION**<br>Select QUICK SETUP menu. |
| **POS. ZERO ADJUST (gauge pressure sensors)**<br>Due to orientation of the device, there may be a shift in the measured value. You correct the MEASURED VALUE via the POS. ZERO ADJUST parameter with the "Confirm" option, i. e. you assign the value 0.0 to the pressure present. |
| **POS. INPUT VALUE (absolute pressure sensors)**<br>Due to orientation of the device, there may be a shift in the measured value. For the POS. INPUT VALUE parameter, specify the desired set point for the MEASURED VALUE. |
| **DAMPING TIME**<br>Enter damping time (time constant $\tau$). The damping affects the speed at which all subsequent elements, such as the on-site display, measured value and OUT value of the Analog Input Block react to a change in the pressure. |

### 5.2.2 On-site operation – on-site display not connected

If no on-site display is connected, the following functions are possible by means of the key on the electronic insert or on the exterior of the device:
- Position adjustment (zero point correction)
- Device reset, → see also Page 14, Section 4.2.2 "Function of the operating elements", Table.

✎ Note!
- The operation must be unlocked. → See page 21, Section 4.5 "Locking/unlocking operation".
- The pressure applied must be within the nominal pressure limits of the sensor. See information on the nameplate.

Carry out position adjustment:

1. Pressure is present at device.
2. Press key for at least 3 seconds. → See Page 13, Section 4.2.1 "Position of operating elements".
3. If the LED on the electronic insert lights up briefly, the pressure applied has been accepted for position adjustment.
   If the LED does not light up, the pressure applied was not accepted. Observe the input limits.

## 5.3 Level measurement

### 5.3.1 Quick Setup menu for Level measuring mode – on-site display

Note!

- Some parameters are only displayed if other parameters are appropriately configured (see the following table).
- The following parameters are set to the following values in the factory:
  - LEVEL SELETION: Level Easy Pressure
  - CALIBRATION MODE: Wet
  - OUTPUT UNIT or LIN. MEASURAND: %
  - EMPTY CALIB.: 0.0
  - FULL CALIB.: 100.0
- → For parameter description see CD-ROM, Operating Instructions BA296P.
- The quick setup is suitable for simple and quick commissioning. If you wish to make more complex settings, e.g. change the unit from "%" to "m", you will have to calibrate using the BASIC SETTINGS group.
- See also Page 15, Section 4.2.3 "Function of the operating elements" and Page 16, 4.3 "On-site operation via on-site display".

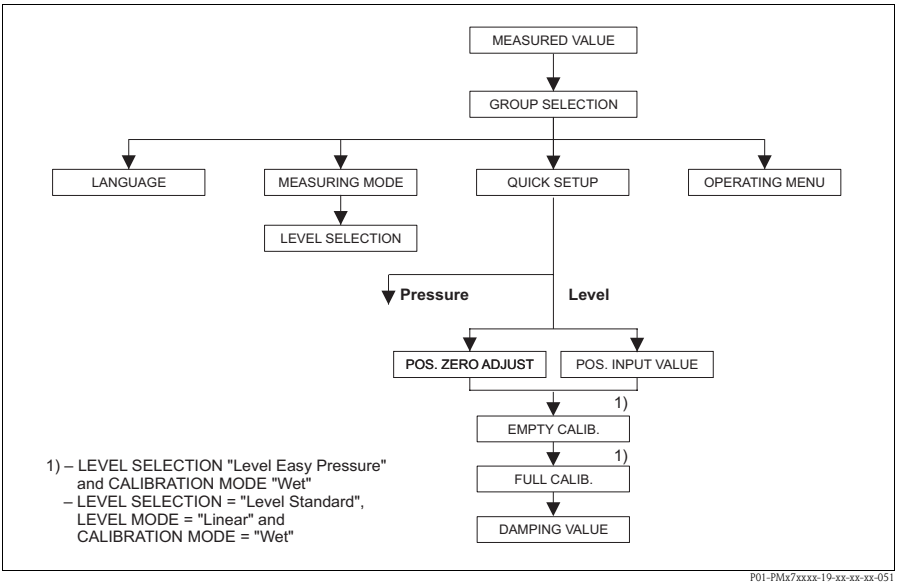



*Fig. 10: Quick Setup menu for the Level measuring mode*

| On-site operation |
|---|
| **Measured value display**<br>On-site display: Switch from the measured value display to GROUP SELECTION with E. |
| **GROUP SELECTION**<br>Select MEASURING MODE. |
| **MEASURING MODE**<br>Select "Level" option. |
| **LEVEL SELECTION**<br>Select level mode. |
| **GROUP SELECTION**<br>Select QUICK SETUP menu. |
| **POS. ZERO ADJUST (gauge pressure sensors)**<br>Due to orientation of the device, there may be a shift in the measured value. You correct the MEASURED VALUE via the POS. ZERO ADJUST parameter with the "Confirm" option, i. e. you assign the value 0.0 to the pressure present. |
| **POS. INPUT VALUE (absolute pressure sensors)**<br>Due to orientation of the device, there may be a shift in the measured value. For the POS. INPUT VALUE parameter, specify the desired set point for the MEASURED VALUE. |
| **EMPTY CALIB.** 1)<br>Enter level for the lower calibration point.<br>For this parameter, enter a level value which is assigned to the pressure present at the device. |
| **FULL CALIB.** 1)<br>Enter level for the upper calibration point.<br>For this parameter, enter a level value which is assigned to the pressure present at the device. |
| **DAMPING TIME**<br>Enter damping time (time constant $\tau$). The damping affects the speed at which all subsequent elements, such as the on-site display, measured value and OUT value of the Analog Input Block react to a change in the pressure. |

1) – LEVEL SELECTION "Level Easy Pressure" and CALIBRATION MODE "Wet"
– LEVEL SELECTION "Level Standard", LEVEL MODE "Linear" and CALIBRATION MODE "Wet"
(Menu path for CALIBRATION MODE: GROUP SELECTION → OPERATING MENU → SETTINGS → BASIC SETTINGS)

### 5.3.2 On-site operation – on-site display not connected

If no on-site display is connected, the following functions are possible by means of the key on the electronic insert or on the exterior of the device:
- Position adjustment (zero point correction)
- Device reset, → see also Page 14, Section 4.2.2 "Function of the operating elements", Table.

Note!
- The operation must be unlocked. → See page 21, Section 4.5 "Locking/unlocking operation".
- The pressure applied must be within the nominal pressure limits of the sensor. See information on the nameplate.

Carry out position adjustment:

1. Pressure is present at device.
2. Press key for at least 3 seconds. → See Page 13, Section 4.2.1 "Position of operating elements".
3. If the LED on the electronic insert lights up briefly, the pressure applied has been accepted for position adjustment.
   If the LED does not light up, the pressure applied was not accepted. Observe the input limits.

www.endress.com/worldwide

Endress+Hauser

People for Process Automation

KA1022P/00/EN/06.09
71095442
CCS/FM+SGML 6.0

71095442