

# Pressure measurement

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# Deltabar M PMD55

Differential pressure transmitter with metal sensor.



**WirelessHART**

- IEC61508 up to SIL2
- High accuracy: up to  $\pm 0.1\%$  ( $\pm 0.075\%$  for platinum)
- 100:1 turndown
- Compact transmitter design

The Deltabar M PMD55 differential pressure transmitter has been designed for arduous environments while combining cost-effectiveness with quality. It's the lowest cost device of its class currently on the market, offering the best value for money.

Reliable and robust, the new Deltabar M is ideal for hazardous applications. It comes with an epoxy-coated aluminium housing offering excellent process safety in harsh environments. With measuring accuracy of up to 0.075%

and a pressure measuring range of 10 mbar... 40 bar, it offers outstanding performance in demanding process conditions. ATEX certified (Ex ia, Ex d, Ex na, IEC Ex) for hazardous area use, it guarantees measurement safety and integrity.

Combining accuracy, safety and reliability with a lightweight and compact design, Deltabar M offers maximum application flexibility, making it ideal for OEM applications. Its robustness and high turndown of 100:1 also makes it an excellent choice for utilities applications including compressed air, steam, water generation and distribution systems, nitrogen metering as well as heating and cooling systems.

Deltabar M benefits from highly modular electronics that enable quick and simple set-up and commissioning. Its user-friendly software featuring a full graphic display allows the selection of application-specific parameters for maximum flexibility. Be it level, flow or differential pressure, you can adjust Deltabar M to your own application requirements.

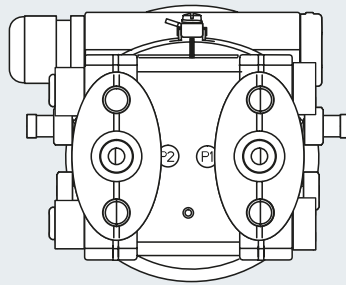
## Technical data

Measuring range	: 0...10 mbar to 0...40 bar
Output	: 4...20mA HART, PROFIBUS PA, FOUNDATION Fieldbus
Ambient temperature	: -40...+85°C
Process temperature	: -40...+85°C
Power supply	: 11.5...45V DC safe area; 11.5...30V DC intrinsically safe
Accuracy	: Standard $\pm 0.1\%$ , platinum $\pm 0.075\%$
Housing	: Powder-coated die-cast aluminium
Process connection	: In contact with process: AISI 316L or C22.8
Process membrane	: Stainless steel 316L or Hastelloy C
Protection	: IP66/67/68

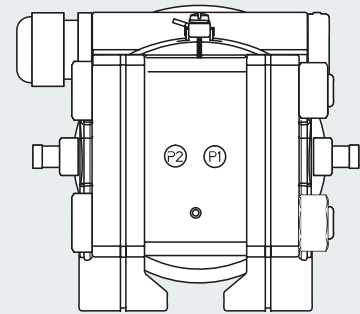
### Process connections

Oval flange, 1/4-18 NPT connection IEC61518  
 Designation of the process connections 'P1' and 'P2'  
 P1 = high pressure side (+)  
 P2 = low pressure side (-)

PMD55, H1



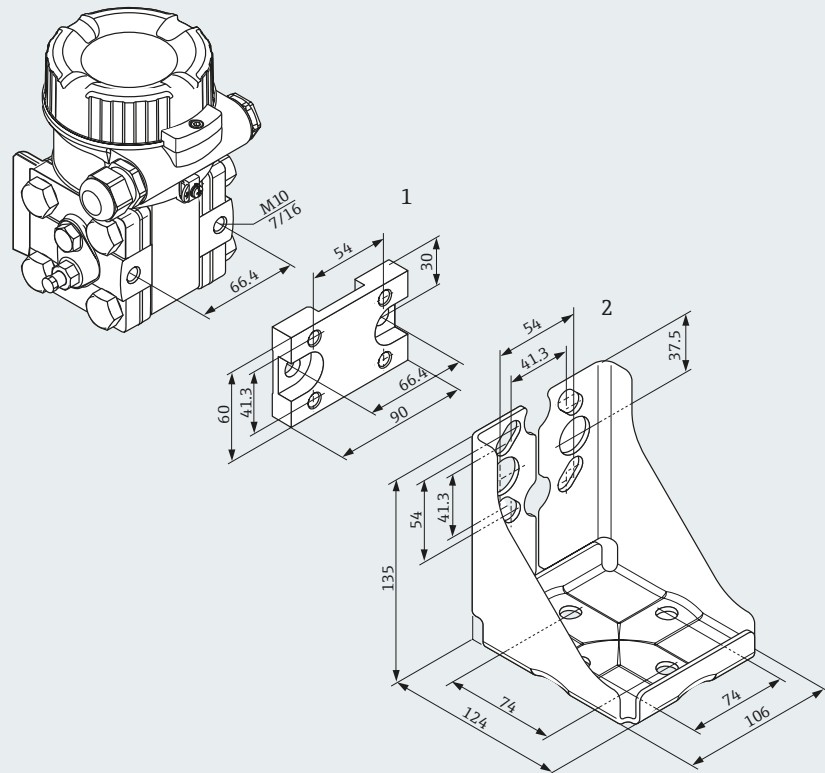
PMD55, V1



### Mounting

#### Mounting bracket for wall and pipe mounting

1 = Adapter plate (+ six screws and six washers)  
 2 = Mounting bracket (+ bracket for pipe mounting and two nuts)



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# Deltabar S PMD75

Differential pressure transmitter for flow, level and filter applications.



**Wireless**HART

- Robust metal measuring cell
- Self-diagnosis and process monitoring functions
- Standard 0.05% accuracy (0.035% optional)
- IEC61508 up to SIL3

The robust metallic sensor offers outstanding performance at low measuring ranges even at high static pressures in gas, liquid and vapour applications.

## Applications

- Highly accurate transmitters for flow measurement (volume or mass-based) across orifice plates and pitot tubes in gas and liquid.
- Level, content or volume measurement in liquid
- Differential pressure measurement of filters and pumps

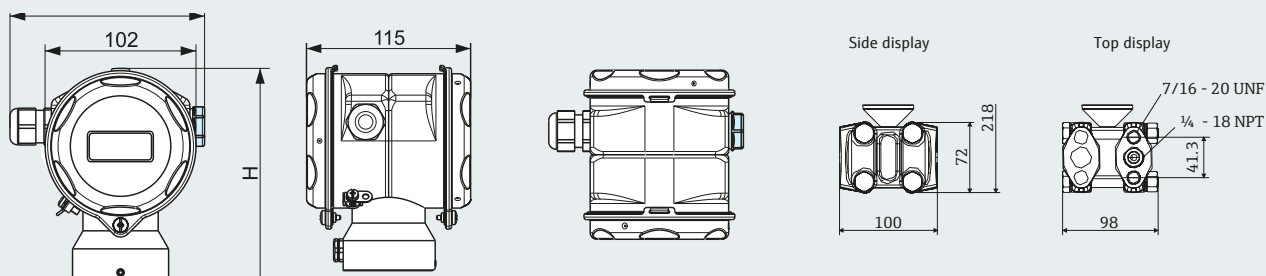
## Advantages

- Modular transmitter consisting of only three modules: electronic, sensor and housing
- Fast commissioning via Quick Setup menu
- Long-term stability <0.05% per 5 years minimises recalibration
- HART, PROFIBUS and FOUNDATION Fieldbus compatible
- Menu-guided display with plain text - no error codes to decipher
- No software or handheld communicators required

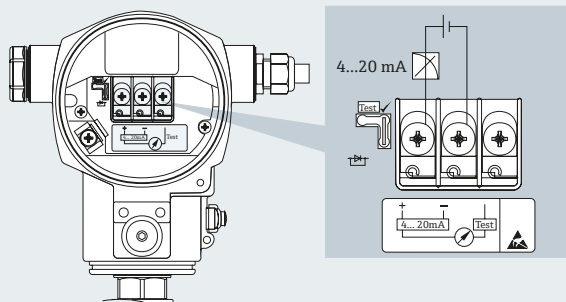
## Technical data

Measuring range	: 10 mbar... 40 bar/TD 100:1 (larger TD on request)
Process temp	: -40°C...85°C
Ambient temp	: -40°C...85°C
Protection	: IP66/67/68
Power supply	: 10.5...45V DC standard, 10.5...30V DC for EExi, 9... 32V DC for PA and FF
Cable connection	: Gland M20 x1.5, 1/2" NPT, 7/8" FF connector, M12
Accuracy	: 0.05% standard (0.035% optional)
Housing	: Cast aluminium with polyester based coating, (stainless steel 316L optional)
Process connection	: Standard DP connection out of 1.4435 (316L), Alloy C276, Carbon steel (C22.8)
Process membrane	: Hastelloy C276, 1.4435 (SS316L), monel, tantalum, rhodium/gold
Process seal	: PTFE, Viton, NBR or copper

**T14 housing dimensions (mm)**



**Electrical connection**



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# Deltabar FMD71/72

Electronic differential pressure transmitter for level measurement.



**Wireless**HART

- Robust ceramic or metal measuring cell
- Unaffected by ambient temperature: no measurement drift
- No impulse lines: no condensation, freezing or leakage problems
- For process pressures up to 10 bar (up to 700 bar on request)

Deltabar FMD71/72 is ideal for measuring the level, volume or mass of liquids in pressurised tanks. The system comprises two sensor modules and one transmitter: one sensor module measures the hydrostatic pressure (high pressure) and the other one the head pressure (low pressure). The level (electronic

differential pressure) is calculated in the transmitter using these two digital values. It eliminates issues of traditional differential pressure measurements using impulse lines or capillaries such as connection leaks and impulse line condensation and offers outstanding multivariable level measurement.

Deltabar FMD71/72 not only offers a superior response rate (up to 10 times faster than conventional DP transmitters), it also eliminates up to 95% of drift caused by ambient temperature changes. What's more, as the sensors are separate to the transmitter, you can locate the transmitter in areas safe and convenient for personnel, offering improved safety and better access.

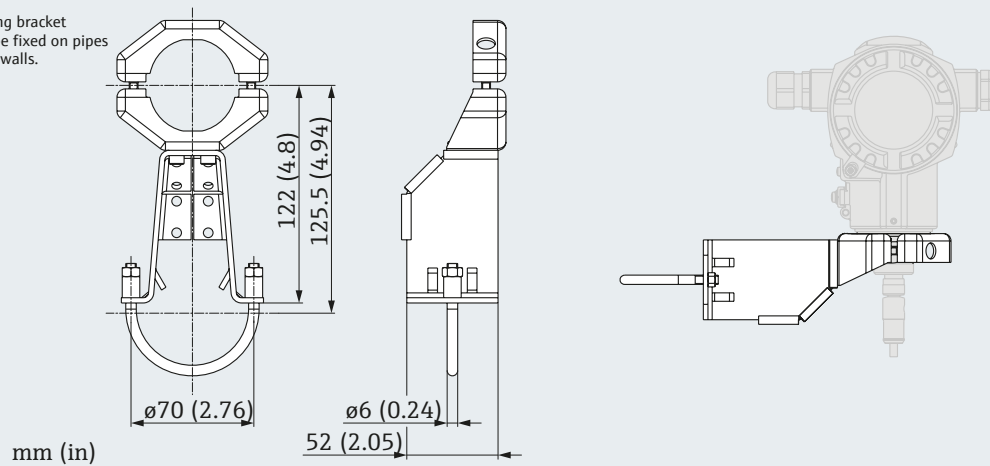
### Installation and maintenance

Deltabar FMD71/72 is cost-effective due to the reduction in time required for installation and maintenance and it has the added bonus of a simplified spares concept. The system also benefits from built-in diagnostics for continuous health indication via HART.

Technical data	FMD71	FMD72
Measuring range (DP):	From -100...+100 mbar to -1...+40 bar	From -400...+400 mbar to -1...+40 bar
Output	: 4...20mA HART	4...20mA HART
Process temperature	: -25°C...+150°C	-40°C...+125°C (higher on request)
Ambient temperature	: -40°C...+80°C	-40°C...+80°C
Protection	: IP66/68 NEMA4X/6P	IP66/68 NEMA4X/6P
Power supply	: 12...45V DC	12...45V DC
Accuracy	: Depends on measuring cell and sensor	Depends on measuring cell and sensor
Housing	: Aluminium, stainless steel	Aluminium, stainless steel
Process connection	: Threads, flanges and hygienic fittings	Threads, flanges and hygienic fittings

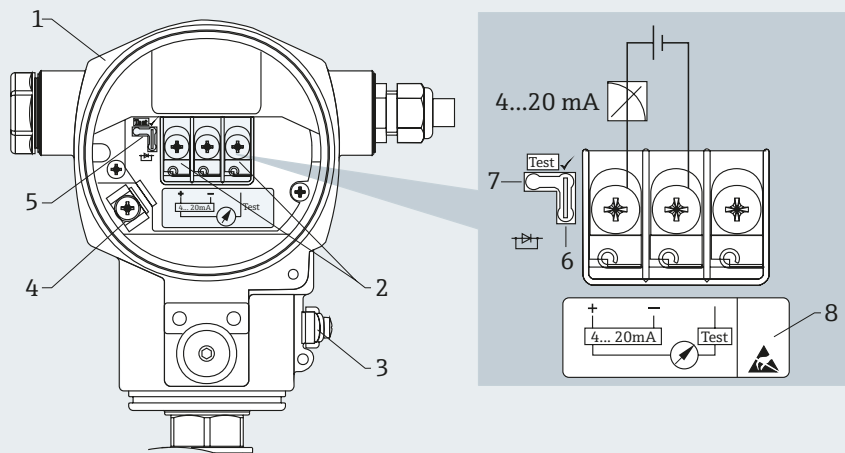
## Installation

Install the transmitter with the mounting bracket (supplied). The mounting bracket can be fixed on pipes with a diameter between 1¼"-2" or on walls.



## Electrical connection

1. Housing
2. 4...20mA test signal between positive and test terminal
3. External ground terminal
4. Internal ground terminal
5. Jumper for 4...20mA test signal
6. Minimum supply voltage = 12 V DC (jumper is set as illustrated in the diagram)
7. Minimum supply voltage = 13 V DC (jumper is set in 'test' position)
8. Devices with integrated overvoltage protection are labelled 'OVP'



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# Deltabar S FMD77

Differential pressure transmitter for level applications.



**Wireless**HART

- For process temperatures up to 400°C
- Self-diagnosis and process monitoring functions
- Standard 0.075% linearity and chemical seal error
- IEC61508 up to SIL3

The metallic sensor provides outstanding long-term stability and single-sided overpressure resistance. It can be supplied with a wide range of process connections and fill fluids.

## Application

- Level, content or volume measurement in pressurised vessels or vessels under vacuum

## Advantages

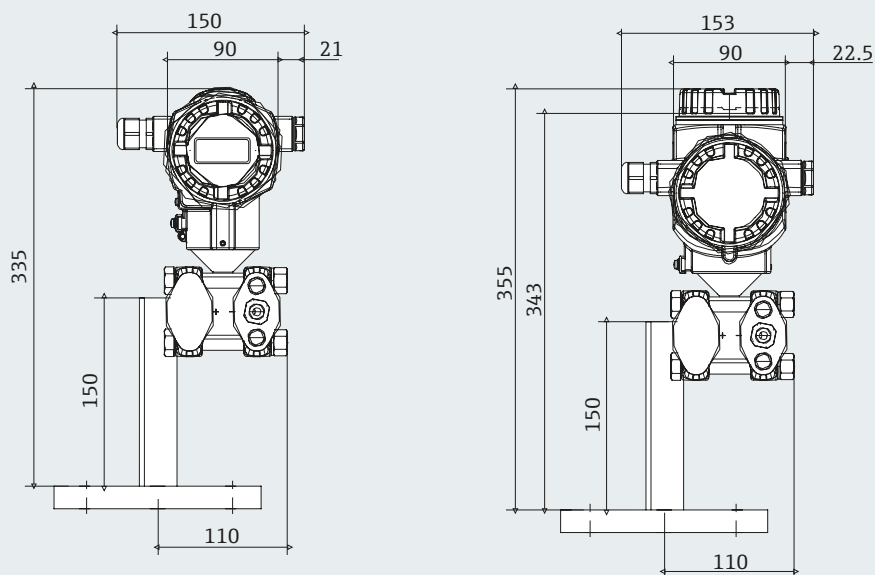
- Long term stability <0.05% per 5 years minimises recalibration
- Integrated linearisation of vessels (horizontal or vertical)
- HART, PROFIBUS and FOUNDATION Fieldbus compatible
- Menu-guided display with plain text - no error codes to decipher
- No software or handheld communicators required

## Technical data

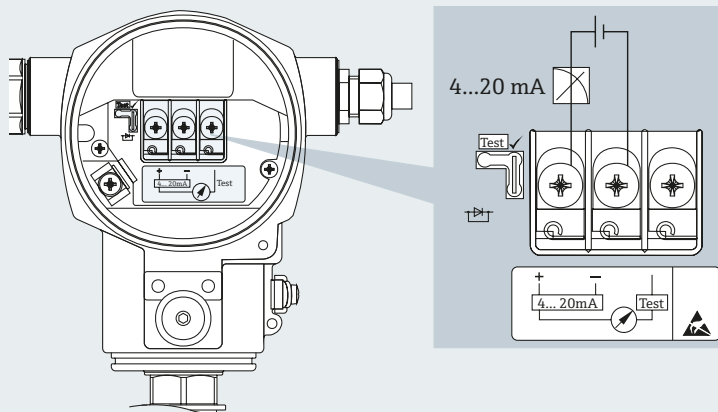
Measuring range	: 10 mbar...16 bar / TD 100:1 (larger TD on request)
Output	: 4...20mA HART, PROFIBUS PA or FOUNDATION Fieldbus
Process temp	: -70°C...400°C
Ambient temp	: -40°C...85°C
Protection	: IP66/67/68
Power supply	: 10.5...45V DC standard, 10.5...30V DC for EExi 9... 32V DC for PA and FOUNDATION Fieldbus
Cable connection	: Gland M20x1.5, Harting connector, 1/2" NPT, 7/8" FOUNDATION Fieldbus connector, M12
Accuracy <small>(including hysteresis and reproducibility up to TD 15:1)</small>	: 0.075% (transmitter) + chemical seal error
Housing	: Cast aluminium with polyester based coating, (stainless steel 316L optional)
Process connection	: ANSI/DIN flanges out of 1.4435 (316L), Alloy C276, Monel, tantalum etc. Compensation side: Standard DP connection out of 316L. Other materials on request.
Process membrane	: 1.4435 (316L), Alloy C276, Monel, Tantalum, PTFE foil etc. Fill fluids (chemical seal) Silicon oil, vegetable oil (FDA), high temperature oil, inert oil fillings



### Dimensions (mm)



### Electrical connection



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# Deltabar S FMD78

Differential pressure transmitter for level applications.



**Wireless**HART™

- For process temperatures up to 400°C
- Self-diagnosis and process monitoring functions
- Standard 0.075% linearity and chemical seals and capillaries error
- IEC61508 up to SIL3

Pressure device for measuring differential pressure in industrial and non-industrial environments. The metallic sensor provides outstanding long-term stability and single-sided overpressure resistance. It can be supplied with a wide range of process connections and fill fluids.

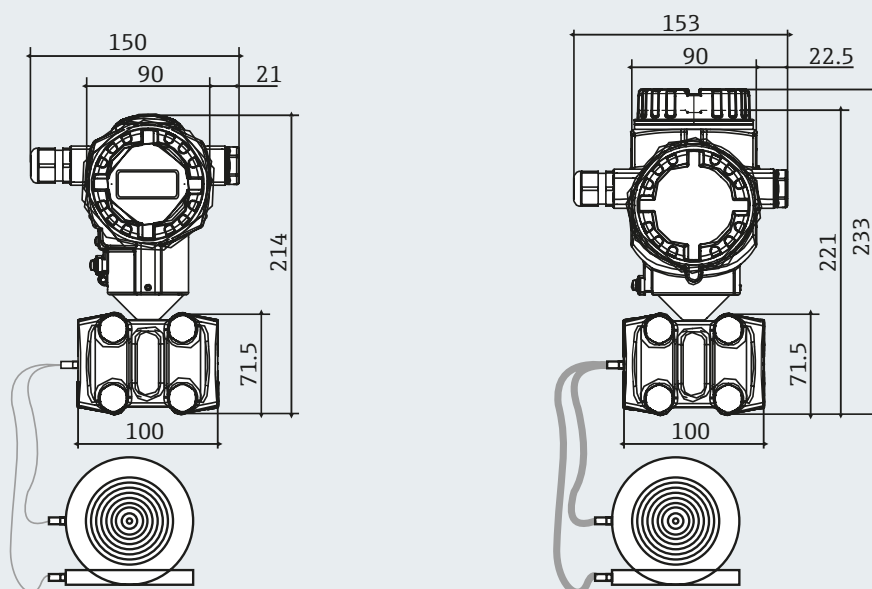
- Level, content or volume measurement in pressurised vessels or vessels under vacuum
- Differential pressure measurement of hazardous and harmful products
- Long term stability <0.05% per 5 years minimises recalibration
- Integrated linearisation of vessels (horizontal or vertical)
- HART, PROFIBUS and FOUNDATION Fieldbus compatible
- Menu-guided display with plain text - no error codes to decipher
- No software or handheld communicators required
- Available with TempC membrane for improved accuracy and process safety in difficult pressure and DP applications

## Technical data

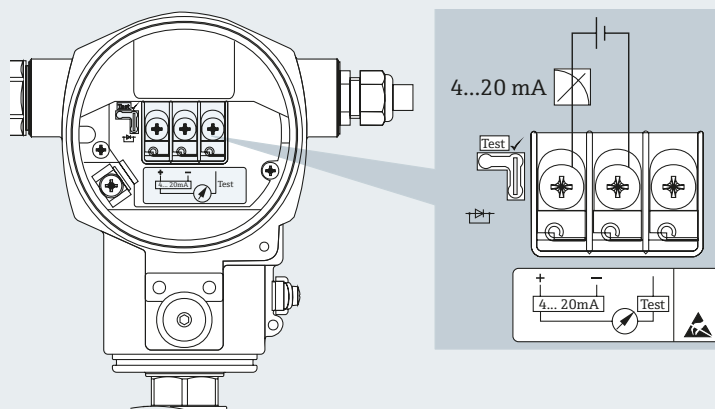
Measuring range	: 100 mbar...40 bar/TD 100:1 (larger TD on request)
Process temp	: -70°C...400°C
Ambient temp	: -40°C...85°C
Protection	: IP66/67/68
Power supply	: 10.5...45V DC standard, 10.5...30V DC for EEx-i 9...32V DC for PA and FOUNDATION Fieldbus
Cable connection	: Gland M20x1.5, 1/2" NPT, 7/8" FOUNDATION Fieldbus connector, M12
Accuracy	: 0.075% (transmitter) + chemical seal and capillaries error.
Housing	: Cast aluminium with polyester based coating, (stainless steel 316L optional)
Process connection	: All common process connections ANSI/DIN flanges, hygienic couplings e.g. Tri-Clamp etc.
Process membrane	: 1.4435 (316L), Alloy C276, Monel, Tantalum, TempC etc.
Capillary	: Armoured (316L) variable length up to 10 metres
Seal and capillary	: Silicon oil, vegetable oil (FDA), high temperature oil, Inert oil fillings

\* The position of the transmitter can be of importance in vacuum applications. Please contact your local Endress+Hauser office for advice.

### Dimensions (mm)



### Electrical connection



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# Cerabar S PMC71/PMP71

High accuracy pressure transmitter with high temperature option up to 150°C.



**WirelessHART**

- Robust ceramic or metallic measuring cell
- Self-diagnosis and process monitoring functions
- Standard 0.05% linearity (0.025% optional)
- IEC61508 up to SIL3

The measuring sensor is either ceramic or metallic, offering outstanding performance in vacuum applications and fast-changing temperature conditions in gas, liquid and vapour applications.

### Applications

The sensors are able to withstand high process temperatures and are either made from metal (PMP71) or from a corrosion-resistant ceramic (PMC71). The ceramic sensor has the additional benefit of withstanding high pressure peaks and high vacuums.

### Technical data

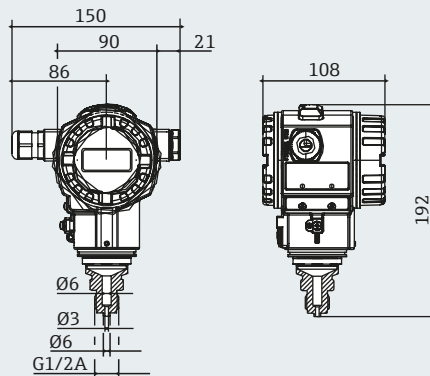
	PMC71	PMP71
Measuring range (larger TD on request)	1 mbar...40 bar gauge or absolute /TD 100:1	10 mbar...700 bar gauge or absolute /TD 100:1
Process temp	-25°C...125°C (optional 150°C)	-40°C...125°C
Ambient temp	-40°C...85°C	-40°C...85°C
Power supply	10.5...45V DC standard 10.5...30V DC for EExi 9... 32DC for PA and FF	10.5...45V DC standard 10.5...30V DC for EExi 9... 32V DC for PA and FF
Cable connection	Gland M20x1.5 1/2" NPT, 7/8" FF connector, M12	
Housing	Cast aluminium with polyester based coating, (stainless steel 316L optional).	
Process connection	Threads, flanges and hygienic fittings	Threads and flanges
Wetted parts	1.4435 (316L), Alloy C276, PVDF etc	1.4435 (316L), Alloy C276, etc
Process seal	Viton, EPDM, Chemraz, Kalrez etc.	Welded construction.
Process membrane	Ceramic Al <sub>2</sub> O <sub>3</sub> 99.9% pure, Ceraphire®	SS316L (1.4435) or Alloy C276

### Advantages

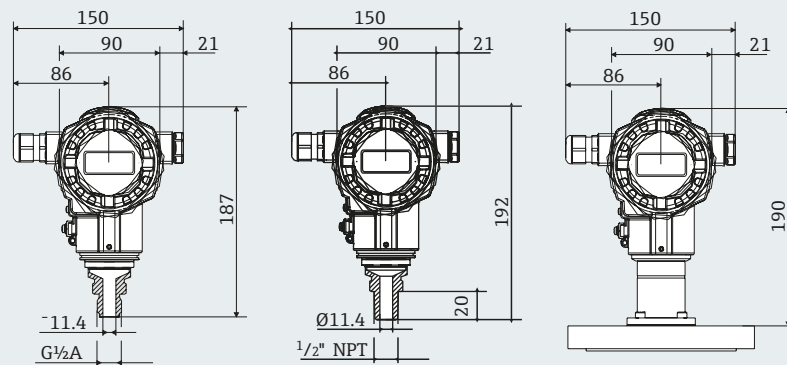
- Measuring sensor capable of withstanding process temperatures up to 150°C at the membrane
- Long-term stability <0.05% per 5 years minimises recalibration
- Secondary containment and venting chamber
- HART, PROFIBUS and FOUNDATION Fieldbus compatible
- IP67 protection (IP68 optional)
- Menu-guided display with plain text - no error codes to decipher
- No software or handheld communicators required

## Dimensions (mm)

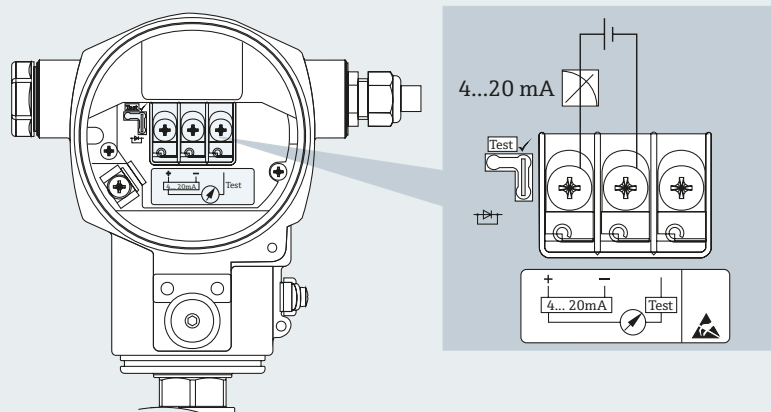
PMP71/PMC71



PMC71



## Electrical connection



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# Cerabar S PMP75

Pressure transmitter with chemical seal for high temperature or hygienic applications.



**Wireless**HART

- Temperatures up to 400°C
- Self-diagnosis and process monitoring functions
- Standard 0.05% linearity and chemical seal error
- IEC61508 up to SIL3

Pressure device for measuring pressure in industrial and non-industrial environments in process temperatures up to 400°C. The sensor element has an optimised mechanical construction to reduce the temperature effect of the chemical seal.

## Applications

The PMP75 is ideal for the oil & gas, chemical, food and pharmaceutical industries. The chemical seal is filled with oil that is either FDA listed, silicon or suitable to be used in oxygen applications, for example.

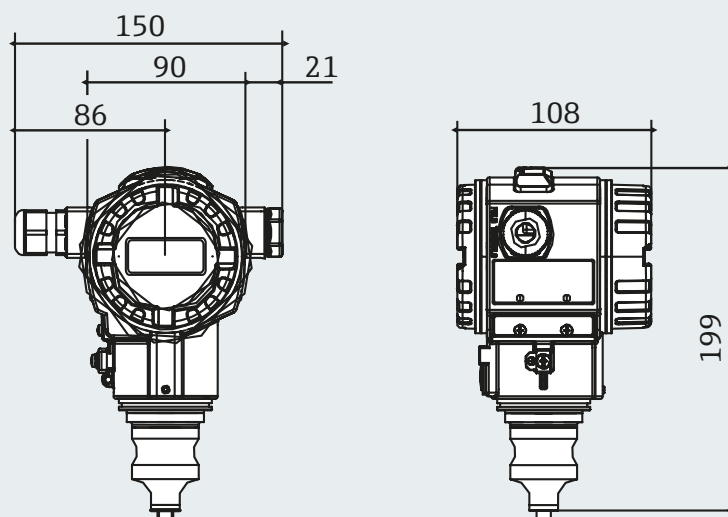
## Advantages

- Optimised for chemical seal mounting
- Long-term stability <0.05% per year minimises recalibration
- HART, PROFIBUS and FOUNDATION Fieldbus compatible
- Menu-guided display with plain text - no error codes to decipher
- No software or handheld communicators required
- Available with TempC membrane for improved accuracy and process safety in difficult pressure and DP applications

## Technical data

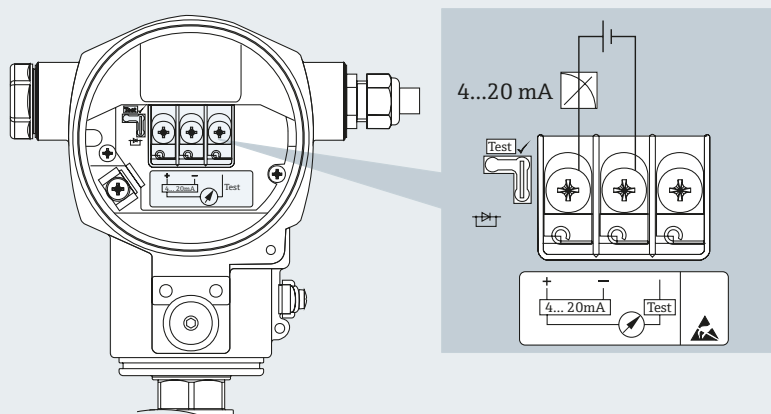
Measuring range	: 100 mbar...400 bar gauge or absolute/TD 100:1 (larger TD on request)
Process temp	: -70°C...400°C
Ambient temp	: -40°C...85°C
Protection class	: IP67 (IP68 optional)
Power supply	: 10.5...45V DC standard, 10.5...30V DC for EExi 9...32V DC for PA and FF
Cable connection	: Gland M20x1.5, ½" NPT, ⅜" FOUNDATION Fieldbus connector, M12
Accuracy	: 0.05% (transmitter) + chemical seal error
Housing cast	: Aluminium with polyester based coating, (stainless steel 316L optional)
Process connection	: All standard DIN/ANSI pressure and hygienic process connections.
Process seal	: Welded construction with secondary containment.
Process membrane	: 316L (1.4435), Alloy C276, Monel, Tantalum, PTFE foil, TempC, etc. Fill fluid silicon oil, vegetable oil (FDA), inert oil, high temperature oil etc.

## Dimensions (mm)



PMP75  
flange size depends on chosen seal

## Electrical connection



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# Cerabar M PMC51/PMP51/PMP55

Overload-resistant pressure transmitter with ceramic or metallic sensors.



PMC51



PMP51



PMP55

**WirelessHART**

- IEC61508 up to SIL2
- High reference accuracy: up to  $\pm 0.15\%$  ( $\pm 0.075\%$  for platinum)
- 100:1 turndown
- Separate housing version: IP69K rating

Cerabar M pressure transmitters measure relative or absolute pressure in gas, vapour, liquid and dust and are suitable for almost all applications in the engineering and process industries. The high degree

of protection and the stainless steel housing make the transmitter ideal for applications where cleaning takes place frequently. And with HART, PROFIBUS or FOUNDATION Fieldbus, Cerabar M can be easily incorporated into existing systems.

## Technical data

	PMC51	PMP51	PMP55
Measuring range	: -100/0...100 mbar to -1/0...40 bar	-400/0...400 mbar to -1/0...400 bar	-400/0...400 mbar to -1/0...400 bar
Output	: 4...20mA analogue, 4...20mA HART, PROFIBUS or FOUNDATION Fieldbus	4...20mA analogue, 4...20mA HART, PROFIBUS or FOUNDATION Fieldbus	4...20mA analogue, 4...20mA HART, PROFIBUS or FOUNDATION Fieldbus
Accuracy	: Standard $\pm 0.15\%$ , platinum $\pm 0.075\%$	Standard $\pm 0.15\%$ , platinum $\pm 0.075\%$	Standard $\pm 0.15\%$
Long-term drift	: $\pm 0.4\%$ over 10 years	$\pm 0.4\%$ over 10 years	$\pm 0.4\%$ over 10 years
Turndown	: Up to 100:1	Up to 100:1	Up to 100:1
Ambient temperature	: +40...+85°C	+40...+85°C	+40...+85°C
Product temperature	: -20...+130°C	-40...+130°C	-70...+400°C
Power supply	: 11.5...45V DC (versions with plug-in connection 35V DC); for intrinsically safe versions: 11.5...30V DC	11.5...45V DC (versions with plug-in connection 35V DC); for intrinsically safe versions: 11.5...30V DC	11.5...45V DC (versions with plug-in connection 35V DC); for intrinsically safe versions: 11.5...30V DC
Housing (coated)	: Stainless steel or aluminium	Stainless steel or aluminium	Stainless steel or aluminium
Protection	: IP66/67/68/69K	IP66/67/68/69K	IP66/67/68/69K



**PMC51: Ceraphire® ceramic sensor**

Cerabar M PMC51 features a 99.9% pure ceramic measuring cell that offers high chemical stability and overload resistance up to 40 times the nominal pressure.

**PMP51: metal on process sensor**

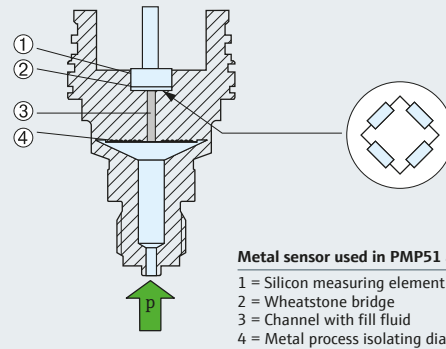
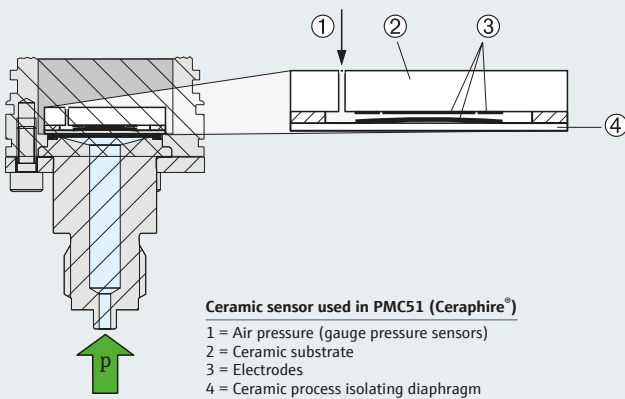
Cerabar M PMP51 features a piezoresistive metallic measuring cell for high long-term measurement stability in process pressures up to 400 bar.

**PMP55: diaphragm seals**

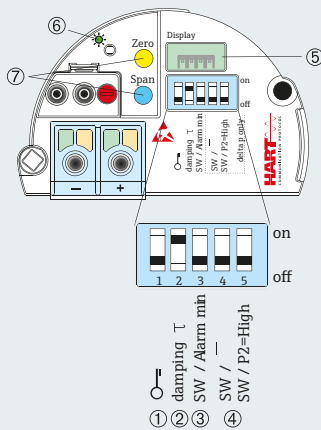
Cerabar M PMP55 is the high temperature and high pressure version offering measurement stability in temperatures up to 400°C and pressures up to 400 bar. With a range of hygienic process connections, it is perfect for use in hygienic applications and it offers ASME BPE conformity and electropolished versions as an option.

It is also available with the TempC membrane for improved accuracy and process safety in difficult pressure and DP applications.

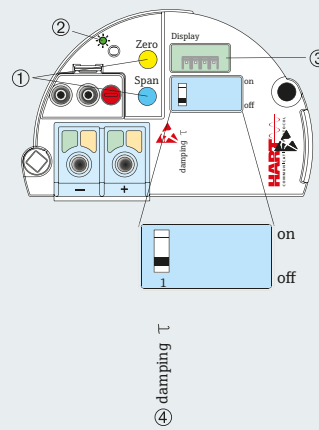
**Ceramic and metallic sensors**



**Operation**



- 1 = DIP switch for locking/unlocking parameters relevant to the measured value
- 2 = DIP switch for switching damping on/off
- 3 = DIP switch for alarm current SW/alarm min (3.6mA)
- 4 = DIP switch only for Deltabar M
- 5 = Slot for optional local display
- 6 = Green LED to indicate successful operation
- 7 = Operating keys for lower range value (zero) and upper range value (span)



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

- For more information, specific application advice or to order, please contact us on 0161 286 5000 or email: [info@uk.endress.com](mailto:info@uk.endress.com)
- To download technical documentation, please visit our website: [www.uk.endress.com](http://www.uk.endress.com)
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# Cerabar T PMC11/21, PMP11/21

Pressure transmitters for simple applications.



PMC11



PMP11



PMC21



PMP21

- Cost-effective and simple to use
- High reproducibility
- Long-term stability
- Overload resistant
- Housing and process isolating diaphragm made of 316L

In standard applications in the process industries, it's all about choosing an instrument that gets the job done! It must work reliably, be easy to install and should meet budget requirements. Our series of compact pressure devices for liquid, gas, vapour and dust applications offer quality and performance at an affordable price.

Many applications in both process automation and utilities monitoring require small products that are easy to install and are flexible in their use. A robust design and high product quality ensure reliable operation. We also know that smooth ordering and fast delivery is important. These were the focal points for the development of the new generation of Cerabar gauge and absolute pressure transmitters.

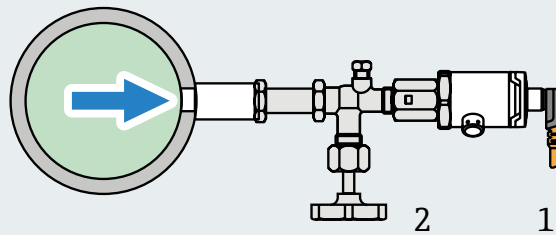
Technical data	PMC11	PMC21	PMP11	PMP21
Sensor	Gauge : Ceramic	Absolute and gauge Ceramic	Gauge Metallic	Absolute and gauge Metallic
Process connections	: Threads	: Threads	: Threads	: Threads
Accuracy	: ±0.5%	±0.3%	±0.5%	±0.3%
Process temperature	: -25°C...+85°C	-40°C...+100°C	-25°C...+85°C	-40°C...+100°C
Pressure	: 400 mbar...40 bar	400 mbar...400 bar	400 mbar...40 bar	400 mbar...400 bar
Max overpressure	: 160 bar	600 bar	160 bar	600 bar
Certification	: ATEX, FM, CSA, IEC Ex, NEPSI, EAC		ATEX, FM, CSA, IEC Ex, NEPSI, EAC	

## Mounting location

### Pressure measurement in liquids

Mount the device with a shutoff device at the same height as the tapping point.

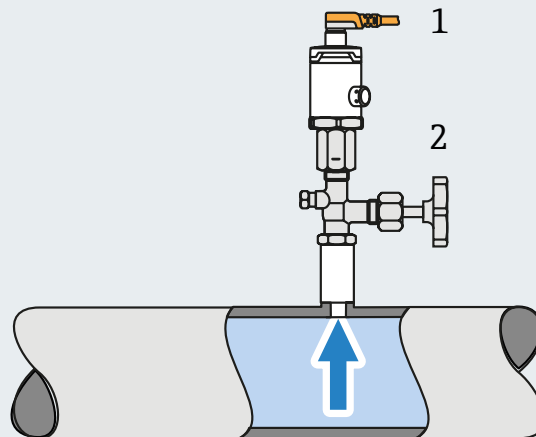
1. Device
2. Shutoff device



### Pressure measurement in gases

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

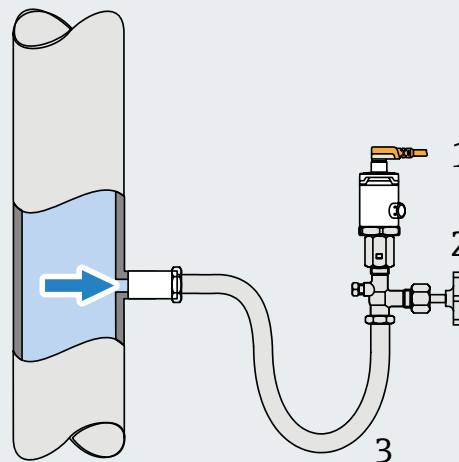
1. Device
2. Shutoff device



### Pressure measurement in vapours

Use a siphon for pressure measurement in vapours as it reduces the temperature to almost ambient temperature. Mount the device with a shutoff device at the same height as the tapping point. Note the maximum permitted ambient temperature of the transmitter!

1. Device
2. Shutoff device
3. Siphon



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# Cerabar T PMP23

Pressure transmitter with fully welded design for the food & beverage industry.



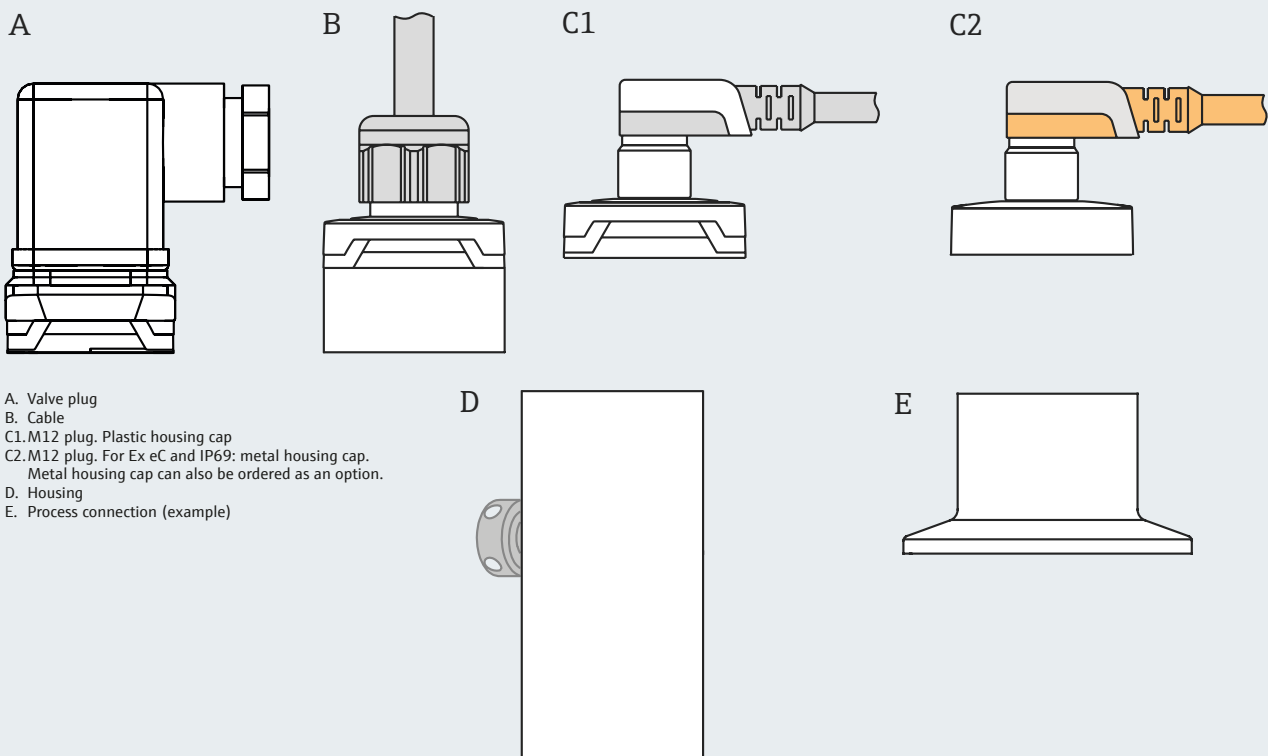
- Cost-effective and simple to use
- High reproducibility
- Long-term stability
- Overload resistant
- Suitable for CIP/SIP cleaning
- IP69 protection

In standard applications in the process and food industries, it's all about choosing an instrument that gets the job done! It must work reliably, be easy to install and should meet budget requirements. Our hygienic compact pressure device for liquid, gas, vapour and powder applications offers high quality at an affordable price.

Cerabar PMP23 is a cost-effective absolute or gauge pressure transmitter featuring a compact, fully-welded construction for maximum performance. The piezo-resistive measuring cell with flush-mounted 316L diaphragm has been specifically designed for applications in the hygienic industries. It offers various EHEDG and 3-A certified hygienic process connections, build materials with FDA conformity, EG 1935/2004 conformity, IP69 protection class as well as hazardous area certificates. The device can be delivered with customised measuring ranges up to 40 bar.

Technical data	PMP23
Measuring principle	: Absolute and gauge
Sensor	: Metallic
Process connections	: Flush-mounted hygienic, flush-mounted thread
Accuracy	: $\pm 0.3\%$
Process temperature	: $-10^{\circ}\text{C} \dots +100^{\circ}\text{C}$
Pressure	: 400 mbar...40 bar
Max overpressure	: 160 bar
Certification	: 3-A, EHEDG, EG 1935/2004

Product design



- A. Valve plug
- B. Cable
- C1. M12 plug. Plastic housing cap
- C2. M12 plug. For Ex eC and IP69: metal housing cap.  
Metal housing cap can also be ordered as an option.
- D. Housing
- E. Process connection (example)

- i** For more information, specific application advice or to order, please contact us on **0161 286 5000** or email: [info@uk.endress.com](mailto:info@uk.endress.com)
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# TempC membrane

Pressure transmitter membrane offering improved accuracy and safety in challenging applications.



- For use with Cerabar PMP55/ PMP75 and Deltabar FMD78 pressure transmitters.
- Covers our range of hygienic process connections for the food & beverage and life sciences industries.
- Laser welded in place for smooth finish and easy cleaning.
- Complements the existing range of pressure measuring cell technologies available: the Ceraphire ceramic cell, condensation-tight CONTITE cell, metallic measuring cell and the electronic DP solution.

The TempC membrane offers improved accuracy and process safety in challenging pressure and DP applications. It utilises a completely new technology to dramatically reduce the influence of process and ambient temperature fluctuations.

In applications with process temperatures from  $-40^{\circ}\text{C}$  to  $250^{\circ}\text{C}$ , it offers a very short recovery time after temperature shock, for example at the end of a CIP/SIP cleaning cycle, when compared to conventional diaphragm seals.

### Better than conventional membranes

Pressure and differential pressure transmitters are employed across all industries for many different applications such as process pressure measurement, hydrostatic level, differential pressure and even flow measurement, across filters, packing, heat exchangers and many others. Sometimes the application determines that the instrument requires a diaphragm seal design, typically due to extremes of process

temperatures, corrosive media, plant vibration, viscous media or hygienic requirements.

Whilst diaphragm seals are very useful in solving some challenging applications they can suffer from poor performance due to changes in both process and ambient temperature. Changes in temperature will cause the oil fill in the system to expand or contract. Conventional membranes can have a high degree of stiffness so the oil expansion or contraction has little effect on the membrane but instead acts upon the measuring cell thus causing errors in measurement.

### Reducing measurement errors by up to 90%!

With this in mind, the innovative TempC (temperature compensatory) membrane has been designed to be much more flexible, thus absorbing any oil expansion or contraction. This can typically reduce these measurement errors by up to 90%, therefore providing much improved measurement stability, reliability and potentially greater process safety.

### TempC membrane for use with the Cerabar PMP55, PMP75 and Deltabar FMD78

Cerabar PMP55



Cerabar PMP75



Deltabar FMD78



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# Ceraphant PTC31B, PTP31B/33B

Pressure switches for safe measurement and monitoring of absolute and gauge pressure.



PTC31B



PTP31B



PTP33B

- Cost-effective and simple to use
- High reproducibility
- Long-term stability
- Fully-welded sensor
- Housing and process isolating diaphragm made of 316L

Ceraphant pressure switches offer outstanding price-performance ratios for the measurement of absolute and gauge pressure in gases, vapours, liquids and dust, offering good application versatility due to a

wide range of approvals and process connections. They are particularly suited to measuring tasks such as pump control and filling machines and in process control applications with head pressure in tanks.

Technical data	PTC31B	PTP31B	PTP33B
Measured variable	: Gauge and absolute pressure	: Gauge and absolute pressure	: Gauge and absolute pressure
Sensor	: Ceramic	: Metallic	: Metallic
Process connections	: Threads	: Threads	: Threads and hygienic
Accuracy	: Standard: 0.5%, Platinum: 0.3%	: Standard: 0.5%, Platinum: 0.3%	: Standard: 0.5%, Platinum: 0.3%
Process temperature	: -25°C...+100°C	: -40°C...+100°C	: -10°C...+100°C
Pressure	: 100 mbar...40 bar	: 400 mbar...40 bar	: 400 mbar...40 bar
Max overpressure	: 60 bar	: 600 bar	: 160 bar
Protection	: IP65/67	: IP65/67	: IP65/67 or IP69
Surface roughness	: x	: x	: Ra<0.76µm
Hygiene approvals	: x	: x	: 3-A, EHEDG, FDA compliant, EG 1935/2004



**PTC31B**

Ceraphant PTC31B pressure switch features a ceramic sensor that is both corrosion and abrasion-resistant and offers long-term stability.

**PTP31B**

Ceraphant PTP31B pressure switch features a metallic sensor for use in a wide range of applications across the process industries.

**PTP33B**

Ceraphant PTP33B hygienic pressure switch is specially designed for use in the food & beverage sector and comes with all relevant hygiene approvals.

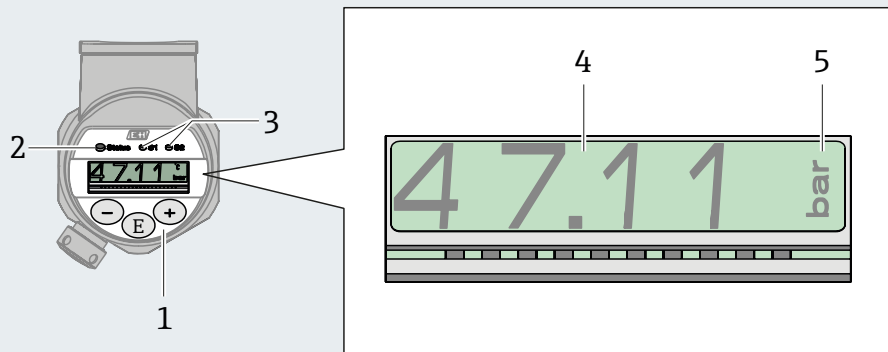
**Operation**

The local liquid crystal display shows measured values, fault messages and information messages and supports you through each operating step. During operation, the display shows measured values, fault messages and notice messages. In addition, it is possible to switch to menu mode via the operating keys.

1. Operating keys
2. Status LED
3. Switch output LEDs
4. Measured value
5. Unit

**Functions:**

- 4-digit measured value display and decimal point
- Simple and complete menu guidance due to breakdown of parameters into several levels and groups
- Possibility to configure the display in accordance with individual wishes and requirements
- Comprehensive diagnostic functions (fault and warning message, peak-hold indicators, etc.)
- Quick and safe commissioning
- The device also signals the status via LEDs



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Services &  
Solutions

Recorders &  
System Components

Analytics

Temperature

Flow

Pressure

Level