

## Product Information MPP

## PHARMA

# Modular Pharma Pressure Transmitter MPP

## Range of applications

- Pressure measurement in pipes and vessels
- High temperature applications up to 177 °C (350 °F) permanent

## Application examples

- Bio-reactor head space pressure monitoring
- Chromatography column pressure measurement
- SIP monitoring
- Pressure measurement of sterile gas lines
- Pressure measurement within sterile transfer lines
- Pressure measurement within filtration processes

## Hygienic design/Process connection

- Front-flush, hygienic and easy sterilizable installation, CPM-process connection
- Versions available to conform to 3-A Standard 74- and/or ASME BPE
- All wetted materials and actuating fill are FDA-conforming
- Sensor completely made of stainless steel
- Complete overview of process connections: see order code
- The Anderson-Negele CLEANadapt system offers a flow-optimized, hygienic and easily sterilizable installation solution for sensors.

## Features

- Unique design and fully modular components
- Components may be economically purchased and individually integrated
- Lower inventory cost for critical sensors
- Modules may be stocked and interchanged to meet any need
- Extremely durable at continuous temperatures up to 177 °C (350 °F)
- CIP / SIP cleaning up to 177 °C (350 °F)
- Easy to operate; adjustments require no additional tools
- Self-diagnostics ensure that sensor is performing optimally
- Available with absolute and relative measuring cell (vacuum proof)
- Developed to excel in the harshest environments
- Airtight sealing eliminates internal condensation
- Intuitive menu-driven setup simplifies commissioning

## Options/Accessories


- Wide offering of standard pressure ranges
- Customer-specified ranges available
- Waterproof prefabricated cable for M12 connector

## Measuring principle of the pressure sensor

This unit utilizes an internal piezoelectric transducer to convert the process measurement into a corresponding mV signal. The mV signal then passes through custom linearization and conditioning circuitry. The resulting signal is an industry standard 4...20 mA output. This mA signal is factory set over the specified range of the unit.

With relative pressure sensors, the back of the diaphragm is vented, i.e. this sensor measures the gauge pressure and/or vacuum relative to the atmospheric pressure. With an absolute pressure sensor the measurement is relative to a perfect theoretical vacuum. As a result, the signal will vary with the ambient atmospheric air pressure.

## Communication

 4...20 mA

## Pressure sensor MPP

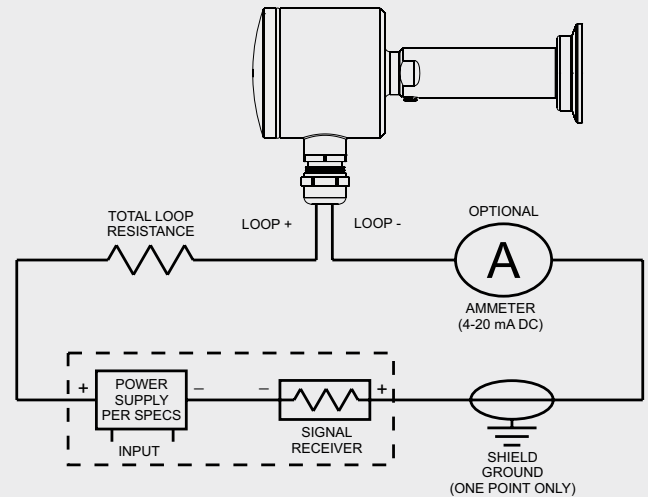
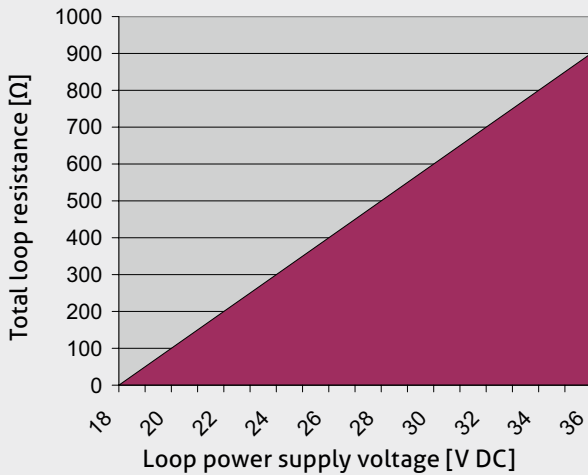


## Pressure sensor MPP with CPM



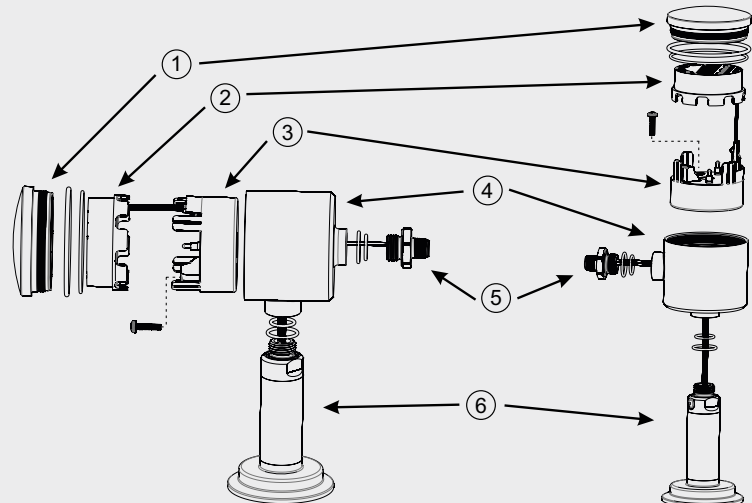
Specification		
<b>Measuring range URL [bar]</b>	Relative	0...2 / 3 / 4 / 6 / 7 / 10 / 20 / 35 / 70 -1...1 / 2.5 / 3 / 4 / 7
<b>Measuring range URL [psi]</b>	Absolute	0...2 / 3 / 4 / 6 / 7 / 10 / 20 / 35
	Relative	0...30 / 50 / 60 / 100 / 150 / 160 / 200 / 500 / 1000 30 mmHg/0, 30 mmHg/0...15 / 30 / 60 / 100 / 200
	Absolute	0...30 / 50 / 60 / 100 / 150 / 160 / 200 / 300 / 500
<b>Turndown</b>	Max. 10:1	of upper range value (see also measurement accuracy)
<b>Overpressure strength</b>	Factor	1.5 x nominal pressure of measuring element up to 35 bar / 500 psi 1.1 x nominal pressure of measuring element up to 70 bar / 1000 psi
<b>Measurement accuracy</b>	Turndown to 5:1	≤ 0.07 % in calibrated measuring range
	Turndown over 5:1	≤ 0.1 % in calibrated measuring range
	Repeatability	0.05 %
	Long-term stability	0.2 % URL every 2 years
<b>Temperature effect</b>	Process	< 12.5 mbar / 10 °C (0.1 psi / 10 °F) typical
	Ambient	< 12.5 mbar / 10 °C (0.1 psi / 10 °F) typical
<b>Temperature range</b>	Process	-18...177 °C (0...350 °F) at ambient temp. up to 60 °C (140 °F)
	Ambient	-18...165 °C (0...330 °F) at ambient temp. up to 71 °C (160 °F) 0...71 °C (32...160 °F)
<b>Response time</b>		< 0.1 seconds
<b>Sample rate</b>		< 0.05 seconds
<b>Materials</b>	Connection head	Stainless steel, AISI 304 (1.4301), $R_a \leq 0.2 \mu\text{m}$ (8 microinch)
	Metal cap	Stainless steel, AISI 304 (1.4301), $R_a \leq 0.2 \mu\text{m}$ (8 microinch)
	Plastic cap	Polycarbonate
	Threaded connector	Stainless steel, AISI 304 (1.4301), $R_a \leq 0.2 \mu\text{m}$ (8 microinch)
	Wetted parts	Stainless steel, AISI 316L, $R_a \leq 0.2 \mu\text{m}$ (8 microinch)
	Diaphragm	Stainless steel, AISI 316L, $R_a \leq 0.2 \mu\text{m}$ (8 microinch)
	Diaphragm seal/oil filling	Medical white oil / mineral oil / paraffin oil FDA approval number 21CFR172.878, 21CFR178.3620, 21CFR573.680 Neobee® M-20 (optional)
<b>Process connection</b>		G1" hygienic, CPM fitting, Tri-Clamp 3/4" ...2"
<b>Electric connection</b>	Cable gland	M16x1.5
	Plug-in connection	M12 connector, 5-pin, 1.4305 (option)
<b>Protection class</b>		IP 67 (with cable fitting) / NEMA 4X IP 69 K (with plug-in connection)
<b>Auxiliary voltage</b>		18...36 V DC
<b>Output</b>	Current loop	4...20 mA DC / Hart 7.0 / 2-wire 20...4 mA DC / Hart 7.0 / 2-wire Foundation Fieldbus
<b>Burden</b>		See separate graph on page 3, typical 0...300 ohm at 24 VDC
<b>Tightening torque</b>	For assembly of all MPP components	27 Nm (20 ft-lbs)
<b>Compliance</b>		HART 7.0 compatible Article 3.3 PED 97/23/EC CSA-B51-03 CRN number CSAOF9754.5R1
<b>Weight</b>		Approx. 780 g

## Burden



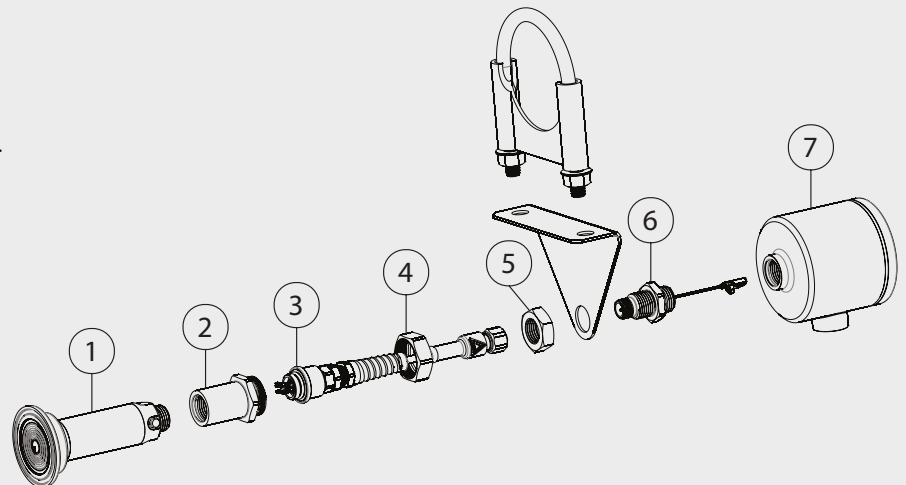
## Exploded view of functional components

- 1: Cap (including two O-rings)
- 2: Display interface
- 3: Puck
- 4: Enclosure
- 5: M12 quick disconnect (including two O-rings)
- 6: Stem (including two O-rings)

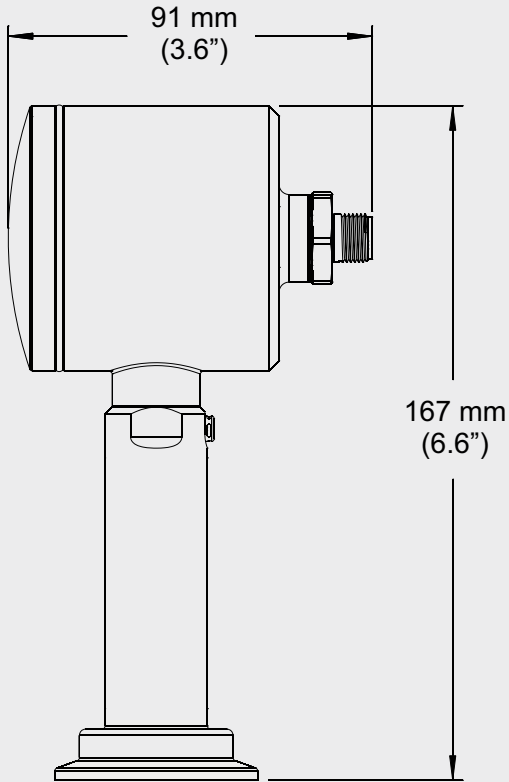


## Exploded view of functional components

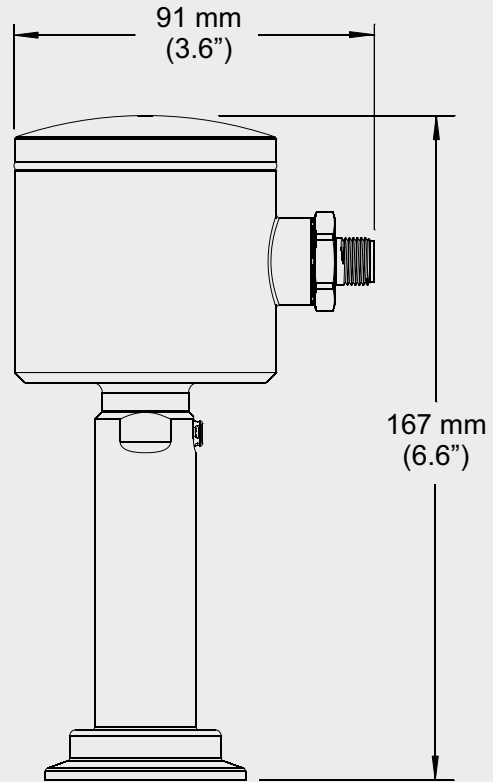
- 1: Measurement cell (stem)
- 2: Stem adaptor kit
- 3: Cable kit receptacle
- 4: Union nut
- 5: Nut
- 6: Remote M12 connector/QDR adaptor
- 7: Enclosure



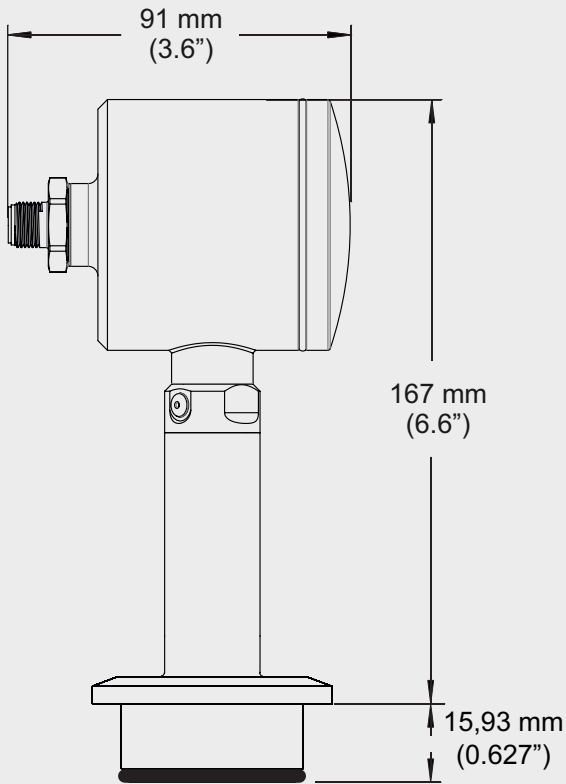
Dimensional drawing: horizontal orientation



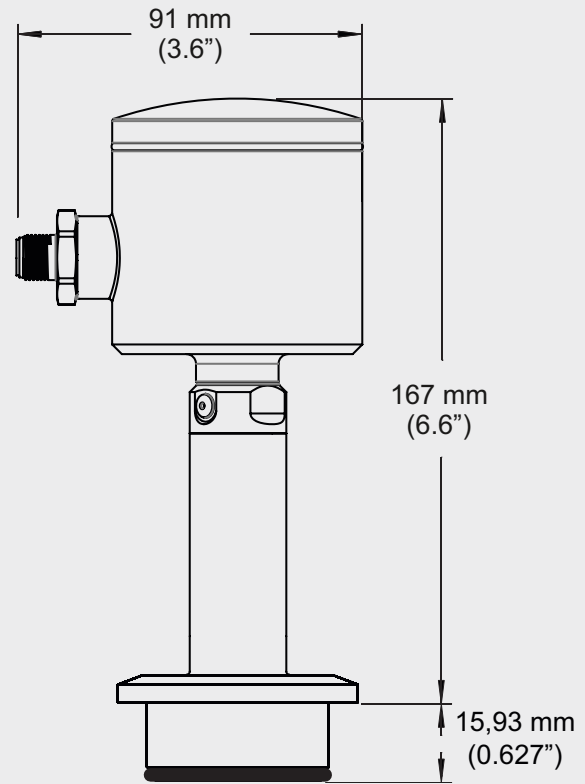
Dimensional drawing: vertical orientation



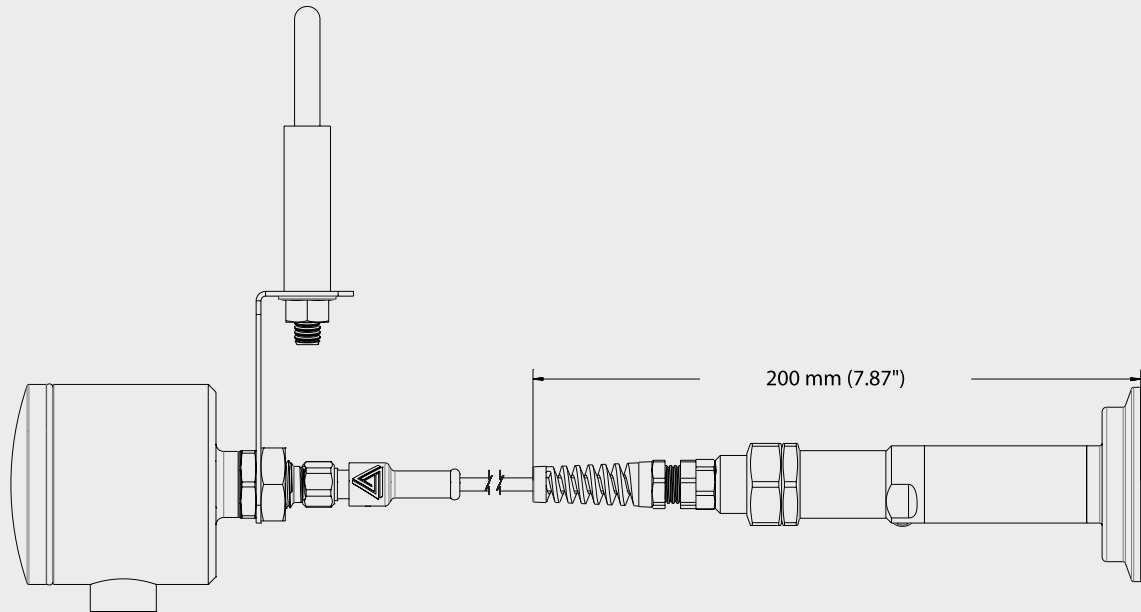
Dimensional drawing: horizontal orientation with CPM



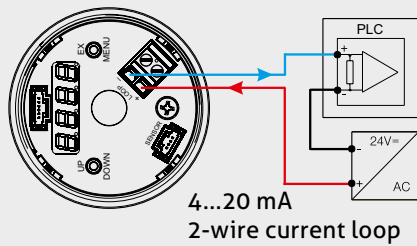
Dimensional drawing: vertical orientation with CPM



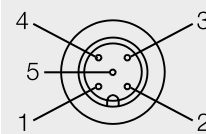
## Dimensional drawing for remote version



## Electrical connection with cable gland



## Electrical connection with M12 connector



## M12 connector configuration

- 1: + supply +24 V DC
- 2: - output 4...20 mA
- 3: not connected
- 4: not connected
- 5: not connected

## Note on 3-A Sanitary Standard 74-



Information on installation according to 3-A standard is available on our website:  
[www.anderson-negele.com/3A74.pdf](http://www.anderson-negele.com/3A74.pdf)

Click on the PDF icon to download the document.

## Intended use



- Not suitable for applications in explosive areas.
- Not suitable for applications in safety-relevant equipment (SIL).



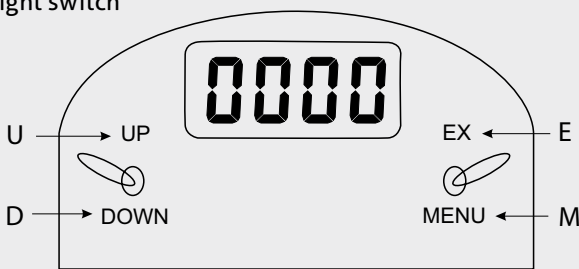
**Modular sensor principle**

The "MPP" pressure sensor has a modular design. It can be purchased in separate components and assembled as required by the customer. It is also available as a fully assembled sensor. In both cases, the user can check or change the following settings.

The components and sensors are delivered according to the specifications (ranges and units) stated on the type label. These values can be checked and changed by the user in the following menu. This is accomplished using two operating buttons (with a total of 4 actuation possibilities) and a 4-digit segment display.

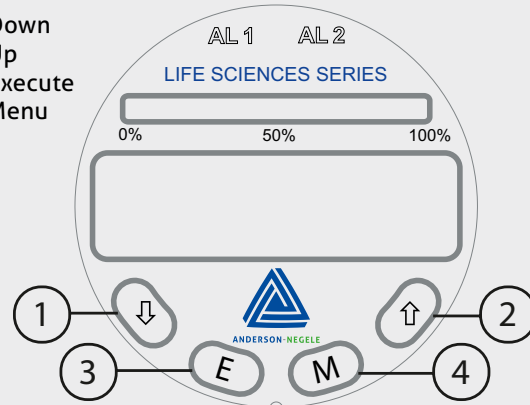
**Configuration without display interface**

- "U" (up) and "D" (down) are toggle pressed on the left switch
- "E" (execute) and "M" (menu) are toggle pressed on the right switch



**Configuration with display interface**

- 1: Down
- 2: Up
- 3: Execute
- 4: Menu



**Modes**

<b>RUN mode</b>	Zero
<b>SENSOR CONFIG mode</b>	4-20mA / Process Variable PSIG / BAR 4-20mA / 20-4mA LRV URV Damping Factory Restore
<b>CALIBRATION mode</b>	2 Point Cal 4 Point Cal

**Modes**

<b>RUN mode</b>	Zero Adjust Display Decimal Momentarily Display mA Output Descriptive Error Message
<b>SENSOR CONFIG mode</b>	PSIG/BAR (native units) 4-20mA / 20-4mA LRV URV Damping Alarm1 Alarm2 Display Units Unit Description Scroll Factory Restore
<b>CALIBRATION mode</b>	2 Point Cal 4 Point Cal

**Note**

The exact adjustment procedure will be described in the MPP instruction manual.



**Cleaning/Maintenance**

- If using pressure washers, do not point nozzle directly at electrical connections!

**Reshipment**

- Sensors shall be clean and must not be contaminated with dangerous media! Note the cleaning instructions!
- To avoid damage to the equipment, use suitable transport packaging only!

**Note on CE**

- Applicable directives:  
Electromagnetic Compatibility Directive 2014/30/EU
- Compliance with the applicable EU directives is identified by the CE label on the product.
- The operating company is responsible for complying with the guidelines applicable to the entire installation.

**Transport/Storage**

- No outdoor storage
- Dry and dust free
- Do not expose to corrosive media
- Protect against solar radiation
- Avoid mechanical shock and vibration
- Storage temperature -55...90 °C (-67...194 °F)
- Relative humidity max. 95 %

**Standards and guidelines**

- Comply with the applicable regulations and directives.

**Disposal**

- Electrical devices should not be disposed of with household trash. They must be recycled in accordance with national laws and regulations.
- Take the device directly to a specialized recycling company and do not use municipal collection points.

**Possible presettings of the measurement range**

Order number PSI		Suitable for sensor type (see order number)		Order number BAR		Suitable for sensor type (see order number)	
		A (absolute)	C (relative)			A (absolute)	C (relative)
25	30Hg/0		x	AA	-1...1		x
28	30Hg/0/15		x	AB	-1...2.5		x
29	30Hg/0/30		x	AC	-1...3		x
31	30Hg/0/60		x	AD	-1...4		x
32	30Hg/0/100		x	AE	-1...7		x
34	30Hg/0/200		x	AF	0...2	x	x
66	0...30	x	x	AG	0...3	x	x
68	0...50	x	x	AH	0...4	x	x
69	0...60	x	x	AI	0...6	x	x
71	0...100	x	x	AJ	0...7	x	x
73	0...150	x	x	AK	0...10	x	x
74	0...160	x	x	AL	0...20	x	x
75	0...200	x	x	AM	0...35	x	x
81	0...500	x	x	AN	0...70		x
84	0...1000	x	x				

Order code of fully assembled sensor

**MPP** Modular pressure sensor, pharma

**SA** Standard stem, pharma

**Maximum upper range value**

- 1** 0...30 psi / 2 bar, type C - relative
- 2** 0...100 psi / 7 bar, type C - relative
- 3** 0...500 psi / 35 bar, type C - relative
- 4** 0...1000 psi / 70 bar, type C - relative
- A** 0...30 psi / 2 bar, type A - absolute
- B** 0...100 psi / 7 bar, type A - absolute
- C** 0...500 psi / 35 bar, type A - absolute

**Process connection** (Ⓐ: 3-A compliant)

- 2** 3/4" Tri-Clamp Ⓐ
- 3** 1" Tri-Clamp Ⓐ
- 4** 1.5" Tri-Clamp Ⓐ
- 5** 2" Tri-Clamp Ⓐ
- A** Thread 1.5" NPT
- D** Thread G1", standard
- G** Thread G1", hygienic CLEANadapt
- B** Varivent B; DN10...DN15 Ⓐ
- F** Varivent F; DN25 Ⓐ
- N** Varivent N; DN40 Ⓐ
- C** CPM fitting Ⓐ
- M** Mini CPM fitting
- E** Fermenter connection length 46 mm
- H** Fermenter connection length 52 mm

**Capillary fill**

- 1** Medical-grade white oil/FDA-approved
- 5** Neobee® M-20

**Wettable material**

- A** Stainless steel 316L
- B** HASTELLOY® C-22® diaphragm

**Sensor type**

- O** Compact version
- A** Remote with 1.5 m (= 5') cable
- B** Remote with 3 m (= 10') cable
- C** Remote with 4.5 m (= 15') cable
- D** Remote with 6 m (= 20') cable
- E** Remote with 7.65 m (= 25') cable

**Enclosure**

- EB** Stainless steel enclosure with puck, display and plastic cap
- EC** Stainless steel enclosure with puck, display and stainless steel cap without sight glass

**Output**

- H** 4...20 mA Hart
- F** Foundation Fieldbus

**Ranges**

- XX** See measuring range table, page 7
- 99** Custom calibration

**Electrical connection**

- A** M12 connector/QDR
- C** Cable gland / cord grip M16x1.5
- N** Adaptor 1/2" NPTF
- M** 7/8" Minifast

**Enclosure orientation**

- 1** Vertical
- 2** Horizontal
- A** Fixed character



**MPP SA 1 2 1 A O EB H XX A 1 A**