



Level



Pressure



Flow



Temperature



Liquid  
Analysis



Registration



Systems  
Components



Services



Solutions

## Technical Information

# Cerabar T PMC131, PMP131, PMP135

## Pressure Transducer

With ceramic and metal sensors

For absolute pressure and gauge pressure measurement up to 400 bar

Extremely stable, overload-resistant and reliable



### Application

Cerabar T is a pressure transducer for measuring absolute pressure and gauge pressure in gases, vapors, liquids and dusts.

Hygienic and threaded connections are available as process connections.

### Your benefits

This compact pressure transducer impresses with its well-engineered construction:

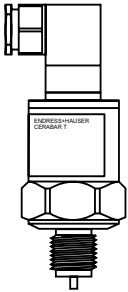
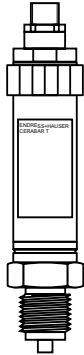
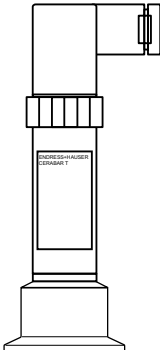
- High reproducibility and long-term stability.
- Finely graduated measuring ranges from vacuum up to 400 bar/6000 psi.
- Ceraphire® ceramic sensor: corrosion-proof, abrasion-proof and extremely overload-resistant.
- Deployed for pressure monitoring up to SIL 2 as per IEC 61508/IEC 61511-1
- Sensors
  - Dry capacitance ceramic sensor (Ceraphire®) for measuring ranges up to 40 bar - overload-resistant, vacuum-proof, stable against alternating load
  - Piezoresistive sensor with metal diaphragm for measuring ranges up to 400 bar

## Table of contents

<b>Function and system design</b> .....	<b>3</b>	<b>Mechanical construction</b> .....	<b>12</b>
Device selection .....	3	PMC131 .....	12
Measuring principle .....	3	PMP131 and PMP135 .....	13
Measuring system .....	4	PMP131 .....	13
<b>Input</b> .....	<b>4</b>	PMP135 .....	14
Measured variable .....	4	Weights .....	15
Measuring range .....	4	Material .....	15
<b>Output</b> .....	<b>4</b>	<b>Operating elements</b> .....	<b>15</b>
Output signal .....	4	Operating elements .....	15
Load .....	4	<b>Certificates and approvals</b> .....	<b>17</b>
Output signal .....	4	CE mark .....	17
Output current .....	4	Ex approvals .....	17
Power .....	5	Pressure Equipment Directive (PED) .....	17
Switch frequency .....	5	Functional safety SIL 2/IEC 61508/IEC 61511-1 .....	17
Input PLC .....	5	Hygiene standard .....	17
Inductive loads .....	5	Standards and guidelines .....	17
<b>Power supply</b> .....	<b>5</b>	Registered trademarks .....	17
PMC131 .....	5	<b>Ordering information</b> .....	<b>18</b>
PMP131 and PMP135 .....	6	PMC131 .....	18
Supply voltage .....	7	PMC131 (continued) .....	19
Residual ripple .....	7	PMP131 .....	20
Cable entry .....	7	PMP131 (continued) .....	21
<b>Performance characteristics</b> .....	<b>8</b>	PMP135 .....	22
Reference operating conditions .....	8	<b>Accessories</b> .....	<b>23</b>
Long-term stability .....	8	Welding neck with sealing taper .....	23
Maximum measured error		Welding neck with sealing surface .....	23
of analog output (under reference operating conditions) .....	8	Plug-in jack .....	23
Switch point .....	8	Plug-on display PHX20/PHX21 .....	23
Rise time (T90) .....	8	<b>Documentation</b> .....	<b>24</b>
Settling time .....	8	Field of Activities .....	24
Thermal change of the lower range value and the span .....	9	Technical Information .....	24
Temperature coefficient (TK) for lower range value and span .....	9	Operating Instructions .....	24
<b>Operating conditions (Installation instructions)</b> .....	<b>9</b>	Functional Safety Manual (SIL) .....	24
Orientation .....	9	Safety Instructions .....	24
Installation instructions .....	9		
Location dependence .....	9		
<b>Operating conditions (environment)</b> .....	<b>10</b>		
Ambient temperature range .....	10		
Storage temperature range .....	10		
Climate class .....	10		
Degree of protection .....	10		
Vibration resistance .....	10		
Electromagnetic compatibility .....	10		
<b>Operating conditions (process)</b> .....	<b>11</b>		
Process temperature range .....	11		
Overload resistance .....	11		
Vacuum resistance .....	11		
Pressure specifications .....	11		

## Function and system design

### Device selection

Cerabar T	PMC131	PMP131	PMP135
	 <p style="text-align: center;">P01-PMC131xx-14-xx-xx-xx-000</p> <p><b>With capacitive measuring cell and ceramic measuring diaphragm (Ceraphire®)</b></p>	 <p style="text-align: center;">P01-PMP131xx-14-xx-xx-xx-000</p> <p><b>With piezoresistive measuring cell and metallic measuring diaphragm</b></p>	 <p style="text-align: center;">P01-PMP135xx-14-xx-xx-xx-000</p> <p><b>With piezoresistive measuring cell and metallic measuring diaphragm for hygienic applications</b></p>
Field of application	Absolute pressure and gauge pressure	Absolute pressure and gauge pressure	Absolute pressure and gauge pressure in hygienic processes
Output	4 to 20 mA	– 4 to 20 mA – Switch output PNP	– 4 to 20 mA – Switch output PNP
Process connection	Thread: – G ½ – ½ MNPT and ¼ FNPT – G ½, bore 11 mm	Thread: – G ½ – ½ MNPT and ¼ FNPT – ½ MNPT, bore 4 mm – G ¼ – ¼ MNPT, bore 3.5 mm	Hygiene: – Clamp DN 22 (¾") – Tri-Clamp DN 25 to 38 (1" to 1½") – Tri-Clamp DN 40 to 51 (2") – G 1 – SMS 1½"
Measuring range	–1 to 0 bar/–100 to 0 kPa up to 0 to 40 bar/0 to 4 MPa	0 to 1 bar/0 to 100 kPa up to 0 to 400 bar/0 to 40 MPa	0 to 1 bar/0 to 100 kPa up to 0 to 40 bar/0 to 4 MPa
Process temperature	–20 to +100 °C	–25 °C to +70 °C	–25 to +100 °C (+135 °C for max. 1 hour)

### Measuring principle

#### PMC131

The measuring pressure causes a slight deflection of the ceramic diaphragm of the sensor. The pressure-proportional change in capacitance is measured at the electrodes of the ceramic sensor. The ceramic sensor is a dry sensor, i.e. no fill fluid is required for the pressure transfer. This makes the sensor completely suitable for vacuums. Extremely high stability, comparable with the material Alloy, is achieved by using ultrapure Ceraphire® as the ceramic.

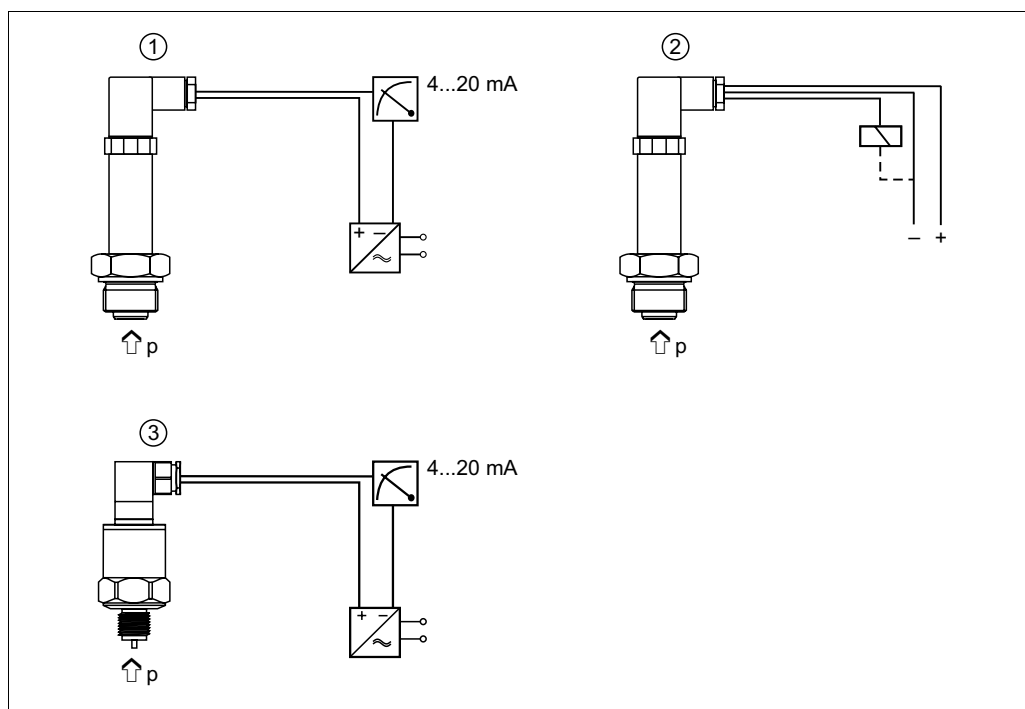
#### PMP131 and PMP135 with analog output

The process pressure acting upon the metallic separating diaphragm of the sensor is transmitted to a resistance bridge via a fluid. The pressure-proportional change of the bridge output voltage is measured and processed further.

#### PMP131 and PMP135 with switch output

The process pressure acting upon the metallic separating diaphragm of the sensor is transmitted to a resistance bridge via a fluid. A differential amplifier creates a standard signal from the pressure-proportional change in output voltage of the bridge. A comparator with an adjustable hysteresis compares this signal with the pre-set switch point and then activates the transistor output.

## Measuring system



P01-PMx13xxx-14-xx-xx-xx-002

- 1 PMP131, PMP135: analog output with transmitter power supply unit, e.g. RN 221N from Endress+Hauser
- 2 PMP131, PMP135: switch output with load, e.g. PLC, DCS, relay
- 3 PMC131: analog output with transmitter power supply unit, e.g. RN 221N from Endress+Hauser

## Input

## Measured variable

Absolute pressure or gauge pressure

## Measuring range

up to 400 bar/6000 psi, see Page 18, "Ordering information" section

## Output

### Analog output (PMC131, PMP131, PMP135)

## Output signal

4 to 20 mA

## Load

**PMC131**

$$R_{Lmax} [\Omega] \leq (U_S - 1 \text{ V}) / 0.02 \text{ A}$$

**PMP131 and PMP135**

$$R_{Lmax} [\Omega] \leq (U_S - 12 \text{ V}) / 0.02 \text{ A}$$

 $R_{Lmax}$ : Maximum load resistance

 $U_S$ : Supply voltage

### Switch output (PMP131, PMP135)

## Output signal

PNP switch output (positive voltage signal), rate depends on power supply voltage

## Output current

- Switch status ON:  $I_a \leq 500 \text{ mA}$
- Switch status OFF:  $I_a \leq 1 \text{ mA}$

**Power** max. 6 W

**Switch frequency** max. 10 Hz

**Input PLC**

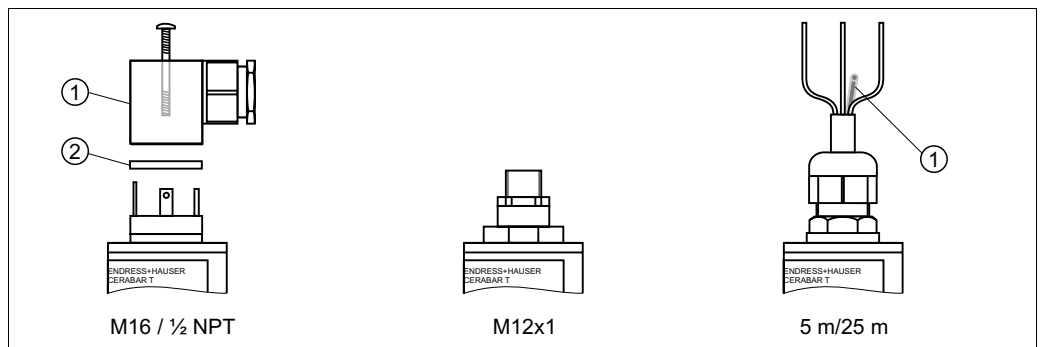
- Input resistance  $R_i \leq 2 \text{ k}\Omega$
- Input current  $I_i \geq 10 \text{ mA}$

**Inductive loads** To prevent electrical interference, only operate an inductive load (relays, contactors, solenoid valves) when directly connected to a protective circuit (free-wheeling diode or capacitor).

## Power supply

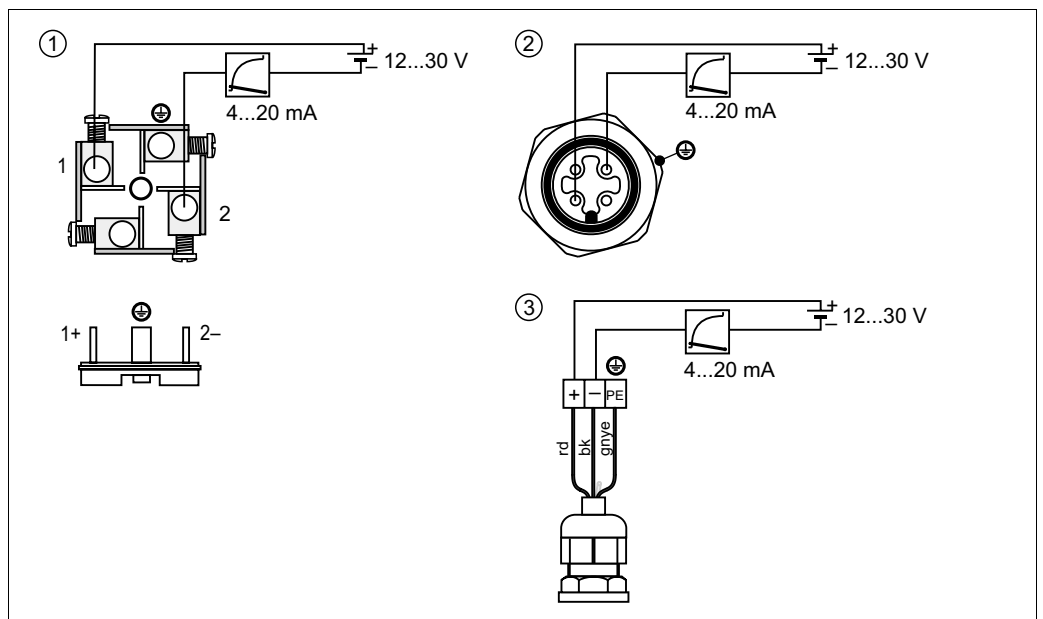
PMC131

### Plug/cable connection



Plug M 16 x 1.5/1/2 NPT	Plug M 12x1	5 m/25 m cable
① Plug-in housing		① Reference pressure line
② Gasket		

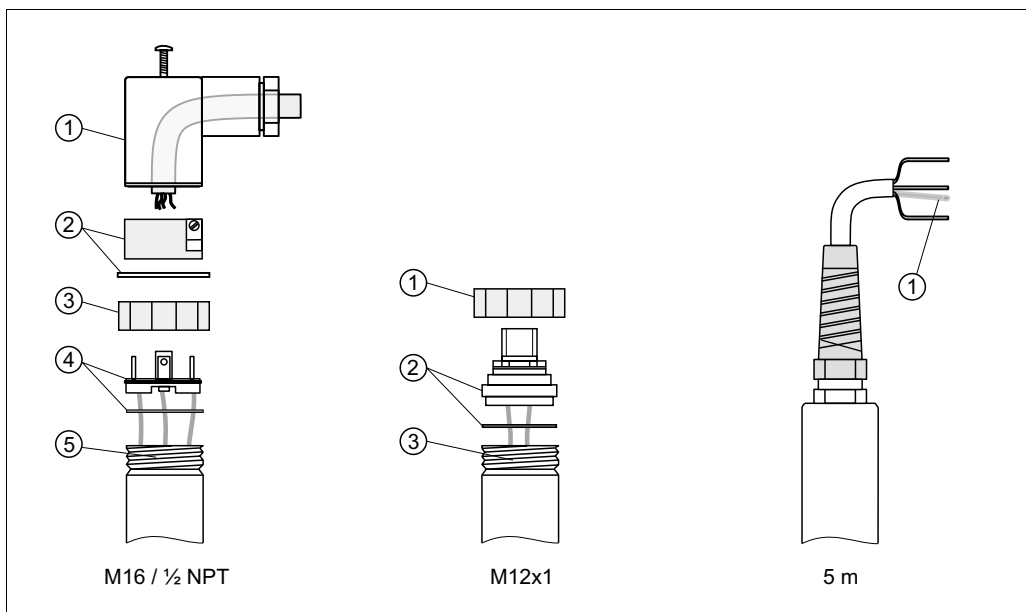
### Electrical connection



- 1 Plug M 16 x 1.5 or 1/2 NPT
- 2 Plug M 12 X 1
- 3 Cable (rd = red, bk = black, gnye = green-yellow)

PMP131 and PMP135

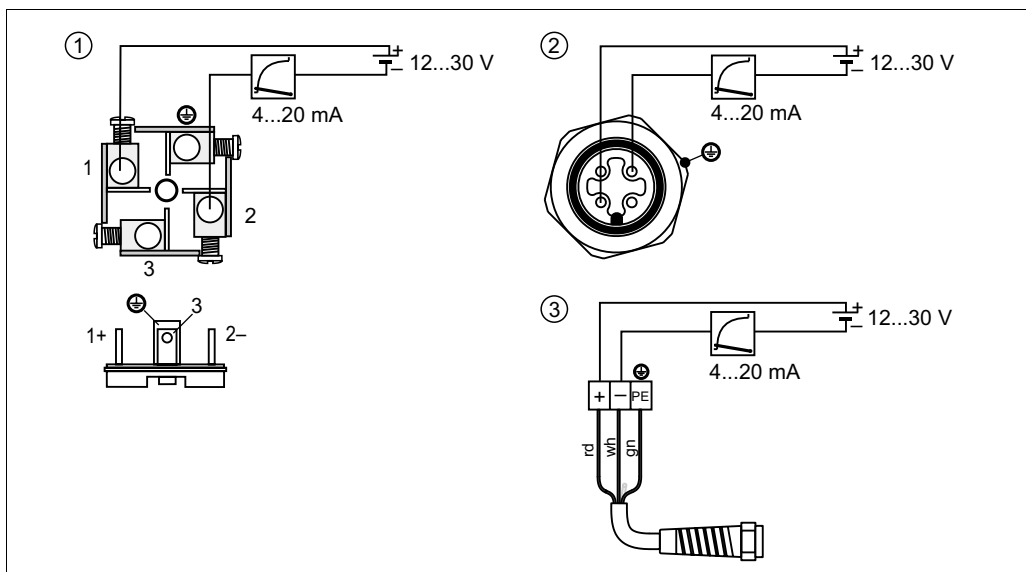
Plug/cable connection



P01-PMP13xxx-04-xx-xx-xx-001

Plug M 16 x 1.5/1/2 NPT	Plug M 12x1	5 m cable, only analog output
① Plug-in housing	① Coupling nut	① Reference pressure line
② Plug-in jack with gasket	② Connector with gasket	
③ Coupling nut	③ Operating potentiometer (inner)	
④ Plug with O-ring		
⑤ Operating potentiometer (inner)		

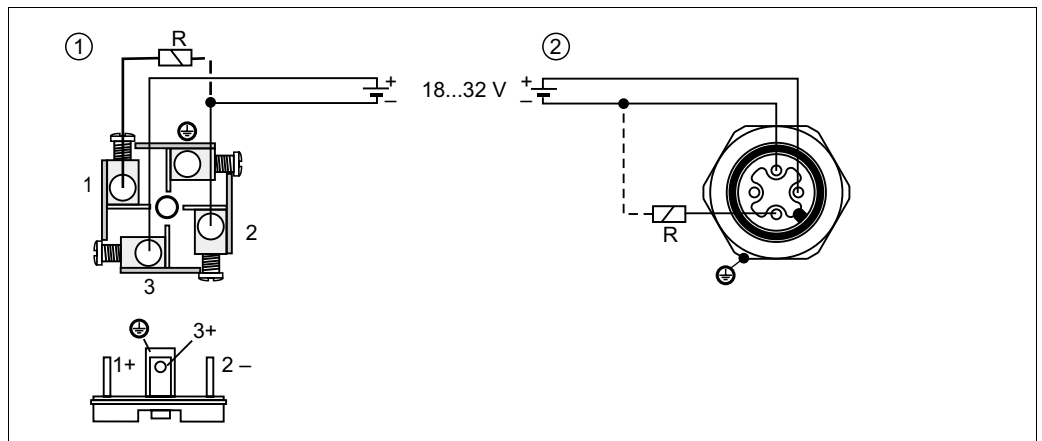
Electrical connection (analog output)



P01-PMP13xxx-04-xx-xx-xx-002

- 1 Plug M 16 x 1.5 or 1/2 NPT
- 2 Plug M 12 X 1
- 3 Cable (rd = red, wh = white, gn = green)

**Electrical connection (switch output)**



P01-PMP13xxx-04-xx-xx-xx-003

- 1 Plug M 16 x 1.5 or 1/2 NPT
- 2 Plug M 12 X 1
- R External load, e.g. relay, programmable logic controller, distributed control system

**Supply voltage**

**PMC131**  
11 to 30 V DC

**PMP131 and PMP135 (analog output)**

- For non-hazardous areas: 12 to 30 V DC
- Ex i: no-load voltage ≤ 26 V DC, short-circuit current ≤ 100 mA, power consumption ≤ 0.8 W

**PMP131 and PMP135 (switch output)**

- 18 to 32 V DC, current consumption without load < 20 mA, with reverse polarity protection

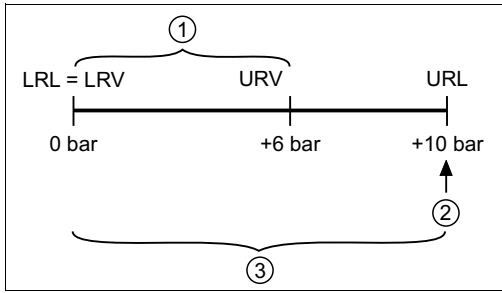
**Residual ripple**

- Analog output: max. 5 % of supply voltage
- Switch output: max. 10 % of supply voltage

**Cable entry**

→ See Page 18, "Ordering information" section.

## Performance characteristics

<b>Reference operating conditions</b>	as per DIN IEC 60770, $T_U = 25\text{ °C}$
<b>Long-term stability</b>	$\leq 0.15\%$ of URL per year
<b>Maximum measured error of analog output (under reference operating conditions)</b>	<p>The measured error comprises the non-linearity including hysteresis and non-reproducibility in accordance with the limit point method as per IEC 60770.</p> <p><b>PMC131</b></p> <ul style="list-style-type: none"> <li><math>\leq 0.5\%</math> of <math>(URL - LRL) \times TD</math></li> </ul> <p><i>Example: PMC131 version "AIR"</i></p> <ul style="list-style-type: none"> <li>Nominal value = 10 bar</li> <li>Upper range value (URV) = 6 bar</li> <li>Lower range value (LRV) = 0 bar</li> </ul> <p><i>Turn down (is set at factory):</i></p> <ul style="list-style-type: none"> <li>Nominal value / <math>(URV - LRV) = 10\text{ bar} / 6\text{ bar} = 10:6</math></li> </ul>
	 <p style="text-align: right; font-size: small;">P01-PMx13xxx-05-xx-xx-xx-001</p> <p><i>Example: PMC131 version "AIR"</i>  set span: 0 to 6 bar; nominal value = 10 bar</p> <ol style="list-style-type: none"> <li>Span set and calibrated at the factory (measuring range)</li> <li>Nominal value <math>\cong</math> Upper Range Limit (URL)</li> <li>Sensor measuring range</li> </ol> <p>LRL Lower Range Limit  URL Upper Range Limit  LRV Lower Range Value  URV Upper Range Value</p>
	<p><b>PMP131 and PMP135</b></p> <ul style="list-style-type: none"> <li><math>\leq 0.5\%</math> of URL</li> </ul>
<b>Switch point</b>	<p><b>PMP131 and PMP135</b></p> <ul style="list-style-type: none"> <li>Deviation: <math>\leq 1\%</math> of URL</li> <li>Non-reproducibility: <math>\leq 0.5\%</math> of URL</li> </ul>
<b>Rise time (T90)</b>	<p><b>PMC131</b></p> <p>20 ms</p>
<b>Settling time</b>	<p><b>PMP131 and PMP135</b></p> <p>2 to 5 ms</p>

<b>Thermal change of the lower range value and the span</b>	<p><b>PMC131</b></p> <p>Zero output, -20 to +85 °C:</p> <ul style="list-style-type: none"> <li>■ typically 1.5 % of URL</li> </ul> <p>Output span, -20 to +85 °C:</p> <ul style="list-style-type: none"> <li>■ Nominal value 0.4 to 40 bar: typically 0.8 % of URL</li> <li>■ Nominal value 0.1bar: typically 1.0 % of URL</li> </ul>
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<b>Temperature coefficient (<math>T_K</math>) for lower range value and span</b>	<p><b>PMP131 and PMP135 (analog output)</b></p> <p>Zero output:</p> <ul style="list-style-type: none"> <li>■ typically: 0.2 % of URL/10 K</li> <li>■ max.: 0.5 % of URL/10 K</li> <li>■ Nominal value <math>\leq</math> 6 bar: by 0.1 % of URL/10 K higher</li> </ul> <p>Output signal:</p> <ul style="list-style-type: none"> <li>■ typically: 0.2 % of URL/10 K</li> <li>■ max.: 0.5 % of URL/10 K</li> </ul> <p><b>PMP131 and PMP135 (switch output)</b></p> <p>Switch point:</p> <ul style="list-style-type: none"> <li>■ typically: 0.2 % of URL/10 K</li> <li>■ max.: 0.5 % of URL/10 K</li> </ul>
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## Operating conditions (Installation instructions)

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<b>Orientation</b>	anywhere
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<b>Installation instructions</b>	<p><b>PMP131</b></p> <p>Process connection G 1/2 flush-mounted, max. torque 40 Nm</p>
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<b>Location dependence</b>	<p><b>PMC131</b></p> <p>without influence</p> <p><b>PMP131 and PMP135</b></p> <p>Position-dependent zero point shift can be corrected by potentiometer setting, see also Page 16.</p>
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## Operating conditions (environment)

<b>Ambient temperature range</b>	<b>PMC131</b> –20 to +85 °C
	<b>PMP131 and PMP135</b> <ul style="list-style-type: none"> <li>■ For non-hazardous areas: –25 to +70 °C</li> <li>■ Ex i: –25 to +65 °C</li> </ul>
<b>Storage temperature range</b>	<b>PMC131</b> –50 to +100 °C
	<b>PMP131 and PMP135</b> –40 to +85 °C
<b>Climate class</b>	<b>PMC131</b> 4K4H as per DIN EN 60721-3
	<b>PMP131 and PMP135</b> 4Z with Z = 70 °C as per VDI/VDE 3540
<b>Degree of protection</b>	<b>PMC131</b> <ul style="list-style-type: none"> <li>■ Plug M16 or ½ NPT: IP 65/NEMA 4X</li> <li>■ Plug M12x1: IP 65/ NEMA 4</li> <li>■ Cable: IP 68/NEMA 6P (1 mWS/24 h)</li> </ul>
	<b>PMP131 and PMP135</b> <ul style="list-style-type: none"> <li>■ Plug M16 or ½ NPT: IP 65/NEMA 4X</li> <li>■ Plug M 12x1 and gauge pressure sensors: IP 65/NEMA 4X</li> <li>■ Plug M 12x1 and absolute pressure sensors: IP 68/NEMA 6P (1 mWS/24 h)</li> <li>■ Cable: IP 68/NEMA 6P (1 mWS/24 h)</li> </ul>
<b>Vibration resistance</b>	4M5 as per DIN EN 60721-3
<b>Electromagnetic compatibility</b>	<b>PMC131</b> Interference emission as per EN 61326 electrical device class B, Interference immunity as per EN 61326 appendix A (industrial use).
	<b>PMP131 and PMP135</b> Interference emission as per EN 61326 electrical device class B, Interference immunity as per EN 61326 appendix A (industrial use) and NAMUR recommendation NE 21.

## Operating conditions (process)

### Process temperature range

#### PMC131

- -20 to +100 °C
- Devices for oxygen application: -10 to +60 °C  
(Version "S" for feature 30 "Sensor gasket")

#### PMP131

-25 to +70 °C

#### PMP135

-25 to +100 °C (+135 °C for max. 1 hour)

### Overload resistance

→ See Page 18, "Ordering information" section.

### Vacuum resistance

#### PMC131

- with URV > 200 mbar / > 80 inH<sub>2</sub>O / > 1.5 psi: 0 mbar<sub>abs</sub>
- with URV = 200 mbar / = 50 inH<sub>2</sub>O or 80 inH<sub>2</sub>O: 500 mbar<sub>abs</sub>  
(Versions "D12", "D38", "W6O", "S4N")
- with URV = 20 mbar or 100 mbar / = 1.5 psi / = 15 inH<sub>2</sub>O or 30 inH<sub>2</sub>O: 700 mbar<sub>abs</sub>  
(Versions "D10", "D3W", "D31", "Q4D", "V6F", "W6N", "W6R")

#### PMP131 and PMP135

10 mbar<sub>abs</sub>

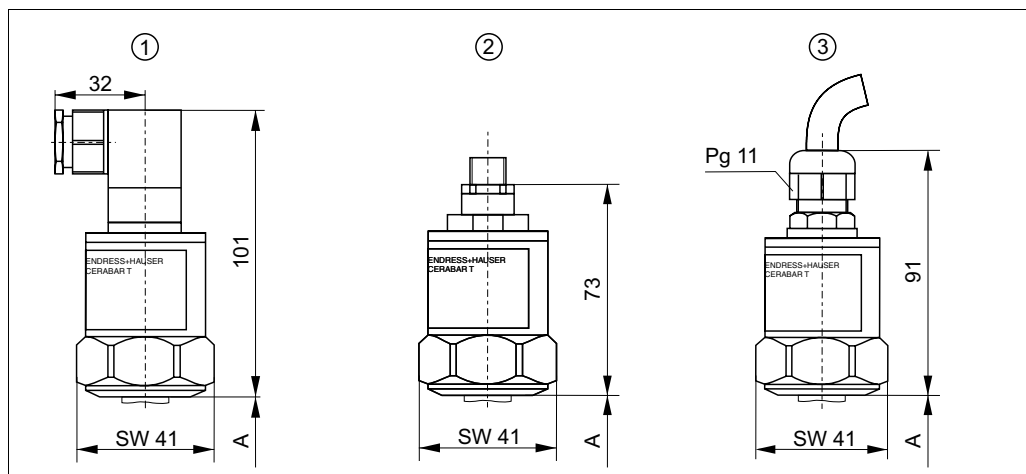
### Pressure specifications

- The MWP (maximum working pressure) of the device is specified on the nameplate. It depends on the weakest element, with regard to pressure, of the selected components. See the following sections:
  - → Page 18 ff, "Ordering information" section, feature 50 "Measuring range; MWP; Nominal value; OPL" or "Sensor range; MWP; OPL".
  - → Page 12 ff, "Mechanical construction" section.
 The MWP specification on the nameplate is based on a reference temperature of +20 °C and can be present over an unlimited period of time.
- The test pressure corresponds to the overload limit of the measuring device (Over Pressure Limit OPL) and must only be present for a limited period of time.

## Mechanical construction

PMC131

Housing



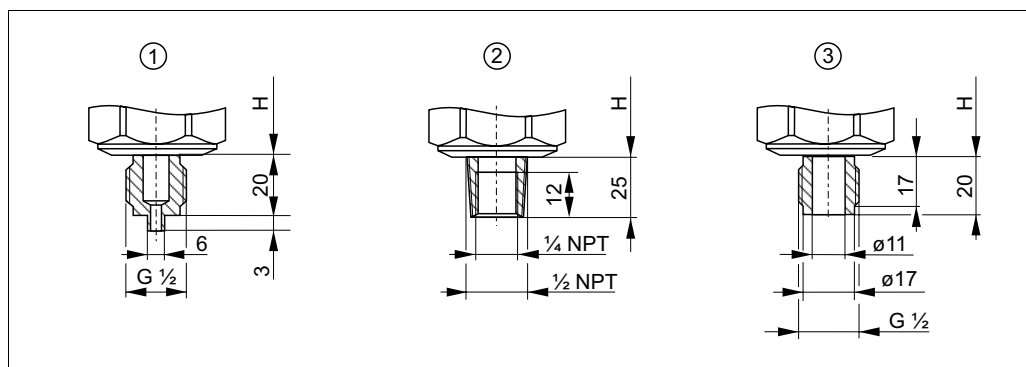
P01-PMC131xx-06-xx-xx-xx-001

Housing PMC131; Material AISI 304 (1.4301)

- 1 Versions A1, A2, B1, C1, C2: Plug M 16 or ½ NPT (ISO 4400), IP 65
- 2 Versions A5, B5, C5: Plug M 12, IP 65
- 3 Versions A3, A4, B3, C3: 5 m or 25 m cable, IP 68

→ See the following diagram for the height of process connection A

### Process connections



P01-PMC131xx-06-xx-xx-xx-002

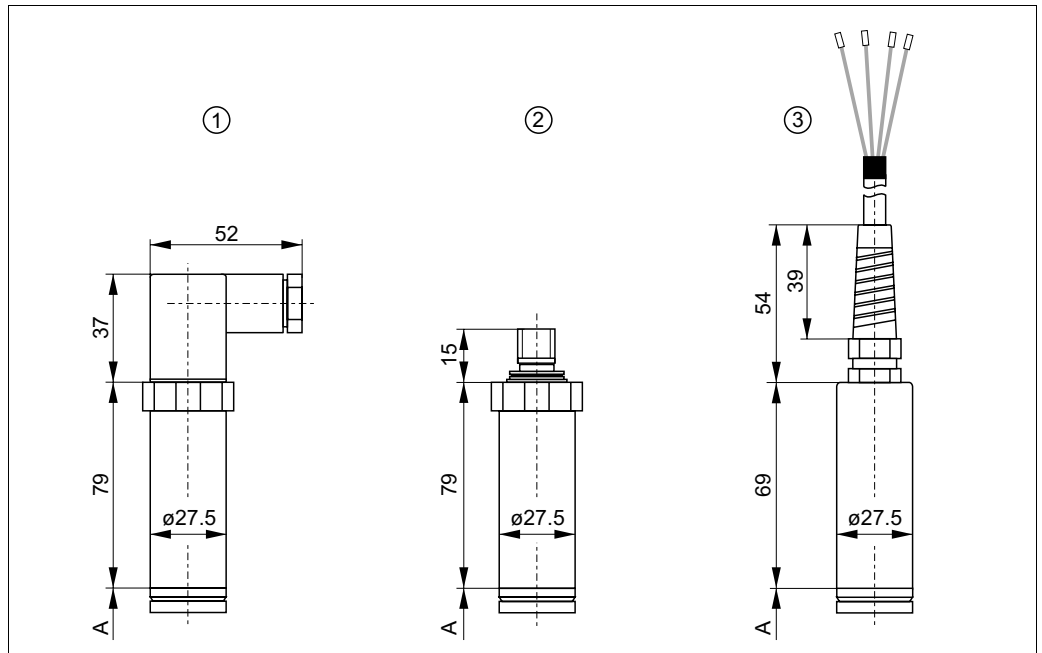
Process connections PMC131; Material AISI 304 (1.4301)

- 1 Version 1: Thread ISO 228 G ½
- 2 Version 2: Thread ANSI ½ MNPT ¼ FNPT
- 3 Version 5: Thread ISO 228 G ½, bore 11 mm

→ See respective housing for installation height H

PMP131 and PMP135

Housing



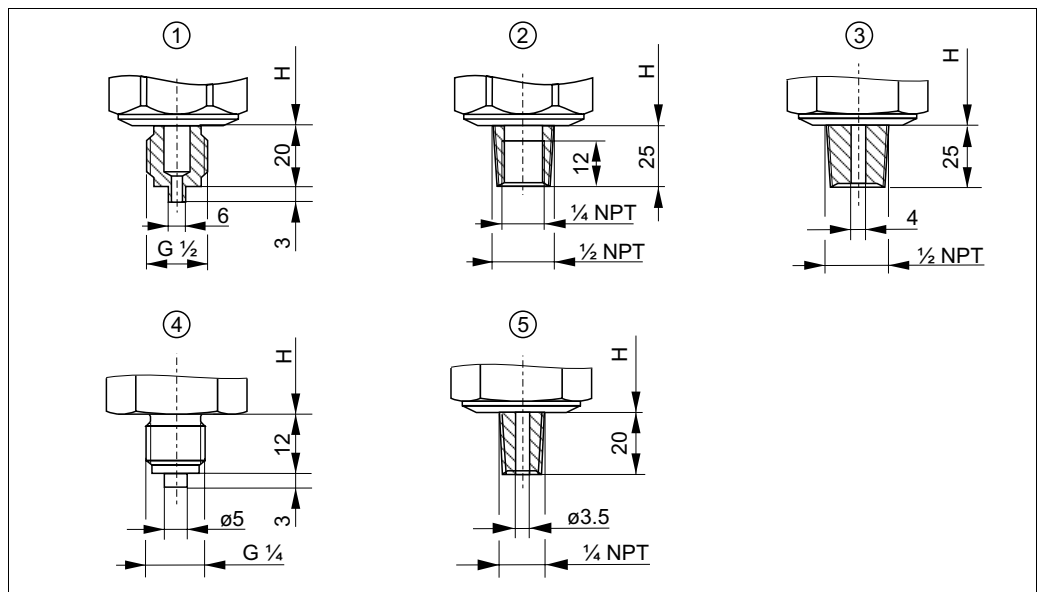
Housing PMP131 and PMP135; Material AISI 304 (1.4301)

- 1 Versions A1, A2: Plug M 16 or 1/2 NPT (ISO 4400), IP 65
- 2 Version A3: 5 m cable, IP 68
- 3 Version A4: Plug M 12, IP 65

→ See the following diagram for the dimensions of process connection A

PMP131

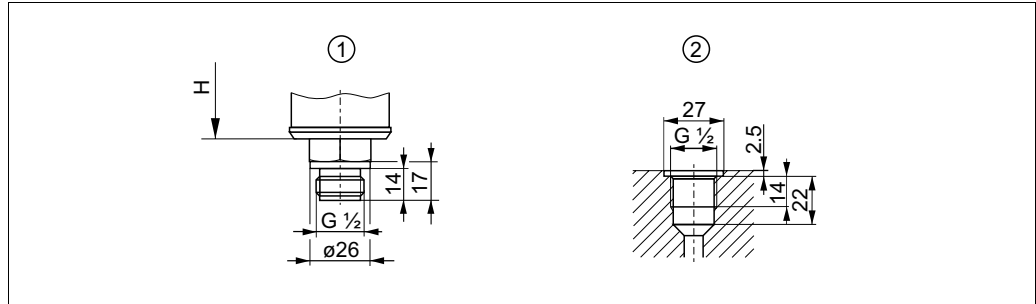
Process connections



Process connections PMP131; Material AISI 304 (1.4301)

- 1 Version 1: Thread ISO 228 G 1/2
- 2 Version 2: Thread ANSI 1/2 MNPT 1/4 FNPT
- 3 Version 3: Thread ANSI 1/2 MNPT, bore 4 mm female
- 4 Version 4: Thread ISO 228 G 1/4
- 5 Version 5: Thread ANSI 1/4 MNPT, bore 3.5 mm female

→ See respective housing for installation height H



P01-PMP131xx-06-09-xx-xx-002

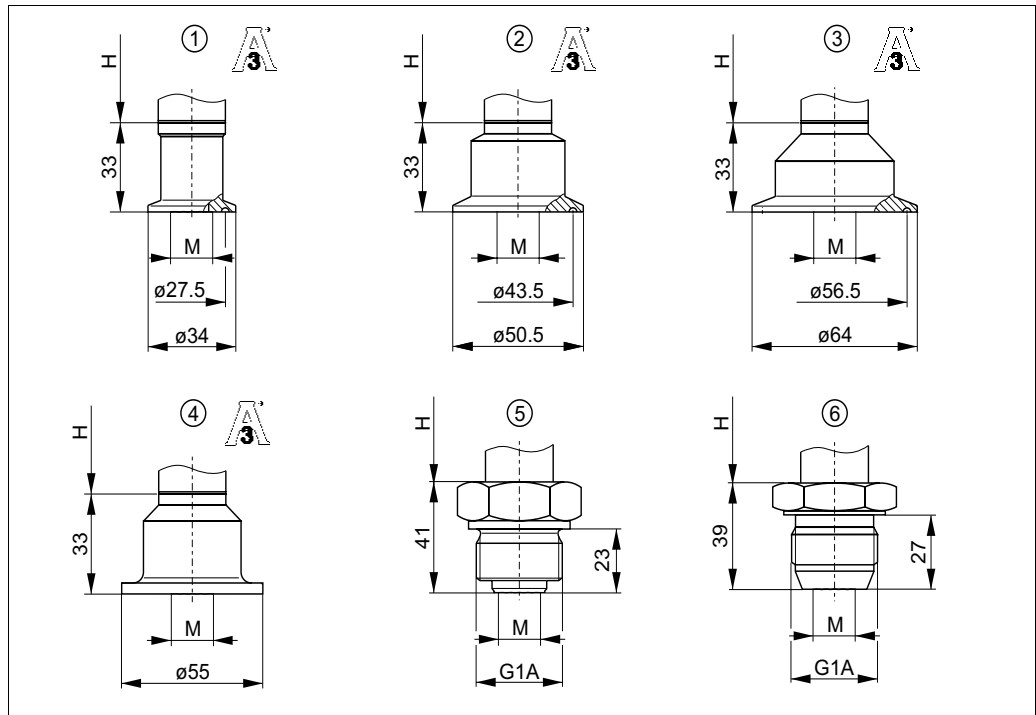
Process connection PMP131; Material AISI 304 (1.4301)

- 1 Version B: Thread ISO 228 G 1/2, Gasket DIN 3852 flush-mounted
- 2 Dimensions for tapped hole G 1/2 as per DIN 3852-11 form X

→ See respective housing for installation height H

PMP135

Process connections



P01-PMP135xx-06-xx-xx-xx-001

Process connections PMP135; Material AISI 316L (1.4435); Surface roughness of the surfaces in contact with the medium  $R_a \leq 0.8 \mu\text{m}$

M = Diaphragm diameter 17.2 mm

- 1 Version F: Clamp 3/4" (ISO 2852) or DN 22 (DIN 32676), 3A
- 2 Version G: Tri-Clamp 1" to 1 1/2" (ISO 2852) or DN 25 to DN 40 (DIN 32676), 3A
- 3 Version H: Tri-Clamp 2" (ISO 2852) or DN 50 (DIN 32676), 3A
- 4 Version S: SMS 1 1/2" PN 25, 3A
- 5 Version N: G1A (ISO 228), with sealing surface for flush-mounted installation
- 6 Version M: G1A (ISO 228), with metallic sealing taper, flush-mounted

→ See respective housing for installation height H

**Weights**

- PMC131: approx. 0.32 kg
- PMP131: approx. 0.24 kg
- PMP135: approx. 0.34 kg

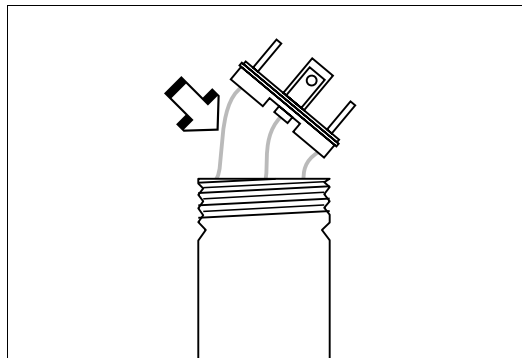
**Material**

- Process connection:
  - PMC131: AISI 304 (1.4301)
  - PMP131: AISI 304 (1.4301)
  - PMP135: AISI 316L (1.4435)
- Sensor diaphragm:
  - PMC131: Ceraphire® (99.9 % Al<sub>2</sub>O<sub>3</sub>), FDA number 21-CFR 186.1256
  - PMP131, PMP135: AISI 316L (1.4435)
- Fill oil:
  - PMP131: Tegiloxan 3
  - PMP135: Mineral oil, FDA number 21-CFR 172.882
- Housing  
AISI 304 (1.4301)
- Electrical connection  
 Plug M12: Polyamide (PA)  
 Valve connector: Sheathing made of polyamide (PA)  
 Cable: Sheathing made of polyurethane (PUR/UL94, V0, UV-resistant)

## Operating elements

**Operating elements**

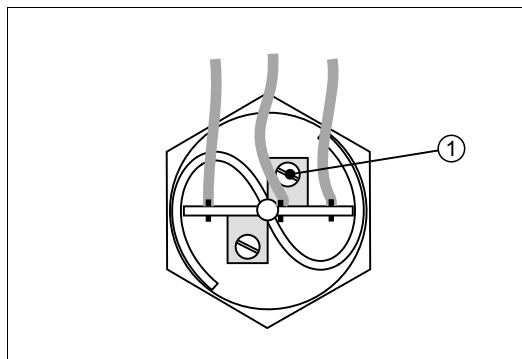
**Position of operating elements**



P01-PMx13xxx-19-xx-xx-xx-003

The potentiometer for operating the Cerabar T PMP131 and PMP135 with analog or switch output is located below the base of the plug.

**Analog output: Zero point adjustment**

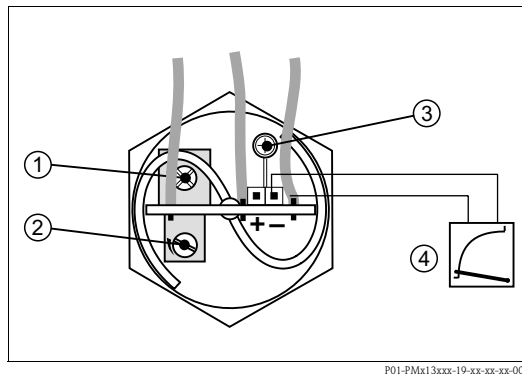


P01-PMx13xxx-19-xx-xx-xx-001

The zero point can be corrected for the Cerabar T PMP131 and PMP135 with analog output and plug version.

1 Potentiometer for zero point correction by ±5 % of URL

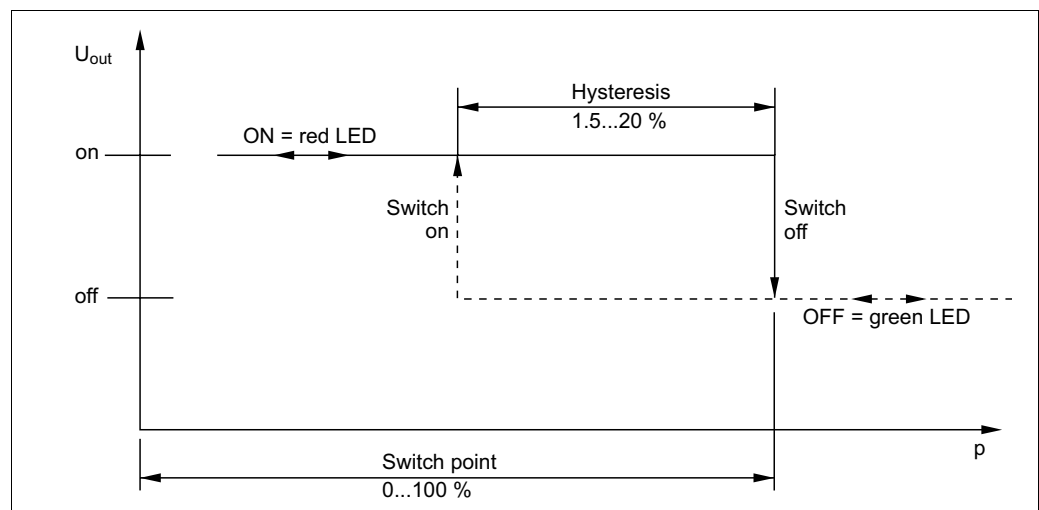
**Switch output: Switch point and hysteresis adjustment**



For the Cerabar T PMP131 and PMP135 with switch output, both the switch point and hysteresis can be adjusted.

This can also be carried out at atmospheric pressure using the enclosed test cable and a voltmeter.

- 1 Hysteresis adjustment 1.5 to 20 % of URL;  
Factory setting 10 % of URL
- 2 Switch point adjustment 0 to 100 % of URL;  
Factory setting 50 % of URL
- 3 LED color code for checking the switch status:  
green = off; red = on
- 4 Connect voltmeter to test pins:  
0 to 1 V corresponds to 0 to 100 % of URL



Instructions for switch point and hysteresis (the percentage values refer to the URL)

- $U_a$  Output voltage
- $p$  Acting pressure

## Certificates and approvals

<b>CE mark</b>	The device meets the legal requirements of the EC directives. Endress+Hauser confirms that the device has been successfully tested by applying the CE mark.
<b>Ex approvals</b>	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 explosion hazardous areas. → See also Page 22, "Safety Instructions" section.
<b>Pressure Equipment Directive (PED)</b>	This measuring device corresponds to Article 3 (3) of the EC directive 97/23/EC (Pressure Equipment Directive) and has been designed and manufactured according to good engineering practice.
<b>Functional safety SIL 2/ IEC 61508/IEC 61511-1</b>	The Cerabar T PMP131 and PMP135 pressure transducers with 4 to 20 mA electronics have been assessed by an independent body according to the standards IEC 61508/IEC 61511-1. These devices can be used for monitoring process pressure up to SIL 2. → For a detailed description of safety functions with Cerabar T, settings and characteristic quantities for functional safety, see the "Functional Safety Manual – Cerabar T SD160P".
<b>Hygiene standard</b>	Many versions of the Cerabar T PMP135 meet the requirements of the 3A-Sanitary Standard No. 74-2. Endress+Hauser confirms this by applying the 3A symbol.
<b>Standards and guidelines</b>	DIN EN 60770 (IEC 60770): Transmitters for controlling in systems used in industrial process technology Part 1: Methods for evaluating the operating behavior.  DIN EN 61003-1, Edition:1993-12 Systems used in industrial process technology; Devices with analog inputs and two-point or multi-point behavior; Part 1: Methods for evaluating the operating behavior.  DIN 16086: Electrical pressure measuring devices, pressure sensors, transmitters, pressure measuring devices Terms, specifications in data sheets.  IEC 60592 Degrees of protection provided by enclosures (IP-Code).  EN 61326: Electrical equipment for control technology and laboratory application – EMC requirements.  IEC 61010 Safety requirements for electrical equipment for measurement, control and laboratory use.  NAMUR Association for Standards for Control and Regulation in the Chemical Industry.
<b>Registered trademarks</b>	Ceraphire® Registered trademark of Endress+Hauser GmbH+Co. KG, Maulburg, Germany (→ See also <a href="http://www.endress.com/ceraphire">www.endress.com/ceraphire</a> )

## Ordering information

PMC131		10		Electrical connection:		
		A1	Plug ISO 4400, M 16, IP 65/NEMA 4X			
		A2	Plug ISO 4400, ½ NPT, IP 65/NEMA 4X			
		A3	5 m cable, IP 68/NEMA 6P			
		A4	25 m cable, IP 68/NEMA 6P			
		A5	Plug M 12, IP 65/NEMA 4			
		B1	Plug ISO 4400, M 16, IP 65, ATEX II 3 G EEx nA II T4			
		B3	5 m cable, IP 68, ATEX II 3 G EEx nA II T4			
		B5	Plug M 12, IP 65, ATEX II 3 G EEx nA II T4			
		C1	Plug ISO 4400, M 16, NEMA 4X, CSA GP			
		C2	Plug ISO 4400, ½ NPT, NEMA 4X, CSA GP			
		C3	5m cable, IP 68/NEMA 6P, CSA GP			
		C5	Plug M12, IP 65/NEMA 4, CSA GP			
20		Process connection:				
		1	Thread ISO 228 G ½, AISI 304			
		2	Thread ANSI ½ MNPT ¼ FNPT, AISI 304			
		5	Thread ISO 228 G ½ bore 11 mm, AISI 304			
30		Sensor seal:				
		F	FKM Viton			
		S	FKM Viton, oxygen application			
40		Additional options:				
		1	Without additional equipment			
		S	GL (German Lloyd) marine certificate			
		2	Final inspection report			
50		Measuring range; MWP; Nominal value; OPL:				
			Measuring range	MWP (Maximum Working Pressure)	Nominal value	OPL (Over Pressure Limit)
			<b>Sensors for gauge pressure</b>			
		A1G	0 to 1 bar / 0 to 100 kPa	6.7 bar	1 bar	10 bar / 1 MPa
		A1H <sup>1)</sup>	0 to 1.6 bar / 0 to 160 kPa	12 bar	2 bar	18 bar / 1.8 MPa
		A1K	0 to 2 bar / 0 to 200 kPa	12 bar	2 bar	18 bar / 1.8 MPa
		A1Q	0 to 4 bar / 0 to 400 kPa	16.7 bar	4 bar	25 bar / 2.5 MPa
		A1R <sup>1)</sup>	0 to 6 bar / 0 to 600 kPa	26.7 bar	10 bar	40 bar / 4 MPa
		A1S	0 to 10 bar / 0 to 1 MPa	26.7 bar	10 bar	40 bar / 4 MPa
		A1T <sup>1)</sup>	0 to 16 bar / 0 to 1.6 MPa	26.7 bar	20 bar	40 bar / 4 MPa
		A1V	0 to 20 bar / 0 to 2 MPa	26.7 bar	20 bar	40 bar / 4 MPa
		A1W <sup>1)</sup>	0 to 25 bar / 0 to 2.5 MPa	40 bar	40 bar	60 bar / 6 MPa
		A1X	0 to 40 bar / 0 to 4 MPa	40 bar	40 bar	60 bar / 6 MPa
		A3C <sup>1)</sup>	-1 to 0 bar / -100 to 0 kPa	6.7 bar	2 bar	10 bar / 1 MPa
		A3E <sup>1)</sup>	-1 to 1 bar / -100 to 100 kPa	6.7 bar	2 bar	10 bar / 1 MPa
		A3G <sup>1)</sup>	-1 to 3 bar / -100 to 300 kPa	16.7 bar	4 bar	25 bar / 2.5 MPa
		A3K <sup>1)</sup>	-1 to 9 bar / -100 to 900 kPa	26.7 bar	10 bar	40 bar / 4 MPa
		A3N <sup>1)</sup>	-1 to 15 bar / -0.1 to 1.5 MPa	26.7 bar	20 bar	40 bar / 4 MPa
		D10	0 to 100 mbar / 0 to 10 kPa	2.7 bar	0.1 bar	4 bar / 400 kPa
		D12 <sup>1)</sup>	0 to 200 mbar / 0 to 20 kPa	3.3 bar	0.2 bar	5 bar / 500 kPa
		D14	0 to 400 mbar / 0 to 40 kPa	5.3 bar	0.4 bar	8 bar / 800 kPa
		D3W	-20 to 20 mbar / -2 to 2 kPa	2.7 bar	0.2 bar	4 bar / 400 kPa
		D31 <sup>1)</sup>	-100 to 100 mbar / -10 to 10 kPa	3.3 bar	0.2 bar	5 bar / 500 kPa
		D38 <sup>1)</sup>	-200 to 200 mbar / -20 to 20 kPa	3.3 bar	0.4 bar	5 bar / 500 kPa
		D39 <sup>1)</sup>	-300 to 300 mbar / -30 to 30 kPa	5.3 bar	1 bar	8 bar / 800 kPa
PMC131						Order code

→ For continuation of ordering information of PMC131, see the following page.

1) Span set and calibrated at the factory

PMC131 (continued)

50					Measuring range; MWP; Nominal value; OPL:			
					Measuring range	MWP (Maximum Working Pressure)	Nominal value	OPL (Over Pressure Limit)
					<b>Sensors for gauge pressure</b>			
				Q4D	0 to 1.5 psi	40 psi	1.5 psi	60 psi
				Q4F <sup>1)</sup>	0 to 5 psi	80 psi	6 psi	120 psi
				Q4H	0 to 15 psi	100 psi	15 psi	150 psi
				Q4K	0 to 30 psi	180 psi	30 psi	270 psi
				Q4N <sup>1)</sup>	0 to 50 psi	250 psi	60 psi	375 psi
				Q4R	0 to 150 psi	400 psi	150 psi	600 psi
				Q4S	0 to 300 psi	400 psi	300 psi	600 psi
				Q4T <sup>1)</sup>	0 to 500 psi	600 psi	600 psi	900 psi
				V6F <sup>1)</sup>	-1.5 to 1.5 psi	50 psi	3 psi	75 psi
				V6N <sup>1)</sup>	-15 to 15 psi	100 psi	30 psi	150 psi
				V6R <sup>1)</sup>	-15 to 30 psi	250 psi	60 psi	375 psi
				V6S	-15 to 60 psi	250 psi	60 psi	375 psi
				V6V	-15 to 150 psi	400 psi	150 psi	600 psi
				S4N <sup>1)</sup>	0 to 50 inH <sub>2</sub> O	50 psi	3 psi	75 psi
				S4Q <sup>1)</sup>	0 to 100 inH <sub>2</sub> O	80 psi	6 psi	120 psi
				W6N <sup>1)</sup>	-15 to 15 inH <sub>2</sub> O	40 psi	3 psi	60 psi
				W6O <sup>1)</sup>	-80 to 80 inH <sub>2</sub> O	50 psi	6 psi	75 psi
				W6R <sup>1)</sup>	-15 to 30 inH <sub>2</sub> O	50 psi	3 psi	75 psi
					<b>Sensors for absolute pressure</b>			
				A2G	0 to 1 bar / 0 to 100 kPa	6.7 bar	1 bar	10 bar / 1 MPa
				A2H <sup>1)</sup>	0 to 1.6 bar / 0 to 160 kPa	12 bar	2 bar	18 bar / 1.8 MPa
				A2K	0 to 2 bar / 0 to 200 kPa	12 bar	2 bar	18 bar / 1.8 MPa
				A2Q	0 to 4 bar / 0 to 400 kPa	16.7 bar	4 bar	25 bar / 2.5 MPa
				A2R <sup>1)</sup>	0 to 6 bar / 0 to 600 kPa	26.7 bar	10 bar	40 bar / 4 MPa
				A2S	0 to 10 bar / 0 to 1 MPa	26.7 bar	10 bar	40 bar / 4 MPa
				A2T <sup>1)</sup>	0 to 16 bar / 0 to 1.6 MPa	26.7 bar	20 bar	40 bar / 4 MPa
				A2V	0 to 20 bar / 0 to 2 MPa	26.7 bar	20 bar	40 bar / 4 MPa
				A2W <sup>1)</sup>	0 to 25 bar / 0 to 2.5 MPa	40 bar	40 bar	60 bar / 6 MPa
				A2X	0 to 40 bar / 0 to 4 MPa	40 bar	40 bar	60 bar / 6 MPa
				D20 <sup>1)</sup>	0 to 100 mbar / 0 to 10 kPa	3.3 bar	0.2 bar	5 bar / 500 kPa
				D22	0 to 200 mbar / 0 to 20 kPa	3.3 bar	0.2 bar	5 bar / 500 kPa
				D24	0 to 400 mbar / 0 to 40 kPa	5.3 bar	0.4 bar	8 bar / 800 kPa
				R4D <sup>1)</sup>	0 to 1.5 psi	50 psi	3 psi	75 psi
				R4F <sup>1)</sup>	0 to 5 psi	80 psi	6 psi	120 psi
				R4H	0 to 15 psi	100 psi	15 psi	150 psi
				R4K	0 to 30 psi	180 psi	30 psi	270 psi
				R4N <sup>1)</sup>	0 to 50 psi	250 psi	60 psi	375 psi
				R4R	0 to 150 psi	400 psi	150 psi	600 psi
				R4S	0 to 300 psi	400 psi	300 psi	600 psi
				R4T <sup>1)</sup>	0 to 500 psi	600 psi	600 psi	900 psi
PMC131						Complete order code		

1) Span set and calibrated at the factory

## PMP131

<b>10</b>	<b>Electrical connection:</b>			
	A1	Plug ISO 4400, M 16, IP 65/NEMA 4X		
	A2	Plug ISO 4400, ½ NPT, IP 65/NEMA 4X		
	A3	5 m cable, IP 68/NEMA 6P		
	A4	Plug M 12, IP 65/NEMA 4X		
<b>20</b>	<b>Process connection:</b>			
	B	Thread ISO 228 G ½, Seal DIN 3852, AISI 304, flush-mounted		
	1	Thread ISO 228 G ½, AISI 304		
	2	Thread ANSI ½ MNPT ¼ FNPT, AISI 304		
	3	Thread ANSI ½ MNPT bore 4 mm, AISI 304		
	4	Thread ISO 228 G ¼, AISI 304		
	5	Thread ANSI ¼ MNPT bore 3.5 mm, AISI 304		
<b>30</b>	<b>Output:</b>			
	0	Analog 4 to 20 mA, SIL		
	D	Analog 4 to 20 mA, SIL, ATEX II 1/2 G EEx ib IIC T6		
	1	Analog 4 to 20 mA, SIL, ATEX II 2 G EEx ib IIC T6		
	5	Analog 4 to 20 mA, SIL, ATEX II 3 G EEx nA II T6		
	2	Switch output PNP, 3-wire		
	3	Switch output PNP, 3-wire, ATEX II 3 G EEx nA II T6		
<b>40</b>	<b>Additional options:</b>			
	1	Without additional equipment		
	S	GL/RINA marine approval		
	2	Final inspection report		
<b>50</b>	<b>Sensor range; MWP; OPL:</b>			
		<b>Sensor range</b>	<b>MWP (maximum working pressure)</b>	<b>OPL (over pressure limit)</b>
		<b>Sensors for gauge pressure</b>		
	A1G	0 to 1 bar / 0 to 100 kPa	2.7 bar	4 bar / 400 kPa
	A1H	0 to 1.6 bar / 0 to 160 kPa	4 bar	6.4 bar / 640 kPa
	A1N	0 to 2.5 bar / 0 to 250 kPa	6.7 bar	10 bar / 1 MPa
	A1Q	0 to 4 bar / 0 to 400 kPa	10.7 bar	16 bar / 1.6 MPa
	A1R	0 to 6 bar / 0 to 600 kPa	16 bar	24 bar / 2.4 MPa
	A1S	0 to 10 bar / 0 to 1 MPa	25 bar	40 bar / 4 MPa
	A1T	0 to 16 bar / 0 to 1.6 MPa	25 bar	64 bar / 6.4 MPa
	A1W	0 to 25 bar / 0 to 2.5 MPa	25 bar	100 bar / 10 MPa
	A1X	0 to 40 bar / 0 to 4 MPa	60 bar	160 bar / 16 MPa
	A1Z	0 to 60 bar / 0 to 6 MPa	60 bar	240 bar / 24 MPa
	A70	0 to 100 bar / 0 to 10 MPa	100 bar	400 bar / 40 MPa
	A71	0 to 160 bar / 0 to 16 MPa	160 bar	600 bar / 60 MPa
	A73	0 to 250 bar / 0 to 25 MPa	250 bar	600 bar / 60 MPa
	A74	0 to 400 bar / 0 to 40 MPa	400 bar	600 bar / 60 MPa
	Q4H	0 to 15 psi	40 psi	60 psi
	Q4K	0 to 30 psi	100 psi	150 psi
	Q4N	0 to 50 psi	160 psi	240 psi
	Q4R	0 to 150 psi	400 psi	600 psi
	Q4S	0 to 300 psi	400 psi	1500 psi
	Q4T	0 to 500 psi	1000 psi	2400 psi
	Q4V	0 to 1000 psi	1000 psi	3600 psi
	Q70	0 to 1500 psi	1500 psi	6000 psi
	Q73	0 to 3000 psi	3000 psi	9000 psi
	Q74	0 to 6000 psi	6000 psi	9000 psi
PMP131				Order code

→ For continuation of ordering information of PMP131, see the following page.

PMP131 (continued)

50					Sensor range; MWP; OPL:		
					Sensor range	MWP (maximum working pressure)	OPL (over pressure limit)
					<b>Sensors for absolute pressure</b>		
				A2G	0 to 1 bar / 0 to 100 kPa	2.7 bar	4 bar / 400 kPa
				A2H	0 to 1.6 bar / 0 to 160 kPa	4 bar	6.4 bar / 640 kPa
				A2N	0 to 2.5 bar / 0 to 250 kPa	6.7 bar	10 bar / 1 MPa
				A2Q	0 to 4 bar / 0 to 400 kPa	10.7 bar	16 bar / 1.6 MPa
				A2R	0 to 6 bar / 0 to 600 kPa	16 bar	24 bar / 2.4 MPa
				A2S	0 to 10 bar / 0 to 1 MPa	25 bar	40 bar / 4 MPa
				A2T	0 to 16 bar / 0 to 1.6 MPa	25 bar	64 bar / 6.4 MPa
				A2W	0 to 25 bar / 0 to 2.5 MPa	25 bar	100 bar / 10 MPa
				A2X	0 to 40 bar / 0 to 4 MPa	60 bar	160 bar / 16 MPa
				A2Z	0 to 60 bar / 0 to 6 MPa	60 bar	240 bar / 24 MPa
				B70	0 to 100 bar / 0 to 10 MPa	100 bar	400 bar / 40 MPa
				B71	0 to 160 bar / 0 to 16 MPa	160 bar	600 bar / 60 MPa
				B73	0 to 250 bar / 0 to 25 MPa	250 bar	600 bar / 60 MPa
				B74	0 to 400 bar / 0 to 40 MPa	400 bar	600 bar / 60 MPa
				R4H	0 to 15 psi	40 psi	60 psi
				R4K	0 to 30 psi	100 psi	150 psi
				R4N	0 to 50 psi	160 psi	240 psi
				R4R	0 to 150 psi	400 psi	600 psi
				R4S	0 to 300 psi	400 psi	1500 psi
				R4T	0 to 500 psi	1000 psi	2400 psi
				R4V	0 to 1000 psi	1000 psi	3600 psi
				R70	0 to 1500 psi	1500 psi	6000 psi
				R73	0 to 3000 psi	3000 psi	9000 psi
				R74	0 to 6000 psi	6000 psi	9000 psi
PMP131					Complete order code		

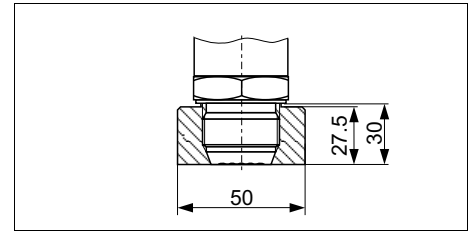
## PMP135

<b>10</b>	<b>Electrical connection:</b>		
A1	Plug ISO 4400, M 16, IP 65/NEMA 4X		
A2	Plug ISO 4400, ½ NPT, IP 65/NEMA 4X		
A3	5 m cable, IP 68/NEMA 6P		
A4	Plug M 12, IP 65/NEMA 4X		
<b>20</b>	<b>Process connection:</b>		
F	Clamp ISO 2852, DN 22 (¾"), AISI 316L, 3A, DIN 32676 DN 20		
G	Tri-Clamp ISO 2852, DN 25 to 38 (1" to 1½"), AISI 316L, 3A, DIN 32676 DN 25 to 40		
H	Tri-Clamp ISO 2852, DN 40 to 51 (2"), AISI 316L, 3A, DIN 32676 DN 50		
M	Thread ISO 228, G 1, with metallic sealing taper, AISI 316L, flush-mounted, adapter 52005087		
N	Thread ISO 228, G 1, with sealing surface for flush-mounted installation, AISI 316L, adapter 52001051		
S	SMS 1½", PN 25, AISI 316L, 3A		
<b>30</b>	<b>Output:</b>		
0	Analog 4 to 20 mA, SIL		
D	Analog 4 to 20 mA, SIL, ATEX II 1/2 G EEx ib IIC T6		
1	Analog 4 to 20 mA, SIL, ATEX II 2 G EEx ib IIC T6		
5	Analog 4 to 20 mA, SIL, ATEX II 3 G EEx nA II T6		
2	Switch output PNP, 3-wire		
3	Switch output PNP, ATEX II 3 G EEx nA II T6		
<b>40</b>	<b>Additional options:</b>		
1	Without additional equipment		
C	EN10204-3.1 material (wetted) inspection certificate		
2	Final inspection report		
<b>50</b>	<b>Sensor range; MWP; OPL:</b>		
	<b>Sensor range</b>	<b>MWP (maximum working pressure)</b>	<b>OPL (over pressure limit)</b>
	<b>Sensors for gauge pressure</b>		
A1G	0 to 1 bar / 0 to 100 kPa	2.7 bar	4 bar / 400 kPa
A1H	0 to 1.6 bar / 0 to 160 kPa	4 bar	6.4 bar / 640 kPa
A1N	0 to 2.5 bar / 0 to 250 kPa	6.7 bar	10 bar / 1 MPa
A1Q	0 to 4 bar / 0 to 400 kPa	10.7 bar	16 bar / 1.6 MPa
A1R	0 to 6 bar / 0 to 600 kPa	16 bar	24 bar / 2.4 MPa
A1S	0 to 10 bar / 0 to 1 MPa	25 bar	40 bar / 4 MPa
A1T	0 to 16 bar / 0 to 1.6 MPa	25 bar	64 bar / 6.4 MPa
A1W	0 to 25 bar / 0 to 2.5 MPa	25 bar	100 bar / 10 MPa
A1X	0 to 40 bar / 0 to 4 MPa	60 bar	160 bar / 16 MPa
Q4H	0 to 15 psi	40 psi	60 psi
Q4K	0 to 30 psi	100 psi	150 psi
Q4N	0 to 50 psi	160 psi	240 psi
Q4R	0 to 150 psi	400 psi	600 psi
Q4S	0 to 300 psi	400 psi	1500 psi
Q4T	0 to 500 psi	1000 psi	2400 psi
	<b>Sensors for absolute pressure</b>		
A2G	0 to 1 bar / 0 to 100 kPa	2.7 bar	4 bar / 400 kPa
A2H	0 to 1.6 bar / 0 to 160 kPa	4 bar	6.4 bar / 640 kPa
A2N	0 to 2.5 bar / 0 to 250 kPa	6.7 bar	10 bar / 1 MPa
A2Q	0 to 4 bar / 0 to 400 kPa	10.7 bar	16 bar / 1.6 MPa
A2R	0 to 6 bar / 0 to 600 kPa	16 bar	24 bar / 2.4 MPa
A2S	0 to 10 bar / 0 to 1 MPa	25 bar	40 bar / 4 MPa
A2T	0 to 16 bar / 0 to 1.6 MPa	25 bar	64 bar / 6.4 MPa
A2W	0 to 25 bar / 0 to 2.5 MPa	25 bar	100 bar / 10 MPa
A2X	0 to 40 bar / 0 to 4 MPa	60 bar	160 bar / 16 MPa
R4H	0 to 15 psi	40 psi	60 psi
R4K	0 to 30 psi	100 psi	150 psi
R4N	0 to 50 psi	160 psi	240 psi
R4R	0 to 150 psi	400 psi	600 psi
R4S	0 to 300 psi	400 psi	1500 psi
R4T	0 to 500 psi	1000 psi	2400 psi
PMP135			Complete order code

## Accessories

### Welding neck with sealing taper

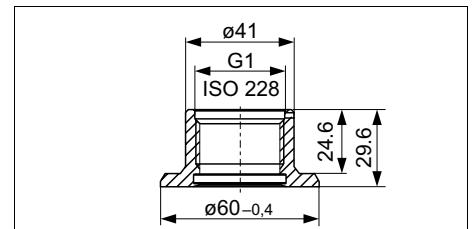
- Welding neck for flush-mounted installation of the process connection G1 A with metallic sealing taper (PMP135, version M)  
Material: AISI 316L (1.4435)  
Order number: 52005087
- with inspection certificate 3.1  
Order number: 52010171
- Pressure sensor dummy for welding the welding neck without any problems with order number 52005087 or 52010171  
Material: CuZn  
Order number: 52005272



P01-PMP135xx-00-xx-00-xx-002

### Welding neck with sealing surface

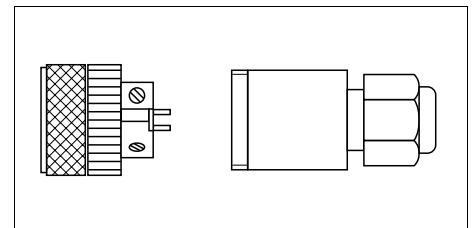
- Welding neck for flush-mounted installation of the process connection G1 A with sealing surface (PMP135, version N)  
Material: AISI 316L (1.4435)  
Gasket (enclosed): silicone O-ring  
Order number: 52001051
- Optional with inspection certificate 3.1  
Order number: 52011896



P01-PMP135xx-00-xx-00-xx-003

### Plug-in jack

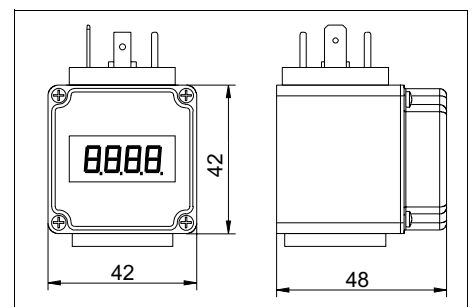
- Plug-in jack M 12x1, straight  
Self-made connection to M 12x1 housing plug  
Material: Handle body PA; Coupling nut CuZn, nickel-plated, degree of protection (inserted): IP 67  
Order number: 52006263



P01-PMP135xx-00-xx-00-xx-003

### Plug-on display PHX20/PHX21

- 4-digit red LED display for looping into 4 to 20 mA circuit via elbow plug  
DIN 43650, rotatable in 90° steps, programmable via 2 keys  
Display range: -1999 to +9999  
Degree of protection: IP 65  
Material: Housing Pa6 GF30, front screen PMMA  
Voltage drop: ≤5 V (corresponds to max. 250 Ω load)  
Approval for PHX21: ATEX II 2G  
Order number PHX20: 52022914  
Order number PHX21: 52022915



P01-PHX2xxxx-06-xx-xx-xx-002

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## Documentation

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<b>Field of Activities</b>	<ul style="list-style-type: none"><li>■ Pressure measurement, powerful measuring devices for process pressure, differential pressure, level and flow: FA004P/00/en</li></ul>
<b>Technical Information</b>	<ul style="list-style-type: none"><li>■ EMC test procedures TI241F/00/en</li></ul>
<b>Operating Instructions</b>	<ul style="list-style-type: none"><li>■ Cerabar T PMC131: KA085P/00/a3</li><li>■ Cerabar T PMP131: KA103P/00/a3</li><li>■ Cerabar T PMP135: KA198P/00/a3</li></ul>
<b>Functional Safety Manual (SIL)</b>	<ul style="list-style-type: none"><li>■ Cerabar T PMP131, PMP135: SD160P/00/en</li></ul>
<b>Safety Instructions</b>	<p>Cerabar T PMC131</p> <ul style="list-style-type: none"><li>■ ATEX II 3 G EEx nA II T4: XA191P/00/a3</li></ul> <p>Cerabar T PMP131</p> <ul style="list-style-type: none"><li>■ ATEX II 1/2 G or 2 G EEx ib IIC T6: XA142P/00/a3</li><li>■ ATEX II 3 G EEx nA II T6: XA191P/00/a3</li></ul> <p>Cerabar T PMP135</p> <ul style="list-style-type: none"><li>■ ATEX II 1/2 G or 2 G EEx ib IIC T6: XA142P/00/a3</li><li>■ ATEX II 3 G EEx nA II T6: XA191P/00/a3</li></ul>

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People for Process Automation