

## Pressure measurement



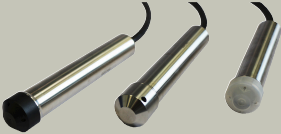
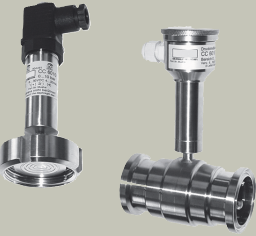


<b>1/3</b>	<b>Product overview</b>
<b>1/6</b>	<b>Pressure transmitters</b>
1/6	Single-range transmitters
1/6	SITRANS P200
1/12	SITRANS P210
1/17	SITRANS P220
1/23	SITRANS LH100
1/30	SITRANS LH300
1/38	SITRANS P Compact
1/50	<u>for food, pharmaceuticals and biotechnology</u>
1/50	SITRANS P300
1/75	Factory mounting of valve manifolds on SITRANS P300
1/77	<u>for the paper industry</u>
1/77	SITRANS P300 with PMC connection
1/89	<u>for applications with advanced requirements</u>
1/89	<u>SITRANS P320/P420</u>
1/90	Technical reference
1/97	Gauge pressure (pressure series)
1/106	Gauge pressure (differential pressure series)
1/115	Gauge and absolute pressure, flush-mounted
1/129	Absolute pressure (pressure series)
1/138	Absolute pressure (differential pressure series)
1/147	Differential pressure and flow
1/161	Level
<b>1/175</b>	<b>Remote seals</b>
1/175	Detailed product overview
1/181	<u>for SITRANS P320/P420</u>
1/181	Technical reference
1/198	Diaphragm seals in sandwich design with flexible capillary
1/208	Diaphragm seals in flange design with flexible capillary
1/218	Diaphragm seals in flange design, direct mount
1/226	Diaphragm seals in flange design, direct mount, with capillary
1/234	Diaphragm seals in screwed design
1/241	Diaphragm seals with quick-release
1/248	Diaphragm seals, miniature type
1/252	Inline seals in sandwich design
1/259	Inline seals with quick-release
1/265	Flushing ring for diaphragm seals
1/275	Measuring setups with remote seal
1/278	Measuring setups without remote seals
<b>1/281</b>	<b>Fittings</b>
1/281	Introduction
1/286	<u>Shut-off valves for gauge and absolute pressure</u>
1/286	Shut-off valves acc. to DIN 16270, DIN 16271 and DIN 16272
1/289	Angled adapter



1/290	Shut-off valves
1/293	<u>Accessories for shut-off valves</u>
1/293	Mounting kit
1/294	Measuring instrument holder
1/295	Shut-off valves for differential pressure
1/295	DN 5 2-, 3- and 5-spindle valve manifold
1/299	PN 100 multiway cock
1/301	DN 5 3-way and 5-way valve manifold
1/305	DN 8 3-way valve manifold
1/309	DN 5/DN 8 valve manifold combination
1/312	DN 8 valve manifold combination
1/315	2-, 3- and 5-spindle valve manifold for protective casing
1/320	3- and 5-spindle valve manifold for vertical differential pressure lines
1/324	Low-pressure multiway cock
1/327	<u>Accessories</u>
1/327	Oval flange
1/329	Connection pieces
1/331	Connection glands
1/332	Connection parts G 1/2
1/334	Water traps
1/335	Sealing rings acc. to EN 837-1
1/336	Pressure surge reducers
1/337	Primary shut-off valves
1/340	Compensation vessels
1/342	Connection parts

## Overview

SITRANS P single-range transmitters for general applications			
	Area of application	Device description	Software for parameterization
<b>SITRANS P2xx</b> 	2-wire or 3-wire transmitters for measuring gauge and absolute pressure	<b>SITRANS P200</b> <ul style="list-style-type: none"> <li>Single-range transmitters for gauge and absolute pressure</li> <li>Ceramic measuring cell</li> <li>For general applications</li> </ul> <b>SITRANS P210</b> <ul style="list-style-type: none"> <li>Single-range transmitters for gauge pressure</li> <li>Stainless steel measuring cell</li> <li>For low-pressure applications</li> </ul> <b>SITRANS P220</b> <ul style="list-style-type: none"> <li>Single-range transmitters for gauge pressure</li> <li>Stainless steel measuring cell, fully welded version</li> <li>For high-pressure applications and refrigeration technology</li> </ul>	–
<b>SITRANS LH100</b> 	2-wire transmitter for measuring hydrostatic level	<ul style="list-style-type: none"> <li>For measuring liquid levels in wells, vessels, channels, dams etc.</li> <li>With ceramic diaphragm, Ø 23.4 mm (0.92 inch)</li> </ul>	–
<b>SITRANS LH300</b> 	2-wire transmitter for measuring hydrostatic level	<ul style="list-style-type: none"> <li>For measuring liquid levels in wells, vessels, channels, dams etc.</li> <li>With ceramic diaphragm, Ø 30 mm (1.18 inches)</li> <li>Suitable for small measuring ranges</li> </ul>	–
<b>SITRANS P Compact</b> 	Transmitters for gauge and absolute pressure for food, pharmaceuticals and biotechnology	<ul style="list-style-type: none"> <li>Single-range transmitters with 2-wire system</li> <li>Hygienic design with various aseptic connections in accordance with EHEDG, FDA and GMP recommendations</li> </ul>	–


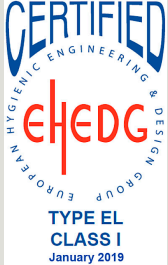



# Pressure measurement


## Product overview

### Overview (continued)


#### SITRANS P transmitters for food, pharmaceuticals and biotechnology

	Area of application	Device description	Software for parameterization
<b>SITRANS P300</b> 	2-wire transmitter for measuring gauge and absolute pressure 	<ul style="list-style-type: none"> <li>Hygiene-based design according to EHEDG, 3A, FDA and GMP</li> <li>Parameterization using 3 buttons and communication over HART, PROFIBUS PA or FOUNDATION Fieldbus</li> <li>Standard process connection G<math>\frac{1}{2}</math>", <math>\frac{1}{2}</math>-NPT and flush-mounted process connections available</li> <li>Measuring range adjustment 100: 1</li> </ul>	SIMATIC PDM
<b>Factory mounting of valve manifolds</b> 		Factory-mounting of valve manifolds on SITRANS P300 gauge or absolute pressure transmitters <ul style="list-style-type: none"> <li>Simplified assembly</li> <li>With pressure test</li> <li>Stainless steel valve manifolds</li> </ul>	–


#### SITRANS P transmitters for the paper industry

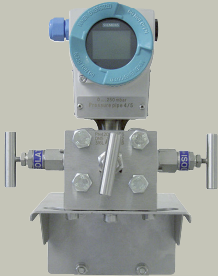

	Area of application	Device description	Software for parameterization
<b>SITRANS P300 with PMC connection</b> 	2-wire transmitter for measuring gauge pressure	<ul style="list-style-type: none"> <li>Measuring range adjustment 100: 1</li> <li>Process connections for the paper industry</li> <li>Parameterization using 3 pushbuttons and HART, PROFIBUS PA or FOUNDATION Fieldbus</li> </ul>	SIMATIC PDM

#### SITRANS P transmitters for applications with advanced requirements

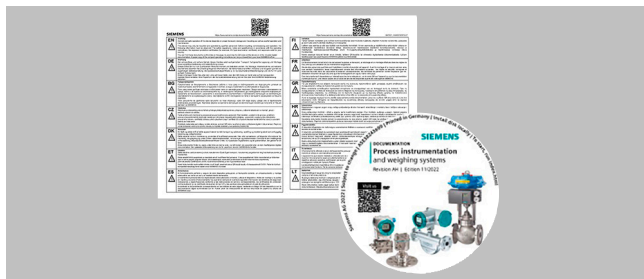
	Area of application	Device description	Software for parameterization
<b>SITRANS P320/P420</b> 	2-wire transmitter for measuring: <ul style="list-style-type: none"> <li>Gauge pressure,</li> <li>Absolute pressure,</li> <li>Differential pressure and</li> <li>Flow or</li> <li>Level</li> </ul>	<ul style="list-style-type: none"> <li>Measuring accuracy               <ul style="list-style-type: none"> <li>- SITRANS P320: 0.065%</li> <li>- SITRANS P420: 0.04%</li> </ul> </li> <li>Fast step response time of up to 105 ms</li> <li>Developed according to IEC 61508, SIL2/3 applications</li> <li>SIL validation remotely</li> <li>Diagnostics according to Namur NE107</li> <li>4-button operation</li> </ul>	SIMATIC PDM

## Overview (continued)

Remote seal for SITRANS P transmitters			
	Area of application	Device description	Software for parameterization
	Remote seals for measuring viscous, corrosive or fibrous media (as well as media at extreme temperatures)	Remote seal for SITRANS P300 and SITRANS P320/420 <ul style="list-style-type: none"> <li>Remote seal in sandwich and flange designs</li> <li>Remote seal with quick-release for the food and beverages industry</li> <li>Wide range of diaphragm materials and filling liquid available</li> </ul>	–

Valves			
	Area of application	Device description	Software for parameterization
	Shutting off the medium and differential pressure lines Mounting of transmitter on valve manifold or shut-off valve	Shut-off valves and valve manifolds available in steel, brass or stainless steel Valve manifolds available for the various process connections of the SITRANS P transmitters	–
		The following parts are available as accessories for valves: <ul style="list-style-type: none"> <li>Oval flange</li> <li>Connection pieces</li> <li>Connection glands</li> <li>Connection parts G<math>\frac{1}{2}</math></li> <li>Water traps</li> <li>Sealing rings acc. to EN 837-1</li> <li>Pressure surge reducers</li> <li>Primary shut-off valves</li> <li>Compensation vessels</li> <li>Connection parts</li> </ul>	–

## Supplied product documentation on DVD and safety notes



The scope of delivery of the Siemens products for process instrumentation includes a multilingual instruction sheet with **safety notes** as well as a uniform **mini DVD – Process Instrumentation and Weighing Systems**.

This DVD contains the most important manuals and certificates for the Siemens process instrumentation and weighing technology portfolio. The delivery may also contain product-specific or order-specific printed materials.

For more information, refer to section 10 "Appendix".

## Pressure measurement

### Pressure transmitters

#### Single-range transmitters / SITRANS P200

##### Overview



The SITRANS P200 pressure transmitter measures the gauge and absolute pressure of liquids, gases and vapors.

- With ceramic measuring cell
- Gauge and absolute measuring ranges 1 to 60 bar (15 to 1000 psi)
- For general applications

##### Benefits

- High measurement accuracy
- Rugged stainless steel enclosure
- High overload withstand capability
- For corrosive and non-corrosive media
- For measuring the pressure of liquids, gases and vapors
- Compact design

##### Application

The SITRANS P200 pressure transmitter for gauge and absolute pressure is used in the following industrial areas:

- Mechanical engineering
- Shipbuilding
- Power engineering
- Chemical industry
- Water supply

##### Design

###### **Device structure without explosion protection**

The pressure transmitter consists of a piezoresistive measuring cell with a diaphragm, installed in a stainless steel enclosure. It can be connected electrically with a device plug to EN 175301-803-A (IP65), an M12 device plug (IP67), a cable (IP67) or a Quickon cable quick screw connection (IP67). The output signal is between 4 and 20 mA or 0 and 10 V

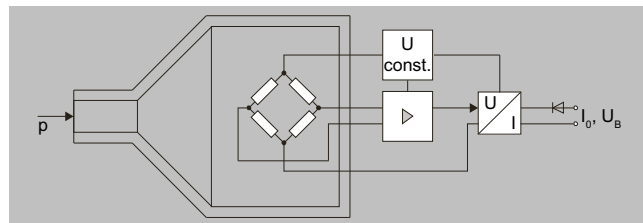
###### **Device structure with explosion protection**

The pressure transmitter consists of a piezoresistive measuring cell with a diaphragm, installed in a stainless steel enclosure. It can be connected electrically with a device plug fulfilling EN 175301-803-A (IP65) or an M12 device plug (IP67). The output signal is between 4 and 20 mA.

##### Function

The pressure transmitter measures the gauge and absolute pressure of liquids, gases and vapors.

###### **Mode of operation**



SITRANS P200 pressure transmitters (7MF1565-...), functional diagram

The ceramic measuring cell has a thick-film resistance bridge, to which the operating pressure  $p$  is transmitted through a ceramic diaphragm.

The voltage output from the measuring cell is converted by an amplifier into an output current of 4 to 20 mA or an output voltage of 0 to 10 V DC.

The output current and voltage are linearly proportional to the input pressure.

## Selection and ordering data

								Article No.	Order code		
<b>SITRANS P200 pressure transmitter, for pressure and absolute pressure for general applications</b>								7MF1565-	● ● ● ● ● - ● ● ● ● ● ● ● ●		
Typical characteristic curve deviation 0.25 %, material of wetted parts: Ceramic and stainless steel + gasket material Material of non-wetted parts: Stainless steel											
Click the article number for online configuration in the PIA Life Cycle Portal.											
Measuring range	Minimum overload limit		Maximum overload limit		Burst pressure						
<b>For gauge pressure</b>											
0 ... 1 bar	(0 ... 14.5 psi)	-1 bar	(-14.5 psi)	2.5 bar	(36.26 psi)	> 2.5 bar	(> 36.3 psi)	3	B	A	
0 ... 1.6 bar	(0 ... 23.2 psi)	-1 bar	(-14.5 psi)	4 bar	(58.02 psi)	> 4 bar	(> 58.0 psi)	3	B	B	
0 ... 2.5 bar	(0 ... 36.3 psi)	-1 bar	(-14.5 psi)	6.25 bar	(90.65 psi)	> 6.25 bar	(> 90.7 psi)	3	B	D	
0 ... 4 bar	(0 ... 58.0 psi)	-1 bar	(-14.5 psi)	10 bar	(145 psi)	> 10 bar	(> 145 psi)	3	B	E	
0 ... 6 bar	(0 ... 87.0 psi)	-1 bar	(-14.5 psi)	15 bar	(217 psi)	> 15 bar	(> 217 psi)	3	B	G	
0 ... 10 bar	(0 ... 145 psi)	-1 bar	(-14.5 psi)	25 bar	(362 psi)	> 25 bar	(> 362 psi)	3	C	A	
0 ... 16 bar	(0 ... 232 psi)	-1 bar	(-14.5 psi)	40 bar	(580 psi)	> 40 bar	(> 580 psi)	3	C	B	
0 ... 25 bar	(0 ... 363 psi)	-1 bar	(-14.5 psi)	62.5 bar	(906 psi)	> 62.5 bar	(> 906 psi)	3	C	D	
0 ... 40 bar	(0 ... 580 psi)	-1 bar	(-14.5 psi)	100 bar	(1450 psi)	> 100 bar	(> 1450 psi)	3	C	E	
0 ... 60 bar	(0 ... 870 psi)	-1 bar	(-14.5 psi)	150 bar	(2175 psi)	> 150 bar	(> 2175 psi)	3	C	G	
Other version; Add order code and plain text: Measuring range: ... to ... bar (psi)								9	A	A	H 1 Y
<b>For absolute pressure</b>											
0 ... 0.6 bar a	(0 ... 8.7 psi a)	0 bar a	(0 psi a)	2.5 bar a	(36.26 psi a)	> 2.5 bar a	(> 36.3 psi a)	5	A	G	
0 ... 1 bar a	(0 ... 14.5 psi a)	0 bar a	(0 psi a)	2.5 bar a	(36.26 psi a)	> 2.5 bar a	(> 36.3 psi a)	5	B	A	
0 ... 1.6 bar a	(0 ... 23.2 psi a)	0 bar a	(0 psi a)	4 bar a	(58.02 psi a)	> 4 bar a	(> 58.0 psi a)	5	B	B	
0 ... 2.5 bar a	(0 ... 36.3 psi a)	0 bar a	(0 psi a)	6.25 bar a	(90.65 psi a)	> 6.25 bar a	(> 90.7 psi a)	5	B	D	
0 ... 4 bar a	(0 ... 58.0 psi a)	0 bar a	(0 psi a)	10 bar a	(145 psi a)	> 10 bar a	(> 145 psi a)	5	B	E	
0 ... 6 bar a	(0 ... 87.0 psi a)	0 bar a	(0 psi a)	15 bar a	(217 psi a)	> 15 bar a	(> 217 psi a)	5	B	G	
0 ... 10 bar a	(0 ... 145 psi)	0 bar a	(0 psi a)	25 bar a	(362 psi a)	> 25 bar a	(> 362 psi a)	5	C	A	
0 ... 16 bar a	(0 ... 232 psi)	0 bar a	(0 psi a)	40 bar a	(580 psi a)	> 40 bar a	(> 580 psi a)	5	C	B	
Other version; Add order code and plain text: Measuring range: ... to ... mbar a (psi a)								9	A	A	H 2 Y
<b>Measuring ranges for gauge pressure</b>											
0 ... 15 psi		-14.5 psi		35 psi		> 35 psi		4	B	B	
3 ... 15 psi		-14.5 psi		35 psi		> 35 psi		4	B	C	
0 ... 20 psi		-14.5 psi		50 psi		> 50 psi		4	B	D	
0 ... 30 psi		-14.5 psi		80 psi		> 80 psi		4	B	E	
0 ... 60 psi		-14.5 psi		140 psi		> 140 psi		4	B	F	
0 ... 100 psi		-14.5 psi		200 psi		> 200 psi		4	B	G	
0 ... 150 psi		-14.5 psi		350 psi		> 350 psi		4	C	A	
0 ... 200 psi		-14.5 psi		550 psi		> 550 psi		4	C	B	
0 ... 300 psi		-14.5 psi		800 psi		> 800 psi		4	C	D	
0 ... 500 psi		-14.5 psi		1 400 psi		> 1400 psi		4	C	E	
0 ... 750 psi		-14.5 psi		2 000 psi		> 2 000 psi		4	C	F	
0 ... 1 000 psi		-14.5 psi		2 000 psi		> 2 000 psi		4	C	G	
Other version; Add order code and plain text: Measuring range: ... to ... psi								9	A	A	H 1 Y
<b>Measuring ranges for absolute pressure</b>											
0 ... 10 psi a		0 psi a		35 psi a		> 35 psi a		6	A	G	
0 ... 15 psi a		0 psi a		35 psi a		> 35 psi a		6	B	A	
0 ... 20 psi a		0 psi a		50 psi a		> 50 psi a		6	B	B	
0 ... 30 psi a		0 psi a		80 psi a		> 80 psi a		6	B	D	
0 ... 60 psi a		0 psi a		140 psi a		> 140 psi a		6	B	E	
0 ... 100 psi a		0 psi a		200 psi a		> 200 psi a		6	B	G	
0 ... 150 psi a		0 psi a		350 psi a		> 350 psi a		6	C	A	
0 ... 200 psi a		0 psi a		550 psi a		> 550 psi a		6	C	B	
0 ... 300 psi a		0 psi a		800 psi a		> 800 psi a		6	C	C	
Other version; Add order code and plain text: Measuring range: ... to ... psi a								9	A	A	H 2 Y
<b>Output signal</b>											
4 ... 20 mA; 2-wire system; auxiliary power 7 ... 33 V DC (10 ... 30 V DC for ATEX devices)								0			
0 ... 10 V; 3-wire system; auxiliary power 12 ... 33 V DC								1	0		

# Pressure measurement

## Pressure transmitters

### Single-range transmitters / SITRANS P200

#### Selection and ordering data (continued)

	Article No.	Order code
<b>SITRANS P200 pressure transmitter, for pressure and absolute pressure for general applications</b>	7MF1565-	
	● ● ● ● ● - ● ● ● ● ● ● ● ●	
0 ... 5 V; 3-wire system; auxiliary power 7 ... 33 V DC	2 0	
Ratiometric 10 ... 90%; 3-wire system; auxiliary power 5 V DC ± 10%	3 0	
<b>Explosion protection (only 4 ... 20 mA)</b>		
None	0	
With explosion protection Ex ia IIC T4	1	
<b>Electrical connection</b>		
Plug according to EN 175301-803-A, stuffing box thread M16 (with coupling)		1
M12 device plug according to IEC 61076-2-101		2
Connection via permanently installed cable, 2 m (6.6 ft); not for "Intrinsic safety" type of protection	0	3
Quick-screw cable gland Quickon PG9; not for "Intrinsic safety" type of protection	0	4
Plug according to EN 175301-803-A, stuffing box thread 1/2"-14 NPT (with coupling)		5
Plug according to EN 175301-803-A, stuffing box thread PG11 (with coupling)		6
Permanently installed cable, length 5 m (16.4 ft)	0	7
Special design		9
		N 1 Y
<b>Process connection</b>		
G½" male according to EN 837-1 (½" BSP male): Standard for metric pressure ranges mbar, bar		A
G½" male and G1/8" female		B
G¼" male according to EN 837-1 (¼" BSP male)		C
7/16"-20 UNF male		D
¼"-18 NPT male: Standard for pressure ranges inH <sub>2</sub> O and psi		E
¼"-18 NPT female		F
½"-14 NPT male		G
½"-14 NPT female		H
7/16"-20 UNF female		J
M20x1.5 male		P
G¼" according to EN ISO 1179-2 (formerly DIN 3852 form E)		Q
G½" according to EN ISO 1179-2 (formerly DIN 3852 form E)		R
Special design		Z
		P 1 Y
<b>Gasket material between sensor and enclosure</b>		
Viton (FPM, standard)		A
Neoprene (CR)		B
Perbunan (NBR)		C
EPDM		D
Special design		Z
		Q 1 Y
<b>Version</b>		
Standard version		1

Options	Order code
Add "-Z" to article number and specify order code.	
Quality inspection certificate (5-point characteristic curve test) according to IEC 62828-2	<b>C11</b>
Oxygen version, free of oil and degreased, max. operating pressure 60 bar (870.2 psi), max. medium temperature +85 °C (185 °F)	<b>E10</b>
<b>Notice</b>	
Only with Viton gasket material between sensor and enclosure, and not with explosion protection version!	



## Technical specifications

SITRANS P200 for gauge and absolute pressure	
<b>Area of application</b> Gauge and absolute pressure measurement	Liquids, gases and vapors
<b>Mode of operation</b> Measuring principle	Piezo-resistive measuring cell (ceramic diaphragm)
Measured variable	Gauge and absolute pressure
<b>Input</b> Measuring range	
• Gauge pressure	
- Metric	1 ... 60 bar (15 ... 870 psi)
- US measuring range	15 ... 1000 psi
• Absolute pressure	
- Metric	0.6 ... 16 bar a (10 ... 232 psi a)
- US measuring range	10 ... 300 psi a
<b>Output</b> Current signal	4 ... 20 mA
• Load	( $U_B - 10\text{ V}$ )/0.02 A
• Auxiliary power $U_B$	7 ... 33 V DC (10 ... 30 V for Ex)
Voltage signal	0 ... 10 V DC
• Load	$\geq 10\text{ k}\Omega$
• Auxiliary power $U_B$	12 ... 33 V DC
• Current consumption	< 7 mA at 10 k $\Omega$
Radiometric output	10 ... 90%
• Load	$\geq 10\text{ k}\Omega$
• Auxiliary power $U_B$	DC 5 V $\pm$ 10%
• Current consumption	< 7 mA at 10 $\Omega$
Characteristic curve	Linear rising
<b>Measuring accuracy</b> Measurement deviation at limit setting including hysteresis and reproducibility	<ul style="list-style-type: none"> <li>Typical: 0.25% of measuring span</li> <li>Maximum: 0.5% of measuring span</li> </ul>
Step response time $T_{99}$	< 5 ms
Long-term stability	
• Lower range value and measuring span	0.25% of measuring span/year
Effect of ambient temperature	
• Lower range value and measuring span	0.25%/10 K of measuring span
• Influence of power supply	0.005%/V
<b>Operating conditions</b> Process temperature with gasket made of:	
• FPM (standard)	-15 ... +125 °C (5 ... 257 °F)
• Neoprene	-35 ... +100 °C (-31 ... +212 °F)
• Perbunan	-20 ... +100 °C (-4 ... +212 °F)
• EPDM	-40 ... +125 °C (-40 ... +257 °F), usable for drinking water
Ambient temperature	-25 ... +85 °C (-13 ... +185 °F)
Storage temperature	-50 ... +100 °C (-58 ... +212 °F)
Degree of protection according to IEC 60529	<ul style="list-style-type: none"> <li>IP65 with plug according to EN 175301-803-A</li> <li>IP67 with M12 device plug</li> <li>IP67 with cable</li> <li>IP67 with cable quick screw connection</li> </ul>
Electromagnetic compatibility	<ul style="list-style-type: none"> <li>According to IEC 61326-1/-2/-3</li> <li>According to NAMUR NE21 for ATEX devices only, and with a max. measurement error of <math>\leq 1\%</math></li> </ul>
<b>Structural design</b> Weight	Approx. 0.090 kg (0.198 lbs)
Process connections	See dimension drawings

## Technical specifications (continued)

SITRANS P200 for gauge and absolute pressure	
Electrical connections	<ul style="list-style-type: none"> <li>Plug according to EN 175301-803-A Form A with cable entry M16x1.5 or 1/2-14 NPT or Pg 11</li> <li>Device plug M12</li> <li>2 or 3-wire (0.5 mm<sup>2</sup>) cable (<math>\varnothing \pm 5.4\text{ mm}</math>)</li> <li>Quickon cable quick screw connection</li> </ul>
Material of wetted parts	
• Measuring cell	Al <sub>2</sub> O <sub>3</sub> - 96%
• Process connection	Stainless steel, mat. no. 1.4404 (SST 316 L)
• Gasket	<ul style="list-style-type: none"> <li>FPM (standard)</li> <li>Neoprene</li> <li>Perbunan</li> <li>EPDM</li> </ul>
Material of non-wetted parts	
• Enclosure	Stainless steel, mat. no. 1.4404 (SST 316 L)
• Connector housing	Plastic
• Cable	PVC
<b>Certificates and approvals</b> Classification according to pressure equipment directive (PED 2014/68/EU)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)
Lloyd's Register of Shipping (LR) <sup>1)</sup>	12/20010
Germanischer Lloyd (GL) <sup>1)</sup>	GL19740 11 HH00
American Bureau of Shipping (ABS) <sup>1)</sup>	ABS_11_HG 789392_PDA
Bureau Veritas (BV) <sup>1)</sup>	BV 271007A0 BV
Det Norske Veritas (DNV) <sup>1)</sup>	A 12553
Drinking water approval (ACS) <sup>1)</sup>	ACS 15 ACC NY 360
EAC <sup>1)</sup>	№ TC RU C-DE.Г605.8.00732 ОС НАНИО «ЦСБЭ»
Underwriters Laboratories (UL) <sup>1)</sup>	
• For USA and Canada	UL 20110217 - E34453
• Worldwide	IEC UL DK 21845
<b>Explosion protection</b> Intrinsic safety "i" (only with current output)	Ex II 1/2 G Ex ia IIC T4 Ga/Gb Ex II 1/2 D Ex ia IIC T125 °C Da/Db
EC type-examination certificate	SEV 10 ATEX 0146
Connection to certified intrinsically safe ohmic circuits with maximum values	$U_i \leq \text{DC } 30\text{ V}$ ; $I_i \leq 100\text{ mA}$ ; $P_i \leq 0.75\text{ W}$
Effective internal inductance and capacity for versions with plugs according to EN 175301-803-A and M12	$L_i = 0\text{ nH}$ ; $C_i = 0\text{ nF}$

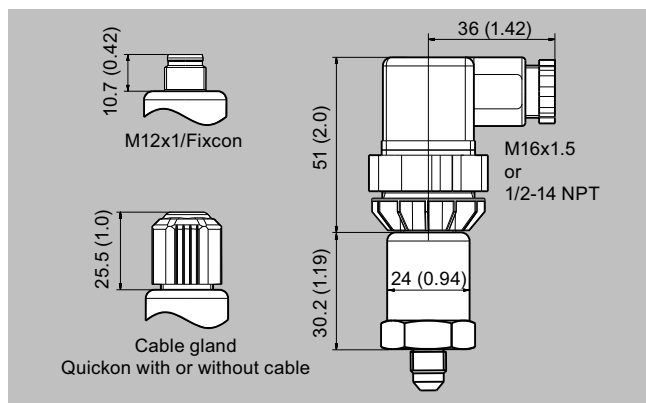
<sup>1)</sup> For variants with output signal 0 ... 5 V and radiometric output available soon.

## Pressure measurement

### Pressure transmitters

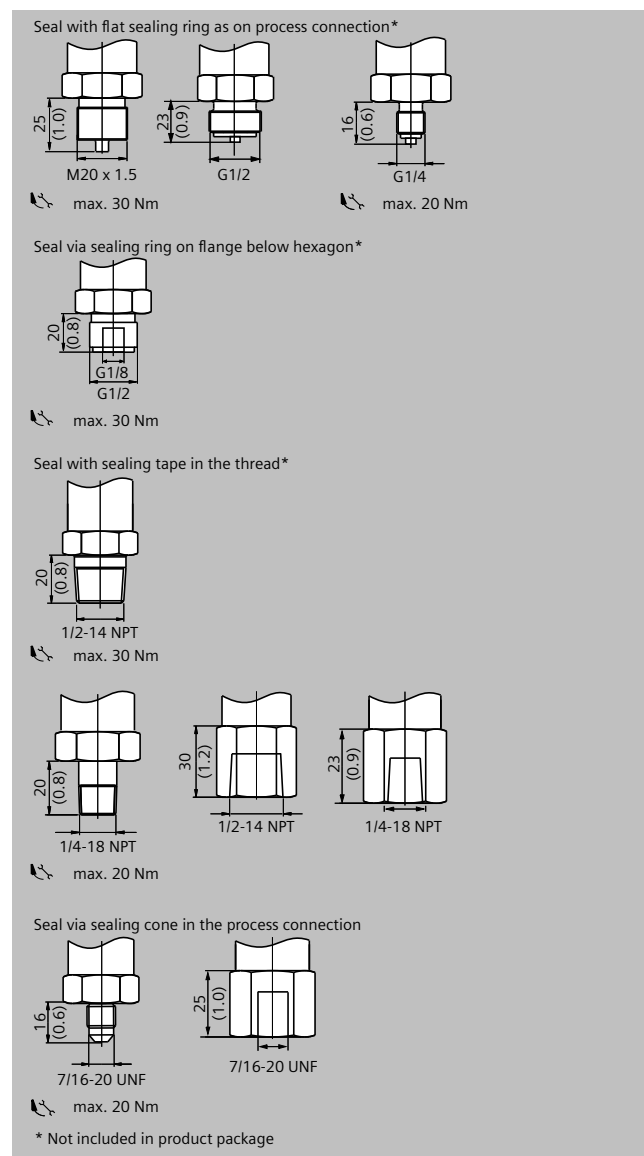
#### Single-range transmitters / SITRANS P200

#### Dimensional drawings



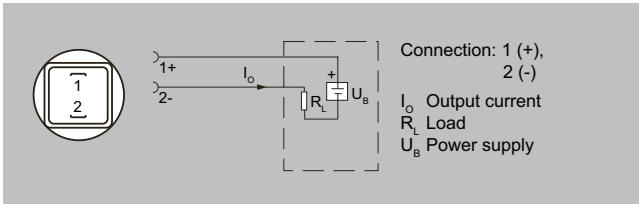
SITRANS P200, electrical connections, dimensions in mm (inch)

#### Dimensional drawings (continued)

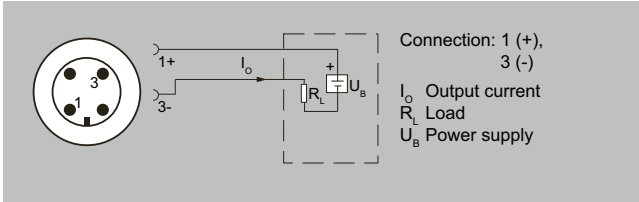


SITRANS P200, process connections, dimensions in mm (inch)

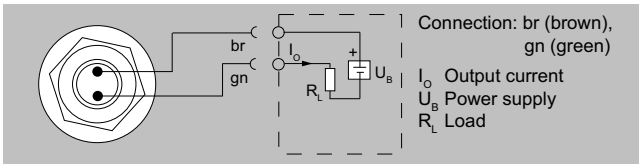
## Circuit diagrams



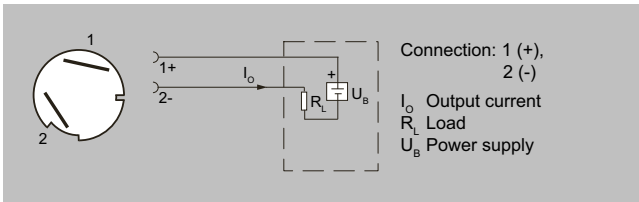
Connection with current output and plug according to EN 175301



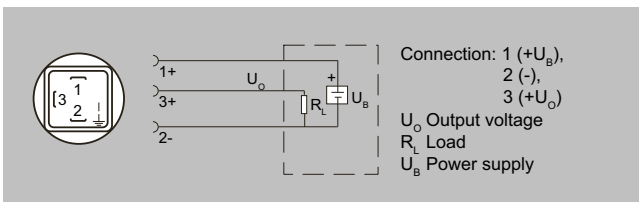
Connection with current output and M12x1 device plug



Connection with current output and cable

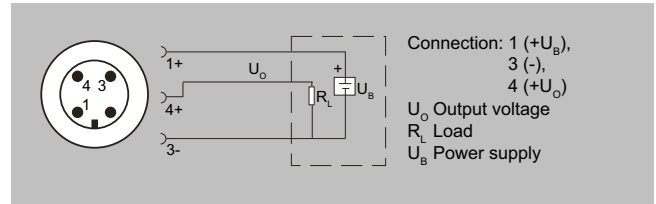


Connection with current output and Quickon cable quick screw connection

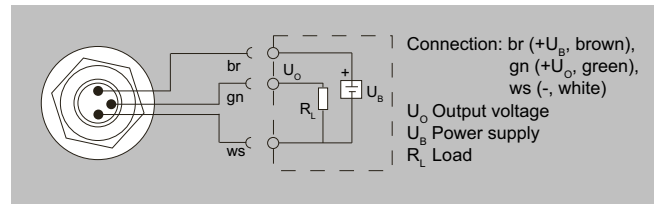


Connection with voltage output, ratiometric output and plug according to EN 175301

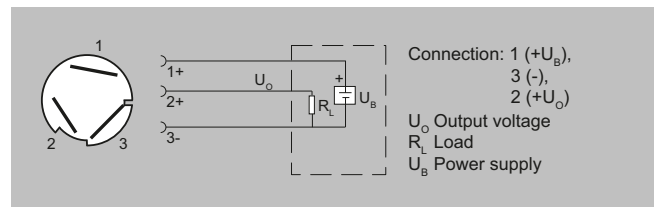
## Circuit diagrams (continued)



Connection with voltage output, ratiometric output and M12x1 device plug



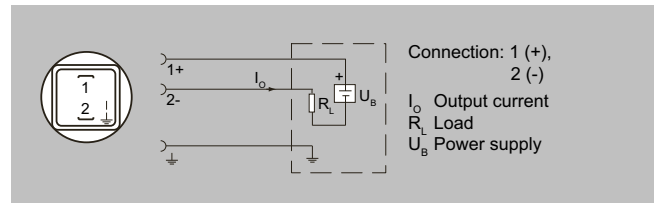
Connection with voltage output, ratiometric output and cable



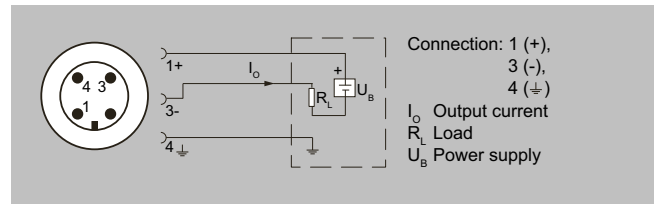
Connection with voltage output, ratiometric output and Quickon fast cable termination

**Device design with explosion protection: 4 to 20 mA**

The grounding connection is conductively bonded to the transmitter enclosure.



Connection with current output and plug according to EN 175301 (Ex)



Connection with current output and M12x1 (Ex) device plug

## Pressure measurement

### Pressure transmitters

#### Single-range transmitters / SITRANS P210

##### Overview



The SITRANS P210 pressure transmitter measures the gauge pressure of liquids, gases and vapors.

- Stainless steel measuring cell
- Measuring ranges 100 to 600 mbar (1.45 to 8.7 psi) relative
- For low-pressure applications

##### Benefits

- High measurement accuracy
- Rugged stainless steel enclosure
- High overload withstand capability
- For corrosive and non-corrosive media
- For measuring the pressure of liquids, gases and vapors
- Compact design

##### Application

The SITRANS P210 pressure transmitter for gauge pressure is used in the following industrial areas:

- Mechanical engineering
- Shipbuilding
- Energy development
- Chemical industry
- Water supply

##### Design

###### **Device structure without explosion protection**

The pressure transmitter consists of a piezoresistive measuring cell with a diaphragm, installed in a stainless steel enclosure. It can be connected electrically with a device plug to EN 175301-803-A (IP65), an M12 device plug (IP67), a cable (IP67) or a Quickon cable quick screw connection (IP67). The output signal is between 4 and 20 mA or 0 and 10 V

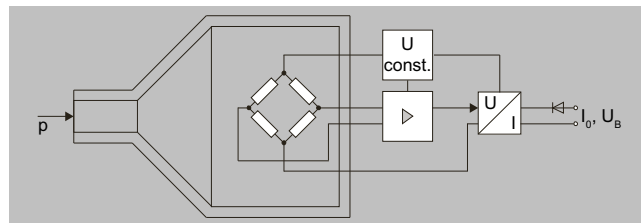
###### **Device structure with explosion protection**

The pressure transmitter consists of a piezoresistive measuring cell with a diaphragm, installed in a stainless steel enclosure. It can be connected electrically with a device plug fulfilling EN 175301-803-A (IP65) or an M12 device plug (IP67). The output signal is between 4 and 20 mA.

##### Function

The pressure transmitter measures the gauge pressure of liquids and gases as well as the level of liquids.

###### **Mode of operation**



SITRANS P210 pressure transmitter (7MF1566-...), functional diagram

The stainless steel measuring cell with silicone oil filling has a thin-film resistance bridge to which the operating pressure  $p$  is transmitted through a stainless steel diaphragm.

The voltage output from the measuring cell is converted by an amplifier into an output current of 4 to 20 mA or an output voltage of 0 to 10 V DC.

The output current and voltage are linearly proportional to the input pressure.

## Selection and ordering data

SITRANS P210 pressure transmitter for gauge pressure, for low-pressure applications							Article No.	Order code					
Measurement deviation typ. 0.25%							7MF1566-						
Material of wetted parts: Stainless steel + gasket material							● ● ● ● ● - ● ● ● ● ● ● ● ●						
Material of non-wetted parts: Stainless steel													
Click the article number for online configuration in the PIA Life Cycle Portal.													
Measuring range	Minimum overload limit		Maximum overload limit		Burst pressure								
<b>For gauge pressure</b>													
0...100 mbar (1.45 psi)	-400 mbar (-5.8 psi)	400 mbar (5.8 psi)	1 bar (14.5 psi)				3	A	A				
0...160 mbar (2.32 psi)	-400 mbar (-5.8 psi)	400 mbar (5.8 psi)	1 bar (14.5 psi)				3	A	B				
0...250 mbar (3.63 psi)	-800 mbar (-11.6 psi)	1 000 mbar (14.5 psi)	2 bar (29.0 psi)				3	A	C				
0...400 mbar (5.8 psi)	-800 mbar (-11.6 psi)	1 000 mbar (14.5 psi)	2 bar (29.0 psi)				3	A	D				
0...600 mbar (8.7 psi)	-1 000 mbar (-14.5 psi)	2 000 mbar (29.0 psi)	3 bar (43.5 psi)				3	A	G				
Other version; Add order code and plain text: Measuring range: ... to ... mbar (psi)							9	A	A		H 1 Y		
<b>Output signal</b>													
4 ... 20 mA; 2-wire system; auxiliary power 7 ... 33 V DC (10 ... 30 V DC for ATEX devices)							0						
0 ... 10 V; 3-wire system; auxiliary power 12 ... 33 V DC							1	0					
0 ... 5 V; 3-wire system; auxiliary power 7 ... 33 V DC							2	0					
Ratiometric 10 ... 90%; 3-wire system; auxiliary power 5 V DC ± 10%							3	0					
<b>Explosion protection (only 4 ... 20 mA)</b>													
None							0						
With explosion protection Ex ia IIC T4							1						
<b>Electrical connection</b>													
Plug according to EN 175301-803-A, stuffing box thread M16 (with coupling)							1						
M12 device plug according to IEC 61076-2-101							2						
Connection via permanently installed cable, 2 m (6.6 ft); not for "Intrinsic safety" type of protection							0	3					
Quick-screw cable gland Quickon PG9; not for "Intrinsic safety" type of protection							0	4					
Plug according to EN 175301-803-A, stuffing box thread 1/2"-14 NPT (with coupling)							5						
Plug according to EN 175301-803-A, stuffing box thread PG11 (with coupling)							6						
Permanently installed cable, length 5 m (16.4 ft)							0	7					
Special design							9				N 1 Y		
<b>Process connection</b>													
G½" male according to EN 837-1 (½" BSP male): Standard for metric pressure ranges mbar, bar											A		
G½" male and G1/8" female											B		
G¼" male according to EN 837-1 (¼" BSP male)											C		
7/16"-20 UNF male											D		
¼"-18 NPT male: Standard for pressure ranges inH <sub>2</sub> O and psi											E		
¼"-18 NPT female											F		
½"-14 NPT male											G		
½"-14 NPT female											H		
7/16"-20 UNF female											J		
M20×1.5 male											P		
G¼" according to EN ISO 1179-2 (formerly DIN 3852 form E)											Q		
G½" according to EN ISO 1179-2 (formerly DIN 3852 form E)											R		
Special design											Z	P 1 Y	
<b>Gasket material between sensor and enclosure</b>													
Viton (FPM, standard)												A	
Neoprene (CR)												B	
Perbunan (NBR)												C	
EPDM												D	
Special design												Z	Q 1 Y
<b>Version</b>													
Standard version												1	

Options	Order code
Add "-Z" to article number and specify order code.	
Quality inspection certificate (5-point characteristic curve test) according to IEC 62828-2	C11

# Pressure measurement

## Pressure transmitters

### Single-range transmitters / SITRANS P210

#### Technical specifications

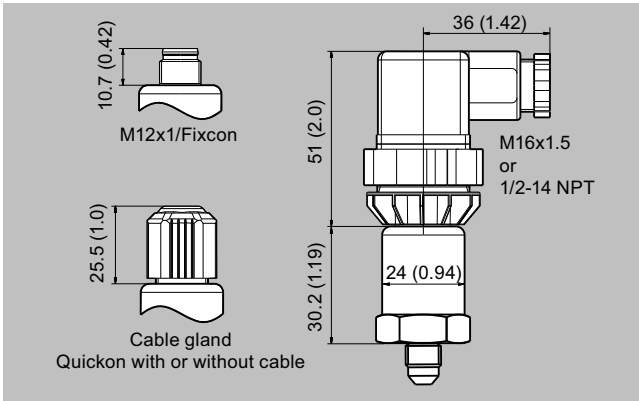
SITRANS P210 for gauge pressure	
<b>Area of application</b> Gauge pressure measurement	Liquids, gases and vapors
<b>Mode of operation</b> Measuring principle	Piezoresistive measuring cell (stainless steel diaphragm)
Measured variable	Gauge pressure
<b>Input</b> Measuring range	
• Gauge pressure	100 ... 600 mbar (1.45 ... 8.7 psi)
<b>Output</b> Current signal	4 ... 20 mA
• Load	( $U_B - 10$ V)/0.02 A
• Auxiliary power $U_B$	7 ... 33 V DC (10 ... 30 V for Ex)
Voltage signal	0 ... 10 V DC
• Load	$\geq 10$ k $\Omega$
• Auxiliary power $U_B$	12 ... 33 V DC
• Current consumption	< 7 mA at 10 k $\Omega$
Radiometric output	10 ... 90%
• Load	$\geq 10$ k $\Omega$
• Auxiliary power $U_B$	DC 5 V $\pm$ 10%
• Current consumption	< 7 mA at 10 k $\Omega$
Characteristic curve	Linear rising
<b>Measuring accuracy</b> Measurement deviation at limit setting including hysteresis and reproducibility	<ul style="list-style-type: none"> <li>• Typical: 0.25% of measuring span</li> <li>• Maximum: 0.5% of measuring span</li> </ul>
Step response time $T_{99}$	< 5 ms
Long-term stability	
• Lower range value and measuring span	0.25% of measuring span/year
Effect of ambient temperature	
• Lower range value and measuring span	<ul style="list-style-type: none"> <li>• 0.25%/10 K of measuring span</li> <li>• 0.5%/10 K of measuring span for a measuring range 100 ... 400 mbar (40 ... 240 inH<sub>2</sub>O)</li> </ul>
• Influence of power supply	0.005%/V
<b>Operating conditions</b> Process temperature with gasket made of:	
• FPM (standard)	-15 ... +125 °C (5 ... 257 °F)
• Neoprene	-35 ... +100 °C (-31 ... +212 °F)
• Perbunan	-20 ... +100 °C (-4 ... +212 °F)
• EPDM	-40 ... +125 °C (-40 ... +257 °F), usable for drinking water
Ambient temperature	-25 ... +85 °C (-13 ... +185 °F)
Storage temperature	-50 ... +100 °C (-58 ... +212 °F)
Type of protection according to IEC 60529	<ul style="list-style-type: none"> <li>• IP65 with plug according to EN 175301-803-A</li> <li>• IP67 with M12 device plug</li> <li>• IP67 with cable</li> <li>• IP67 with cable quick screw connection</li> </ul>
Electromagnetic compatibility	<ul style="list-style-type: none"> <li>• According to IEC 61326-1/-2/-3</li> <li>• According to NAMUR NE21 for ATEX devices only, and with a max. measurement error of <math>\leq 1\%</math></li> </ul>
Mounting position	Vertical, facing up
<b>Structural design</b> Weight	Approx. 0.090 kg (0.198 lbs)
Process connections	See dimension drawings

#### Technical specifications (continued)

SITRANS P210 for gauge pressure	
Electrical connections	<ul style="list-style-type: none"> <li>• Plug according to EN 175301-803-A Form A with cable entry M16x1.5 or 1/2-14 NPT or Pg 11</li> <li>• Device plug M12</li> <li>• 2 or 3-wire (0.5 mm<sup>2</sup>) cable (<math>\varnothing \pm 5.4</math> mm)</li> <li>• Quickon cable quick screw connection</li> </ul>
Material of wetted parts	
• Measuring cell	Stainless steel, mat. no. 1.4435
• Process connection	Stainless steel, mat. no. 1.4404 (SST 316 L)
• Gasket	<ul style="list-style-type: none"> <li>• FPM (standard)</li> <li>• Neoprene</li> <li>• Perbunan</li> <li>• EPDM</li> </ul>
Material of non-wetted parts	
• Enclosure	Stainless steel, mat. no. 1.4404 (SST 316 L)
• Connector housing	Plastic
• Cable	PVC
<b>Certificates and approvals</b> Classification according to pressure equipment directive (PED 2014/68/EU)	For gases of fluid group 1 and liquids of fluid group 1; meets requirements as per article 4, paragraph 3 (sound engineering practice) 12/20010
Lloyd's Register of Shipping (LR) <sup>1)</sup>	GL19740 11 HH00
Germanischer Lloyd (GL) <sup>1)</sup>	ABS_11_HG 789392_PDA
American Bureau of Shipping (ABS) <sup>1)</sup>	BV 271007A0 BV
Bureau Veritas (BV) <sup>1)</sup>	A 12553
Det Norske Veritas (DNV) <sup>1)</sup>	ACS 15 ACC NY 360
Drinking water approval (ACS) <sup>1)</sup>	№ TC RU C-DE.Г605.8.00732 ОС НАНИО «ЦСБЭ»
EAC <sup>1)</sup>	
Underwriters Laboratories (UL) <sup>1)</sup>	UL 20110217 - E34453
• For the USA and Canada	
• Worldwide	IEC UL DK 21845
<b>Explosion protection</b> Intrinsic safety "i" (only with current output)	Ex II 1/2 G Ex ia IIC T4 Ga/Gb Ex II 1/2 D Ex ia IIC T125 °C Da/Db
EC type-examination certificate	SEV 10 ATEX 0146
Connection to certified intrinsically safe ohmic circuits with maximum values	$U_i \leq$ DC 30 V; $I_i \leq$ 100 mA; $P_i \leq$ 0.75 W
Effective internal inductance and capacity for versions with plugs according to EN 175301-803-A and M12	$L_i =$ 0 nH; $C_i =$ 0 nF

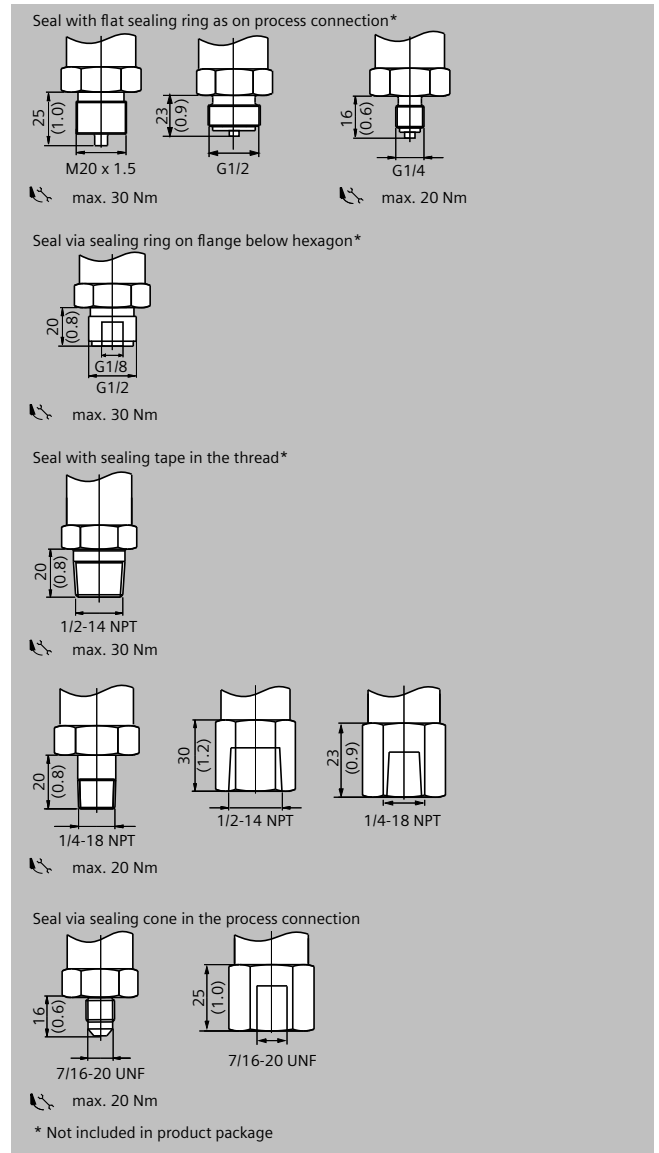
<sup>1)</sup> For variants with output signal 0 ... 5 V and radiometric output available soon.

Dimensional drawings



SITRANS P210, electrical connections, dimensions in mm (inch)

Dimensional drawings (continued)



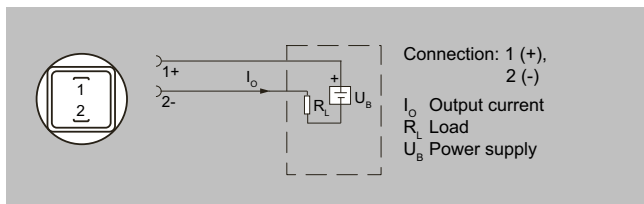
SITRANS P210, process connections, dimensions in mm (inch)

# Pressure measurement

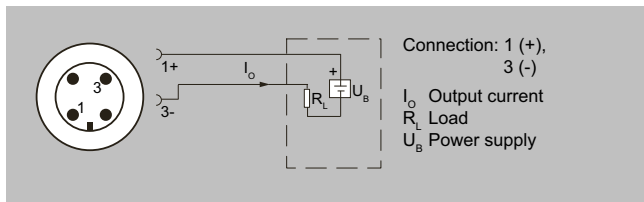
## Pressure transmitters

### Single-range transmitters / SITRANS P210

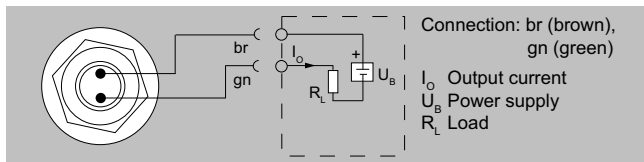
#### Circuit diagrams



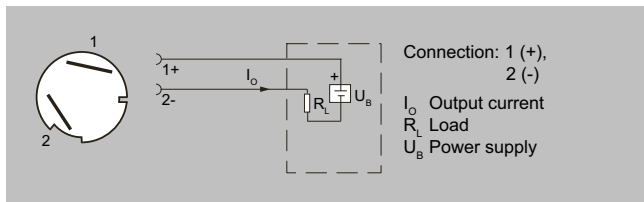
Connection with current output and plug according to EN 175301



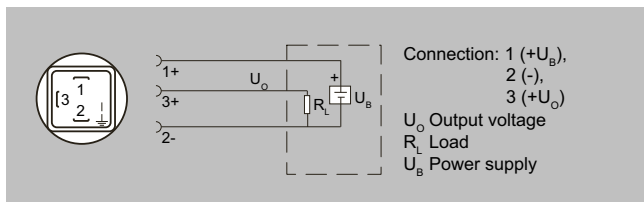
Connection with current output and M12x1 device plug



Connection with current output and cable

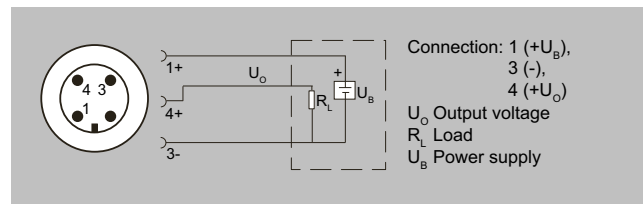


Connection with current output and Quickon cable quick screw connection

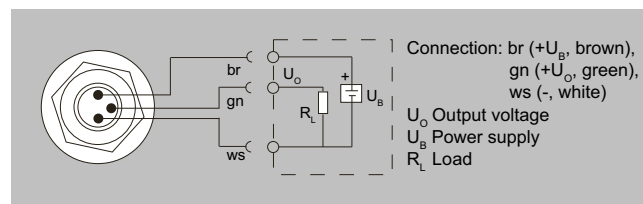


Connection with voltage output, ratiometric output and plug according to EN 175301

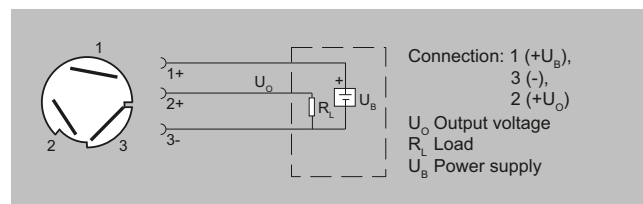
#### Circuit diagrams (continued)



Connection with voltage output, ratiometric output and M12x1 device plug



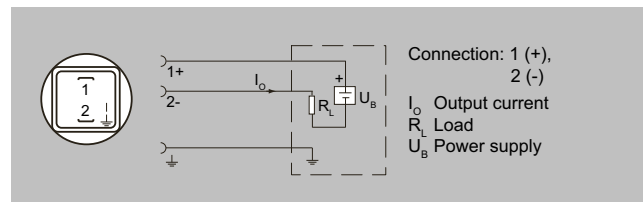
Connection with voltage output, ratiometric output and cable



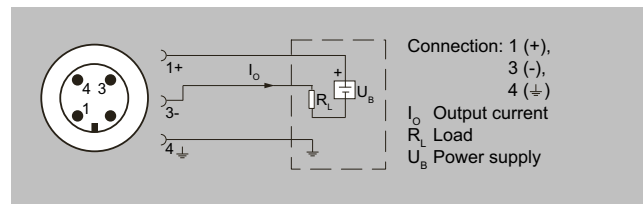
Connection with voltage output, ratiometric output and Quickon fast cable termination

#### Device design with explosion protection: 4 to 20 mA

The grounding connection is conductively bonded to the transmitter enclosure.



Connection with current output and plug according to EN 175301 (Ex)



Connection with current output and M12x1 (Ex) device plug



## Overview



The SITRANS P220 pressure transmitter measures the gauge pressure of liquids, gases and vapors.

- Stainless steel measuring cell, fully welded
- Measuring ranges 2.5 to 1 000 bar (36.3 to 14 500 psi) relative
- For high-pressure applications and refrigeration technology

## Benefits

- High measurement accuracy
- Rugged stainless steel enclosure
- High overload withstand capability
- For corrosive and non-corrosive media
- For measuring the pressure of liquids, gases and vapors
- Compact design
- Gasket-less

## Application

The SITRANS P220 pressure transmitter for gauge pressure is used in the following industrial areas:

- Mechanical engineering
- Shipbuilding
- Energy development
- Chemical industry
- Water supply

## Design

### Device structure without explosion protection

The pressure transmitter consists of a piezoresistive measuring cell with a diaphragm, installed in a stainless steel enclosure. It can be connected electrically with a device plug to EN 175301-803-A (IP65), an M12 device plug (IP67), a cable (IP67) or a Quickon cable quick screw connection (IP67). The output signal is between 4 and 20 mA or 0 and 10 V

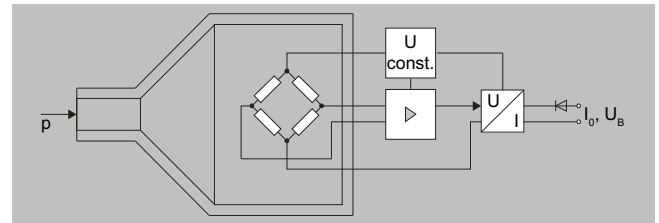
### Device structure with explosion protection

The pressure transmitter consists of a piezoresistive measuring cell with a diaphragm, installed in a stainless steel enclosure. It can be connected electrically with a device plug fulfilling EN 175301-803-A (IP65) or an M12 device plug (IP67). The output signal is between 4 and 20 mA.

## Function

The pressure transmitter measures the gauge pressure of liquids and gases as well as the level of liquids.

### Mode of operation



SITRANS P220 pressure transmitters (7MF1567-...), functional diagram

The stainless steel measuring cell has a thick-film resistance bridge to which the operating pressure  $p$  is transmitted through a stainless steel diaphragm.

The voltage output from the measuring cell is converted by an amplifier into an output current of 4 to 20 mA or an output voltage of 0 to 10 V DC.

The output current and voltage are linearly proportional to the input pressure.

# Pressure measurement

## Pressure transmitters

### Single-range transmitters / SITRANS P220

#### Selection and ordering data

								Article No.	Order code	
<b>SITRANS P220 pressure transmitter for gauge pressure, for high-pressure and cold applications, fully-welded version</b>								7MF1567-		
								● ● ● ● ● - ● ● A ● ● ● ● ●		
Measurement deviation typ. 0.25%										
Material of wetted parts: Stainless steel										
Material of non-wetted parts: Stainless steel										
Click the article number for online configuration in the PIA Life Cycle Portal.										
Measuring range	Minimum overload limit	Maximum overload limit	Burst pressure							
<b>For gauge pressure</b>										
0 ... 2.5 bar (0 ... 36.3 psi)	-1 bar (-14.5 psi)	6.25 bar (90.7 psi)	25 bar (363 psi)	3	B	D				
0 ... 4 bar (0 ... 58 psi)	-1 bar (-14.5 psi)	10 bar (145 psi)	40 bar (580 psi)	3	B	E				
0 ... 6 bar (0 ... 87 psi)	-1 bar (-14.5 psi)	15 bar (217 psi)	60 bar (870 psi)	3	B	G				
0 ... 10 bar (0 ... 145 psi)	-1 bar (-14.5 psi)	25 bar (362 psi)	60 bar (870 psi)	3	C	A				
0 ... 16 bar (0 ... 232 psi)	-1 bar (-14.5 psi)	40 bar (580 psi)	96 bar (1 392 psi)	3	C	B				
0 ... 25 bar (0 ... 363 psi)	-1 bar (-14.5 psi)	62.5 bar (906 psi)	150 bar (2 176 psi)	3	C	D				
0 ... 40 bar (0 ... 580 psi)	-1 bar (-14.5 psi)	100 bar (1 450 psi)	240 bar (3 481 psi)	3	C	E				
0 ... 60 bar (0 ... 870 psi)	-1 bar (-14.5 psi)	150 bar (2 175 psi)	360 bar (5 221 psi)	3	C	G				
0 ... 100 bar (0 ... 1450 psi)	-1 bar (-14.5 psi)	250 bar (3 625 psi)	600 bar (8 702 psi)	3	D	A				
0 ... 160 bar (0 ... 2320 psi)	-1 bar (-14.5 psi)	400 bar (5 801 psi)	960 bar (13 924 psi)	3	D	B				
0 ... 250 bar (0 ... 3625 psi)	-1 bar (-14.5 psi)	625 bar (9 064 psi)	1 500 bar (21 756 psi)	3	D	D				
0 ... 400 bar (0 ... 5801 psi)	-1 bar (-14.5 psi)	1 000 bar (14 503 psi)	2 400 bar (34 809 psi)	3	D	E				
0 ... 600 bar (0 ... 8702 psi)	-1 bar (-14.5 psi)	1 500 bar (21 755 psi)	3 600 bar (52 200 psi)	3	D	G				
0 ... 1000 bar (0 ... 14500 psi)	-1 bar (-14.5 psi)	1 500 bar (21 755 psi)	5 000 bar (72 520 psi)	3	E	A				
Other version; Add order code and plain text: Measuring range: ... to ... bar (psi)								9	A A	H 1 Y
<b>Measuring ranges for gauge pressure</b>										
0 ... 30 psi	-14.5 psi	75 psi	360 psi	4	B	E	<sup>1)</sup>			
0 ... 60 psi	-14.5 psi	150 psi	580 psi	4	B	F	<sup>1)</sup>			
0 ... 100 psi	-14.5 psi	250 psi	580 psi	4	B	G	<sup>1)</sup>			
0 ... 150 psi	-14.5 psi	375 psi	870 psi	4	C	A	<sup>1)</sup>			
0 ... 200 psi	-14.5 psi	500 psi	1 390 psi	4	C	B	<sup>1)</sup>			
0 ... 300 psi	-14.5 psi	750 psi	2 170 psi	4	C	D	<sup>1)</sup>			
0 ... 500 psi	-14.5 psi	1 250 psi	3 481 psi	4	C	E	<sup>1)</sup>			
0 ... 750 psi	-14.5 psi	1 875 psi	5 220 psi	4	C	F	<sup>1)</sup>			
0 ... 1 000 psi	-14.5 psi	2 500 psi	5 220 psi	4	C	G	<sup>1)</sup>			
0 ... 1 500 psi	-14.5 psi	3 750 psi	8 700 psi	4	D	A	<sup>1)</sup>			
0 ... 2 000 psi	-14.5 psi	5 000 psi	13 920 psi	4	D	B	<sup>1)</sup>			
0 ... 3 000 psi	-14.5 psi	7 500 psi	21 750 psi	4	D	D	<sup>1)</sup>			
0 ... 5 000 psi	-14.5 psi	12 500 psi	34 800 psi	4	D	E	<sup>1)</sup>			
0 ... 6 000 psi	-14.5 psi	15 000 psi	34 800 psi	4	D	F	<sup>1)</sup>			
0 ... 8 700 psi	-14.5 psi	21 755 psi	52 200 psi	4	D	G	<sup>1)</sup>			
0 ... 14 500 psi	-14.5 psi	21 755 psi	72 520 psi	4	E	A				
Other version; Add order code and plain text: Measuring range: ... to ... psi								9	A A	H 1 Y
<b>Output signal</b>										
4 ... 20 mA; 2-wire system, auxiliary power 7 ... 33 V DC (10 ... 30 V DC for ATEX devices) <sup>1)</sup>								0		
0 ... 10 V; 3-wire system; auxiliary power 12 ... 33 V DC								1	0	
0 ... 5 V; 3-wire system; auxiliary power 7 ... 33 V DC								2	0	
Ratiometric 10 ... 90%; 3-wire system; auxiliary power 5 V DC ± 10%								3	0	
<b>Explosion protection (only 4 ... 20 mA)</b>										
None								0		
With explosion protection Ex ia IIC T4 <sup>1)</sup>								1		
<b>Electrical connection</b>										
Plug according to EN 175301-803-A, stuffing box thread M16 (with coupling) <sup>1)</sup>								1		
M12 device plug according to IEC 61076-2-101								2		
Connection via permanently installed cable, 2 m (6.6 ft); not for "Intrinsic safety" type of protection								0	3	
Quick-screw cable gland Quickon PG9; not for "Intrinsic safety" type of protection								0	4	
Plug according to EN 175301-803-A, stuffing box thread 1/2"-14 NPT (with coupling) <sup>1)</sup>								5		
Plug according to EN 175301-803-A, stuffing box thread PG11 (with coupling) <sup>1)</sup>								6		
Permanently installed cable, length 5 m (16.4 ft)								0	7	
Special design								9		N 1 Y

## Selection and ordering data (continued)

	Article No.	Order code
<b>SITRANS P220 pressure transmitter for gauge pressure, for high-pressure and cold applications, fully-welded version</b>	7MF1567-	
	● ● ● ● ● - ● ● A ● ● ● ● ●	
<b>Process connection</b>		
G½" male according to EN 837-1 (½" BSP male) (standard for metric pressure ranges mbar, bar)		A
G½" male and G1/8" female		B
G¼" male according to EN 837-1 (¼" BSP male)		C
7/16"-20 UNF male		D
¼"-18 NPT male (standard for pressure ranges inH <sub>2</sub> O and psi) <sup>1)</sup>		E
¼"-18 NPT female		F
½"-14 NPT male		G
½"-14 NPT female		H
7/16"-20 UNF female		J
M20×1.5 male		P
G¼" according to EN ISO 1179-2 (formerly DIN 3852 form E)		Q
G½" according to EN ISO 1179-2 (formerly DIN 3852 form E)		R
Special design		Z
<b>Version</b>		P 1 Y
Standard version <sup>1)</sup>		1

<sup>1)</sup> Order code E21 required for complete configurations with CRN and cCSA<sub>US</sub> Ex approval.

Options	Order code
Add "-Z" to article number and specify order code.	
Quality inspection certificate (5-point characteristic curve test) according to IEC 62828-2 (not possible for measuring ranges > 0 ... 600 bar/0 ... 8 702 psi)	C11
Oxygen version, free of oil and degreased (not in combination with explosion protection version!)	E10
With CRN and cCSA <sub>US</sub> Ex approval (only for measuring ranges 0 ... 30 psi to 0 ... 8 700 psi)	E21

# Pressure measurement

## Pressure transmitters

### Single-range transmitters / SITRANS P220

#### Technical specifications

SITRANS P220 for gauge pressure	
<b>Area of application</b>	
Gauge pressure measurement	Liquids, gases and vapors
<b>Mode of operation</b>	
Measuring principle	Piezoresistive measuring cell (stainless steel diaphragm)
Measured variable	Gauge pressure
<b>Input</b>	
Measuring range	
• Gauge pressure	
- Metric	2.5 ... 1 000 bar (36 ... 14 500 psi)
- US measuring range	30 ... 14 500 psi
<b>Output</b>	
Current signal	4 ... 20 mA
• Load	( $U_B - 10\text{ V}$ )/0.02 A
• Auxiliary power $U_B$	7 ... 33 V DC (10 ... 30 V for Ex)
Voltage signal	0 ... 10 V DC
• Load	$\geq 10\text{ k}\Omega$
• Auxiliary power $U_B$	12 ... 33 V DC
• Current consumption	< 7 mA at 10 k $\Omega$
Radiometric output	10 ... 90%
• Load	$\geq 10\text{ k}\Omega$
• Auxiliary power $U_B$	DC 5 V $\pm$ 10%
• Current consumption	< 7 mA at 10 k $\Omega$
Characteristic curve	Linear rising
<b>Measuring accuracy</b>	
Measurement deviation at limit setting including hysteresis and reproducibility	<ul style="list-style-type: none"> <li>• Typical: 0.25% of measuring span</li> <li>• Maximum: 0.5% of measuring span</li> </ul>
Step response time $T_{99}$	< 5 ms
Long-term stability	
• Lower range value and measuring span	0.25% of measuring span/year
Effect of ambient temperature	
• Lower range value and measuring span	0.25%/10 K of measuring span
• Influence of power supply	0.005%/V
<b>Operating conditions</b>	
Process temperature	-40 ... +120 °C (-40 ... +248 °F)
Ambient temperature	-25 ... +85 °C (-13 ... +185 °F)
Storage temperature	-50 ... +100 °C (-58 ... +212 °F)
Degree of protection according to IEC 60529	<ul style="list-style-type: none"> <li>• IP65 with plug according to EN 175301-803-A</li> <li>• IP67 with M12 device plug</li> <li>• IP67 with cable</li> <li>• IP67 with cable quick screw connection</li> </ul>
Electromagnetic compatibility	<ul style="list-style-type: none"> <li>• According to IEC 61326-1/-2/-3</li> <li>• According to NAMUR NE21 for ATEX devices only, and with a max. measurement error of <math>\leq 1\%</math></li> </ul>
<b>Structural design</b>	
Weight	Approx. 0.090 kg (0.198 lbs)
Process connections	See dimension drawings
Electrical connections	<ul style="list-style-type: none"> <li>• Plug according to EN 175301-803-A Form A with cable entry M16x1.5 or 1/2-14 NPT or PG 11</li> <li>• Device plug M12</li> <li>• 2 or 3-wire (0.5 mm<sup>2</sup>) cable (<math>\varnothing \pm 5.4\text{ mm}</math>)</li> <li>• Quickon cable quick screw connection</li> </ul>
Material of wetted parts	
• Measuring cell	Stainless steel, mat. no. 1.4016

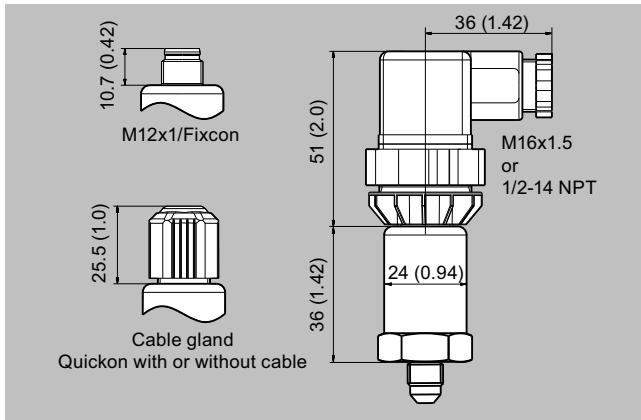
#### Technical specifications (continued)

SITRANS P220 for gauge pressure	
• Process connection	Stainless steel, mat. no. 1.4404 (SST 316 L)
Material of non-wetted parts	
• Enclosure	Stainless steel, mat. no. 1.4404 (SST 316 L)
• Connector housing	Plastic
• Cable	PVC
<b>Certificates and approvals</b>	
Classification according to pressure equipment directive (PED 2014/68/EU)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)
Lloyd's Register of Shipping (LR) <sup>1)</sup>	12/20010
Germanischer Lloyd (GL) <sup>1)</sup>	GL19740 11 HH00
American Bureau of Shipping (ABS) <sup>1)</sup>	ABS_11_HG 789392_PDA
Bureau Veritas (BV) <sup>1)</sup>	BV 271007A0 BV
Det Norske Veritas (DNV) <sup>1)</sup>	A 12553
Drinking water approval (ACS) <sup>1)</sup>	ACS 15 ACC NY 360
EAC <sup>1)</sup>	№ TC RU C-DE.ГБ05.В.00732 ОС НАННО «ЦСВЭ»
CRN <sup>2)</sup>	0F18659.5C
Underwriters Laboratories (UL) <sup>1)</sup>	
• For USA and Canada	UL 20110217 - E34453
• Worldwide	IEC UL DK 21845
<b>Explosion protection</b>	
Intrinsic safety "i" (only with current output)	Ex II 1/2 G Ex ia IIC T4 Ga/Gb Ex II 1/2 D Ex ia IIC T125 °C Da/Db
EC type-examination certificate	SEV 10 ATEX 0146
Connection to certified intrinsically safe ohmic circuits with maximum values	$U_i \leq \text{DC } 30\text{ V}$ ; $I_i \leq 100\text{ mA}$ ; $P_i \leq 0.75\text{ W}$
Effective internal inductance and capacity for versions with plugs according to EN 175301-803-A and M12	$L_i = 0\text{ nH}$ ; $C_i = 0\text{ nF}$
CSA <sup>2)</sup>	70006348 Class I, Division I, Groups A, B, C&D; Class II, Division 1, Groups E, F and G, Class III Class I, Division 2, Groups A, B, C and D; Class II, Division 2, Groups F and G, Class III A/Ex ia IIC T4 Ga/Gb A/Ex ia IIC T125 °C Da/Db

1) For variants with output signal 0 ... 5 V and radiometric output available soon.

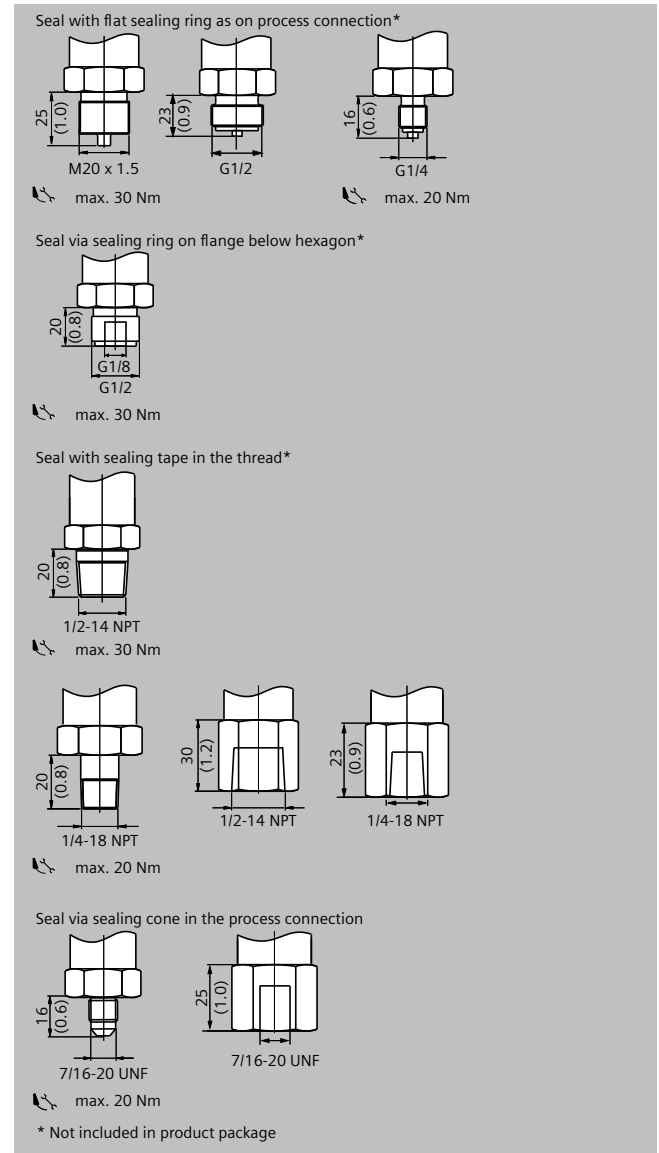
2) See ordering data for available versions.

## Dimensional drawings



SITRANS P220, electrical connections, dimensions in mm (inch)

## Dimensional drawings (continued)



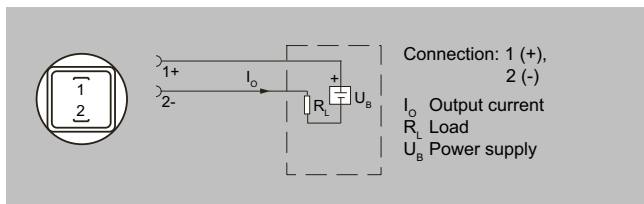
SITRANS P220, process connections, dimensions in mm (inch)

# Pressure measurement

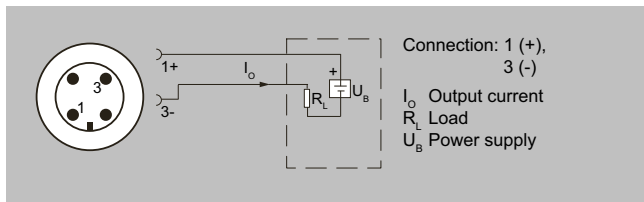
## Pressure transmitters

### Single-range transmitters / SITRANS P220

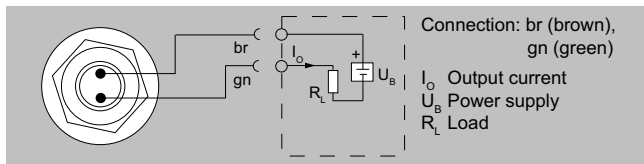
#### Circuit diagrams



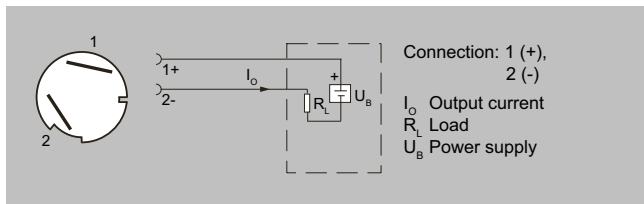
Connection with current output and plug according to EN 175301



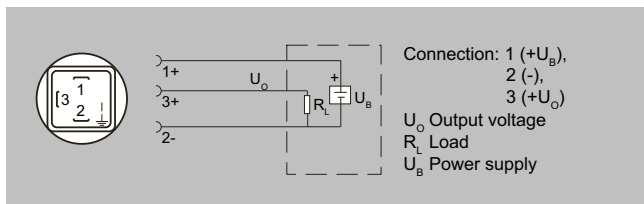
Connection with current output and M12x1 device plug



Connection with current output and cable

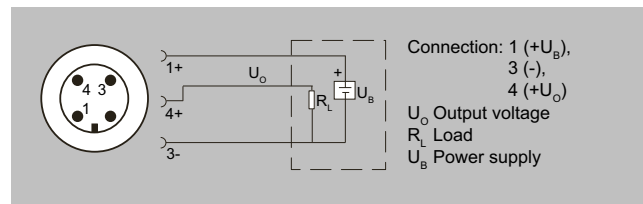


Connection with current output and Quickon cable quick screw connection

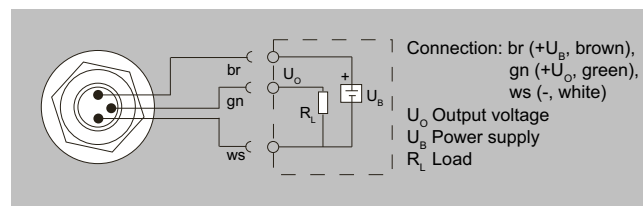


Connection with voltage output, ratiometric output and plug according to EN 175301

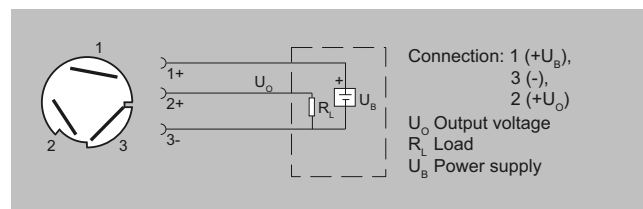
#### Circuit diagrams (continued)



Connection with voltage output, ratiometric output and M12x1 device plug



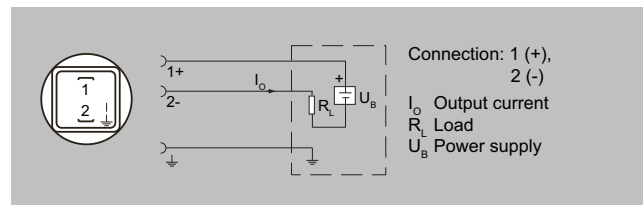
Connection with voltage output, ratiometric output and cable



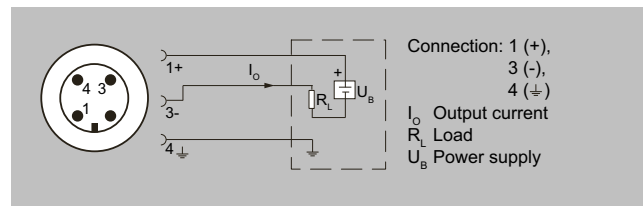
Connection with voltage output, ratiometric output and Quickon fast cable termination

#### Device design with explosion protection: 4 to 20 mA

The grounding connection is conductively bonded to the transmitter enclosure.



Connection with current output and plug according to EN 175301 (Ex)



Connection with current output and M12x1 (Ex) device plug

## Overview



The pressure transmitter SITRANS LH100 is a submersible sensor for hydrostatic level measurement.

The pressure transmitter measures the liquid levels in tanks, containers, channels and dams. The SITRANS LH100 pressure transmitters are available for various measuring ranges and with explosion protection as an option.

A cable box and an anchoring clamp are available as accessories for simple installation.

## Benefits

- Compact design
- Simple installation
- Small error in measurement (0.3 %)
- Degree of protection IP68

## Application

SITRANS LH100 pressure transmitters are used in the following branches, for example:

- Shipbuilding
- Water/waste water supply
- For use in unpressurized/open vessels and wells

## Design

The pressure transmitter has a built-in ceramic sensor which is equipped with a Wheatstone resistance bridge.

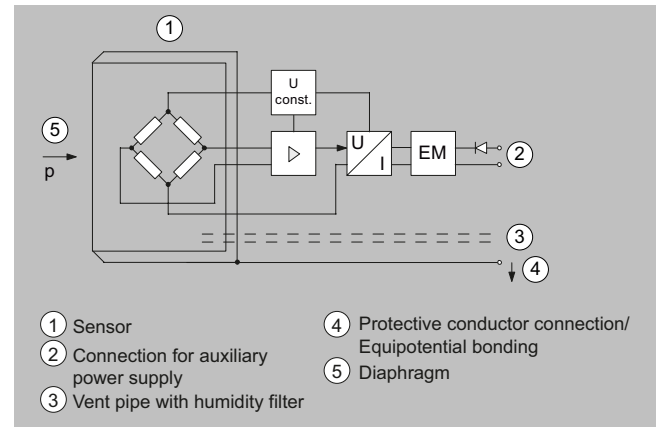
These pressure transmitters are equipped with an electronic circuit fitted together with the sensor in a stainless steel enclosure. In addition, the connecting cable contains a vent pipe which is equipped with a humidity filter to prevent the build-up of condensation.

The diaphragm is protected against external influences by a protective cap.

The sensor, the electronics and the connecting cable are housed in an enclosure with small dimensions.

The pressure transmitter is temperature-compensated for a wide temperature range.

## Function



SITRANS LH100 pressure transmitter, mode of operation and connection diagram

On one side of the sensor (1), the diaphragm (5) is exposed to the hydrostatic pressure which is proportional to the submersion depth. This pressure is compared with atmospheric pressure. Pressure compensation is carried out using the vent pipe (3) in the connecting cable. The vent pipe is equipped with a humidity filter which prevents the build-up of condensation in the vent pipe.

The hydrostatic pressure of the liquid column acts on the diaphragm of the sensor and transmits the pressure to the Wheatstone resistance bridge in the sensor.

The output voltage signal of the sensor is applied to the electronic circuit where it is converted into an output current signal of 4 to 20 mA.

The protective conductor connection/equipotential bonding (4) is connected to the enclosure.

## Pressure measurement

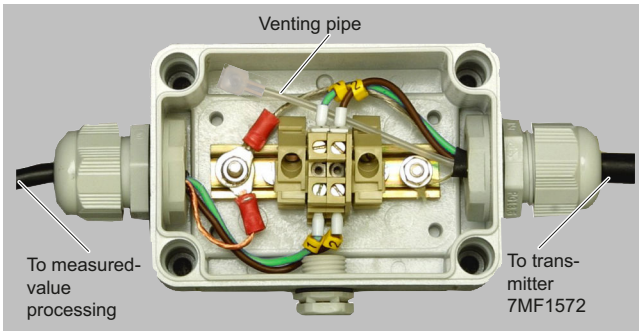
### Pressure transmitters

#### Single-range transmitters / SITRANS LH100

#### Integration

It is generally recommended that the connecting cable of the SITRANS LH100 transmitter is connected to the cable box, which can be ordered separately, and secured with the anchoring clamp, also available separately. The cable box has to be installed near the measuring point.

If the medium is anything other than water, it is also necessary to check compatibility with the specified materials of the transmitter.



Cable box 7MF1572-8AA, open, schematic diagram



Measuring point setup, generally with cable box 7MF1572-8AA and 7MF1572-8AB cable hanger



## Selection and ordering data

SITRANS LH100 pressure transmitter	Article No. 7MF1572-	Order code
For the measurement of the hydrostatic fill level through submersion 2-wire system, 4 ... 20 mA, enclosure material mat. no. 1.4404 (316 L) Measuring cell Al <sub>2</sub> O <sub>3</sub> ceramic, with permanently mounted PE cable	● ● A ● ● ● ● ●	
Click the article number for online configuration in the PIA Life Cycle Portal.		
<b>Measuring range</b>	<b>Cable length</b>	
0 ... 3 mH <sub>2</sub> O	10 m (≈ 30 ft)	1 C
0 ... 4 mH <sub>2</sub> O	10 m (≈ 30 ft)	1 D
0 ... 5 mH <sub>2</sub> O	10 m (≈ 30 ft)	1 E
0 ... 6 mH <sub>2</sub> O	10 m (≈ 30 ft)	1 F
0 ... 10 mH <sub>2</sub> O	20 m (≈ 60 ft)	1 H
0 ... 20 mH <sub>2</sub> O	30 m (≈ 90 ft)	1 K
0 ... 9 ftH <sub>2</sub> O <sup>1)</sup>	33 ft	2 C
0 ... 12 ftH <sub>2</sub> O	33 ft	2 D
0 ... 15 ftH <sub>2</sub> O	33 ft	2 E
0 ... 18 ftH <sub>2</sub> O	33 ft	2 F
0 ... 30 ftH <sub>2</sub> O	66 ft	2 H
0 ... 60 ftH <sub>2</sub> O	98 ft	2 K
0 ... 0.3 bar <sup>1)</sup>	10 m (≈ 30 ft)	3 C
0 ... 0.4 bar	10 m (≈ 30 ft)	3 D
0 ... 0.5 bar	10 m (≈ 30 ft)	3 E
0 ... 0.6 bar	10 m (≈ 30 ft)	3 F
0 ... 1 bar	20 m (≈ 60 ft)	3 H
0 ... 2 bar	30 m (≈ 90 ft)	3 K
<b>Special designs</b>		
Measuring ranges for special designs between:		
• 0 ... 3 mH <sub>2</sub> O and 0 ... 30 mH <sub>2</sub> O		
• 0 ... 9 ftH <sub>2</sub> O and 0 ... 100 ftH <sub>2</sub> O		
• 0 ... 0.3 bar and 0 ... 3 bar		
<b>Special cable length/special measuring range</b>	9 A	H . . + Y 0 1
Add "Z" to article number, specify order code and plain text. Note: Specification of the measuring range Y01 is mandatory!		
The following applies to determining the maximum cable length for Ex versions: Transmitters:		
• C <sub>i</sub> = 0 μF, L <sub>i</sub> = 0 μH		
Cables:		
• C <sub>k</sub> = 0.19 nF per meter cable		
• L <sub>k</sub> = 1.5 μH per meter cable		
The max. permissible data of the transmitter infeed device must be taken into account!		
3 m (10 ft)		H 1 A
5 m (16 ft)		H 1 B
7 m (23 ft)		H 1 C
10 m (33 ft)		H 1 D
15 m (49 ft)		H 1 E
20 m (66 ft)		H 1 F
25 m (82 ft)		H 1 G
30 m (98 ft)		H 1 H
40 m (131 ft)		H 1 J
50 m (164 ft)		H 1 K
60 m (198 ft)		H 1 L
70 m (231 ft)		H 1 M
80 m (264 ft)		H 1 N
90 m (297 ft)		H 1 P
100 m (330 ft)		H 1 Q
<b>Gasket material between sensor and enclosure</b>		
FPM (standard)	1	
EPDM (for drinking water applications)	2	
<b>Explosion protection</b>		
None	0	
With explosion protection ATEX II 1 G Ex ia IIC T4 Ga and IECEx Ex ia IIC T4 Ga	1	

## Pressure measurement

### Pressure transmitters

#### Single-range transmitters / SITRANS LH100

#### Selection and ordering data (continued)

Options	Order code
<b>Add "-Z" to article number and specify order code.</b>	
Quality inspection certificate (5-point characteristic curve test) according to IEC 62828-2	<b>C11</b>
Specification of measuring range (only with special cable lengths) in: "... to ... mH <sub>2</sub> O" or "... to ... ftH <sub>2</sub> O" or "... to ... bar"	<b>Y01</b>

#### Accessories/spare parts

	Article No.
Cable plug for connecting the transmitter cable	<b>7MF1572-8AA</b>
Anchoring clamp For mounting the pressure transmitter	<b>7MF1572-8AB</b>
Protective caps As a replacement (pack of 10)	<b>7MF1572-8AD</b>
Humidity filter As a replacement (pack of 10)	<b>7MF1572-8AE</b>

## Technical specifications

Pressure transmitter SITRANS LH100 (submersible sensor)	
<b>Mode of operation</b>	
Measuring principle	Piezo-resistive
<b>Input</b>	
Measured variable	Hydrostatic level
Measuring range	Max. permissible operating pressure
• 0 ... 3 mH <sub>2</sub> O (0 ... 9 ftH <sub>2</sub> O)	• 1.5 bar (21.8 psi) (corresponds to 15 mH <sub>2</sub> O (45 ftH <sub>2</sub> O))
• 0 ... 4 mH <sub>2</sub> O (0 ... 12 ftH <sub>2</sub> O)	• 1.5 bar (21.8 psi) (corresponds to 15 mH <sub>2</sub> O (45 ftH <sub>2</sub> O))
• 0 ... 5 mH <sub>2</sub> O (0 ... 15 ftH <sub>2</sub> O)	• 1.5 bar (21.8 psi) (corresponds to 15 mH <sub>2</sub> O (45 ftH <sub>2</sub> O))
• 0 ... 6 mH <sub>2</sub> O (0 ... 18 ftH <sub>2</sub> O)	• 1.5 bar (21.8 psi) (corresponds to 15 mH <sub>2</sub> O (45 ftH <sub>2</sub> O))
• 0 ... 10 mH <sub>2</sub> O (0 ... 30 ftH <sub>2</sub> O)	• 3.0 bar (43.5 psi) (corresponds to 30 mH <sub>2</sub> O (90 ftH <sub>2</sub> O))
• 0 ... 20 mH <sub>2</sub> O (0 ... 60 ftH <sub>2</sub> O)	• 5.0 bar (72.5 psi) (corresponds to 50 mH <sub>2</sub> O (150 ftH <sub>2</sub> O))
• 0 ... 0.3 bar	• 1.5 bar
• 0 ... 0.4 bar	• 1.5 bar
• 0 ... 0.5 bar	• 1.5 bar
• 0 ... 0.6 bar	• 1.5 bar
• 0 ... 1 bar	• 3.0 bar
• 0 ... 2 bar	• 5.0 bar
<b>Output</b>	
Output signal	4 ... 20 mA
<b>Measuring accuracy</b>	According to IEC 62828-1
Measurement deviation at limit setting including hysteresis and reproducibility	
Measuring range	
• 0 ... 3 mH <sub>2</sub> O (0 ... 9 ftH <sub>2</sub> O or 0 ... 0.3 bar)	• 0.5% measuring range end value (typical) • 1.0% of measuring range end value (maximum)
• For all other measuring ranges	• 0.3% of measuring range end value (typical) • 0.6% of measuring range end value (maximum)
<b>Effect of ambient temperature</b>	
Measuring range	Zero and span
• 3 mH <sub>2</sub> O (9 ftH <sub>2</sub> O or 0.3 bar)	0.45%/10 K of measuring range end value
• 4 ... 6 mH <sub>2</sub> O (12 ... 18 ftH <sub>2</sub> O or 0.4...0.6 bar)	0.45%/10 K of measuring range end value
• > 6 mH <sub>2</sub> O (> 18 ftH <sub>2</sub> O or > 0.6 bar)	0.3%/10 K of measuring range end value
<b>Long-term stability</b>	
Measuring range	Zero and span
• 3 mH <sub>2</sub> O (9 ftH <sub>2</sub> O or 0.3 bar)	0.4% of measuring range end value/year
• 4 ... 6 mH <sub>2</sub> O (12 ... 18 ftH <sub>2</sub> O or 0.4...0.6 bar)	0.25% of measuring range end value/year
• > 6 mH <sub>2</sub> O (> 18 ftH <sub>2</sub> O or > 0.6 bar)	0.2% of measuring range end value/year
<b>Operating conditions</b>	
Ambient conditions	
• Process temperature	-10 ... +80 °C (14 ... 176 °F)
• Storage temperature	-40 ... +80 °C (-40 ... +176 °F)
Degree of protection according to IEC 60529	IP68
<b>Structural design</b>	
Weight	
• Pressure transmitter	≈ 0.2 kg (≈ 0.44 lb)

## Technical specifications (continued)

Pressure transmitter SITRANS LH100 (submersible sensor)	
• Cable; maximum cable length 100 m (330 ft)	0.025 kg/m (≈ 0.015 lb/ft)
Electrical connection	Cable with 3 conductors, vent pipe and integrated humidity filter
Material	
• Seal diaphragm	Al <sub>2</sub> O <sub>3</sub> ceramic, 96%
• Enclosure	Stainless steel, mat. no. 1.4404/316L
• Gasket	• FPM (standard) • EPDM (optional)
• Connecting cable	• PE-HD (standard) • PE-LD (in the case of versions with EPDM seal, suitable for drinking water applications)
<b>Auxiliary power</b>	
Terminal voltage on pressure transmitter U <sub>B</sub>	• 10 ... 33 V DC • 10 ... 30 V DC for transmitter with intrinsic safety explosion protection
<b>Certificates and approvals</b>	
Drinking water approval (ACS)	15 ACC NY 360
EAC	№ TC RU C-DE.ГБ05.В.00732 OC НАННО «ЦСБЭ»
Underwriters Laboratories (UL)	2014-11-17 - E344532
The device is not subject to the pressure equipment directive (PED 2014/68/EU)	
Explosion protection	
• Intrinsic safety "i"	IECEx SEV 14.0003 SEV 14 ATEX 0109
- Marking	II 1 G Ex ia IIC T4 Ga
• EAC Ex	TC RU C-DE.AA87.B.00324

## Cable box

Area of application	For connecting the transmitter cable
<b>Structural design</b>	
Weight	0.2 kg (0.44 lb)
Electrical connection	2 x 3-way (28 to 18 AWG)
Cable entry	2 x Pg 9
Enclosure material	Polycarbonate
Vent valve for atmospheric pressure	
<b>Operating conditions</b>	
Degree of protection according to IEC 60529	IP65

## Anchoring clamp

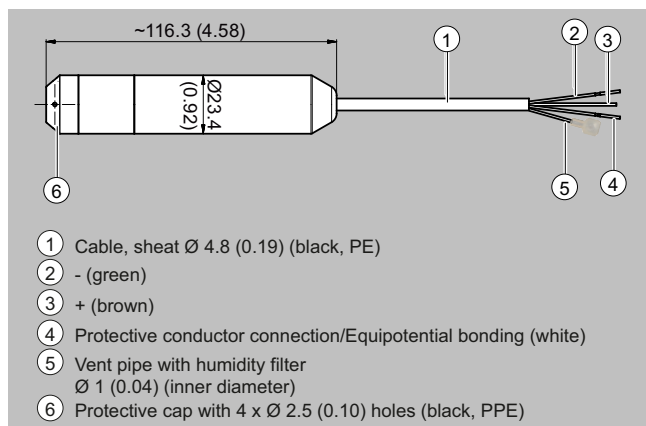
Area of application	For mounting the transmitter
<b>Structural design</b>	
Weight	0.16 kg (0.35 lb)
Material	Zinc-plated steel, polyamide

## Pressure measurement

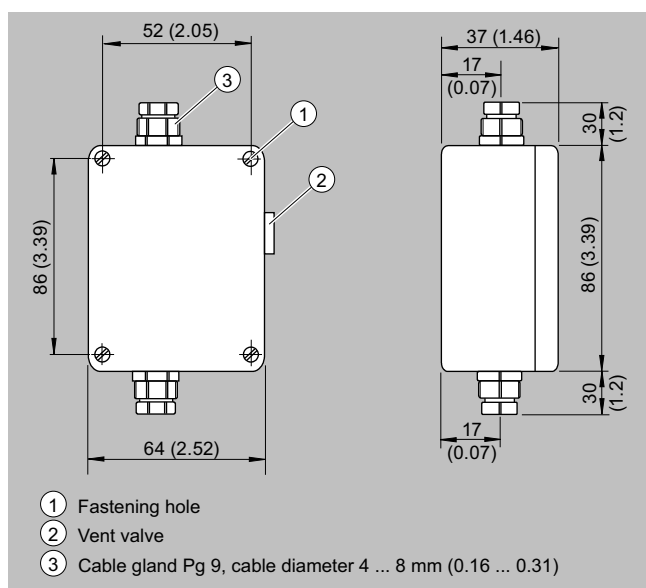
### Pressure transmitters

#### Single-range transmitters / SITRANS LH100

#### Dimensional drawings

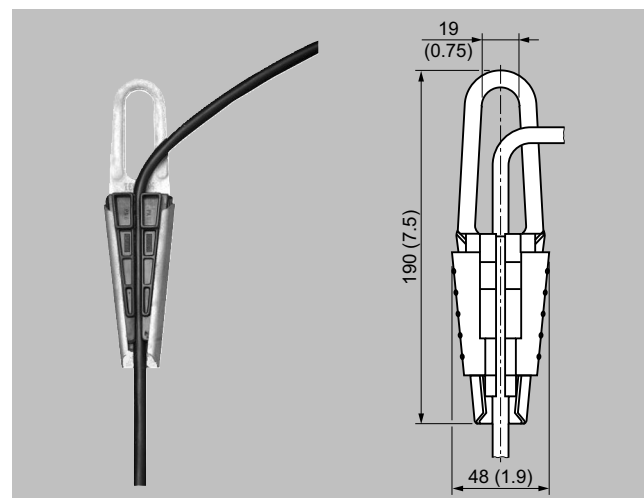


SITRANS LH100 pressure transmitter, dimensions in mm (inch)



Junction box, dimensions in mm (inch)

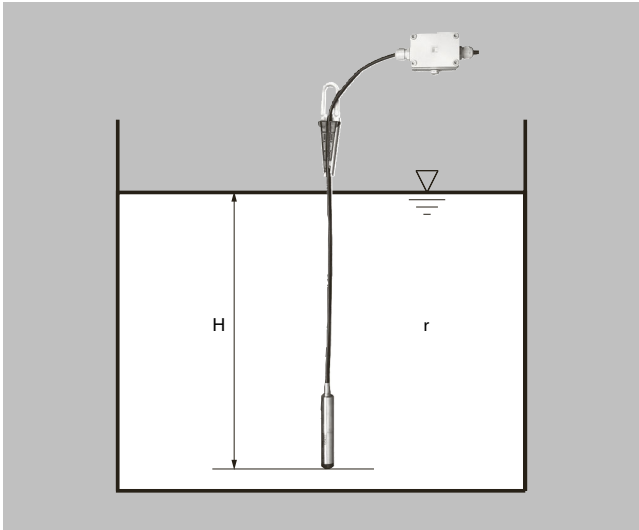
#### Dimensional drawings (continued)



Anchoring clamp, dimensions in mm (inch)

**More information**

*Establishing the measuring range with water as process medium*



Calculation of the measuring range

$$p = \rho \times g \times H$$

with:

$\rho$  = density of medium

$g$  = local gravitational acceleration

$H$  = maximum level

Example:

Medium: Water,  $\rho = 1\,000\text{ kg/m}^3$

Gravitational acceleration:  $9.81\text{ m/s}^2$

Lower range value: 0 m

Maximum level: 6.0 m

Cable length: 10 m

Calculation:

$$p = 1\,000\text{ kg/m}^3 \times 9.81\text{ m/s}^2 \times 6.0\text{ m}$$

$$p = 58\,860\text{ N/m}^2$$

$$p = 589\text{ mbar}$$

Transmitter to be ordered:

**7MF1572-1FA10**

Plus, if required, cable box 7MF1572-8AA and anchoring clamp

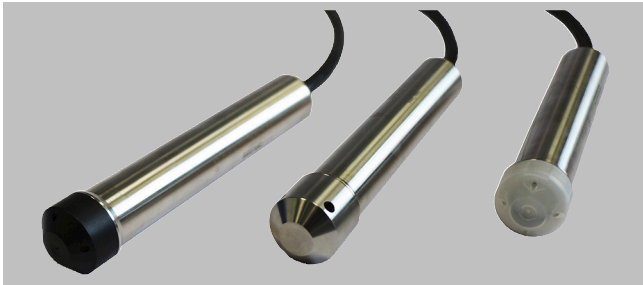
7MF1572-8AB

## Pressure measurement

### Pressure transmitters

#### Single-range transmitters / SITRANS LH300

#### Overview



The pressure transmitter SITRANS LH300 is a submersible sensor for hydrostatic level measurement with a protective capability made of PPE (left), stainless steel (center) and ETFE (right).

The pressure transmitter measures the liquid levels in tanks, containers, channels and dams. The SITRANS LH300 pressure transmitters are available for various measuring ranges and with explosion protection as an option.

A cable box and an anchoring clamp are available as accessories for simple installation.

#### Benefits

- Compact design
- Simple installation
- Small error in measurement (typically 0.15%)
- Degree of protection IP68

#### Application

SITRANS LH300 pressure transmitters are used in the following fields of industry, for example:

- Shipbuilding
- Water/waste water supply
- Drinking water treatment plants
- For use in unpressurized/open vessels and wells
- Desalinization plants

#### Design

The pressure transmitter has a built-in ceramic sensor which is equipped with a Wheatstone resistance bridge.

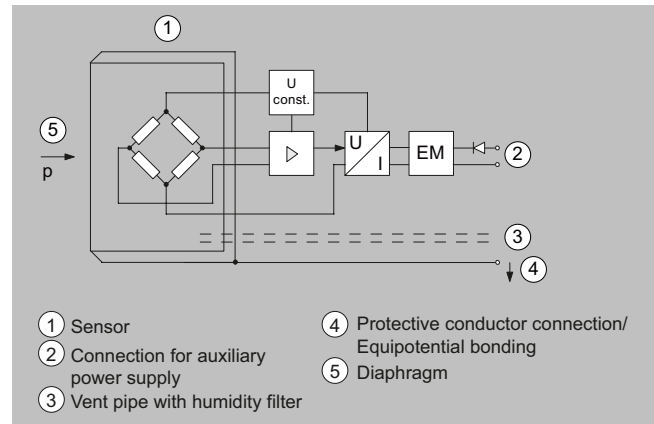
These pressure transmitters are equipped with an electronic circuit fitted together with the sensor in a stainless steel enclosure. In addition, the connecting cable contains a vent pipe which is equipped with a humidity filter to prevent the build-up of condensation.

The diaphragm is protected against external influences by a protective cap.

The sensor, the electronics and the connecting cable are housed in an enclosure with small dimensions.

The pressure transmitter is temperature-compensated for a wide temperature range.

#### Function



SITRANS LH300 pressure transmitter, mode of operation and connection diagram

On one side of the sensor (1), the diaphragm (5) is exposed to the hydrostatic pressure which is proportional to the submersion depth. This pressure is compared with atmospheric pressure. Pressure compensation is carried out using the vent pipe (3) in the connecting cable. The vent pipe is equipped with a humidity filter which prevents the build-up of condensation in the vent pipe.

The hydrostatic pressure of the liquid column acts on the diaphragm of the sensor and transmits the pressure to the Wheatstone resistance bridge in the sensor.

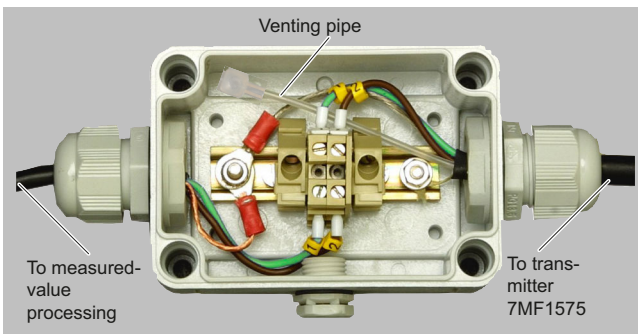
The output voltage signal of the sensor is applied to the electronic circuit where it is converted into an output current signal of 4 to 20 mA.

The protective conductor connection/equipotential bonding (4) is connected to the enclosure.

## Integration

It is generally recommended that the connecting cable of the SITRANS LH300 transmitter is connected to the cable box, which can be ordered separately, and secured with an anchoring clamp, also available separately. The cable box is to be installed near the measuring point, but outside the process medium.

Likewise, in the case of process media other than water, the compatibility with the specified materials of the transmitter, cable and seal must be checked.



Cable box 7MF1575-8AA, opened, schematic representation



Measurement location setup, in principle with cable box 7MF1575-8AA and anchoring clamp 7MF1575-8AB

# Pressure measurement

## Pressure transmitters

### Single-range transmitters / SITRANS LH300

#### Selection and ordering data

SITRANS LH300 pressure transmitter		Article No. 7MF1575-	Order code
For the measurement of the hydrostatic level, immersion probe, 2-wire system, 4 ... 20 mA, for enclosure material see ordering option, measuring cell Al <sub>2</sub> O <sub>3</sub> ceramic (99.6% purity), with permanently mounted cable. Material of protective cap for PE cable: PPE (color: black). Material of protective cap for FEP cable: PPE (color: white) <b>Note:</b> Cable box and cable hanger must be ordered separately.			
Click the article number for online configuration in the PIA Life Cycle Portal.			
Measuring range	Cable length (PE cable)		
0 ... 1 mH <sub>2</sub> O	5 m (≈ 15 ft)	1 A	
0 ... 2 mH <sub>2</sub> O	5 m (≈ 15 ft)	1 B	
0 ... 3 mH <sub>2</sub> O	10 m (≈ 30 ft)	1 C	
0 ... 4 mH <sub>2</sub> O	10 m (≈ 30 ft)	1 D	
0 ... 5 mH <sub>2</sub> O	10 m (≈ 30 ft)	1 E	
0 ... 6 mH <sub>2</sub> O	10 m (≈ 30 ft)	1 F	
0 ... 10 mH <sub>2</sub> O	20 m (≈ 60 ft)	1 H	
0 ... 20 mH <sub>2</sub> O	30 m (≈ 90 ft)	1 K	
0 ... 40 mH <sub>2</sub> O	50 m (≈ 150 ft)	1 L	
0 ... 3 ftH <sub>2</sub> O	5 m (≈ 15 ft)	2 A	
0 ... 6 ftH <sub>2</sub> O	5 m (≈ 15 ft)	2 B	
0 ... 9 ftH <sub>2</sub> O	10 m (≈ 30 ft)	2 C	
0 ... 12 ftH <sub>2</sub> O	10 m (≈ 30 ft)	2 D	
0 ... 15 ftH <sub>2</sub> O	10 m (≈ 30 ft)	2 E	
0 ... 18 ftH <sub>2</sub> O	10 m (≈ 30 ft)	2 F	
0 ... 30 ftH <sub>2</sub> O	20 m (≈ 60 ft)	2 H	
0 ... 60 ftH <sub>2</sub> O	30 m (≈ 90 ft)	2 K	
0 ... 120 ftH <sub>2</sub> O	50 m (≈ 150 ft)	2 L	
0 ... 0.1 bar	5 m (≈ 15 ft)	3 A	
0 ... 0.2 bar	5 m (≈ 15 ft)	3 B	
0 ... 0.3 bar	10 m (≈ 30 ft)	3 C	
0 ... 0.4 bar	10 m (≈ 30 ft)	3 D	
0 ... 0.5 bar	10 m (≈ 30 ft)	3 E	
0 ... 0.6 bar	10 m (≈ 30 ft)	3 F	
0 ... 1 bar	20 m (≈ 60 ft)	3 H	
0 ... 2 bar	30 m (≈ 90 ft)	3 K	
0 ... 4 bar	50 m (≈ 150 ft)	3 L	
<b>Special designs</b>			
Measuring ranges for special designs between:			
0 ... 1 mH <sub>2</sub> O and 0 ... 160 mH <sub>2</sub> O or			
0 ... 3 ftH <sub>2</sub> O and 0 ... 530 ftH <sub>2</sub> O or			
0 ... 0.1 bar and 0 ... 16 bar possible.			
<b>PE cable for general applications and drinking water applications</b>			
<b>Special cable length</b>		9 X	H . .
Add "-Z" to article number, specify order code and plain text:			
Y01: Cable length .....			
3 m (≈ 10 ft)			H 1 A
5 m (≈ 16 ft)			H 1 B
7 m (≈ 23 ft)			H 1 C
10 m (≈ 33 ft)			H 1 D
15 m (≈ 50 ft)			H 1 E
20 m (≈ 65 ft)			H 1 F
25 m (≈ 80 ft)			H 1 G
30 m (≈ 100 ft)			H 1 H
40 m (≈ 130 ft)			H 1 J
50 m (≈ 160 ft)			H 1 K
60 m (≈ 200 ft)			H 1 L
70 m (≈ 230 ft)			H 1 M
80 m (≈ 265 ft)			H 1 N
90 m (≈ 295 ft)			H 1 P
100 m (≈ 330 ft)			H 1 Q
125 m (≈ 410 ft)			H 1 R
150 m (≈ 495 ft)			H 1 S



## Selection and ordering data (continued)

SITRANS LH300 pressure transmitter	Article No.					Order code		
	7	M	F	1	5	7	5	7
175 m (≈ 575 ft)						H	1	T
200 m (≈ 650 ft)						H	1	U
225 m (≈ 740 ft)						H	1	V
250 m (≈ 820 ft)						H	1	W
275 m (≈ 900 ft)						H	1	X
300 m (≈ 990 ft)						H	2	A
350 m (≈ 1150 ft)						H	2	B
400 m (≈ 1320 ft)						H	2	C
450 m (≈ 1480 ft)						H	2	D
500 m (≈ 1650 ft)						H	2	E
550 m (≈ 1815 ft)						H	2	F
600 m (≈ 1980 ft)						H	2	G
650 m (≈ 2145 ft)						H	2	H
700 m (≈ 2310 ft)						H	2	J
750 m (≈ 2475 ft)						H	2	K
800 m (≈ 2640 ft)						H	2	L
850 m (≈ 2800 ft)						H	2	M
900 m (≈ 2970 ft)						H	2	N
950 m (≈ 3135 ft)						H	2	P
1 000 m (≈ 3300 ft)						H	2	Q
<b>Additional special cable lengths</b>	9	X				H	1	Y
Add "-Z" to article number, specify order code and plain text: H1Y: Cable length .....						+		
Y01: Measuring range .....						Y	0	1
<b>FEP cable for corrosive process media</b>								
<b>Special cable length</b>	9	X				H	.	.
Add "-Z" to article number, specify order code and plain text: Y01: Cable length .....						+		
						Y	0	1
3 m (≈ 10 ft)						H	5	A
5 m (≈ 16 ft)						H	5	B
7 m (≈ 23 ft)						H	5	C
10 m (≈ 33 ft)						H	5	D
15 m (≈ 50 ft)						H	5	E
20 m (≈ 65 ft)						H	5	F
25 m (≈ 80 ft)						H	5	G
30 m (≈ 100 ft)						H	5	H
40 m (≈ 130 ft)						H	5	J
50 m (≈ 160 ft)						H	5	K
60 m (≈ 200 ft)						H	5	L
70 m (≈ 230 ft)						H	5	M
80 m (≈ 265 ft)						H	5	N
90 m (≈ 295 ft)						H	5	P
100 m (≈ 330 ft)						H	5	Q
125 m (≈ 410 ft)						H	5	R
150 m (≈ 495 ft)						H	5	S
175 m (≈ 575 ft)						H	5	T
200 m (≈ 650 ft)						H	5	U
225 m (≈ 740 ft)						H	5	V
250 m (≈ 820 ft)						H	5	W
275 m (≈ 900 ft)						H	5	X
300 m (≈ 990 ft)						H	6	A
350 m (≈ 1150 ft)						H	6	B
400 m (≈ 1320 ft)						H	6	C
450 m (≈ 1480 ft)						H	6	D
500 m (≈ 1650 ft)						H	6	E
550 m (≈ 1815 ft)						H	6	F
600 m (≈ 1980 ft)						H	6	G

# Pressure measurement

## Pressure transmitters

### Single-range transmitters / SITRANS LH300

#### Selection and ordering data (continued)

SITRANS LH300 pressure transmitter		Article No. 7MF1575-					Order code			
		●	●	●	●	●	●	●	●	
650 m (≈ 2145 ft)								H	6	H
700 m (≈ 2310 ft)								H	6	J
750 m (≈ 2475 ft)								H	6	K
800 m (≈ 2640 ft)								H	6	L
850 m (≈ 2800 ft)								H	6	M
900 m (≈ 2970 ft)								H	6	N
950 m (≈ 3135 ft)								H	6	P
1000 m (≈ 3300 ft)								H	6	Q
<b>Additional special cable lengths</b>		9	X					H	5	Y
Add "-Z" to article number, specify order code and plain text: H1Y: Cable length ..... Y01: Measuring range .....								+		
								Y	0	1
<b>Material of the enclosure</b>	<b>Protective cap material</b>									
Stainless steel 316L (1.4404)	Protective cap made of PPE (recommended for PE cable)							A		
Stainless steel 316L (1.4404)	Protective cap made of ETFE (standard with FEP cable)							B		
Stainless steel 316L (1.4404)	Stainless steel 316L (1.4404)							C		
Stainless steel 904L (1.4539) for seawater applications	Protective cap made of PPE							D		
Stainless steel 904L (1.4539) for seawater applications	Protective cap made of ETFE							E		
Stainless steel 904L (1.4539) for seawater applications	Stainless steel 904L (1.4539) for seawater applications							F		
<b>Gasket material between sensor and enclosure</b>										
FPM (standard)								1		
EPDM (for drinking water applications)								2		
<b>Explosion protection</b>										
None								0		
With ATEX II1 G Ex ia IIC T4 Ga, IECEx Ex ia IIC T4 Ga and EAC Ex explosion protection (only possible for cable length ≤ 300 m (990 ft))								1		

Options	Order code
Quality test certificate (factory calibration) according to IEC 62828-2 (6 points upward)	C11

#### Accessories/spare parts

	Article No.
Cable box	7MF1575-8AA
Anchoring clamp	7MF1575-8AB
Protective cap, PPE As spare part (pack of 10)	7MF1575-8AD
Protective cap, ETFE As spare part (pack of 10)	7MF1575-8AE
Humidity filter As spare part (pack of 10)	7MF1575-8AF
Protective cap, stainless steel 316L (1.4404) For wastewater applications	7MF1575-8AG
Protective cap, stainless steel 904L (1.4539) For seawater applications	7MF1575-8AH

## Technical specifications

Pressure transmitter SITRANS LH300 (submersible sensor)	
<b>Mode of operation</b>	
Measuring principle	Piezo-resistive
<b>Input</b>	
Measured variable	Hydrostatic level
Measuring range	Max. permissible operating pressure
• 0 ... 1 mH <sub>2</sub> O (0 ... 3 ftH <sub>2</sub> O)	• 1.5 bar (21.8 psi) (corresponds to 15 mH <sub>2</sub> O (45 ftH <sub>2</sub> O))
• 0 ... 2 mH <sub>2</sub> O (0 ... 6 ftH <sub>2</sub> O)	• 1.5 bar (21.8 psi) (corresponds to 15 mH <sub>2</sub> O (45 ftH <sub>2</sub> O))
• 0 ... 3 mH <sub>2</sub> O (0 ... 9 ftH <sub>2</sub> O)	• 1.5 bar (21.8 psi) (corresponds to 15 mH <sub>2</sub> O (45 ftH <sub>2</sub> O))
• 0 ... 4 mH <sub>2</sub> O (0 ... 12 ftH <sub>2</sub> O)	• 2 bar (29 psi) (corresponds to 20 mH <sub>2</sub> O (60 ftH <sub>2</sub> O))
• 0 ... 5 mH <sub>2</sub> O (0 ... 15 ftH <sub>2</sub> O)	• 2 bar (29 psi) (corresponds to 20 mH <sub>2</sub> O (60 ftH <sub>2</sub> O))
• 0 ... 6 mH <sub>2</sub> O (0 ... 18 ftH <sub>2</sub> O)	• 2 bar (29 psi) (corresponds to 20 mH <sub>2</sub> O (60 ftH <sub>2</sub> O))
• 0 ... 10 mH <sub>2</sub> O (0 ... 30 ftH <sub>2</sub> O)	• 5 bar (72.5 psi) (corresponds to 50 mH <sub>2</sub> O (150 ftH <sub>2</sub> O))
• 0 ... 20 mH <sub>2</sub> O (0 ... 60 ftH <sub>2</sub> O)	• 10 bar (145 psi) (corresponds to 100 mH <sub>2</sub> O (300 ftH <sub>2</sub> O))
• 0 ... 40 mH <sub>2</sub> O (0 ... 120 ftH <sub>2</sub> O)	• 20 bar (290 psi) (corresponds to 200 mH <sub>2</sub> O (600 ftH <sub>2</sub> O))
Special measuring ranges	
• Up to 100 mH <sub>2</sub> O (0 ... 300 ftH <sub>2</sub> O)	• 20 bar (290 psi) (corresponds to 200 mH <sub>2</sub> O (600 ftH <sub>2</sub> O))
• Up to 160 mH <sub>2</sub> O (0 ... 480 ftH <sub>2</sub> O)	• 24 bar (348 psi) (corresponds to 240 mH <sub>2</sub> O (720 ftH <sub>2</sub> O))
Measuring range	
• 0 ... 0.1 bar	• 1.5 bar
• 0 ... 0.2 bar	• 1.5 bar
• 0 ... 0.3 bar	• 1.5 bar
• 0 ... 0.4 bar	• 2 bar
• 0 ... 0.5 bar	• 2 bar
• 0 ... 0.6 bar	• 2 bar
• 0 ... 1 bar	• 5 bar
• 0 ... 2 bar	• 10 bar
• 0 ... 4 bar	• 20 bar
Special measuring ranges	
• Up to 10 bar	• 20 bar
• Up to 20 bar	• 24 bar
<b>Output</b>	
Output signal	4 ... 20 mA
<b>Measuring accuracy</b>	According to IEC 62828-1
Measurement deviation at limit setting including hysteresis and reproducibility	• ≤ 0.15% of the measuring range end value (typical) • ≤ 0.3% of the measuring range end value (max.)
Effect of ambient temperature	≤ 0.05%/10 K of the measuring range end value (zero point and span)
Long-term stability	≤ 0.15% of the measuring range end value/year (zero point and span)
<b>Operating conditions</b>	
Ambient conditions	
• Process temperature	-10 ... +80 °C (14 ... 176 °F)
• Storage temperature	-20 ... +80 °C (-4 ... +176 °F)
Degree of protection according to IEC 60529	IP68
<b>Structural design</b>	
Weight	
• Pressure transmitter	≈ 0.4 kg (≈ 0.88 lb)

## Technical specifications (continued)

Pressure transmitter SITRANS LH300 (submersible sensor)	
• Cable	0.08 kg/m (≈ 0.059 lb/ft)
Maximum of freely hanging length	300 m (990 ft)
Electrical connection	Cable with 2 wires, vent pipe and integrated humidity filters
<b>Material</b>	
• Seal diaphragm	Al <sub>2</sub> O <sub>3</sub> ceramic, 96%
• Enclosure	Stainless steel, mat. no. 1.4404/316L or 1.4539/904L for seawater applications
• Gasket	• FPM (standard) • EPDM (optional)
• Connecting cable	• PE (standard/drinking water applications) • FEP (for corrosive process media)
• Protective cap	Stainless steel, PPE or ETFE
<b>Auxiliary power</b>	
Terminal voltage on pressure transmitter U <sub>B</sub>	• 10 ... 33 V DC for transmitter without explosion protection • 10 ... 30 V DC for transmitter with intrinsic safety explosion protection
<b>Certificates and approvals</b>	
Drinking water approval (ACS)	17 ACC NY 055
EAC	TC N RU Д-ДЕ.ΓΑ02.В.05092
Underwriters Laboratories (UL)	ML File No. E344532, issued 2017-08-17
Marine approval (LR)	LR_18/20074
Marine approval (DNV/GL)	TAA00000CE
Marine approval (BV)	56926/A0 BV
Marine approval (ABS)	HG1881314_P
Marine approval (RINA)	ELE067319XG
Pressure Equipment Directive	The transmitter is not subject to the pressure equipment directive (DGRL 2014/68/EU)
Explosion protection	
• ATEX	SEV 16 ATEX 0121
• IEC Ex	IEC Ex SEV 16.0003
• EAC Ex	TC RU C-DE.AA87.B.00324
Intrinsic safety "i"	
• Marking	II 1 G Ex ia IIC T4 Ga

## Cable box

<b>Area of application</b>	For connecting the transmitter cable
<b>Structural design</b>	
Weight	0.2 kg (0.44 lb)
Electrical connection	2 x 3-way (28 to 18 AWG)
Cable entry	2 x PG 13.5
Enclosure material	Polycarbonate
Vent valve for atmospheric pressure	
<b>Operating conditions</b>	
Degree of protection according to IEC 60529	IP65

## Anchoring clamp

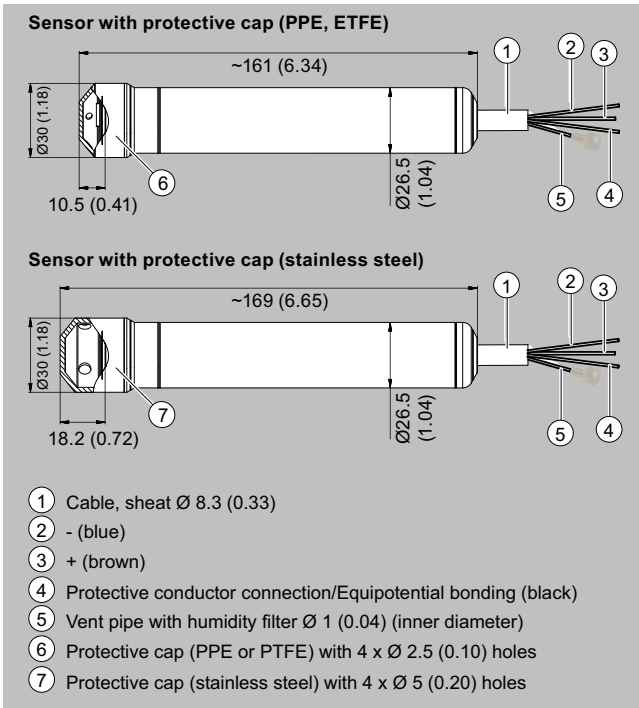
<b>Area of application</b>	For mounting the transmitter
<b>Structural design</b>	
Weight	0.16 kg (0.35 lb)
Material	Zinc-plated steel, polyamide
Terminal area	For cable with a diameter of 5.5 ... 9.5 mm

# Pressure measurement

## Pressure transmitters

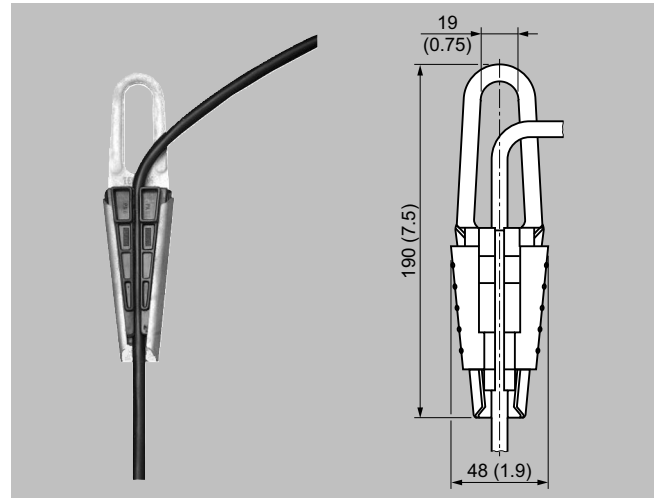
### Single-range transmitters / SITRANS LH300

#### Dimensional drawings

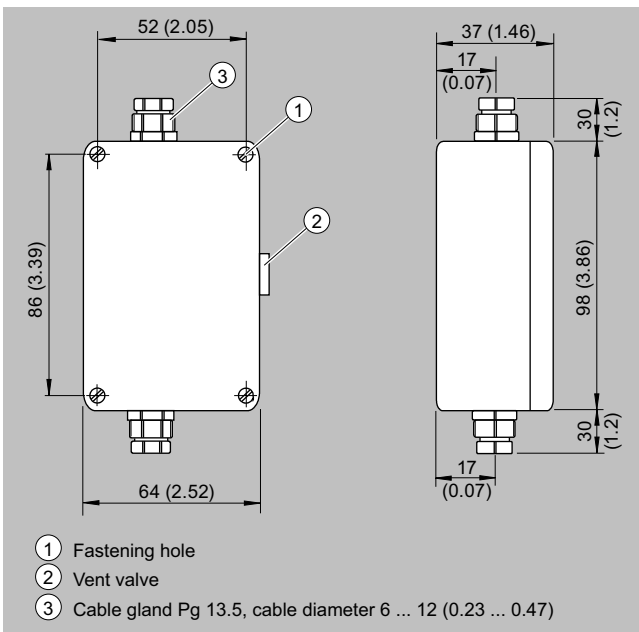


SITRANS LH300 pressure transmitter, dimensions in mm (inch)

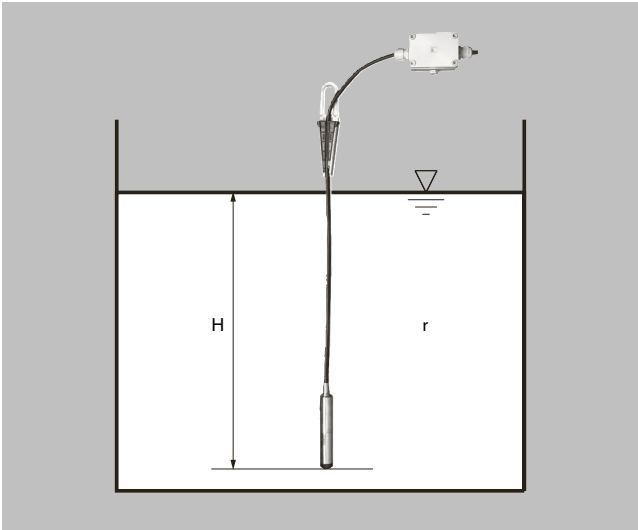
#### Dimensional drawings (continued)



Anchoring clamp, dimensions in mm (inch)



Cable box, dimensions in mm (inch)

**More information****Determination of the measuring range for water as process medium**

Calculation of the measuring range:

$$p = \rho \times g \times H$$

with:

$\rho$  = density of medium

$g$  = local gravitational acceleration

$H$  = maximum level

Example:

Medium: Water,  $\rho = 1\,000\text{ kg/m}^3$

Gravitational acceleration:  $9.81\text{ m/s}^2$

Lower range value: 0 m

Maximum level: 6.0 m

Cable length: 10 m

Calculation:

$$p = 1\,000\text{ kg/m}^3 \times 9.81\text{ m/s}^2 \times 6.0\text{ m}$$

$$p = 58\,860\text{ N/m}^2$$

$$p = 589\text{ mbar}$$

Transmitter to be ordered:

**7MF1575-1FA10**

Plus, if required, cable box 7MF1575-8AA and anchoring clamp 7MF1575-8AB

## Pressure measurement

### Pressure transmitters

#### Single-range transmitters / SITRANS P Compact

##### Overview



The SITRANS P Compact pressure transmitter is designed for the specific requirements of the food, pharmaceuticals and biotechnology industries.

The use of high-quality materials guarantees adherence to hygiene provisions.

Particular importance was placed on high surface quality. In addition, the system can be electropolished.

A further important feature is the hygienic design of the process connection with different aseptic connections.

The fully welded stainless steel enclosure can be designed with degree of protection up to IP67.

By means of corresponding temperature decouplers, the SITRANS P Compact transmitter can be used for temperatures up to 200 °C (392 °F).

##### Benefits

- Measuring ranges from 0 to 160 mbar (0 to 2.32 psi) to 0 to 40 bar (0 to 580 psi)
- Linearity error incl. hysteresis < +0.2% of the full-scale value
- Piezo-resistive measurement system, vacuum-proof and overload-proof
- Hygiene-based design according to EHEDG, FDA and GMP recommendations
- Material and surface quality according to hygiene requirements
- Wetted parts made of stainless steel; completely welded
- Signal output 4 to 20 mA (0 to 20 mA as option)
- Stainless steel enclosure with degree of protection IP65 (IP67 as option)
- Process temperature up to 200 °C (392 °F)
- Explosion protection II 2G EEx [ib] IIC T6 to ATEX
- Easy and safe to clean

##### Application

The SITRANS P Compact pressure transmitter is designed for the specific requirements of the food, pharmaceuticals and biotechnology industries.

The use of high-quality materials guarantees adherence to hygiene provisions.

The SITRANS P Compact pressure transmitter can be ordered in a large number of different variants. This enables precise adaptation of the pressure transmitter to the conditions of the usage location.

##### Design

The electronics are potted for protection against humidity, corrosive atmospheres and vibrations.

##### **Operating instructions for the pressure transmitter**

###### Atmospheric internal pressure compensation

The atmospheric internal pressure compensation of the SITRANS P Compact pressure transmitter is designed as follows in the overpressure measuring range:

- With connector designs via plug cable gland (IP65)
- In field enclosures via an integrated sinter filter (IP65) or a ventilated connecting cable (IP67)
- In versions with cable outlet via ventilated connecting cable (IP67)

In the absolute pressure area, no internal pressure compensation to the atmosphere is necessary.

**Note:** The degrees of protection specified above are only achieved under the following conditions:

- Proper mounting of the pressure transmitter
- Firmly tightened plug cable glands
- Cable diameters match nominal diameters of sealing inserts in the enclosure

**Note:** The integrated measures for EMC are only effective with a properly connected ground connection.

###### CE marking

The CE marking of the pressure transmitter certifies adherence with the guidelines of the European Council (9/336/EEC), the EMC legislation (13 Nov. 1992) and the applicable generic standards.

Problem-free operation in systems and plants is only achieved when the conditions for shielding, grounding, cable routing and electrical isolation are complied with during installation and mounting.

###### Hazardous areas

**Note:** In hazardous areas, electrical equipment can only be installed and operated by qualified expert personnel.

Changes at devices and connections void the Ex protection and the warranty.

In intrinsically safe circuits, equipotential bonding must be ensured over the entire course of the cable run, within and outside of the hazardous area. The limit values listed in the ATEX approval need to be considered.

##### Function

Process pressure acts on a piezo-resistive semi-conductor measuring bridge via a remote seal diaphragm by means of a transfer fluid. The pressure transmitter converts the measured pressure values into a load-independent current signal.

A compensation network achieves a large degree of independence of the output signal from the ambient temperature. With a specially adapted remote seal connection with minimized system volume, the influence of the process temperature on the output signal is reduced significantly as compared to a conventional screw connection.

The pressure transmitters can be supplied with an unregulated DC voltage of 10 to 30 V. The output signals common in measuring technology are available.

## Selection and ordering data

	Article No.	Order code
<b>SITRANS P Compact pressure transmitter for gauge and absolute pressure, with flush-mounted diaphragm</b>	7MF8010-	
	1 ● ● ● ● - ● ● ● ● ● ● ● ●	
2-wire system, process temperature up to 140 °C (284 °F), measurement deviation: 0.2% of full-scale value, output 4 ... 20 mA		
<b>Click the article number for online configuration in the PIA Life Cycle Portal.</b>		
<b>Diaphragm seal with quick-release</b>		
Milk pipe union acc. to DIN 11851 with slotted union nut		
• DN 25	A D	
• DN 32	A E	
• DN 40	A F	
• DN 50	A G	
• DN 65	A H	
Dairy connection according to DIN 11851 with screwed connector		
• DN 25	B D	
• DN 32	B E	
• DN 40	B F	
• DN 50	B G	
• DN 65	B H	
Clamp connection acc. to DIN 32676		
• DN 25	C D	
• DN 40	C F	
• DN 50	C G	
Clamp connection acc. to ISO 2852		
• 1 inch	D M	
• 1½ inches	D N	
• 2 inches	D P	
• 2½ inches	D Q	
IDF standard with slotted union nut		
• 1 inch	E M	
• 1½ inches	E N	
• 2 inches	E P	
IDF standard with screwed connector		
• 1 inch	F M	
• 1½ inches	F N	
• 2 inches	F P	
SMS standard with slotted union nut		
• 1 inch	G M	
• 1½ inches	G N	
• 2 inches	G P	
SMS standard with screwed connector		
• 1 inch	H M	
• 1½ inches	H N	
• 2 inches	H P	
DRD flange without welded flange		
• DN 50, PN 40	J H	
Varivent connection (Tuchenhausen Co.)		
• D = 50 for Varivent enclosure DN 25 and 1 inch	K F	
• D = 68 for Varivent enclosure DN 40 ... DN 125 and 1½ ... 6 inches	K L	
Special design (specify order code and plain text)	Z A	J 1 Y
<b>Filling liquid</b>		
Food-grade oil, FDA-listed	3	
Special design (specify order code and plain text)	9	L 1 Y

# Pressure measurement

## Pressure transmitters

### Single-range transmitters / SITRANS P Compact

#### Selection and ordering data (continued)

	Article No.	Order code
<b>SITRANS P Compact pressure transmitter for gauge and absolute pressure, with flush-mounted diaphragm</b>	7MF8010-	
	1 ● ● ● ● - ● ● ● ● ● ● ● ●	
<b>Output signal</b>		
4 ... 20 mA	1	
Special design (specify order code and plain text)	9	M 1 Y
<b>Diaphragm seal with aseptic connection</b>		
Aseptic screw gland according to DIN 11864-1, Form A, with slotted union nut		
• 1 inch	P M	
• 1½ inches	P N	
• 2 inches	P P	
• 2½ inches	P Q	
Aseptic screw gland according to DIN 11864-1, Form A, with screwed connector		
• 1 inch	Q M	
• 1½ inches	Q N	
• 2 inches	Q P	
• 2½ inches	Q Q	
NEUMO BioConnect aseptic screw gland with slotted union nut <sup>1)</sup>		
• DN 25	R D	
• DN 32	R E	
• DN 40	R F	
• DN 50	R G	
NEUMO BioConnect aseptic screw gland with screwed connector <sup>1)</sup>		
• DN 25	S D	
• DN 32	S E	
• DN 40	S F	
• DN 50	S G	
NEUMO BioConnect aseptic clamp connection, form R <sup>1)</sup>		
• DN 25	T D	
• DN 32	T E	
• DN 40	T F	
• DN 50	T G	
NEUMO BioConnect aseptic clamp connection, form V <sup>1)</sup>		
• DN 25	U D	
• DN 32	U E	
• DN 40	U F	
• DN 50	U G	
Male thread according to DIN 3852, form A		
• G1", min. measuring span. 0.4 bar (5.8 psi)	X C	
• G1½", min. measuring span. 0.25 bar (3.63 psi)	X D	
• G2", min. measuring span. 0.16 bar (2.32 psi)	X E	
Special design (specify order code and plain text)	Z A	J 1 Y
<b>Filling liquid</b>		
Food-grade oil, FDA-listed	3	
Special design (specify order code and plain text)	9	L 1 Y
<b>Output signal</b>		
4 ... 20 mA	1	
Special design (specify order code and plain text)	9	M 1 Y
<b>Enclosure version (stainless steel, mat. no. 1.4404/316L) / electrical connection</b>		
Enclosure with angled device plug according to DIN 43650, IP65	1	
Enclosure with M12 device plug, IP65, fastening union nut made of polyamide	2	
Enclosure with M12 device plug, IP65, fastening union nut made of stainless steel	3	
Field enclosure (small) made of stainless steel with cable gland, IP65	4	
Field enclosure (small) made of stainless steel with cable gland, IP67, internal ventilation for measuring ranges < 16 bar (< 232 psi)	5	



## Selection and ordering data (continued)

		Article No.	Order code
<b>SITRANS P Compact pressure transmitter for gauge and absolute pressure, with flush-mounted diaphragm</b>		7MF8010-	
		1 ● ● ● ● - ● ● ● ● ● ● ● ●	
<b>Measuring range</b>	<b>Overload pressure</b>		
0 ... 160 mbar (0 ... 2.32 psi)	1 bar (14.5 psi)		B B
0 ... 250 mbar (0 ... 3.63 psi)	1 bar (14.5 psi)		B C
0 ... 400 mbar (0 ... 5.8 psi)	3 bar (43.5 psi)		B D
0 ... 600 mbar (0 ... 8.7 psi)	3 bar (43.5 psi)		B E
0 ... 1 bar (0 ... 14.5 psi)	3 bar (43.5 psi)		C A
0 ... 1.6 bar (0 ... 23.2 psi)	10 bar (145 psi)		C B
0 ... 2.5 bar (0 ... 36.3 psi)	10 bar (145 psi)		C C
0 ... 4 bar (0 ... 58 psi)	20 bar (290 psi)		C D
0 ... 6 bar (0 ... 87 psi)	60 bar (870 psi)		C E
0 ... 10 bar (0 ... 145 psi)	60 bar (870 psi)		D A
0 ... 16 bar (0 ... 232 psi)	60 bar (870 psi)		D B
0 ... 25 bar (0 ... 363 psi)	60 bar (870 psi)		D C
0 ... 40 bar (0 ... 580 psi)	100 bar (1450 psi)		D D
-160 ... 0 mbar (-2.32 ... 0 inH <sub>2</sub> O)	1 bar (14.5 psi)		E B
-250 ... 0 mbar (-3.73 ... 0 inH <sub>2</sub> O)	1 bar (14.5 psi)		E C
-400 ... 0 mbar (-5.8 ... 0 inH <sub>2</sub> O)	3 bar (43.5 psi)		E D
-600 ... 0 mbar (-8.7 ... 0 inH <sub>2</sub> O)	3 bar (43.5 psi)		E E
-1 ... 0 bar (-14.5 ... 0 psi)	3 bar (43.5 psi)		F A
-1 ... 0.6 bar (-14.5 ... 8.7 psi)	10 bar (145 psi)		F B
-1 ... 1.5 bar (-14.5 ... 21.8 psi)	10 bar (145 psi)		F C
-1 ... 3 bar (-14.5 ... 43.5 psi)	20 bar (290 psi)		F D
-1 ... 5 bar (-14.5 ... 72.5 psi)	20 bar (290 psi)		F E
-1 ... 9 bar (-14.5 ... 130.5 psi)	60 bar (870 psi)		G A
-1 ... 15 bar (-14.5 ... 217.6 psi)	60 bar (870 psi)		G B
0 ... 1 bar a (0 ... 14.5 psi a)	3 bar a (43.5 psi a)		H A
0 ... 1.6 bar a (0 ... 23.2 psi a)	10 bar a (145 psi a)		H B
0 ... 2.5 bar a (0 ... 36.3 psi a)	10 bar a (145 psi a)		H C
0 ... 4 bar a (0 ... 58 psi a)	10 bar a (145 psi a)		H D
0 ... 6 bar a (0 ... 87 psi a)	60 bar a (870 psi a)		H E
0 ... 10 bar a (0 ... 145 psi a)	60 bar a (870 psi a)		J A
Special design (specify order code and plain text)			Z A P 1 Y
<b>Explosion protection</b>			
None			1
With, according to ATEX 100a, II 2 G, Ex ib IIC T6			2

1) Please make sure to also specify: Connections for pipes: R01, R02 or R03, see "Options" table.

		Article No.	Order code
<b>SITRANS P Compact pressure transmitter for gauge and absolute pressure, with inline seal 2-wire system, process temperature up to 140 °C (284 °F), measurement deviation: 0.2% of full-scale value, output 4 ... 20 mA</b>		7MF8010-	
		2 ● ● ● ● - ● ● ● ● ● ● ● ●	
Click the article number for online configuration in the PIA Life Cycle Portal.			
<b>Inline seal (screw gland at each end) with quick-release clamps</b>			
Dairy connection according to DIN 11851 with screwed connector			
• DN 25		A D	
• DN 32		A E	
• DN 40		A F	
• DN 50		A G	
• DN 65		A H	
Clamp connection acc. to DIN 32676			
• DN 25		C D	
• DN 32		C E	
• DN 40		C F	
• DN 50		C G	

# Pressure measurement

## Pressure transmitters

### Single-range transmitters / SITRANS P Compact

#### Selection and ordering data (continued)

	Article No.	Order code
<b>SITRANS P Compact pressure transmitter for gauge and absolute pressure, with inline seal 2-wire system, process temperature up to 140 °C (284 °F), measurement deviation: 0.2% of full-scale value, output 4 ... 20 mA</b>	<b>7MF8010-</b> 2 ● ● ● ● - ● ● ● ● ● ● ● ●	
• DN 65	C H	
Clamp connection acc. to ISO 2852 <sup>1)</sup>		
• 1 inch	D M	
• 1½ inches	D N	
• 2 inches	D P	
• 2½ inches	D Q	
Special design (specify order code and plain text)	Z A	J 1 Y
<b>Filling liquid</b>		
Food-grade oil, FDA-listed	3	
Special design (specify order code and plain text)	9	L 1 Y
<b>Output signal</b>		
4 ... 20 mA	1	
Special design (specify order code and plain text)	9	M 1 Y
<b>Inline seals with aseptic connection</b>		
Aseptic screw gland according to DIN 11864-1, Form A, with screwed connector		
• 1 inch	Q M	
• 1½ inches	Q N	
• 2 inches	Q P	
NEUMO BioConnect aseptic screw gland with screwed connector <sup>2)</sup>		
• DN 25	S D	
• DN 32	S E	
• DN 40	S F	
• DN 50	S G	
• DN 65	S H	
NEUMO BioConnect aseptic clamp connection, form R <sup>2)</sup>		
• DN 25	T D	
• DN 32	T E	
• DN 40	T F	
• DN 50	T G	
SÜDMO aseptic screw gland with W 501 screwed connector <sup>2)</sup>		
• 1 inch	V M	
• 1½ inches	V N	
• 2 inches	V P	
SÜDMO aseptic screw gland with W 601 clamp connection <sup>2)</sup>		
• 1 inch	W M	
• 1½ inches	W N	
• 2 inches	W P	
Special design (specify order code and plain text)	Z A	J 1 Y
<b>Filling liquid</b>		
Food-grade oil, FDA-listed	3	
Special design (specify order code and plain text)	9	L 1 Y
<b>Output signal</b>		
4 ... 20 mA	1	
Special design (specify order code and plain text)	9	M 1 Y
<b>Enclosure version (stainless steel, mat. no. 1.4404/316L) / electrical connection</b>		
Enclosure with angled device plug according to DIN 43650, IP65, securing union nut made of polyamide		1
Enclosure with M12 device plug, IP65, fastening union nut made of polyamide		2
Enclosure with M12 device plug, IP65, fastening union nut made of stainless steel		3
Field enclosure (small) made of stainless steel with cable gland, IP65		4
Field enclosure (small) made of stainless steel with cable gland, IP67, internal ventilation for measuring ranges < 16 bar (< 232 psi)		5

## Selection and ordering data (continued)

		Article No.	Order code
<b>SITRANS P Compact pressure transmitter for gauge and absolute pressure, with inline seal 2-wire system, process temperature up to 140 °C (284 °F), measurement deviation: 0.2% of full-scale value, output 4 ... 20 mA</b>		<b>7MF8010-</b>	
		<b>2</b> ● ● ● ● - ● ● ● ● ● ● ● ●	
<b>Measuring range</b>	<b>Overload pressure</b>		
0 ... 160 mbar (0 ... 2.32 psi)	1 bar (14.5 psi)		B B
0 ... 250 mbar (0 ... 3.63 psi)	1 bar (14.5 psi)		B C
0 ... 400 mbar (0 ... 5.8 psi)	3 bar (43.5 psi)		B D
0 ... 600 mbar (0 ... 8.7 psi)	3 bar (43.5 psi)		B E
0 ... 1 bar (0 ... 14.5 psi)	3 bar (43.5 psi)		C A
0 ... 1.6 bar (0 ... 23.2 psi)	10 bar (145 psi)		C B
0 ... 2.5 bar (0 ... 36.3 psi)	10 bar (145 psi)		C C
0 ... 4 bar (0 ... 58 psi)	20 bar (290 psi)		C D
0 ... 6 bar (0 ... 87 psi)	60 bar (870 psi)		C E
0 ... 10 bar (0 ... 145 psi)	60 bar (870 psi)		D A
0 ... 16 bar (0 ... 232 psi)	60 bar (870 psi)		D B
0 ... 25 bar (0 ... 363 psi)	60 bar (870 psi)		D C
0 ... 40 bar (0 ... 580 psi)	100 bar (1450 psi)		D D
-160 ... 0 mbar (-2.32 ... 0 psi)	1 bar (14.5 psi)		E B
-250 ... 0 mbar (-3.63 ... 0 psi)	1 bar (14.5 psi)		E C
-400 ... 0 mbar (-5.8 ... 0 psi)	3 bar (43.5 psi)		E D
-600 ... 0 mbar (-8.7 ... 0 psi)	3 bar (43.5 psi)		E E
-1 ... 0 bar (-14.5 ... 0 psi)	3 bar (43.5 psi)		F A
-1 ... 0.6 bar (-14.5 ... 8.7 psi)	10 bar (145 psi)		F B
-1 ... 1.5 bar (-14.5 ... 21.8 psi)	10 bar (145 psi)		F C
-1 ... 3 bar (-14.5 ... 43.5 psi)	20 bar (290 psi)		F D
-1 ... 5 bar (-14.5 ... 72.5 psi)	20 bar (290 psi)		F E
-1 ... 9 bar (-14.5 ... 130.5 psi)	60 bar (870 psi)		G A
-1 ... 15 bar (-14.5 ... 217.6 psi)	60 bar (870 psi)		G B
0 ... 1 bar a (0 ... 14.5 psi a)	3 bar a (43.5 psi a)		H A
0 ... 1.6 bar a (0 ... 23.2 psi a)	10 bar a (145 psi a)		H B
0 ... 2.5 bar a (0 ... 36.3 psi a)	10 bar a (145 psi a)		H C
0 ... 4 bar a (0 ... 58 psi a)	10 bar a (145 psi a)		H D
0 ... 6 bar a (0 ... 87 psi a)	60 bar (870 psi a)		H E
0 ... 10 bar a (0 ... 145 psi a)	60 bar (870 psi a)		J A
Special design (specify order code and plain text)			Z A P 1 Y
<b>Explosion protection</b>			
None			1
With explosion protection according to ATEX 100a, II 2 G, Ex ib IIC T6			2

1) Observe inside diameter of the pipe. Please specify pipe classes (see "Options").

2) Please make sure to also specify: Connections for pipes: R01, R02 or R03, see "Options" table.

Options	Order code
<b>Add "-Z" to article number, specify order code and plain text or entry from drop-down list.</b>	
<b>Hygiene version</b> Roughness process connection: Foil $R_a < 0.8 \mu\text{m}$ ( $3.15 \cdot 10^{-8}$ inches); welding seams $R_a < 1.5 \mu\text{m}$ ( $5.9 \cdot 10^{-8}$ inches)	<b>P01</b>
<b>Integrated cooling element</b> Process temperature max. 200 °C (392 °F) instead of 140 °C (284 °F)	<b>K01</b>
<b>Connections for pipes</b>	
Pipes according to DIN 11850	<b>R01</b>
ISO pipes according to DIN 2463	<b>R02</b>
Pipes acc. to >>O. D. Tubing "BS 4825 Part 1"<<	<b>R03</b>

Options	Order code
<b>Add "-Z" to article number, specify order code and plain text or entry from drop-down list.</b>	
<b>Certificates</b>	
Quality inspection certificate (5-point characteristic curve test) according to IEC 62828-2	<b>C11</b>
Inspection certificate according to EN 10204-3.1	<b>C12</b>
Use of FDA-listed remote seal filling liquids certified with a factory certificate according to EN 10204-2.2	<b>C17</b>
Roughness depth measurement $R_a$ certified with a factory certificate according to EN 10204-3.1	<b>C18</b>
Certification according to EHEDG for inline seal with aseptic screw gland according to DIN 11864	<b>C19</b>

# Pressure measurement

## Pressure transmitters

### Single-range transmitters / SITRANS P Compact

#### Technical specifications

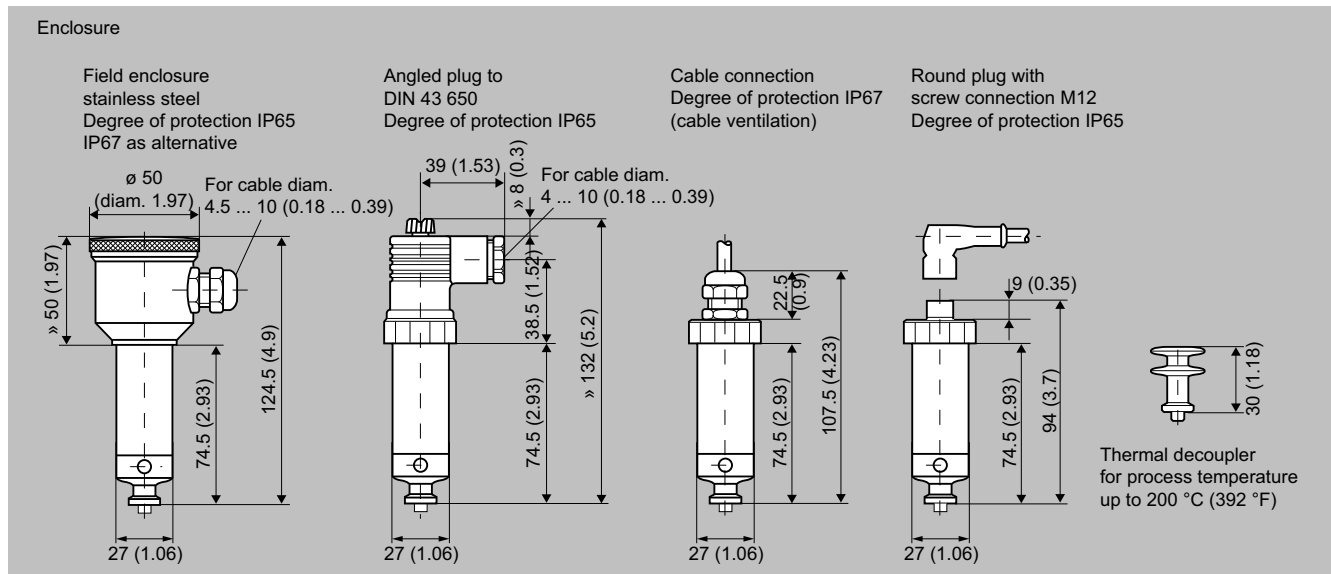
Pressure transmitters for food, pharmaceuticals and biotechnology	
<b>Mode of operation</b>	
Measuring principle	Piezo-resistive
<b>Input</b>	
Measured variable	Gauge or absolute pressure
Measuring range	0 ... 160 mbar (0 ... 2.32 psi) ... 0 ... 40 bar (0 ... 580 psi)
<b>Output</b>	
Output signal	
• 2-wire system	4 ... 20 mA
• 3-wire system	0 ... 20 mA
<b>Measuring accuracy</b>	According to IEC 62828-1
Measurement deviation at limit setting including hysteresis and reproducibility	≤ 0.2% of full-scale value
Adjustment accuracy	≤ ±0.2% of full-scale value
Step response time	< 20 ms
<b>Effect of ambient temperature</b>	
On the enclosure	
• Zero point	< 0.2%/10 K of full-scale value
• Measuring span	< 0.2%/10 K of full-scale value
On the process connection (remote seals)	Zero-point error (dependent on design) <sup>1)</sup>
• Flange remote seal	
- DN 25/1"	4.8 mbar/10 K (0.069 psi/10 K)
- DN 32/1¼"	2.3 mbar/10 K (0.033 psi/10 K)
- DN 40/1½"	1.6 mbar/10 K (0.023 psi/10 K)
- DN 50/2"	0.6 mbar/10 K (0.009 psi/10 K)
• Inline seal	
- DN 25/1"	9.5 mbar/10 K (0.138 psi/10 K)
- DN 32/1¼"	4.1 mbar/10 K (0.060 psi/10 K)
- DN 40/1½"	3.9 mbar/10 K (0.057 psi/10 K)
- DN 50/2"	3.9 mbar/10 K (0.057 psi/10 K)
<b>Operating conditions</b>	
Installation conditions	
• Mounting position	Any, vertical as standard
Ambient conditions	
• Ambient temperature	-10 ... +70 °C (14 ... 158 °F)
• Storage temperature	-10 ... +90 °C (14 ... 194 °F)
• Process temperature	Max. 200 °C (392 °F), depending on design
• Vacuum-resistant	0 mbar (0 psi) absolute at max. 50 °C. Higher process temperatures on request.
• Degree of protection according to IEC 60529	IP65, optional IP67
• Electromagnetic Compatibility	
- Emitted interference	To EN 50081 Part 1, issue 1993 (residential and industrial areas). The device has no own emissions.
- Noise immunity to	EN 50082 Part 2, issue March 1995 (industrial areas)
<b>Structural design</b>	
Weight (without remote seal)	
• Field enclosure	≈ 460 G (≈ 1.01 lb)

#### Technical specifications (continued)

Pressure transmitters for food, pharmaceuticals and biotechnology	
• Enclosure with plug	≈ 200 g (≈ 0.44 lb)
Enclosure	
• Designs	<ul style="list-style-type: none"> <li>• Field enclosure IP65 or IP67, with screw gland</li> <li>• Angled device plug DIN 43650, IP65</li> <li>• Cable connection, IP67</li> <li>• M12 device plug, IP65</li> </ul>
• Material	Stainless steel, mat. no. 1.4404/316L/1.4305
Material of union nut	Polyamide (with electrical connection using plug or cable) Electronics unit potted with silicone Internal ventilation for measuring ranges < 16 bar (< 232 psi), through enclosure thread or connecting cable depending on design
Process connection	
• Versions	See ordering data
• Material of coupling	Stainless steel, mat. no. 1.4404/316L
<b>Auxiliary power</b>	
Terminal voltage on transmitter	10 ... 30 V DC
Nominal voltage	24 V DC
<b>Certificates and approvals</b>	
Classification according to pressure equipment directive (PED 2014/68/EU)	
• For 7MF8010-1... (with diaphragm seal)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)
• For 7MF8010-2... (with inline seal)	For gases of fluid group 1 and liquids of fluid group 1; complies with the requirements of article 4, paragraph 1 (annex 1); assigned to category III, conformity evaluation module H by the TÜV Nord
Explosion protection	
• Intrinsic safety "i"	TÜV 03 ATEX 2099 X
- Marking	Ex II 2G EEx ib IIC T6

<sup>1)</sup> The zero-point error specified for the process connection should be considered as a guide value for a standard design. We will make a detailed system calculation on request. Systems with reduced remote seal error are available on request.

## Dimensional drawings



SITRANS P Compact, dimensions in mm (inch)

## Process connections

## Quick-release diaphragm seals

## Dairy connection according to DIN 11851 with slotted union nut

	DN	PN	H mm (inch)	G
	25	40	24 (0.95)	Radius 52 x 1/6 inch
	32	40	24 (0.95)	Radius 58 x 1/6 inch
	40	40	24 (0.95)	Radius 65 x 1/6 inch
	50	25	25.1 (0.99)	Radius 78 x 1/6 inch
	65	25	28.6 (1.13)	Radius 95 x 1/6 inch

## Dairy connection according to DIN 11851 with screwed connector

	DN	PN	H mm (inch)	G
	25	40	-	Radius 52 x 1/6 inch
	32	40	20 (0.79)	Radius 58 x 1/6 inch
	40	40	20 (0.79)	Radius 65 x 1/6 inch
	50	25	20 (0.79)	Radius 78 x 1/6 inch
	65	25	22 (0.87)	Radius 95 x 1/6 inch

## SMS standard with union nut

	DN	PN	H mm (inch)	G
	1 inch	40	16 (0.63)	Radius 40 x 1.6 inches
	1½ inches	40	16 (0.63)	Radius 60 x 1.6 inches
	2 inches	25	16 (0.63)	Radius 70 x 1.6 inches

## SMS standard with threaded socket

	DN	PN	H mm (inch)	G
	1 inch	40	16 (0.63)	Radius 40 x 1.6 inches
	1½ inches	40	20 (0.79)	Radius 60 x 1.6 inches
	2 inches	25	20 (0.79)	Radius 70 x 1.6 inches

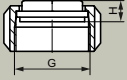
## Pressure measurement

### Pressure transmitters

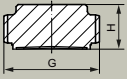
#### Single-range transmitters / SITRANS P Compact

#### Dimensional drawings (continued)

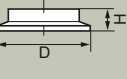
##### IDF standard with union nut

	DN	PN	H mm (inch)	G
	1 inch	40	21 (0.83)	1 inch
	1½ inches	40	13.5 (0.53)	1½ inches
	2 inches	25	15 (0.59)	2 inches

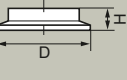
##### IDF standard with screwed connector

	DN	PN	H mm (inch)	G
	1 inch	40	21 (0.83)	1 inch
	1½ inches	40	13.5 (0.53)	1½ inches
	2 inches	25	15 (0.59)	2 inches

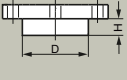
##### Clamp connection according to DIN 32676

	DN	PN	H mm (inch)	D mm (inches)
	25	16	14 (0.55)	50.5 (2)
	40	16	14 (0.55)	50.5 (2)
	50	16	14 (0.55)	64 (2.52)

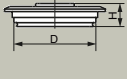
##### Clamp connection according to ISO 2852

	DN	PN	H mm (inch)	D mm (inches)
	1 inch	16	14 (0.55)	50.5 (2)
	1½ inches	16	12 (0.47)	50.5 (2)
	2 inches	16	14 (0.55)	64 (2.52)
	2½ inches	16	14 (0.55)	77.5 (3.05)

##### DRD flange without welded flange

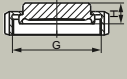
	DN	PN	H mm (inch)	D mm (inches)
	50	40	16.7 (0.66)	65.5 (2.58)

##### Varivent connection

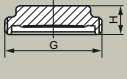
	DN	PN	H mm (inch)	D mm (inches)
	25	25	19 (0.75)	50 (1.97)
	40 ... 125	25/10	19 (0.75)	68 (2.68)

##### Diaphragm seal with aseptic connection

##### Aseptic screw gland according to DIN 11864-1, form A, with slotted union nut

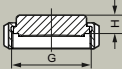
	DN	PN	H mm (inch)	D mm (inches)
	1 inch	40	20 (0.79)	Radius 52 x 1/6 inch
	1½ inches	40	20 (0.79)	Radius 58 x 1/6 inch
	2 inches	25	20 (0.79)	Radius 65 x 1/6 inch
	2½ inches	25	20 (0.79)	Radius 78 x 1/6 inch

##### Aseptic screw gland according to DIN 11864-1, form A, with screwed connector

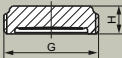
	DN	PN	H mm (inch)	D mm (inches)
	1 inch	40	15 (0.59)	Radius 52 x 1/6 inch
	1½ inches	40	15 (0.59)	Radius 58 x 1/6 inch
	2 inches	25	15 (0.59)	Radius 65 x 1/6 inch
	2½ inches	25	15 (0.59)	Radius 78 x 1/6 inch

## Dimensional drawings (continued)


## NEUMO BioConnect aseptic screw gland with slotted union nut

	DN	PN	H mm (inch)	D mm (inches)
	25	16	15 (0.59)	M 42 x 2
	32	16	15 (0.59)	M 52 x 2
	40	16	15 (0.59)	M 56 x 2
	50	16	15 (0.59)	M 68 x 2

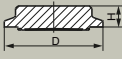
## NEUMO BioConnect aseptic screw gland with screwed connector

	DN	PN	H mm (inch)	D mm (inches)
	25	16	20 (0.79)	M 42 x 2
	32	16	20 (0.79)	M 52 x 2
	40	16	20 (0.79)	M 56 x 2
	50	16	20 (0.79)	M 68 x 2

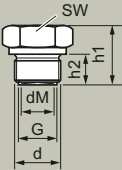
## NEUMO BioConnect aseptic clamp connection, form R

	DN	PN	H mm (inch)	D mm (inches)
	25	40	20 (0.79)	50.5 (2)
	32	40	20 (0.79)	50.5 (2)
	40	40	20 (0.79)	64 (2.52)
	50	25	20 (0.79)	77.4 (3.05)

## NEUMO BioConnect aseptic clamp connection, form V

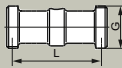
	DN	PN	H mm (inch)	D mm (inches)
	25	40	15 (0.59)	50.5 (2)
	32	40	15 (0.59)	50.5 (2)
	40	40	20 (0.79)	64 (2.52)
	50	25	20 (0.79)	77.4 (3.05)

## Connecting socket for screw-in thread according to DIN 3852, form A

	G	d mm (inches)	d <sub>M</sub> mm (inch)	h <sub>1</sub> mm (inch)	h <sub>2</sub> mm (inch)	SW mm (inch)
	G½A	26 (1.02)	17.5 (0.69)	27 (1.06)	14 (0.55)	27 (1.06)
	G¾A	32 (1.26)	22.6 (0.89)	31 (1.22)	16 (0.63)	32 (1.26)
	G1A	39 (1.54)	27 (1.06)	33 (1.30)	18 (0.71)	51 (2.01)
	G1½A	55 (2.17)	40 (1.57)	40 (1.57)	22 (0.87)	55 (2.17)
	G2A	68 (2.68)	51 (2.00)	42 (1.65)	24 (0.94)	70 (2.76)

## Inline seal (screw gland at each end) with quick-release clamps

## Dairy connection according to DIN 11851 with screwed connector

	DN	PN	L mm (inch)	G
	25	40	110 (4.33)	Radius 52 x 1/16 inch
	32	40	110 (4.33)	Radius 58 x 1/16 inch
	40	40	110 (4.33)	Radius 65 x 1/16 inch
	50	25	110 (4.33)	Radius 78 x 1/16 inch
	65	25	110 (4.33)	Radius 95 x 1/16 inch

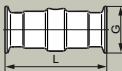
## Pressure measurement

### Pressure transmitters

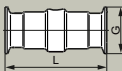
#### Single-range transmitters / SITRANS P Compact

#### Dimensional drawings (continued)

##### Clamp connection according to DIN 32676

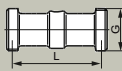
	DN	PN	L mm (inch)	D mm (inches)
	25	16	110 (4.33)	50.5 (2)
	32	16	110 (4.33)	50.5 (2)
	40	16	110 (4.33)	50.5 (2)
	50	16	110 (4.33)	64 (2.52)
	65	10	110 (4.33)	91 (3.58)

##### Clamp connection according to ISO 2852

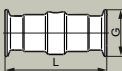
	DN	PN	L mm (inch)	D mm (inches)
	1 inch	16	110 (4.33)	50.5 (2)
	1½ inches	16	110 (4.33)	50.5 (2)
	2 inches	16	110 (4.33)	64 (2.52)
	2½ inches	16	110 (4.33)	91 (3.58)

#### Inline seals with aseptic connection

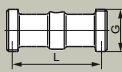
##### Aseptic screwed gland according to DIN 11864-1, form A, with screwed connector

	DN	PN	L mm (inch)	G
	1 inch	40	110 (4.33)	Radius 52 x 1/6 inch
	1½ inches	40	110 (4.33)	Radius 65 x 1/6 inch
	2 inches	25	110 (4.33)	Radius 78 x 1/6 inch

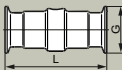
##### NEUMO BioConnect aseptic screwed gland with screwed connector

	DN	PN	L mm (inch)	G
	25	16	110 (4.33)	M 42 x 2
	32	16	110 (4.33)	M 52 x 2
	40	16	110 (4.33)	M 56 x 2
	50	16	110 (4.33)	M 68 x 2
	65	16	110 (4.33)	M 90 x 3

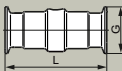
##### SÜDMO aseptic screwed gland with W 501 screwed connector

	DN	PN	L mm (inch)	G
	1 inch	25	110 (4.33)	Radius 44 x 1/6 inch
	1½ inches	25	110 (4.33)	Radius 58 x 1/6 inch
	2 inches	20	110 (4.33)	Radius 78 x 1/6 inch

##### NEUMO BioConnect aseptic screwed gland clamp connection, form R

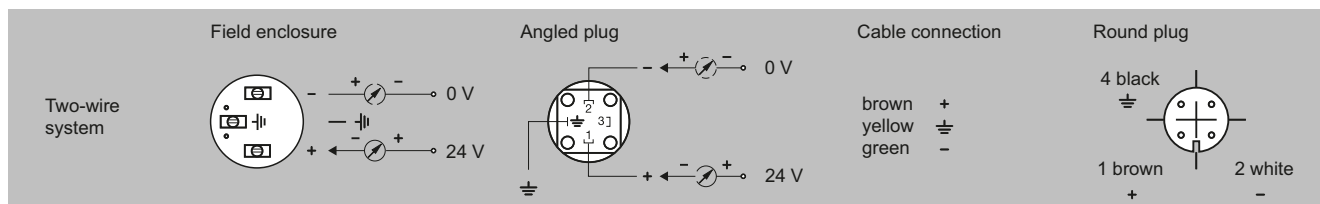
	DN	PN	L mm (inch)	D mm (inches)
	25	16	110 (4.33)	50.4 (2)
	32	16	110 (4.33)	50.4 (2)
	40	16	110 (4.33)	64 (2.52)
	50	16	110 (4.33)	77.4 (3.05)

##### SÜDMO aseptic screwed gland with W 601 screwed connector

	DN	PN	L mm (inch)	D mm (inches)
	1 inch	16	110 (4.33)	50.5 (2)
	1½ inches	16	110 (4.33)	64 (2.52)
	2 inches	16	110 (4.33)	77.5 (3.05)



## Circuit diagrams



SITRANS P Compact, connection diagram

## Pressure measurement

### Pressure transmitters

for food, pharmaceuticals and biotechnology / SITRANS P300

#### Overview



The SITRANS P300 is a digital pressure transmitter for relative and absolute pressure. The conventional thread versions are available as process connections, as are flush-mounted versions. A large number of the flush-mounted versions are suitable for food and pharmaceutical applications, and satisfy the EHEDG and 3A hygiene requirements.

The output signal is a load-independent direct current from 4 to 20 mA or a PROFIBUS PA or FOUNDATION Fieldbus signal, which is linearly proportional to the input pressure. Communication is via HART

protocol or PROFIBUS PA or FOUNDATION Fieldbus interface. The basic settings of the pressure transmitter can be made easily on-site by means of three buttons.

The SITRANS P300 has a single-chamber stainless steel enclosure. The pressure transmitter is approved for "intrinsically safe" type of protection. It can be used in zone 1 or zone 0.

#### Benefits

- High quality and service life
- High reliability even under extreme chemical and mechanical loads
- Extensive diagnostics and simulation functions
- Minimal conformity error
- Small long-term drift
- Wetted parts made of high-grade materials (e.g., stainless steel, Hastelloy)
- Measuring range 0.008 bar to 400 bar (0.1 psi to 5802 psi)
- High measuring accuracy
- Parameterization using control keys and HART and/or PROFIBUS PA or FOUNDATION Fieldbus

## Application

The pressure transmitter is available in versions for gauge pressure and for absolute pressure. The output signal is always a load-independent direct current from 4 to 20 mA or a PROFIBUS PA or FOUNDATION Fieldbus signal, which is linearly proportional to the input pressure. The pressure transmitter measures corrosive, non-corrosive and hazardous gases, vapors and liquids.

It can be used for the following measurement types:

- Gauge pressure
- Absolute pressure

With appropriate parameter settings, it can also be used for the following additional measurement types:

- Level
- Volume
- Mass

The "intrinsically safe" Ex ia type of protection version of the transmitter can be installed in hazardous areas (Zone 1). The devices are provided with an EC type-examination certificate and comply with the respective harmonized European standards of ATEX.

### Gauge pressure

This variant measures the gauge pressure of corrosive, non-corrosive and hazardous gases, vapors and liquids.

The smallest measuring span is 0.01 bar (0.15 psi), the largest 400 bar (5802 psi).

### Level

With appropriate parameter settings, the gauge pressure variant measures the level of corrosive, non-corrosive and hazardous liquids.

For level measurement in an open vessel, you require one device; for level measurement in a closed vessel, you require two devices and a process control system.

### Absolute pressure

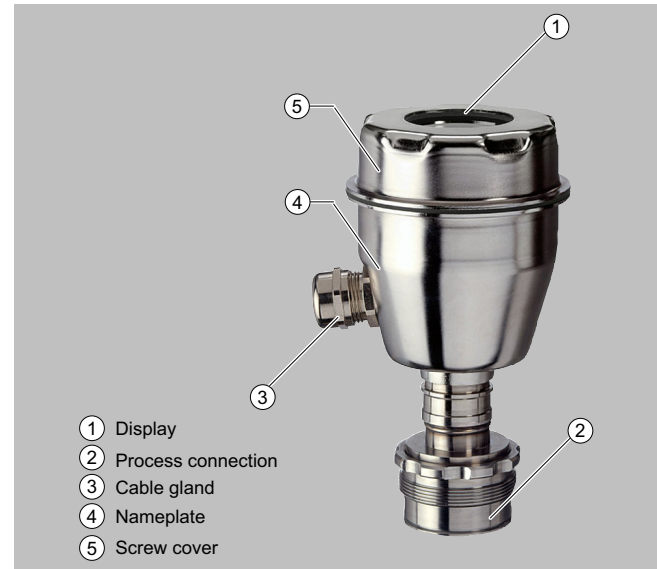
This variant measures the absolute pressure of corrosive, non-corrosive and hazardous gases, vapors and liquids.

The smallest measuring span is 0.008 bar a (0.12 psi a), the largest is 30 bar a (435 psi a).

## Design

The device comprises:

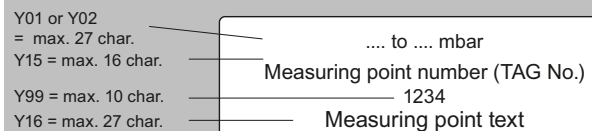
- electronics
- Enclosure
- Measuring cell



Perspective view of SITRANS P300

The enclosure has a screw-on cover (5) and, depending on the version, comes with or without an inspection window. The electrical terminal compartment, the buttons for operation of the device are located under this cover and, depending on the version, the display. The connections for the auxiliary power  $U_H$  and the shield are in the terminal compartment. The cable gland is mounted on the side of the enclosure. The measuring cell with the process connection (2) is located on the bottom of the enclosure. The measuring cell with the process connection may differ from the one shown in the diagram, depending on the device version.

### Example of attached measuring points sign



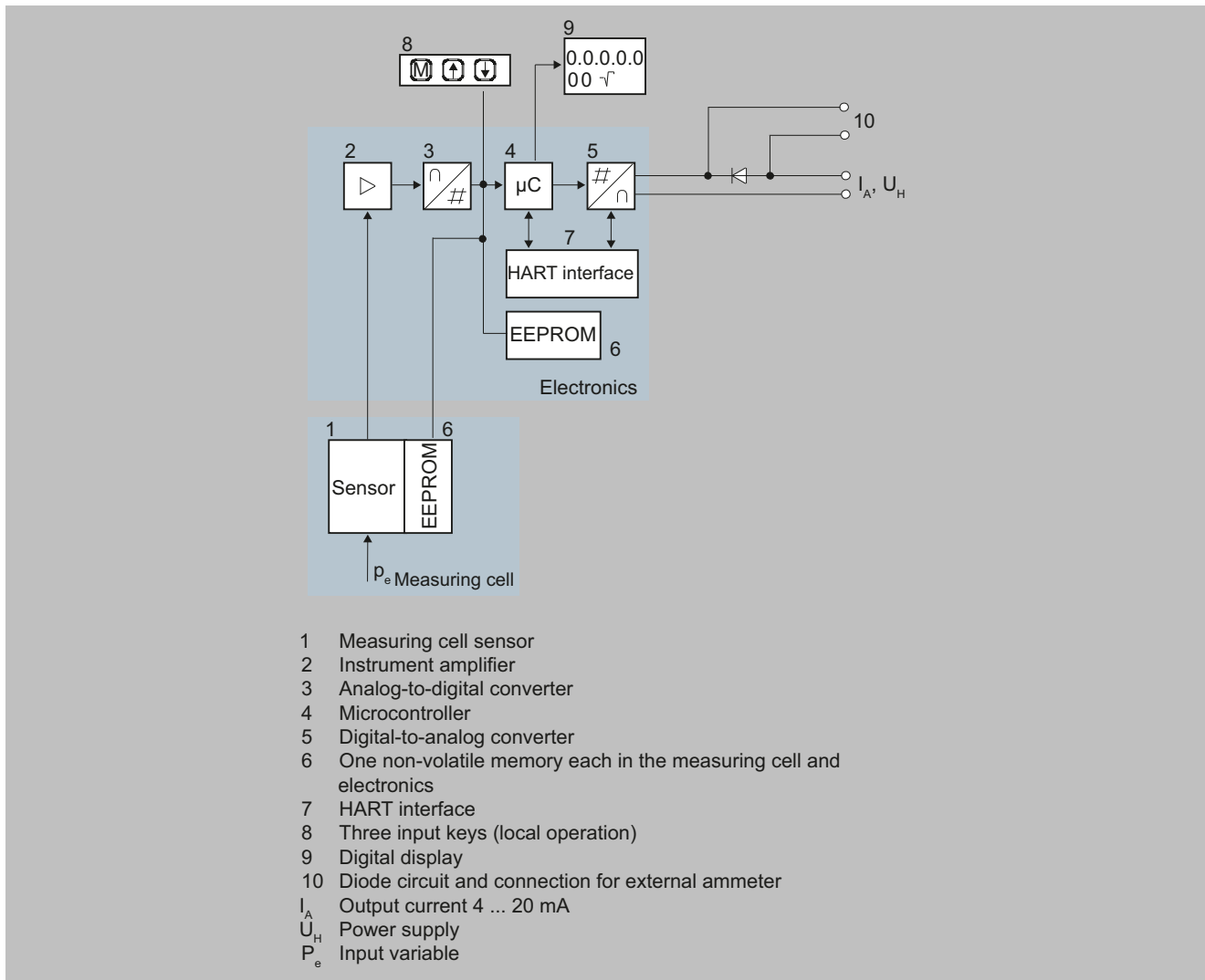
## Pressure measurement

### Pressure transmitters

for food, pharmaceuticals and biotechnology / SITRANS P300

#### Function

##### Mode of operation of electronics with HART communication



Function diagram of electronics

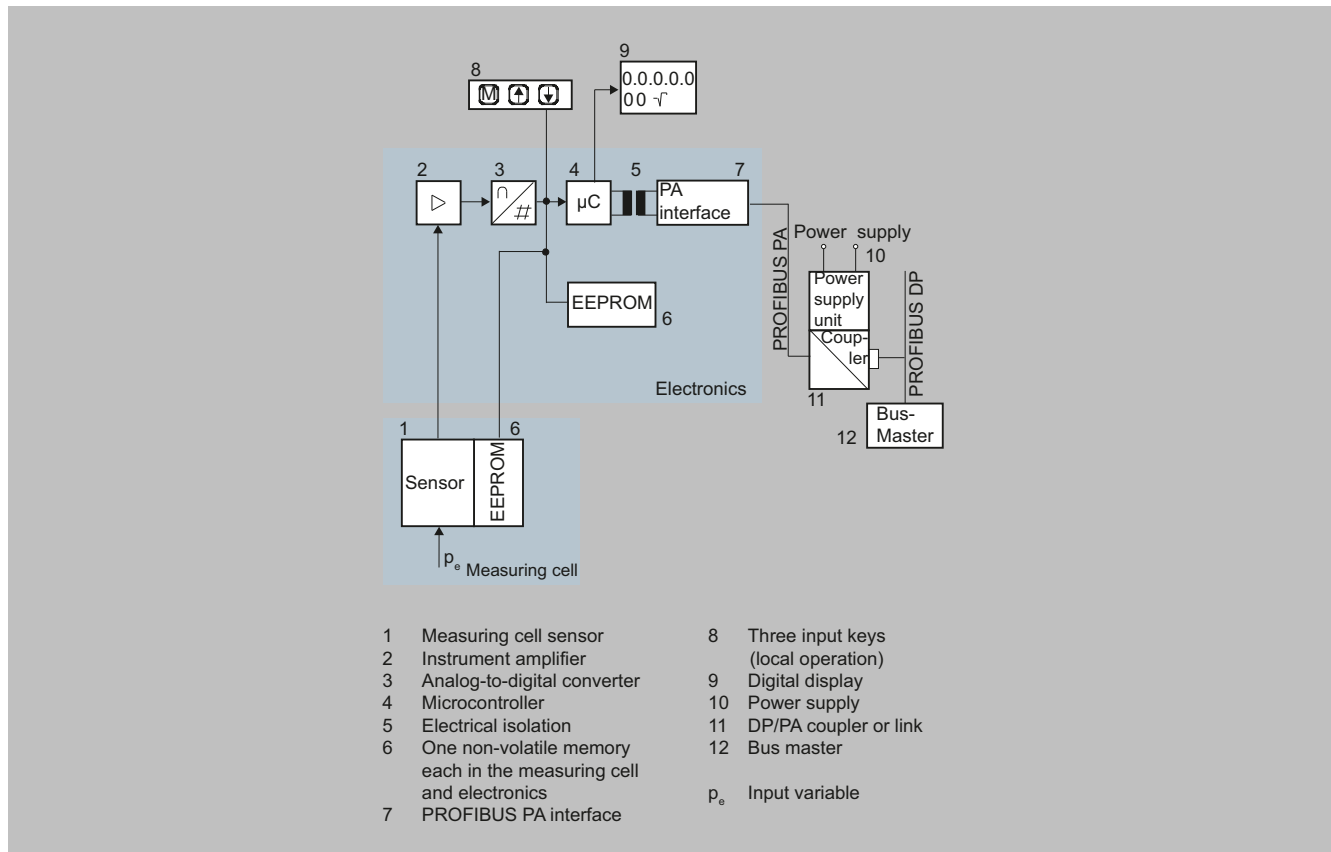
The input pressure is converted into an electrical signal by the sensor (1). This signal is amplified by the instrument amplifier (2) and digitalized in an analog-to-digital converter (3). The digital signal is analyzed in a microcontroller (4) and corrected for linearity and temperature response. In a digital-to-analog converter (5) it is then converted into the output current of 4 to 20 mA. A diode circuit provides reverse polarity protection. You can make an uninterrupted current measurement with a low-ohm ammeter at the connection (10). The data spe-

cific to the measuring cell, the electronic data and parameter settings are stored in two non-volatile memories (6). The first storage is linked to the measuring cell, the second to the electronics.

The buttons (8) can be used to call up individual functions, so-called modes. If you have a device with a local display (9), you can use this to track mode settings and other messages. The basic mode settings can be changed with a computer via the HART modem (7).

## Function (continued)

## Mode of operation of electronics with PROFIBUS PA communication



Function diagram of electronics

The input pressure is converted into an electrical signal by the sensor (1). This signal is amplified by the instrument amplifier (2) and digitalized in an analog-to-digital converter (3). The digital signal is analyzed in a microcontroller (4) and corrected for linearity and temperature response. It is then made available on the PROFIBUS PA via an electrically isolated PROFIBUS PA interface (7). The data specific to the measuring cell, the electronic data and parameter settings are stored in

two non-volatile memories (6). The first storage is linked to the measuring cell, the second to the electronics.

The buttons (8) can be used to call up individual functions, so-called modes. If you have a device with a local display (9), you can use this to track mode settings and other messages. The basic mode settings can be changed with a computer over the bus master (12).

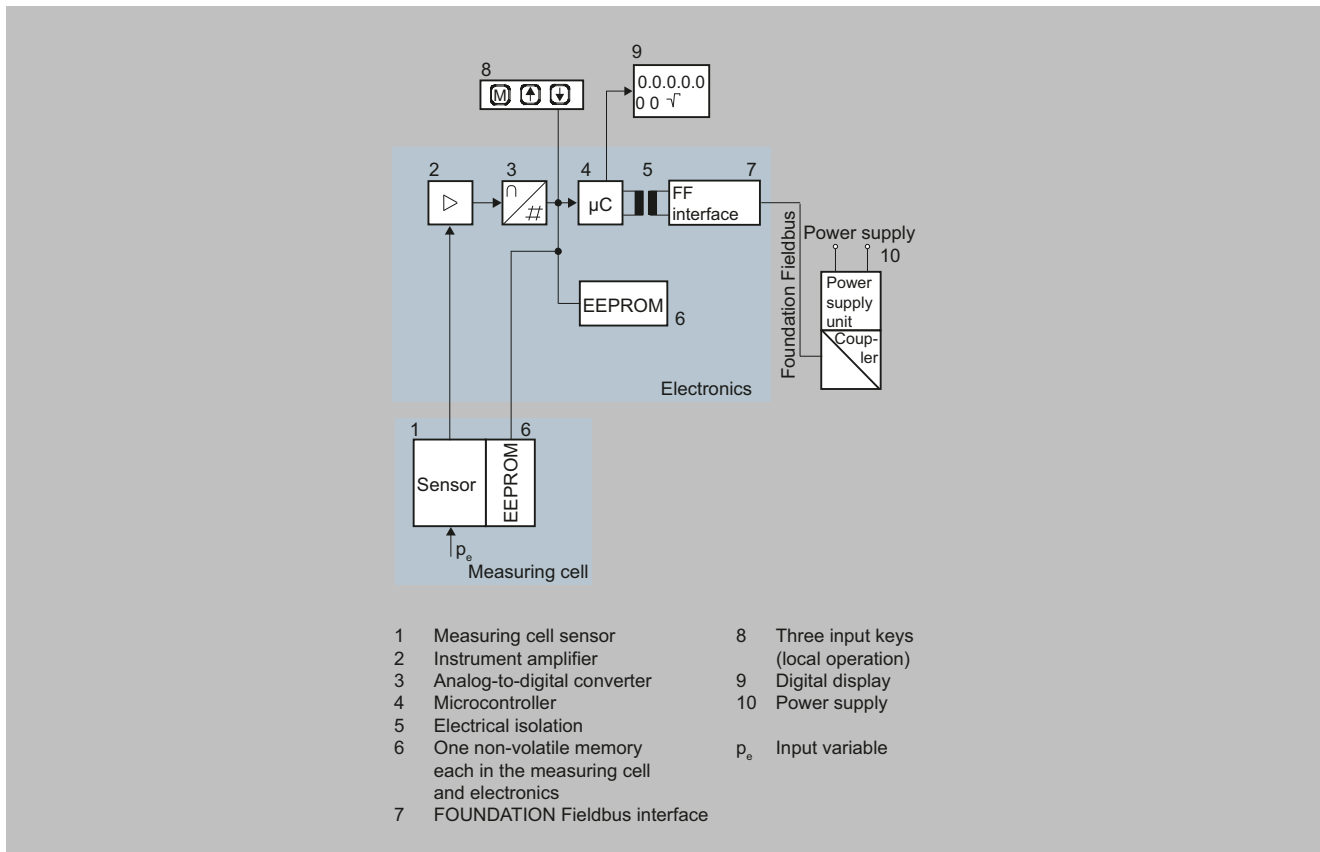
## Pressure measurement

### Pressure transmitters

for food, pharmaceuticals and biotechnology / SITRANS P300

#### Function (continued)

#### Mode of operation of electronics with FOUNDATION Fieldbus communication



Function diagram of electronics

The bridge output voltage created by the sensor (1, Figure "Function diagram of electronics") is amplified by the instrument amplifier (2) and digitalized in the analog-to-digital converter (3). The digital information is evaluated in the microcontroller, corrected for linearity and temperature response and made available on the FOUNDATION Fieldbus via an electrically isolated FOUNDATION Fieldbus interface (7).

The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). One storage is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced separately from each other.

Using the three input keys (8), you can assign parameters to the pressure transmitter directly at the measuring point. The input keys can also be used to control the view of the measurement results, the error messages and the operating modes on the local display (9).

The results with status values and diagnostics data are transferred by cyclic data transmission on the FOUNDATION Fieldbus. Parameteriza-

tion data and error messages are transferred by acyclic data transmission. Special software such as National Instruments Configurator is required for this.

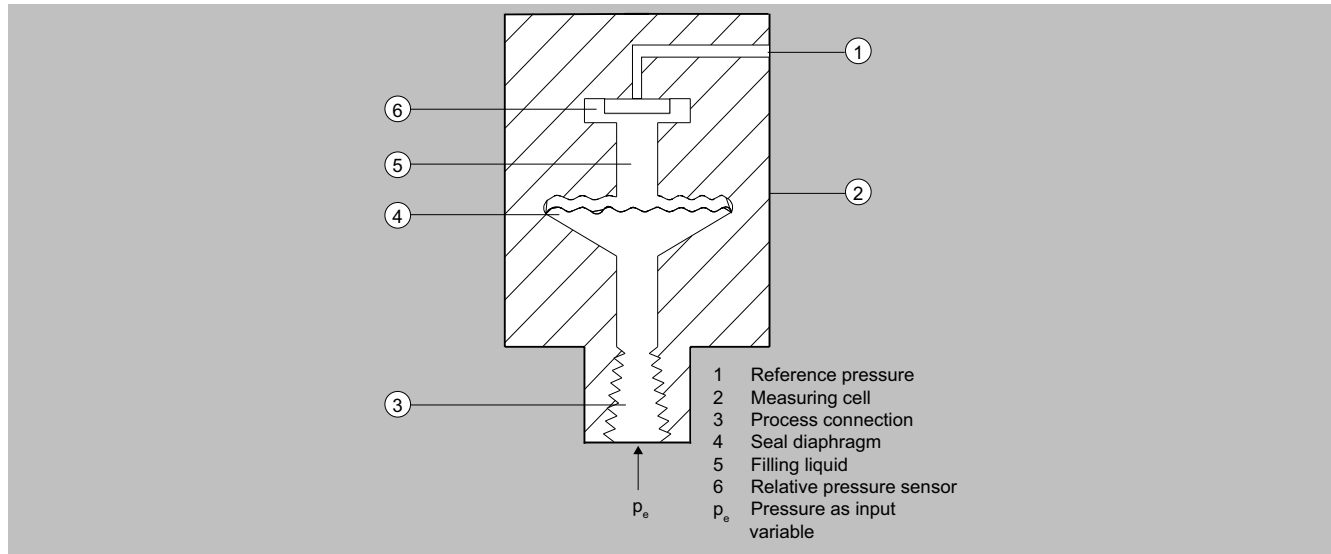
#### Mode of operation of the measuring cells

The process connections available include the following:

- G $\frac{1}{2}$
- $\frac{1}{2}$ -14 NPT
- Flush-mounted diaphragm:
  - Flanges according to EN
  - Flanges according to ASME
  - NuG and pharmaceutical connections

## Function (continued)

## Measuring cell for gauge pressure

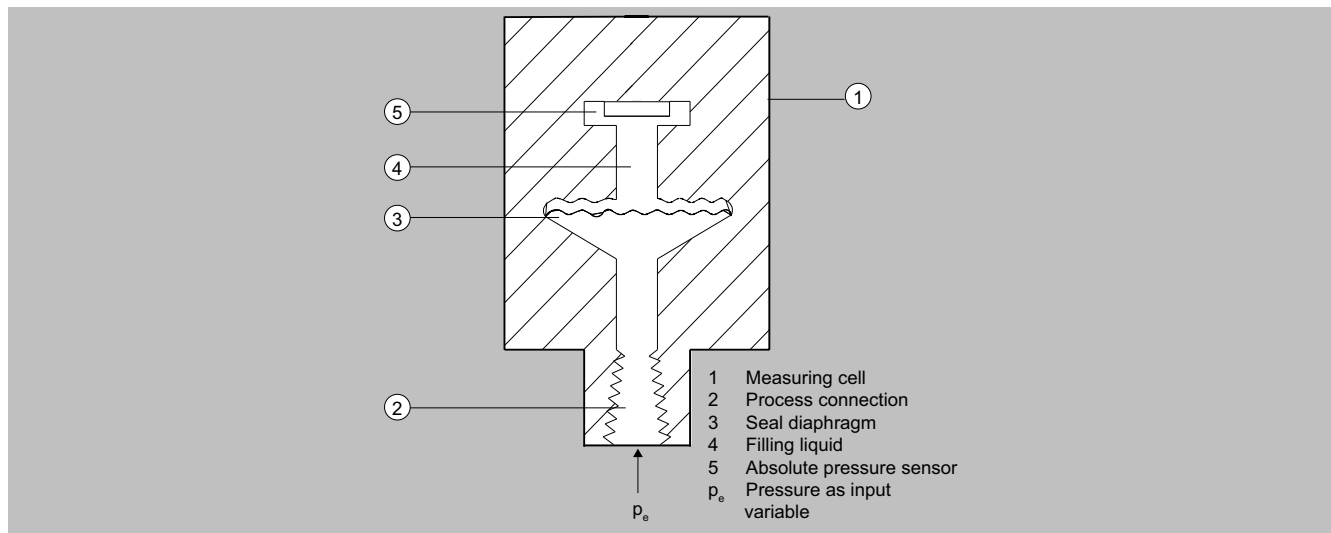


Measuring cell for gauge pressure, function diagram

The input pressure ( $p_e$ ) is transferred via the seal diaphragm (4) and the filling liquid (5) to the gauge pressure sensor (6), displacing its measuring diaphragm. The displacement changes the resistance value of the four piezo resistors in the measuring diaphragm in a bridge circuit. The change in the resistance causes a bridge output voltage proportional to the input pressure.

Transmitters with measuring spans  $\leq 63$  bar ( $\leq 926.1$  psi) measure the input pressure compared to atmospheric, transmitters with measuring spans of  $\geq 160$  bar ( $\geq 2352$  psi) compared to a vacuum.

## Measuring cell for absolute pressure



Measuring cell for absolute pressure, function diagram

The input pressure ( $p_e$ ) is transferred via the seal diaphragm (3) and the filling liquid (4) to the absolute pressure sensor (5), displacing its measuring diaphragm. The displacement changes the resistance value

of the four piezo resistors in the measuring diaphragm in a bridge circuit. The change in the resistance causes a bridge output voltage proportional to the input pressure.

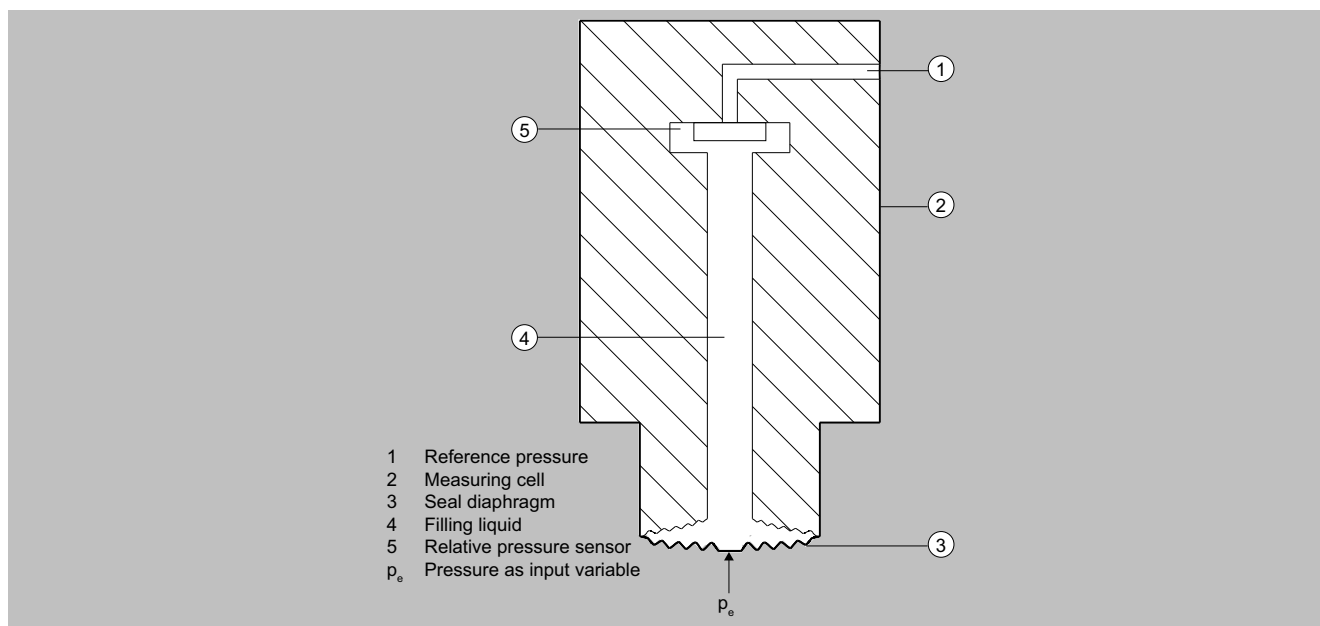
## Pressure measurement

### Pressure transmitters

for food, pharmaceuticals and biotechnology / SITRANS P300

#### Function (continued)

##### Measuring cell for gauge pressure, flush-mounted diaphragm

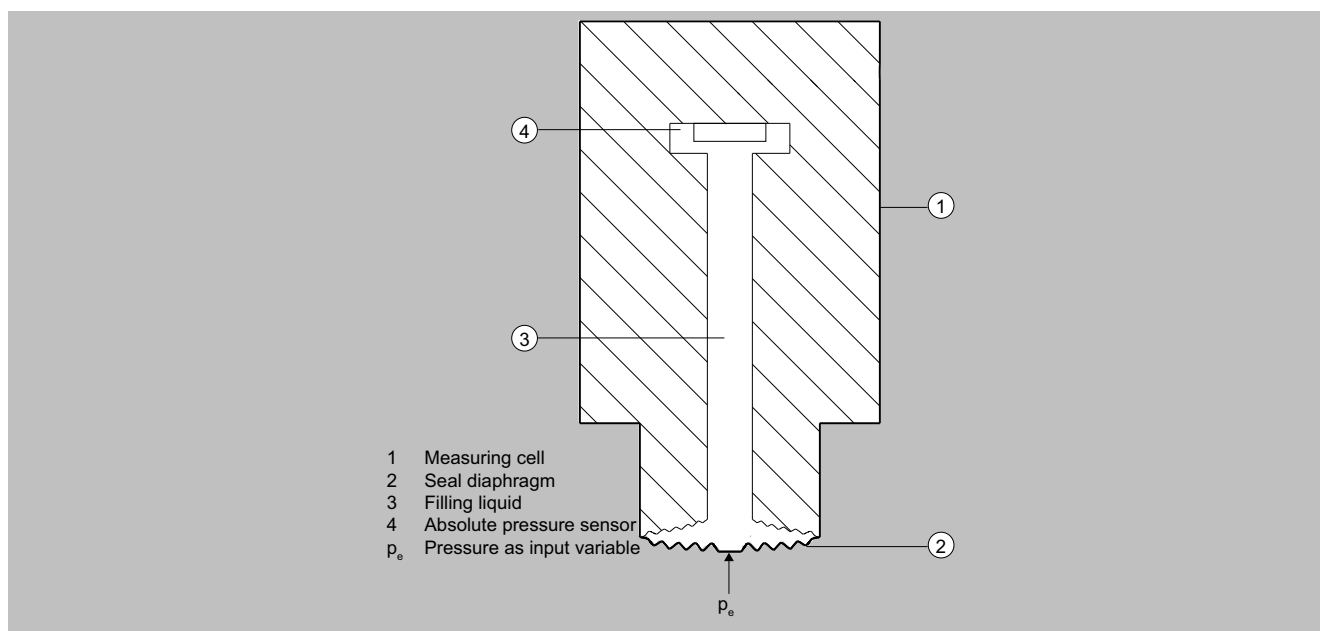


Measuring cell for gauge pressure, flush-mounted diaphragm, function diagram

The input pressure ( $p_e$ ) is transferred via the seal diaphragm (3) and the filling liquid (4) to the gauge pressure sensor (5), displacing its measuring diaphragm. The displacement changes the resistance value of the four piezo resistors in the measuring diaphragm in a bridge circuit. The change in the resistance causes a bridge output voltage proportional to the input pressure.

Transmitters with measuring spans  $\leq 63$  bar ( $\leq 926.1$  psi) measure the input pressure compared to atmospheric, transmitters with measuring spans of  $\geq 160$  bar ( $\geq 2352$  psi) compared to a vacuum.

##### Measuring cell for absolute pressure, front-flush membrane



Measuring cell for absolute pressure, flush-mounted diaphragm, function diagram



**Function (continued)**

The input pressure ( $p_e$ ) is transferred via the seal diaphragm (2) and the filling liquid (3) to the absolute pressure sensor (4), displacing its measuring diaphragm. The displacement changes the resistance value of the four piezo resistors in the measuring diaphragm in a bridge circuit. The change in the resistance causes a bridge output voltage proportional to the input pressure.

**Parameterization**

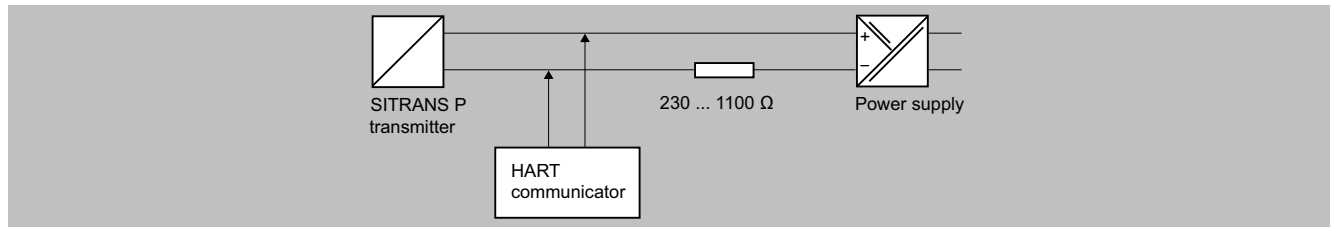
Depending on the version, there are a range of options for parameterizing the pressure transmitter and for setting or scanning the parameters.

Parameterization using the input keys (local operation)

With the input keys, you can easily set the most important parameters without any additional equipment.

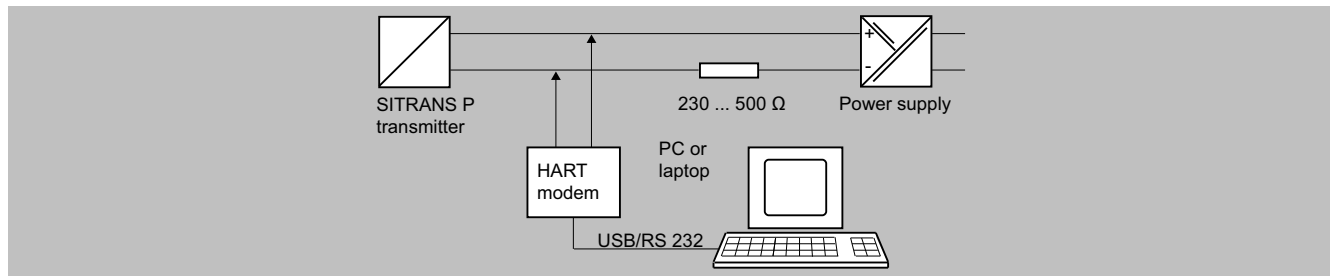
Parameterization using HART

Parameterization using HART is performed with a HART Communicator or a PC.



Communication between a HART Communicator and a pressure transmitter

When parameterizing with the HART Communicator, the connection is made directly to the 2-wire cable.



HART communication between a PC communicator and a pressure transmitter

When parameterizing with a PC, the connection is made through a HART modem.

The signals needed for communication in conformity with the HART 5.x or 6.x protocols are superimposed on the output current using FSK (Frequency Shift Keying).

Adjustable SITRANS P300 parameters with HART

Parameters	Input keys	HART
Lower range value	x	x
Upper range value	x	x
Electrical damping	x	x
Blind adjustment of the lower range value	x	x
Blind adjustment of the upper range value	x	x
Zero adjustment	x	x
Current simulator	x	x
Fault current	x	x
Disabling of buttons, write protection	x	x <sup>1)</sup>
Type of unit, unit	x	x
Input of characteristic curve		x
Freely-programmable LCD		x
Diagnostic functions		x

1) Except cancel write protection.

Diagnostic functions for SITRANS P300 with HART

- Zero correction display
- Event counter
- Limit transmitter
- Saturation alarm
- Min/max pointer
- Simulation functions
- Maintenance timer

Available physical units of display for SITRANS P300 with HART

Physical variable	Physical units
Pressure (can also be preset in the factory)	Pa, MPa, kPa, bar, mbar, torr, atm, psi, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , in H <sub>2</sub> O, in H <sub>2</sub> O (4 °C), mmH <sub>2</sub> O, ftH <sub>2</sub> O (20 °C), inHg, mmHg
Level (height data)	m, cm, mm, ft, in
Volume	m <sup>3</sup> , dm <sup>3</sup> , hl, yd <sup>3</sup> , ft <sup>3</sup> , in <sup>3</sup> , US gallon, Imp. gallon, bushel, barrel, barrel liquid
Mass	g, kg, t, lb, Ston, Lton, oz
Temperature	K, °C, °F, °R
Other	%, mA

## Pressure measurement

### Pressure transmitters

for food, pharmaceuticals and biotechnology / SITRANS P300

#### Function (continued)

##### Parameterization through PROFIBUS interface

Fully digital communication through PROFIBUS PA, profile 3.0, is particularly user-friendly. PROFIBUS connects the SITRANS P300 PA to a process control system, e.g. SIMATIC PSC 7. Communication is possible even in a hazardous area.

For parameter assignment via PROFIBUS, you need suitable software, e.g. SIMATIC PDM (Process Device Manager)

##### Parameterization through FOUNDATION Fieldbus interface

Fully digital communication through FOUNDATION Fieldbus is particularly user-friendly. Through the FOUNDATION Fieldbus the P300 is connected to a process control system. Communication is possible even in a hazardous area.

For parameterization through the FOUNDATION Fieldbus you need suitable software, e.g. National Instruments Configurator.

##### Adjustable parameters for SITRANS P300 with PROFIBUS PA and FOUNDATION Fieldbus

Adjustable parameters	Input keys	PROFIBUS PA and FOUNDATION Fieldbus
Electrical damping	x	x
Zero adjustment (correction of position)	x	x
Buttons and/or function disabling	x	x
Source of measured value display	x	x
Physical unit of display	x	x
Position of decimal point	x	x
Bus address	x	x
Adjustment of characteristic curve	x	x
Input of characteristic curve		x
Freely-programmable LCD		x
Diagnostic functions		x

##### Diagnostic functions for SITRANS P300 with PROFIBUS PA and FOUNDATION Fieldbus

- Event counter
- Min/max pointer
- Maintenance timer

- Simulation functions
- Zero correction display
- Limit transmitter
- Saturation alarm

##### Physical units available for the display

Physical variable	Physical units
Pressure (can also be preset in the factory)	Mpa, kPa, Pa, bar, mbar, torr, atm, psi, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , mmH <sub>2</sub> O, mmHg, inHg, in H <sub>2</sub> O, in H <sub>2</sub> O (4 °C), ftH <sub>2</sub> O (20 °C), mmHg, inHg
Level (height data)	m, cm, mm, ft, in, yd
Mass	g, kg, t, lb, Ston, Lton, oz
Volume	m <sup>3</sup> , dm <sup>3</sup> , hl, yd <sup>3</sup> , ft <sup>3</sup> , in <sup>3</sup> , US gallon, Imp. gallon, bushel, barrel, barrel liquid
Volume flow	m <sup>3</sup> /s, m <sup>3</sup> /min, m <sup>3</sup> /h, m <sup>3</sup> /d, l/s, l/min, l/h, l/d, Ml/d, ft <sup>3</sup> /s, ft <sup>3</sup> /min, ft <sup>3</sup> /h, ft <sup>3</sup> /d, US gallon/s, US gallon/min, US gallon/h, US gallon/d, bbl/s, bbl/min, bbl/h, bbl/d
Mass flow	g/s, g/min, g/h, g/d, kg/s, kg/min, kg/h, kg/d, t/s, t/min, t/h, t/d, lb/s, lb/min, lb/h, lb/d, STon/s, STon/min, STon/h, STon/d, LTon/s, LTon/min, LTon/h, LTon/d
Temperature	K, °C, °F, °R
Other	%

##### Hygiene version

In the case of the SITRANS P300 with 7MF812-... flush-mounted diaphragm, selected connections comply with the requirements of the EHEDG or 3A. You can find further details in the order form. Please note in particular that the seal materials used must comply with the requirements of 3A. Similarly, the filling liquids used must be FDA-compliant.

## Selection and ordering data

		Article No.
SITRANS P300 pressure transmitters for gauge pressure and absolute pressure, single chamber enclosure, nameplate inscription in English		
4 ... 20 mA / HART		7MF8023-
PROFIBUS PA (PA)		7MF8024-
FOUNDATION Fieldbus (FF)		7MF8025-
		● ● ● ● ● - ● ● ● ● ●
Click the article number for online configuration in the PIA Life Cycle Portal.		
<b>Measuring cell filling</b>	<b>Measuring cell cleaning</b>	
Silicone oil	Normal	1
Inert liquid	Cleanliness level 2 according to DIN 25410	3
<b>Measuring span (min. ... max.)</b>		
8.3 ... 250 mbar (0.12 ... 3.63 psi)		A
0.01 ... 1 bar (0.15 ... 14.5 psi)		B
0.04 ... 4 bar (0.58 ... 58 psi)		C
0.16 ... 16 bar (2.32 ... 232 psi)		D
0.63 ... 63 bar (9.14 ... 914 psi)		E
1.6 ... 160 bar (23.2 ... 2320 psi)		F
4 ... 400 bar (58 ... 5802 psi)		G
8.34 ... 250 mbar a (0.13 ... 3.63 psi a)		Q
43.34 ... 1300 mbar a (0.63 ... 18.86 psi a)		S
0.17 ... 5 bar a (2.43 ... 72.5 psi a)		T
1 ... 30 bar a (14.6 ... 435 psi a)		U
<b>Material of wetted parts</b>		
<b>Seal diaphragm</b>	<b>Measuring cell</b>	
Stainless steel	Stainless steel	A
Hastelloy	Stainless steel	B
Hastelloy	Hastelloy	C
Version for diaphragm seal in combination with "internal thread ½-14 NPT" process connection ( <b>recommended version</b> ) <sup>1) 2) 3) 4) 5)</sup>		Y 1
<b>Process connection</b>		
Connection shank G½B according to EN 837-1		0
Internal thread ½-14 NPT		1
Oval flange with process connection out of stainless steel (oval flange has no internal thread) <sup>6)</sup>		
• Fastening thread 7/16 20 UNF according to EN 61518		2
• Fastening thread M10 according to DIN 19213		3
• Mounting thread M12 according to DIN 19213		4
External thread M20 × 1.5		5
External thread ½-14 NPT		6
<b>Material of non-wetted parts</b>		
Stainless steel, deep-drawn and electrolytically polished		4
<b>Version</b>		
Standard version		1
<b>Explosion protection</b>		
None		A
With ATEX, type of protection:		
"Intrinsic safety (Ex ia)"		B
Zone 20/21/22 <sup>7)</sup>		C
Ex nA/nL (Zone 2) <sup>8)</sup>		E
With FM "Intrinsic safety" (cFM <sub>US</sub> )		M
<b>Electrical connection/cable entry</b>		
Screw gland M20×1.5 (polyamide) <sup>9)</sup>		A
Screw gland M20×1.5 (metal)		B
Screw gland M20×1.5 (stainless steel)		C
Device plug M12 (stainless steel, without cable socket)		G
½-14 NPT gland threading metal <sup>10)</sup>		H
½-14 NPT gland threading stainless steel <sup>10)</sup>		J
<b>Display</b>		
Without local display, with buttons, closed lid		1
With local display and buttons, closed lid <sup>11)</sup>		2

# Pressure measurement

## Pressure transmitters

### for food, pharmaceuticals and biotechnology / SITRANS P300

#### Selection and ordering data (continued)

		Article No.
SITRANS P300 pressure transmitters for gauge pressure and absolute pressure, single chamber enclosure, nameplate inscription in English		
4 ... 20 mA / HART		7MF8023-
PROFIBUS PA (PA)		7MF8024-
FOUNDATION Fieldbus (FF)		7MF8025-
		● ● ● ● ● - ● ● ● ● ●
With local display and buttons, lid with polycarbonate pane (setting for HART devices: mA, for PROFIBUS PA and FOUNDATION Fieldbus devices: Pressure units <sup>11</sup> )		4
With local display and buttons (setting acc. to specifications, order code "Y21" or "Y22" required), lid with polycarbonate pane <sup>11</sup> )		5
With local display and buttons, lid with glass pane (setting for HART devices: mA, for PROFIBUS and FOUNDATION Fieldbus devices: Pressure units <sup>11</sup> )		6
With local display and buttons (setting acc. to specifications, order code "Y21" or "Y22" required), lid with glass pane <sup>11</sup> )		7

#### Note:

See section "Supplementary components" for supply units. A quick-start guide is included in the scope of delivery of the device.

- 1) If the quality inspection certificate (factory calibration) according to IEC 60770-2 is to be ordered for transmitters with mounted diaphragm seals, it is recommended that this certificate be ordered exclusively for the remote seals. Here, the measuring accuracy of the entire combination is certified.
- 2) If Inspection Certificate 3.1. is to be ordered for transmitters with mounted diaphragm seals, this certificate must also be ordered with the respective remote seals.
- 3) The diaphragm seal is to be specified with a separate article number and must be included with the transmitter article number, for example 7MF802-...Y-... and 7MF0810-.....-0...

- 4) The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.
- 5) Remote seal for direct mounting only available in combination with process connection 1/2-14 NPT.
- 6) M10 fastening thread: Max. measuring span 160 bar (2320 psi) fastening thread 7/16-20 UNF and M12: Max. measuring span 400 bar (5802 psi)
- 7) Can only be ordered together with electrical connection option A.
- 8) Can only be ordered together with electrical connection option B, C or G.
- 9) Only together with HART electronics.
- 10) Without cable gland.
- 11) Local display cannot be rotated.

		Article No.
SITRANS P300 pressure transmitters for gauge pressure and absolute pressure with flush mounted membrane, single chamber enclosure, nameplate inscription in English		
4 ... 20 mA / HART		7MF8123-
PROFIBUS PA (PA)		7MF8124-
FOUNDATION Fieldbus (FF)		7MF8125-
		● ● ● ● ● - ● ● ● ● ●
Click the article number for online configuration in the PIA Life Cycle Portal.		
<b>Measuring cell filling</b>	<b>Measuring cell cleaning</b>	
Silicone oil	Normal	1
Inert liquid		3
Food grade oil		
• Neobee oil	Normal	4
<b>Measuring span (min. ... max.)</b>		
0.01 ... 1 bar (0.15 ... 14.5 psi)		B
0.04 ... 4 bar (0.58 ... 58 psi)		C
0.16 ... 16 bar (2.32 ... 232 psi)		D
0.63 ... 63 bar (9.14 ... 914 psi)		E
43.34 ... 1300 mbar a (0.63 ... 18.86 psi a) <sup>11</sup> )		S
0.17 ... 5 bar a (2.43 ... 72.5 psi a) <sup>11</sup> )		T
1 ... 30 bar a (14.6 ... 435 psi a) <sup>11</sup> )		U
<b>Material of wetted parts</b>	<b>Measuring cell</b>	
<b>Seal diaphragm</b>		
Stainless steel	Stainless steel	A
Hastelloy <sup>2)</sup>	Stainless steel	B
<b>Process connection</b>		
Flange version with order code M.., N.., R.. or Q.. (see "Options")		7
<b>Material of non-wetted parts</b>		
Stainless steel, deep-drawn and electrolytically polished		4
<b>Version</b>		
Standard version		1
<b>Explosion protection</b>		
None		A
With ATEX, type of protection:		

## Selection and ordering data (continued)

	Article No.
SITRANS P300 pressure transmitters for gauge pressure and absolute pressure with flush mounted membrane, single chamber enclosure, nameplate inscription in English	
4 ... 20 mA / HART	7MF8123-
PROFIBUS PA (PA)	7MF8124-
FOUNDATION Fieldbus (FF)	7MF8125-
	● ● ● ● ● - ● ● ● ●
"Intrinsic safety (Ex ia)"	
Zone 20/21/22 <sup>3)</sup>	
Ex nA/nL (Zone 2) <sup>4)</sup>	
With FM "Intrinsic safety" (cFM <sub>US</sub> )	
<b>Electrical connection/cable entry</b>	
Screw gland M20×1.5 (polyamide) <sup>5)</sup>	
Screw gland M20×1.5 (metal)	
Screw gland M20×1.5 (stainless steel)	
Device plug M12 (stainless steel, without cable socket)	
Screw gland ½-14 NPT threading metal <sup>6)</sup>	
½-14 NPT gland threading stainless steel <sup>6)</sup>	
<b>Display</b>	
Without local display, with buttons, closed lid	
With local display and buttons, closed lid <sup>7)</sup>	
With local display and buttons, lid with polycarbonate pane (setting for HART devices: mA, for PROFIBUS PA and FOUNDATION Fieldbus devices: Pressure units <sup>7)</sup> )	
With local display and buttons (setting acc. to specifications, order code "Y21" or "Y22" required), lid with polycarbonate pane <sup>7)</sup>	
With local display and buttons, lid with glass pane (setting for HART devices: mA, for PROFIBUS and FOUNDATION Fieldbus devices: pressure units <sup>7)</sup> )	
With local display and buttons (setting acc. to specifications, order code "Y21" or "Y22" required), lid with glass pane <sup>7)</sup>	

## Note:

See section "Supplementary components" for supply units. A quick-start guide is included in the scope of delivery of the device.

- Not with temperature decoupler P00, not for process connections R01, R02, R04, R10 and R11 and can only be ordered together with silicone oil.
- Only available for flanges with option M..., N... and Q...
- Can only be ordered together with electrical connection option A.
- Can only be ordered together with electrical connection option B, C or G.
- Only together with HART electronics.
- Without cable gland.
- Local display cannot be rotated.

Options	Order code	Communication
<b>Add "-Z" to article number and specify order code.</b>		
<b>Pressure transmitter with mounting bracket (2 brackets, 4 nuts, 4 U washers, 1 angle)</b> Completely of stainless steel, for wall and pipe mounting	A02	HART / PQ / FF
<b>Cable socket for M12 device plug, stainless steel</b>	A51	HART / PQ / FF
<b>Nameplate inscription (in place of English)</b>		HART / PQ / FF
• German	B10	HART / PQ / FF
• French	B12	HART / PQ / FF
• Spanish	B13	HART / PQ / FF
• Italian	B14	HART / PQ / FF
<b>English nameplate</b> Pressure units in inH <sub>2</sub> O or psi	B21	HART / PQ / FF
<b>Quality inspection certificate (5-point characteristic curve test) according to IEC 62828-2<sup>1)</sup></b>	C11	HART / PQ / FF
<b>Inspection certificate according to EN 10204-3.1<sup>2)</sup></b>	C12	HART / PQ / FF
<b>Factory certificate according to EN 10204-2.2</b>	C14	HART / PQ / FF
<b>IP65/IP68 degree of protection, only for M20×1.5 and ½-14 NPT</b>	D12	HART / PQ / FF
<b>IP6k9k degree of protection, only for M20×1.5</b>	D46	HART / PQ / FF

Options	Order code	Communication
<b>Add "-Z" to article number and specify order code.</b>		
<b>CRN Approval Canada (Canadian Registration Number)</b>	E22	HART / PQ / FF
<b>Export approval Korea</b>	E11	HART / PQ / FF
<b>Explosion protection Ex ia according to EAC Ex (Russia)</b>	E80	HART / PQ / FF
<b>Ex approval Ex ia/ib NEPSI</b>	E55	HART / PQ / FF
<b>Only for SITRANS P300 with flush-mounted diaphragm (7MF81...-...)</b>		
<b>Flange according to EN 1092-1 Form B1</b>		
DN 25, PN 40 <sup>3)</sup>	M11	HART / PQ / FF
DN 40, PN 40	M13	HART / PQ / FF
DN 40, PN 100	M23	HART / PQ / FF
DN 50, PN 16	M04	HART / PQ / FF
DN 50, PN 40	M14	HART / PQ / FF
DN 80, PN 16	M06	HART / PQ / FF
DN 80, PN 40	M16	HART / PQ / FF
<b>Flange according to ASME B16.5</b>		
1", Class 150 <sup>3)</sup>	M40	HART / PQ / FF
1½", Class 150	M41	HART / PQ / FF
2", Class 150	M42	HART / PQ / FF
3", Class 150	M43	HART / PQ / FF
4", Class 150	M44	HART / PQ / FF
1½", Class 300	M46	HART / PQ / FF
2", Class 300	M47	HART / PQ / FF
3", Class 300	M48	HART / PQ / FF
4", Class 300	M49	HART / PQ / FF
<b>Threaded connection according to DIN 3852-2 Form A, thread according to ISO 228</b>		
G ¾" A, flush mounted <sup>4)</sup>	R01	HART / PQ / FF
G 1" A, flush mounted <sup>4)</sup>	R02	HART / PQ / FF
G 2" A, flush mounted	R04	HART / PQ / FF

# Pressure measurement

## Pressure transmitters

for food, pharmaceuticals and biotechnology / SITRANS P300

### Selection and ordering data (continued)

Options	Order code	Communication
<b>Add "-Z" to article number and specify order code.</b>		
<b>Tank connection<sup>5)</sup></b> Seal not included in scope of delivery		
TG 52/50, PN 40	R10	HART / PQ / FF
TG 52/150, PN 40	R11	HART / PQ / FF
<b>Sanitary process connection according to DIN 11851 (dairy connection with slotted union nut)</b>		
DN 50, PN 25	N04	HART / PQ / FF
DN 80, PN 25	N06	HART / PQ / FF
<b>Tri-Clamp connection according to DIN 32676/ ISO 2852</b> 3A compliant <sup>6)</sup>		
DN 50/2", PN 16	N14	HART / PQ / FF
DN 65/2.5", PN 10	N15	HART / PQ / FF
Clamp 2" ISO 2852, PN 16	N22	HART / PQ / FF
Clamp 3" ISO 2852, PN 10	N23	HART / PQ / FF
<b>Varivent connection</b> 3A and EHEDG compliant <sup>6)</sup>		
Type N = 68 for Varivent enclosure DN 40 ... 125 and 1½" ... 6", PN 40	N28	HART / PQ / FF
<b>Temperature decoupler up to 200 °C<sup>7)</sup></b> For version with flush-mounted diaphragm	P00	HART / PQ / FF
<b>Sanitary process connection according to DRD</b>		
DN 50, PN 40	M32	HART / PQ / FF
<b>SMS screwed connector</b>		
2"	M73	HART / PQ / FF
2½"	M74	HART / PQ / FF
3"	M75	HART / PQ / FF
<b>Sanitary process screw connection according to NEUMO BioConnect screw connection, 3A and EHEDG compliant<sup>6)</sup></b>		
DN 50, PN 16	Q05	HART / PQ / FF
DN 65, PN 16	Q06	HART / PQ / FF
DN 80, PN 16	Q07	HART / PQ / FF
DN 100, PN 16	Q08	HART / PQ / FF
DN 2", PN 16	Q13	HART / PQ / FF
DN 2½", PN 16	Q14	HART / PQ / FF
DN 3", PN 16	Q15	HART / PQ / FF
DN 4", PN 16	Q16	HART / PQ / FF
<b>Sanitary process flange connection according to NEUMO Connect S</b>		
DN 2", PN 16	Q72	HART / PQ / FF
<b>Aseptic screwed connector according to DIN 11864-1 Form A</b> 3A compliant <sup>6)</sup>		
DN 50, PN 25	N33	HART / PQ / FF
DN 65, PN 25	N34	HART / PQ / FF
DN 80, PN 25	N35	HART / PQ / FF
DN 100, PN 25	N36	HART / PQ / FF
<b>Aseptic flange with notch according to DIN 11864-2 Form A</b> 3A compliant <sup>6)</sup>		
DN 50, PN 16	N43	HART / PQ / FF
DN 65, PN 16	N44	HART / PQ / FF
DN 80, PN 16	N45	HART / PQ / FF
DN 100, PN 16	N46	HART / PQ / FF
<b>Aseptic flange with groove according to DIN 11864-2 Form A</b> 3A compliant <sup>6)</sup>		
DN 50, PN 16	N43 + P11	HART / PQ / FF
DN 65, PN 16	N44 + P11	HART / PQ / FF

Options	Order code	Communication
<b>Add "-Z" to article number and specify order code.</b>		
DN 80, PN 16	N45 + P11	HART / PQ / FF
DN 100, PN 16	N46 + P11	HART / PQ / FF
<b>Aseptic clamp with groove according to DIN 11864-3 Form A</b> 3A compliant <sup>6)</sup>		
DN 50, PN 25	N53	HART / PQ / FF
DN 65, PN 25	N54	HART / PQ / FF
DN 80, PN 16	N55	HART / PQ / FF
DN 100, PN 16	N56	HART / PQ / FF
<b>Additional information</b> Add "-Z" to article number, specify order code and plain text.		
<b>Measuring range to be set</b> Specify in plain text (max. 5 digits): Y01: ... to ... mbar, bar, kPa, MPa, psi	Y01	HART / PQ <sup>8)</sup>
<b>Tag plate made of stainless steel and entry in the device variable (measuring point description)</b> Max. 16 characters; specify in plain text: Y15: .....	Y15	HART / PQ / FF
<b>Measuring point text (entry in device variable)</b> Max. 27 characters; specify in plain text: Y16: .....	Y16	HART / PQ / FF
<b>Entry of HART TAG</b> Max. 8 characters; specify in plain text: Y17: .....	Y17	HART
<b>Setting of the local display in pressure units</b> Specify in plain text (default setting: bar): Y21: mbar, bar, kPa, MPa, psi, ... <b>Note</b> The following pressure units can be selected: bar, mbar, mm H <sub>2</sub> O <sup>10)</sup> , inH <sub>2</sub> O <sup>10)</sup> , ftH <sub>2</sub> O <sup>10)</sup> , mmHG, inHG, psi, Pa, kPa, MPa, g/cm <sup>2</sup> , Torr, ATM or %	Y21	HART / PQ / FF
<b>Setting of the local display in non-pressure units<sup>9)</sup></b> Specify in plain text: Y22: ..... to ..... l, m <sup>3</sup> , m, USg, ... (Specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	Y22 + Y01	HART
<b>Preset bus address, possible range 1 ... 126</b> Specify in plain text: Y25: .....	Y25	PQ / FF

#### Note:

Factory-mounting of valve manifolds, see Accessories. Only Y01, Y15, Y16, Y17, Y21, Y22 and Y25 are possible as factory preset.

- 1) If the quality inspection certificate (factory calibration) according to IEC 60770-2 is to be ordered for transmitters with mounted diaphragm seals, it is recommended that this certificate be ordered exclusively for the remote seals. Here, the measuring accuracy of the entire combination is certified.
- 2) If Inspection Certificate 3.1. is to be ordered for transmitters with mounted diaphragm seals, this certificate must also be ordered with the respective remote seals.
- 3) Special Viton seal included in scope of delivery (FKM; temperature range -20 ... +200 °C (-4 ... +392 °F))
- 4) Cannot be combined with order code P00. Can only be ordered together with silicon oil measuring cell filling.
- 5) Weld-in sockets can be ordered under Accessories.
- 6) 3A compliance ensured only when 3A compliant sealing rings are used.
- 7) Conformity according to 3A and EHEDG. The maximum permissible medium temperatures depend on the respective measuring cell fillings (see process conditions).
- 8) Measuring accuracies for PROFIBUS PA transmitters with option Y01 are calculated in the same way as for HART devices.
- 9) Preset value can only be change via SIMATIC PDM
- 10) 20 °C reference temperature.

## Selection and ordering data (continued)

Spare parts/accessories	Article number
<b>Mounting bracket and fastening parts kit</b> Made of stainless steel	7MF8997-1AA
<b>Lid without inspection window</b> Gasket not included	7MF8997-1BA
<b>Lid with glass inspection window</b> Gasket not included	7MF8997-1BD
<b>NBR enclosure sealing</b>	7MF8997-1BG
<b>Measuring point label</b> Unlabeled	7MF8997-1CA
<b>Cable gland</b>	
• Metal	7MF8997-1EA
• Plastic (blue)	7MF8997-1EB
<b>Weldable sockets for PMC connection</b>	
• PMC style Standard: Thread 1½"	7MF4997-2HA
• PMC style Minibolt: Flush-mounted 1"	7MF4997-2HB
<b>Gaskets for PMC connection</b> (Packing unit: 5 units)	
• PTFE seal for PMC Style Standard: Thread 1½"	7MF4997-2HC
• Gasket made of Viton for PMC Style Minibolt: Flush-mounted 1"	7MF4997-2HD
<b>Weldable sockets for TG 52/50 and TG 52/150 connection</b>	
• TG 52/50 connection	7MF4997-2HE
• TG 52/150 connection	7MF4997-2HF
<b>Seals for TG 52/50 and TG 52/150 made of silicone</b>	7MF4997-2HG

Spare parts/accessories	Article number
<b>Seals for flange connection with flush-mounted diaphragm</b> Material FKM (Viton); temperature range:-20 ... +200 °C (-4 ... +392 °F), 10 units	
• DN 25, PN 40 (M11)	7MF4997-2HH
• 1", Class 150 (M40)	7MF4997-2HK

Documentation	Article number
The entire documentation is available for download free of charge in various languages at: <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>	
Compact operating instructions	
• English, German, Spanish, French, Italian, Dutch	A5E03434657
<b>HART modem</b>	
With USB interface	7MF4997-1DB

Note:

See section "Supplementary components" for supply units.

Ordering example	
Item line:	7MF8023-1DB24-1AB7-Z
B line	A02 + Y01 + Y21
C-line	Y01: 1 ... 10 bar (14.5 ... 145 psi)
C-line	Y21: bar (psi)

# Pressure measurement

## Pressure transmitters

for food, pharmaceuticals and biotechnology / SITRANS P300

### Technical specifications

#### SITRANS P300 for gauge and absolute pressure

##### Gauge pressure input

Measured variable

Measuring span (infinitely adjustable) or nominal measuring range, max. permissible operating pressure (in accordance with 2014/68/EU Pressure Equipment Directive) and max. permissible test pressure (pursuant to DIN 16086)  
(for oxygen measurement, max. 100 bar/10 MPa/1450 psi and 60 °C (140 °F) ambient temperature/medium temperature)

Gauge pressure

HART

Measuring span

8.3 ... 250 mbar  
0.83 ... 25 kPa  
0.12 ... 3.6 psi  
  
0.01 ... 1 bar  
1 ... 100 kPa  
0.15 ... 14.5 psi  
  
0.04 ... 4 bar  
4 ... 400 kPa  
0.58 ... 58 psi  
  
0.16 ... 16 bar  
16 ... 1600 kPa  
2.3 ... 232 psi  
  
0.63 ... 63 bar  
63 ... 6300 kPa  
9.1 ... 914 psi  
  
1.6 ... 160 bar  
0.16 ... 16 MPa  
23 ... 2321 psi  
  
4 ... 400 bar  
0.4 ... 40 MPa  
58 ... 5802 psi

PROFIBUS PA/FOUNDATION Fieldbus

Nominal measuring range

250 mbar  
25 kPa  
3.6 psi  
  
1 bar  
100 kPa  
14.5 psi  
  
4 bar  
400 kPa  
58 psi  
  
16 bar  
1600 kPa  
232 psi  
  
63 bar  
6300 kPa  
914 psi  
  
160 bar  
16 MPa  
2321 psi  
  
400 bar  
40 MPa  
5802 psi

Max. permissible operating pressure MAWP (PS)

4 bar  
400 kPa  
58 psi  
  
4 bar  
400 kPa  
58 psi  
  
7 bar  
0.7 MPa  
102 psi  
  
21 bar  
2.1 MPa  
305 psi  
  
67 bar  
6.7 MPa  
972 psi  
  
167 bar  
16.7 MPa  
2422 psi  
  
400 bar  
40 MPa  
5802 psi

Max. permissible test pressure

6 bar  
600 kPa  
87 psi  
  
6 bar  
600 kPa  
87 psi  
  
10 bar  
1 MPa  
145 psi  
  
32 bar  
3.2 MPa  
464 psi  
  
100 bar  
10 MPa  
1450 psi  
  
250 bar  
25 MPa  
3626 psi  
  
600 bar  
60 MPa  
8702 psi

##### Lower measuring limit

For 250 mbar/25 kPa/3.6 psi measuring cells, the lower measuring limit is 750 mbar a/75 kPa a/10.8 psi a. The measuring cell is vacuum-resistant up to 30 mbar a/3 kPa a/0.44 psi a.

- Measuring cell with silicone oil filling
- Measuring cell with inert filling liquid

30 mbar a/3 kPa a/0.44 psi a

30 mbar a/3 kPa a/0.44 psi a

##### Upper measuring limit

100% of the max. measuring span (for oxygen measurement max. 100 bar/10 MPa/1450 psi and 60 °C (140 °F) ambient temperature/medium temperature)

##### Absolute pressure input

Measured variable

Measuring span (continuously adjustable) or nominal measuring range, max. permissible operating pressure (in accordance with 2014/68/EU Pressure Equipment Directive) and max. permissible test pressure (pursuant to DIN 16086)

Absolute pressure

HART

Measuring span

8.34 ... 250 mbar a  
0.83 ... 25 kPa a  
3.35 ... 100 inH<sub>2</sub>O a  
0.13 ... 3.63 psi a  
  
43.34 ... 1300 mbar a  
4.33 ... 130 kPa a  
17.42 ... 522.4 inH<sub>2</sub>O a  
0.63 ... 18.86 psi a  
  
0.17 ... 5 bar a  
17 ... 500 kPa a  
2.43 ... 72.5 psi a  
  
1 ... 30 bar a  
0.1 ... 3 MPa a  
14.6 ... 435 psi a

PROFIBUS PA/FOUNDATION Fieldbus

Nominal measuring range

250 mbar a  
25 kPa a  
100 inH<sub>2</sub>O a  
  
1300 mbar a  
130 kPa a  
525 inH<sub>2</sub>O a  
  
5000 mbar a  
500 kPa a  
72.5 psi a  
  
30 bar a  
3 MPa a  
435 psi a

Max. permissible operating pressure MAWP (PS)

1.5 bar a  
150 kPa a  
21.8 psi a  
  
2.6 bar a  
260 kPa a  
37.7 psi a  
  
10 bar a  
1 MPa a  
145 psi a  
  
10 bar a  
1 MPa a  
145 psi a  
  
45 bar a  
4.5 MPa a  
653 psi a

Max. permissible test pressure

6 bar a  
600 kPa a  
87 psi a  
  
10 bar a  
1 MPa a  
145 psi a  
  
30 bar a  
3 MPa a  
435 psi a  
  
100 bar a  
10 MPa a  
1450 psi a

##### Lower measuring limit

- Measuring cell with silicone oil filling
- Measuring cell with inert liquid

- For medium temperature -20 °C <  $\vartheta$  ≤ +60 °C  
(-4 °F <  $\vartheta$  ≤ +140 °F)

0 mbar a/3 kPa a/0.44 psi a

30 mbar a/0 kPa a/0 psi a



## Technical specifications (continued)

SITRANS P300 for gauge and absolute pressure			
- For medium temperature 60 °C < $\vartheta$ ≤ +100 °C (max. 85 °C for measuring cell 30 bar) (140 °F < $\vartheta$ ≤ +212 °F (max. 185 °F for measuring cell 435 psi))	30 mbar a + 20 mbar a · ( $\vartheta$ - 60 °C)/°C 3 kPa a + 2 kPa a · ( $\vartheta$ - 60 °C)/°C 0.44 psi a + 0.29 psi a · ( $\vartheta$ - 140 °F)/°F		
<b>Upper measuring limit</b>	100% of the max. measuring span (for oxygen measurement max. 100 bar/10 MPa/1450 psi and 60 °C (140 °F) ambient temperature/medium temperature)		
Lower range value	Between the measuring limits (continuously adjustable)		
<b>Input of gauge pressure with front-flush diaphragm</b>			
Measured variable	Gauge pressure, flush-mounted		
Measuring span (continuously adjustable) or nominal measuring range, max. permissible operating pressure and max. permissible test pressure	<b>HART</b>	<b>PROFIBUS PA/FOUNDATION Fieldbus</b>	
	Measuring span	Nominal measuring range	Max. permissible operating pressure MAWP (PS)
			Max. permissible test pressure
	0.01 ... 1 bar	1 bar	4 bar
	1 ... 100 kPa	100 kPa	400 kPa
	0.15 ... 14.5 psi	14.5 psi	58 psi
	0.04 ... 4 bar	4 bar	7 bar
	4 ... 400 kPa	400 kPa	0.7 MPa
	0.58 ... 58 psi	58 psi	102 psi
	0.16 ... 16 bar	16 bar	21 bar
	16 ... 1600 kPa	1600 kPa	2.1 MPa
	2.3 ... 232 psi	232 psi	305 psi
	0.63 ... 63 bar	63 bar	67 bar
	63 ... 6300 kPa	6300 kPa	6.7 MPa
	9.1 ... 914 psi	914 psi	972 psi
			1450 psi
<b>Lower measuring limit</b>	100 mbar a (1.45 psi a)		
• Measuring cell with silicone oil	100 mbar a/10 kPa a/1.45 psi a		
• Measuring cell with inert liquid	100 mbar a/10 kPa a/1.45 psi a		
• Measuring cell with neobee	100 mbar a/10 kPa a/1.45 psi a		
<b>Upper measuring limit</b>	100% of max. measuring span		
<b>Input of absolute pressure, with flush-mounted diaphragm</b>			
Measured variable	Absolute pressure, flush-mounted		
Measuring span (continuously adjustable) or nominal measuring range and max. permissible test pressure	<b>HART</b>	<b>PROFIBUS PA/FOUNDATION Fieldbus</b>	
	Measuring span	Nominal measuring range	Max. permissible operating pressure MAWP (PS)
			Max. permissible test pressure
	43 ... 1300 mbar a	1300 mbar a	2.6 bar a
	4.3 ... 130 kPa a	130 kPa a	260 kPa a
	17 ... 525 inH <sub>2</sub> O a	525 inH <sub>2</sub> O a	37.7 psi a
	160 ... 5000 mbar a	5000 mbar a	10 bar a
	16 ... 500 kPa a	500 kPa a	1 MPa a
	2.32 ... 72.5 psi a	72.5 psi a	145 psi a
	1 ... 30 bar a	30 bar a	45 bar a
	0.1 ... 3 MPa a	3 MPa a	4.5 MPa a
	14.5 ... 435 psi a	435 psi a	653 psi a
			1450 psi a
<b>Lower measuring limit</b>	Depending on the process connection, the measuring span may differ from these values 0 mbar a/0 kPa a/0 psi a		
<b>Upper measuring limit</b>	100% of max. measuring span		
<b>Output</b>			
Output signal	<b>HART</b>	<b>PROFIBUS PA/FOUNDATION Fieldbus</b>	
Physical bus	4 ... 20 mA	Digital PROFIBUS PA signal	
Protection against polarity reversal	-	IEC 61158-2	
Electrical damping (step width 0.1 s)	Protected against short-circuit and polarity reversal. Each connection against the other with max. supply voltage.	Protected against short-circuit and polarity reversal. Each connection against the other with max. supply voltage.	
	Set to 2 s (0 ... 100 s)	Set to 2 s (0 ... 100 s)	

# Pressure measurement

## Pressure transmitters

for food, pharmaceuticals and biotechnology / SITRANS P300

### Technical specifications (continued)

<b>SITRANS P300 for gauge and absolute pressure</b>	
<b>Measuring accuracy for gauge pressure</b> Reference conditions	According to IEC 62828-1 <ul style="list-style-type: none"> <li>• Rising characteristic curve</li> <li>• Lower range value 0 bar</li> <li>• Seal diaphragm stainless steel</li> <li>• Measuring cell with silicone oil</li> <li>• Room temperature 25 °C (77 °F)</li> </ul>
Measuring span ratio (spread, Turn-Down)	$r = \text{maximum measuring span/set measuring span or nominal measuring range}$
<b><u>Measurement deviation at limit setting including hysteresis and reproducibility</u></b>	
<ul style="list-style-type: none"> <li>• Linear characteristic curve</li> </ul>	
- 250 mbar/25 kPa/3.6 psi	$r \leq 1.25: \leq 0.075\%$ $1.25 < r \leq 30: \leq (0.008 \cdot r + 0.065)\%$
- 1 bar/100 kPa/14.5 psi 4 bar/400 kPa/58 psi 16 bar/1.6 MPa/232 psi 63 bar/6.3 MPa/914 psi 160 bar/16 MPa/2321 psi	$r \leq 5: \leq 0.075\%$ $5 < r \leq 100: \leq (0.005 \cdot r + 0.05)\%$
- 400 bar/40 MPa/5802 psi	$r \leq 3: \leq 0.075\%$ $3 < r \leq 10: \leq (0.0029 \cdot r + 0.071)\%$ $10 < r \leq 100: \leq (0.005 \cdot r + 0.05)\%$
<b><u>Influence of ambient temperature (in percent per 28 °C (50 °F))</u></b>	
<ul style="list-style-type: none"> <li>• 250 mbar/25 kPa/3.6 psi</li> </ul>	$\leq (0.16 \cdot r + 0.1)\%$
<ul style="list-style-type: none"> <li>• 1 bar/100 kPa/14.5 psi            4 bar/400 kPa/58 psi            16 bar/1.6 MPa/232 psi            63 bar/6.3 MPa/914 psi            160 bar/16 MPa/2321 psi            400 bar/40 MPa/5802 psi</li> </ul>	$\leq (0.07 \cdot r + 0.08)\%$
<b><u>Long-term stability (temperature change ±30 °C (± 54 °F))</u></b>	
<ul style="list-style-type: none"> <li>• 250 mbar/25 kPa/3.6 psi</li> </ul>	$\leq (0.16 \cdot r)\%$ per year
<ul style="list-style-type: none"> <li>• 1 bar/100 kPa/14.5 psi            4 bar/400 kPa/58 psi</li> </ul>	$\leq (0.25 \cdot r)\%$ in 5 years
<ul style="list-style-type: none"> <li>• 16 bar/1.6 MPa/232 psi            63 bar/6.3 MPa/914 psi            160 bar/16 MPa/2321 psi            400 bar/40 MPa/5802 psi</li> </ul>	$\leq (0.125 \cdot r)\%$ in 5 years
Influence of mounting position	$\leq 0.05 \text{ mbar}/0.005 \text{ kPa}/0.000725 \text{ psi}$ per 10° incline (zero offset is possible with position error compensation)
Effect of auxiliary power (in percent per voltage change)	0.005% per 1 V
Measured value resolution for PROFIBUS PA and FOUNDATION Fieldbus	$3 \cdot 10^{-5}$ of nominal measuring range
<b>Measuring accuracy for absolute pressure</b> Reference conditions (All error information always refers to the set measuring span)	According to IEC 62828-1 <ul style="list-style-type: none"> <li>• Rising characteristic curve</li> <li>• Lower range value 0 bar</li> <li>• Seal diaphragm stainless steel</li> <li>• Silicone oil filling</li> <li>• Room temperature 25 °C (77 °F)</li> </ul>
Measuring span ratio r (spread, Turn-Down)	$r = \text{maximum measuring span/set measuring span or nominal measuring range}$
<b><u>Measurement deviation at limit setting including hysteresis and reproducibility</u></b>	
<ul style="list-style-type: none"> <li>• Linear characteristic curve</li> </ul>	
- $r \leq 10$	$\leq 0.1\%$
- $10 < r \leq 30$	$\leq 0.2\%$
<b><u>Influence of ambient temperature (in percent per 28 °C (50 °F))</u></b>	
<ul style="list-style-type: none"> <li>• 250 mbar a/25 kPa a/3.6 psi a</li> </ul>	$\leq (0.15 \cdot r + 0.1)\%$

## Technical specifications (continued)

SITRANS P300 for gauge and absolute pressure		
<ul style="list-style-type: none"> <li>1300 mbar a/130 kPa a/18.8 psi a</li> <li>5 bar a/500 kPa a/72.5 psi a</li> <li>30 bar a/3000 kPa a/435 psi a</li> </ul>	$\leq (0.08 \cdot r + 0.16)\%$	
Long-term stability (temperature change $\pm 30\text{ °C}$ ( $\pm 54\text{ °F}$ ))	$\leq (0.25 \cdot r)\%$ in 5 years	
Effect of mounting position (in pressure per change of angle)	$\leq 0.05\text{ mbar}/0.005\text{ kPa}/0.000725\text{ psi}$ per $10^\circ$ incline (zero-point correction is possible with position error compensation)	
Effect of auxiliary power (in percent per voltage change)	0.005% per 1 V	
Measured value resolution for PROFIBUS PA and FOUNDATION Fieldbus	$3 \cdot 10^{-5}$ of nominal measuring range	
<b>Measuring accuracy for gauge and absolute pressure, with flush-mounted diaphragm</b>		
Reference conditions (All error information always refers to the set measuring span)	According to IEC 62828-1	
	<ul style="list-style-type: none"> <li>Rising characteristic curve</li> <li>Lower range value 0 bar</li> <li>Seal diaphragm stainless steel</li> <li>Silicone oil filling</li> <li>Room temperature <math>25\text{ °C}</math> (<math>77\text{ °F}</math>)</li> </ul>	
Measuring span ratio r (spread, Turn-Down)	$r = \text{maximum measuring span/set measuring span or nominal measuring range}$	
<b>Measurement deviation at limit setting including hysteresis and reproducibility</b>		
<ul style="list-style-type: none"> <li>Linear characteristic curve</li> </ul>	<b>Gauge pressure with flush-mounted diaphragm</b>	<b>Absolute pressure with flush-mounted diaphragm</b>
- $r \leq 5$	$\leq 0.075\%$	-
- $5 < r \leq 100$	$\leq (0.005 \cdot r + 0.05)\%$	-
- $r \leq 10$	-	$\leq 0.2\%$
- $10 < r \leq 30$	-	$\leq 0.4\%$
Influence of ambient temperature (in percent per $28\text{ °C}$ ( $50\text{ °F}$ ))	$\leq (0.08 \cdot r + 0.16)\%$	$\leq (0.16 \cdot r + 0.24)\%$
<b>Influence of the medium temperature (in pressure per temperature unit)</b>		
<ul style="list-style-type: none"> <li>Temperature difference between medium temperature and ambient temperature</li> </ul>	$3\text{ mbar}/0.3\text{ kPa}/0.04\text{ psi}$ per 10 K	
Long-term stability (temperature change $\pm 30\text{ °C}$ ( $\pm 54\text{ °F}$ ))	$\leq (0.25 \cdot r)\%$ in 5 years	
Effect of mounting position (in pressure per change of angle)	$0.4\text{ mbar}/0.04\text{ kPa}/0.006\text{ psi}$ per $10^\circ$ incline (zero offset is possible with position error compensation)	
Effect of auxiliary power (in percent per voltage change)	0.005% per 1 V	
Measured value resolution for PROFIBUS PA and FOUNDATION Fieldbus	$3 \cdot 10^{-5}$ of nominal measuring range	

## Operating conditions

Installation conditions	
Ambient temperature	Observe the temperature class in hazardous areas.
<ul style="list-style-type: none"> <li>Measuring cell with silicone oil</li> </ul>	$-40 \dots +85\text{ °C}$ ( $-40 \dots +185\text{ °F}$ )
<ul style="list-style-type: none"> <li>Measuring cell with Neobee oil (FDA-compliant, with flush-mounted diaphragm)</li> </ul>	$-10 \dots +85\text{ °C}$ ( $14 \dots 185\text{ °F}$ )
<ul style="list-style-type: none"> <li>Measuring cell with inert liquid</li> </ul>	$-40 \dots +85\text{ °C}$ ( $-40 \dots +185\text{ °F}$ )
<ul style="list-style-type: none"> <li>Display readable</li> </ul>	$-30 \dots +85\text{ °C}$ ( $-22 \dots +185\text{ °F}$ )
<ul style="list-style-type: none"> <li>Storage temperature</li> </ul>	$-50 \dots +85\text{ °C}$ ( $-58 \dots +185\text{ °F}$ ) - For Neobee: $-20 \dots +85\text{ °C}$ ( $-4 \dots +185\text{ °F}$ ) - For high-temperature oil: $-10 \dots +85\text{ °C}$ ( $14 \dots +185\text{ °F}$ )
<ul style="list-style-type: none"> <li>Climatic class</li> </ul>	
<ul style="list-style-type: none"> <li>Condensation</li> </ul>	Relative humidity 0 ... 100% Condensation permissible, suitable for use in the tropics

## Operating conditions

Degree of protection	
<ul style="list-style-type: none"> <li>According to IEC 60529</li> <li>According to NEMA 250</li> </ul>	IP65, IP68 Type 4X, enclosure cleaning, resistant to lyes, steam to $150\text{ °C}$ ( $302\text{ °F}$ )
Electromagnetic compatibility	
<ul style="list-style-type: none"> <li>Emitted interference and interference immunity</li> </ul>	According to IEC 61326 and NAMUR NE 21
<b>Process conditions</b>	
Medium temperature	
	The max. medium temperature of the flush-mounted process connections is to be taken into account in accordance with the relevant connection standards (e.g. DIN 32676, DIN 11851, etc.).
<ul style="list-style-type: none"> <li>Measuring cell with silicone oil</li> </ul>	$-40 \dots +100\text{ °C}$ ( $-40 \dots +212\text{ °F}$ )
<ul style="list-style-type: none"> <li>Measuring cell with silicone oil (with flush-mounted diaphragm)</li> </ul>	$-40 \dots +150\text{ °C}$ ( $-40 \dots +302\text{ °F}$ )

# Pressure measurement

## Pressure transmitters

for food, pharmaceuticals and biotechnology / SITRANS P300

### Technical specifications (continued)

Operating conditions																					
• Measuring cell with Neobee oil (FDA-compliant, with flush-mounted diaphragm)	-10 ... +150 °C (14 ... 302 °F)																				
• Measuring cell with silicone oil, with temperature decoupler (only for gauge pressure version with flush-mounted diaphragm)	-40 ... +200 °C (-40 ... +392 °F)																				
• Measuring cell with Neobee oil, with temperature decoupler (only for gauge pressure version with flush-mounted diaphragm)	-10 ... +200 °C (14 ... 392 °F)																				
• Measuring cell with inert liquid	-20 ... +100 °C (-4 ... +212 °F)																				
Structural design (standard version)																					
Weight (without options)	Approx. 800 g (1.8 lbs)																				
Enclosure material	Stainless steel, mat. no. 1.4301/304																				
Material of wetted parts																					
• Connection shank	Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819																				
• Oval flange	Stainless steel, mat. no. 1.4404/316L																				
• Seal diaphragm	Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819																				
• Measuring cell filling	<ul style="list-style-type: none"> <li>• Silicone oil</li> <li>• Inert filling liquid</li> </ul>																				
Process connection	<ul style="list-style-type: none"> <li>• G<sub>1/2</sub>B according to EN 837-1</li> <li>• Internal thread 1/2-14 NPT</li> <li>• Oval flange PN 160 (MAWP 2320 psi) with fastening thread: <ul style="list-style-type: none"> <li>- 7/16-20 UNF according to with IEC 61518/EN 61518</li> <li>- M10 according to DIN 19213</li> </ul> </li> </ul>																				
Structural design (version with flush-mounted diaphragm)																					
Weight (without options)	Approx. 1 ... 13 kg (2.2 ... 29 lbs)																				
Enclosure material	Stainless steel, mat. no. 1.4301/304																				
Material of wetted parts																					
• Process connection	Stainless steel, mat. no. 1.4404/316L																				
• Seal diaphragm	Stainless steel, mat. no. 1.4404/316L																				
• Measuring cell filling	<ul style="list-style-type: none"> <li>• Silicone oil</li> <li>• Inert filling liquid</li> <li>• Food grade oil (Neobee oil)</li> </ul>																				
Process connection	<ul style="list-style-type: none"> <li>• Flanges according to EN and ASME</li> <li>• F&amp;B and pharmaceutical flanges</li> </ul>																				
Surface quality touched-by-media	R <sub>a</sub> values ≤ 0.8 μm (32 μ-inch)/welds R <sub>a</sub> ≤ 1.6 μm (64 μ-inch) (Process connections according to 3A; R <sub>a</sub> values ≤ 0.8 μm (32 μ-inch)/welds R <sub>a</sub> ≤ 0.8 μm (32 μ-inch)																				
Auxiliary power U <sub>H</sub>																					
Terminal voltage on transmitter	<table border="1"> <thead> <tr> <th>HART</th> <th>PROFIBUS PA/FOUNDATION Fieldbus</th> </tr> </thead> <tbody> <tr> <td>10.5 ... 42 V DC</td> <td>-</td> </tr> <tr> <td>10.5 ... 30 V DC for intrinsically safe operation</td> <td>-</td> </tr> <tr> <td>Auxiliary power</td> <td>Bus-powered</td> </tr> <tr> <td>Separate supply voltage</td> <td>Not necessary</td> </tr> <tr> <td>Bus voltage</td> <td></td> </tr> <tr> <td>• Without Ex</td> <td>9 ... 32 V</td> </tr> <tr> <td>• With intrinsically safe operation</td> <td>9 ... 24 V</td> </tr> <tr> <td>Current consumption</td> <td></td> </tr> <tr> <td>• Max. basic current</td> <td>12.5 mA</td> </tr> </tbody> </table>	HART	PROFIBUS PA/FOUNDATION Fieldbus	10.5 ... 42 V DC	-	10.5 ... 30 V DC for intrinsically safe operation	-	Auxiliary power	Bus-powered	Separate supply voltage	Not necessary	Bus voltage		• Without Ex	9 ... 32 V	• With intrinsically safe operation	9 ... 24 V	Current consumption		• Max. basic current	12.5 mA
HART	PROFIBUS PA/FOUNDATION Fieldbus																				
10.5 ... 42 V DC	-																				
10.5 ... 30 V DC for intrinsically safe operation	-																				
Auxiliary power	Bus-powered																				
Separate supply voltage	Not necessary																				
Bus voltage																					
• Without Ex	9 ... 32 V																				
• With intrinsically safe operation	9 ... 24 V																				
Current consumption																					
• Max. basic current	12.5 mA																				

Operating conditions			
• Starting current ≤ basic current	-	Yes	
• Max. fault current in the event of an error	-	15.5 mA	
Fault disconnection electronics (FDE) available	-	Yes	
Certificates and approvals		HART	PROFIBUS PA/FOUNDATION Fieldbus
Classification according to pressure equipment directive (PED 2014/68/EU)	For gasses of fluid group 1 and liquids of fluid group 1; complies with requirements of Article 4, Paragraph 3 (sound engineering practice)		
Water, waste water	Available soon		
Explosion protection			
Intrinsic safety "i"	PTB 05 ATEX 2048		
• Marking	II 1/2 G Ex ia IIC/IB T4/T5/T6 Ga/Gb		
• Permissible ambient temperature			
- Temperature class T4	-40 ... +85 °C (-40 ... +185 °F)		
- Temperature class T5	-40 ... +70 °C (-40 ... +158 °F)		
- Temperature class T6	-40 ... +60 °C (-40 ... +140 °F)		
• Connection	To certified intrinsically safe circuits with peak values: U <sub>i</sub> = 30 V, I <sub>i</sub> = 100 mA, P <sub>i</sub> = 750 mW, R <sub>i</sub> = 300 Ω	To certified intrinsically safe circuits with peak values: <b>FISCO supply unit:</b> U <sub>i</sub> = 17.5 V, I <sub>i</sub> = 380 mA, P <sub>i</sub> = 5.32 W <b>Linear barrier:</b> U <sub>i</sub> = 24 V, I <sub>i</sub> = 250 mA, P <sub>i</sub> = 1.2 W	C <sub>i</sub> = 1.1 nF L <sub>i</sub> = 7 μH
• Effective internal capacitance	C <sub>i</sub> = 6 nF		
• Effective internal inductance	L <sub>i</sub> = 0.4 mH		
Explosion protection to FM for USA and Canada (cFMUS)			
• Identification (DIP) or (IS); (NI)	Certificate of Compliance 3025099 CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4 ... T6 CL I, DIV 2, GP ABCD T4 ... T6; CL II, DIV 2, GP FG; CL III		
• Identification (DIP) or (IS)	Certificate of Compliance 3025099C CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC 4 ... T6 CL I, DIV 2, GP ABCD T4 ... T6; CL II, DIV 2, GP FG; CL III		
Dust explosion protection for Zone 20/21/22	PTB 05 ATEX 2048		
• Marking	II 1 D Ex ia IIC T <sub>200</sub> 122 °C Da II 1/2 D Ex ia IIC T <sub>200</sub> 122 °C Da/Db II 2 D Ex ib IIC T <sub>200</sub> 122 °C Db		
• Permissible ambient temperature			
- Temperature class T4	-40 ... +85 °C (-40 ... +185 °F) (for mineral glass window -20 ... +85 °C (-4 ... +185 °F))		
- Temperature class T5	-40 ... +70 °C (-40 ... +158 °F) (for mineral glass window -20 ... +70 °C (-4 ... +158 °F))		
- Temperature class T6	-40 ... +60 °C (-40 ... +140 °F) (for mineral glass window -20 ... +60 °C (-4 ... +140 °F))		
• Connection	To certified intrinsically safe circuits with peak values: U <sub>i</sub> = 30 V, I <sub>i</sub> = 100 mA, P <sub>i</sub> = 750 mW	To certified intrinsically safe circuits with peak values: U <sub>i</sub> = 24 V, I <sub>i</sub> = 380 mA, P <sub>i</sub> = 5.32 W	C <sub>i</sub> = 5 nF L <sub>i</sub> = 10 μH
• Effective internal capacitance	C <sub>i</sub> = 6 nF		
• Effective internal inductance	L <sub>i</sub> = 0.4 μH		
Type of protection Ex nA/nL/c (Zone 2)	PTB 05 ATEX 2048		
• Marking	II 3 G Ex ic IIC T6 ... T4 Gc II 3 G Ex ec IIC T6 ... T4 Gc II 3 G Ex ic IIC T6 ... T4 Gc		

## Technical specifications (continued)

Operating conditions		
• Permissible ambient temperature		
- Temperature class T4	-40 ... +85 °C (-40 ... +185 °F) (only for mineral glass window -20 ... +85 °C (-4 ... +185 °F))	
- Temperature class T5	-40 ... +70 °C (-40 ... +158 °F) (only for mineral glass window -20 ... +70 °C (-4 ... +158 °F))	
- Temperature class T6	-40 ... +60 °C (-40 ... +140 °F) (only for mineral glass window -20 ... +60 °C (-4 ... +140 °F))	
• Ex nA/nL connection	To certified intrinsically safe circuits with peak values: $U_m = 45 \text{ V}$	To certified intrinsically safe circuits with peak values: $U_m = 32 \text{ V}$
• Ex ic connection	To certified intrinsically safe circuits with peak values: $U_i = 45 \text{ V}$	To certified intrinsically safe circuits with peak values: $U_i = 32 \text{ V}$
• Effective internal capacitance	$C_i = 6 \text{ nF}$	$C_i = 5 \text{ nF}$
• Effective internal inductance	$L_i = 0.4 \text{ mH}$	$L_i = 20 \text{ } \mu\text{H}$

## Communication

Communication	
<b>HART</b>	
HART	230 ... 1100 $\Omega$
Protocol	HART version 5.x
Software for computer	SIMATIC PDM
<b>PROFIBUS PA</b>	
Simultaneous communication with master class 2 (max.)	4
The address can be set using	Configuration tool or local operation (standard setting Address 126)
Cyclic data usage	
• Output byte	5 (one measured value) or 10 (two measured values)
• Input byte	0, 1 or 2 (totalizer mode and reset function for dosing)
Internal preprocessing	
Device profile	PROFIBUS PA Profile for Process Control Devices Version 3.0, Class B
Function blocks	2
• Analog input	
- Adaptation to user-specific process variable	Yes, linearly rising or falling characteristic curve
- Electrical damping adjustable	0 ... 100 s
- Simulation function	Output/input
- Failure mode	Parameterizable (last good value, substitute value, incorrect value)
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respectively

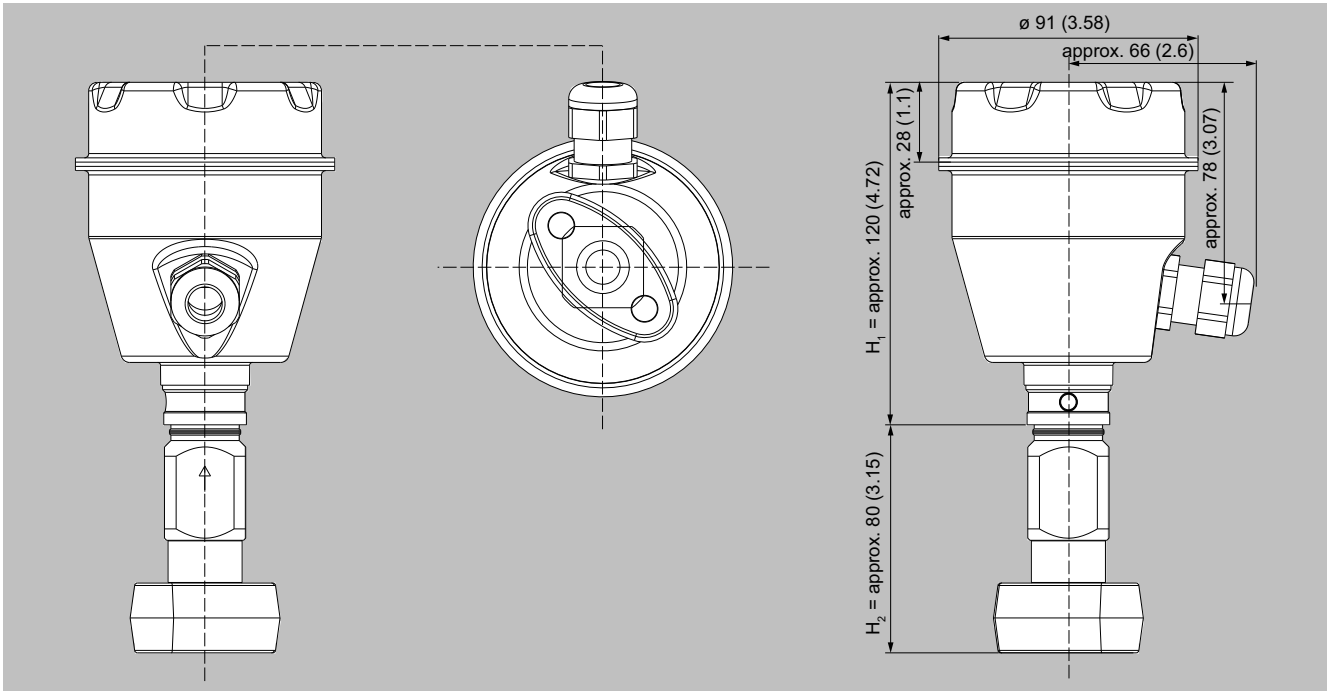
Communication	
• Register (totalizer)	Can be reset, preset, optional direction of counting, simulation function of register output
- Failure mode	Parameterizable (summation with last good value, continuous summation, summation with incorrect value)
- Limit monitoring	One upper and lower warning limit and one alarm limit respectively
• Physical block	1
Transducer blocks	2
• Pressure transducer block	
- Can be calibrated by applying two pressures	Yes
- Monitoring of sensor limits	Yes
- Specification of a vessel characteristic curve with	Max. 30 nodes
- Simulation function for measured pressure value and sensor temperature	Constant value or by means of parameterizable ramp function
<b>FOUNDATION Fieldbus</b>	
Function blocks	3 function blocks analog input, 1 function block PID
• Analog input	
- Adaptation to user-specific process variable	Yes, linearly rising or falling characteristic curve
- Electrical damping adjustable	0 ... 100 s
- Simulation function	Output/input (can be locked within the device with a bridge)
- Failure mode	Parameterizable (last good value, substitute value, incorrect value)
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respectively
- Square-rooted characteristic curve for flow measurement	Yes
• PID	Standard-FOUNDATION Fieldbus function block
• Physical block	1 resource block
Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block LCD
• Pressure transducer block	
- Can be calibrated by applying two pressures	Yes
- Monitoring of sensor limits	Yes
- Simulation function: Measured pressure value, sensor temperature and electronics temperature	Constant value or by means of parameterizable ramp function

## Pressure measurement

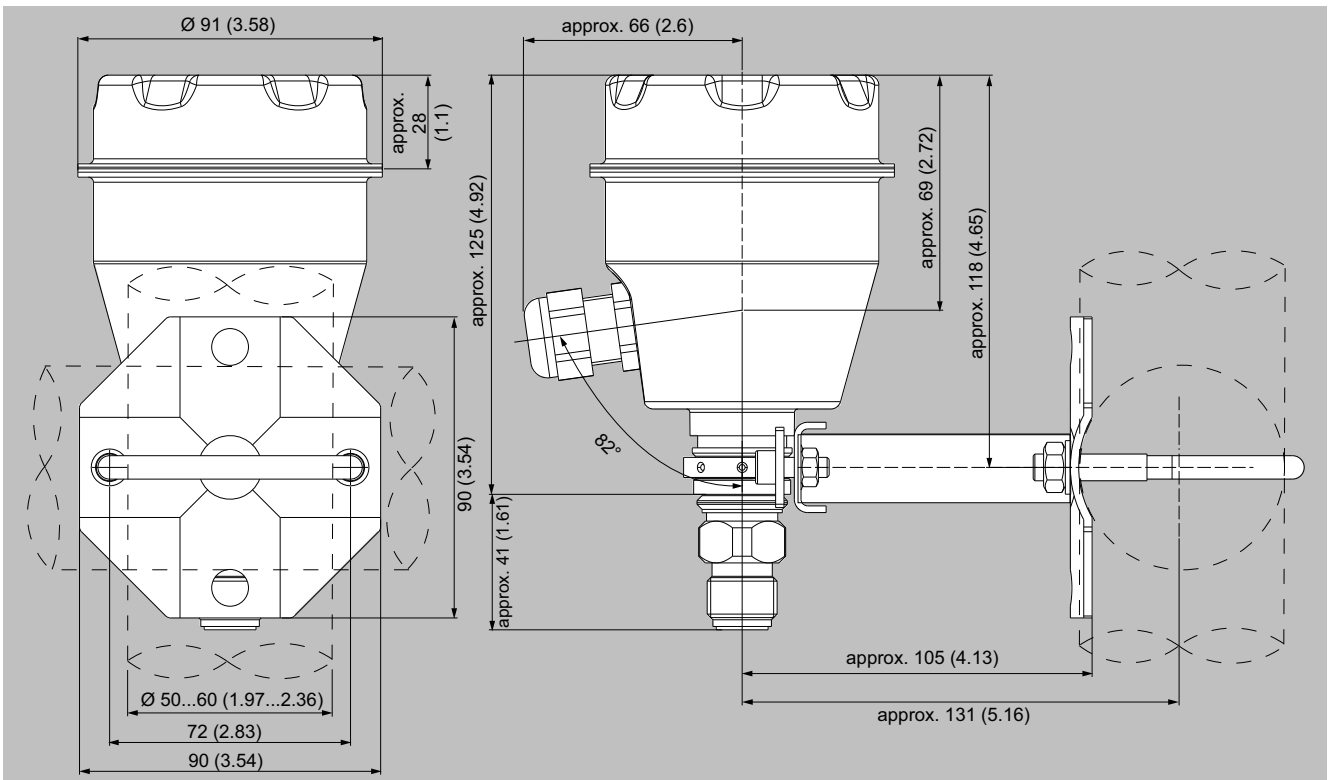
### Pressure transmitters

for food, pharmaceuticals and biotechnology / SITRANS P300

### Dimensional drawings

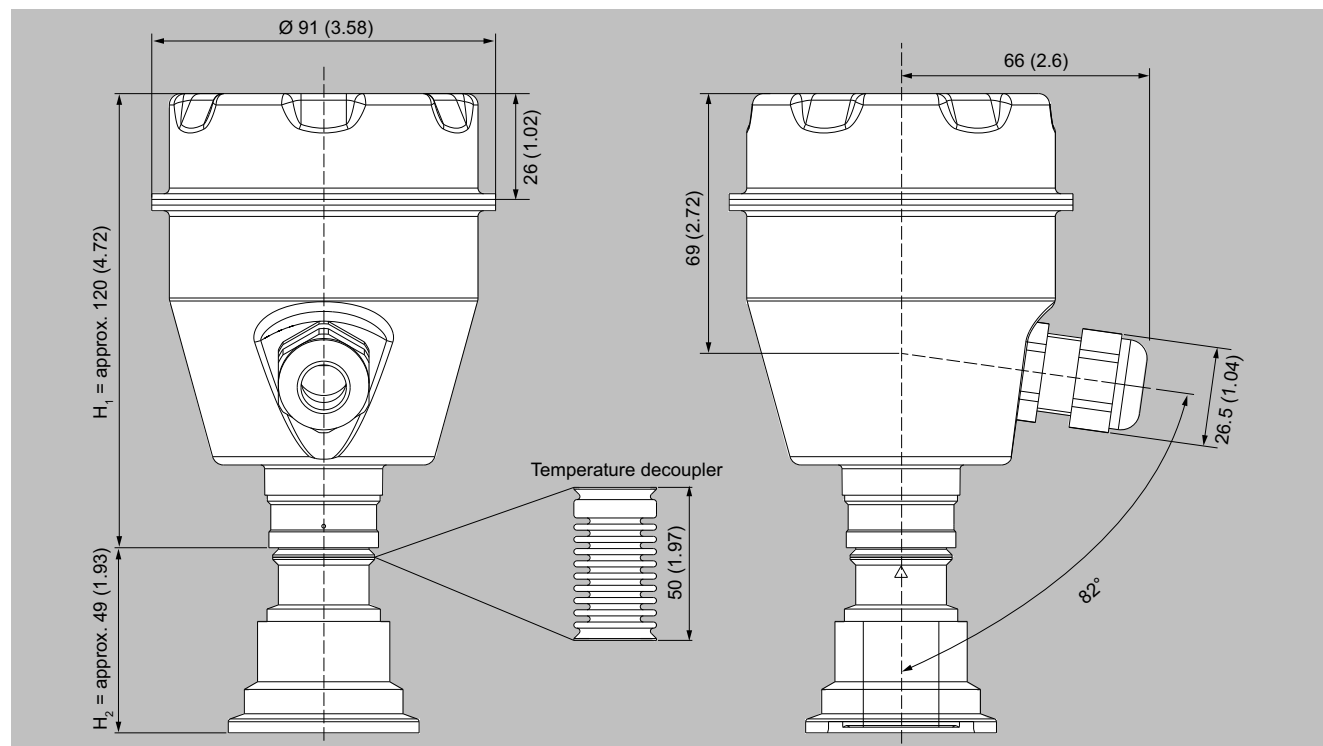


SITRANS P300, with oval flange, dimensions in mm (inch)



SITRANS P300, process connection M20 x 1.5, with built-in mounting bracket, dimensions in mm (inch)

## Dimensional drawings (continued)



SITRANS P300, flush-mounted, dimensions in mm (inch)

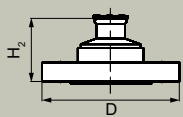
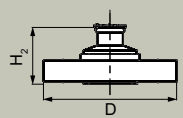
The figure shows a SITRANS P300 with an example flange. In this drawing the height is subdivided into  $H_1$  and  $H_2$ .

$H_1$  = Height of the SITRANS P300 up to a defined cross-section

$H_2$  = Height of the flange up to this defined cross-section

Only the height  $H_2$  is indicated in the dimensions of the flanges.

## Flanges according to EN and ASME

Flange	Order code	DN	PN	ØD	$H_2$
EN 1092-1 	M11	25	40	115 mm (4.5 inches)	Approx. 52 mm (2 inches)
	M13	40	40	150 mm (5.9 inches)	
	M23	40	100	170 mm (6.7 inches)	
	M04	50	16	165 mm (6.5 inches)	
	M14	50	40	165 mm (6.5 inches)	
	M06	80	16	200 mm (7.9 inches)	
	M16	80	40	200 mm (7.9 inches)	
ASME B16.5 	M40	1 inch	150	110 mm (4.3 inches)	Approx. 52 mm (2 inches)
	M41	1½ inches	150	130 mm (5.1 inches)	
	M42	2 inches	150	150 mm (5.9 inches)	
	M43	3 inches	150	190 mm (7.5 inches)	
	M44	4 inches	150	230 mm (9.1 inches)	
	M45	1 inch	300	125 mm (4.9 inches)	
	M46	1½ inches	300	155 mm (6.1 inches)	
	M47	2 inches	300	165 mm (6.5 inches)	
	M48	3 inches	300	210 mm (8.1 inches)	
	M49	4 inches	300	255 mm (10.0 inches)	

## Pressure measurement

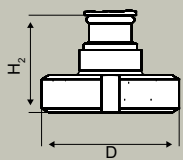
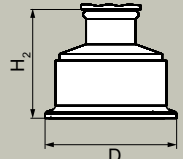
### Pressure transmitters

for food, pharmaceuticals and biotechnology / SITRANS P300

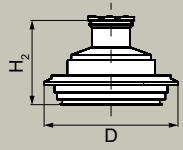
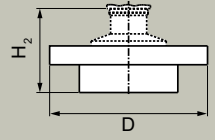
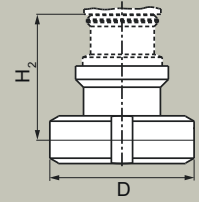
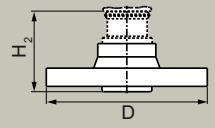
#### Dimensional drawings (continued)

##### NuG and pharmaceutical connections

Connections according to DIN

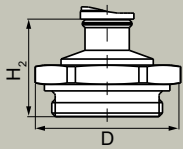
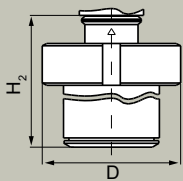
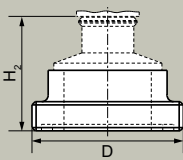
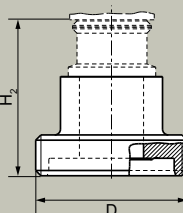
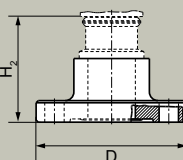
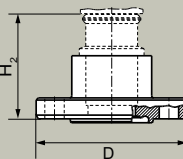
Connection	Order code	DN	PN	ØD	H <sub>2</sub>
DIN 11851 (dairy connection with slotted union nut) 	N04	50	25	92 mm (3.6 inches)	Approx. 52 mm (2 inches)
	N06	80	25	127 mm (5.0 inches)	
Tri-Clamp acc. to DIN 32676 	N14	50	16	64 mm (2.5 inches)	Approx. 52 mm (2 inches)
	N15	65	10	91 mm (3.6 inches)	

#### Other connections

Connection	Order code	DN	PN	ØD	H <sub>2</sub>
Varivent connection 	N28	40 ... 125	40	84 mm (3.3 inches)	Approx. 52 mm (2 inches)
Sanitary process connection according to DRD 	M32	50	40	105 mm (4.1 inches)	Approx. 52 mm (2 inches)
Sanitary process screw connection according to NEUMO BioConnect 	Q05	50	16	82 mm (3.2 inches)	Approx. 52 mm (2 inches)
	Q06	65	16	105 mm (4.1 inches)	
	Q07	80	16	115 mm (4.5 inches)	
	Q08	100	16	145 mm (5.7 inches)	
	Q13	2 inches	16	82 mm (3.2 inches)	
	Q14	2½ inches	16	105 mm (4.1 inches)	
	Q15	3 inches	16	105 mm (4.1 inches)	
Q16	4 inches	16	145 mm (5.7 inches)		
Sanitary process connection according to NEUMO BioConnect S flange connection 	Q72	2 inches	16	125 mm (4.9 inches)	Approx. 52 mm (2 inches)



## Dimensional drawings (continued)

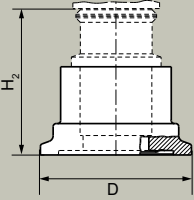
Connection	Order code	DN	PN	ØD	H <sub>2</sub>
<b>Threaded connection G<math>\frac{3}{4}</math> inch, G1 inch and G2 inch according to DIN 3852-2 Form A</b> 	R01 R02 R04	$\frac{3}{4}$ inch 1 inch 2 inches	60 60 60	37 mm (1.5 inches) 48 mm (1.9 inches) 78 mm (3.1 inches)	Approx. 45 mm (1.8 inches) Approx. 47 mm (1.9 inches) Approx. 52 mm (2 inches)
<b>Tank connection TG 52/50 and TG 52/150</b> 	R10 R11	25 25	40 40	63 mm (2.5 inches) 63 mm (2.5 inches)	Approx. 63 mm (2.5 inches) Approx. 170 mm (6.7 inches)
<b>SMS screwed connector</b> 	M73 M74 M75	2 inches 2½ inches 3 inches	25 25 25	70 x 1/6 mm 85 x 1/6 mm 98 x 1/6 mm	Approx. 52 mm (2.1 inches)
<b>Aseptic screwed connector according to DIN 11864-1 Form A</b> 	N33 N34 N35 N36	50 65 80 100	25 25 25 25	78 x 1/6 inch 95 x 1/6 inch 110 x ¼ inch 130 x ¼ inch	Approx. 52 mm (2.1 inches)
<b>Aseptic flange with notch according to DIN 11864-2 Form A</b> 	N43 N44 N45 N46	50 65 80 100	16 16 16 16	94 113 133 159	Approx. 52 mm (2.1 inches)
<b>Aseptic flange with groove according to DIN 11864-2 Form A</b> 	N43 + P11 N44 + P11 N45 + P11 N46 + P11	50 65 80 100	16 16 16 16	94 113 133 159	Approx. 52 mm (2.1 inches)

## Pressure measurement

### Pressure transmitters

for food, pharmaceuticals and biotechnology / SITRANS P300

#### Dimensional drawings (continued)

Connection	Order code	DN	PN	ØD	H <sub>2</sub>
Aseptic clamp with groove according to DIN 11864-3 Form A 	N53	50	25	77.5	Approx. 52 mm (2.1 inches)
	N54	65	25	91	
	N55	80	16	106	
	N56	100	16	130	

### Overview

The SITRANS P300 transmitter for gauge and absolute pressure can be delivered factory-fitted with the following valve manifold 7MF9011-4EA and 7MF9011-4FA.

### Design

The 7MF9011-4EA valve manifolds are sealed with PTFE sealings between the transmitter and the valve manifold as standard. Soft iron, stainless steel and copper sealings are also available for sealing purposes if preferred.

The 7MF9011-4FA valve manifolds are sealed with PTFE sealing tape between the transmitter and the valve manifold.

The complete unit is checked for leaks under pressure after assembly (air pressure 6 bar (87 psi)) and certified with a factory certificate according to EN 10204 - 2.2.

All valve manifolds should preferably be secured with the corresponding mounting brackets. The transmitters are mounted on the valve manifold and not on the unit itself.

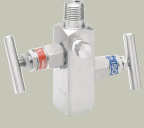
If you order a mounting bracket when choosing the option "Factory-mounting of valve manifolds", you will receive a mounting bracket for the valve manifold instead of a bracket for mounting the transmitter.

If you order an inspection certificate 3.1 to EN 10204 after choosing the option "Factory-mounting of valve manifolds", a separate certificate is provided for the transmitter and for the valve manifold.


### Selection and ordering data

#### Valve manifolds

#### 7MF9011-4FA valve manifold on gauge and absolute pressure transmitters

	Add -Z to the article number of the transmitter and specify order codes	Order code
	SITRANS P300 <b>7MF802-...1-...</b>	T03
	With process connection internal thread 1/2-14 NPT, in-sealed with PTFE sealing tape Delivery including high-pressure test certified by factory certificate according to EN 10204-2.2	
	<b>Additional versions:</b>	
	Delivery includes mounting bracket and stainless steel mounting clips (instead of the mounting bracket supplied with the transmitter)	A02
	Inspection certificate according to EN 10204-3.1 for transmitter and mounted valve manifold	C12

#### 7MF9011-4EA valve manifold on gauge and absolute pressure transmitters

	Add -Z to the article number of the transmitter and specify order codes	Order code
	SITRANS P300 <b>7MF802-...0-...</b>	T02
	With process connection shank G1/2 A according to EN 837-1, gasket made of PTFE between valve manifold and transmitter	
	<b>Alternative gasket material:</b>	
	• Soft iron	A70
	• Stainless steel, mat. no. 14571	A71
	• Copper	A72
	Delivery including high-pressure test certified by factory certificate according to EN 10204-2.2	
	<b>Additional versions:</b>	
	Delivery includes mounting bracket and stainless steel mounting clips (instead of the mounting bracket supplied with the transmitter)	A02
	Inspection certificate according to EN 10204- 3.1 for transmitters and mounted valve manifold	C12

## Pressure measurement

### Pressure transmitters

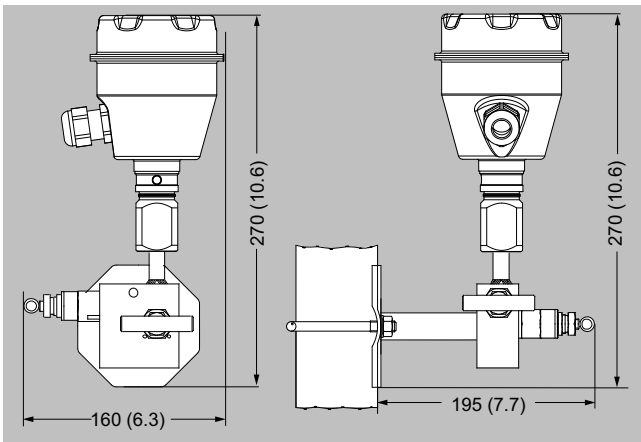
for food, pharmaceuticals and biotechnology / Factory mounting of valve manifolds on SITRANS P300

#### Dimensional drawings

Valve manifolds mounted on SITRANS P300



7MF9011-4EA valve manifold with mounted gauge pressure and absolute pressure transmitters

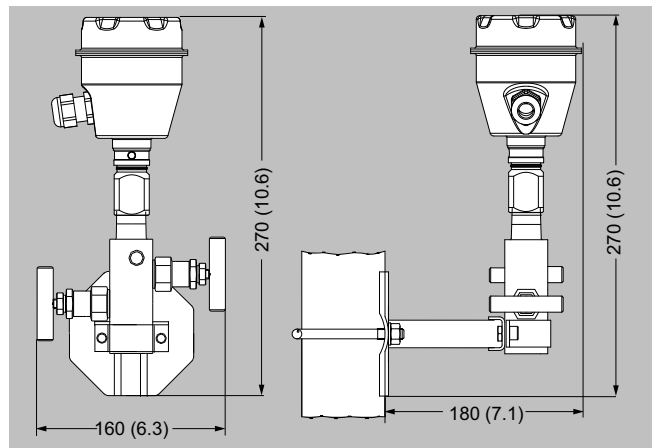


7MF9011-4EA valve manifold with mounted gauge pressure and absolute pressure transmitters, dimensions in mm (inch)

#### Dimensional drawings (continued)



7MF9011-4FA valve manifold with mounted gauge pressure and absolute pressure transmitters



7MF9011-4FA valve manifold with mounted gauge pressure and absolute pressure transmitters, dimensions in mm (inch)

## Overview



SITRANS P300, pressure transmitter with PMC connection for paper industry

The SITRANS P300 pressure transmitter has been fitted with special process connections for the paper industry. With the two process connection threads 1½" and 1" flush at the front, the SITRANS P300 transmitter can be used in all processes of the paper industry.

The SITRANS P300 pressure transmitter is a digital pressure transmitter featuring extensive user-friendliness and high accuracy. The parameterization is performed using control keys or via HART communication or via PROFIBUS PA or FOUNDATION Fieldbus interface.

The comprehensive functionality makes for precise adjustment of the pressure transmitter to the requirements of the plant. Operation is very simple in spite of the numerous setting options.

Pressure transmitters of the "Intrinsic safety" and "Flameproof" type of protection can be installed within hazardous areas (zone 1) or in zone 0. The devices are provided with an EC type-examination certificate and comply with the corresponding harmonized European standards (ATEX).

Various versions of the pressure transmitters are available for measuring:

- Gauge pressure
- Level
- Volume level
- Mass level

## Benefits

- High quality and service life
- High reliability even under extreme chemical and mechanical loads, e.g. abrasion
- For corrosive and non-corrosive gases, vapors and liquids
- Extensive diagnostics and simulation functions
- Minimal conformity error
- Small long-term drift
- Wetted parts made of Hastelloy
- Continuously adjustable measuring spans from 0.03 bar to 16 bar (0.43 psi to 232 psi) with HART interface
- Nominal measuring ranges from 1 bar to 16 bar (14.5 psi to 232 psi) with PROFIBUS PA interface
- High measuring accuracy
- Parameterization using control keys or HART and/or PROFIBUS PA or FOUNDATION Fieldbus

## Application

The SITRANS P300 pressure transmitter for gauge pressure with PMC connection is used in the paper industry.

Pressure transmitters of the "Intrinsic safety" and "Flameproof" type of protection can be installed within hazardous areas (zone 1) or in zone 0. The pressure transmitters are provided with an EC type-examination certificate and comply with the corresponding harmonized European standards (ATEX).

Pressure transmitters with the type of protection "Intrinsic safety" for use in zone 0 may be operated with power supply units of category "ia" and "ib".

The pressure transmitters can be equipped with various designs of remote seals for special applications such as the measurement of highly viscous substances.

The pressure transmitter can be operated locally over 3 input buttons or programmed externally over HART or over PROFIBUS PA or FOUNDATION Fieldbus interface.

### Measuring span (continuously adjustable)

P300 with HART: 0.01 to 16 bar (0.15 to 232 psi)

### Nominal measuring range

For P300 with PROFIBUS PA and FOUNDATION Fieldbus:  
1 to 16 bar (14.5 to 232 psi)

## Pressure measurement

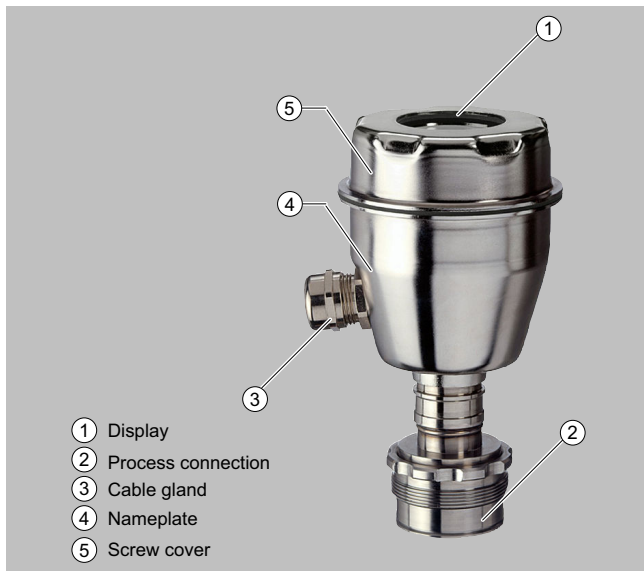
### Pressure transmitters

for the paper industry / SITRANS P300 with PMC connection

#### Design

The SITRANS P300 pressure transmitter consists of:

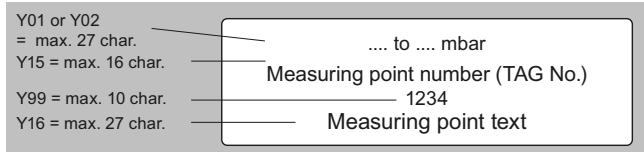
- electronics
- Enclosure
- Measuring cell



Perspective view of the SITRANS P300

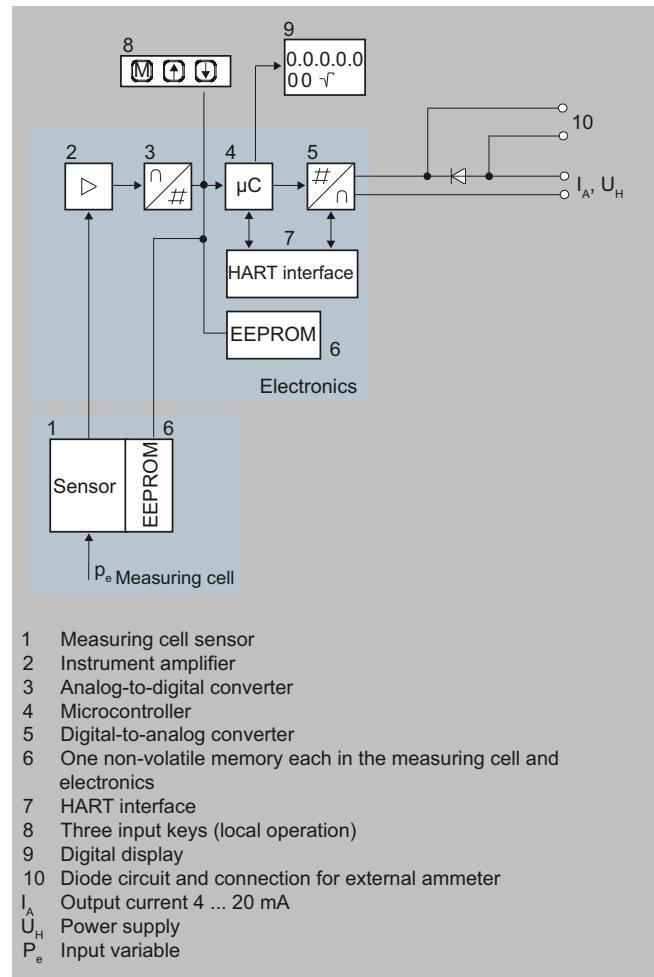
The enclosure has a screw-on cover (5) and, depending on the version, comes with or without an inspection window. The electrical terminal compartment, the buttons for operation of the device and, depending on the version, the display are located under this cover. The connections for the auxiliary power  $U_H$  and the shield are in the terminal compartment. The cable gland is on the side of the enclosure. The measuring cell with the process connection (2) is located on the bottom of the enclosure. The measuring cell with the process connection may differ from the one shown in the diagram, depending on the device design.

#### Example of attached measuring point label



#### Function

##### Operation of electronics with HART communication



Function diagram of electronics

The bridge output voltage created by the sensor (1, Figure "Function diagram of electronics") is amplified by the measuring amplifier (2) and digitalized in the analog-to-digital converter (3). The digital information is evaluated in a microcontroller, corrected for linearity and temperature response, and converted in a digital-to-analog converter (5) into an output current of 4 to 20 mA.

The diode circuit (10) protects against incorrect polarity.

The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). One memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced separately from each other.

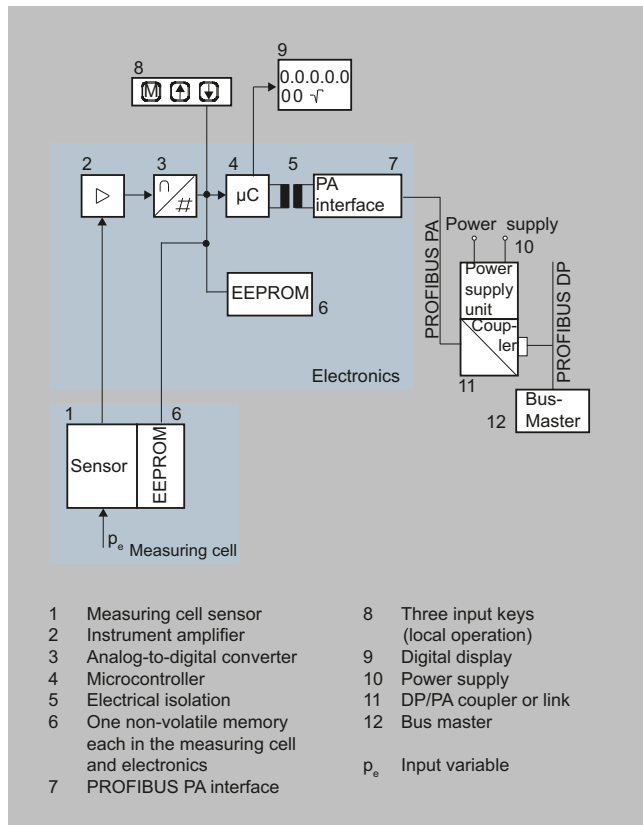
Using the 3 input buttons (8), you can parameterize the pressure transmitter directly at the measuring point. The input buttons can also be used to control the view of the measurement results, the error messages and the operating modes on the display (9).

The HART modem (7) permits parameterization using a protocol according to the HART specification.

The pressure transmitters with measuring spans  $\leq 63$  bar measure the input pressure compared to atmosphere, transmitters with spans  $\geq 160$  bar the input pressure compared to vacuum.

## Function (continued)

## Operation of electronics with PROFIBUS PA communication



Function diagram of electronics

The bridge output voltage created by the sensor (1, Figure "Function diagram of electronics") is amplified by the measuring amplifier (2) and digitalized in the analog-to-digital converter (3). The digital information is evaluated in the microcontroller, corrected for linearity and temperature response, and made available on the PROFIBUS PA via an electrically isolated PA interface (7).

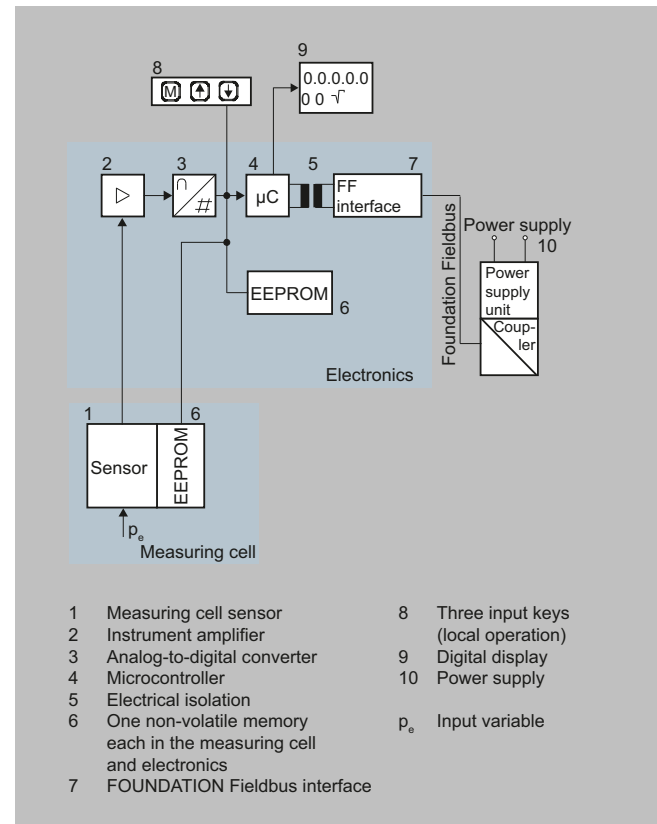
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). One memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced separately from each other.

Using the three input buttons (8), you can parameterize the pressure transmitter directly at the measuring point. The input buttons can also be used to control the view of the measurement results, the error messages and the operating modes on the display (9).

The results with status values and diagnostics data are transferred by cyclic data transmission on the PROFIBUS PA. Parameterization data and error messages are transferred by acyclic data transmission. Special software such as SIMATIC PDM is required for this.

## Function (continued)

## Operation of electronics with FOUNDATION Fieldbus communication



Function diagram of electronics

The bridge output voltage created by the sensor (1, Figure "Function diagram of electronics") is amplified by the measuring amplifier (2) and digitalized in the analog-to-digital converter (3). The digital information is evaluated in the microcontroller, corrected for linearity and temperature response and made available on the FOUNDATION Fieldbus via an electrically isolated FOUNDATION Fieldbus interface (7).

The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). One memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced separately from each other.

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## Pressure measurement

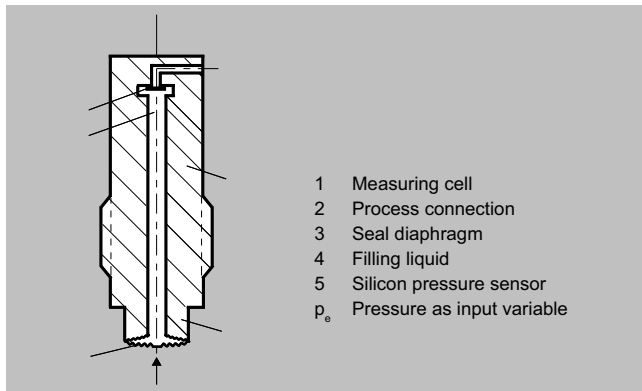
### Pressure transmitters

#### for the paper industry / SITRANS P300 with PMC connection

#### Function (continued)

##### Mode of operation of the measuring cell

##### Measuring cell for gauge pressure with flush-mounted diaphragm



- 1 Measuring cell
  - 2 Process connection
  - 3 Seal diaphragm
  - 4 Filling liquid
  - 5 Silicon pressure sensor
- $p_e$  Pressure as input variable

Measuring cell for gauge pressure, with flush-mounted diaphragm for paper industry, function diagram

The pressure  $p_e$  is applied through the process connection (2, Figure "Measuring cell for gauge pressure, with flush-mounted diaphragm for paper industry, function diagram") to the measuring cell (1). This pressure is subsequently transmitted further through the seal diaphragm (3) and the filling liquid (4) to the silicon pressure sensor (5) whose measuring diaphragm is then flexed. This changes the resistance of the four piezo-resistors fitted in the diaphragm in a bridge circuit. This change in resistance results in a bridge output voltage proportional to the input pressure.

##### Parameterization

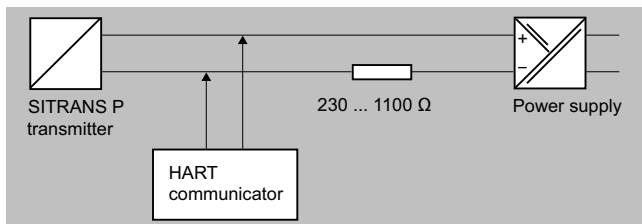
Depending on the version, there are a range of options for parameterizing the pressure transmitter and for setting or scanning the parameters.

##### Parameterization using the input buttons (local operation)

With the input buttons, you can easily set the most important parameters without any additional equipment.

##### Parameterization using HART

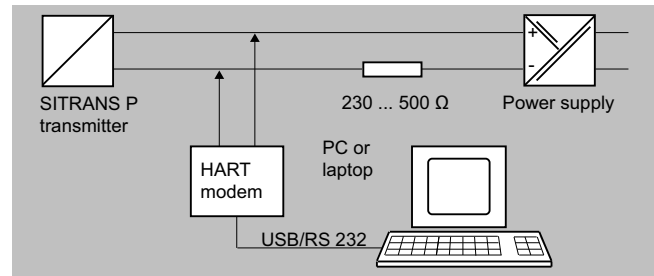
Parameterization using HART is performed with a HART Communicator or a PC.



Communication between a HART Communicator and a pressure transmitter

When parameterizing with the HART Communicator, the connection is made directly to the 2-wire cable.

#### Function (continued)



HART communication between a PC communicator and a pressure transmitter

When parameterizing with a PC, the connection is made through a HART modem.

The signals needed for communication in conformity with the HART 5.x or 6.x protocols are superimposed on the output current using FSK (Frequency Shift Keying).

##### Adjustable parameters for SITRANS P300 with HART

Parameters	Input buttons HART	
Lower range value	x	x
Upper range value	x	x
Electrical damping	x	x
Blind adjustment of the lower range value	x	x
Blind adjustment of the upper range value	x	x
Zero adjustment	x	x
Current simulator	x	x
Fault current	x	x
Disabling of buttons, write protection	x	x <sup>1)</sup>
Type of unit, unit	x	x
Characteristic curve (linear)	x	x
Input of characteristic curve		x
Freely-programmable LCD		x
Diagnostic functions		x

<sup>1)</sup> Except cancel write protection.

##### Diagnostic functions for SITRANS P300 with HART

- Zero correction display
- Event counter
- Limit transmitter
- Saturation alarm
- Min/max pointer
- Simulation functions
- Maintenance timer

##### Available physical units of display for SITRANS P300 with HART

Physical variable	Physical units
Pressure (can also be preset in the factory)	Pa, MPa, kPa, bar, mbar, torr, atm, psi, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , inH <sub>2</sub> O, inH <sub>2</sub> O (4 °C), mmH <sub>2</sub> O, ftH <sub>2</sub> O (20 °C), inHg, mmHg
Level (height data)	m, cm, mm, ft, in
Volume	m <sup>3</sup> , dm <sup>3</sup> , hl, yd <sup>3</sup> , ft <sup>3</sup> , in <sup>3</sup> , US gallon, Imp. gallon, bushel, barrel, barrel liquid
Mass	g, kg, t, lb, Ston, Lton, oz
Temperature	K, °C, °F, °R
Other	%, mA



### Function (continued)

#### Parameterization through PROFIBUS interface

Fully digital communication through PROFIBUS PA, profile 3.0, is particularly user-friendly. Communication is possible even in a hazardous area.

For parameter assignment via PROFIBUS, you need suitable software, e.g. SIMATIC PDM (Process Device Manager)

#### Parameterization through FOUNDATION Fieldbus interface

Fully digital communication through FOUNDATION Fieldbus is particularly user-friendly. Communication is possible even in a hazardous area.

For parameterization through the FOUNDATION Fieldbus you need suitable software, e.g. National Instruments Configurator.

#### Adjustable parameters for SITRANS P300 with PROFIBUS PA and FOUNDATION Fieldbus

Adjustable parameters	Input buttons	PROFIBUS PA and FOUNDATION Fieldbus
Electrical damping	x	x
Zero adjustment (correction of position)	x	x
Buttons and/or function disabling	x	x
Source of measured value display	x	x
Physical unit of display	x	x
Position of decimal point	x	x
Bus address	x	x
Adjustment of characteristic curve	x	x
Input of characteristic curve		x
Freely-programmable LCD		x
Diagnostic functions		x

#### Diagnostic functions for SITRANS P300 with PROFIBUS PA and FOUNDATION Fieldbus

- Event counter
- Min/max pointer
- Maintenance timer
- Simulation functions
- Zero correction display
- Limit transmitter
- Saturation alarm

#### Physical units available for the display

Physical variable	Physical units
Pressure (can also be preset in the factory)	MPa, hPa, kPa, Pa, bar, mbar, torr, atm, psi, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , mmH <sub>2</sub> O, mmH <sub>2</sub> O (4 °C), inH <sub>2</sub> O, inH <sub>2</sub> O (4 °C), ftH <sub>2</sub> O, mmHg, inHg
Level (height data)	m, cm, mm, ft, in, yd
Mass	g, kg, t, lb, Ston, Lton, oz
Volume	m <sup>3</sup> , dm <sup>3</sup> , hl, yd <sup>3</sup> , ft <sup>3</sup> , in <sup>3</sup> , US gallon, Imp. gallon, bushel, barrel, barrel liquid
Temperature	K, °C, °F, °R
Other	%

# Pressure measurement

## Pressure transmitters

for the paper industry / SITRANS P300 with PMC connection

### Selection and ordering data

		Article No.
SITRANS P300 pressure transmitters with PMC connection, single chamber enclosure, nameplate inscription in English		
4 ... 20 mA / HART		7MF8123-
PROFIBUS PA		7MF8124-
FOUNDATION Fieldbus (FF)		7MF8125-
		● ● ● ● ● - ● ● ● ● ●
Click the article number for online configuration in the PIA Life Cycle Portal.		
<b>Measuring cell filling</b>	<b>Measuring cell cleaning</b>	
Silicone oil	Normal	1
Inert liquid	Cleanliness level 2 according to DIN 25410	3
<b>Measuring span</b>		
1 bar (14.5 psi) <sup>1)</sup>		B
4 bar (58 psi)		C
16 bar (232 psi)		D
<b>Material of wetted parts</b>		
<u>Seal diaphragm</u>	<u>Measuring cell</u>	
Hastelloy	Stainless steel	B
<b>Process connection</b>		
PMC style Standard: Thread 1½"		2
PMC style Minibolt: Flush-mounted 1" (minimum measuring span: 500 mbar (200 inH <sub>2</sub> O), cannot be ordered with 1 bar measuring cell (option B))		3
<b>Material of non-wetted parts</b>		
Stainless steel, deep-drawn and electrolytically polished		4
<b>Version</b>		
Standard version		1
<b>Explosion protection</b>		
None		A
With ATEX, type of protection:		
• "Intrinsic safety (Ex ia)"		B
• Zone 20/21/22 <sup>2)</sup>		C
• Ex nA/nL (Zone 2) <sup>3)</sup>		E
With FM + CSA, type of protection:		
• "Intrinsic Safe (is)" (planned) <sup>4)</sup>		M
<b>Electrical connection/cable entry</b>		
Screw gland M20×1.5 (polyamide) <sup>5)</sup>		A
Screw gland M20×1.5 (metal)		B
Screw gland M20×1.5 (stainless steel)		C
Device plug M12 (stainless steel, without cable socket)		G
½-14 NPT threaded metal <sup>6)</sup>		H
½-14 NPT threaded stainless steel <sup>6)</sup>		J
<b>Display</b>		
Without local display, with buttons, closed lid		1
With local display and buttons, closed lid <sup>7)</sup>		2
With local display and buttons, lid with polycarbonate pane (setting for HART devices: mA, for PROFIBUS PA and FOUNDATION Fieldbus devices: pressure units) <sup>7)</sup>		4
With local display and buttons (setting acc. to specifications, order code "Y21" or "Y22" required), lid with polycarbonate pane <sup>7)</sup>		5
With local display and buttons, lid with glass pane (setting for HART devices: mA, for PROFIBUS PA and FOUNDATION Fieldbus devices: pressure unit) <sup>7)</sup>		6
With local display and buttons (setting acc. to specifications, order code "Y21" or "Y22" required), lid with glass pane <sup>7)</sup>		7

#### Note

See section "Supplementary components" for supply units. The device's scope of delivery includes a brochure and a sealing ring.

- 1) Only with "Standard" process connection
- 2) Can only be ordered together with electrical connection option A.
- 3) Can only be ordered together with electrical connection option B, C or G.
- 4) Explosion protection acc. to FM/CSA: suitable for installations according to NEC 500/505. 5) Only together with HART electronics.
- 6) Without cable gland.
- 7) Local display cannot be rotated.

Options	Order code	Communication
<b>Add "-Z" to article number and specify order code.</b>		
<b>Cable socket for M12 device plug</b>		
Stainless steel	A51	HART / PQ / FF
<b>Nameplate inscription (in place of English)</b>		
• German	B10	HART / PQ / FF
• French	B12	HART / PQ / FF

## Selection and ordering data (continued)

Options	Order code	Communication
<b>Add "-Z" to article number and specify order code.</b>		
• Spanish	B13	HART / PQ / FF
• Italian	B14	HART / PQ / FF
<b>English nameplate, pressure units in inH<sub>2</sub>O or psi</b>	B21	HART / PQ / FF
<b>Quality inspection certificate (5-point characteristic curve test) according to IEC 62828-2<sup>1)</sup></b>	C11	HART / PQ / FF
<b>Inspection certificate according to EN 10204-3.1<sup>2)</sup></b>	C12	HART / PQ / FF
<b>Factory certificate according to EN 10204-2.2</b>	C14	HART / PQ / FF
<b>Setting of the upper saturation limit of the output signal to 22.0 mA</b>	D05	HART / PQ / FF
<b>IP65/IP68 degree of protection only for M20x1.5 and ½-14 NPT</b>	D12	HART / PQ / FF
<b>Mounting</b>		
Weld-in sockets for standard threaded connection 1½"	P01	HART / PQ / FF
Weld-in sockets for minibolt connection 1" (including screw 5/16-18 UNC-2B and washer)	P02	HART / PQ / FF
<b>Additional information</b> Add "-Z" to article number, specify order code and plain text.		
<b>Measuring range to be set</b> Specify in plain text (max. 5 digits): Y01: ... to ... mbar, bar, kPa, MPa, psi	Y01	HART / PQ <sup>1)</sup>
<b>Tag plate made of stainless steel and entry in the device variable (measuring point description)</b> Max. 16 characters; specify in plain text: Y15: .....	Y15	HART / PQ / FF

Options	Order code	Communication
<b>Add "-Z" to article number and specify order code.</b>		
<b>Measuring point text (entry in device variable)</b> Max. 27 characters; specify in plain text: Y16: .....	Y16	HART / PQ / FF
<b>Entry of HART TAG</b> Max. 8 characters; specify in plain text: Y17: .....	Y17	HART
<b>Setting of the local display in pressure units</b> Specify in plain text (default setting: bar): Y21: mbar, bar, kPa, MPa, psi, ... <b>Note</b> The following pressure units can be selected: bar, mbar, mm H <sub>2</sub> O <sup>3)</sup> , inH <sub>2</sub> O <sup>3)</sup> , ftH <sub>2</sub> O <sup>3)</sup> , mmHG, inHG, psi, Pa, kPa, MPa, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , Torr, ATM or %	Y21	HART / PQ / FF
<b>Setting of the local display in non-pressure units<sup>9)</sup></b> Specify in plain text: Y22: ..... to ..... l, m <sup>3</sup> , m, USg, ... (Specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	Y22 + Y01	HART
<b>Preset bus address, possible range 1 ... 126</b> Specify in plain text: Y25: .....	Y25	PQ / FF

**Note:**

Only "Y01" and "Y21" can be factory preset.

- 1) Measuring accuracies for PROFIBUS PA transmitters with option Y01 are calculated in the same way as for HART devices.
- 2) Preset values can only be changed via SIMATIC PDM.
- 3) 20 °C reference temperature.

# Pressure measurement

## Pressure transmitters

for the paper industry / SITRANS P300 with PMC connection

### Technical specifications

#### SITRANS P300 for gauge pressure with PMC connection for the paper industry

SITRANS P300 for gauge pressure with PMC connection for the paper industry				
<b>Input</b>				
Measured variable	Gauge pressure (flush-mounted)			
Measuring span (continuously adjustable) or nominal measuring range and max. permissible test pressure	<b>HART</b>	<b>PROFIBUS PA/FOUNDATION Fieldbus</b>		
	Measuring span	Nominal measuring range	Max. permissible operating pressure MAWP (PS)	Max. permissible test pressure
	0.01 ... 1 bar 1 ... 100 kPa 0.15 ... 14.5 psi	1 bar 100 kPa 14.5 psi	4 bar 400 kPa 58 psi	6 bar 600 kPa 87 psi
	0.04 ... 4 bar 4 ... 400 kPa 0.58 ... 58 psi	4 bar 400 kPa 58 psi	7 bar 0.71 MPa 102 psi	10 bar 1 MPa 145 psi
	0.16 ... 16 bar 16 ... 1600 kPa 2.3 ... 232 psi	16 bar 1600 kPa 232 psi	21 bar 2.1 MPa 305 psi	32 bar 3.2 MPa 464 psi
Lower measuring limit (for PMC Style Minibolt no measuring span < 500 mbar adjustable)	100 mbar a/10 kPa a/1.45 psi a			
Upper measuring limit	100% of max. measuring span			
<b>Output</b>				
Output signal	<b>HART</b>	<b>PROFIBUS PA/FOUNDATION Fieldbus</b>		
• Lower limit (continuously adjustable)	4 ... 20 mA	Digital PROFIBUS PA signal		
• Upper limit (continuously adjustable)	3.55 mA, factory set to 3.84 mA	-		
Load	23 mA, factory-set to 20.5 mA or optionally set to 22.0 mA	-		
• Without HART	$R_B \leq (U_H - 10.5 \text{ V}) / 0.023 \text{ A}$ in $\Omega$ , $U_H$ : Auxiliary power in V	-		
• With HART	$R_B = 230 \dots 500 \Omega$ (SIMATIC PDM) or $R_B = 230 \dots 1100 \Omega$ (HART communicator)	-		
Physical bus	-	IEC 61158-2		
Protection against polarity reversal	Protected against short-circuit and polarity reversal. Each connection against the other with max. supply voltage.			
Electrical damping (step width 0.1 s)	Set to 2 s (0 ... 100 s)			
<b>Measuring accuracy</b>				
Reference conditions	According to IEC 62828-1			
	<ul style="list-style-type: none"> <li>• Rising characteristic curve</li> <li>• Lower range value 0 bar</li> <li>• Seal diaphragm stainless steel</li> <li>• Silicone oil filling</li> <li>• Room temperature (25 °C (77 °F))</li> </ul>			
Measuring span ratio r (spread, Turn-Down)	r = maximum measuring span/set measuring span or nominal measuring range			
Measurement deviation at limit setting including hysteresis and reproducibility				
• Linear characteristic curve				
- $r \leq 5$	$\leq 0.075\%$			
- $5 < r \leq 100$	$\leq (0.005 \cdot r + 0.05)\%$			
Effect of ambient temperature	$\leq (0.08 \cdot r + 0.16)\%$			
Long-term stability (temperature change $\pm 30 \text{ °C}$ ( $\pm 54 \text{ °F}$ ))	$\leq (0.25 \cdot r)\%$ in 5 years			
Influence of mounting position	$\leq 0.1 \text{ mbar}/0.01 \text{ kPa}/0.00145 \text{ psi}$ per $10^\circ$ incline (zero offset is possible with position error compensation)			
Effect of auxiliary power (in percent per voltage change)	0.005% per 1 V			
Measured value resolution for PROFIBUS PA and FOUNDATION Fieldbus	$3 \cdot 10^{-5}$ of nominal measuring range			
<b>Operating conditions</b>				
<b>Installation conditions</b>				
Ambient temperature	Observe the temperature class in hazardous areas.			
• Measuring cell with silicone oil	-40 ... +85 °C (-40 ... +185 °F)			
• Display readable	-30 ... +85 °C (-22 ... +185 °F)			
• Storage temperature	-50 ... +85 °C (-58 ... +185 °F)			

## Technical specifications (continued)

SITRANS P300 for gauge pressure with PMC connection for the paper industry		
Climatic class		
Condensation	Relative humidity 0 ... 100% Condensation permissible, suitable for use in the tropics	
Degree of protection		
• According to EN 60529	IP65, IP68	
• According to NEMA 250	Type 4X, enclosure cleaning, resistant to lyes, steam to 150 °C (302 °F)	
Electromagnetic compatibility		
• Emitted interference and interference immunity	Acc. to EN 61326 and NAMUR NE 21	
<b>Process conditions</b>		
Medium temperature		
• Measuring cell with silicone oil	-40 ... +100 °C (-40 ... +212 °F)	
<b>Structural design</b>		
Weight (without options)	Approx. 1 kg (2.2 lbs)	
Enclosure material	Stainless steel, mat. no. 1.4301/304	
Material of wetted parts		
• Seal diaphragm	Hastelloy C276, mat. no. 2.4819	
• Measuring cell filling	Silicone oil	
Surface quality touched-by-media	R <sub>a</sub> -values ≤ 0.8 μm (32 μ-inch)/welds Ra ≤ 1.6 μm (64 μ-inch)	
<b>Auxiliary power U<sub>H</sub></b>	<b>HART</b>	<b>PROFIBUS PA/FOUNDATION Fieldbus</b>
Terminal voltage on transmitter	10.5 ... 42 V DC for intrinsically safe operation: 10.5 ... 30 V DC	-
Auxiliary power	-	Bus-powered
Separate supply voltage	-	Not necessary
Bus voltage		
• Without EEx	-	9 ... 32 V
• With intrinsically safe operation	-	9 ... 24 V
Current consumption		
• Max. basic current	-	12.5 mA
• Starting current ≤ basic current	-	Yes
• Max. fault current in the event of an error	-	15.5 mA
Fault disconnection electronics (FDE) available	-	Yes
<b>Certificates and approvals</b>	<b>HART</b>	<b>PROFIBUS PA/FOUNDATION Fieldbus</b>
Classification according to pressure equipment directive (PED 2014/68/EU)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)	
Explosion protection		
Intrinsic safety "i"	PTB 05 ATEX 2048	
Marking	II 1/2 G Ex ia IIC/IIB T4/T5/T6 Ga/Gb	
Permissible ambient temperature		
• Temperature class T4	-40 ... +85 °C (-40 ... +185 °F)	
• Temperature class T5	-40 ... +70 °C (-40 ... +158 °F)	
• Temperature class T6	-40 ... +60 °C (-40 ... +140 °F)	
Connection	To certified intrinsically safe circuits with peak values: U <sub>i</sub> = 30 V, I <sub>i</sub> = 100 mA, P <sub>i</sub> = 750 mW, R <sub>i</sub> = 300 Ω	To certified intrinsically safe circuits with peak values: <b>FISCO supply unit:</b> U <sub>i</sub> = 17.5 V, I <sub>i</sub> = 380 mA, P <sub>i</sub> = 5.32 W <b>Linear barrier:</b> U <sub>i</sub> = 24 V, I <sub>i</sub> = 250 mA, P <sub>i</sub> = 1.2 W
Effective internal capacitance	C <sub>i</sub> = 6 nF	C <sub>i</sub> = 1.1 nF
Effective internal inductance	L <sub>i</sub> = 0.4 mH	L <sub>i</sub> = 7 μH

# Pressure measurement

## Pressure transmitters

### for the paper industry / SITRANS P300 with PMC connection

#### Technical specifications (continued)

##### SITRANS P300 for gauge pressure with PMC connection for the paper industry

Explosion protection to FM for USA and Canada (cFM<sub>US</sub>)

- Identification (DIP) or (IS); (NI)

Certificate of Compliance 3025099

CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4 ... T6  
CL I, DIV 2, GP ABCD T4 ... T6; CL II, DIV 2, GP FG; CL III

- Identification (DIP) or (IS)

Certificate of Compliance 3025099C

CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4 ... T6  
CL I, DIV 2, GP ABCD T4 ... T6; CL II, DIV 2, GP FG; CL III

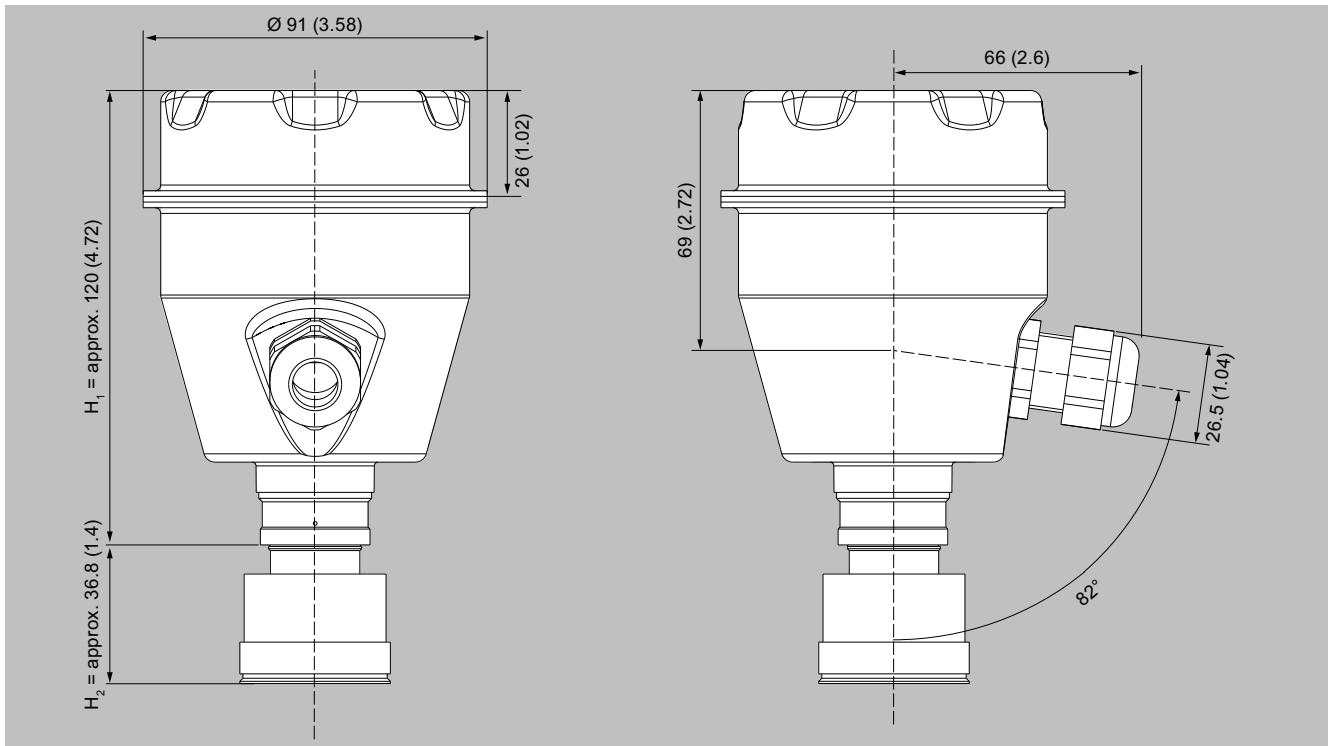
#### Communication

Communication	
<b>HART</b>	
HART	230 ... 1 100 Ω
Protocol	HART version 5.x
Software for computer	SIMATIC PDM
<b>PROFIBUS PA</b>	
Simultaneous communication with master class 2 (max.)	4
The address can be set using	Configuration tool or local operation (default setting address 126)
Cyclic data usage	
• Output byte	1 measured value: 5 bytes 2 measured values: 10 bytes
• Input byte	Register operation mode: 1 byte Reset function due to dosing: 1 byte
Device profile	PROFIBUS PA Profile for Process Control Devices Version 3.0, Class B
Function blocks	2
• Analog input	
- Adaptation to user-specific process variable	Linearly rising or falling characteristic curve
- Electrical damping	0 ... 100 s adjustable
- Simulation function	Output/input
- Limit monitoring	One upper and lower warning limit and one alarm limit respectively
• Register (totalizer)	Can be reset and preset Selectable direction of counting Simulation function of the register output
- Limit monitoring	One upper and lower warning limit and one alarm limit respectively
• Physical block	1
Transducer blocks	2
• Pressure transducer block	
- Monitoring of sensor limits	Yes
- Specification of a vessel characteristic curve with	Max. 31 nodes
- Characteristic curve	Linear

#### Communication

- Simulation function	Available
• Transducer block "Electronics temperature"	
Simulation function	Available
<b>FOUNDATION Fieldbus</b>	
Function blocks	3 function blocks analog input, 1 function block PID
• Analog input	
- Adaptation to user-specific process variable	Yes, linearly rising or falling characteristic curve
- Electrical damping adjustable	0 ... 100 s
- Simulation function	Output/input (can be locked within the device with a bridge)
- Failure mode	Parameterizable (last good value, substitute value, incorrect value)
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respectively
- Square-rooted characteristic curve for flow measurement	Yes
• PID	Standard FOUNDATION Fieldbus function block
• Physical block	1 resource block
Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block LCD
• Pressure transducer block	
- Can be calibrated by applying two pressures	Yes
- Monitoring of sensor limits	Yes
- Simulation function: pressure measurement, sensor temperature and electronics temperature	Constant value or by means of parameterizable ramp function

## Dimensional drawings

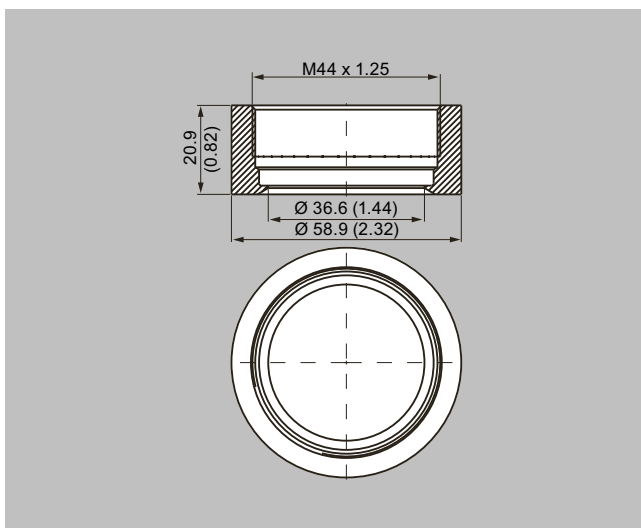


SITRANS P300 pressure transmitter for gauge pressure, with PMC connection, dimensions in mm (inch)

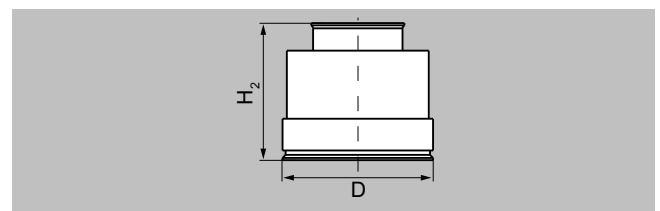
The figure shows a SITRANS P300 with an example flange. In this drawing, the height is subdivided into  $H_1$  and  $H_2$ :

- $H_1$  = Height of the SITRANS P300 up to a defined cross-section
- $H_2$  = Height of the flange up to this defined cross-section

Only the height  $H_2$  is indicated in the dimensions of the flanges.

**PMC Style standard weldable sockets**

PMC Style Standard weldable sockets, dimensions in mm (inch)



Material: Stainless steel, mat. no. 1.4404/316L

$\text{Ø}D = 40.9 \text{ mm (1.6")}$

$H_2 = \text{approx. } 36.8 \text{ mm (1.4")}$

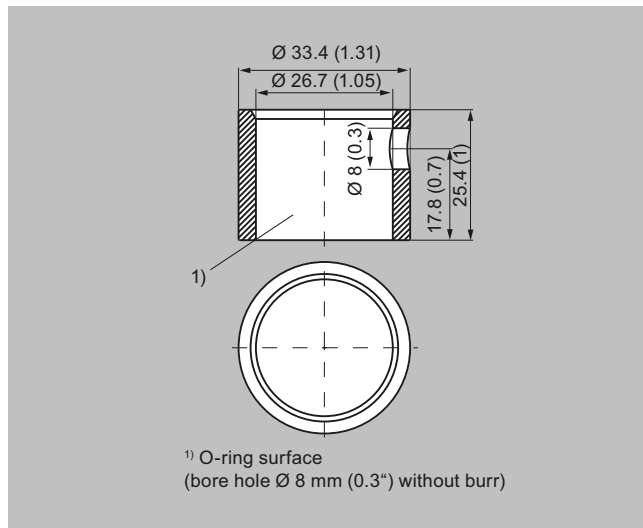
## Pressure measurement

### Pressure transmitters

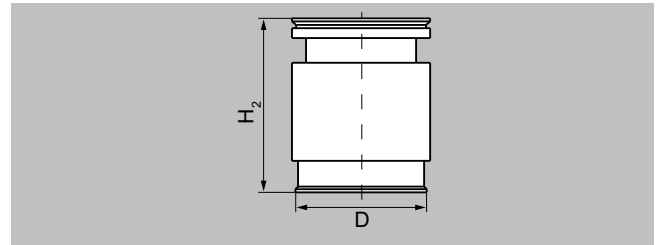
for the paper industry / SITRANS P300 with PMC connection

#### Dimensional drawings (continued)

##### PMC Style Minibolt weldable sockets



PMC Style Minibolt weldable sockets, dimensions in mm (inch)



$\varnothing D = 26.3 \text{ mm (1.0")}$

$H_2 = \text{approx. } 33.1 \text{ mm (1.3")}$



## Overview

SITRANS P320/P420 pressure transmitters are available in various versions for measuring:

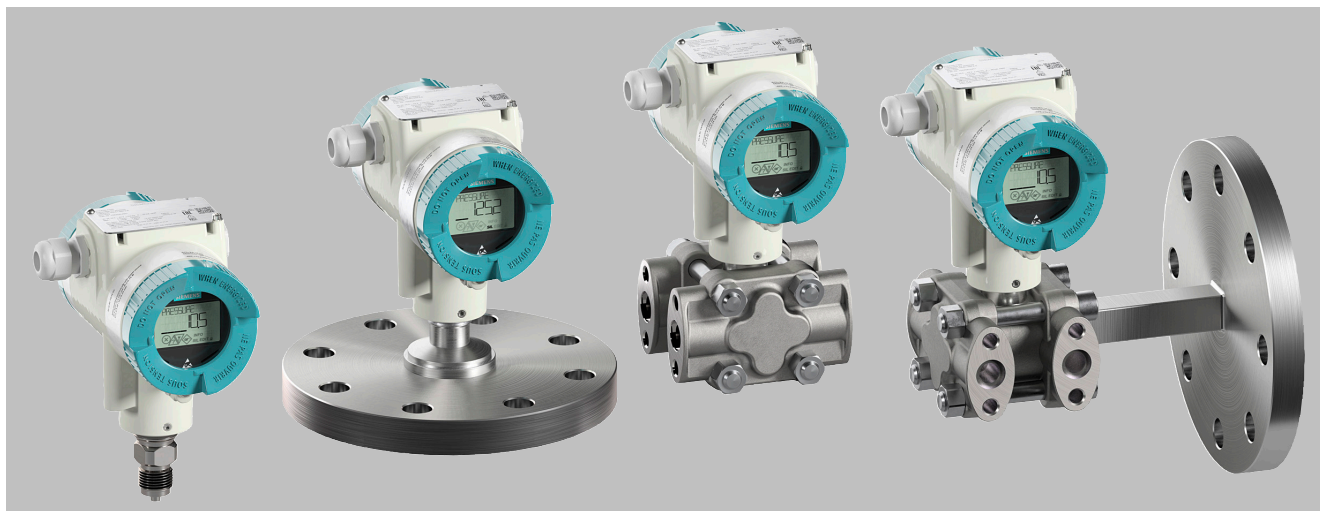
- Gauge pressure
- Absolute pressure
- Differential pressure
- Level
- Volume flow
- Mass flow

## Pressure measurement

### Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Technical reference

#### Overview



SITRANS P320/P420 pressure transmitters are digital pressure transmitters featuring extensive user-friendliness and high accuracy. The parameter assignment is performed using input buttons or the HART interface.

The comprehensive functionality makes for precise adjustment of the pressure transmitter to the requirements of the plant. Operation is very user-friendly in spite of the numerous setting options.

Due to their advanced diagnostic functionalities according to NAMUR NE107, the SITRANS P320/P420 pressure transmitters are very suitable for use in chemical plants. Thanks to the advanced diagnostic functions and the process value storage, the SITRANS P420 is "Ready for Digitalization".

The "Remote Safety Handling" function saves customers significant amounts of time and money, because the SIL function can be switched on and validated remotely via SIMATIC PDM. This eliminates travel times and on-site operation via the local display or keyboard.

Parameter assignment using the HART protocol is very easy and quick thanks to the innovative EDD with integrated Quick Start wizard.

The transmitters can be equipped with various types of remote seals for special applications such as the measurement of highly viscous substances.

SITRANS P320/P420 pressure transmitters are available in various versions for measuring:

- Gauge pressure
- Absolute pressure
- Differential pressure
- Level
- Volume flow
- Mass flow

## Benefits

- Diagnostic functions in accordance with NAMUR recommendation NE107
- SIL devices developed according to IEC 61508
- SIL validation on the device or remotely with SIMATIC PDM
- Reduction of internal inductance for Ex applications to LI = 0
- Step response time for pressure type T63 = 105 ms and for differential pressure type 135 ms.
- Minimal conformity error
- Very low temperature influence
- Very good long-term stability
- High quality and service life
- High reliability even under extreme chemical and mechanical loads
- For corrosive and non-corrosive gases, vapors and liquids
- Extensive diagnostics and simulation functions
- Separate replacement of measuring cell and electronics without recalibration
- Wetted parts made of high-grade materials (e.g., stainless steel, alloy, gold, Monel, tantalum)
- Infinitely adjustable spans from 0.01 bar to 700 bar (0.15 psi to 10153 psi)
- Convenient parameterization over 4 input buttons and HART interface

## Application

SITRANS P320/P420 pressure transmitters can be used in industrial areas with extreme chemical and mechanical loads.

The pressure transmitters can be used in zone 1 or zone 0 with the corresponding Ex approval.

The pressure transmitters can be equipped with various designs of remote seals for special applications such as the measurement of highly viscous substances.

The pressure transmitter can be operated locally over 4 input buttons or programmed externally over HART interface.

### **Pressure transmitters for gauge pressure**

Measured variable:

- Gauge pressure of corrosive and non-corrosive gases, vapors and liquids.

Measuring span (infinitely adjustable)

- For SITRANS P320/P420 with HART: 0.01 bar to 700 bar (0.15 psi to 10153 psi)

There are two series:

- Gauge pressure series
- Differential pressure series

### **Pressure transmitters for absolute pressure**

Measured variable:

- Absolute pressure of corrosive and non-corrosive gases, vapors and liquids.

Measuring span (infinitely adjustable)

- For SITRANS P320/P420 with HART: 8.3 mbar a to 160 bar a (0.12 to 2 321 psi a)

There are two series:

- Gauge pressure series
- Differential pressure series

### **Pressure transmitters for differential pressure and flow**

Measured variables:

- Differential pressure
- Small positive or negative overpressure
- Flow  $q \sim \sqrt{\Delta p}$  (together with a primary differential pressure transducer (see section "Flowmeters"))

Measuring span (infinitely adjustable)

- For SITRANS P320/P420 with HART: 1 mbar to 160 bar (0.0145 to 2 321 psi)

### **Pressure transmitters for level**

Measured variable:

- Level of corrosive and non-corrosive liquids in open and closed vessels.

Measuring span (infinitely adjustable)

- For SITRANS P320/P420 with HART: 25 mbar to 5 bar (0.363 to 72.5 psi)

Type of the mounting flange:

- EN 1092-1 flanges
- ASME B16.5 flanges
- J.I.S. flanges
- Diverse range of sealing surface forms available

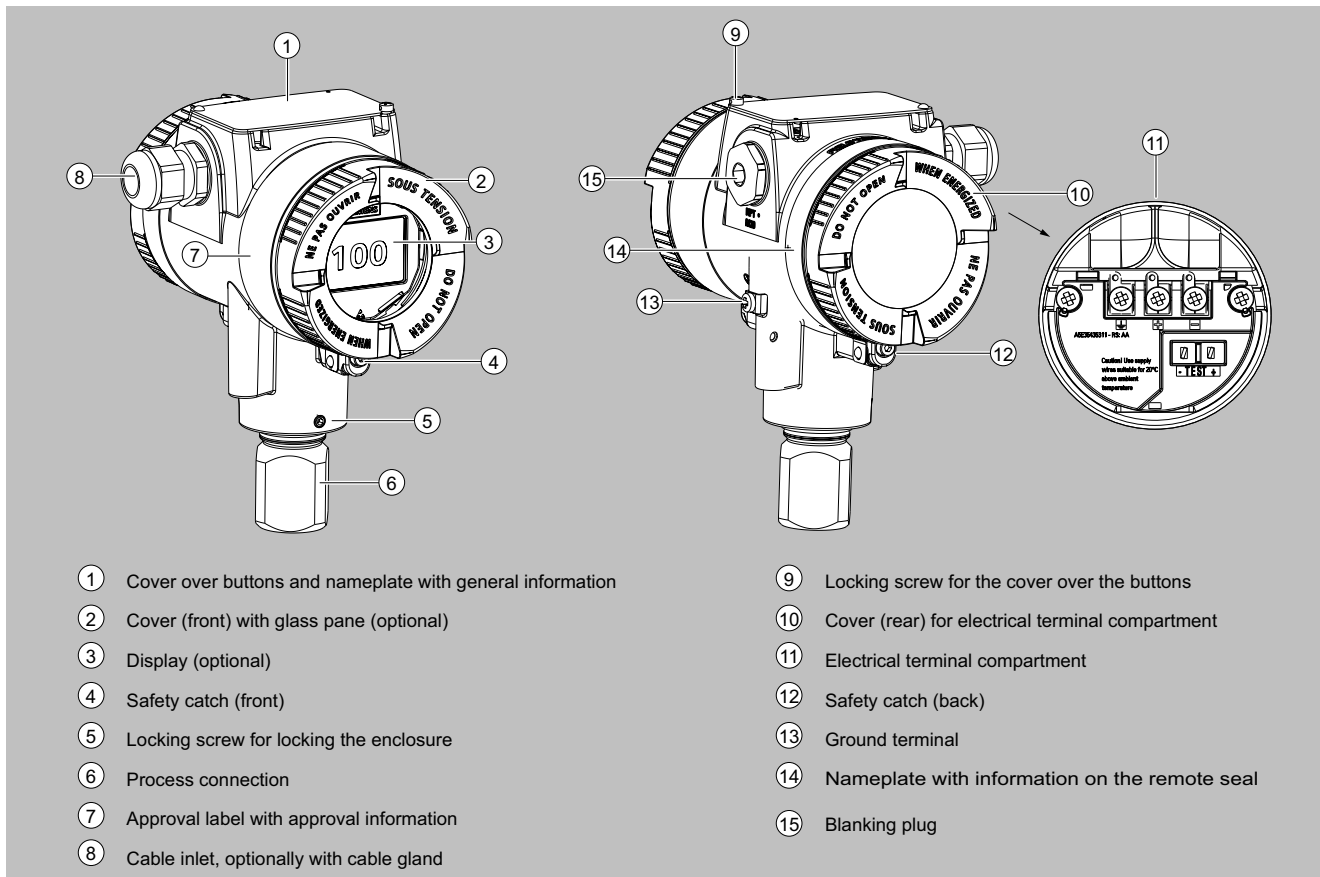
## Pressure measurement

### Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Technical reference

#### Design

Depending on the customer-specific order, the device comprises different parts.



#### Device front view

- The electronics enclosure is made of die cast aluminum or precision cast stainless steel.
  - The enclosure has a removable cover at the front and the back.
  - Depending on the device design, the front cover (2) may be designed with a glass pane.
  - The cable inlet (8) to the electrical terminal compartment is at the side; either the left or right-hand one can be used. The unused opening is closed with a blanking plug (15).
  - The ground terminal (13) is located on the side.
  - The electrical terminal compartment (11) for the auxiliary power and shield is accessible when you remove the back cover (10).
  - The measuring cell with process connection (6) is located in the bottom part of the enclosure.
- The measuring cell is prevented from rotating by a locking screw (5).

- Thanks to the modular design of the pressure transmitter, the measuring cell and application electronics or terminal compartment can be replaced if required.

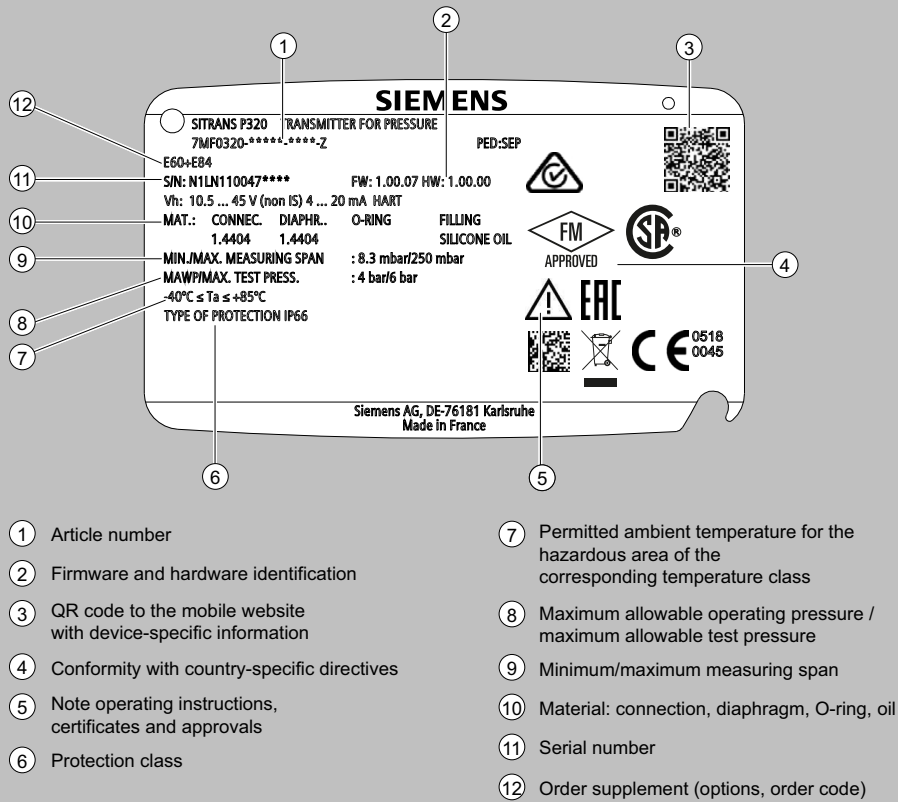
- The button cover (1) is located on the upper face of the enclosure. The nameplate with general information is located on the cover over the buttons.

#### **Nameplates**

##### Nameplate

The nameplate with the article no. and other important information, such as design details and technical data, is located on the cover over the buttons.

## Design (continued)

Certification label with approval information

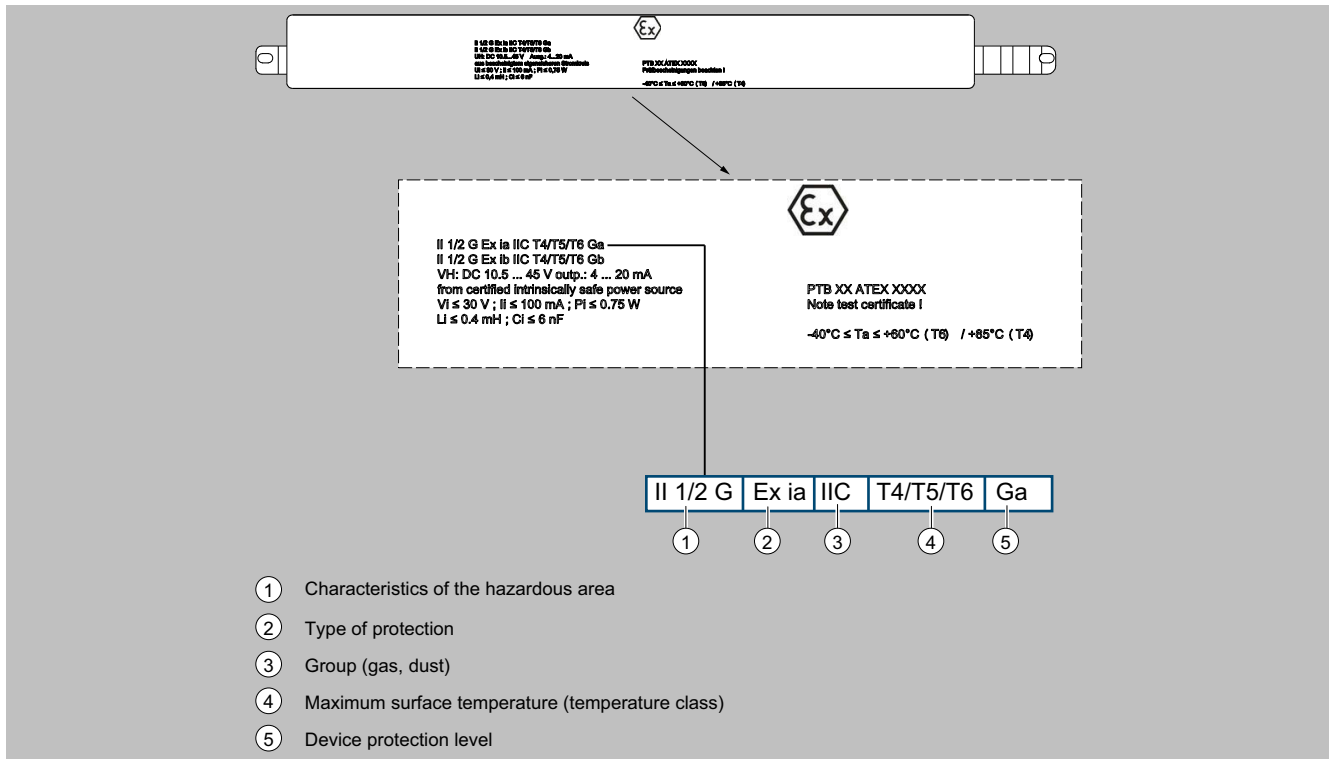
The certification label with approval information is located on the front of the enclosure.

## Pressure measurement

### Pressure transmitters

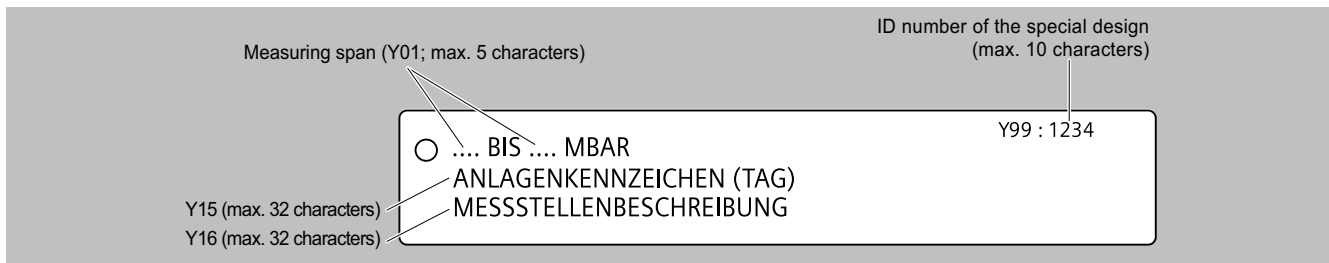
for applications with advanced requirements / SITRANS P320/P420 / Technical reference

#### Design (continued)



#### Tag plate

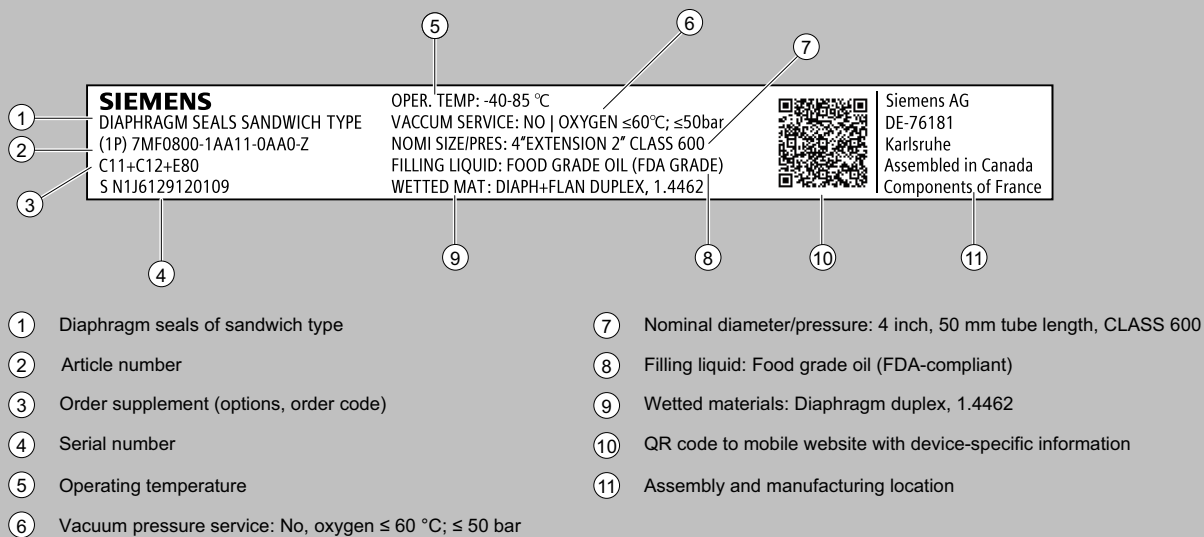
The tag plate is fastened with a wire under the front cover.



#### Nameplate with information on the remote seals

The nameplate with information on the remote seals is located on the back of the enclosure.

## Design (continued)



## Pressure measurement

### Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Technical reference

#### Function

##### Adjustable parameters and diagnostics

SITRANS P320/P420 with HART communication

Parameters	Input buttons	SITRANS P320	SITRANS P420
Application, measurement type	x	x	x
Adjusting lower range value/upper range value	x	x	x
Setting lower range value/upper range value	x	x	x
Electrical damping	x	x	x
Zero adjustment	x	x	x
Fault current	x	x	x
Saturation limits	x	x	x
Scaling of the display	x	x	x
Characteristic curve selection	x	x	x
Temperature unit	x	x	x
Button lock	x	x	x
Change user PIN	x	x	x
Functional safety	x	x	x
Loop test	x	x	x
Start view	x	x	x
Pressure reference	x	x	x
Reset	x	x	x
<b>Diagnostics and trend log</b>			
Min/max pointer	–	x	x
Limit monitoring	–	2	2
Event counter (overrun/undershoot)	–	2	2
Maintenance and service timer	–	x	x
Trend log	–	–	2, max. 1 500 values
Diagnostic log	–	x	x
Parameters change log	–	–	x

Available physical units of display for SITRANS P320/P420

Physical variable	Physical units
Pressure (can also be preset in the factory)	Pa, MPa, kPa, hPa, bar, mbar, psi, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , kgf/cm <sup>2</sup> , inH <sub>2</sub> O, inH <sub>2</sub> O (4 °C), ftH <sub>2</sub> O, mmH <sub>2</sub> O, mmH <sub>2</sub> O (4 °C), mH <sub>2</sub> O (4 °C), mmHg, inHg, atm, torr
Level (height data)	m, cm, mm, ft, in
Volumes (fill level)	m <sup>3</sup> , l, hl, in <sup>3</sup> , ft <sup>3</sup> , yd <sup>3</sup> , gal, gal (UK), bu, bbl, bbl (US), SCF, Nm <sup>3</sup> , NI
Volume (flow)	m <sup>3</sup> /sec, m <sup>3</sup> /h, m <sup>3</sup> /d, l/sec, l/min, l/h, Ml/d, ft <sup>3</sup> /sec, ft <sup>3</sup> /h, ft <sup>3</sup> /d, SCF/min, SCF/h, NI/h, Nm <sup>3</sup> /hgal/sec, gal/min, gal/h, gal/d, Mgal/d, gal (UK)/sec, gal (UK)/min, gal (UK)/h, gal (UK)/d, bbl/sec, bbl/min, bbl/h, bbl/d,
Mass (flow)	Kg/sec, kg/min, kg/h, kg/d, g/sec, g/min, g/h, t/min, t/h, t/d, lb/sec, lb/min, lb/h, lb/d, ton/min, ton/h, ton/d, ton (UK)/h, ton (UK)/d
Temperature	°C, °F
Other	%, mA, free text max. 12 characters

For more device information and technical specifications, refer to the individual device versions.



## Selection and ordering data

	Article No.	
<b>Pressure transmitters for gauge pressure (pressure series)</b>		
<b>SITRANS P320</b>	7MF030	● - ● ● ● ● ● - ● ● ● ●
<b>SITRANS P420</b>	7MF040	● - ● ● ● ● ● - ● ● ● ●
Click the article number for online configuration in the PIA Life Cycle Portal.		
<b>Communication</b>		
HART, 4 ... 20 mA		0
PROFIBUS PA		1
FOUNDATION Fieldbus (FF)		2
<b>Measuring cell filling</b>		
Silicone oil		1
Inert liquid		3
Neobee oil		4
<b>Maximum measuring span</b>		
250 mbar (3.6 psi)		F
1 000 mbar (14.5 psi)		J
4 000 mbar (58 psi)		N
16 bar (232 psi)		Q
63 bar (914 psi)		T
160 bar (2 321 psi)		V
400 bar (5 802 psi)		W
700 bar (10 153 psi)		X
<b>Process connection</b>		
External thread M20 × 1.5		B
External thread G½ (EN 837-1)		D
Internal thread ½-14 NPT		E
External thread ½-14 NPT		F
Oval flange, fastening thread: 7/16-20 UNF (IEC 61518)		G
Oval flange, fastening thread: M10 (DIN 19213)		H
Oval flange, fastening thread: M12 (DIN 19213)		J
Version for diaphragm seal pressure		U
<b>Material of wetted parts: Process connection, seal diaphragm</b>		
Stainless steel 316L/1.4404, stainless steel 316L/1.4404		0
Stainless steel 316L/1.4404, alloy C276/2.4819		1
Alloy C22/2.4602, alloy C276/2.4819		2
Stainless steel 316L/1.4404, stainless steel 316L/1.4404 gold-plated		7
<b>Material of non-wetted parts</b>		
Die-cast aluminum		1
Stainless steel precision casting CF3M/1.4409 similar to 316L		2
<b>Enclosure</b>		
Dual chamber device		5
<b>Type of protection</b>		
Without Ex		A
Intrinsic safety		B
Flameproof enclosure		C
Flameproof enclosure, intrinsic safety		D
Dust protection by enclosure Zone 21/22 (DIP), increased safety Zone 2		L
Intrinsic safety, dust protection by enclosure Zone 20/21/22 (DIP), increased safety Zone 2		M
Combination of options B, C and L (Zone model)		S
Combination of options B, C and L (Zone model, Class Division)		T
<b>Electrical connections/cable entries</b>		
Thread for cable gland: Cable gland must be ordered separately as option (Axx)		
• 2 × M20 × 1.5		F
• 2 × ½-14 NPT		M
<b>Local operation/display</b>		
Without local display (lid closed)		0
With local display (lid closed)		1
With local display (lid with glass pane)		2

## Pressure measurement

### Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Gauge pressure (pressure series)

#### Selection and ordering data (continued)

Options	Order code
<b>Add "-Z" to article no., add order code and plain text or entry from drop-down list.</b>	
<b>Cable glands included</b>	
Plastic	A00
Metal	A01
Stainless steel	A02
Stainless steel 316L/1.4404	A03
CMP, for XP devices	A10
CAPRI ADE 4F, CuZn, cable inner diameter 7 ... 12 mm, cable outer diameter 10 ... 16 mm	A11
CAPRI ADE 4F, stainless steel, cable inner diameter 7 ... 12 mm, cable outer diameter 10 ... 16 mm	A12
Sealing plug included, plastic	A20
Sealing plug included, metal	A21
Sealing plug included, stainless steel	A22
Sealing plug included, stainless steel 316L/1.4404	A23
<b>Device plug Han mounted left</b>	
Device plug Han 7D (plastic, straight)	A30
Device plug Han 7D (plastic, angled)	A31
Device plug Han 7D (metal, straight)	A32
Device plug Han 7D (metal, angled)	A33
Device plug Han 8D (plastic, straight)	A34
Device plug Han 8D (plastic, angled)	A35
Device plug Han 8D (metal, straight)	A36
Device plug Han 8D (metal, angled)	A37
<b>Cable socket included</b>	
Plastic, for device plug Han 7D and Han 8D	A40
Metal, for device plug Han 7D and Han 8D	A41
<b>Device plug M12 mounted left</b>	
Stainless steel, without cable socket	A62
Stainless steel, with cable socket	A63
<b>Cable entry/device plug mounting</b>	
2 × sealing plugs M20 × 1.5, IP66/68 installed on both sides	A90
2 × sealing plugs ½-14 NPT, IP66/68 installed on both sides	A91
Cable gland/device plug mounted left	A97
Cable gland/device plug mounted right	A99
<b>Nameplate labeling (standard labeling: English, unit bar)</b>	
German (bar)	B11
French (bar)	B12
Spanish (bar)	B13
Italian (bar)	B14
Chinese (bar)	B15
Russian (bar)	B16
English (psi)	B20
English (Pa)	B30
Chinese (Pa)	B35
<b>Certificates</b>	
Quality inspection certificate, 5-point factory calibration (IEC 62828-2)	C11
Inspection certificate (EN 10204-3.1) - Material of pressurized and wetted parts	C12

Options	Order code
<b>Add "-Z" to article no., add order code and plain text or entry from drop-down list.</b>	
Factory certificate - NACE (MR 0103-2012 and MR 0175-2009)	C13
Factory certificate (EN 10204-2.2) - Wetted parts	C14
Inspection certificate (EN 10204-3.1) - PMI test of pressurized and wetted parts	C15
<b>Certificates for functional safety</b>	
Functional Safety (IEC 61508) - SIL2/3	C20
<b>Device options</b>	
PDF file with device settings	D10
Double layer coating (epoxy resin and polyurethane) 120 µm of enclosure and lid	D20
FVMQ enclosure sealing	D21
Degree of protection IP66/IP68 (not for device plug M12 and Han)	D30
Unlabeled TAG plate	D40
Without labeling of the measuring range on the TAG plate	D41
Stainless steel Ex plate 1.4404/316L	D42
Overvoltage protection up to 6 kV (internal)	D70
Overvoltage protection up to 6 kV (external)	D71
Labels on transport packaging (provided by customer)	D90
<b>General approval without Ex approval</b>	
Worldwide (CE, UKCA, RCM) except EAC, FM, CSA, KCC	E00
Worldwide (CE, UKCA, RCM, EAC, FM, CSA, KCC)	E01
CSA (USA and Canada)	E06
EAC	E07
FM	E08
KCC	E09
<b>Explosion protection approvals</b>	
ATEX (Europe)	E20
CSA (USA and Canada) <sup>1)</sup>	E21
FM (USA and Canada) <sup>1)</sup>	E22
IECEx (Worldwide)	E23
EACEx (GOST-R, -K, -B)	E24
INMETRO (Brazil)	E25
KCs (Korea)	E26
NEPSI (China)	E27
PESO (India)	E28
CSA (Japan)	E29
UKR Sepro (Ukraine)	E30
UKEX (United Kingdom)	E33
ATEX (Europe), IECEx (Worldwide) and UKEX (UK)	E47
CSA (Canada) and FM (USA) <sup>1)</sup>	E48
ATEX (Europe) and IECEx (Worldwide) + CSA (Canada) and FM (USA) <sup>1)</sup>	E49
<b>Marine approvals</b>	
DNV-GL (Det Norske Veritas/Germanischer Lloyd)	E50
LR (Lloyds Register)	E51
BV (Bureau Veritas)	E52
ABS (American Bureau of Shipping)	E53
RMR (Russian Maritime Register)	E55
KR (Korean Register of Shipping)	E56
RINA (Registro Italiano Navale)	E57
CCS (China Classification Society)	E58

## Selection and ordering data (continued)

Options	Order code
<b>Add "-Z" to article no., add order code and plain text or entry from drop-down list.</b>	
<b>Country-specific approvals</b>	
CRN approval Canada (Canadian Registration Number)	E60
<b>Special approvals</b>	
Oxygen application (with inert liquid, max. 160 bar (2 320 psi) at 100 °C (212 °F))	E80
Dual Seal	E81
WRC/WRAS (drinking water); only with process flange O-rings made of EPDM	E83
NSF61 (drinking water)	E84
ACS (drinking water)	E85
<b>Mounting bracket</b>	
Steel, zinc-plated	H01
Stainless steel 1.4301/304	H02
Stainless steel 1.4404/316L	H03
<b>Flange connections with flange EN 1092-1</b>	
With flange adapter G½ Form B1	
• DN 25 PN 40, stainless steel 1.4571/316Ti	J80
• DN 50 PN 40, stainless steel 1.4571/316Ti	J81
• DN 80 PN 40, stainless steel 1.4571/316Ti	J82
With water trap G½ form B1	
• DN 25 PN 40, stainless steel 1.4571/316Ti	J83
• DN 50 PN 40, stainless steel 1.4571/316Ti	J84
• DN 80 PN 40, stainless steel 1.4571/316Ti	J85
• DN 25 PN 100, stainless steel 1.4571/316Ti	J86
<b>Process flanges, gaskets (instead of standard gaskets FKM (FPM))</b>	
Gasket (EN 837-1) material Fe (soft iron)	K60
Gasket (EN 837-1) material 1.4571	K61
Gasket (EN 837-1) material Cu	K62
<b>Process connection</b>	
Process connection external thread G½, bore hole 11 mm	K80

Options	Order code
<b>Add "-Z" to article no., add order code and plain text or entry from drop-down list.</b>	
<b>Shut-off valves, valve manifolds</b>	
With mounted valve manifold 7MF9011-4EA, process connection at transmitter G½ shank, PTFE sealing ring and pressure test certified in factory certificate (EN 10204-2.2)	T02
With mounted valve manifold 7MF9011-4FA, process connection at transmitter internal thread ½-14 NPT, sealing tape. With PTFE sealing ring and pressure test certified in factory certificate (EN 10204-2.2)	T03
With mounted valve manifold 7MF9411-5AA, process connection at transmitter oval flange with PTFE sealing ring, steel fixing screws, pressure test certified in factory certificate (EN 10204-2.2)	T05
With mounted valve manifold 7MF9411-5AA, process connection at transmitter oval flange with PTFE sealing ring, stainless steel fixing screws, pressure test certified in factory certificate (EN 10204-2.2)	T06
<b>Device settings</b>	
Measuring span: Lower range value (max. 5 characters), upper range value (max. 5 characters), unit [mbar, bar, kPa, MPa, psi, ...], example: -0.5 ... 10.5 psi	Y01
TAG (on stainless steel plate and device parameters, max. 32 characters)	Y15
Measuring point description (on stainless steel plate and device parameters, max. 32 characters)	Y16
TAG short (device parameters, max. 8 characters)	Y17
Local display: [Pressure, Percent], reference [None, Absolute, Gauge], example: Pressure gauge	Y21
Local display: Scaling with standard units [m³/s, l/s, m, inch, ...]; example 1 ... 5 m	Y22
Local display: Scaling with user-specific units (max. 12 characters), example 1 ... 5 m	Y23
Set PROFIBUS PA device address (1 ... 126)	Y25
Saturation limits instead of 3.8 ... 20.5 mA, example: 3.8 ... 22.0 mA	Y30
Fault current instead of 3.6 mA [22.5 mA, 22.8 mA]	Y31
Damping in seconds instead of 2 s (0.0 ... 100.0 s)	Y32
ID number of special design	Y99

1) Explosion protection acc. to FM/CSA: suitable for installation according to NEC 500/505.

# Pressure measurement

## Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Gauge pressure (pressure series)

### Technical specifications

#### SITRANS P320/SITRANS P420 for gauge pressure (pressure series)

SITRANS P320/SITRANS P420 for gauge pressure (pressure series)			
<b>Input</b>			
Measured variable	Gauge pressure		
Measuring span (continuously adjustable) or measuring range, max. permissible operating pressure (in accordance with Pressure Equipment Directive 2014/68/EU) and max. permissible test pressure (pursuant to DIN 16086) (for oxygen measurement, max. 100 bar/10 MPa/1450 psi and 60 °C (140 °F) ambient temperature/medium temperature)	Measuring span	Max. permissible operating pressure MAWP (PS)	Maximum permissible test pressure
	8.3 ... 250 mbar 0.83 ... 25 kPa 0.12 ... 3.6 psi	4 bar 0.4 MPa 58 psi	6 bar 0.6 MPa 87 psi
	0.01 ... 1 bar 1 ... 100 kPa 0.15 ... 14.5 psi	6 bar 0.6 MPa 87 psi	9 bar 0.9 MPa 130 psi
	0.04 ... 4 bar 4 ... 400 kPa 0.58 ... 58 psi	20 bar 2 MPa 290 psi	30 bar 3 MPa 435 psi
	0.16 ... 16 bar 0.016 ... 1.6 MPa 2.3 ... 232 psi	45 bar 4.5 MPa 652 psi	70 bar 7 MPa 1015 psi
	0.63 ... 63 bar 0.063 ... 6.3 MPa 9.1 ... 914 psi	80 bar 8 MPa 1160 psi	120 bar 12 MPa 1740 psi
	1.6 ... 160 bar 0.16 ... 16 MPa 23 ... 2321 psi	240 bar 24 MPa 3481 psi	360 bar 36 MPa 5221 psi
	4 ... 400 bar 0.4 ... 40 MPa 58 ... 5802 psi	400 bar 40 MPa 5802 psi	600 bar 60 MPa 8702 psi
	7 ... 700 bar 0.7 ... 70 MPa 102 ... 10153 psi	800 bar 80 MPa 11603 psi	800 bar 80 MPa 11603 psi
Measuring limits	For 250 mbar/25 kPa/3.6 psi measuring cells, the lower measuring limit is 750 mbar a/75 kPa a/10.8 psi a. The measuring cell is vacuum-resistant up to 30 mbar a/3 kPa a/0.44 psi a.		
• Lower measuring limit			
- Measuring cell with silicone oil filling	30 mbar a/3 kPa a/0.44 psi a		
- Measuring cell with inert oil	30 mbar a/3 kPa a/0.44 psi a		
- Measuring cell with FDA-compliant oil	100 mbar a/10 kPa a/1.45 psi a		
• Upper measuring limit	100% of the max. measuring span (for oxygen measurement max. 100 bar/10 MPa/1450 psi and 60 °C (140 °F) ambient temperature/medium temperature)		
• Lower range value	Between the measuring limits (continuously adjustable)		
<b>Output</b>			
Output signal	HART 4 ... 20 mA		
• Lower saturation limit (continuously adjustable)	3.55 mA, factory set to 3.8 mA		
• Upper saturation limit (continuously adjustable)	22.8 mA, factory-set to 20.5 mA or optionally 22.0 mA		
• Ripple (without HART communication)	$I_{pp} \leq 0.5\%$ of max. output current		
Adjustable damping	0 ... 100 s, continuously adjustable over remote operation 0 ... 100 s, in increments of 0.1 s, adjustable over display		
• Current simulator	3.55 ... 22.8 mA		
• Failure signal	3.55 ... 22.8 mA (factory set to 3.55 mA)		
Load	Resistance R [Ω]		
• Without HART communication	$R = (U_H - 10.5 \text{ V}) / 22.8 \text{ mA}$ , $U_H$ : Auxiliary power in V		
• With HART communication	$R = 230 \dots 1100 \Omega$		
Characteristic curve	<ul style="list-style-type: none"> <li>• Linearly increasing or linearly decreasing</li> <li>• Linear increase or decrease or according to the square root (only for differential pressure and flow)</li> </ul>		
Physical bus	-		
Polarity-independent	-		

## Technical specifications (continued)

SITRANS P320/SITRANS P420 for gauge pressure (pressure series)	
<b>Measuring accuracy</b>	
Reference conditions	<ul style="list-style-type: none"> <li>• According to IEC 62828-1</li> <li>• Rising characteristic curve</li> <li>• Lower range value 0 bar/kPa/psi</li> <li>• Seal diaphragm stainless steel</li> <li>• Measuring cell with silicone oil filling</li> <li>• Room temperature 25 °C (77 °F)</li> </ul>
Conformity error at limit point setting, including hysteresis and repeatability	
Measuring span ratio r (spread, Turn-Down)	r = max. measuring span/set measuring span and nominal measuring range
<ul style="list-style-type: none"> <li>• Linear characteristic curve</li> </ul>	
- 250 mbar/25 kPa/3.6 psi	$r \leq 1.25:$ $\leq 0.075\%$ (SITRANS P320) $\leq 0.065\%$ (SITRANS P420)
- 1 bar/100 kPa/14.5 psi 4 bar/400 kPa/58 psi 16 bar/1.6 MPa/232 psi 63 bar/6.3 MPa/914 psi 160 bar/16 MPa/2321 psi	$1.25 < r \leq 30:$ $\leq (0.008 \cdot r + 0.065)\%$ $r \leq 5:$ $\leq 0.065\%$ (SITRANS P320) $\leq 0.04\%$ (SITRANS P420) $5 < r \leq 100:$ $\leq (0.004 \cdot r + 0.045)\%$
- 400 bar/40 MPa/5802 psi 700 bar/70 MPa/10152 psi	$r \leq 5:$ $\leq 0.075\%$ (SITRANS P320) $5 < r \leq 100:$ $\leq (0.005 \cdot r + 0.05)\%$ (SITRANS P320) $r \leq 5:$ $\leq 0.075\%$ (SITRANS P420) $5 < r \leq 100:$ $\leq (0.005 \cdot r + 0.05)\%$ (SITRANS P420)
Influence of ambient temperature in % per 28 °C (50 °F)	
• 250 mbar/25 kPa/3.6 psi	$\leq (0.16 \cdot r + 0.1)\%$
• 1 bar/100 kPa/14.5 psi	$\leq (0.05 \cdot r + 0.1)\%$
• 4 bar/400 kPa/58 psi 16 bar/1.6 MPa/232 psi 63 bar/6.3 MPa/914 psi 160 bar/16 MPa/2321 psi 400 bar/40 MPa/5802 psi	$\leq (0.025 \cdot r + 0.125)\%$
• 700 bar/70 MPa/10152 psi	$\leq (0.08 \cdot r + 0.16)\%$
Long-term stability at $\pm 30$ °C ( $\pm 54$ °F)	
• 250 mbar/25 kPa/3.6 psi	$\leq (0.25 \cdot r)\%$ per year
• 1 bar/100 kPa/14.5 psi	In 5 years $\leq (0.25 \cdot r)\%$ In 10 years $\leq (0.35 \cdot r)\%$
• 4 bar/400 kPa/58 psi 16 bar/1.6 MPa/232 psi 63 bar/6.3 MPa/914 psi 160 bar/16 MPa/2321 psi 400 bar/40 MPa/5802 psi	In 5 years $\leq (0.125 \cdot r)\%$ In 10 years $\leq (0.15 \cdot r)\%$
• 700 bar/70 MPa/10152 psi	In 5 years $\leq (0.25 \cdot r)\%$ In 10 years $\leq (0.35 \cdot r)\%$
Step response time $T_{63}$ (without electrical damping)	$\leq 0.105$ s
Effect of mounting position (in pressure per change of angle)	$\leq 0.05$ mbar/0.005 kPa/0.000725 psi per 10° incline (zero offset is possible with position error compensation)
Effect of auxiliary power (in % per voltage change)	0.005% per 1 V
<b>Operating conditions</b>	
Medium temperature	
• Measuring cell with silicone oil filling	-40 ... +100 °C (-40 ... +212 °F)
• Measuring cell with inert oil	
- 1 bar/100 kPa/14.5 psi 4 bar/400 kPa/58 psi 16 bar/1.6 MPa/232 psi 63 bar/6.3 MPa/914 psi	-40 ... +100 °C (-40 ... +212 °F)
- 160 bar/16 MPa/2321 psi 400 bar/40 MPa/5802 psi 700 bar/70 MPa/10152 psi	-20 ... +100 °C (-4 ... +212 °F)

# Pressure measurement

## Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Gauge pressure (pressure series)

### Technical specifications (continued)

SITRANS P320/SITRANS P420 for gauge pressure (pressure series)	
<ul style="list-style-type: none"> <li>Measuring cell with FDA-compliant oil</li> </ul>	-10 ... +100 °C (14 ... +212 °F)
Ambient conditions	
<ul style="list-style-type: none"> <li>Ambient temperature/enclosure</li> </ul>	Observe the temperature class in hazardous areas.
<ul style="list-style-type: none"> <li>Measuring cell with silicone oil filling</li> </ul>	-40 ... +85 °C (-40 ... +185 °F)
<ul style="list-style-type: none"> <li>Measuring cell with inert oil for gauge pressure measuring cells:               <ul style="list-style-type: none"> <li>1 bar/100 kPa/14.5 psi</li> <li>4 bar/400 kPa/58 psi</li> <li>16 bar/1.6 MPa/232 psi</li> <li>63 bar/6.3 MPa/914 psi</li> </ul> </li> </ul>	-40 ... +85 °C (-40 ... +185 °F)
<ul style="list-style-type: none"> <li>Measuring cell with inert oil</li> </ul>	-40 ... +85 °C (-40 ... +185 °F)
<ul style="list-style-type: none"> <li>Measuring cell with FDA-compliant oil</li> </ul>	-10 ... +85 °C (14 ... +185 °F)
<ul style="list-style-type: none"> <li>Display</li> </ul>	-20 ... +80 °C (-4 ... +176 °F)
<ul style="list-style-type: none"> <li>Storage temperature</li> </ul>	-50 ... +85 °C (-58 ... +185 °F) (with FDA-compliant oil: -20 ... +85 °C (-4 ... +185 °F))
<ul style="list-style-type: none"> <li>Climatic class in accordance with IEC 60721-3-4</li> </ul>	4K4H
<ul style="list-style-type: none"> <li>Degree of protection</li> </ul>	IP66, IP68
<ul style="list-style-type: none"> <li>According to IEC 60529</li> </ul>	Type 4X
<ul style="list-style-type: none"> <li>According to NEMA 250</li> </ul>	
<ul style="list-style-type: none"> <li>Electromagnetic compatibility</li> </ul>	
<ul style="list-style-type: none"> <li>Emitted interference and interference immunity</li> </ul>	According to IEC 61326 and NAMUR NE 21
<b>Structural design</b>	
Weight	
<ul style="list-style-type: none"> <li>Aluminum enclosure: Approx. 1.8 kg (3.9 lbs)</li> <li>Stainless steel enclosure: Approx. 3.8 kg (8.3 lbs)</li> </ul>	
Material	
<ul style="list-style-type: none"> <li>Material of wetted parts</li> </ul>	
<ul style="list-style-type: none"> <li>Process connection</li> </ul>	Stainless steel, material no. 1.4404/316L or Alloy C22, material no. 2.4602
<ul style="list-style-type: none"> <li>Oval flange</li> </ul>	Stainless steel, mat. no. 1.4404/316L
<ul style="list-style-type: none"> <li>Seal diaphragm</li> </ul>	Stainless steel, material no. 1.4404/316L or Alloy C276, material no. 2.4819
<ul style="list-style-type: none"> <li>Material of non-wetted parts</li> </ul>	
<ul style="list-style-type: none"> <li>Electronics enclosure</li> </ul>	<ul style="list-style-type: none"> <li>Low-copper die-cast aluminum GD-ALSi 12 or stainless steel precision casting, mat. no. 1.4409/ CF-3M</li> <li>Standard: Powder coating with polyurethane Option: 2 coats: Coat 1: Epoxy-based; coat 2: Polyurethane</li> <li>Coating: The layer structure and thickness correspond to EN ISO 12944 Corrosion Class C3-M (for standard transmitter) and C5-H (for transmitter with double layer coating)</li> <li>Stainless steel nameplate (1.4404/316L)</li> </ul>
<ul style="list-style-type: none"> <li>Mounting bracket</li> </ul>	Zinc-plated steel or stainless steel
Process connection	
<ul style="list-style-type: none"> <li>Connection shank G1/2A according to EN 837-1</li> <li>Female thread ½-14 NPT</li> <li>Oval flange (PN 160 (MWP 2320 psi g)) with fastening thread:               <ul style="list-style-type: none"> <li>7/16-20 UNF according to EN 61518</li> <li>M10 according to DIN 19213</li> </ul> </li> <li>Oval flange (PN 420 (MWP 2320 psi g)) with fastening thread:               <ul style="list-style-type: none"> <li>7/16-20 UNF according to EN 61518</li> <li>M12 according to DIN 19213</li> </ul> </li> <li>Male thread M20 × 1.5 and ½-14 NPT</li> </ul>	
Electrical connection	
<ul style="list-style-type: none"> <li>Cable entry via the following screw glands:               <ul style="list-style-type: none"> <li>M20 × 1.5</li> <li>½-14 NPT</li> <li>Device plug Han 7D/Han 8D<sup>1)</sup></li> <li>Device plug M12</li> </ul> </li> </ul>	
<b>Displays and controls</b>	
Buttons	
<ul style="list-style-type: none"> <li>4 buttons for operation directly on the device</li> </ul>	
Display	
<ul style="list-style-type: none"> <li>With or without integrated display (optional)</li> <li>Lid with inspection window (optional)</li> </ul>	

## Technical specifications (continued)

SITRANS P320/SITRANS P420 for gauge pressure (pressure series)	
<b>Auxiliary power <math>U_H</math></b>	
Terminal voltage on pressure transmitter	10.5 ... 45 V DC 10.5 ... 30 V DC in intrinsically safe mode
Ripple	$U_{SS} \leq 0.2$ V (47 ... 125 Hz)
Noise	$U_{eff} \leq 1.2$ mV (0.5 ... 10 kHz)
Auxiliary power	–
Separate supply voltage	–
<b>Certificates and approvals</b>	
Classification according to pressure equipment directive (PED 2014/68/EU)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)
Drinking water	
• WRAS (England)	No.: 1903094 (option E83)
• ACS (France)	No.: 18 ACC LY 277 (option E85)
• NSF (USA)	No.: 20180920-MH61350 (option E84)
CRN (Canada)	No.: 0F9863.5C (option E60)
Explosion protection acc. to NEPSI (China)	No.: GYJ19.1058X (option E27)
Explosion protection acc. to INMETRO (Brazil)	No.: BRA-18-GE-0035X (option E25)
Explosion protection	
• Intrinsic safety "i"	
- Marking	II 1/2 G Ex ia/ib IIC T4/T6 Ga/Gb
- Permissible ambient temperature	-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +55 °C (-40 ... +131 °F) temperature class T6
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6
- Connection	To certified intrinsically safe circuits with peak values: $U_i = 30$ V, $I_i = 101$ mA, $P_i = 760$ mW $U_i = 29$ V, $I_i = 110$ mA, $P_i = 800$ mW
- Effective internal inductance/capacitance	$L_i = 0.24$ $\mu$ H/ $C_i = 3.29$ nF
• Flameproof enclosure "d"	
- Marking	Ex II 1/2 G Ex ia/db IIC T4/T6 Ga/Gb
- Permissible ambient temperature	-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6
- Connection	To a circuit with the operating values: $U_n = 10.5$ ... 45 V, 4 ... 20 mA
• Dust explosion protection for Zones 21, 22	
- Marking	Ex II 2D Ex tb IIIC T120 °C Db Ex II 3D Ex tc IIIC T120 °C Dc
- Permissible ambient temperature	-40 ... +80 °C (-40 ... +176 °F)
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F)
- Max. surface temperature	120 °C (248 °F)
- Connection	To a circuit with the operating values: $U_n = 10.5$ ... 45 V, 4 ... 20 mA
• Dust explosion protection for Zones 20, 21, 22	
- Marking	Ex II 1D Ex ia IIIC T120 °C Da Ex II 2D Ex ib IIIC T120 °C Db
- Permissible ambient temperature	-40 ... +80 °C (-40 ... +176 °F)
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F)
- Connection	To certified intrinsically safe circuits with peak values: $U_i = 30$ V, $I_i = 101$ mA, $P_i = 760$ mW $U_i = 29$ V, $I_i = 110$ mA, $P_i = 800$ mW
- Effective internal inductance/capacitance	$L_i = 0.24$ $\mu$ H/ $C_i = 3.29$ nF
• Type of protection for Zone 2	
- Marking	Ex II 3G Ex ec IIC T4/T6 Gc
- Permissible ambient temperature "ec"	-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +40 °C (-40 ... +104 °F) temperature class T6

# Pressure measurement

## Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Gauge pressure (pressure series)

### Technical specifications (continued)

SITRANS P320/SITRANS P420 for gauge pressure (pressure series)	
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6
- "ec" connection	To a circuit with the operating values: $U_n = 10.5 \dots 30 \text{ V}$ , $4 \dots 20 \text{ mA}$
• Explosion protection acc. to FM	Available soon
- Marking (XP/DIP) or IS; NI; S	CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4 ... T6: CL I, DIV 2, GP ABCD T4 ... T6; CL II, DIV 2, GP FG; CL III
• Explosion protection according to CSA	Available soon
- Marking (XP/DIP) or (IS)	CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4 ... T6: CL I, DIV 2, GP ABCD T4 ... T6; CL II, DIV 2, GP FG; CL III
NAMUR recommendations	
• NE 06	Standardized Electrical Signals and Questions Relating to Engineering Technology
• NE 21	Electromagnetic Compatibility (EMC) of Industrial Process and Laboratory Control Equipment
• NE 23	Extra Low Voltage Circuits with Safe Separation
• NE 43	Standardization of the Signal Level for the Failure Information of Digital Transmitters
• NE 53	Software and Hardware of Field Devices and Signal Processing Devices with Digital Electronics
• NE 80	The Application of the Pressure Equipment Directive to Process Control Devices
• NE 105	Specifications for Integrating Fieldbus Devices in Engineering Tools for Field Devices
• NE 107	Self-Monitoring and Diagnosis of Field Devices
• NE 131	NAMUR Standard Device - Field Devices for Standard Applications

1) Han 8D is identical to Han 8U.

Communication	
<b>HART</b>	
HART	230 ... 1 100 Ω
Protocol	HART 7
Software for computer	SIMATIC PDM
<b>PROFIBUS PA</b>	
Simultaneous communication with master class 2 (max.)	4
The address can be set using	Configuration tool or local operation (default setting address 126)
Cyclic data usage	
• Output byte	≤ 35 (7 measured values)
• Input byte	0, 1, or 2 (register operation mode and reset function for dosing)
Internal preprocessing	
Device profile	PROFIBUS PA Profile Version 4.01 Class B. Cyclic data usage compatible with version 3.XX
Number of function blocks	7
• Analog input	
- Adaptation to user-specific process variable	Yes, linearly rising or falling characteristic curve
- Electrical damping adjustable	0 ... 100 s
- Simulation function	Output/input
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respectively
• Register (totalizer)	Can be reset, preset, optional direction of counting, simulation function of register output
- Limit monitoring	One upper and lower warning limit and one alarm limit respectively
• Physical block	1
Transducer blocks	1
• Pressure transducer block	
- Can be calibrated by applying two pressures	Yes
- Monitoring of sensor limits	Yes

Communication	
- Specification of a vessel characteristic curve with	Max. 30 nodes
- Square-rooted characteristic curve for flow measurement	Yes
- Tank characteristic curve for volume measurement	Yes
- Low flow cut-off and implementation point of square-root extraction	Parameterizable
- Simulation function for measured pressure value and sensor temperature	Constant value or by means of parameterizable ramp function
<b>FOUNDATION Fieldbus</b>	
Device profile	FF ITK 6
Function blocks	3 function blocks analog input, 1 function block PID
• Analog input	
- Adaptation to user-specific process variable	Yes, linearly rising or falling characteristic curve
- Electrical damping adjustable	0 ... 100 s
- Simulation function	Output/input (can be locked within the device with a bridge)
- Failure mode	Parameterizable (last good value, substitute value, incorrect value)
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respectively
- Square-rooted characteristic curve for flow measurement	Yes
• PID	Standard FOUNDATION Fieldbus function block
• Physical block	1 resource block
Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block LCD
• Pressure transducer block	
- Can be calibrated by applying two pressures	Yes

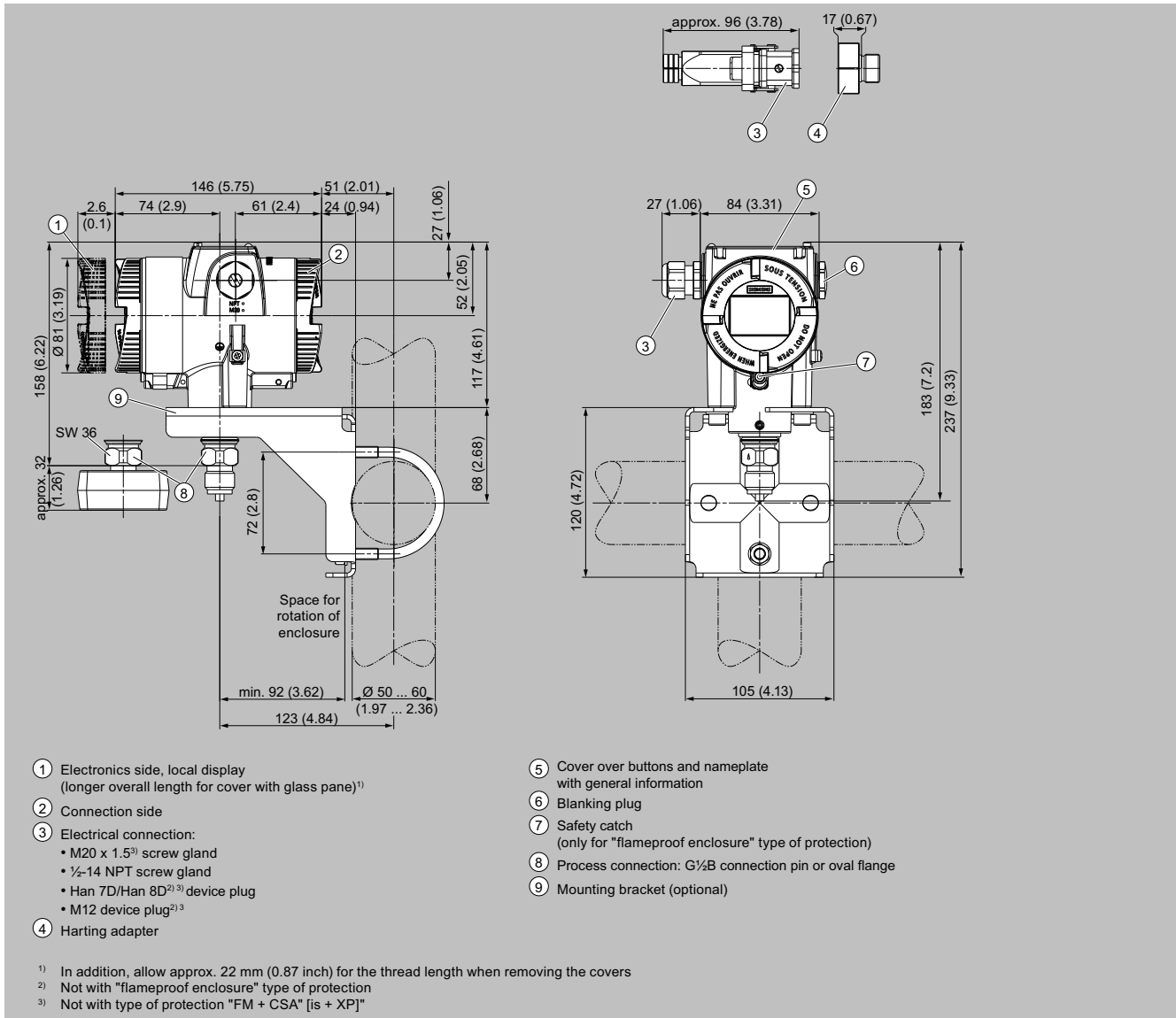


## Technical specifications (continued)

## Communication

- Monitoring of sensor limits	Yes
- Simulation function: pressure measurement, sensor temperature and electronics temperature	Constant value or by means of parameterizable ramp function

## Dimensional drawings



SITRANS P320/P420 pressure transmitter for gauge pressure (pressure series), dimensions in mm (inch)

# Pressure measurement

## Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Gauge pressure (differential pressure series)

### Selection and ordering data

	Article No.									
Pressure transmitters for gauge pressure (differential pressure series)										
SITRANS P320	7MF031	●	-	●	●	●	●	●	●	●
SITRANS P420	7MF041	●	-	●	●	●	●	●	●	●
Click the article number for online configuration in the PIA Life Cycle Portal.										
<b>Communication</b>										
HART, 4 ... 20 mA										0
PROFIBUS PA										1
FOUNDATION Fieldbus (FF)										2
<b>Measuring cell filling</b>										
Silicone oil										1
Inert filling liquid										3
<b>Maximum measuring span</b>										
20 mbar (8.037 inH <sub>2</sub> O)										B
60 mbar (24.11 inH <sub>2</sub> O)										D
250 mbar (1005 inH <sub>2</sub> O)										G
600 mbar (241.1 inH <sub>2</sub> O)										H
1 600 mbar (643 inH <sub>2</sub> O)										M
5 000 mbar (2009 inH <sub>2</sub> O)										P
30 bar (435 psi)										R
160 bar (2 320 psi)										Y
<b>Process connection</b>										
Oval flange, fastening thread: 7/16-20 UNF (IEC 61518)										L
Oval flange, fastening thread: M10 (PN 160), (DIN 19213)										M
Oval flange, fastening thread: 7/16-20 UNF (IEC 61518) with lateral ventilation										N
Oval flange, fastening thread: M10 (PN 160) (DIN 19213) with lateral ventilation										P
<b>Material of wetted parts: Process connection, seal diaphragm</b>										
Stainless steel 316L/1.4404, stainless steel 316L/1.4404, process flange stainless steel 316/1.4408										0
Stainless steel 316L/1.4404, alloy C276/2.4819, process flange stainless steel 316/1.4408										1
Alloy C22/2.4602, alloy C276/2.4819, process flange stainless steel 316/1.4408										2
Tantalum/tantalum, process flange stainless steel 316/1.4408 (not in combination with maximum measuring span 20 mbar (0.29 psi) and 60 mbar (0.87 psi))										4
Monel 400/2.4360, Monel 400/2.4360, process flange stainless steel 316/1.4408 (not in combination with maximum measuring span 20 mbar (0.29 psi) and 60 mbar (0.87 psi))										6
Stainless steel 316L/1.4404 gold-plated, process flange stainless steel 316/1.4408 (not in combination with maximum measuring span 20 mbar (0.29 psi) and 60 mbar (0.87 psi))										8
<b>Material of non-wetted parts</b>										
Die-cast aluminum										1
Stainless steel precision casting CF3M/1.4409 similar to 316L										2
<b>Enclosure</b>										
Dual chamber device										5
<b>Type of protection</b>										
Without Ex										A
Intrinsic safety										B
Flameproof enclosure										C
Flameproof enclosure, intrinsic safety										D
Dust protection by enclosure Zone 21/22 (DIP), increased safety Zone 2										L
Intrinsic safety, dust protection by enclosure Zone 20/21/22 (DIP), increased safety Zone 2										M
Combination of options B, C and L (Zone model)										S
Combination of options B, C and L (Zone model, Class Division)										T
<b>Electrical connections/cable entries</b>										
Thread for cable gland: Cable gland must be ordered separately as option (Axx)										
• 2 × M20 × 1.5										F
• 2 × 1/2-14 NPT										M
<b>Local operation/display</b>										
Without local display (lid closed)										0
With local display (lid closed)										1
With local display (lid with glass pane)										2

## Selection and ordering data (continued)

Options	Order code
<b>Add "-Z" to article no., add order code and plain text or entry from drop-down list.</b>	
<b>Cable glands included</b>	
Plastic	A00
Metal	A01
Stainless steel	A02
Stainless steel 316L/1.4404	A03
CMP, for XP devices	A10
CAPRI ADE 4F, CuZn, cable inner diameter 7 ... 12 mm, cable outer diameter 10 ... 16 mm	A11
CAPRI ADE 4F, stainless steel, cable inner diameter 7 ... 12 mm, cable outer diameter 10 ... 16 mm	A12
Sealing plug included, plastic	A20
Sealing plug included, metal	A21
Sealing plug included, stainless steel	A22
Sealing plug included, stainless steel 316L/1.4404	A23
<b>Device plug Han mounted left</b>	
Device plug Han 7D (plastic, straight)	A30
Device plug Han 7D (plastic, angled)	A31
Device plug Han 7D (metal, straight)	A32
Device plug Han 7D (metal, angled)	A33
Device plug Han 8D (plastic, straight)	A34
Device plug Han 8D (plastic, angled)	A35
Device plug Han 8D (metal, straight)	A36
Device plug Han 8D (metal, angled)	A37
<b>Cable socket included</b>	
Plastic, for device plug Han 7D and Han 8D	A40
Metal, for device plug Han 7D and Han 8D	A41
<b>Device plug M12 mounted left</b>	
Stainless steel, without cable socket	A62
Stainless steel, with cable socket	A63
<b>Cable entry/device plug mounting</b>	
2 × sealing plugs M20 × 1.5, IP66/68 installed on both sides	A90
2 × sealing plugs ½-14 NPT, IP66/68 installed on both sides	A91
Cable gland/device plug mounted left	A97
Cable gland/device plug mounted right	A99
<b>Nameplate labeling (standard labeling: English, unit bar)</b>	
German (bar)	B11
French (bar)	B12
Spanish (bar)	B13
Italian (bar)	B14
Chinese (bar)	B15
Russian (bar)	B16
English (psi)	B20
English (Pa)	B30
Chinese (Pa)	B35
<b>Certificates</b>	
Quality inspection certificate - 5-point factory calibration (IEC 62828-2)	C11
Inspection certificate (EN 10204-3.1) - Material of pressurized and wetted parts	C12

Options	Order code
<b>Add "-Z" to article no., add order code and plain text or entry from drop-down list.</b>	
Factory certificate - NACE (MR 0103-2012 and MR 0175-2009)	C13
Factory certificate (EN 10204-2.2) - Wetted parts	C14
Inspection certificate (EN 10204-3.1) - PMI test of pressurized and wetted parts	C15
<b>Certificates for functional safety</b>	
Functional Safety (IEC 61508) - SIL2/3	C20
<b>Device options</b>	
PDF file with device settings	D10
Double layer coating (epoxy resin and polyurethane) 120 µm of enclosure and lid	D20
FVMQ enclosure sealing	D21
Degree of protection IP66/IP68 (not for device plug M12 and Han)	D30
Unlabeled TAG plate	D40
Without labeling of the measuring range on the TAG plate	D41
Stainless steel Ex plate 1.4404/316L	D42
Extension of the medium temperature to -40 °C for measuring cell filling with inert filling liquid Please note step response time T63: 5.5 s (20 and 60 mbar); 1.4 s (250 and 600 mbar); 0.3 s (1.6 and 5 bar)	D52
Overvoltage protection up to 6 kV (internal)	D70
Overvoltage protection up to 6 kV (external)	D71
Labels on transport packaging (provided by customer)	D90
<b>General approval without Ex approval</b>	
Worldwide (CE, UKCA, RCM) except EAC, FM, CSA, KCC	E00
Worldwide (CE, UKCA, RCM, EAC, FM, CSA, KCC)	E01
CSA (USA and Canada)	E06
EAC	E07
FM	E08
KCC	E09
<b>Explosion protection approvals</b>	
ATEX (Europe)	E20
CSA (USA and Canada) <sup>1)</sup>	E21
FM (USA and Canada) <sup>1)</sup>	E22
IECEx (Worldwide)	E23
EACEx (GOST-R, -K, -B)	E24
INMETRO (Brazil)	E25
KCs (Korea)	E26
NEPSI (China)	E27
PESO (India)	E28
CSA (Japan)	E29
UKR Sepro (Ukraine)	E30
UKEX (United Kingdom)	E33
ATEX (Europe), IECEx (Worldwide) and UKEX (UK)	E47
CSA (Canada) and FM (USA) <sup>1)</sup>	E48
ATEX (Europe) and IECEx (Worldwide) + CSA (Canada) and FM (USA) <sup>1)</sup>	E49
<b>Marine approvals</b>	
DNV-GL (Det Norske Veritas/Germanischer Lloyd)	E50
LR (Lloyds Register)	E51
BV (Bureau Veritas)	E52
ABS (American Bureau of Shipping)	E53
RMR (Russian Maritime Register)	E55

## Pressure measurement

### Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Gauge pressure (differential pressure series)

#### Selection and ordering data (continued)

Options Add "-Z" to article no., add order code and plain text or entry from drop-down list.	Order code
KR (Korean Register of Shipping)	E56
RINA (Registro Italiano Navale)	E57
CCS (China Classification Society)	E58
<b>Country-specific approvals</b>	
CRN approval Canada (Canadian Registration Number)	E60
<b>Special approvals</b>	
Oxygen application (with inert liquid, max. 160 bar (2 320 psi) at 100 °C (212 °F))	E80
Dual Seal	E81
WRC/WRAS (drinking water); only with process flange O-rings made of EPDM	E83
NSF61 (drinking water)	E84
ACS (drinking water)	E85
<b>Mounting bracket</b>	
Steel, zinc-plated	H01
Stainless steel 1.4301/304	H02
Stainless steel 1.4404/316L	H03
<b>Process flanges; screw plug with vent valve</b>	
Welded in on right	J08
Welded in on left	J09
Glued in on right	J10
Glued in on left	J11
<b>Flange connections with flange EN 1092-1</b>	
Form B1	
• DN 25 PN 40, stainless steel 1.4571/316Ti	J70
• DN 50 PN 40, stainless steel 1.4571/316Ti	J71
• DN 80 PN 40, stainless steel 1.4571/316Ti	J72
• DN 15 PN 40, stainless steel 1.4571/316Ti	J78
Form C	
• DN 25 PN 40, stainless steel 1.4571/316Ti	J73
• DN 50 PN 40, stainless steel 1.4571/316Ti	J74
• DN 80 PN 40, stainless steel 1.4571/316Ti	J75
<b>Flange connection options</b>	
Flange connection and temperature extension	J76
Flange connection with epoxy resin coating	J77
<b>Process flanges; special materials</b>	
Reserved for 7MF7: without process flanges, without screws, without gaskets	K00
Process flange material alloy C22/2.4602	K01
Process flange material Monel 400/2.4360	K02
Process connection material PVDF, on the side ½-14 NPT	K05
Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 25 PN 40, MAWP 4 bar	K06
Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 40 PN 40, MAWP 4 bar	K07
<b>Process flanges; process connection option</b>	
Process flange with process connection G½ welded on	K20
Process connection NAM (ASTAVA)	K21
<b>Process flanges chambered with gaskets</b>	
1 × chambered, graphite	K40
1 × chambered, PTFE (FDA-compliant), recommended for gas measurements	K41

Options Add "-Z" to article no., add order code and plain text or entry from drop-down list.	Order code
<b>Process flanges, gaskets (instead of standard gaskets FKM (FPM))</b>	
O-ring, process flanges, PTFE	K50
O-ring, process flanges, FEP (with silicone core, approved for food)	K51
O-ring, process flanges, FFKM (FFPM)	K52
O-ring, process flanges, NBR	K53
O-ring, process flanges, EPDM	K54
<b>Process flange options</b>	
Process flanges for vertical differential pressure lines (half process flange)	K81
Process flanges (+) - side front	K82
Process flange screws, process flange nuts, material Monel 400/2.4360	K83
Valve ¼-18 NPT, material same as process flanges	K84
Valve mounted on the side, measured medium: Gas	K85
Oval flange attached, PTFE seal + fixing screws	K86
<b>Valve manifolds</b>	
With mounted valve manifold (3-way) 7MF9411-5BA, PTFE sealing rings, chrome-plated steel screws and pressure test certified in factory certificate (EN 10204-2.2)	U01
With mounted valve manifold (3-way) 7MF9411-5BA, PTFE sealing rings, stainless steel screws and pressure test certified in factory certificate (EN 10204-2.2)	U02
With mounted valve manifold (5-way) 7MF9411-5CA, PTFE sealing rings, chrome-plated steel screws and pressure test certified in factory certificate (EN 10204-2.2)	U03
With mounted valve manifold (5-way) 7MF9411-5CA, PTFE sealing rings, stainless steel screws and pressure test certified in factory certificate (EN 10204-2.2)	U04
<b>Device settings</b>	
Measuring span: Lower range value (max. 5 characters), upper range value (max. 5 characters), unit [mbar, bar, kPa, MPa, psi, ...], example: -0.5 ... 10.5 psi	Y01
TAG (on stainless steel plate and device parameters, max. 32 characters)	Y15
Measuring point description (on stainless steel plate and device parameters, max. 32 characters)	Y16
TAG short (device parameters, max. 8 characters)	Y17
Local display: [Pressure, Percent], reference [None, Absolute, Gauge], example: Pressure gauge	Y21
Local display: Scaling with standard units [m³/s, l/s, m, inch, ...]; example 1 ... 5 m	Y22
Local display: Scaling with user-specific units (max. 12 characters), example 1 ... 5 m	Y23
Set PROFIBUS PA device address (1 ... 126)	Y25
Saturation limits instead of 3.8 ... 20.5 mA, example: 3.8 ... 22.0 mA	Y30
Fault current instead of 3.6 mA [22.5 mA, 22.8 mA]	Y31
Damping in seconds instead of 2 s (0.0 ... 100.0 s)	Y32
ID number of special design	Y99

<sup>1)</sup> Explosion protection acc. to FM/CSA: suitable for installation according to NEC 500/505.

## Technical specifications

## SITRANS P320 / SITRANS P420 for gauge pressure (differential pressure series)

SITRANS P320 / SITRANS P420 for gauge pressure (differential pressure series)			
<b>Input</b>			
Measured variable	Gauge pressure		
Measuring span (continuously adjustable) or measuring range and max. permissible operating pressure (pursuant to Pressure Equipment Directive 2014/68/EU)	Measuring span	Max. permissible operating pressure MAWP (PS)	Maximum permissible test pressure
	1 ... 20 mbar	160 bar	240 bar
	0.1 ... 2 kPa	16 MPa	24 MPa
	0.4019 ... 8.037 inH <sub>2</sub> O	2 320 psi	3 481 psi
	1 ... 60 mbar	160 bar	240 bar
	0.1 ... 6 kPa	16 MPa	24 MPa
	0.4019 ... 24.11 inH <sub>2</sub> O	2 320 psi	3 481 psi
	2.5 ... 250 mbar	160 bar	240 bar
	0.2 ... 25 kPa	16 MPa	24 MPa
	1.005 ... 100.5 inH <sub>2</sub> O	2 320 psi	3 481 psi
	6 ... 600 mbar	160 bar	240 bar
	0.6 ... 60 kPa	16 MPa	24 MPa
	2.41 ... 241.1 inH <sub>2</sub> O	2 320 psi	3 481 psi
	16 ... 1 600 mbar	160 bar	240 bar
	1.6 ... 160 kPa	16 MPa	24 MPa
	6.43 ... 643 inH <sub>2</sub> O	2 320 psi	3 481 psi
	50 ... 5 000 mbar	160 bar	240 bar
	5 ... 500 kPa	16 MPa	24 MPa
	20.09 ... 2 009 inH <sub>2</sub> O	2 320 psi	3 481 psi
	0.3 ... 30 bar	160 bar	240 bar
0.03 ... 3 MPa	16 MPa	24 MPa	
4.35 ... 435 psi	2 320 psi	3 481 psi	
8 ... 160 bar	160 bar	240 bar	
0.8 ... 16 MPa	16 MPa	24 MPa	
116 ... 2 320 psi	2 320 psi	3 481 psi	
<b>Measuring limits</b>			
• Lower measuring limit			
- Measuring cell with silicone oil filling	30 mbar a/3 kPa a/0.44 psi a		
- Measuring cell with inert oil	30 mbar a/3 kPa a/0.44 psi a		
- Measuring cell with FDA-compliant oil	100 mbar a/10 kPa a/1.45 psi a		
• Upper measuring limit	100% of the max. measuring span (for oxygen measurement max. 100 bar/10 MPa/1450 psi and 60 °C (140 °F) ambient temperature/medium temperature)		
• Lower range value	Between the measuring limits (continuously adjustable)		
<b>Output</b>			
Output signal	HART		
• Lower saturation limit (continuously adjustable)	4 ... 20 mA		
• Upper saturation limit (continuously adjustable)	3.55 mA, factory set to 3.8 mA		
• Ripple (without HART communication)	22.8 mA, factory-set to 20.5 mA or optionally 22.0 mA		
Adjustable damping	$I_{pp} \leq 0.5\%$ of max. output current		
• Current simulator	0 ... 100 s, continuously adjustable over remote operation		
• Failure signal	0 ... 100 s, in increments of 0.1 s, adjustable over display		
Load	Resistance R [Ω]		
• Without HART communication	3.55 ... 22.8 mA		
• With HART communication	3.55 ... 22.8 mA		
Characteristic curve	Resistance R [Ω]		
Physical bus	R = (U <sub>H</sub> - 10.5 V) / 22.8 mA, U <sub>H</sub> : Auxiliary power in V		
Polarity-independent	R = 230 ... 1100 Ω		
	• Linearly increasing or linearly decreasing		
	• Linear increase or decrease or according to the square root (only for differential pressure and flow)		

# Pressure measurement

## Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Gauge pressure (differential pressure series)

### Technical specifications (continued)

#### SITRANS P320 / SITRANS P420 for gauge pressure (differential pressure series)

##### Measuring accuracy

###### Reference conditions

- According to IEC 62828-1
- Rising characteristic curve
- Lower range value 0 bar/kPa/psi
- Seal diaphragm stainless steel
- Measuring cell with silicone oil filling
- Room temperature 25 °C (77 °F)

###### Conformity error at limit point setting, including hysteresis and repeatability

###### Measuring span ratio r (spread, Turn-Down)

r = max. measuring span/set measuring span and nominal measuring range

###### • Linear characteristic curve

- 20 mbar/2 kPa/8.031 inH<sub>2</sub>O

r ≤ 5: ≤ 0.075%

5 < r ≤ 20: ≤ (0.005 · r + 0.05)%

- 60 mbar/6 kPa/24.09 inH<sub>2</sub>O

r ≤ 5: ≤ 0.075%

5 < r ≤ 60: ≤ (0.005 · r + 0.05)%

- 250 mbar/25 kPa/3.6 psi  
600 mbar/60 kPa/240.9 inH<sub>2</sub>O  
1 600 mbar/160 kPa/642.4 inH<sub>2</sub>O  
5 000 mbar/500 kPa/2008 inH<sub>2</sub>O  
30 bar/3 MPa/435 psi

r ≤ 5: ≤ 0.065% (SITRANS P320)

≤ 0.04% (SITRANS P420)

5 < r ≤ 100: ≤ (0.004 · r + 0.045)%

- 160 bar/16 MPa/2 320 psi

r ≤ 5: ≤ 0.065% (SITRANS P320)

≤ 0.04% (SITRANS P420)

5 < r ≤ 20: ≤ (0.004 · r + 0.045)%

###### Influence of ambient temperature in % per 28 °C (50 °F)

• 20 mbar/2 kPa/8.031 inH<sub>2</sub>O

≤ (0.15 · r + 0.1)%

• 60 mbar/6 kPa/24.09 inH<sub>2</sub>O

≤ (0.075 · r + 0.1)%

• 250 mbar/25 kPa/3.6 psi  
600 mbar/60 kPa/240.9 inH<sub>2</sub>O  
1 600 mbar/160 kPa/642.4 inH<sub>2</sub>O  
5 000 mbar/500 kPa/2008 inH<sub>2</sub>O  
30 bar/3 MPa/435 psi  
160 bar/16 MPa/2 320 psi

≤ (0.025 · r + 0.125)% (SITRANS P320)

• 250 mbar/25 kPa/3.6 psi  
5 000 mbar/500 kPa/2008 inH<sub>2</sub>O

≤ (0.025 · r + 0.0625)% (SITRANS P420)

• 600 mbar/60 kPa/240.9 inH<sub>2</sub>O  
1 600 mbar/160 kPa/642.4 inH<sub>2</sub>O  
30 bar/3 MPa/435 psi  
160 bar/16 MPa/2 320 psi

≤ (0.0125 · r + 0.0625)% (SITRANS P420)

###### Long-term stability at ±30 °C (± 54 °F)

• 20 mbar/2 kPa/8.031 inH<sub>2</sub>O

≤ (0.2 · r)% per year

• 60 mbar/6 kPa/24.09 inH<sub>2</sub>O

In 5 years ≤ (0.25 · r)%

• 250 mbar/25 kPa/3.6 psi  
600 mbar/60 kPa/240.9 inH<sub>2</sub>O  
1 600 mbar/160 kPa/642.4 inH<sub>2</sub>O  
5 000 mbar/500 kPa/2008 inH<sub>2</sub>O  
30 bar/3 MPa/435 psi  
160 bar/16 MPa/2 320 psi

In 5 years ≤ (0.125 · r)%

In 10 years ≤ (0.15 · r)%

###### Step response time T<sub>63</sub> (without electrical damping)

• 20 mbar/2 kPa/8.031 inH<sub>2</sub>O

Approx. 0.160 s

• 60 mbar/6 kPa/24.09 inH<sub>2</sub>O

Approx. 0.150 s

• 250 mbar/25 kPa/3.6 psi  
600 mbar/60 kPa/240.9 inH<sub>2</sub>O  
1 600 mbar/160 kPa/642.4 inH<sub>2</sub>O  
5 000 mbar/500 kPa/2008 inH<sub>2</sub>O  
30 bar/3 MPa/435 psi  
160 bar/16 MPa/2 320 psi

Approx. 0.135 s

###### Effect of mounting position (in pressure per change of angle)

≤ 0.7 mbar/0.07 kPa/0.010 psi per 10° incline  
(zero offset is possible with position error compensation)

###### Effect of auxiliary power (in % per voltage change)

0.005% per 1 V

**Technical specifications (continued)**

<b>SITRANS P320 / SITRANS P420 for gauge pressure (differential pressure series)</b>	
<b>Operating conditions</b>	
Medium temperature	
• Measuring cell with silicone oil filling	-40 ... +100 °C (-40 ... +212 °F)
- Measuring cell 30 bar (435 psi)	-20 ... +100 °C (-4 ... +212 °F)
- Measuring cell 160 bar (2 320 psi)	-20 ... +100 °C (-4 ... +212 °F)
• Measuring cell with inert oil	-20 ... +100 °C (-4 ... +212 °F)
Ambient conditions	
• Ambient temperature/enclosure	Observe the temperature class in hazardous areas.
- Measuring cell with silicone oil filling	-40 ... +85 °C (-40 ... +185 °F)
- Measuring cell with inert oil	-40 ... +85 °C (-40 ... +185 °F)
- Display	-20 ... +80 °C (-4 ... +176 °F)
• Storage temperature	-50 ... +85 °C (-58 ... +185 °F)
• Climatic class in accordance with IEC 60721-3-4	4K4H
• Degree of protection	
- According to IEC 60529	IP66, IP68
- According to NEMA 250	Type 4X
• Electromagnetic compatibility	
- Emitted interference and interference immunity	According to IEC 61326 and NAMUR NE 21
<b>Structural design</b>	
Weight	<ul style="list-style-type: none"> <li>• Aluminum enclosure: Approx. 3.9 kg (8.5 lbs)</li> <li>• Stainless steel enclosure: Approx. 5.9 kg (13 lbs)</li> </ul>
Material	
• Material of wetted parts	
- Seal diaphragm	Stainless steel, mat. no. 1.4404/316L, Alloy C276, mat. no. 2.4819, Monel, mat. no. 2.4360, tantalum or gold
- Process flanges	Stainless steel, mat. no. 1.4408 to PN 160, mat. no. 1.4571/316Ti for PN 420, Alloy C22, 2.4602 or Monel, mat. no. 2.4360
- Sealing plug	1.4404 or as option alloy C22; 2.4602 or Monel mat. no. 2.4360
- O-ring	FPM (Viton) or optionally: PTFE, FEP, FEPM and NBR
• Material of non-wetted parts	
- Electronics enclosure	<ul style="list-style-type: none"> <li>• Low-copper die-cast aluminum GD-ALSi 12 or stainless steel precision casting, mat. no. 1.4409/ CF-3M</li> <li>• Standard: Powder coating with polyurethane</li> <li>Option: 2 coats: Coat 1: epoxy-based; coat 2: Polyurethane</li> <li>• Stainless steel nameplate (1.4404/316L)</li> </ul>
- Process flange screws	Stainless steel ISO 3506-1 A4-70
- Mounting bracket	Steel, zinc-plated steel, or stainless steel
Process connection	1/4-18 NPT female thread and flange connection with 7/16-20 UNF fastening thread according to EN 61518 or M10 according to DIN 19213 (M12 for PN 420 (MWP 6092 psi))
Electrical connection	Screw terminals Cable entry via the following screw glands: <ul style="list-style-type: none"> <li>• M20 × 1.5</li> <li>• 1/2-14 NPT</li> <li>• Device plug Han 7D/Han 8D<sup>1)</sup></li> <li>• Device plug M12</li> </ul>
<b>Displays and controls</b>	
Buttons	4 buttons for operation directly on the device
Display	<ul style="list-style-type: none"> <li>• With or without integrated display (optional)</li> <li>• Lid with inspection window (optional)</li> </ul>
<b>Auxiliary power U<sub>H</sub></b>	
Terminal voltage on pressure transmitter	10.5 ... 45 V DC 10.5 ... 30 V DC in intrinsically safe mode
Ripple	U <sub>SS</sub> ≤ 0.2 V (47 ... 125 Hz)

# Pressure measurement

## Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Gauge pressure (differential pressure series)

### Technical specifications (continued)

SITRANS P320 / SITRANS P420 for gauge pressure (differential pressure series)	
Noise	$U_{\text{eff}} \leq 1.2 \text{ mV}$ (0.5 ... 10 kHz)
Auxiliary power	–
Separate supply voltage	–
<b>Certificates and approvals</b>	
Classification according to pressure equipment directive (PED 2014/68/EU)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)
Drinking water	
• WRAS (England)	No.: 1903094 (option E83)
• ACS (France)	No.: 18 ACC LY 277 (option E85)
• NSF (USA)	No.: 20180920-MH61350 (option E84)
CRN (Canada)	No.: 0F9863.5C (option E60)
Explosion protection acc. to NEPSI (China)	No.: GYJ19.1058X (option E27)
Explosion protection acc. to INMETRO (Brazil)	No.: BRA-18-GE-0035X (option E25)
Explosion protection	
• Intrinsic safety "I"	
- Marking	II 1/2 G Ex ia/ib IIC T4/T6 Ga/Gb
- Permissible ambient temperature	-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6
- Connection	To certified intrinsically safe circuits with peak values: $U_i = 30 \text{ V}$ , $I_i = 101 \text{ mA}$ , $P_i = 760 \text{ mW}$ $U_i = 29 \text{ V}$ , $I_i = 110 \text{ mA}$ , $P_i = 800 \text{ mW}$
- Effective internal inductance/capacitance	$L_i = 0.24 \text{ } \mu\text{H}$ / $C_i = 3.29 \text{ nF}$
• Flameproof enclosure "d"	
- Marking	Ex II 1/2 G Ex ia/db IIC T4/T6 Ga/Gb
- Permissible ambient temperature	-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6
- Connection	To a circuit with the operating values: $U_n = 10.5 \text{ ... } 45 \text{ V}$ , $4 \text{ ... } 20 \text{ mA}$
• Dust explosion protection for Zones 21, 22	
- Marking	Ex II 2D Ex tb IIIC T120 °C Db Ex II 3D Ex tc IIIC T120 °C Dc
- Permissible ambient temperature	-40 ... +80 °C (-40 ... +176 °F)
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F)
- Max. surface temperature	120 °C (248 °F)
- Connection	To a circuit with the operating values: $U_n = 10.5 \text{ ... } 45 \text{ V}$ , $4 \text{ ... } 20 \text{ mA}$
• Dust explosion protection for Zones 20, 21, 22	
- Marking	Ex II 1D Ex ia IIIC T120 °C Da Ex II 2D Ex ib IIIC T120 °C Db
- Permissible ambient temperature	-40 ... +80 °C (-40 ... +176 °F)
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F)
- Connection	To certified intrinsically safe circuits with peak values: $U_i = 30 \text{ V}$ , $I_i = 101 \text{ mA}$ , $P_i = 760 \text{ mW}$ $U_i = 29 \text{ V}$ , $I_i = 110 \text{ mA}$ , $P_i = 800 \text{ mW}$
- Effective internal inductance/capacitance	$L_i = 0.24 \text{ } \mu\text{H}$ / $C_i = 3.29 \text{ nF}$
• Type of protection for Zone 2	
- Marking	Ex II 3G Ex ec IIC T4/T6 Gc
- Permissible ambient temperature "ec"	-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +40 °C (-40 ... +104 °F) temperature class T6
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6
- "ec" connection	To a circuit with the operating values: $U_n = 10.5 \text{ ... } 30 \text{ V}$ , $4 \text{ ... } 20 \text{ mA}$
• Explosion protection acc. to FM	Available soon



## Technical specifications (continued)

SITRANS P320 / SITRANS P420 for gauge pressure (differential pressure series)	
- Marking (XP/DIP) or IS; NI; S	CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4 ... T6; CL I, DIV 2, GP ABCD T4 ... T6; CL II, DIV 2, GP FG; CL III
• Explosion protection according to CSA	Available soon
- Marking (XP/DIP) or (IS)	CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4 ... T6; CL I, DIV 2, GP ABCD T4 ... T6; CL II, DIV 2, GP FG; CL III
NAMUR recommendations	
• NE 06	Standardized Electrical Signals and Questions Relating to Engineering Technology
• NE 21	Electromagnetic Compatibility (EMC) of Industrial Process and Laboratory Control Equipment
• NE 23	Extra Low Voltage Circuits with Safe Separation
• NE 43	Standardization of the Signal Level for the Failure Information of Digital Transmitters
• NE 53	Software and Hardware of Field Devices and Signal Processing Devices with Digital Electronics
• NE 80	The Application of the Pressure Equipment Directive to Process Control Devices
• NE 105	Specifications for Integrating Fieldbus Devices in Engineering Tools for Field Devices
• NE 107	Self-Monitoring and Diagnosis of Field Devices
• NE 131	NAMUR Standard Device - Field Devices for Standard Applications

<sup>1)</sup> Han 8D is identical to Han 8U.

Communication	
<b>HART</b>	
HART	230 ... 1 100 Ω
Protocol	HART 7
Software for computer	SIMATIC PDM
<b>PROFIBUS PA</b>	
Simultaneous communication with master class 2 (max.)	4
The address can be set using	Configuration tool or local operation (default setting address 126)
Cyclic data usage	
• Output byte	≤ 35 (7 measured values)
• Input byte	0, 1, or 2 (register operation mode and reset function for dosing)
Internal preprocessing	
Device profile	PROFIBUS PA Profile Version 4.01 Class B. Cyclic data usage compatible with version 3.XX
Number of function blocks	7
• Analog input	
- Adaptation to user-specific process variable	Yes, linearly rising or falling characteristic curve
- Electrical damping adjustable	0 ... 100 s
- Simulation function	Output/input
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respectively
• Register (totalizer)	Can be reset, preset, optional direction of counting, simulation function of register output
- Limit monitoring	One upper and lower warning limit and one alarm limit respectively
• Physical block	1
Transducer blocks	
• Pressure transducer block	1
- Can be calibrated by applying two pressures	Yes
- Monitoring of sensor limits	Yes

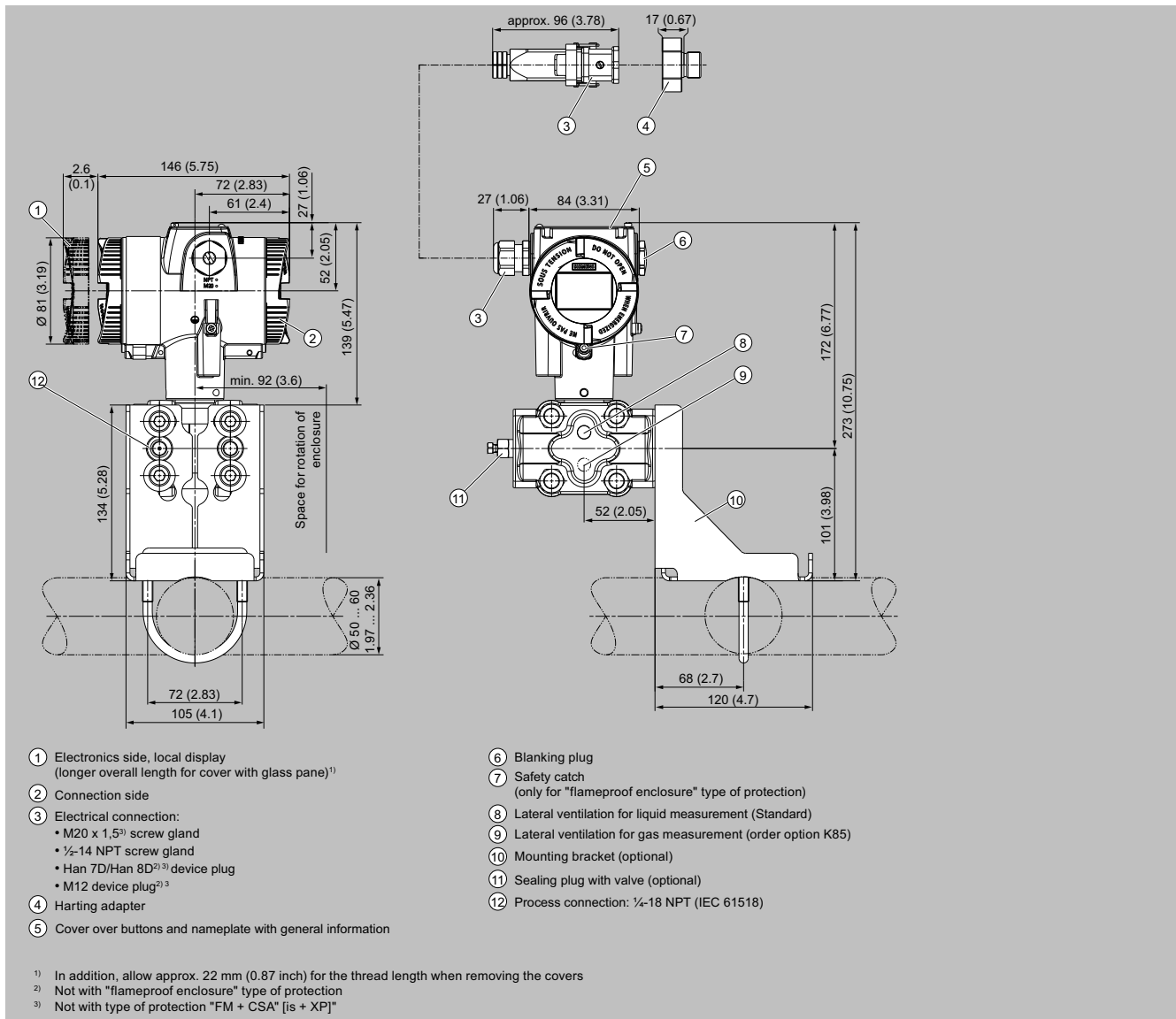
Communication	
- Specification of a vessel characteristic curve with	Max. 30 nodes
- Square-rooted characteristic curve for flow measurement	Yes
- Tank characteristic curve for volume measurement	Yes
- Low flow cut-off and implementation point of square-root extraction	Parameterizable
- Simulation function for measured pressure value and sensor temperature	Constant value or by means of parameterizable ramp function
<b>FOUNDATION Fieldbus</b>	
Device profile	FF ITK 6
Function blocks	3 function blocks analog input, 1 function block PID
• Analog input	
- Adaptation to user-specific process variable	Yes, linearly rising or falling characteristic curve
- Electrical damping adjustable	0 ... 100 s
- Simulation function	Output/input (can be locked within the device with a bridge)
- Failure mode	Parameterizable (last good value, substitute value, incorrect value)
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respectively
- Square-rooted characteristic curve for flow measurement	Yes
• PID	Standard FOUNDATION Fieldbus function block
• Physical block	1 resource block
Transducer blocks	
• Pressure transducer block	1 transducer block Pressure with calibration, 1 transducer block LCD
- Can be calibrated by applying two pressures	Yes
- Monitoring of sensor limits	Yes
- Simulation function: pressure measurement, sensor temperature and electronics temperature	Constant value or by means of parameterizable ramp function

# Pressure measurement

## Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Gauge pressure (differential pressure series)

### Dimensional drawings



SITRANS P320/P420 pressure transmitter for gauge pressure (differential pressure series), dimensions in mm (inch)

for applications with advanced requirements / SITRANS P320/P420 / Gauge and absolute pressure, flush-mounted

## Selection and ordering data

	Article No.	
<b>Pressure transmitters for gauge and absolute pressure, with flush-mounted diaphragm</b>		
SITRANS P320 for gauge pressure	7MF030	● - ● ● ● ● ● - ● ● ● ●
SITRANS P420 for gauge pressure	7MF040	● - ● ● ● ● ● - ● ● ● ●
SITRANS P320 for absolute pressure	7MF032	● - ● ● ● ● ● - ● ● ● ●
SITRANS P420 for absolute pressure	7MF042	● - ● ● ● ● ● - ● ● ● ●
Click the article number for online configuration in the PIA Life Cycle Portal.		
<b>Communication</b>		
HART, 4 ... 20 mA	0	
PROFIBUS PA	1	
FOUNDATION Fieldbus (FF)	2	
<b>Measuring cell filling</b>		
Silicone oil		1
Inert filling liquid		3
Neobee oil		4
<b>Maximum measuring span</b>		
1 000 mbar (14.5 psi)		J
4 000 mbar (58 psi)		N
16 bar (232 psi)		Q
63 bar (914 psi)		T
1 300 mbar a (18.9 psi a)		L
5 000 mbar a (72.5 psi a)		P
30 bar a (435 psi a)		R
<b>Process connection</b>		
Flush-mounted diaphragm		K
<b>Material of wetted parts: Process connection, seal diaphragm</b>		
Stainless steel 316L/1.4404, stainless steel 316L/1.4404		0
Stainless steel 316L/1.4404, alloy C276/2.4819		1
Alloy C22/2.4602, alloy C276/2.4819		2
<b>Material of non-wetted parts</b>		
Die-cast aluminum		1
Stainless steel precision casting CF3M/1.4409 similar to 316L		2
<b>Enclosure</b>		
Dual chamber device		5
<b>Type of protection</b>		
Without Ex		A
Intrinsic safety		B
Flameproof enclosure		C
Flameproof enclosure, intrinsic safety		D
Dust protection by enclosure Zone 21/22 (DIP), increased safety Zone 2		L
Intrinsic safety, dust protection by enclosure Zone 20/21/22 (DIP), increased safety Zone 2		M
Combination of options B, C and L (Zone model)		S
Combination of options B, C and L (Zone model, Class Division)		T
<b>Electrical connections/cable entries</b>		
Thread for cable gland: Cable gland must be ordered separately as option (Axx)		
• 2 × M20 × 1.5		F
• 2 × ½-14 NPT		M
<b>Local operation/display</b>		
Without local display (lid closed)		0
With local display (lid closed)		1
With local display (lid with glass pane)		2

Options	Order code
Add "-Z" to article no., add order code and plain text or entry from drop-down list.	
<b>Cable glands included</b>	
Plastic	A00
Metal	A01

Options	Order code
Add "-Z" to article no., add order code and plain text or entry from drop-down list.	
Stainless steel	A02
Stainless steel 316L/1.4404	A03
CMP, for XP devices	A10

## Pressure measurement

### Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Gauge and absolute pressure, flush-mounted

#### Selection and ordering data (continued)

Options	Order code
<b>Add "-Z" to article no., add order code and plain text or entry from drop-down list.</b>	
CAPRI ADE 4F, CuZn, cable inner diameter 7 ... 12 mm, cable outer diameter 10 ... 16 mm	A11
CAPRI ADE 4F, stainless steel, cable inner diameter 7 ... 12 mm, cable outer diameter 10 ... 16 mm	A12
Sealing plug included, plastic	A20
Sealing plug included, metal	A21
Sealing plug included, stainless steel	A22
Sealing plug included, stainless steel 316L/1.4404	A23
<b>Device plug Han mounted left</b>	
Device plug Han 7D (plastic, straight)	A30
Device plug Han 7D (plastic, angled)	A31
Device plug Han 7D (metal, straight)	A32
Device plug Han 7D (metal, angled)	A33
Device plug Han 8D (plastic, straight)	A34
Device plug Han 8D (plastic, angled)	A35
Device plug Han 8D (metal, straight)	A36
Device plug Han 8D (metal, angled)	A37
<b>Cable socket included</b>	
Plastic, for device plug Han 7D and Han 8D	A40
Metal, for device plug Han 7D and Han 8D	A41
<b>Device plug M12 mounted left</b>	
Stainless steel, without cable socket	A62
Stainless steel, with cable socket	A63
<b>Cable entry/device plug mounting</b>	
2× sealing plugs M20 × 1.5, IP66/68 installed on both sides	A90
2× sealing plugs ½-14 NPT, IP66/68 installed on both sides	A91
Cable gland/device plug mounted left	A97
Cable gland/device plug mounted right	A99
<b>Nameplate labeling (standard labeling: English, unit bar)</b>	
German (bar)	B11
French (bar)	B12
Spanish (bar)	B13
Italian (bar)	B14
Chinese (bar)	B15
Russian (bar)	B16
English (psi)	B20
English (Pa)	B30
Chinese (Pa)	B35
<b>Certificates</b>	
Quality inspection certificate, 5-point factory calibration (IEC 62828-2)	C11
Inspection certificate (EN 10204-3.1) - Material of pressurized and wetted parts	C12
Factory certificate - NACE (MR 0103-2012 and MR 0175-2009)	C13
Factory certificate (EN 10204-2.2) - Wetted parts	C14
Inspection certificate (EN 10204-3.1) - PMI test of pressurized and wetted parts	C15
<b>Certificates for functional safety</b>	
Functional Safety (IEC 61508) - SIL2/3	C20

Options	Order code
<b>Add "-Z" to article no., add order code and plain text or entry from drop-down list.</b>	
<b>Device options</b>	
PDF file with device settings	D10
Double layer coating (epoxy resin and polyurethane) 120 µm of enclosure and lid	D20
FVMQ enclosure sealing	D21
Degree of protection IP66/IP68 (not for device plug M12 and Han)	D30
Unlabeled TAG plate	D40
Without labeling of the measuring range on the TAG plate	D41
Stainless steel Ex plate 1.4404/316L	D42
Overvoltage protection up to 6 kV (internal)	D70
Overvoltage protection up to 6 kV (external)	D71
Labels on transport packaging (provided by customer)	D90
<b>General approval without Ex approval</b>	
Worldwide (CE, UKCA, RCM) except EAC, FM, CSA, KCC	E00
Worldwide (CE, UKCA, RCM, EAC, FM, CSA, KCC)	E01
CSA (USA and Canada)	E06
EAC	E07
FM	E08
KCC	E09
<b>Explosion protection approvals</b>	
ATEX (Europe)	E20
CSA (USA and Canada) <sup>1)</sup>	E21
FM (USA and Canada) <sup>1)</sup>	E22
IECEx (Worldwide)	E23
EACEx (GOST-R, -K, -B)	E24
INMETRO (Brazil)	E25
KCs (Korea)	E26
NEPSI (China)	E27
PESO (India)	E28
CSA (Japan)	E29
UKR Sepro (Ukraine)	E30
UKEX (United Kingdom)	E33
ATEX (Europe), IECEx (Worldwide) and UKEX (UK)	E47
CSA (Canada) and FM (USA) <sup>1)</sup>	E48
ATEX (Europe) and IECEx (Worldwide) + CSA (Canada) and FM (USA) <sup>1)</sup>	E49
<b>Marine approvals</b>	
DNV-GL (Det Norske Veritas/Germanischer Lloyd)	E50
LR (Lloyds Register)	E51
BV (Bureau Veritas)	E52
ABS (American Bureau of Shipping)	E53
RMR (Russian Maritime Register)	E55
KR (Korean Register of Shipping)	E56
RINA (Registro Italiano Navale)	E57
CCS (China Classification Society)	E58
<b>Country-specific approvals</b>	
CRN approval Canada (Canadian Registration Number)	E60
<b>Special approvals</b>	
Oxygen application (with inert liquid, max. 160 bar (2 320 psi) at 100 °C (212 °F))	E80
Dual Seal	E81

## Selection and ordering data (continued)

Options	Order code
<b>Add "-Z" to article no., add order code and plain text or entry from drop-down list.</b>	
WRC/WRAS (drinking water); only with process flange O-rings made of EPDM	E83
NSF61 (drinking water)	E84
ACS (drinking water)	E85
3A (hygiene)	E86
EHEDG (hygiene)	E87
<b>Process flanges, gaskets (instead of standard gaskets FKM (FPM))</b>	
Gasket (EN 837-1) material Fe (soft iron)	K60
Gasket (EN 837-1) material 1.4571	K61
Gasket (EN 837-1) material Cu	K62
<b>Process connection</b>	
Process connection external thread G $\frac{1}{2}$ , bore hole 11 mm	K80
<b>Flanges according to EN 1092-1 Form B1 and ASME standard B16.5</b>	
EN 1092-1 Form B1	
• DN 50 PN 16	M03
• DN 80 PN 16	M05
• DN 25 PN 40	M10
• DN 40 PN 40	M12
• DN 50 PN 40	M13
• DN 80 PN 40	M15
• DN 40 PN 100	M22
ASME B16.5	
• 1" Class 150 RF	M30
• 1 $\frac{1}{2}$ " Class 150 RF	M31
• 2" Class 150 RF	M32
• 3" Class 150 RF	M33
• 4" Class 150 RF	M34
• 1 $\frac{1}{2}$ " Class 300 RF	M36
• 2" Class 300 RF	M37
• 3" Class 300 RF	M38
• 4" Class 300 RF	M39
<b>Sanitary connections in accordance with the standard</b>	
Sanitary flange DIN 11851	
• With slotted union nut DN 50 PN 25	N03
• With slotted union nut DN 80 PN 25	N05
Tri-Clamp	
• DIN 32676 DN 50 PN 16	N14
• DIN 32676 DN 65 PN 10	N15
• ISO 2852 2" PN 40	N22
• ISO 2852 3" PN 40	N23
Aseptic screwed connector	
• DIN 11864-1 Form A DN 50 PN 25	N33
• DIN 11864-1 Form A DN 65 PN 25	N34
• DIN 11864-1 Form A DN 80 PN 25	N35
• DIN 11864-1 Form A DN100 PN 25	N36
Aseptic flange with notch	

Options	Order code
<b>Add "-Z" to article no., add order code and plain text or entry from drop-down list.</b>	
• DIN 11864-2 Form A DN 50 PN 16	N43
• DIN 11864-2 Form A DN 65 PN 16	N44
• DIN 11864-2 Form A DN 80 PN 16	N45
• DIN 11864-2 Form A DN100 PN 16	N46
Aseptic clamp with groove	
• DIN 11864-3 Form A DN 50 PN 25	N53
• DIN 11864-3 Form A DN 65 PN 25	N54
• DIN 11864-3 Form A DN 80 PN 16	N55
• DIN 11864-3 Form A DN100 PN 16	N56
<b>Sanitary connections manufacturer-specific</b>	
Varivent type N for pipes DN 40 ... DN 125 PN 40	P06
<b>Sanitary connections special design</b>	
Tank connection	
• TG 52/50 PN 40 with gasket	Q00
• TG 52/150 PN 40 with gasket	Q01
DRD flange D = 65 mm DN 50 PN 40	Q15
SMS socket	
• With thread 2" PN 25	Q28
• With thread 2 $\frac{1}{2}$ " PN 25	Q29
• With thread 3" PN 25	Q30
<b>Weldable sockets for tank connection</b>	
Weldable piece for TG52/50	Q90
Weldable piece for TG52/150	Q91
<b>Connections for the paper industry</b>	
Process connection PMC Style Standard	R00
Process connection PMC Style Minibolt	R01
Weldable sockets for PMC Style Standard	R02
Weldable sockets for PMC Style Minibolt	R03
<b>Threaded connection</b>	
External thread G $\frac{3}{4}$ -A DIN 3852-2 Form A	R11
External thread G1-A DIN 3852-2 Form A	R12
External thread G2-A DIN 3852-2 Form A	R14
<b>Special options front-flush</b>	
Temperature decoupler (media temperature up to 200 °C)	R85
Mating connector including gasket	R90
<b>Device settings</b>	
Measuring span: Lower range value (max. 5 characters), upper range value (max. 5 characters), unit [mbar, bar, kPa, MPa, psi, ...], example: -0.5 ... 10.5 psi	Y01
TAG (on stainless steel plate and device parameters, max. 32 characters)	Y15
Measuring point description (on stainless steel plate and device parameters, max. 32 characters)	Y16
TAG short (device parameters, max. 8 characters)	Y17
Local display: [Pressure, Percent], reference [None, Absolute, Gauge], example: Pressure gauge	Y21
Local display: Scaling with standard units [m <sup>3</sup> /s, l/s, m, inch, ...]; example 1 ... 5 m	Y22
Local display: Scaling with user-specific units (max. 12 characters), example 1 ... 5 m	Y23
Set PROFIBUS PA device address (1 ... 126)	Y25

## Pressure measurement

### Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Gauge and absolute pressure, flush-mounted

#### Selection and ordering data (continued)

Options	Order code
<b>Add "-Z" to article no., add order code and plain text or entry from drop-down list.</b>	
Saturation limits instead of 3.8 ... 20.5 mA, example: 3.8 ... 22.0 mA	<b>Y30</b>
Fault current instead of 3.6 mA [22.5 mA, 22.8 mA]	<b>Y31</b>
Damping in seconds instead of 2 s (0.0 ... 100.0 s)	<b>Y32</b>
ID number of special design	<b>Y99</b>

<sup>1)</sup> Explosion protection acc. to FM/CSA: suitable for installation according to NEC 500/505.

### Technical specifications

SITRANS P320 / SITRANS P420 for gauge and absolute pressure, with flush-mounted diaphragm			
<b>Input of gauge pressure with front-flush diaphragm</b>			
Measured variable	Gauge pressure		
Measuring span (continuously adjustable) or measuring range, max. permissible operating pressure and max. permissible test pressure	Measuring span	Max. permissible operating pressure MAWP (PS)	Maximum permissible test pressure
	0.01 ... 1 bar 1 ... 100 kPa 0.15 ... 14.5 psi 0.04 ... 4 bar 4 ... 400 kPa 0.58 ... 58 psi 0.16 ... 16 bar 0.016 ... 1.6 MPa 2.3 ... 232 psi 0.6 ... 63 bar 0.063 ... 6.3 MPa 9.1 ... 914 psi	Refer to the information on the nameplate of the pressure transmitter and the data on the mounting flange <sup>1)</sup>	
Measuring limits			
• Lower measuring limit			
- Measuring cell with silicone oil filling	100 mbar a/10 kPa a/1.45 psi a		
- Measuring cell with inert oil	100 mbar a/10 kPa a/1.45 psi a		
- Measuring cell with FDA-compliant oil	100 mbar a/10 kPa a/1.45 psi a		
• Upper measuring limit	100% of max. measuring span		
<b>Input of absolute pressure, with flush-mounted diaphragm</b>			
Measured variable	Absolute pressure		
Measuring span (continuously adjustable) or measuring range, max. permissible operating pressure and max. permissible test pressure	Measuring span	Max. permissible operating pressure MAWP (PS)	Maximum permissible test pressure
	43 ... 1300 mbar a 4.3 ... 130 kPa a 17 ... 525 inH <sub>2</sub> O a 166 ... 5 000 mbar a 16.6 ... 500 kPa a 2.41 ... 72.5 psi a 1 ... 30 bar a 0.1 ... 3 MPa a 14.5 ... 435 psi a	Refer to the information on the nameplate of the pressure transmitter and the data on the mounting flange <sup>1)</sup>	
Measuring limits			
• Lower measuring limit			
- Measuring cell with silicone oil filling	0 bar a/0 kPa a/0 psi a		
• Upper measuring limit	100% of max. measuring span		
Lower range value	Between the measuring limits (continuously adjustable)		
<b>Output</b>			
Output signal	<b>HART</b> 4 ... 20 mA		
• Lower saturation limit (continuously adjustable)	3.55 mA, factory set to 3.8 mA		
• Upper saturation limit (continuously adjustable)	22.8 mA, factory-set to 20.5 mA or optionally 22.0 mA		
• Ripple (without HART communication)	$I_{pp} \leq 0.5\%$ of max. output current		
Adjustable damping	0 ... 100 s, continuously adjustable over remote operation 0 ... 100 s, in increments of 0.1 s, adjustable over local display		
• Current simulator	3.55 ... 22.8 mA		
• Failure signal	3.55 ... 22.8 mA		
Load	Resistance R [Ω]		

# Pressure measurement

## Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Gauge and absolute pressure, flush-mounted

### Technical specifications (continued)

SITRANS P320 / SITRANS P420 for gauge and absolute pressure, with flush-mounted diaphragm	
<ul style="list-style-type: none"> <li>Without HART communication</li> <li>With HART communication</li> </ul>	$R = (U_H - 10.5 \text{ V}) / 22.8 \text{ mA}$ , $U_H$ : Auxiliary power in V $R = 230 \dots 1100 \Omega$
Characteristic curve	<ul style="list-style-type: none"> <li>Linearly increasing or linearly decreasing</li> <li>Linear increase or decrease or according to the square root (only for differential pressure and flow)</li> </ul>
Physical bus	-
Polarity-independent	-
<b>Gauge pressure measuring accuracy, with front-flush diaphragm</b>	
Reference conditions	<ul style="list-style-type: none"> <li>According to IEC 62828-1</li> <li>Rising characteristic curve</li> <li>Lower range value 0 bar/kPa/psi</li> <li>Seal diaphragm stainless steel</li> <li>Measuring cell with silicone oil filling</li> <li>Room temperature 25 °C (77 °F)</li> </ul>
Characteristic curve deviation at limit point setting, including hysteresis and repeatability	
Measuring span ratio $r$ (spread, Turn-Down)	$r = \text{maximum measuring span/set measuring span or nominal measuring range}$
<ul style="list-style-type: none"> <li>Linear characteristic curve</li> </ul>	
<ul style="list-style-type: none"> <li>1 bar/100 kPa/14.5 psi</li> <li>4 bar/400 kPa/58 psi</li> <li>16 bar/1.6 MPa/232 psi</li> <li>63 bar/6.3 MPa/914 psi</li> </ul>	$r \leq 5:$ $\leq 0.075\%$ $5 < r \leq 100:$ $\leq (0.005 \cdot r + 0.05)\%$
Influence of ambient temperature in % per 28 °C (50 °F)	
<ul style="list-style-type: none"> <li>1 bar/100 kPa/14.5 psi</li> <li>4 bar/400 kPa/58 psi</li> <li>16 bar/1.6 MPa/232 psi</li> <li>63 bar/6.3 MPa/914 psi</li> </ul>	$\leq (0.08 \cdot r + 0.16)\%$
Influence of the medium temperature (in pressure per temperature unit)	
<ul style="list-style-type: none"> <li>Temperature difference between medium temperature and ambient temperature</li> </ul>	3 mbar/0.3 kPa/0.04 psi per 10 K
Long-term stability at $\pm 30 \text{ °C}$ ( $\pm 54 \text{ °F}$ )	
<ul style="list-style-type: none"> <li>1 bar/100 kPa/14.5 psi</li> <li>4 bar/400 kPa/58 psi</li> <li>16 bar/1.6 MPa/232 psi</li> <li>63 bar/6.3 MPa/914 psi</li> </ul>	In 5 years $\leq (0.25 \cdot r)\%$ In 5 years $\leq (0.125 \cdot r)\%$
Step response time $T_{63}$ (without electrical damping)	$\leq 0.105 \text{ s}$
Effect of mounting position (in pressure per change of angle)	0.4 mbar/0.04 kPa/0.006 per 10° incline (zero offset is possible with position error compensation)
Effect of auxiliary power (in % per voltage change)	0.005% per 1 V
<b>Absolute pressure measuring accuracy with flush diaphragm</b>	
Reference conditions	<ul style="list-style-type: none"> <li>According to IEC 62828-1</li> <li>Rising characteristic curve</li> <li>Lower range value 0 bar/kPa/psi</li> <li>Seal diaphragm stainless steel</li> <li>Measuring cell with silicone oil filling</li> <li>Room temperature 25 °C (77 °F)</li> </ul>
Characteristic curve deviation at limit point setting, including hysteresis and repeatability	
Measuring span ratio $r$ (spread, Turn-Down)	$r = \text{maximum measuring span/set measuring span or nominal measuring range}$
<ul style="list-style-type: none"> <li>Linear characteristic curve</li> </ul>	
$r \leq 10:$	$\leq 0.2\%$



for applications with advanced requirements / SITRANS P320/P420 / Gauge and absolute pressure, flush-mounted

### Technical specifications (continued)

SITRANS P320 / SITRANS P420 for gauge and absolute pressure, with flush-mounted diaphragm	
- All measuring cells	10 < r ≤ 30: ≤ 0.4%
Influence of ambient temperature (in % per 28 °C (50 °F))	
• All measuring cells	≤ (0.16 · r + 0.24)%
Influence of the medium temperature (in pressure per temperature unit)	
• Temperature difference between medium temperature and ambient temperature	3 mbar/0.3 kPa/0.04 psi per 10 K
Long-term stability at ±30 °C (± 54 °F)	
• All measuring cells	In 5 years ≤ (0.25 · r)%
Step response time T <sub>63</sub> (without electrical damping)	≤ 0.105 s
Effect of mounting position (in pressure per change of angle)	0.4 mbar/0.04 kPa/0.006 per 10° incline (zero offset is possible with position error compensation)
Effect of auxiliary power (in % per voltage change)	0.005% per 1 V
<b>Operating conditions</b>	
Medium temperature <sup>2)</sup>	
• Measuring cell with silicone oil filling	-40 ... +150 °C (-40 ... +302 °F) -40 ... +200 °C (-40 ... +392 °F) with temperature decoupler
• Measuring cell with inert oil	-20 ... +100 °C (-4 ... +212 °F)
• Measuring cell with FDA-compliant oil	-10 ... +150 °C (14 ... 302 °F)
Ambient conditions	
• Ambient temperature/enclosure	Observe the temperature class in hazardous areas.
- Measuring cell with silicone oil filling	-40 ... +85 °C (-40 ... +185 °F)
- Measuring cell with inert fill oil (different pressure classes)	1 bar/100 kPa/14.5 psi 4 bar/400 kPa/58 psi 16 bar/1.6 MPa/232 psi 63 bar/6.3 MPa/914 psi -40 ... +85 °C (-40 ... +185 °F)
- Measuring cell with FDA-compliant oil	-10 ... +85 °C (14 ... +185 °F)
- Local display	-20 ... +80 °C (-4 ... +176 °F)
• Storage temperature	-50 ... +85 °C (-58 ... +185 °F) (with FDA-compliant oil: -20 ... +85 °C (-4 ... +185 °F))
• Climatic class in accordance with IEC 60721-3-4	4K4H
• Type of protection	
- According to IEC 60529	IP66, IP68
- According to NEMA 250	Type 4X
• Electromagnetic compatibility	
- Emitted interference and interference immunity	According to IEC 61326 and NAMUR NE 21
<b>Structural design</b>	
Weight	
	Pressure transmitter without mounting flange
	• Aluminum enclosure: Approx. 1.8 kg (3.9 lb)
	• Stainless steel enclosure: Approx. 3.8 kg (8.3 lb)
Material	
• Material of wetted parts	
- Process connection	Stainless steel, mat. no. 1.4404/316L
- Seal diaphragm	Stainless steel, material no. 1.4404/316L or Alloy C276, material no. 2.4819
• Material of non-wetted parts	
- Electronics enclosure	• Low-copper die-cast aluminum GD-ALSi 12 or stainless steel precision casting, mat. no. 1.4409/ CF-3M • Standard: Powder coating with polyurethane Option: 2 coats: Coat 1: Epoxy-based; coat 2: Polyurethane • Stainless steel nameplate (1.4404/316L)
- Mounting bracket	Steel, zinc-plated steel, or stainless steel

# Pressure measurement

## Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Gauge and absolute pressure, flush-mounted

### Technical specifications (continued)

SITRANS P320 / SITRANS P420 for gauge and absolute pressure, with flush-mounted diaphragm	
Process connection	<ul style="list-style-type: none"> <li>• Flanges according to EN and ASME</li> <li>• F&amp;B and pharmaceutical flanges</li> <li>• BioConnect/BioControl</li> <li>• PMC style</li> </ul>
Electrical connection	Cable entry via the following screw glands: <ul style="list-style-type: none"> <li>• M20 × 1.5</li> <li>• ½-14 NPT</li> <li>• Device plug Han 7D/Han 8D<sup>3)</sup></li> <li>• Device plug M12</li> </ul>
<b>Displays and controls</b>	
Buttons	4 buttons for operation directly on the device
Local display	<ul style="list-style-type: none"> <li>• With or without integrated local display (optional)</li> <li>• Lid with inspection window (optional)</li> </ul>
<b>Auxiliary power U<sub>H</sub></b>	
Terminal voltage on pressure transmitter	10.5 ... 45 V DC 10.5 ... 30 V DC in intrinsically safe mode
Ripple	U <sub>SS</sub> ≤ 0.2 V (47 ... 125 Hz)
Noise	U <sub>eff</sub> ≤ 1.2 mV (0.5 ... 10 kHz)
Auxiliary power	–
Separate supply voltage	–
<b>Certificates and approvals</b>	
Classification according to pressure equipment directive (PED 2014/68/EU)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)
Drinking water	
• WRAS (England)	No.: 1903094 (option E83)
• ACS (France)	No.: 18 ACC LY 277 (option E85)
• NSF (USA)	No.: 20180920-MH61350 (option E84)
CRN (Canada)	No.: 0F9863.5C (option E60)
Explosion protection acc. to NEPSI (China)	No.: GYJ19.1058X (option E27)
Explosion protection acc. to INMETRO (Brazil)	No.: BRA-18-GE-0035X (option E25)
Explosion protection	
• Intrinsic safety "i"	
- Marking	II 1/2 G Ex ia/ib IIC T4/T6 Ga/Gb
- Permissible ambient temperature	-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6
- Connection	To certified intrinsically safe circuits with peak values: U <sub>i</sub> = 30 V, I <sub>i</sub> = 101 mA, P <sub>i</sub> = 760 mW U <sub>i</sub> = 29 V, I <sub>i</sub> = 110 mA, P <sub>i</sub> = 800 mW
- Effective internal inductance/capacitance	L <sub>i</sub> = 0.24 µH/C <sub>i</sub> = 3.29 nF
• Flameproof enclosure "d"	
- Marking	Ex II 1/2 G Ex ia/db IIC T4/T6 Ga/Gb
- Permissible ambient temperature	-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6
- Connection	To a circuit with the operating values: U <sub>n</sub> = 10.5 ... 45 V, 4 ... 20 mA
• Dust explosion protection for Zones 21, 22	
- Marking	Ex II 2D Ex tb IIIC T120 °C Db Ex II 3D Ex tc IIIC T120 °C Dc
- Permissible ambient temperature	-40 ... +80 °C (-40 ... +176 °F)
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F)
- Max. surface temperature	120 °C (248 °F)
- Connection	To a circuit with the operating values: U <sub>n</sub> = 10.5 ... 45 V, 4 ... 20 mA

### Technical specifications (continued)

SITRANS P320 / SITRANS P420 for gauge and absolute pressure, with flush-mounted diaphragm	
• Dust explosion protection for Zones 20, 21, 22	
- Marking	Ex II 1D Ex ia IIIC T120 °C Da Ex II 2D Ex ib IIIC T120 °C Db
- Permissible ambient temperature	-40 ... +80 °C (-40 ... +176 °F)
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F)
- Connection	To certified intrinsically safe circuits with peak values: U <sub>i</sub> = 30 V, I <sub>i</sub> = 101 mA, P <sub>i</sub> = 760 mW U <sub>i</sub> = 29 V, I <sub>i</sub> = 110 mA, P <sub>i</sub> = 800 mW
- Effective internal inductance/capacitance	L <sub>i</sub> = 0.24 µH/C <sub>i</sub> = 3.29 nF
• Type of protection (Ex) for zone 2	
- Marking	Ex II 3G Ex ec IIC T4/T6 Gc
- Permissible ambient temperature "ec"	-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +40 °C (-40 ... +104 °F) temperature class T6
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6
- "ec" connection	To a circuit with the operating values: U <sub>n</sub> = 10.5 ... 30 V, 4 ... 20 mA
• Explosion protection acc. to FM	Available soon
- Marking (XP/DIP) or IS; NI; S	CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4 ... T6; CL I, DIV 2, GP ABCD T4 ... T6; CL II, DIV 2, GP FG; CL III
• Explosion protection according to CSA	Available soon
- Marking (XP/DIP) or (IS)	CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4 ... T6; CL I, DIV 2, GP ABCD T4 ... T6; CL II, DIV 2, GP FG; CL III
NAMUR recommendations	
• NE 06	Standardized Electrical Signals and Questions Relating to Engineering Technology
• NE 21	Electromagnetic Compatibility (EMC) of Industrial Process and Laboratory Control Equipment
• NE 23	Extra Low Voltage Circuits with Safe Separation
• NE 43	Standardization of the Signal Level for the Failure Information of Digital Transmitters with analog output signal
• NE 53	Software and Hardware of Field Devices and Signal Processing Devices with Digital Electronics
• NE 80	The Application of the Pressure Equipment Directive to Process Control Devices
• NE 105	Specifications for Integrating Fieldbus Devices in Engineering Tools for Field Devices
• NE 107	Self-Monitoring and Diagnosis of Field Devices
• NE 131	NAMUR Standard Device - Field Devices for Standard Applications

- The MAWP value of the pressure transmitter can be lower than the PN value of the mounting flange and vice versa.  
To determine the maximum permissible operating pressure and the maximum permissible test pressure, use the lowest value as reference.
- Observe the temperature limits in the process connection standards (e.g. DIN 32676 and DIN 11851) for the maximum medium temperature for flush-mounted process connections.
- Han 8D is identical to Han 8U.

Communication	
<b>HART</b>	
HART	230 ... 1 100 Ω
Protocol	HART 7
Software for computer	SIMATIC PDM
<b>PROFIBUS PA</b>	
Simultaneous communication with master class 2 (max.)	4
The address can be set using	Configuration tool or local operation (default setting address 126)
Cyclic data usage	
• Output byte	≤ 35 (7 measured values)
• Input byte	0, 1, or 2 (register operation mode and reset function for dosing)

Communication	
Internal preprocessing	
Device profile	PROFIBUS PA Profile Version 4.01 Class B. Cyclic data usage compatible with version 3.XX
Number of function blocks	7
• Analog input	
- Adaptation to user-specific process variable	Yes, linearly rising or falling characteristic curve
- Electrical damping adjustable	0 ... 100 s
- Simulation function	Output/input
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respectively
• Register (totalizer)	Can be reset, preset, optional direction of counting, simulation function of register output

# Pressure measurement

## Pressure transmitters

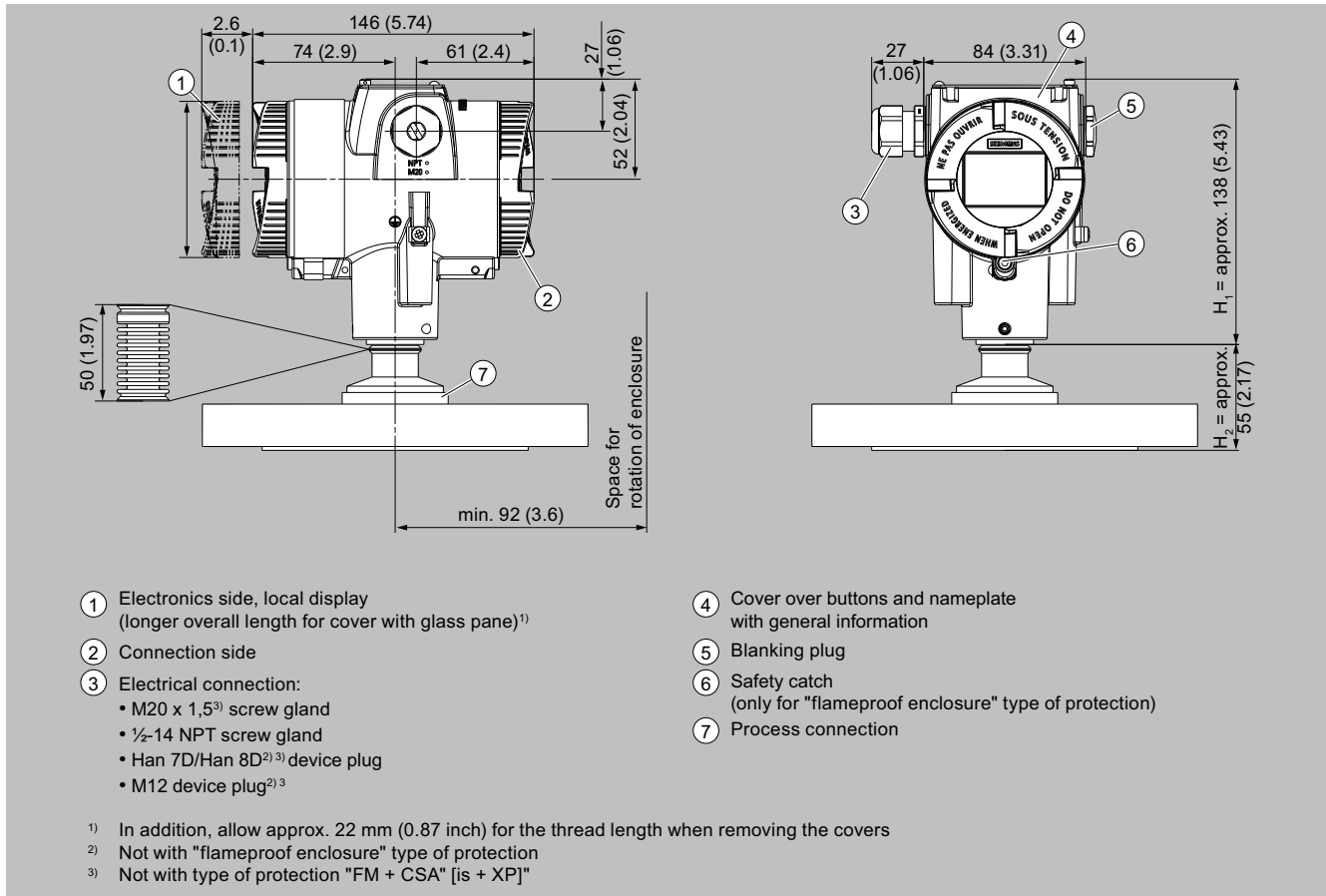
for applications with advanced requirements / SITRANS P320/P420 / Gauge and absolute pressure, flush-mounted

### Technical specifications (continued)

Communication	
- Limit monitoring	One upper and lower warning limit and one alarm limit respectively
• Physical block	1
Transducer blocks	1
• Pressure transducer block	
- Can be calibrated by applying two pressures	Yes
- Monitoring of sensor limits	Yes
- Specification of a vessel characteristic curve with	Max. 30 nodes
- Square-rooted characteristic curve for flow measurement	Yes
- Tank characteristic curve for volume measurement	Yes
- Low flow cut-off and implementation point of square-root extraction	Parameterizable
- Simulation function for measured pressure value and sensor temperature	Constant value or by means of parameterizable ramp function
FOUNDATION Fieldbus	
Device profile	FF ITK 6
Function blocks	3 function blocks analog input, 1 function block PID

Communication	
• Analog input	
- Adaptation to user-specific process variable	Yes, linearly rising or falling characteristic curve
- Electrical damping adjustable	0 ... 100 s
- Simulation function	Output/input (can be locked within the device with a bridge)
- Failure mode	Parameterizable (last good value, substitute value, incorrect value)
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respectively
- Square-rooted characteristic curve for flow measurement	Yes
• PID	Standard FOUNDATION Fieldbus function block
• Physical block	1 resource block
Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block LCD
• Pressure transducer block	
- Can be calibrated by applying two pressures	Yes
- Monitoring of sensor limits	Yes
- Simulation function: pressure measurement, sensor temperature and electronics temperature	Constant value or by means of parameterizable ramp function

## Dimensional drawings



SITRANS P320/P420 pressure transmitter, with flush-mounted diaphragm, dimensions in mm (inch)

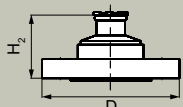
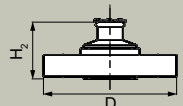
This figure consists of a SITRANS P320/P420 with an example flange. In this figure, the height is divided into H<sub>1</sub> and H<sub>2</sub>.

H<sub>1</sub> = Height of the SITRANS P320/P420 up to a defined cross-section

H<sub>2</sub> = Height of the flange up to this defined cross-section

Only the height H<sub>2</sub> is indicated in the dimensions of the flanges.

## Flanges according to EN and ASME

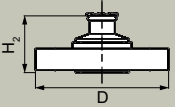
Flange	Order code	DN	PN	ØD	H <sub>2</sub>
EN 1092-1 	M03	50	16	165 mm (6.5 inches)	Approx. 52 mm (2 inches)
	M05	80	16	200 mm (7.9 inches)	
	M10	25	40	115 mm (4.5 inches)	
	M12	40	40	150 mm (5.9 inches)	
	M13	50	40	165 mm (6.5 inches)	
	M15	80	40	200 mm (7.9 inches)	
	M22	40	100	170 mm (6.7 inches)	
ASME B16.5 	M30	1 inch	150	110 mm (4.3 inches)	Approx. 52 mm (2 inches)
	M31	1½ inches	150	125 mm (4.9 inches)	
	M32	2 inches	150	150 mm (5.9 inches)	
	M33	3 inches	150	190 mm (7.5 inches)	
	M34	4 inches	150	230 mm (9.1 inches)	
	M36	1½ inches	300	155 mm (6.1 inches)	
	M37	2 inches	300	165 mm (6.5 inches)	

## Pressure measurement

### Pressure transmitters

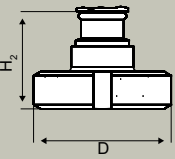
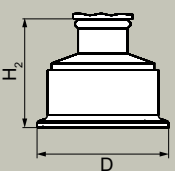
for applications with advanced requirements / SITRANS P320/P420 / Gauge and absolute pressure, flush-mounted

#### Dimensional drawings (continued)

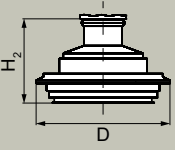
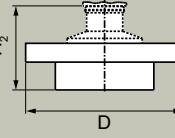
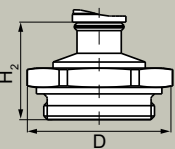
Flange	Order code	DN	PN	ØD	H <sub>2</sub>
	M38	3 inches	300	210 mm (8.1 inches)	Approx. 52 mm (2 inches)
	M39	4 inches	300	255 mm (10.0 inches)	

#### NuG and pharmaceutical connections

Connections according to DIN

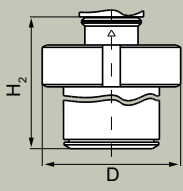
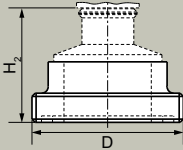
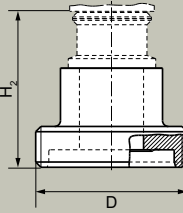
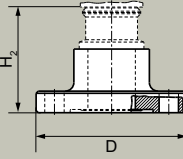
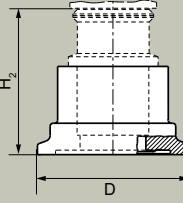
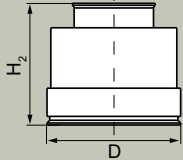
Connection	Order code	DN	PN	ØD	H <sub>2</sub>
<b>DIN 11851 (dairy connection with slotted union nut)</b> 	N03	50	25	92 mm (3.6 inches)	Approx. 52 mm (2 inches)
	N05	80	25	127 mm (5.0 inches)	
<b>Tri-Clamp acc. to DIN 32676</b> 	N14	50	16	64 mm (2.5 inches)	Approx. 52 mm (2 inches)
	N15	65	16	91 mm (3.6 inches)	
	N22	2 inches	16	64 mm (2.5 inches)	
	N23	3 inches	10	91 mm (3.6 inches)	

#### Other connections

Connection	Order code	DN	PN	ØD	H <sub>2</sub>
<b>Varivent connection</b> 	P06	40 ... 125	40	84 mm (3.3 inches)	Approx. 52 mm (2 inches)
<b>Sanitary process connection according to DRD</b> 	Q15	65	40	105 mm (4.1 inches)	Approx. 52 mm (2 inches)
<b>Threaded connection G<sup>3/4</sup>", G1" and G2" according to DIN 3852-2 form A</b> 	R11	¾ inch	60	37 mm (1.5 inches)	Approx. 45 mm (1.8 inches)
	R12	1 inch	60	48 mm (1.9 inches)	Approx. 47 mm (1.9 inches)
	R14	2 inches	60	78 mm (3.1 inches)	Approx. 52 mm (2 inches)

for applications with advanced requirements / SITRANS P320/P420 / Gauge and absolute pressure, flush-mounted

## Dimensional drawings (continued)

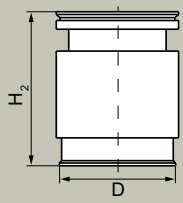
Connection	Order code	DN	PN	ØD	H <sub>2</sub>
Tank connection TG 52/50 and TG52/150 	Q00	25	40	63 mm (2.5 inches)	Approx. 63 mm (2.5 inches)
	Q01	25	40	63 mm (2.5 inches)	Approx. 170 mm (6.7 inches)
SMS screwed connector 	Q28	2 inches	25	70 x 1/6 mm	Approx. 52 mm (2.1 inches)
	Q29	2½ inches	25	85 x 1/6 mm	
	Q30	3 inches	25	98 x 1/6 mm	
Aseptic screwed connector according to DIN 11864-1 Form A 	N33	50	25	78 x 1/6 inch	Approx. 52 mm (2.1 inches)
	N34	65	25	95 x 1/6 inch	
	N35	80	25	110 x ¼ inch	
	N36	100	25	130 x ¼ inch	
Aseptic flange with notch according to DIN 11864-2 Form A 	N43	50	16	94 (3.7 inches)	Approx. 52 mm (2.1 inches)
	N44	65	16	113 (4.4 inches)	
	N45	80	16	133 (5.2 inches)	
	N46	100	16	159 (6.3 inches)	
Aseptic clamp with groove according to DIN 11864-3 Form A 	N53	50	25	77.5 (3.1 inch)	Approx. 52 mm (2.1 inches)
	N54	65	25	91 (3.6 inch)	
	N55	80	16	106 (4.2 inches)	
	N56	100	16	130 (5.1 inches)	
Process connection PMC Style Standard 	R00	-	-	40.9 mm (1.6 inches)	Approx. 36.8 mm (1.4 inches)

## Pressure measurement

### Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Gauge and absolute pressure, flush-mounted

#### Dimensional drawings (continued)

Connection	Order code	DN	PN	ØD	H <sub>2</sub>
Process connection PMC Style Minibolt 	R01	-	-	26.3 mm (1.0 inch)	Approx. 33.1 mm (1.3 inches)



## Selection and ordering data

	Article No.	
<b>Pressure transmitters for absolute pressure (pressure series)</b>		
<b>SITRANS P320</b>	7MF032	● - ● ● ● ● ● - ● ● ● ●
<b>SITRANS P420</b>	7MF042	● - ● ● ● ● ● - ● ● ● ●
Click the article number for online configuration in the PIA Life Cycle Portal.		
<b>Communication</b>		
HART, 4 ... 20 mA	0	
PROFIBUS PA	1	
FOUNDATION Fieldbus (FF)	2	
<b>Measuring cell filling</b>		
Silicone oil	1	
Inert filling liquid	3	
<b>Maximum measuring span</b>		
250 mbar a (100.5 inH <sub>2</sub> O a)		F
1 300 mbar a (522 inH <sub>2</sub> O a)		L
5 000 mbar a (72.5 psi a)		P
30 bar a (435 psi a)		R
160 bar a (2 321 psi a)		V
400 bar a (5 802 psi a)		W
700 bar a (10 153 psi a)		X
<b>Process connection</b>		
External thread M20 × 1.5		B
External thread G½ (EN 837-1)		D
Internal thread ½-14 NPT		E
External thread ½-14 NPT		F
Oval flange, fastening thread: 7/16-20 UNF (IEC 61518)		G
Oval flange, fastening thread: M10 (DIN 19213)		H
Oval flange, fastening thread: M12 (DIN 19213)		J
Version for diaphragm seal pressure		U
<b>Material of wetted parts: Process connection, seal diaphragm</b>		
Stainless steel 316L/1.4404, stainless steel 316L/1.4404		0
Stainless steel 16L/1.4404, alloy C276/2.4819		1
Alloy C22/2.4602, alloy C276/2.4819		2
Stainless steel 316L/1.4404, stainless steel 316L/1.4404 gold-plated		7
<b>Material of non-wetted parts</b>		
Die-cast aluminum		1
Stainless steel precision casting CF3M/1.4409 similar to 316L		2
<b>Enclosure</b>		
Dual chamber device		5
<b>Type of protection</b>		
Without Ex		A
Intrinsic safety		B
Flameproof enclosure		C
Flameproof enclosure, intrinsic safety		D
Dust protection by enclosure Zone 21/22 (DIP), increased safety Zone 2		L
Intrinsic safety, dust protection by enclosure Zone 20/21/22 (DIP), increased safety Zone 2		M
Combination of options B, C and L (Zone model)		S
Combination of options B, C and L (Zone model, Class Division)		T
<b>Electrical connections/cable entries</b>		
Thread for cable gland: Cable gland must be ordered separately as option (Axx)		
• 2 × M20 × 1.5		F
• 2 × ½-14 NPT		M
<b>Local operation/display</b>		
Without local display (lid closed)		0
With local display (lid closed)		1
With local display (lid with glass pane)		2

## Pressure measurement

### Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Absolute pressure (pressure series)

#### Selection and ordering data (continued)

Options	Order code
<b>Add "-Z" to article number, specify order code and plain text or entry from drop-down list.</b>	
<b>Cable glands included</b>	
Plastic	A00
Metal	A01
Stainless steel	A02
Stainless steel 316L/1.4404	A03
CMP, for XP devices	A10
CAPRI ADE 4F, CuZn, cable inner diameter 7 ... 12 mm, cable outer diameter 10 ... 16 mm	A11
CAPRI ADE 4F, stainless steel, cable inner diameter 7 ... 12 mm, cable outer diameter 10 ... 16 mm	A12
Sealing plug included, plastic	A20
Sealing plug included, metal	A21
Sealing plug included, stainless steel	A22
Sealing plug included, stainless steel 316L/1.4404	A23
<b>Device plug Han mounted left</b>	
Device plug Han 7D (plastic, straight)	A30
Device plug Han 7D (plastic, angled)	A31
Device plug Han 7D (metal, straight)	A32
Device plug Han 7D (metal, angled)	A33
Device plug Han 8D (plastic, straight)	A34
Device plug Han 8D (plastic, angled)	A35
Device plug Han 8D (metal, straight)	A36
Device plug Han 8D (metal, angled)	A37
<b>Cable socket included</b>	
Plastic, for device plug Han 7D and Han 8D	A40
Metal, for device plug Han 7D and Han 8D	A41
<b>Device plug M12 mounted left</b>	
Stainless steel, without cable socket	A62
Stainless steel, with cable socket	A63
<b>Cable entry/device plug mounting</b>	
2× sealing plugs M20 × 1.5, IP66/68 installed on both sides	A90
2× sealing plugs ½-14 NPT, IP66/68 installed on both sides	A91
Cable gland/device plug mounted left	A97
Cable gland/device plug mounted right	A99
<b>Nameplate labeling (standard labeling: English, unit bar)</b>	
German (bar)	B11
French (bar)	B12
Spanish (bar)	B13
Italian (bar)	B14
Chinese (bar)	B15
Russian (bar)	B16
English (psi)	B20
English (Pa)	B30
Chinese (Pa)	B35
<b>Certificates</b>	
Quality inspection certificate, 5-point factory calibration (IEC 62828-2)	C11
Inspection certificate (EN 10204-3.1) - Material of pressurized and wetted parts	C12

Options	Order code
<b>Add "-Z" to article number, specify order code and plain text or entry from drop-down list.</b>	
Factory certificate - NACE (MR 0103-2012 and MR 0175-2009)	C13
Factory certificate (EN 10204-2.2) - Wetted parts	C14
Inspection certificate (EN 10204-3.1) - PMI test of pressurized and wetted parts	C15
<b>Certificates for functional safety</b>	
Functional Safety (IEC 61508) - SIL2/3	C20
<b>Device options</b>	
PDF file with device settings	D10
Double layer coating (epoxy resin and polyurethane) 120 µm of enclosure and lid	D20
FVMQ enclosure sealing	D21
Degree of protection IP66/IP68 (not for device plug M12 and Han)	D30
Unlabeled TAG plate	D40
Without labeling of the measuring range on the TAG plate	D41
Stainless steel Ex plate 1.4404/316L	D42
Overvoltage protection up to 6 kV (internal)	D70
Overvoltage protection up to 6 kV (external)	D71
Labels on transport packaging (provided by customer)	D90
<b>General approval without Ex approval</b>	
Worldwide (CE, UKCA, RCM) except EAC, FM, CSA, KCC	E00
Worldwide (CE, UKCA, RCM, EAC, FM, CSA, KCC)	E01
CSA (USA and Canada)	E06
EAC	E07
FM	E08
KCC	E09
<b>Explosion protection approvals</b>	
ATEX (Europe)	E20
CSA (USA and Canada) <sup>1)</sup>	E21
FM (USA and Canada) <sup>1)</sup>	E22
IECEx (Worldwide)	E23
EACEx (GOST-R, -K, -B)	E24
INMETRO (Brazil)	E25
KCs (Korea)	E26
NEPSI (China)	E27
PESO (India)	E28
CSA (Japan)	E29
UKR Sepro (Ukraine)	E30
UKEX (United Kingdom)	E33
ATEX (Europe), IECEx (Worldwide) and UKEX (UK)	E47
CSA (Canada) and FM (USA) <sup>1)</sup>	E48
ATEX (Europe) and IECEx (Worldwide) + CSA (Canada) and FM (USA) <sup>1)</sup>	E49
<b>Marine approvals</b>	
DNV-GL (Det Norske Veritas/Germanischer Lloyd)	E50
LR (Lloyds Register)	E51
BV (Bureau Veritas)	E52
ABS (American Bureau of Shipping)	E53
RMR (Russian Maritime Register)	E55
KR (Korean Register of Shipping)	E56
RINA (Registro Italiano Navale)	E57
CCS (China Classification Society)	E58

## Selection and ordering data (continued)

Options	Order code
<b>Add "-Z" to article number, specify order code and plain text or entry from drop-down list.</b>	
<b>Country-specific approvals</b>	
CRN approval Canada (Canadian Registration Number)	E60
<b>Special approvals</b>	
Oxygen application (with inert liquid, max. 160 bar (2 320 psi) at 100 °C (212 °F))	E80
Dual Seal	E81
WRC/WRAS (drinking water); only with process flange O-rings made of EPDM	E83
NSF61 (drinking water)	E84
ACS (drinking water)	E85
<b>Mounting bracket</b>	
Steel, zinc-plated	H01
Stainless steel 1.4301/304	H02
Stainless steel 1.4404/316L	H03
<b>Flange connections with flange EN 1092-1</b>	
With flange adapter G½ Form B1	
• DN 25 PN 40, stainless steel 1.4571/316Ti	J80
• DN 50 PN 40, stainless steel 1.4571/316Ti	J81
• DN 80 PN 40, stainless steel 1.4571/316Ti	J82
With water trap G½ form B1	
• DN 25 PN 40, stainless steel 1.4571/316Ti	J83
• DN 50 PN 40, stainless steel 1.4571/316Ti	J84
• DN 80 PN 40, stainless steel 1.4571/316Ti	J85
• DN 25 PN 100, stainless steel 1.4571/316Ti	J86
<b>Process flanges, gaskets (instead of standard gaskets FKM (FPM))</b>	
Gasket (EN 837-1) material Fe (soft iron)	K60
Gasket (EN 837-1) material 1.4571	K61
Gasket (EN 837-1) material Cu	K62
<b>Process connection</b>	
Process connection external thread G½, bore hole 11 mm	K80

Options	Order code
<b>Add "-Z" to article number, specify order code and plain text or entry from drop-down list.</b>	
<b>Shut-off valves, valve manifolds</b>	
With mounted valve manifold 7MF9011-4EA, process connection at transmitter G½ shank, PTFE sealing ring and pressure test certified in factory certificate (EN 10204-2.2)	T02
With mounted valve manifold 7MF9011-4FA, process connection at transmitter internal thread ½-14 NPT, sealing tape. With PTFE sealing ring and pressure test certified in factory certificate (EN 10204-2.2)	T03
With mounted valve manifold 7MF9411-5AA, process connection at transmitter oval flange with PTFE sealing ring, steel fixing screws, pressure test certified in factory certificate (EN 10204-2.2)	T05
With mounted valve manifold 7MF9411-5AA, process connection at transmitter oval flange with PTFE sealing ring, stainless steel fixing screws, pressure test certified in factory certificate (EN 10204-2.2)	T06
<b>Device settings</b>	
Measuring span: Lower range value (max. 5 characters), upper range value (max. 5 characters), unit [mbar, bar, kPa, MPa, psi, ...], example: -0.5 ... 10.5 psi	Y01
TAG (on stainless steel plate and device parameters, max. 32 characters)	Y15
Measuring point description (on stainless steel plate and device parameters, max. 32 characters)	Y16
TAG short (device parameters, max. 8 characters)	Y17
Local display: [Pressure, Percent], reference [None, Absolute, Gauge], example: Pressure gauge	Y21
Local display: Scaling with standard units [m³/s, l/s, m, inch, ...]; example 1 ... 5 m	Y22
Local display: Scaling with user-specific units (max. 12 characters), example 1 ... 5 m	Y23
Set PROFIBUS PA device address (1 ... 126)	Y25
Saturation limits instead of 3.8 ... 20.5 mA, example: 3.8 ... 22.0 mA	Y30
Fault current instead of 3.6 mA [22.5 mA, 22.8 mA]	Y31
Damping in seconds instead of 2 s (0.0 ... 100.0 s)	Y32
ID number of special design	Y99

1) Explosion protection acc. to FM/CSA: suitable for installation according to NEC 500/505.

# Pressure measurement

## Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Absolute pressure (pressure series)

### Technical specifications

#### SITRANS P320 / SITRANS P420 for absolute pressure (pressure series)

Input	Absolute pressure	Max. permissible operating pressure MAWP (PS)	Maximum permissible test pressure
Measured variable	Absolute pressure		
Measuring span (continuously adjustable) or measuring range, max. permissible operating pressure (in accordance with Pressure Equipment Directive 2014/68/EU) and max. test pressure (pursuant to DIN 16086)	Measuring span		
	8.3 ... 250 mbar a	4 bar a	6 bar a
	0.83 ... 25 kPa a	0.4 MPa a	0.6 MPa a
	3.3 ... 100.5 inH <sub>2</sub> O a	58 psi a	87 psi a
	43 ... 1300 mbar a	6.6 bar a	10 bar a
	4.3 ... 130 kPa a	0.66 MPa a	1 MPa a
	17.3 ... 522 inH <sub>2</sub> O a	95 psi a	145 psi a
	166 ... 5 000 mbar a	20 bar a	30 bar a
	16.6 ... 500 kPa a	2 MPa a	3 MPa a
	2.41 ... 72.5 psi a	290 psi a	435 psi a
	1 ... 30 bar a	65 bar a	100 bar a
	0.1 ... 3 MPa a	6.5 MPa a	10 MPa a
	14.5 ... 435 psi a	942 psi a	1450 psi a
	5.3 ... 160 bar a	240 bar	380 bar a
	0.53 ... 16 MPa a	24 MPa	38 MPa a
	77 ... 2321 psi a	3481 psi	5111 psi a
	13.3 ... 400 bar a	400 bar a	600 bar a
	1.3 ... 40 MPa a	40 MPa a	60 MPa a
	192 ... 5802 psi a	5802 psi a	8702 psi a
	23.3 ... 700 bar a	800 bar a	800 bar a
	2.3 ... 70 MPa a	80 MPa a	80 MPa a
	337 ... 10153 psi a	11603 psi a	11603 psi a
Measuring limits			
• Lower measuring limit			
- Measuring cell with silicone oil filling	0 mbar a/kPa a/psi a		
- Measuring cell with inert oil	For medium temperature -20 °C < $\vartheta$ ≤ +60 °C (-4 °F < $\vartheta$ ≤ +140 °F)		30 mbar a/3 kPa a/0.44 psi a
	For medium temperature 60 °C < $\vartheta$ ≤ +100 °C (max. 85 °C for measuring cell 30 bar) (140 °F < $\vartheta$ ≤ +212 °F (max. 185 °F for measuring cell 435 psi))		30 mbar a + 20 mbar a · ( $\vartheta$ - 60 °C)/°C 3 kPa a + 2 kPa a · ( $\vartheta$ - 60 °C)/°C 0.44 psi a + 0.29 psi a · ( $\vartheta$ - 140 °F)/°F
• Upper measuring limit	100% of the max. measuring span (for oxygen measurement max. 100 bar/10 MPa/1450 psi and 60 °C (140 °F) ambient temperature/medium temperature)		
• Lower range value	Between the measuring limits (continuously adjustable)		
<b>Output</b>	<b>HART</b>		
Output signal	4 ... 20 mA		
• Lower saturation limit (continuously adjustable)	3.55 mA, factory set to 3.8 mA		
• Upper saturation limit (continuously adjustable)	22.8 mA, factory-set to 20.5 mA or optionally 22.0 mA		
• Ripple (without HART communication)	$I_{pp} \leq 0.5\%$ of max. output current		
Adjustable damping	0 ... 100 s, continuously adjustable over remote operation 0 ... 100 s, in increments of 0.1 s, adjustable over display		
• Current simulator	3.55 ... 22.8 mA		
• Failure signal	3.55 ... 22.8 mA (factory set to 3.55 mA)		
Load	Resistance R [Ω]		
• Without HART communication	$R = (U_H - 10.5 \text{ V}) / 22.8 \text{ mA}$ , $U_H$ : Auxiliary power in V		
• With HART communication	$R = 230 \dots 1100 \Omega$		
Characteristic curve	<ul style="list-style-type: none"> <li>• Linearly increasing or linearly decreasing</li> <li>• Linear increase or decrease or according to the square root (only for differential pressure and flow)</li> </ul>		
Physical bus	-		
Polarity-independent	-		

## Technical specifications (continued)

SITRANS P320 / SITRANS P420 for absolute pressure (pressure series)	
<b>Measuring accuracy</b>	
Reference conditions	<ul style="list-style-type: none"> <li>• According to IEC 62828-1</li> <li>• Rising characteristic curve</li> <li>• Lower range value 0 bar/kPa/psi</li> <li>• Seal diaphragm stainless steel</li> <li>• Measuring cell with silicone oil filling</li> <li>• Room temperature 25 °C (77 °F)</li> </ul>
Conformity error at limit point setting, including hysteresis and repeatability	
Measuring span ratio r (spread, Turn-Down)	r = maximum measuring span/set measuring span or nominal measuring range
<ul style="list-style-type: none"> <li>• Linear characteristic curve (all measuring cells)</li> </ul>	
- r ≤ 10	≤ 0.1%
- 10 < r ≤ 30	≤ 0.2%
Influence of ambient temperature (in % per 28 °C (50 °F))	
<ul style="list-style-type: none"> <li>• 250 mbar a/25 kPa a/3.6 psi a</li> </ul>	≤ (0.15 · r + 0.1)%
<ul style="list-style-type: none"> <li>• 1300 mbar a/130 kPa a/18.8 psi a</li> <li>5 bar a/500 kPa a/72.5 psi a</li> <li>30 bar a/3000 kPa a/435 psi a</li> <li>160 bar a/16 MPa a/2321 psi a</li> <li>400 bar a/40 MPa a/5802 psi a</li> <li>700 bar a/70 MPa a/10153 psi a</li> </ul>	≤ (0.08 · r + 0.16)%
Long-term stability at ±30 °C (± 54 °F)	In 5 years ≤ (0.25 · r)%
Step response time T <sub>63</sub> (without electrical damping)	Approx. 0.105 s
Effect of mounting position (in pressure per change of angle)	≤ 0.05 mbar/0.005 kPa/0.000725 psi per 10° incline (zero offset is possible with position error compensation)
Effect of auxiliary power (in % per voltage change)	0.005% per 1 V
<b>Operating conditions</b>	
Medium temperature	
<ul style="list-style-type: none"> <li>• Measuring cell with silicone oil filling</li> </ul>	-40 ... +100 °C (-40 ... +212 °F)
<ul style="list-style-type: none"> <li>• Measuring cell with inert filling liquid</li> </ul>	-20 ... +100 °C (-4 ... +212 °F)
Ambient conditions	
<ul style="list-style-type: none"> <li>• Ambient temperature/enclosure</li> </ul>	Observe the temperature class in hazardous areas.
- Measuring cell with silicone oil filling	-40 ... +85 °C (-40 ... +185 °F)
- Measuring cell with inert filling liquid	-40 ... +85 °C (-40 ... +185 °F)
- Display	-20 ... +80 °C (-4 ... +176 °F)
• Storage temperature	-50 ... +85 °C (-58 ... +185 °F) (with FDA-compliant oil: -20 ... +85 °C (-4 ... +185 °F))
• Climatic class in accordance with IEC 60721-3-4	4K4H
• Degree of protection	
- According to IEC 60529	IP66, IP68
- According to NEMA 250	Type 4X
• Electromagnetic compatibility	
- Emitted interference and interference immunity	According to IEC 61326 and NAMUR NE 21
<b>Structural design</b>	
Weight	<ul style="list-style-type: none"> <li>• Aluminum enclosure: Approx. 1.8 kg (3.9 lbs)</li> <li>• Stainless steel enclosure: Approx. 3.8 kg (8.3 lbs)</li> </ul>
Material	
<ul style="list-style-type: none"> <li>• Material of wetted parts</li> </ul>	
- Process connection	Stainless steel, material no. 1.4404/316L or Alloy C22, material no. 2.4602
- Oval flange	Stainless steel, mat. no. 1.4404/316L

# Pressure measurement

## Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Absolute pressure (pressure series)

### Technical specifications (continued)

SITRANS P320 / SITRANS P420 for absolute pressure (pressure series)	
<ul style="list-style-type: none"> <li>- Seal diaphragm</li> <li>• Material of non-wetted parts</li> <li>- Electronics enclosure</li> <li>- Mounting bracket</li> <li>Process connection</li> <li>Electrical connection</li> </ul>	<p>Stainless steel, material no. 1.4404/316L or Alloy C276, material no. 2.4819</p> <ul style="list-style-type: none"> <li>• Low-copper die-cast aluminum GD-ALSi 12 or stainless steel precision casting, mat. no. 1.4409/ CF-3M</li> <li>• Standard: Powder coating with polyurethane</li> <li>Option: 2 coats: Coat 1: Epoxy-based; coat 2: Polyurethane</li> <li>• Stainless steel nameplate (1.4404/316L)</li> </ul> <p>Zinc-plated steel or stainless steel</p> <ul style="list-style-type: none"> <li>• Connection shank G1/2A according to EN 837-1</li> <li>• Female thread ½-14 NPT</li> <li>• Oval flange (PN 160 (MWP 2320 psi g)) with fastening thread: <ul style="list-style-type: none"> <li>- 7/16-20 UNF according to EN 61518</li> <li>- M10 according to DIN 19213</li> </ul> </li> <li>• Oval flange (PN 420 (MWP 2320 psi g)) with fastening thread: <ul style="list-style-type: none"> <li>- 7/16-20 UNF according to EN 61518</li> <li>- M12 according to DIN 19213</li> </ul> </li> <li>• Male thread M20 × 1.5 and ½-14 NPT</li> </ul> <p>Cable entry via the following screw glands:</p> <ul style="list-style-type: none"> <li>• M20 × 1.5</li> <li>• ½-14 NPT</li> <li>• Device plug Han 7D/Han 8D<sup>1)</sup></li> <li>• Device plug M12</li> </ul>
<p><b>Displays and controls</b></p> <ul style="list-style-type: none"> <li>Buttons</li> <li>Display</li> </ul>	<p>4 buttons for operation directly on the device</p> <ul style="list-style-type: none"> <li>• With or without integrated display (optional)</li> <li>• Lid with inspection window (optional)</li> </ul>
<p><b>Auxiliary power U<sub>H</sub></b></p> <ul style="list-style-type: none"> <li>Terminal voltage on pressure transmitter</li> <li>Ripple</li> <li>Noise</li> <li>Auxiliary power</li> <li>Separate supply voltage</li> </ul>	<p>10.5 ... 45 V DC 10.5 ... 30 V DC in intrinsically safe mode</p> <p><math>U_{SS} \leq 0.2 \text{ V}</math> (47 ... 125 Hz)</p> <p><math>U_{\text{eff}} \leq 1.2 \text{ mV}</math> (0.5 ... 10 kHz)</p> <p>–</p> <p>–</p>
<p><b>Certificates and approvals</b></p> <ul style="list-style-type: none"> <li>Classification according to pressure equipment directive (PED 2014/68/EU)</li> <li>Drinking water <ul style="list-style-type: none"> <li>• WRAS (England)</li> <li>• ACS (France)</li> <li>• NSF (USA)</li> </ul> </li> <li>CRN (Canada)</li> <li>Explosion protection acc. to NEPSI (China)</li> <li>Explosion protection acc. to INMETRO (Brazil)</li> <li>Explosion protection <ul style="list-style-type: none"> <li>• Intrinsic safety "i"</li> </ul> </li> <li>- Marking</li> <li>- Permissible ambient temperature</li> <li>- Permissible medium temperature</li> <li>- Connection</li> <li>- Effective internal inductance/capacitance</li> <li>• Flameproof enclosure "d"</li> <li>- Marking</li> </ul>	<p>For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)</p> <p>No.: 1903094 (option E83)</p> <p>No.: 18 ACC LY 277 (option E85)</p> <p>No.: 20180920-MH61350 (option E84)</p> <p>No.: 0F9863.5C (option E60)</p> <p>No.: GYJ19.1058X (option E27)</p> <p>No.: BRA-18-GE-0035X (option E25)</p> <p>II 1/2 G Ex ia/ib IIC T4/T6 Ga/Gb</p> <p>-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6</p> <p>-40 ... +100 °C (-40 ... +212 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6</p> <p>To certified intrinsically safe circuits with peak values: U<sub>i</sub> = 30 V, I<sub>i</sub> = 101 mA, P<sub>i</sub> = 760 mW U<sub>i</sub> = 29 V, I<sub>i</sub> = 110 mA, P<sub>i</sub> = 800 mW</p> <p>L<sub>i</sub> = 0.24 µH/C<sub>i</sub> = 3.29 nF</p> <p>Ex II 1/2 G Ex ia/db IIC T4/T6 Ga/Gb</p>

## Technical specifications (continued)

## SITRANS P320 / SITRANS P420 for absolute pressure (pressure series)

- Permissible ambient temperature	-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6
- Connection	To circuit with the operating values $U_n = 10.5 \dots 45 \text{ V}$ , $4 \dots 20 \text{ mA}$
• Dust explosion protection for Zones 21, 22	
- Marking	Ex II 2D Ex tb IIC T120 °C Db Ex II 3D Ex tc IIC T120 °C Dc
- Permissible ambient temperature	-40 ... +80 °C (-40 ... +176 °F)
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F)
- Max. surface temperature	120 °C (248 °F)
- Connection	To circuit with the operating values $U_n = 10.5 \dots 45 \text{ V}$ , $4 \dots 20 \text{ mA}$
• Dust explosion protection for Zones 20, 21, 22	
- Marking	Ex II 1D Ex ia IIC T120 °C Da Ex II 2D Ex ib IIC T120 °C Db
- Permissible ambient temperature	-40 ... +80 °C (-40 ... +176 °F)
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F)
- Connection	To certified intrinsically safe circuits with peak values: $U_i = 30 \text{ V}$ , $I_i = 101 \text{ mA}$ , $P_i = 760 \text{ mW}$ $U_i = 29 \text{ V}$ , $I_i = 110 \text{ mA}$ , $P_i = 800 \text{ mW}$ $L_i = 0.24 \mu\text{H}/C_i = 3.29 \text{ nF}$
- Effective internal inductance/capacitance	
• Type of protection for Zone 2	
- Marking	Ex II 3G Ex ec IIC T4/T6 Gc
- Permissible ambient temperature "ec"	-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +40 °C (-40 ... +104 °F) temperature class T6
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6
- "ec" connection	To circuit with the operating values $U_n = 10.5 \dots 30 \text{ V}$ , $4 \dots 20 \text{ mA}$
• Explosion protection acc. to FM	Available soon
- Marking (XP/DIP) or IS; NI; S	CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4 ... T6; CL I, DIV 2, GP ABCD T4 ... T6; CL II, DIV 2, GP FG; CL III
• Explosion protection according to CSA	Available soon
- Marking (XP/DIP) or (IS)	CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4 ... T6; CL I, DIV 2, GP ABCD T4 ... T6; CL II, DIV 2, GP FG; CL III
NAMUR recommendations	
• NE 06	Standardized Electrical Signals and Questions Relating to Engineering Technology
• NE 21	Electromagnetic Compatibility (EMC) of Industrial Process and Laboratory Control Equipment
• NE 23	Extra Low Voltage Circuits with Safe Separation
• NE 43	Standardization of the Signal Level for the Failure Information of Digital Transmitters
• NE 53	Software and Hardware of Field Devices and Signal Processing Devices with Digital Electronics
• NE 80	The Application of the Pressure Equipment Directive to Process Control Devices
• NE 105	Specifications for Integrating Fieldbus Devices in Engineering Tools for Field Devices
• NE 107	Self-Monitoring and Diagnosis of Field Devices
• NE 131	NAMUR Standard Device - Field Devices for Standard Applications

1) Han 8D is identical to Han 8U.

## Communication

HART	
HART Protocol	230 ... 1 100 Ω HART 7
Software for computer	SIMATIC PDM

## Communication

PROFIBUS PA	
Simultaneous communication with master class 2 (max.)	4
The address can be set using	Configuration tool or local operation (default setting address 126)

# Pressure measurement

## Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Absolute pressure (pressure series)

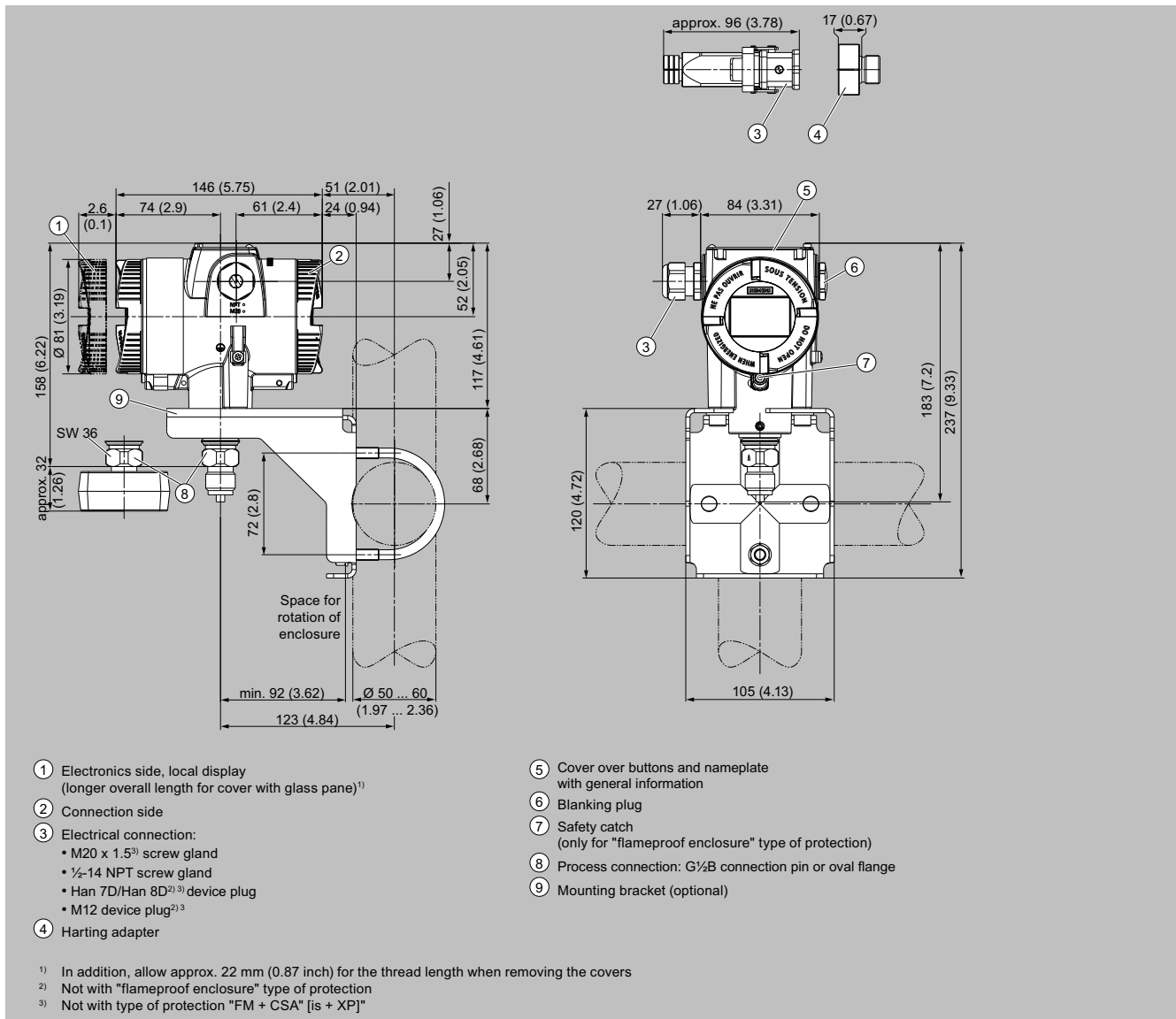
### Technical specifications (continued)

Communication	
Cyclic data usage	
• Output byte	≤ 35 (7 measured values)
• Input byte	0, 1, or 2 (register operation mode and reset function for dosing)
Internal preprocessing	
Device profile	PROFIBUS PA Profile Version 4.01 Class B. Cyclic data usage compatible with version 3.XX
Number of function blocks	7
• Analog input	
- Adaptation to user-specific process variable	Yes, linearly rising or falling characteristic curve
- Electrical damping adjustable	0 ... 100 s
- Simulation function	Output/input
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respectively
• Register (totalizer)	Can be reset, preset, optional direction of counting, simulation function of register output
- Limit monitoring	One upper and lower warning limit and one alarm limit respectively
• Physical block	1
Transducer blocks	1
• Pressure transducer block	
- Can be calibrated by applying two pressures	Yes
- Monitoring of sensor limits	Yes
- Specification of a vessel characteristic curve with	Max. 30 nodes
- Square-rooted characteristic curve for flow measurement	Yes
- Tank characteristic curve for volume measurement	Yes

Communication	
- Low flow cut-off and implementation point of square-root extraction	Parameterizable
- Simulation function for measured pressure value and sensor temperature	Constant value or by means of parameterizable ramp function
<b>FOUNDATION Fieldbus</b>	
Device profile	FF ITK 6
Function blocks	3 function blocks analog input, 1 function block PID
• Analog input	
- Adaptation to user-specific process variable	Yes, linearly rising or falling characteristic curve
- Electrical damping adjustable	0 ... 100 s
- Simulation function	Output/input (can be locked within the device with a bridge)
- Failure mode	Parameterizable (last good value, substitute value, incorrect value)
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respectively
- Square-rooted characteristic curve for flow measurement	Yes
• PID	Standard FOUNDATION Fieldbus function block
• Physical block	1 resource block
Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block LCD
• Pressure transducer block	
- Can be calibrated by applying two pressures	Yes
- Monitoring of sensor limits	Yes
- Simulation function: pressure measurement, sensor temperature and electronics temperature	Constant value or by means of parameterizable ramp function



## Dimensional drawings



SITRANS P320/P420 pressure transmitter for absolute pressure (pressure series), dimensions in mm (inch)

# Pressure measurement

## Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Absolute pressure (differential pressure series)

### Selection and ordering data

	Article No.
<b>Pressure transmitters for absolute pressure (differential pressure series)</b>	
SITRANS P320	7MF033 ● - ● ● ● ● ● - ● ● ● ●
SITRANS P420	7MF043 ● - ● ● ● ● ● - ● ● ● ●
Click the article number for online configuration in the PIA Life Cycle Portal.	
<b>Communication</b>	
HART, 4 ... 20 mA	0
PROFIBUS PA	1
FOUNDATION Fieldbus (FF)	2
<b>Measuring cell filling</b>	
Silicone oil	1
Inert filling liquid	3
<b>Maximum measuring span</b>	
250 mbar a (100.5 inH <sub>2</sub> O a)	G
1300 mbar a (522 inH <sub>2</sub> O a)	L
5000 mbar a (72.5 psi a)	P
30 bar a (435 psi a)	R
160 bar (2 320 psi)	Y
<b>Process connection</b>	
Oval flange, fastening thread: 7/16"-20 UNF (IEC 61518)	Q
Oval flange, fastening thread: M10 (DIN 19213)	R
Oval flange, fastening thread: 7/16"-20 UNF (IEC 61518) with lateral ventilation	S
Oval flange, fastening thread: M10 (DIN 19213) with lateral ventilation	T
Version for diaphragm seal with fastening thread 7/16"-20 UNF (IEC 61518)	V
Version for diaphragm seal with fastening thread M10 (DIN 19213)	W
<b>Material of wetted parts: Process connection, seal diaphragm</b>	
Stainless steel 316L/1.4404, stainless steel 316L/1.4404, process flange stainless steel 316/1.4408	0
Stainless steel 316L/1.4404, alloy C276/2.4819, process flange stainless steel 316/1.4408	1
Alloy C22/2.4602, alloy C276/2.4819, process flange stainless steel 316/1.4408	2
Tantalum/tantalum, process flange stainless steel 316/1.4408	4
Monel 400/2.4360, Monel 400/2.4360, process flange stainless steel 316/1.4408	6
Stainless steel 316L/1.4404 gold-plated, process flange stainless steel 316/1.4408	8
<b>Material of non-wetted parts</b>	
Die-cast aluminum	1
Stainless steel precision casting CF3M/1.4409 similar to 316L	2
<b>Enclosure</b>	
Dual chamber device	5
<b>Type of protection</b>	
Without Ex	A
Intrinsic safety	B
Flameproof enclosure	C
Flameproof enclosure, intrinsic safety	D
Dust protection by enclosure Zone 21/22 (DIP), increased safety Zone 2	L
Intrinsic safety, dust protection by enclosure Zone 20/21/22 (DIP), increased safety Zone 2	M
Combination of options B, C and L (Zone model)	S
Combination of options B, C and L (Zone model, Class Division)	T
<b>Electrical connections/cable entries</b>	
Thread for cable gland: Cable gland must be ordered separately as option (Axx)	
• 2 × M20 × 1.5	F
• 2 × 1/2"-14 NPT	M
<b>Local operation/display</b>	
Without local display (lid closed)	0
With local display (lid closed)	1
With local display (lid with glass pane)	2

for applications with advanced requirements / SITRANS P320/P420 / Absolute pressure (differential pressure series)

## Selection and ordering data (continued)

Options	Order code
<b>Add "-Z" to article no., add order code and plain text or entry from drop-down list.</b>	
<b>Cable glands included</b>	
Plastic	A00
Metal	A01
Stainless steel	A02
Stainless steel 316L/1.4404	A03
CMP, for XP devices	A10
CAPRI ADE 4F, CuZn, cable inner diameter 7 ... 12 mm, cable outer diameter 10 ... 16 mm	A11
CAPRI ADE 4F, stainless steel, cable inner diameter 7 ... 12 mm, cable outer diameter 10 ... 16 mm	A12
Sealing plug included, plastic	A20
Sealing plug included, metal	A21
Sealing plug included, stainless steel	A22
Sealing plug included, stainless steel 316L/1.4404	A23
<b>Device plug Han mounted left</b>	
Device plug Han 7D (plastic, straight)	A30
Device plug Han 7D (plastic, angled)	A31
Device plug Han 7D (metal, straight)	A32
Device plug Han 7D (metal, angled)	A33
Device plug Han 8D (plastic, straight)	A34
Device plug Han 8D (plastic, angled)	A35
Device plug Han 8D (metal, straight)	A36
Device plug Han 8D (metal, angled)	A37
<b>Cable socket included</b>	
Plastic, for device plug Han 7D and Han 8D	A40
Metal, for device plug Han 7D and Han 8D	A41
<b>Device plug M12 mounted left</b>	
Stainless steel, without cable socket	A62
Stainless steel, with cable socket	A63
<b>Cable entry/device plug mounting</b>	
2× sealing plugs M20 × 1.5, IP66/68 installed on both sides	A90
2× sealing plugs ½-14 NPT, IP66/68 installed on both sides	A91
Cable gland/device plug mounted left	A97
Cable gland/device plug mounted right	A99
<b>Nameplate labeling (standard labeling: English, unit bar)</b>	
German (bar)	B11
French (bar)	B12
Spanish (bar)	B13
Italian (bar)	B14
Chinese (bar)	B15
Russian (bar)	B16
English (psi)	B20
English (Pa)	B30
Chinese (Pa)	B35
<b>Certificates</b>	
Quality inspection certificate - 5-point factory calibration (IEC 62828-2)	C11
Inspection certificate (EN 10204-3.1) - Material of pressurized and wetted parts	C12

Options	Order code
<b>Add "-Z" to article no., add order code and plain text or entry from drop-down list.</b>	
Factory certificate - NACE (MR 0103-2012 and MR 0175-2009)	C13
Factory certificate (EN 10204-2.2) - wetted parts	C14
Inspection certificate (EN 10204-3.1) - PMI test of pressurized and wetted parts	C15
<b>Certificates for functional safety</b>	
Functional Safety (IEC 61508) - SIL2/3	C20
<b>Device options</b>	
PDF file with device settings	D10
Double layer coating (epoxy resin and polyurethane) 120 µm of enclosure and lid	D20
FVMQ enclosure sealing	D21
Degree of protection IP66/IP68 (not for device plug M12 and Han)	D30
Unlabeled TAG plate	D40
Without labeling of the measuring range on the TAG plate	D41
Stainless steel Ex plate 1.4404/316L	D42
Overvoltage protection up to 6 kV (internal)	D70
Overvoltage protection up to 6 kV (external)	D71
Labels on transport packaging (provided by customer)	D90
<b>General approval without Ex approval</b>	
Worldwide (CE, UKCA, RCM) except EAC, FM, CSA, KCC	E00
Worldwide (CE, UKCA, RCM, EAC, FM, CSA, KCC)	E01
CSA (USA and Canada)	E06
EAC	E07
FM	E08
KCC	E09
<b>Explosion protection approvals</b>	
ATEX (Europe)	E20
CSA (USA and Canada) <sup>1)</sup>	E21
FM (USA and Canada) <sup>1)</sup>	E22
IECEx (Worldwide)	E23
EACEx (GOST-R, -K, -B)	E24
INMETRO (Brazil)	E25
KCs (Korea)	E26
NEPSI (China)	E27
PESO (India)	E28
CSA (Japan)	E29
UKR Sepro (Ukraine)	E30
UKEX (United Kingdom)	E33
ATEX (Europe), IECEx (Worldwide) and UKEX (UK)	E47
CSA (Canada) and FM (USA) <sup>1)</sup>	E48
ATEX (Europe) and IECEx (Worldwide) + CSA (Canada) and FM (USA) <sup>1)</sup>	E49
<b>Marine approvals</b>	
DNV-GL (Det Norske Veritas/Germanischer Lloyd)	E50
LR (Lloyds Register)	E51
BV (Bureau Veritas)	E52
ABS (American Bureau of Shipping)	E53
RMR (Russian Maritime Register)	E55
KR (Korean Register of Shipping)	E56
RINA (Registro Italiano Navale)	E57
CCS (China Classification Society)	E58

## Pressure measurement

### Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Absolute pressure (differential pressure series)

#### Selection and ordering data (continued)

Options Add "-Z" to article no., add order code and plain text or entry from drop-down list.	Order code
<b>Country-specific approvals</b>	
CRN approval Canada (Canadian Registration Number)	E60
<b>Special approvals</b>	
Oxygen application (with inert liquid, max. 160 bar (2 320 psi) at 100 °C (212 °F))	E80
Dual Seal	E81
WRC/WRAS (drinking water); only with process flange O-rings made of EPDM	E83
NSF61 (drinking water)	E84
ACS (drinking water)	E85
<b>Mounting bracket</b>	
Steel, zinc-plated	H01
Stainless steel 1.4301/304	H02
Stainless steel 1.4404/316L	H03
<b>Process flanges; screw plug with vent valve</b>	
Welded in on right	J08
Welded in on left	J09
Glued in on right	J10
Glued in on left	J11
<b>Flange connections with flange EN 1092-1</b>	
Form B1	
• DN 25 PN 40, stainless steel 1.4571/316Ti	J70
• DN 50 PN 40, stainless steel 1.4571/316Ti	J71
• DN 80 PN 40, stainless steel 1.4571/316Ti	J72
• DN 15 PN 40, stainless steel 1.4571/316Ti	J78
Form C	
• DN 25 PN 40, stainless steel 1.4571/316Ti	J73
• DN 50 PN 40, stainless steel 1.4571/316Ti	J74
• DN 80 PN 40, stainless steel 1.4571/316Ti	J75
<b>Flange connection options</b>	
Flange connection and temperature extension	J76
Flange connection with epoxy resin coating	J77
<b>Process flanges; special materials</b>	
Reserved for 7MF7: without process flanges, without screws, without gaskets	K00
Process flange material alloy C22/2.4602	K01
Process flange material Monel 400/2.4360	K02
Process connection material PVDF, on the side ½-14 NPT	K05
Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 25 PN 40, MAWP 4 bar	K06
Process flanges/process connection material PVDF, flange on the side EN 1092-1 Form B1 DN 40 PN 40, MAWP 4 bar	K07
<b>Process flanges; process connection option</b>	
Process flange with process connection G½ welded on	K20
Process connection NAM (ASTAVA)	K21
<b>Process flanges chambered with gaskets</b>	
1 × chambered, graphite	K40
1 × chambered, PTFE (FDA-compliant), recommended for gas measurements	K41

Options Add "-Z" to article no., add order code and plain text or entry from drop-down list.	Order code
<b>Process flanges, gaskets (instead of standard gaskets FKM (FPM))</b>	
O-ring, process flanges, PTFE	K50
O-ring, process flanges, FEP (with silicone core, approved for food)	K51
O-ring, process flanges, FFKM (FFPM)	K52
O-ring, process flanges, NBR	K53
O-ring, process flanges, EPDM	K54
<b>Process flange options</b>	
Process flanges for vertical differential pressure lines (half process flange)	K81
Process flanges (+) - side front	K82
Process flange screws, process flange nuts, material Monel 400/2.4360	K83
Valve ¼-18 NPT, material same as process flanges	K84
Valve mounted on the side, measured medium: Gas	K85
Oval flange attached, PTFE seal + fixing screws	K86
<b>Valve manifolds</b>	
With mounted valve manifold (3-way) 7MF9411-5BA, PTFE sealing rings, chrome-plated steel screws and pressure test certified in factory certificate (EN 10204-2.2)	U01
With mounted valve manifold (3-way) 7MF9411-5BA, PTFE sealing rings, stainless steel screws and pressure test certified in factory certificate (EN 10204-2.2)	U02
With mounted valve manifold (5-way) 7MF9411-5CA, PTFE sealing rings, chrome-plated steel screws and pressure test certified in factory certificate (EN 10204-2.2)	U03
With mounted valve manifold (5-way) 7MF9411-5CA, PTFE sealing rings, stainless steel screws and pressure test certified in factory certificate (EN 10204-2.2)	U04
<b>Device settings</b>	
Measuring span: Lower range value (max. 5 characters), upper range value (max. 5 characters), unit [mbar, bar, kPa, MPa, psi, ...], example: -0.5 ... 10.5 psi	Y01
TAG (on stainless steel plate and device parameters, max. 32 characters)	Y15
Measuring point description (on stainless steel plate and device parameters, max. 32 characters)	Y16
TAG short (device parameters, max. 8 characters)	Y17
Local display: [Pressure, Percent], reference [None, Absolute, Gauge], example: Pressure gauge	Y21
Local display: Scaling with standard units [m³/s, l/s, m, inch, ...]; example 1 ... 5 m	Y22
Local display: Scaling with user-specific units (max. 12 characters), example 1 ... 5 m	Y23
Set PROFIBUS PA device address (1 ... 126)	Y25
Saturation limits instead of 3.8 ... 20.5 mA, example: 3.8 ... 22.0 mA	Y30
Fault current instead of 3.6 mA [22.5 mA, 22.8 mA]	Y31
Damping in seconds instead of 2 s (0.0 ... 100.0 s)	Y32
ID number of special design	Y99

<sup>1)</sup> Explosion protection acc. to FM/CSA: suitable for installation according to NEC 500/505.

## Technical specifications

## SITRANS P320 / SITRANS P420 for absolute pressure (differential pressure series)

SITRANS P320 / SITRANS P420 for absolute pressure (differential pressure series)			
<b>Input</b>			
Measured variable	Absolute pressure		
Measuring span (continuously adjustable) or measuring range and max. permissible operating pressure (pursuant to Pressure Equipment Directive 2014/68/EU)	Measuring span	Max. permissible operating pressure MAWP (PS)	Maximum permissible test pressure
	8.3 ... 250 mbar a 0.83 ... 25 kPa a 3.3 ... 100.5 inH <sub>2</sub> O a 43 ... 1300 mbar a 4.3 ... 130 kPa a 17.3 ... 522 inH <sub>2</sub> O a 166 ... 5 000 mbar a 16.6 ... 500 kPa a 2.41 ... 72.5 psi a 1 ... 30 bar a 0.1 ... 3 MPa a 14.5 ... 435 psi a 8 ... 160 bar 0.8 ... 16 MPa 116 ... 2 320 psi	160 bar a 16 MPa a 2 320 psi a 160 bar a 16 MPa a 2 320 psi a 160 bar a 16 MPa a 2 320 psi a 160 bar a 16 MPa a 2 320 psi a 160 bar a 16 MPa a 2 320 psi a	240 bar a 24 MPa a 3 481 psi a 240 bar a 24 MPa a 3 481 psi a 240 bar a 24 MPa a 3 481 psi a 240 bar a 24 MPa a 3 481 psi a 240 bar a 24 MPa a 3 481 psi a
Measuring limits	0 mbar a/kPa a/psi a		
• Lower measuring limit	For medium temperature -20 °C < $\vartheta$ ≤ +60 °C (-4 °F < $\vartheta$ ≤ +140 °F)		
- Measuring cell with silicone oil filling	For medium temperature 60 °C < $\vartheta$ ≤ +100 °C (max. 85 °C for measuring cell 30 bar) (140 °F < $\vartheta$ ≤ +212 °F (max. 185 °F for measuring cell 435 psi))		
- Measuring cell with inert liquid	30 mbar a/3 kPa a/0.44 psi a 20 mbar a · ( $\vartheta$ -60 °C)/°C 3 kPa a + 2 kPa a · ( $\vartheta$ -60 °C)/°C 0.44 psi a + 0.29 psi a · ( $\vartheta$ - 140 °F)/°F		
• Upper measuring limit	100% of the max. measuring span (for oxygen measurement max. 100 bar/10 MPa/1450 psi and 60 °C (140 °F) ambient temperature/medium temperature)		
• Lower range value	Between the measuring limits (continuously adjustable)		
<b>Output</b>			
Output signal	4 ... 20 mA		
• Lower saturation limit (continuously adjustable)	3.55 mA, factory set to 3.8 mA		
• Upper saturation limit (continuously adjustable)	22.8 mA, factory-set to 20.5 mA or optionally 22.0 mA		
• Ripple (without HART communication)	$I_{pp} \leq 0.5\%$ of max. output current		
Adjustable damping	0 ... 100 s, continuously adjustable over remote operation 0 ... 100 s, in increments of 0.1 s, adjustable over display		
• Current simulator	3.55 ... 22.8 mA		
• Failure signal	3.55 ... 22.8 mA		
Load	Resistance R [Ω]		
• Without HART communication	$R = (U_H - 10.5 \text{ V}) / 22.8 \text{ mA}$ , $U_H$ : Auxiliary power in V		
• With HART communication	$R = 230 \dots 1100 \Omega$		
Characteristic curve	<ul style="list-style-type: none"> <li>• Linearly increasing or linearly decreasing</li> <li>• Linear increase or decrease or according to the square root (only for differential pressure and flow)</li> </ul>		
Physical bus	-		
Polarity-independent	-		
<b>Measuring accuracy</b>			
Reference conditions	<ul style="list-style-type: none"> <li>• According to IEC 62828-1</li> <li>• Rising characteristic curve</li> <li>• Lower range value 0 bar/kPa/psi</li> <li>• Seal diaphragm stainless steel</li> <li>• Measuring cell with silicone oil filling</li> <li>• Room temperature 25 °C (77 °F)</li> </ul>		
Conformity error at limit point setting, including hysteresis and repeatability			

# Pressure measurement

## Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Absolute pressure (differential pressure series)

### Technical specifications (continued)

#### SITRANS P320 / SITRANS P420 for absolute pressure (differential pressure series)

Measuring span ratio $r$ (spread, Turn-Down)	$r = \text{max. measuring span/set measuring span and nominal measuring range}$
<ul style="list-style-type: none"> <li>Linear characteristic curve</li> </ul>	
- 250 mbar/25 kPa/3.63 psi	$r \leq 5:$ $\leq 0.075\%$ $5 < r \leq 30:$ $\leq (0.02 \cdot r + 0.05)\%$
- 1300 mbar a/130 kPa a/18.8 psi a 5 bar a/500 kPa a/72.5 psi a 30 bar a/3000 kPa a/435 psi a	$r \leq 5:$ $\leq 0.075\%$ $5 < r \leq 30:$ $\leq (0.005 \cdot r + 0.05)\%$
- 160 bar/16 MPa/2 320 psi	$r \leq 5:$ $\leq 0.075\%$ $5 < r \leq 20:$ $\leq (0.005 \cdot r + 0.05)\%$
Influence of ambient temperature (in % per 28 °C (50 °F))	
<ul style="list-style-type: none"> <li>250 mbar a/25 kPa a/3.6 psi a</li> </ul>	$\leq (0.1 \cdot r + 0.1)\%$
<ul style="list-style-type: none"> <li>1300 mbar a/130 kPa a/18.8 psi a 5 bar a/500 kPa a/72.5 psi a 30 bar a/3000 kPa a/435 psi a 160 bar a/16 MPa a/2 320 psi a</li> </ul>	$\leq (0.0025 \cdot r + 0.125)\%$
Long-term stability at $\pm 30$ °C ( $\pm 54$ °F)	
<ul style="list-style-type: none"> <li>250 mbar a/25 kPa a/3.6 psi a</li> </ul>	In 5 years $\leq (0.2 \cdot r)\%$
<ul style="list-style-type: none"> <li>1300 mbar a/130 kPa a/18.8 psi a 5 bar a/500 kPa a/72.5 psi a 30 bar a/3000 kPa a/435 psi a 160 bar a/16 MPa a/2 320 psi a</li> </ul>	In 5 years $\leq (0.1 \cdot r)\%$ In 10 years $\leq (0.15 \cdot r)\%$
Step response time $T_{63}$ (without electrical damping)	
<ul style="list-style-type: none"> <li>250 mbar a/25 kPa a/3.6 psi a 1300 mbar a/130 kPa a/18.8 psi a 5 bar a/500 kPa a/72.5 psi a 30 bar a/3000 kPa a/435 psi a 160 bar a/16 MPa a/2 320 psi a</li> </ul>	Every 0.135 s
Effect of mounting position (in pressure per change of angle)	$\leq 0.7$ mbar/0.07 kPa/0.010 psi per 10° incline (zero offset is possible with position error compensation)
Effect of auxiliary power (in % per voltage change)	0.005% per 1 V
<b>Operating conditions</b>	
Medium temperature	
<ul style="list-style-type: none"> <li>Measuring cell with silicone oil filling</li> </ul>	-40 ... +100 °C (-40 ... +212 °F)
- Measuring cell 30 bar (435 psi)	-20 ... +100 °C (-4 ... +212 °F)
- Measuring cell 160 bar (2 320 psi)	-20 ... +100 °C (-4 ... +212 °F)
<ul style="list-style-type: none"> <li>Measuring cell with inert oil</li> </ul>	-20 ... +100 °C (-4 ... +212 °F)
Ambient conditions	
<ul style="list-style-type: none"> <li>Ambient temperature/enclosure</li> </ul>	Observe the temperature class in hazardous areas.
- Measuring cell with silicone oil filling	-40 ... +85 °C (-40 ... +185 °F)
- Measuring cell with inert oil	-40 ... +85 °C (-40 ... +185 °F)
- Display	-20 ... +80 °C (-4 ... +176 °F)
<ul style="list-style-type: none"> <li>Storage temperature</li> </ul>	-50 ... +85 °C (-58 ... +185 °F) (with FDA-compliant oil: -20 ... +85 °C (-4 ... +185 °F))
<ul style="list-style-type: none"> <li>Climatic class in accordance with IEC 60721-3-4</li> </ul>	4K4H
<ul style="list-style-type: none"> <li>Degree of protection</li> </ul>	
- According to IEC 60529	IP66, IP68
- According to NEMA 250	Type 4X
<ul style="list-style-type: none"> <li>Electromagnetic compatibility</li> </ul>	
- Emitted interference and interference immunity	According to IEC 61326 and NAMUR NE 21
<b>Structural design</b>	
Weight	<ul style="list-style-type: none"> <li>Aluminum enclosure: Approx. 3.9 kg (8.5 lbs)</li> <li>Stainless steel enclosure: Approx. 5.9 kg (13 lbs)</li> </ul>
Material	

## Technical specifications (continued)

SITRANS P320 / SITRANS P420 for absolute pressure (differential pressure series)	
<ul style="list-style-type: none"> <li>Material of wetted parts</li> <li>Seal diaphragm</li> <li>Process flanges</li> <li>Sealing plug</li> <li>O-ring</li> <li>Material of non-wetted parts</li> <li>Electronics enclosure</li> <li>Process flange screws</li> <li>Mounting bracket</li> <li>Process connection</li> <li>Electrical connection</li> </ul>	<p>Stainless steel, mat. no. 1.4404/316L, Alloy C276, mat. no. 2.4819, Monel, mat. no. 2.4360, tantalum or gold</p> <p>Stainless steel, mat. no. 1.4408 to PN 160, mat. no. 1.4571/316Ti for PN 420, Alloy C22, 2.4602 or Monel, mat. no. 2.4360</p> <p>1.4404 or as option alloy C22; 2.4602 or Monel mat. no. 2.4360</p> <p>FPM (Viton) or optionally: PTFE, FEP, FEPM and NBR</p> <ul style="list-style-type: none"> <li>Low-copper die-cast aluminum GD-ALSi 12 or stainless steel precision casting, mat. no. 1.4409/ CF-3M</li> <li>Standard: Powder coating with polyurethane Option: 2 coats: Coat 1: Epoxy-based; coat 2: Polyurethane</li> <li>Stainless steel nameplate (1.4404/316L)</li> </ul> <p>Stainless steel ISO 3506-1 A4-70</p> <p>Steel, zinc-plated steel, or stainless steel</p> <p>¼-18 NPT female thread and flange connection with 7/16-20 UNF fastening thread according to EN 61518 or M10 according to DIN 19213 (M12 for PN 420 (MWP 6092 psi))</p> <p>Screw terminals Cable entry via the following screw glands:</p> <ul style="list-style-type: none"> <li>M20 × 1.5</li> <li>½-14 NPT</li> <li>Device plug Han 7D/Han 8D<sup>1)</sup></li> <li>Device plug M12</li> </ul>
<b>Displays and controls</b> Buttons Display	<p>4 buttons for operation directly on the device</p> <ul style="list-style-type: none"> <li>With or without integrated display (optional)</li> <li>Lid with inspection window (optional)</li> </ul>
<b>Auxiliary power U<sub>H</sub></b> Terminal voltage on pressure transmitter Ripple Noise Auxiliary power Separate supply voltage	<p>10.5 ... 45 V DC 10.5 ... 30 V DC in intrinsically safe mode</p> <p><math>U_{SS} \leq 0.2 \text{ V}</math> (47 ... 125 Hz)</p> <p><math>U_{eff} \leq 1.2 \text{ mV}</math> (0.5 ... 10 kHz)</p> <p>–</p> <p>–</p>
<b>Certificates and approvals</b> Classification according to pressure equipment directive (PED 2014/68/EU) Drinking water • WRAS (England) • ACS (France) • NSF (USA) CRN (Canada) Explosion protection acc. to NEPSI (China) Explosion protection acc. to INMETRO (Brazil) Explosion protection • Intrinsic safety "i" - Marking - Permissible ambient temperature - Permissible medium temperature - Connection - Effective internal inductance/capacitance • Flameproof enclosure "d" - Marking	<p>For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)</p> <p>No.: 1903094 (option E83)</p> <p>No.: 18 ACC LY 277 (option E85)</p> <p>No.: 20180920-MH61350 (option E84)</p> <p>No.: 0F9863.5C (option E60)</p> <p>No.: GYJ19.1058X (option E27)</p> <p>No.: BRA-18-GE-0035X (option E25)</p> <p>II 1/2 G Ex ia/ib IIC T4/T6 Ga/Gb</p> <p>-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6</p> <p>-40 ... +100 °C (-40 ... +212 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6</p> <p>To certified intrinsically safe circuits with peak values: <math>U_i = 30 \text{ V}</math>, <math>I_i = 101 \text{ mA}</math>, <math>P_i = 760 \text{ mW}</math> <math>U_i = 29 \text{ V}</math>, <math>I_i = 110 \text{ mA}</math>, <math>P_i = 800 \text{ mW}</math> <math>L_i = 0.24 \mu\text{H}/C_i = 3.29 \text{ nF}</math></p> <p>Ex II 1/2 G Ex ia/db IIC T4/T6 Ga/Gb</p>

## Pressure measurement

### Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Absolute pressure (differential pressure series)

#### Technical specifications (continued)

##### SITRANS P320 / SITRANS P420 for absolute pressure (differential pressure series)

- Permissible ambient temperature	-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6
- Connection	To a circuit with the operating values: $U_n = 10.5 \dots 45 \text{ V}$ , $4 \dots 20 \text{ mA}$
• Dust explosion protection for zones 21, 22	
- Marking	Ex II 2D Ex tb IIIC T120 °C Db Ex II 3D Ex tc IIIC T120 °C Dc
- Permissible ambient temperature	-40 ... +80 °C (-40 ... +176 °F)
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F)
- Max. surface temperature	120 °C (248 °F)
- Connection	To a circuit with the operating values: $U_n = 10.5 \dots 45 \text{ V}$ , $4 \dots 20 \text{ mA}$
• Dust explosion protection for Zones 20, 21, 22	
- Marking	Ex II 1D Ex ia IIIC T120 °C Da Ex II 2D Ex ib IIIC T120 °C Db
- Permissible ambient temperature	-40 ... +80 °C (-40 ... +176 °F)
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F)
- Connection	To certified intrinsically safe circuits with peak values: $U_i = 30 \text{ V}$ , $I_i = 101 \text{ mA}$ , $P_i = 760 \text{ mW}$ $U_i = 29 \text{ V}$ , $I_i = 110 \text{ mA}$ , $P_i = 800 \text{ mW}$ $L_i = 0.24 \mu\text{H}/C_i = 3.29 \text{ nF}$
- Effective internal inductance/capacitance	
• Type of protection for Zone 2	
- Marking	Ex II 3G Ex ec IIC T4/T6 Gc
- Permissible ambient temperature "ec"	-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +40 °C (-40 ... +104 °F) temperature class T6
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6
- "ec" connection	To a circuit with the operating values: $U_n = 10.5 \dots 30 \text{ V}$ , $4 \dots 20 \text{ mA}$
• Explosion protection acc. to FM	Available soon
- Marking (XP/DIP) or IS; NI; S	CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4 ... T6: CL I, DIV 2, GP ABCD T4 ... T6; CL II, DIV 2, GP FG; CL III
• Explosion protection according to CSA	Available soon
- Marking (XP/DIP) or (IS)	CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4 ... T6: CL I, DIV 2, GP ABCD T4 ... T6; CL II, DIV 2, GP FG; CL III
NAMUR recommendations	
• NE 06	Standardized Electrical Signals and Questions Relating to Engineering Technology
• NE 21	Electromagnetic Compatibility (EMC) of Industrial Process and Laboratory Control Equipment
• NE 23	Extra Low Voltage Circuits with Safe Separation
• NE 43	Standardization of the Signal Level for the Failure Information of Digital Transmitters
• NE 53	Software and Hardware of Field Devices and Signal Processing Devices with Digital Electronics
• NE 80	The Application of the Pressure Equipment Directive to Process Control Devices
• NE 105	Specifications for Integrating Fieldbus Devices in Engineering Tools for Field Devices
• NE 107	Self-Monitoring and Diagnosis of Field Devices
• NE 131	NAMUR Standard Device - Field Devices for Standard Applications

<sup>1)</sup> Han 8D is identical to Han 8U.

#### Communication

HART	
HART Protocol	230 ... 1 100 Ω HART 7
Software for computer	SIMATIC PDM

#### Communication

PROFIBUS PA	
Simultaneous communication with master class 2 (max.)	4
The address can be set using	Configuration tool or local operation (default setting address 126)



### Technical specifications (continued)

Communication	
Cyclic data usage	
• Output byte	≤ 35 (7 measured values)
• Input byte	0, 1, or 2 (register operation mode and reset function for dosing)
Internal preprocessing	
Device profile	PROFIBUS PA Profile Version 4.01 Class B. Cyclic data usage compatible with version 3.XX
Number of function blocks	7
• Analog input	
- Adaptation to user-specific process variable	Yes, linearly rising or falling characteristic curve
- Electrical damping adjustable	0 ... 100 s
- Simulation function	Output/input
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respectively
• Register (totalizer)	Can be reset, preset, optional direction of counting, simulation function of register output
- Limit monitoring	One upper and lower warning limit and one alarm limit respectively
• Physical block	1
Transducer blocks	1
• Pressure transducer block	
- Can be calibrated by applying two pressures	Yes
- Monitoring of sensor limits	Yes
- Specification of a vessel characteristic curve with	Max. 30 nodes
- Square-rooted characteristic curve for flow measurement	Yes
- Tank characteristic curve for volume measurement	Yes

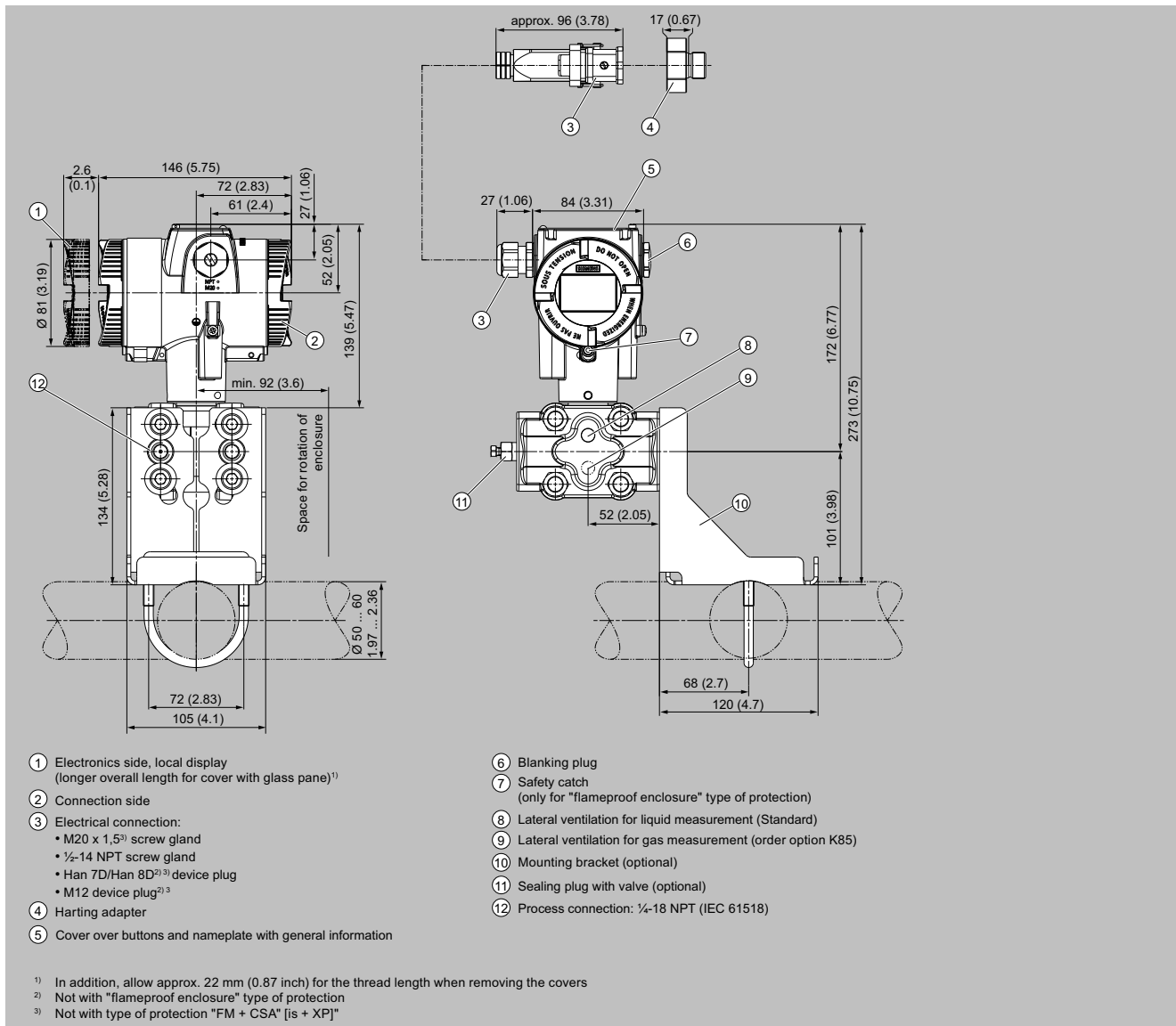
Communication	
- Low flow cut-off and implementation point of square-root extraction	Parameterizable
- Simulation function for measured pressure value and sensor temperature	Constant value or by means of parameterizable ramp function
<b>FOUNDATION Fieldbus</b>	
Device profile	FF ITK 6
Function blocks	3 function blocks analog input, 1 function block PID
• Analog input	
- Adaptation to user-specific process variable	Yes, linearly rising or falling characteristic curve
- Electrical damping adjustable	0 ... 100 s
- Simulation function	Output/input (can be locked within the device with a bridge)
- Failure mode	Parameterizable (last good value, substitute value, incorrect value)
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respectively
- Square-rooted characteristic curve for flow measurement	Yes
• PID	Standard FOUNDATION Fieldbus function block
• Physical block	1 resource block
Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block LCD
• Pressure transducer block	
- Can be calibrated by applying two pressures	Yes
- Monitoring of sensor limits	Yes
- Simulation function: pressure measurement, sensor temperature and electronics temperature	Constant value or by means of parameterizable ramp function

# Pressure measurement

## Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Absolute pressure (differential pressure series)

### Dimensional drawings



SITRANS P320/P420 pressure transmitter for absolute pressure (differential pressure series), dimensions in mm (inch)

## Selection and ordering data

	Article No.	
<b>Pressure transmitters for differential pressure and flow, PN 160 (MAWP 2320 psi)</b>		
<b>SITRANS P320</b>	7MF034	● - ● ● ● ● ● - ● ● ● ●
<b>SITRANS P420</b>	7MF044	● - ● ● ● ● ● - ● ● ● ●
Click the article number for online configuration in the PIA Life Cycle Portal.		
<b>Communication</b>		
HART, 4 ... 20 mA	0	
PROFIBUS PA	1	
FOUNDATION Fieldbus (FF)	2	
<b>Measuring cell filling</b>		
Silicone oil	1	
Inert liquid	3	
Neobee oil	4	
<b>Maximum measuring span</b>		
20 mbar (8.037 inH <sub>2</sub> O)		B
60 mbar (24.11 inH <sub>2</sub> O)		D
250 mbar (100.5 inH <sub>2</sub> O)		G
600 mbar (241.1 inH <sub>2</sub> O)		H
1 600 mbar (643 inH <sub>2</sub> O)		M
5 000 mbar (2009 inH <sub>2</sub> O)		P
30 bar (435 psi)		R
160 bar (2 320 psi)		Y
<b>Process connection</b>		
Oval flange, fastening thread: 7/16-20 UNF (IEC 61518)		L
Oval flange, fastening thread: M10 (PN 160) (DIN 19213)		M
Oval flange, fastening thread: 7/16-20 UNF (IEC 61518) with lateral ventilation		N
Oval flange, fastening thread: M10 (PN 160) (DIN 19213) with lateral ventilation		P
Version for diaphragm seal with fastening thread 7/16-20 UNF (IEC 61518)		V
Version for diaphragm seal with fastening thread M10 (PN 160) (DIN 19213)		W
Version for diaphragm seal (one side mounted directly; other side with capillary line) with fastening thread 7/16-20 UNF (IEC 61518)		X
<b>Material of wetted parts: Process connection, seal diaphragm</b>		
Stainless steel 316L/1.4404, stainless steel 316L/1.4404, process flange stainless steel 316/1.4408		0
Stainless steel 316L/1.4404, alloy C276/2.4819, process flange stainless steel 316/1.4408		1
Alloy C22/2.4602, alloy C276/2.4819, process flange stainless steel 316/1.4408		2
Tantalum/tantalum, process flange stainless steel 316/1.4408 (not in combination with maximum measuring span 20 mbar (0.29 psi) and 60 mbar (0.87 psi))		4
Monel 400/2.4360, Monel 400/2.4360, process flange stainless steel 316/1.4408 (not in combination with maximum measuring span 20 mbar (0.29 psi) and 60 mbar (0.87 psi))		6
Stainless steel 316L/1.4404 gold-plated, process flange stainless steel 316/1.4408 (not in combination with maximum measuring span 20 mbar (0.29 psi) and 60 mbar (0.87 psi))		8
<b>Material of non-wetted parts</b>		
Die-cast aluminum		1
Stainless steel precision casting CF3M/1.4409 similar to 316L		2
<b>Enclosure</b>		
Dual chamber device		5
<b>Type of protection</b>		
Without Ex		A
Intrinsic safety		B
Flameproof enclosure		C
Flameproof enclosure, intrinsic safety		D
Dust protection by enclosure Zone 21/22 (DIP), increased safety Zone 2		L
Intrinsic safety, dust protection by enclosure Zone 20/21/22 (DIP), increased safety Zone 2		M
Combination of options B, C and L (Zone model)		S
Combination of options B, C and L (Zone model, Class Division)		T
<b>Electrical connections/cable entries</b>		
Thread for cable gland: Cable gland must be ordered separately as option (Axx)		
• 2 × M20 × 1.5		F
• 2 × 1/2-14 NPT		M
<b>Local operation/display</b>		
Without local display (lid closed)		0
With local display (lid closed)		1

# Pressure measurement

## Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Differential pressure and flow

### Selection and ordering data (continued)

	Article No.	
<b>Pressure transmitters for differential pressure and flow, PN 160 (MAWP 2320 psi)</b>		
SITRANS P320	7MF034	● - ● ● ● ● ● - ● ● ● ●
SITRANS P420	7MF044	● - ● ● ● ● ● - ● ● ● ●
With local display (lid with glass pane)		2

	Article No.	
<b>Pressure transmitters for differential pressure and flow, PN 420 (MAWP 6092 psi)</b>		
SITRANS P320	7MF035	● - ● ● ● ● ● - ● ● ● ●
SITRANS P420	7MF045	● - ● ● ● ● ● - ● ● ● ●

Click the article number for online configuration in the PIA Life Cycle Portal.

<b>Communication</b>		
HART, 4 ... 20 mA	0	
PROFIBUS PA	1	
FOUNDATION Fieldbus (FF)	2	
<b>Measuring cell filling</b>		
Silicone oil	1	
Inert liquid	3	
Neobee oil	4	
<b>Maximum measuring span</b>		
250 mbar (100.5 inH <sub>2</sub> O)		G
600 mbar (241.1 inH <sub>2</sub> O)		H
1600 mbar (643 inH <sub>2</sub> O)		M
5000 mbar (2009 inH <sub>2</sub> O)		P
30 bar (435 psi)		R
<b>Process connection</b>		
Oval flange, fastening thread: 7/16-20 UNF (IEC 61518)		L
Oval flange, fastening thread: M12 (PN 420) (DIN 19213)		M
Oval flange, fastening thread: 7/16-20 UNF (IEC 61518) with lateral ventilation		N
Oval flange, fastening thread: M12 (PN 420) (DIN 19213) with lateral ventilation		P
Version for diaphragm seal with fastening thread 7/16-20 UNF (IEC 61518)		V
Version for diaphragm seal with fastening thread M10 (DIN 19213)		W
Version for diaphragm seal (one side mounted directly; other side with capillary line) with fastening thread 7/16-20 UNF (IEC 61518)		X
<b>Material of wetted parts: Process connection, seal diaphragm</b>		
Stainless steel 316L/1.4404, stainless steel 316L/1.4404, process flange stainless steel 316/1.4408		0
Stainless steel 316L/1.4404, alloy C276/2.4819, process flange stainless steel 316/1.4408		1
Stainless steel 316L/1.4404 gold-plated, process flange stainless steel 316/1.4408		8
<b>Material of non-wetted parts</b>		
Die-cast aluminum		1
Stainless steel precision casting CF3M/1.4409 similar to 316L		2
<b>Enclosure</b>		
Dual chamber device		5
<b>Type of protection</b>		
Without Ex		A
Intrinsic safety		B
Flameproof enclosure		C
Flameproof enclosure, intrinsic safety		D
Dust protection by enclosure Zone 21/22 (DIP), increased safety Zone 2		L
Dust protection by enclosure Zone 20/21/22 (DIP), increased safety Zone 2		M
Combination of options B, C and L (Zone model)		S
Combination of options B, C and L (Zone model, Class Division)		T
<b>Electrical connections/cable entries</b>		
Thread for cable gland: Cable gland must be ordered separately as option (Axx)		
• 2 × M20 × 1.5		F
• 2 × 1/2-14 NPT		M
<b>Local operation/display</b>		
Without local display (lid closed)		0
With local display (lid closed)		1

## Selection and ordering data (continued)

	Article No.
Pressure transmitters for differential pressure and flow, PN 420 (MAWP 6092 psi)	
SITRANS P320	7MF035
SITRANS P420	7MF045
With local display (lid with glass pane)	2

Options	Order code
<b>Add "-Z" to article no., add order code and plain text or entry from drop-down list.</b>	
<b>Cable glands included</b>	
Plastic	A00
Metal	A01
Stainless steel	A02
Stainless steel 316L/1.4404	A03
CMP, for XP devices	A10
CAPRI ADE 4F, CuZn, cable inner diameter 7 ... 12 mm, cable outer diameter 10 ... 16 mm	A11
CAPRI ADE 4F, stainless steel, cable inner diameter 7 ... 12 mm, cable outer diameter 10 ... 16 mm	A12
Sealing plug included, plastic	A20
Sealing plug included, metal	A21
Sealing plug included, stainless steel	A22
Sealing plug included, stainless steel 316L/1.4404	A23
<b>Device plug Han mounted left</b>	
Device plug Han 7D (plastic, straight)	A30
Device plug Han 7D (plastic, angled)	A31
Device plug Han 7D (metal, straight)	A32
Device plug Han 7D (metal, angled)	A33
Device plug Han 8D (plastic, straight)	A34
Device plug Han 8D (plastic, angled)	A35
Device plug Han 8D (metal, straight)	A36
Device plug Han 8D (metal, angled)	A37
<b>Cable socket included</b>	
Plastic, for device plug Han 7D and Han 8D	A40
Metal, for device plug Han 7D and Han 8D	A41
<b>Device plug M12 mounted left</b>	
Stainless steel, without cable socket	A62
Stainless steel, with cable socket	A63
<b>Cable entry/device plug mounting</b>	
2 × sealing plugs M20 × 1.5, IP66/68 installed on both sides	A90
2 × sealing plugs ½-14 NPT, IP66/68 installed on both sides	A91
Cable gland/device plug mounted left	A97
Cable gland/device plug mounted right	A99
<b>Nameplate labeling (standard labeling: English, unit bar)</b>	
German (bar)	B11
French (bar)	B12
Spanish (bar)	B13
Italian (bar)	B14
Chinese (bar)	B15
Russian (bar)	B16
English (psi)	B20
English (Pa)	B30
Chinese (Pa)	B35

Options	Order code
<b>Add "-Z" to article no., add order code and plain text or entry from drop-down list.</b>	
<b>Certificates</b>	
Quality inspection certificate, 5-point factory calibration (IEC 62828-2)	C11
Inspection certificate (EN 10204-3.1) - Material of pressurized and wetted parts	C12
Factory certificate - NACE (MR 0103-2012 and MR 0175-2009)	C13
Factory certificate (EN 10204-2.2) - Wetted parts	C14
Inspection certificate (EN 10204-3.1) - PMI test of pressurized and wetted parts	C15
<b>Certificates for functional safety</b>	
Functional Safety (IEC 61508) - SIL2/3	C20
<b>Device options</b>	
PDF file with device settings	D10
Double layer coating (epoxy resin and polyurethane) 120 µm of enclosure and lid	D20
FVMQ enclosure sealing	D21
Degree of protection IP66/IP68 (not for device plug M12 and Han)	D30
Unlabeled TAG plate	D40
Without labeling of the measuring range on the TAG plate	D41
Stainless steel Ex plate 1.4404/316L	D42
Increase of pressure rating from PN 420 to PN 500 (Tested according to IEC 61010. Only permissible for process media of fluid group 2 acc. to DGRL. Not suitable for use with hazardous process media.)	D50
Extension of the medium temperature to -40 °C for measuring cell filling with inert filling liquid Please note step response time T63: 5.5 s (20 and 60 mbar); 1.4 s (250 and 600 mbar); 0.3 s (1.6 and 5 bar)	D52
Overvoltage protection up to 6 kV (internal)	D70
Overvoltage protection up to 6 kV (external)	D71
Labels on transport packaging (provided by customer)	D90
<b>General approval without Ex approval</b>	
Worldwide (CE, UKCA, RCM) except EAC, FM, CSA, KCC	E00
Worldwide (CE, UKCA, RCM, EAC, FM, CSA, KCC)	E01
CSA (USA and Canada)	E06
EAC	E07
FM	E08
KCC	E09
<b>Explosion protection approvals</b>	
ATEX (Europe)	E20
CSA (USA and Canada) <sup>1)</sup>	E21
FM (USA and Canada) <sup>1)</sup>	E22
IECEX (Worldwide)	E23
EACEx (GOST-R, -K, -B)	E24
INMETRO (Brazil)	E25
KCs (Korea)	E26
NEPSI (China)	E27

## Pressure measurement

### Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Differential pressure and flow

#### Selection and ordering data (continued)

Options Add "-Z" to article no., add order code and plain text or entry from drop-down list.	Order code
PESO (India)	E28
CSA (Japan)	E29
UKR Sepro (Ukraine)	E30
UKEX (United Kingdom)	E33
ATEX (Europe), IECEx (Worldwide) and UKEX (UK)	E47
CSA (Canada) and FM (USA) <sup>1)</sup>	E48
ATEX (Europe) and IECEx (Worldwide) + CSA (Canada) and FM (USA) <sup>1)</sup>	E49
<b>Marine approvals</b>	
DNV-GL (Det Norske Veritas/Germanischer Lloyd)	E50
LR (Lloyds Register)	E51
BV (Bureau Veritas)	E52
ABS (American Bureau of Shipping)	E53
RMR (Russian Maritime Register)	E55
KR (Korean Register of Shipping)	E56
RINA (Registro Italiano Navale)	E57
CCS (China Classification Society)	E58
<b>Country-specific approvals</b>	
CRN approval Canada (Canadian Registration Number)	E60
<b>Special approvals</b>	
Oxygen application (with inert liquid, max. 160 bar (2 320 psi) at 100 °C (212 °F))	E80
Dual Seal	E81
WRC/WRAS (drinking water); only with process flange O-rings made of EPDM	E83
NSF61 (drinking water)	E84
ACS (drinking water)	E85
<b>Mounting bracket</b>	
Steel, zinc-plated	H01
Stainless steel 1.4301/304	H02
Stainless steel 1.4404/316L	H03
<b>Process flanges; screw plug with vent valve</b>	
Welded in on right	J08
Welded in on left	J09
Glued in on right	J10
Glued in on left	J11
<b>Flange connections with flange EN 1092-1</b>	
Form B1	
• DN 25 PN 40, stainless steel 1.4571/316Ti	J70
• DN 50 PN 40, stainless steel 1.4571/316Ti	J71
• DN 80 PN 40, stainless steel 1.4571/316Ti	J72
• DN 15 PN 40, stainless steel 1.4571/316Ti	J78
Form C	
• DN 25 PN 40, stainless steel 1.4571/316Ti	J73
• DN 50 PN 40, stainless steel 1.4571/316Ti	J74
• DN 80 PN 40, stainless steel 1.4571/316Ti	J75
<b>Flange connection options</b>	
Flange connection and temperature extension	J76
Flange connection with epoxy resin coating	J77

Options Add "-Z" to article no., add order code and plain text or entry from drop-down list.	Order code
<b>Process flanges; special materials</b>	
Reserved for 7MF7: without process flanges, without screws, without gaskets	K00
Process flange material alloy C22/2.4602	K01
Process flange material Monel 400/2.4360	K02
Stainless steel with PVDF insert max. PN 10 (MAWP 145 psi), max. medium temperature 90 °C (194 °F)	K05
Process connection ½-14 NPT, on the side in the middle of the process flanges, no vent valves possible	
<b>Process flanges; process connection option</b>	
Process connection NAM (ASTAVA)	K21
<b>Process flanges chambered with gaskets</b>	
1 × chambered, graphite	K40
1 × chambered, PTFE (FDA-compliant), recommended for gas measurements	K41
<b>Process flanges, gaskets (instead of standard gaskets FKM (FPM))</b>	
O-ring, process flanges, PTFE	K50
O-ring, process flanges, FEP (with silicone core, approved for food)	K51
O-ring, process flanges, FFKM (FFPM)	K52
O-ring, process flanges, NBR	K53
O-ring, process flanges, EPDM	K54
<b>Process flange options</b>	
Process flanges for vertical differential pressure lines (half process flange)	K81
Process flanges (+) - side front	K82
Process flange screws, process flange nuts, material Monel 400/2.4360	K83
Valve ¼-18 NPT, material same as process flanges	K84
Valve mounted on the side, measured medium: Gas	K85
Oval flange attached, PTFE seal + fixing screws	K86
<b>Valve manifolds</b>	
With mounted valve manifold (3-way) 7MF9411-5BA, PTFE sealing rings, chrome-plated steel screws and pressure test certified in factory certificate (EN 10204-2.2)	U01
With mounted valve manifold (3-way) 7MF9411-5BA, PTFE sealing rings, stainless steel screws and pressure test certified in factory certificate (EN 10204-2.2)	U02
With mounted valve manifold (5-way) 7MF9411-5CA, PTFE sealing rings, chrome-plated steel screws and pressure test certified in factory certificate (EN 10204-2.2)	U03
With mounted valve manifold (5-way) 7MF9411-5CA, PTFE sealing rings, stainless steel screws and pressure test certified in factory certificate (EN 10204-2.2)	U04
<b>Device settings</b>	
Measuring span: Lower range value (max. 5 characters), upper range value (max. 5 characters), unit [mbar, bar, kPa, MPa, psi, ...], example: -0.5 ... 10.5 psi	Y01
Square-rooted characteristic curve [VSLN2, MSLN2]; example: VSLN2	Y02
TAG (on stainless steel plate and device parameters, max. 32 characters)	Y15
Measuring point description (on stainless steel plate and device parameters, max. 32 characters)	Y16
TAG short (device parameters, max. 8 characters)	Y17

## Selection and ordering data (continued)

Options	Order code
<b>Add "-Z" to article no., add order code and plain text or entry from drop-down list.</b>	
Local display: [Pressure, Percent], reference [None, Absolute, Gauge], example: Pressure gauge	<b>Y21</b>
Local display: Scaling with standard units [m <sup>3</sup> /s, l/s, m, inch, ...], example 1 ... 5 m <sup>3</sup> /s	<b>Y22</b>
Local display: Scaling with user-specific units (max. 12 characters), example 1 ... 5 m	<b>Y23</b>

Options	Order code
<b>Add "-Z" to article no., add order code and plain text or entry from drop-down list.</b>	
Set PROFIBUS PA device address (1 ... 126)	<b>Y25</b>
Saturation limits instead of 3.8 ... 20.5 mA, example: 3.8 ... 22.0 mA	<b>Y30</b>
Fault current instead of 3.6 mA [22.5 mA, 22.8 mA]	<b>Y31</b>
Damping in seconds instead of 2 s (0.0 ... 100.0 s)	<b>Y32</b>
ID number of special design	<b>Y99</b>

<sup>1)</sup> Explosion protection acc. to FM/CSA: suitable for installation according to NEC 500/505.

# Pressure measurement

## Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Differential pressure and flow

### Technical specifications

#### SITRANS P320 / SITRANS P420 for differential pressure and flow

Input	Differential pressure and flow		
Measured variable	Measuring span	Max. permissible operating pressure MAWP (PS)	Maximum permissible test pressure
Measuring span (continuously adjustable) or measuring range and max. permissible operating pressure (pursuant to Pressure Equipment Directive 2014/68/EU)	1 ... 20 mbar	160 bar	240 bar
	0.1 ... 2 kPa	16 MPa	24 MPa
	0.4019 ... 8.037 inH <sub>2</sub> O	2 320 psi	3 481 psi
	1 ... 60 mbar	160 bar	240 bar
	0.1 ... 6 kPa	16 MPa	24 MPa
	0.4019 ... 24.11 inH <sub>2</sub> O	2 320 psi	3 481 psi
	2.5 ... 250 mbar	160 bar	240 bar
	0.2 ... 25 kPa	16 MPa	24 MPa
	1.005 ... 100.5 inH <sub>2</sub> O	2 320 psi	3 481 psi
	6 ... 600 mbar	160 bar	240 bar
	0.6 ... 60 kPa	16 MPa	24 MPa
	2.41 ... 241.1 inH <sub>2</sub> O	2 320 psi	3 481 psi
	16 ... 1600 mbar	160 bar	240 bar
	1.6 ... 160 kPa	16 MPa	24 MPa
	6.43 ... 643 inH <sub>2</sub> O	2 320 psi	3 481 psi
	50 ... 5 000 mbar	160 bar	240 bar
	5 ... 500 kPa	16 MPa	24 MPa
	20.09 ... 2009 inH <sub>2</sub> O	2 320 psi	3 481 psi
	8 ... 160 bar	160 bar	240 bar
	0.8 ... 16 MPa	16 MPa	24 MPa
116 ... 2 320 psi	2 320 psi	3 481 psi	
0.3 ... 30 bar	160 bar	240 bar	
0.03 ... 3 MPa	16 MPa	24 MPa	
4.35 ... 435 psi	2 320 psi	3 481 psi	
2.5 ... 250 mbar	420 bar	630 bar	
0.25 ... 25 kPa	42 MPa	63 MPa	
1.005 ... 100.5 inH <sub>2</sub> O	6 092 psi	9 137 psi	
6 ... 600 mbar	420 bar	630 bar	
0.6 ... 60 kPa	42 MPa	63 MPa	
2.41 ... 241.1 inH <sub>2</sub> O	6 092 psi	9 137 psi	
16 ... 1600 mbar	420 bar	630 bar	
1.6 ... 160 kPa	42 MPa	63 MPa	
6.43 ... 643 inH <sub>2</sub> O	6 092 psi	9 137 psi	
50 ... 5 000 mbar	420 bar	630 bar	
5 ... 500 kPa	42 MPa	63 MPa	
20.09 ... 2009 inH <sub>2</sub> O	6 092 psi	9 137 psi	
0.3 ... 30 bar	420 bar	630 bar	
0.03 ... 3 MPa	42 MPa	63 MPa	
4.35 ... 435 psi	6 092 psi	9 137 psi	
Measuring limits	All measuring cells:		
• Lower measuring limit	<ul style="list-style-type: none"> <li>-100% of max. measuring range or 30 mbar a /3 kPa a /0.44 psi a</li> </ul>		
- Measuring cell with silicone oil filling	Measuring cell 160 bar/16 MPa/2 320 psi:		
	<ul style="list-style-type: none"> <li>-25% of maximum measuring range or 30 mbar a /3 kPa a /0.44 psi a</li> </ul>		
- Measuring cell with inert liquid	For medium temperature -20 °C < $\vartheta$ ≤ +60 °C (-4 °F < $\vartheta$ ≤ +140 °F)	-100% of maximum measuring range or 30 mbar a /3 kPa a /0.44 psi a	
	For medium temperature 60 °C < $\vartheta$ ≤ +100 °C (max. 85 °C for measuring cell 30 bar with PN 420) (140 °F < $\vartheta$ ≤ +212 °F (max. 185 °F for measuring cell 435 psi))	-100% of maximum measuring range or 30 mbar a /3 kPa a /0.44 psi a	
		30 mbar a + 20 mbar a · ( $\vartheta$ - 60 °C)/°C 3 kPa a + 2 kPa a · ( $\vartheta$ - 60 °C)/°C 0.44 psi a + 0.29 psi a · ( $\vartheta$ - 140 °F)/°F	
- Measuring cell with FDA-compliant oil	For medium temperature -10 °C < $\vartheta$ ≤ +100 °C (-14 °F < $\vartheta$ ≤ +212 °F)	-100% of maximum measuring range or 100 mbar a /10 kPa a /14.5 psi a	
• Upper measuring limit	100% of the max. measuring span (for oxygen measurement max. 100 bar/10 MPa/1450 psi and 60 °C (140 °F) ambient temperature/medium temperature)		



### Technical specifications (continued)

SITRANS P320 / SITRANS P420 for differential pressure and flow	
• Lower range value	Between the measuring limits (continuously adjustable)
<b>Output</b>	<b>HART</b>
Output signal	4 ... 20 mA
• Lower saturation limit (continuously adjustable)	3.55 mA, factory set to 3.8 mA
• Upper saturation limit (continuously adjustable)	22.8 mA, factory-set to 20.5 mA or optionally 22.0 mA
• Ripple (without HART communication)	$I_{pp} \leq 0.5\%$ of max. output current
Adjustable damping	0 ... 100 s, continuously adjustable over remote operation 0 ... 100 s, in increments of 0.1 s, adjustable over local display
• Current simulator	3.55 ... 22.8 mA
• Failure signal	3.55 ... 22.8 mA
Load	Resistance R [ $\Omega$ ]
• Without HART communication	$R = (U_H - 10.5 \text{ V}) / 22.8 \text{ mA}$ , $U_H$ : Auxiliary power in V
• With HART communication	$R = 230 \dots 1100 \Omega$
Characteristic curve	<ul style="list-style-type: none"> <li>• Linearly increasing or linearly decreasing</li> <li>• Linear increase or decrease or according to the square root (only for differential pressure and flow)</li> </ul>
Physical bus	-
Polarity-independent	-
<b>Measuring accuracy</b>	
Reference conditions	<ul style="list-style-type: none"> <li>• According to IEC 62828-1</li> <li>• Rising characteristic curve</li> <li>• Lower range value 0 bar/kPa/psi</li> <li>• Seal diaphragm stainless steel</li> <li>• Measuring cell with silicone oil filling</li> <li>• Room temperature 25 °C (77 °F)</li> </ul>
Characteristic curve deviation at limit point setting, including hysteresis and repeatability	
Measuring span ratio r (spread, Turn-Down)	r = maximum measuring span/set measuring span or nominal measuring range
• Linear characteristic curve	
- 20 mbar/2 kPa/0.29 psi	$r \leq 5:$ $\leq 0.075\%$ $5 < r \leq 20:$ $\leq (0.005 \cdot r + 0.05)\%$
- 60 mbar/6 kPa/0.87 psi	$r \leq 5:$ $\leq 0.075\%$ $5 < r \leq 60:$ $\leq (0.005 \cdot r + 0.05)\%$
- 250 mbar/25 kPa/3.63 psi 600 mbar/60 kPa/8.7 psi 1600 mbar/160 kPa/23.21 psi 5 bar/500 kPa/72.5 psi 30 bar/3 MPa/435 psi	$r \leq 5:$ $\leq 0.065\%$ (SITRANS P320) $5 < r \leq 100:$ $\leq (0.004 \cdot r + 0.045)\%$ (SITRANS P320)
- 160 bar/16 MPa/2 320 psi	$r \leq 5:$ $\leq 0.065\%$ (SITRANS P320) $5 < r \leq 20:$ $\leq (0.004 \cdot r + 0.045)\%$ (SITRANS P320)
- 250 mbar/25 kPa/3.63 psi (PN 160) 600 mbar/60 kPa/8.7 psi 1600 mbar/160 kPa/23.21 psi 5 bar/500 kPa/72.5 psi 30 bar/3 MPa/435 psi	$r \leq 5:$ $\leq 0.04\%$ (SITRANS P420) $5 < r \leq 100:$ $\leq (0.004 \cdot r + 0.045)\%$ (SITRANS P420)
- 160 bar/16 MPa/2 320 psi	$r \leq 5:$ $\leq 0.04\%$ (SITRANS P420) $5 < r \leq 20:$ $\leq (0.004 \cdot r + 0.045)\%$ (SITRANS P420)
- 250 mbar/25 kPa/3.63 psi (PN 420)	$r \leq 5:$ $\leq 0.065\%$ (SITRANS P420)
• Square-rooted characteristic curve (flow > 50%)	
- 20 mbar/2 kPa/0.29 psi	$r \leq 5:$ $\leq 0.075\%$ $5 < r \leq 20:$ $\leq (0.005 \cdot r + 0.05)\%$
- 60 mbar/6 kPa/0.87 psi	$r \leq 5:$ $\leq 0.075\%$ $5 < r \leq 60:$ $\leq (0.005 \cdot r + 0.05)\%$
- 250 mbar/25 kPa/3.63 psi	$r \leq 5:$ $\leq 0.065\%$ (SITRANS P320) $\leq 0.04\%$ (SITRANS P420)

# Pressure measurement

## Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Differential pressure and flow

### Technical specifications (continued)

#### SITRANS P320 / SITRANS P420 for differential pressure and flow

600 mbar/60 kPa/8.7 psi 1600 mbar/160 kPa/23.21 psi 5 bar/500 kPa/72.5 psi 30 bar/3 MPa/435 psi	5 < r ≤ 100:	≤ (0.004 · r + 0.045)%
- 160 bar/16 MPa/2 320 psi	r ≤ 5: 5 < r ≤ 20:	≤ 0.065% (SITRANS P320) ≤ 0.04% (SITRANS P420) ≤ (0.004 · r + 0.045)%
• Square-rooted characteristic curve (flow 25 ... 50%)		
- 20 mbar/2 kPa/0.29 psi	r ≤ 5: 5 < r ≤ 20:	≤ 0.15% ≤ (0.01 · r + 0.1)%
- 60 mbar/6 kPa/0.87 psi	r ≤ 5: 5 < r ≤ 60:	≤ 0.15% ≤ (0.01 · r + 0.1)%
- 250 mbar/25 kPa/3.63 psi 600 mbar/60 kPa/8.7 psi 1600 mbar/160 kPa/23.21 psi 5 bar/500 kPa/72.5 psi 30 bar/3 MPa/435 psi	r ≤ 5: 5 < r ≤ 100:	≤ 0.13% (SITRANS P320) ≤ 0.08% (SITRANS P420) ≤ (0.008 · r + 0.09)%
- 160 bar/16 MPa/2 320 psi	r ≤ 5: 5 < r ≤ 20:	≤ 0.13% (SITRANS P320) ≤ 0.08% (SITRANS P420) ≤ (0.008 · r + 0.09)%
Influence of ambient temperature (in % per 28 °C (50 °F))		
- 20 mbar/2 kPa/0.29 psi		≤ (0.15 · r + 0.1)%
- 60 mbar/6 kPa/0.87 psi		≤ (0.075 · r + 0.1)%
- 250 mbar/25 kPa/3.63 psi 600 mbar/60 kPa/8.7 psi 1600 mbar/160 kPa/23.21 psi 5 bar/500 kPa/72.5 psi 30 bar/3 MPa/435 psi 160 bar/16 MPa/2 320 psi		≤ (0.025 · r + 0.125)% (SITRANS P320)
- 250 mbar/25 kPa/3.63 psi 5 bar/500 kPa/72.5 psi		≤ (0.025 · r + 0.0625)% (SITRANS P420)
- 600 mbar/60 kPa/8.7 psi 1600 mbar/160 kPa/23.21 psi 30 bar/3 MPa/435 psi 160 bar/16 MPa/2 320 psi		≤ (0.0125 · r + 0.0625)% (SITRANS P420)
Effect of static pressure		
• At the lower range value	Zero offset is possible with position error compensation	
- 20 mbar/2 kPa/0.29 psi		≤ (0.3 · r)% per 70 bar (SITRANS P320) ≤ (0.2 · r)% per 70 bar (SITRANS P420)
- 60 mbar/6 kPa/0.87 psi 250 mbar/25 kPa/3.63 psi 600 mbar/60 kPa/8.7 psi 1600 mbar/160 kPa/23.21 psi 30 bar/3 MPa/435 psi 160 bar/16 MPa/2 320 psi		≤ (0.1 · r)% per 70 bar
- 5 bar/500 kPa/72.5 psi		≤ (0.15 · r)% per 70 bar
• On the measuring span		
- 20 mbar/2 kPa/0.29 psi		≤ 0.2% per 70 bar
- 60 mbar/6 kPa/0.87 psi 250 mbar/25 kPa/3.63 psi 600 mbar/60 kPa/8.7 psi 1600 mbar/160 kPa/23.21 psi 5 bar/500 kPa/72.5 psi 30 bar/3 MPa/435 psi 160 bar/16 MPa/2 320 psi		≤ 0.1% per 70 bar
Long-term stability at ±30 °C (± 54 °F)	Static pressure max. 70 bar/7 MPa/1015 psi	

## Technical specifications (continued)

SITRANS P320 / SITRANS P420 for differential pressure and flow	
<ul style="list-style-type: none"> <li>• 20 mbar/2 kPa/0.29 psi</li> <li>• 60 mbar/6 kPa/0.87 psi</li> <li>• 250 mbar/25 kPa/3.63 psi</li> <li>• 600 mbar/60 kPa/8.7 psi</li> <li>• 1600 mbar/160 kPa/23.21 psi</li> <li>• 5 bar/500 kPa/72.5 psi</li> <li>• 160 bar/16 MPa/2 320 psi</li> <li>• 30 bar/3 MPa/435 psi</li> </ul>	<ul style="list-style-type: none"> <li>≤ (0.2 · r)% per year</li> <li>In 5 years ≤ (0.25 · r)%</li> <li>In 5 years ≤ (0.125 · r)%</li> <li>In 10 years ≤ (0.15 · r)%</li> <li>In 5 years ≤ (0.25 · r)%</li> <li>In 10 years ≤ (0.35 · r)%</li> </ul>
Step response time $T_{63}$ (without electrical damping for pressure rating PN 160)	
<ul style="list-style-type: none"> <li>• 20 mbar/2 kPa/0.29 psi</li> <li>• 60 mbar/6 kPa/0.87 psi</li> <li>• 250 mbar/25 kPa/3.63 psi</li> <li>• 600 mbar/60 kPa/8.7 psi</li> <li>• 1600 mbar/160 kPa/23.21 psi</li> <li>• 5 bar/500 kPa/72.5 psi</li> <li>• 30 bar/3 MPa/435 psi</li> <li>• 160 bar/16 MPa/2 320 psi</li> </ul>	<ul style="list-style-type: none"> <li>Approx. 0.160 s</li> <li>Approx. 0.150 s</li> <li>Approx. 0.135 s</li> </ul>
Effect of mounting position (in pressure per change of angle)	≤ 0.7 mbar/0.07 kPa/0.028 inH <sub>2</sub> O per 10° incline (zero offset is possible with position error compensation)
Effect of auxiliary power (in % per voltage change)	0.005% per 1 V
<b>Operating conditions</b>	
Medium temperature	
<ul style="list-style-type: none"> <li>• Measuring cell with silicone oil filling</li> <li>- Measuring cell 30 bar (435 psi)</li> <li>- Measuring cell 160 bar (2 320 psi)</li> <li>• Measuring cell with inert oil</li> <li>• Measuring cell with FDA-compliant oil</li> </ul>	<ul style="list-style-type: none"> <li>-40 ... +100 °C (-40 ... +212 °F)</li> <li>-20 ... +100 °C (-4 ... +212 °F)</li> <li>-20 ... +100 °C (-4 ... +212 °F)</li> <li>-20 ... +100 °C (-4 ... +212 °F)</li> <li>-10 ... +100 °C (14 ... +212 °F)</li> </ul>
Ambient conditions	
<ul style="list-style-type: none"> <li>• Ambient temperature/enclosure</li> <li>- Measuring cell with silicone oil filling</li> <li>- Measuring cell with inert oil</li> <li>- Measuring cell with FDA-compliant oil</li> <li>- Local display</li> <li>• Storage temperature</li> <li>• Climatic class in accordance with IEC 60721-3-4</li> <li>• Degree of protection</li> <li>- According to IEC 60529</li> <li>- According to NEMA 250</li> <li>• Electromagnetic compatibility</li> <li>- Emitted interference and interference immunity</li> </ul>	<ul style="list-style-type: none"> <li>Observe the temperature class in hazardous areas.</li> <li>-40 ... +85 °C (-40 ... +185 °F)</li> <li>-40 ... +85 °C (-40 ... +185 °F)</li> <li>-10 ... +85 °C (14 ... +185 °F)</li> <li>-20 ... +80 °C (-4 ... +176 °F)</li> <li>-50 ... +85 °C (-58 ... +185 °F) (with FDA-compliant oil: -20 ... +85 °C (-4 ... +185 °F))</li> <li>4K4H</li> <li>IP66, IP68</li> <li>Type 4X</li> <li>According to IEC 61326 and NAMUR NE 21</li> </ul>
<b>Structural design</b>	
Weight	<ul style="list-style-type: none"> <li>• Aluminum enclosure: Approx. 3.9 kg (8.5 lbs)</li> <li>• Stainless steel enclosure: Approx. 5.9 kg (13 lbs)</li> </ul>
Material	
<ul style="list-style-type: none"> <li>• Material of wetted parts</li> <li>- Seal diaphragm</li> <li>- Process flanges</li> <li>- Sealing plug</li> <li>- O-ring</li> <li>• Material of non-wetted parts</li> </ul>	<ul style="list-style-type: none"> <li>Stainless steel, mat. no. 1.4404/316L, Alloy C276, mat. no. 2.4819, Monel, mat. no. 2.4360, tantalum or gold</li> <li>Stainless steel, mat. no. 1.4408 to PN 160, mat. no. 1.4571/316Ti for PN 420, Alloy C22, 2.4602 or Monel, mat. no. 2.4360</li> <li>1.4404 or as option alloy C22; 2.4602 or Monel mat. no. 2.4360</li> <li>FPM (Viton) or optionally: PTFE, FEP, FEPM and NBR</li> </ul>

# Pressure measurement

## Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Differential pressure and flow

### Technical specifications (continued)

SITRANS P320 / SITRANS P420 for differential pressure and flow	
- Electronics enclosure	<ul style="list-style-type: none"> <li>Low-copper die-cast aluminum GD-ALSi 12 or stainless steel precision casting, mat. no. 1.4409/ CF-3M</li> <li>Standard: Powder coating with polyurethane</li> <li>Option: 2 coats: Coat 1: Epoxy-based; coat 2: Polyurethane</li> <li>Stainless steel nameplate (1.4404/316L)</li> </ul>
- Process flange screws	Stainless steel ISO 3506-1 A4-70
- Mounting bracket	Steel, zinc-plated steel, or stainless steel
Process connection	1/4-18 NPT internal thread and flange connection with 7/16-20 UNF fastening thread according to EN 61518 or M10 according to DIN 19213 (M12 for PN 420 (MWP 6 092 psi))
Electrical connection	Screw terminals Cable entry via the following screw glands: <ul style="list-style-type: none"> <li>M20 × 1.5</li> <li>1/2-14 NPT</li> <li>Device plug Han 7D/Han 8D<sup>1)</sup></li> <li>Device plug M12</li> </ul>
<b>Displays and controls</b>	
Buttons	4 buttons for operation directly on the device
Local display	<ul style="list-style-type: none"> <li>With or without integrated local display (optional)</li> <li>Lid with inspection window (optional)</li> </ul>
<b>Auxiliary power U<sub>H</sub></b>	
Terminal voltage on pressure transmitter	10.5 ... 45 V DC 10.5 ... 30 V DC in intrinsically safe mode
Ripple	U <sub>SS</sub> ≤ 0.2 V (47 ... 125 Hz)
Noise	U <sub>eff</sub> ≤ 1.2 mV (0.5 ... 10 kHz)
Auxiliary power	–
Separate supply voltage	–
<b>Certificates and approvals</b>	
Classification according to pressure equipment directive (PED 2014/68/EU)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice) <b>For flow only</b> For gases of fluid group 1 and liquids of fluid group 1; fulfills the basic safety requirements as per article 3, paragraph 1 (appendix 1); classified as category III, module H conformity evaluation by TÜV Nord
Drinking water	
• WRAS (England)	No.: 1903094 (option E83)
• ACS (France)	No.: 18 ACC LY 277 (option E85)
• NSF (USA)	No.: 20180920-MH61350 (option E84)
CRN (Canada)	No.: 0F9863.5C (option E60)
Explosion protection acc. to NEPSI (China)	No.: GYJ19.1058X (option E27)
Explosion protection acc. to INMETRO (Brazil)	No.: BRA-18-GE-0035X (option E25)
Explosion protection	
• Intrinsic safety "i"	
- Marking	II 1/2 G Ex ia/ib IIC T4/T6 Ga/Gb
- Permissible ambient temperature	-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6
- Connection	To certified intrinsically safe circuits with peak values: U <sub>i</sub> = 30 V, I <sub>i</sub> = 101 mA, P <sub>i</sub> = 760 mW U <sub>i</sub> = 29 V, I <sub>i</sub> = 110 mA, P <sub>i</sub> = 800 mW
- Effective internal inductance/capacitance	L <sub>i</sub> = 0.24 µH/C <sub>i</sub> = 3.29 nF
• Flameproof enclosure "d"	
- Marking	Ex II 1/2 G Ex ia/db IIC T4/T6 Ga/Gb
- Permissible ambient temperature	-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6
- Connection	To a circuit with the operating values: U <sub>n</sub> = 10.5 ... 45 V, 4 ... 20 mA

### Technical specifications (continued)

#### SITRANS P320 / SITRANS P420 for differential pressure and flow

• Dust explosion protection for Zones 21, 22	
- Marking	Ex II 2D Ex tb IIIC T120 °C Db Ex II 3D Ex tc IIIC T120 °C Dc
- Permissible ambient temperature	-40 ... +80 °C (-40 ... +176 °F)
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F)
- Max. surface temperature	120 °C (248 °F)
- Connection	To a circuit with the operating values: $U_n = 10.5 \dots 45 \text{ V}$ , $4 \dots 20 \text{ mA}$
• Dust explosion protection for Zones 20, 21, 22	
- Marking	Ex II 1D Ex ia IIIC T120 °C Da Ex II 2D Ex ib IIIC T120 °C Db
- Permissible ambient temperature	-40 ... +80 °C (-40 ... +176 °F)
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F)
- Connection	To certified intrinsically safe circuits with peak values: $U_i = 30 \text{ V}$ , $I_i = 101 \text{ mA}$ , $P_i = 760 \text{ mW}$ $U_i = 29 \text{ V}$ , $I_i = 110 \text{ mA}$ , $P_i = 800 \text{ mW}$ $L_i = 0.24 \mu\text{H}/C_i = 3.29 \text{ nF}$
- Effective internal inductance/capacitance	
• Type of protection for Zone 2	
- Marking	Ex II 3G Ex ec IIC T4/T6 Gc
- Permissible ambient temperature "ec"	-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +40 °C (-40 ... +104 °F) temperature class T6
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6
- "ec" connection	To a circuit with the operating values: $U_n = 10.5 \dots 30 \text{ V}$ , $4 \dots 20 \text{ mA}$
• Explosion protection acc. to FM	Available soon
- Marking (XP/DIP) or IS; NI; S	CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4 ... T6; CL I, DIV 2, GP ABCD T4 ... T6; CL II, DIV 2, GP FG; CL III
• Explosion protection according to CSA	Available soon
- Marking (XP/DIP) or (IS)	CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4 ... T6; CL I, DIV 2, GP ABCD T4 ... T6; CL II, DIV 2, GP FG; CL III
NAMUR recommendations	
• NE 06	Standardized Electrical Signals and Questions Relating to Engineering Technology
• NE 21	Electromagnetic Compatibility (EMC) of Industrial Process and Laboratory Control Equipment
• NE 23	Extra Low Voltage Circuits with Safe Separation
• NE 43	Standardization of the signal level for the failure information of digital transmitters with analog output signal
• NE 53	Software and Hardware of Field Devices and Signal Processing Devices with Digital Electronics
• NE 80	The Application of the Pressure Equipment Directive to Process Control Devices
• NE 105	Specifications for Integrating Fieldbus Devices in Engineering Tools for Field Devices
• NE 107	Self-Monitoring and Diagnosis of Field Devices
• NE 131	NAMUR Standard Device - Field Devices for Standard Applications

#### Communication

<b>HART</b>	
HART Protocol	230 ... 1 100 Ω
Software for computer	HART 7 SIMATIC PDM
<b>PROFIBUS PA</b>	
Simultaneous communication with master class 2 (max.)	4
The address can be set using	Configuration tool or local operation (default setting address 126)
Cyclic data usage	
• Output byte	≤ 35 (7 measured values)
• Input byte	0, 1, or 2 (register operation mode and reset function for dosing)

#### Communication

Internal preprocessing	
Device profile	PROFIBUS PA Profile Version 4.01 Class B. Cyclic data usage compatible with version 3.XX
Number of function blocks	7
• Analog input	
- Adaptation to user-specific process variable	Yes, linearly rising or falling characteristic curve
- Electrical damping adjustable	0 ... 100 s

## Pressure measurement

### Pressure transmitters

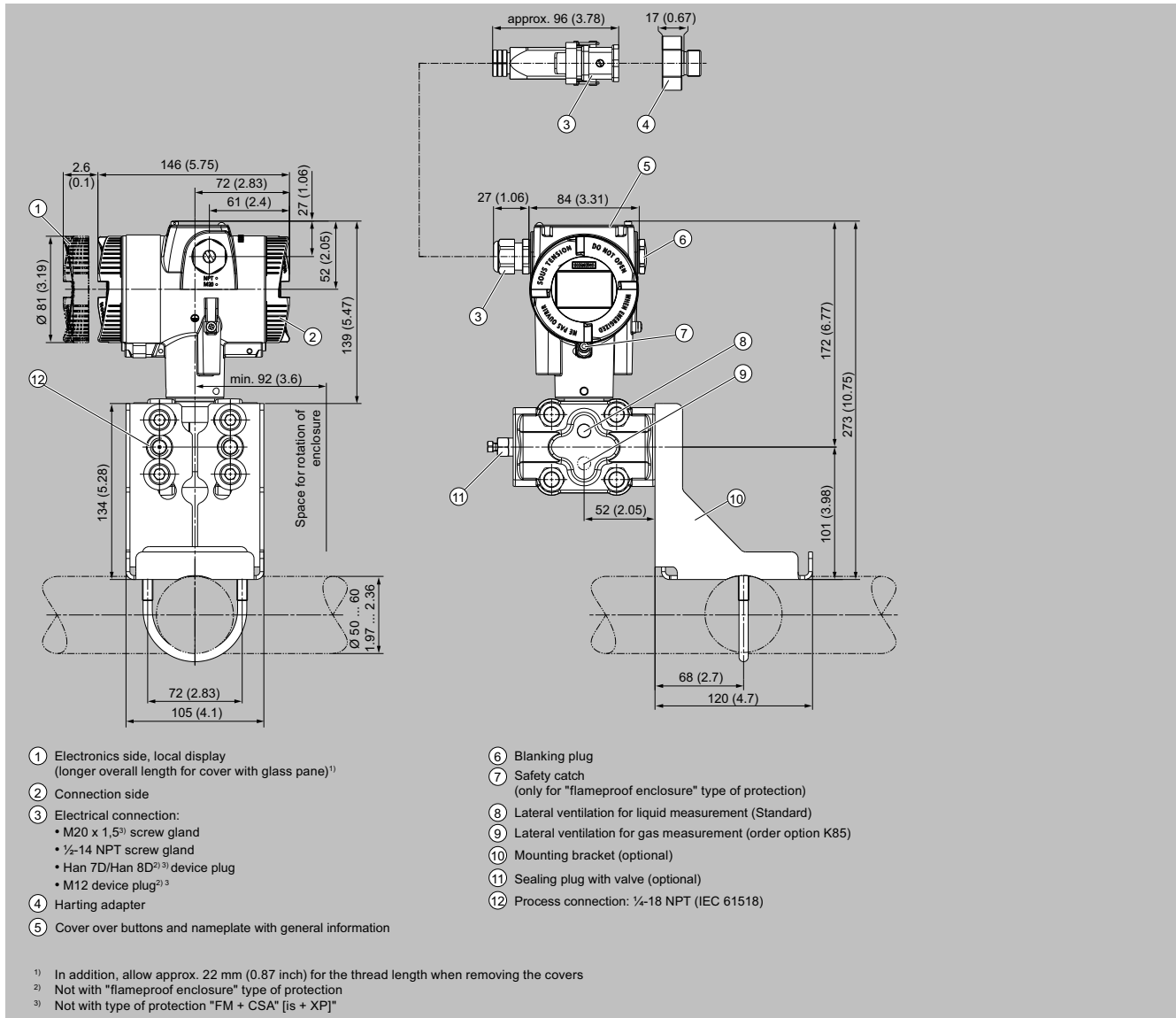
for applications with advanced requirements / SITRANS P320/P420 / Differential pressure and flow

#### Technical specifications (continued)

Communication	
- Simulation function	Output/input
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respectively
• Register (totalizer)	Can be reset, preset, optional direction of counting, simulation function of register output
- Limit monitoring	One upper and lower warning limit and one alarm limit respectively
• Physical block	1
Transducer blocks	1
• Pressure transducer block	
- Can be calibrated by applying two pressures	Yes
- Monitoring of sensor limits	Yes
- Specification of a vessel characteristic curve with	Max. 30 nodes
- Square-rooted characteristic curve for flow measurement	Yes
- Tank characteristic curve for volume measurement	Yes
- Low flow cut-off and implementation point of square-root extraction	Parameterizable
- Simulation function for measured pressure value and sensor temperature	Constant value or by means of parameterizable ramp function
FOUNDATION Fieldbus	
Device profile	FF-ITK 6
Function blocks	3 function blocks analog input, 1 function block PID

Communication	
• Analog input	
- Adaptation to user-specific process variable	Yes, linearly rising or falling characteristic curve
- Electrical damping adjustable	0 ... 100 s
- Simulation function	Output/input (can be locked within the device with a bridge)
- Failure mode	Parameterizable (last good value, substitute value, incorrect value)
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respectively
- Square-rooted characteristic curve for flow measurement	Yes
• PID	Standard FOUNDATION Fieldbus function block
• Physical block	1 resource block
Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block LCD
• Pressure transducer block	
- Can be calibrated by applying two pressures	Yes
- Monitoring of sensor limits	Yes
- Simulation function: pressure measurement, sensor temperature and electronics temperature	Constant value or by means of parameterizable ramp function

## Dimensional drawings



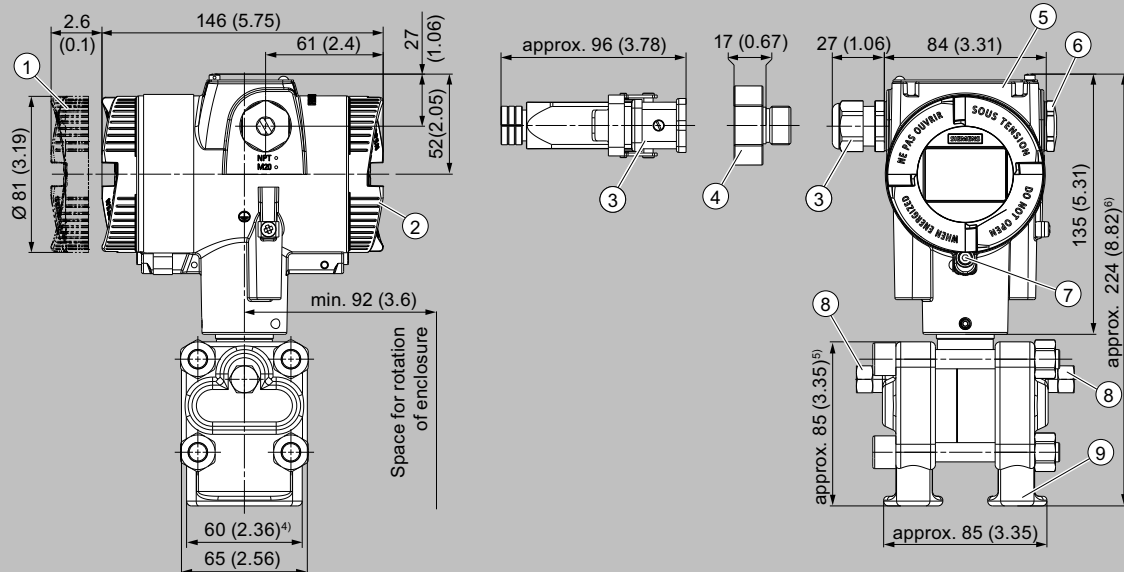
SITRANS P320/P420 pressure transmitter for differential pressure and flow, dimensions in mm (inch)

## Pressure measurement

### Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Differential pressure and flow

#### Dimensional drawings (continued)



- ① Electronics side, local display (longer overall length for cover with inspection window)<sup>1)</sup>
- ② Connection side
- ③ Electrical connection:
  - M20 x 1.5<sup>3)</sup> screw gland
  - ½-14 NPT screw gland
  - Han 7D/Han 8D<sup>2)</sup> device plug
  - M12 device plug<sup>2)</sup> 3
- ④ Harting adapter

- ⑤ Cover over buttons and nameplate with general information
- ⑥ Blanking plug
- ⑦ Safety catch (only for "flameproof enclosure" type of protection)
- ⑧ Sealing plug with valve (option)
- ⑨ Process connection: ¼-18 NPT (IEC 61518)

<sup>1)</sup> In addition, allow approx. 22 mm (0.87 inch) for the thread length when removing the covers

<sup>2)</sup> Not with "flameproof enclosure" type of protection

<sup>3)</sup> Not with type of protection "FM + CSA" [is + XP]

<sup>4)</sup> 74 mm (2.9 inches) for PN ≥ 420 (MAWP ≥ 6092 psi)

<sup>5)</sup> 91 mm (3.6 inches) for PN ≥ 420 (MAWP ≥ 6092 psi)

<sup>6)</sup> 226 mm (8.9 inches) for PN ≥ 420 (MAWP ≥ 6092 psi)

SITRANS P320/P420 pressure transmitter for differential pressure and flow with process covers for vertical differential pressure lines (option "K81"), dimensions in mm (inch)



## Selection and ordering data

	Article No.	
<b>Pressure transmitters for level</b>		
<b>SITRANS P320</b>	7MF036	● - ● ● ● ● ● - ● ● ● ●
<b>SITRANS P420</b>	7MF046	● - ● ● ● ● ● - ● ● ● ●
Click the article number for online configuration in the PIA Life Cycle Portal.		
<b>Communication</b>		
HART, 4 ... 20 mA		0
PROFIBUS PA		1
FOUNDATION Fieldbus (FF)		2
<b>Measuring cell filling</b>		
Silicone oil		1
<b>Maximum measuring span</b>		
60 mbar (24.11 inH <sub>2</sub> O)		D
250 mbar (100.5 inH <sub>2</sub> O)		G
600 mbar (241 inH <sub>2</sub> O)		H
1600 mbar (643 inH <sub>2</sub> O)		M
5000 mbar (72.5 psi)		P
30 bar (435 psi)		R
160 bar (2321 psi)		Y
<b>Process connection</b>		
Version for diaphragm seal with fastening thread 7/16-20 UNF (IEC 61518): Remote seal 7MF0814 must be ordered separately.		V
<b>Material of wetted parts: Process connection, seal diaphragm</b>		
Stainless steel 316L/1.4404, stainless steel 316L/1.4404, process flange stainless steel 316/1.4408		0
Stainless steel 316L/1.4404; alloy C276/2.4819, process flange stainless steel 316/1.4408		1
Sensor pressure: Alloy C22/2.4602, alloy C276/2.4819		2
Sensor differential pressure: Alloy C276/2.4819, alloy C276/2.4819; process flange stainless steel 316/1.4408		
Tantalum, tantalum, process flange stainless steel 316/1.4408		4
Monel 400/2.4360, Monel 400/2.4360; process flange: Stainless steel 316/1.4408		6
Stainless steel 316L/1.4404, gold-plated; process flange stainless steel 316/1.4408		8
<b>Material of non-wetted parts</b>		
Die-cast aluminum		1
Stainless steel precision casting CF3M/1.4409 similar to 316L		2
<b>Enclosure</b>		
Dual chamber device		5
<b>Type of protection</b>		
Without Ex		A
Intrinsic safety		B
Flameproof enclosure		C
Flameproof enclosure, intrinsic safety		D
Dust protection by enclosure Zone 21/22 (DIP), increased safety Zone 2		L
Intrinsic safety, dust protection by enclosure Zone 20/21/22 (DIP), increased safety Zone 2		M
Combination of options B, C and L (Zone model)		S
Combination of options B, C and L (Zone model, Class Division)		T
<b>Electrical connections/cable entries</b>		
Thread for cable gland: Cable gland must be ordered separately as option (Axx)		
• 2 × M20 × 1.5		F
• 2 × 1/2-14 NPT		M
<b>Local operation/display</b>		
Without local display (lid closed)		0
With local display (lid closed)		1
With local display (lid with glass pane)		2

Options	Order code
Add "-Z" to article number, specify order code and plain text or entry from drop-down list.	
<b>Cable glands included</b>	
Plastic	A00
Metal	A01

Options	Order code
Add "-Z" to article number, specify order code and plain text or entry from drop-down list.	
Stainless steel	A02
Stainless steel 316L/1.4404	A03
CMP, for XP devices	A10

## Pressure measurement

### Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Level

#### Selection and ordering data (continued)

Options	Order code
<b>Add "-Z" to article number, specify order code and plain text or entry from drop-down list.</b>	
CAPRI ADE 4F, CuZn, cable inner diameter 7 ... 12 mm, cable outer diameter 10 ... 16 mm	A11
CAPRI ADE 4F, stainless steel, cable inner diameter 7 ... 12 mm, cable outer diameter 10 ... 16 mm	A12
Sealing plug included, plastic	A20
Sealing plug included, metal	A21
Sealing plug included, stainless steel	A22
Sealing plug included, stainless steel 316L/1.4404	A23
<b>Device plug Han mounted left</b>	
Device plug Han 7D (plastic, straight)	A30
Device plug Han 7D (plastic, angled)	A31
Device plug Han 7D (metal, straight)	A32
Device plug Han 7D (metal, angled)	A33
Device plug Han 8D (plastic, straight)	A34
Device plug Han 8D (plastic, angled)	A35
Device plug Han 8D (metal, straight)	A36
Device plug Han 8D (metal, angled)	A37
<b>Cable socket included</b>	
Plastic, for device plug Han 7D and Han 8D	A40
Metal, for device plug Han 7D and Han 8D	A41
<b>Device plug M12 mounted left</b>	
Stainless steel, without cable socket	A62
Stainless steel, with cable socket	A63
<b>Cable entry/device plug mounting</b>	
2× sealing plugs M20 × 1.5, IP66/68 installed on both sides	A90
2× sealing plugs ½-14 NPT, IP66/68 installed on both sides	A91
Cable gland/device plug mounted left	A97
Cable gland/device plug mounted right	A99
<b>Nameplate labeling (standard labeling: English, unit bar)</b>	
German (bar)	B11
French (bar)	B12
Spanish (bar)	B13
Italian (bar)	B14
Chinese (bar)	B15
Russian (bar)	B16
English (psi)	B20
English (Pa)	B30
Chinese (Pa)	B35
<b>Certificates</b>	
Quality inspection certificate, 5-point factory calibration (IEC 62828-2)	C11
Inspection certificate (EN 10204-3.1) - Material of pressurized and wetted parts	C12
Factory certificate - NACE (MR 0103-2012 and MR 0175-2009)	C13
Factory certificate (EN 10204-2.2) - Wetted parts	C14
Inspection certificate (EN 10204-3.1) - PMI test of pressurized and wetted parts	C15
<b>Certificates for functional safety</b>	
Functional Safety (IEC 61508) - SIL2/3	C20

Options	Order code
<b>Add "-Z" to article number, specify order code and plain text or entry from drop-down list.</b>	
<b>Device options</b>	
PDF file with device settings	D10
Double layer coating (epoxy resin and polyurethane) 120 µm of enclosure and lid	D20
FVMQ enclosure sealing	D21
Degree of protection IP66/IP68 (not for device plug M12 and Han)	D30
Unlabeled TAG plate	D40
Without labeling of the measuring range on the TAG plate	D41
Stainless steel Ex plate 1.4404/316L	D42
Overvoltage protection up to 6 kV (internal)	D70
Overvoltage protection up to 6 kV (external)	D71
Labels on transport packaging (provided by customer)	D90
<b>General approval without Ex approval</b>	
Worldwide (CE, UKCA, RCM) except EAC, FM, CSA, KCC	E00
Worldwide (CE, UKCA, RCM, EAC, FM, CSA, KCC)	E01
CSA (USA and Canada)	E06
EAC	E07
FM	E08
KCC	E09
<b>Explosion protection approvals</b>	
ATEX (Europe)	E20
CSA (USA and Canada) <sup>1)</sup>	E21
FM (USA and Canada) <sup>1)</sup>	E22
IECEx (Worldwide)	E23
EACEx (GOST-R, -K, -B)	E24
INMETRO (Brazil)	E25
KCs (Korea)	E26
NEPSI (China)	E27
PESO (India)	E28
CSA (Japan)	E29
UKR Sepro (Ukraine)	E30
UKEX (United Kingdom)	E33
ATEX (Europe), IECEx (Worldwide) and UKEX (UK)	E47
CSA (Canada) and FM (USA) <sup>1)</sup>	E48
ATEX (Europe) and IECEx (Worldwide) + CSA (Canada) and FM (USA) <sup>1)</sup>	E49
<b>Marine approvals</b>	
DNV-GL (Det Norske Veritas/Germanischer Lloyd)	E50
LR (Lloyds Register)	E51
BV (Bureau Veritas)	E52
ABS (American Bureau of Shipping)	E53
RMR (Russian Maritime Register)	E55
KR (Korean Register of Shipping)	E56
RINA (Registro Italiano Navale)	E57
CCS (China Classification Society)	E58
<b>Country-specific approvals</b>	
CRN approval Canada (Canadian Registration Number)	E60
<b>Special approvals</b>	
Oxygen application (with inert liquid, max. 160 bar (2 320 psi) at 100 °C (212 °F))	E80
Dual Seal	E81

## Selection and ordering data (continued)

Options	Order code
<b>Add "-Z" to article number, specify order code and plain text or entry from drop-down list.</b>	
WRC/WRAS (drinking water); only with process flange O-rings made of EPDM	E83
NSF61 (drinking water)	E84
ACS (drinking water)	E85
<b>Process flanges</b>	
Gasket process flange 1 × chambered, graphite	K40
Gasket process flange, 1 × chambered, PTFE	K41
Vent valve in the material of the process flange	K84
<b>Device settings</b>	
Measuring span: Lower range value (max. 5 characters), upper range value (max. 5 characters), unit [mbar, bar, kPa, MPa, psi, ...], example: -0.5 ... 10.5 psi	Y01
TAG (on stainless steel plate and device parameters, max. 32 characters)	Y15

Options	Order code
<b>Add "-Z" to article number, specify order code and plain text or entry from drop-down list.</b>	
Measuring point description (on stainless steel plate and device parameters, max. 32 characters)	Y16
TAG short (device parameters, max. 8 characters)	Y17
Local display: [Pressure, Percent], reference [None, Absolute, Gauge], example: Pressure gauge	Y21
Local display: Scaling with standard units [m³/s, l/s, m, inch, ...]; example 1 ... 5 m	Y22
Local display: Scaling with user-specific units (max. 12 characters), example 1 ... 5 m	Y23
Set PROFIBUS PA device address (1 ... 126)	Y25
Saturation limits instead of 3.8 ... 20.5 mA, example: 3.8 ... 22.0 mA	Y30
Fault current instead of 3.6 mA [22.5 mA, 22.8 mA]	Y31
Damping in seconds instead of 2 s (0.0 ... 100.0 s)	Y32
ID number of special design	Y99

<sup>1)</sup> Explosion protection acc. to FM/CSA: suitable for installation according to NEC 500/505.

		Article No.	Order code
<b>Diaphragm seal</b>		7MF0814-	
<b>In flange design, directly installed on a pressure transmitter for level SITRANS P320/P420 7MF03../7MF04.. to be ordered separately, scope of delivery: 1 unit</b>		● ● ● 0 3 - 0 ● ● ● ● ● ●	
Click the article number for online configuration in the PIA Life Cycle Portal.			
<b>Standard of process connection EN 1092-1</b>			
<b>Nominal diameter</b>	<b>Nominal pressure</b>		
DN 25	PN 10/16/25/40	0 B D	
	PN 63/100	0 B F	
	PN 160	0 B G	
	PN 250	0 B H	
DN 40	PN 10/16/25/40	0 D D	
	PN 63/100	0 D F	
	PN 160	0 D G	
DN 50	PN 10/16/25/40	0 E D	
	PN 63/100	0 E E	
	PN 160	0 E F	
DN 80	PN 10/16/25/40	0 G D	
	PN 100	0 G F	
DN 100	PN 10/16	0 H B	
	PN 25/40	0 H D	
	PN 160	0 H F	
DN 125	PN 16	0 J B	
	PN 40	0 J D	
<b>Process connection standard ASME B16.5</b>			
<b>Nominal diameter</b>	<b>Nominal pressure</b>		
1 inch	Class 150	1 K L	
	Class 300	1 K M	
	Class 600	1 K N	
	Class 1500	1 K P	
1½ inches	Class 150	1 L A	
	Class 300	1 L B	
	Class 400/600	1 L D	
	Class 900/1500	1 L F	
2 inches	Class 150	1 M A	
	Class 300	1 M B	
	Class 400/600	1 M D	
	Class 900/1500	1 M F	
3 inches	Class 150	1 P A	

# Pressure measurement

## Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Level

### Selection and ordering data (continued)

		Article No.	Order code	
<b>Diaphragm seal</b>		7MF0814-		
In flange design, directly installed on a pressure transmitter for level		● ● ● 0 3 - 0 ● ● ● ● ● ●		
SITRANS P320/P420				
7MF03../7MF04.. to be ordered separately, scope of delivery: 1 unit				
4 inches	Class 300	1 P B		
	Class 600	1 P D		
	Class 1500	1 P F		
	Class 150	1 Q A		
	Class 300	1 Q B		
	Class 400	1 Q D		
	Class 1500	1 Q F		
	5 inches	Class 150	1 R A	
		Class 300	1 R B	
		Class 400	1 R C	
<b>Process connection standard J.I.S.</b>				
<b>Nominal diameter</b>	<b>Nominal pressure</b>			
DN 50	10K	2 E S		
	20k	2 E T		
	40K	2 E U		
DN 80	10K	2 G S		
	20k	2 G T		
	40K	2 G U		
DN 100	10K	2 H S		
	20k	2 H T		
	40K	2 H U		
Other version, add order code and plain text		9 Z A	H 1 Y	
<b>Filling liquid</b>				
Silicone oil M50			B	
High-temperature oil			C	
Silicone oil M5			A	
Food oil (FDA-listed)			E	
Neobee M20 (FDA-listed)			R	
Halocarbon oil			D	
Other version, add order code and plain text			Z P 1 Y	
<b>Material of wetted parts</b>				
Stainless steel 316L				
• Without coating			A	
• With PFA coating			D	
• With PTFE coating			E 0	
• With ECTFE coating			F	
Monel 400, 2.4360			G	
Hastelloy C276, 2.4819			J	
Tantalum			K	
Titanium, 3.7035			L 0	
Nickel 201			M 0	
Diaphragm Duplex, 1.4462			Q	
Diaphragm and flange Duplex, 1.4462			R	
Stainless steel 316L, gold-plated			S 0	
Hastelloy C4, 2.4610			U 0	
Hastelloy C22, 2.4602			V 0	
Other version, add order code and plain text			Z Q 1 Y	
<b>Tube length</b>				
None			0	
50 mm (2 inches)			1	
100 mm (4 inches)			2	
150 mm (6 inches)			3	
200 mm (8 inches)			4	
250 mm (10 inches)			5	
Other version, add order code and plain text			Z 8 R 1 Y	

## Selection and ordering data (continued)

		Article No.	Order code
<b>Diaphragm seal</b>		7MF0814-	
<b>In flange design, directly installed on a pressure transmitter for level</b>		● ● ● 0 3 - 0 ● ● ● ● ● ●	
<b>SITRANS P320/P420</b>			
<b>7MF03../7MF04.. to be ordered separately, scope of delivery: 1 unit</b>			
<b>Customer-specific tube length</b>			
• Wetted parts: Stainless steel without coating			
Range	Standard length		
20 ... 50 mm (0.79 ... 1.97 inches)	50 mm (1.97 inches)		A 1
51 ... 100 mm (2.01 ... 3.94 inches)	100 mm (3.94 inches)		A 2
101 ... 150 mm (3.98 ... 5.91 inches)	150 mm (5.91 inches)		A 3
151 ... 200 mm (5.94 ... 7.87 inches)	200 mm (7.87 inches)		A 4
201 ... 250 mm (7.91 ... 9.84 inches)	250 mm (9.84 inches)		A 5
• Wetted parts: Stainless steel with ECTFE coating			
Range	Standard length		
20 ... 50 mm (0.79 ... 1.97 inches)	50 mm (1.97 inches)		F 1
51 ... 100 mm (2.01 ... 3.94 inches)	100 mm (3.94 inches)		F 2
101 ... 150 mm (3.98 ... 5.91 inches)	150 mm (5.91 inches)		F 3
151 ... 200 mm (5.94 ... 7.87 inches)	200 mm (7.87 inches)		F 4
201 ... 250 mm (7.91 ... 9.84 inches)	250 mm (9.84 inches)		F 5
• Wetted parts: Stainless steel with PFA coating			
Range	Standard length		
20 ... 50 mm (0.79 ... 1.97 inches)	50 mm (1.97 inches)		D 1
51 ... 100 mm (2.01 ... 3.94 inches)	100 mm (3.94 inches)		D 2
101 ... 150 mm (3.98 ... 5.91 inches)	150 mm (5.91 inches)		D 3
151 ... 200 mm (5.94 ... 7.87 inches)	200 mm (7.87 inches)		D 4
201 ... 250 mm (7.91 ... 9.84 inches)	250 mm (9.84 inches)		D 5
• Wetted parts: Monel 400			
Range	Standard length		
20 ... 50 mm (0.79 ... 1.97 inches)	50 mm (1.97 inches)		G 1
51 ... 100 mm (2.01 ... 3.94 inches)	100 mm (3.94 inches)		G 2
101 ... 150 mm (3.98 ... 5.91 inches)	150 mm (5.91 inches)		G 3
151 ... 200 mm (5.94 ... 7.87 inches)	200 mm (7.87 inches)		G 4
• Wetted parts: Hastelloy C276			
Range	Standard length		
20 ... 50 mm (0.79 ... 1.97 inches)	50 mm (1.97 inches)		J 1
51 ... 100 mm (2.01 ... 3.94 inches)	100 mm (3.94 inches)		J 2
101 ... 150 mm (3.98 ... 5.91 inches)	150 mm (5.91 inches)		J 3
151 ... 200 mm (5.94 ... 7.87 inches)	200 mm (7.87 inches)		J 4
• Wetted parts: Tantalum			
Range	Standard length		
20 ... 50 mm (0.79 ... 1.97 inches)	50 mm (1.97 inches)		K 1
51 ... 100 mm (2.01 ... 3.94 inches)	100 mm (3.94 inches)		K 2
101 ... 150 mm (3.98 ... 5.91 inches)	150 mm (5.91 inches)		K 3
151 ... 200 mm (5.94 ... 7.87 inches)	200 mm (7.87 inches)		K 4

Options	Order code
<b>Add "-Z" to article number, specify order code and plain text or entry from drop-down list.</b>	
<b>Factory certificates</b>	
Quality inspection certificate (5-point characteristic curve test) according to IEC 62828-2	C11
Inspection certificate according to EN 10204-3.1 for main body and diaphragm	C12

Options	Order code
<b>Add "-Z" to article number, specify order code and plain text or entry from drop-down list.</b>	
Manufacturer code according to NACE (MR 0103-2012 and MR 0175-2009) (only in combination with wetted parts made of stainless steel 316 L and Hastelloy)	C13
Inspection certificate according to EN 10204-3.1, PMI test of pressure containing and wetted parts	C15
Test report on the FDA listing of the oil according to EN 10204-2.2	C17
Factory certificate functional safety (SIL2/3), suitability of devices for use according to IEC 61508 and IEC 61511 (contains SIL Declaration of Conformity)	C20

## Pressure measurement

### Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Level

#### Selection and ordering data (continued)

Options	Order code
<b>Add "-Z" to article number, specify order code and plain text or entry from drop-down list.</b>	
<b>Accessories</b>	
Epoxy resin coating Color: Transparent Scope: Front and rear of the remote seal, connecting pipe, process connection of the transmitter. Maximum medium temperature with epoxy resin coating: 140 °C	<b>D15</b>
Remote seal nameplate Attached, made of stainless steel, contains Article No. and order number of the remote seal	<b>D42</b>
Volume deflagration flame arrester (VDEF) for differential pressure transmitter	<b>D62</b>
<b>Negative pressure service</b>	
Negative pressure service for differential pressure transmitters	<b>D83</b>
Extended negative pressure service for differential pressure transmitters	<b>D88</b>
<b>Approvals and certificates</b>	
Country-specific approval CRN approval Canada (Canadian Registration Number) <b>Note:</b> If the order code E60 is selected, the option E60 must also be selected for the transmitter!	<b>E60</b>
Oil-free and grease-free cleaned version for oxygen application including EN 10204-2.2 certificates (only with filling liquid halocarbon oil and at max. temperature 60 °C and max. pressure 50 bar)	<b>E80</b>
Oil-free and grease-free cleaned version not for oxygen application, including EN 10204-2.2 certificates	<b>E87</b>
<b>Sealing surface</b>	
Sealing surface smooth, form B2/EN1092-1 or RFSF/ANSI 16.5 (only for wetted parts made of stainless steel 316L)	<b>M50</b>
Sealing surface groove according to EN 1092-1, form D (instead of sealing surface B1, only for wetted parts made of stainless steel 316L)	<b>M54</b>
Sealing surface RJF (groove) according to ASME B16.5 (instead of sealing surface RF 125 ... 250AA, only for wetted parts made of stainless steel 316L)	<b>M64</b>
Sealing surface with tongue to EN 1092-1, form C (for wetted parts made of stainless steel 316L only)	
• DN 40	<b>M71</b>
• DN 50	<b>M72</b>
• DN 80	<b>M73</b>
• DN 100	<b>M74</b>

Options	Order code
<b>Add "-Z" to article number, specify order code and plain text or entry from drop-down list.</b>	
• DN 125	<b>M75</b>
Sealing surface with spigot according to EN 1092-1, form E (for wetted parts made of stainless steel 316L only)	
• DN 40	<b>M77</b>
• DN 50	<b>M78</b>
• DN 80	<b>M79</b>
• DN 100	<b>M80</b>
• DN 125	<b>M81</b>
Sealing surface internal face according to EN 1092-1, form F (only for wetted parts made of stainless steel 316L)	
• DN 50	<b>M84</b>
• DN 80	<b>M85</b>
• DN 100	<b>M86</b>
• DN 125	<b>M87</b>
<b>Remote seal connection</b>	
Elongated pipe, 150 mm (5.9 inches) instead of 100 mm (3.9 inches)	<b>S05</b>
Elongated pipe, 200 mm (7.9 inches) instead of 100 mm (3.9 inches)	<b>S06</b>
<b>Desired remote seal supplier</b>	
<b>Note:</b> If the remote seal is to be supplied only by one of the suppliers specified below, this option needs to be selected. For orders without this option, the remote seal supplier is selected through the dispatch center.	
Company WIKA, Klingenberg	<b>W01</b>
Company Labom, Hude	<b>W02</b>
<b>Special design</b>	
Welded filling hole	<b>X01</b>
<b>Customer-specific tube length</b>	
Customer-specific tube length (specify in plain text in mm)	<b>Y44</b>
<b>Specification of process conditions<sup>1)</sup></b>	
Ambient temperature range	
• -10 ... +50 °C (14 ... +122 °F) preset	<b>D66</b>
• -40 ... +50 °C (-40 ... +122 °F)	<b>D67</b>
• -10 ... +85 °C (14 ... +185 °F)	<b>D68</b>
Process temperature min. ... °C/(°F)/max. ... °C/(°F)	<b>Y50</b>

<sup>1)</sup> See also "Specification of process conditions for selection and ordering data" below the "More information" section.

## Technical specifications

SITRANS P320 / SITRANS P420 for level			
<b>Input</b>			
Measured variable	Level		
Measuring span (continuously adjustable) or measuring range and max. permissible operating pressure (pursuant to Pressure Equipment Directive 2014/68/EU)	Measuring span	Max. permissible operating pressure MAWP (PS)	Maximum permissible test pressure
	25 ... 250 mbar 2.5 ... 25 kPa 10 ... 100.5 inH <sub>2</sub> O	See "Mounting flange"	
	25 ... 600 mbar 2.5 ... 60 kPa 10 ... 241 inH <sub>2</sub> O		
	53 ... 1 600 mbar 5.3 ... 160 kPa 21 ... 643 inH <sub>2</sub> O		
	166 ... 5 000 mbar 16.6 ... 500 kPa 2.41 ... 72.5 psi		
Measuring limits			
• Lower measuring limit			
- Measuring cell with silicone oil filling	-100% of max. measuring range or 30 mbar a/3 kPa a/0.44 psi a depending on the mounting flange		
- Measuring cell with inert oil	-100% of max. measuring range or 30 mbar a/3 kPa a/0.44 psi a depending on the mounting flange		
- Measuring cell with FDA-compliant oil	-100% of max. measuring range or 100 mbar a/10 kPa a/1.45 psi a		
• Upper measuring limit	100% of max. measuring span		
• Lower range value	Between the measuring limits (continuously adjustable)		
<b>Output</b>			
Output signal	<b>HART</b> 4 ... 20 mA		
• Lower saturation limit (continuously adjustable)	3.55 mA, factory set to 3.8 mA		
• Upper saturation limit (continuously adjustable)	22.8 mA, factory-set to 20.5 mA or optionally 22.0 mA		
• Ripple (without HART communication)	$I_{pp} \leq 0.5\%$ of max. output current		
Adjustable damping	0 ... 100 s, continuously adjustable over remote operation 0 ... 100 s, in increments of 0.1 s, adjustable over display		
• Current simulator	3.55 ... 22.8 mA		
• Failure signal	3.55 ... 22.8 mA		
Load	Resistance R [ $\Omega$ ]		
• Without HART communication	$R = (U_H - 10.5 \text{ V}) / 22.8 \text{ mA}$ , $U_H$ : Auxiliary power in V		
• With HART communication	$R = 230 \dots 1100 \Omega$		
Characteristic curve	<ul style="list-style-type: none"> <li>Linearly increasing or linearly decreasing</li> <li>Linear increase or decrease or according to the square root (only for differential pressure and flow)</li> </ul>		
Physical bus	-		
Polarity-independent	-		
<b>Measuring accuracy</b>			
Reference conditions	<ul style="list-style-type: none"> <li>According to IEC 62828-1</li> <li>Rising characteristic curve</li> <li>Lower range value 0 bar/kPa/psi</li> <li>Seal diaphragm stainless steel</li> <li>Measuring cell with silicone oil filling</li> <li>Room temperature 25 °C (77 °F)</li> </ul>		
Conformity error at limit point setting, including hysteresis and repeatability			
Measuring span ratio r (spread, Turn-Down)	$r = \text{maximum measuring span/set measuring span or nominal measuring range}$		
• Linear characteristic curve	$r \leq 5$ :	$\leq 0.125\%$	

# Pressure measurement

## Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Level

### Technical specifications (continued)

SITRANS P320 / SITRANS P420 for level		
<ul style="list-style-type: none"> <li>- 250 mbar/25 kPa/3.6 psi</li> <li>- 600 mbar/60 kPa/8.7 psi</li> <li>- 1600 mbar/160 kPa/23.21 psi</li> <li>- 5 bar/500 kPa/72.5 psi</li> </ul>	5 < r ≤ 10:	≤ (0.007 · r + 0.09)%
Influence of ambient temperature in % per 28 °C (50 °F)		
<ul style="list-style-type: none"> <li>• SITRANS P320</li> <li>- 250 mbar/25 kPa/3.6 psi</li> <li>- 600 mbar/60 kPa/8.7 psi</li> <li>- 1600 mbar/160 kPa/23.21 psi</li> <li>- 5 bar/500 kPa/72.5 psi</li> </ul>	≤ (0.025 · r + 0.125)%	
<ul style="list-style-type: none"> <li>• SITRANS P420</li> <li>- 250 mbar/25 kPa/3.6 psi</li> <li>- 5 bar/500 kPa/72.5 psi</li> </ul>	≤ (0.025 · r + 0.0625)%	
<ul style="list-style-type: none"> <li>- 600 mbar/60 kPa/8.7 psi</li> <li>- 1600 mbar/160 kPa/23.21 psi</li> </ul>	≤ (0.125 · r + 0.0625)%	
Effect of static pressure		
<ul style="list-style-type: none"> <li>• At the lower range value</li> <li>- 250 mbar/25 kPa/3.63 psi</li> <li>- 600 mbar/60 kPa/8.7 psi</li> <li>- 1.6 bar/160 kPa/23.21 psi</li> <li>- 5 bar/500 kPa/72.52 psi</li> </ul>	≤ (0.3 · r)% per nominal pressure	
	≤ (0.15 · r)% per nominal pressure	
<ul style="list-style-type: none"> <li>• On the measuring span</li> </ul>	≤ (0.1 · r)% per nominal pressure	
Long-term stability at ±30 °C (± 54 °F)		
<ul style="list-style-type: none"> <li>• All measuring cells</li> </ul>	In 5 years ≤ (0.25 · r)% static pressure max. 70 bar/7 MPa/1015 psi	
Step response time T <sub>63</sub> (without electrical damping)	Depends on the installed remote seal	
Influence of mounting position	Depends on the filling liquid in the mounting flange	
Effect of auxiliary power (in % per voltage change)	0.005% per 1 V	
<b>Operating conditions</b>		
Medium temperature		
Measuring cell with silicone oil filling	<ul style="list-style-type: none"> <li>• High side: See "Mounting flange"</li> <li>• Low side: -40 ... +100 °C (-40 ... +212 °F)</li> </ul>	
Ambient conditions		
<ul style="list-style-type: none"> <li>• Ambient temperature/enclosure</li> </ul>	Always consider the assignment of max. permissible operating temperature to max. permissible operating pressure of the respective flange connection.	
<ul style="list-style-type: none"> <li>- Measuring cell with silicone oil filling</li> </ul>	-40 ... +85 °C (-40 ... +185 °F)	
<ul style="list-style-type: none"> <li>- Display</li> </ul>	-20 ... +80 °C (-4 ... +176 °F)	
<ul style="list-style-type: none"> <li>• Storage temperature</li> </ul>	-50 ... +85 °C (-58 ... +185 °F)	
<ul style="list-style-type: none"> <li>• Climatic class in accordance with IEC 60721-3-4</li> </ul>	4K4H	
<ul style="list-style-type: none"> <li>• Degree of protection</li> </ul>		
<ul style="list-style-type: none"> <li>- According to IEC 60529</li> </ul>	IP66, IP68	
<ul style="list-style-type: none"> <li>- According to NEMA 250</li> </ul>	Type 4X	
<ul style="list-style-type: none"> <li>• Electromagnetic compatibility</li> </ul>		
<ul style="list-style-type: none"> <li>- Emitted interference and interference immunity</li> </ul>	According to IEC 61326 and NAMUR NE 21	
<b>Structural design</b>		
Weight	Pressure transmitter with mounting flange, without tube	
<ul style="list-style-type: none"> <li>• According to EN</li> </ul>	<ul style="list-style-type: none"> <li>• Aluminum enclosure: Approx. 11 ... 13 kg (24.2 ... 28.7 lbs)</li> <li>• Stainless steel enclosure: Approx. 13 ... 15 kg (28.7 ... 33 lbs)</li> </ul>	
<ul style="list-style-type: none"> <li>• According to ASME</li> </ul>	<ul style="list-style-type: none"> <li>• Aluminum enclosure: Approx. 11 ... 18 kg (24.2 ... 39.7 lbs)</li> <li>• Stainless steel enclosure: Approx. 13 ... 20 kg (28.7 ... 44 lbs)</li> </ul>	
Material		
<ul style="list-style-type: none"> <li>• Material of wetted parts</li> </ul>		



## Technical specifications (continued)

SITRANS P320 / SITRANS P420 for level		
- High side	Seal diaphragm of mounting flange	Stainless steel, mat. no. 1.4404/316L, Monel 400, mat. no. 2.4360, Alloy B2, mat. no. 2.4617, Alloy C276, mat. no. 2.4819, Alloy C22, mat. no. 2.4602, tantalum, PTFE, PFA, ECTFE
	Sealing surface	Smooth according to EN 1092-1, form B1 or ASME B16.5 RF 125 ... 250 AA for stainless steel 316L, EN 2092-1 form B2 or ASME B16.5 RFSF for the remaining materials
- Gasket material in the process flanges	For standard applications	Viton
	For negative pressure applications on the mounting flange	Copper
- Low side	Seal diaphragm	Stainless steel, mat. no. 1.4404/316L
	Process flanges	Stainless steel, mat. no. 1.4408/316
	Process flange screw	Stainless steel ISO 3506-1 A4-70
	O-ring	FPM (Viton)
• Material of non-wetted parts		
- Electronics enclosure		<ul style="list-style-type: none"> <li>• Low-copper die-cast aluminum GD-AlSi 12 or stainless steel precision casting, mat. no. 1.4409/ CF-3M</li> <li>• Standard: Powder coating with polyurethane Option: 2 coats: Coat 1: Epoxy-based; coat 2: Polyurethane</li> <li>• Stainless steel nameplate (1.4404/316L)</li> </ul>
Process flange screws	Stainless steel ISO 3506-1 A4-70	
Measuring cell filling	Silicone oil	
• Mounting flange filling liquid	Silicone oil or other material	
Process connection		
• High side	Flange according to EN and ASME	
• Low side	1/4-18 NPT female thread and flange connection with M10 fastening thread according to DIN 19213 (M12 for PN 420 (MWP 6092 psi)) or 7/16-20 UNF according to EN 61518	
Electrical connection	Screw terminals Cable entry via the following screw glands: <ul style="list-style-type: none"> <li>• M20 × 1.5</li> <li>• 1/2-14 NPT</li> <li>• Device plug Han 7D/Han 8D<sup>1)</sup></li> <li>• Device plug M12</li> </ul>	
<b>Displays and controls</b>		
Buttons	4 buttons for operation directly on the device	
Display	<ul style="list-style-type: none"> <li>• With or without integrated display (optional)</li> <li>• Lid with inspection window (optional)</li> </ul>	
<b>Auxiliary power U<sub>H</sub></b>		
Terminal voltage on pressure transmitter	10.5 ... 45 V DC 10.5 ... 30 V DC in intrinsically safe mode	
Ripple	U <sub>SS</sub> ≤ 0.2 V (47 ... 125 Hz)	
Noise	U <sub>eff</sub> ≤ 1.2 mV (0.5 ... 10 kHz)	
Auxiliary power	–	
Separate supply voltage	–	
<b>Certificates and approvals</b>		
Classification according to pressure equipment directive (PED 2014/68/EU)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)	
Drinking water		
• WRAS (England)	No.: 1903094 (option E83)	
• ACS (France)	No.: 18 ACC LY 277 (option E85)	
• NSF (USA)	No.: 20180920-MH61350 (option E84)	
CRN (Canada)	No.: 0F9863.5C (option E60)	
Explosion protection acc. to NEPSI (China)	No.: GYJ19.1058X (option E27)	
Explosion protection acc. to INMETRO (Brazil)	No.: BRA-18-GE-0035X (option E25)	
Explosion protection		
• Intrinsic safety "i"		
- Marking	II 1/2 G Ex ia/ib IIC T4/T6 Ga/Gb	

# Pressure measurement

## Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Level

### Technical specifications (continued)

#### SITRANS P320 / SITRANS P420 for level

- Permissible ambient temperature	-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6
- Connection	To certified intrinsically safe circuits with peak values: U <sub>i</sub> = 30 V, I <sub>i</sub> = 101 mA, P <sub>i</sub> = 760 mW U <sub>i</sub> = 29 V, I <sub>i</sub> = 110 mA, P <sub>i</sub> = 800 mW
- Effective internal inductance/capacitance	L <sub>i</sub> = 0.24 μH/C <sub>i</sub> = 3.29 nF
• Flameproof enclosure "d"	
- Marking	Ex II 1/2 G Ex ia/db IIC T4/T6 Ga/Gb
- Permissible ambient temperature	-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6
- Connection	To a circuit with the operating values: U <sub>n</sub> = 10.5 ... 45 V, 4 ... 20 mA
• Dust explosion protection for Zones 20, 21, 22	
- Marking	Ex II 1D Ex tb IIIC T120 °C Da Ex II 2D Ex tb IIIC T120 °C Db Ex II 3D Ex tc IIIC T120 °C Dc
- Permissible ambient temperature	-40 ... +80 °C (-40 ... +176 °F)
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F)
- Max. surface temperature	120 °C (248 °F)
- Connection	To a circuit with the operating values: U <sub>n</sub> = 10.5 ... 45 V, 4 ... 20 mA
• Dust explosion protection for Zones 21, 22	
- Marking	Ex II 2D Ex ib IIIC T120 °C Db
- Permissible ambient temperature	-40 ... +80 °C (-40 ... +176 °F)
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F)
- Connection	To certified intrinsically safe circuits with peak values: U <sub>i</sub> = 30 V, I <sub>i</sub> = 101 mA, P <sub>i</sub> = 760 mW U <sub>i</sub> = 29 V, I <sub>i</sub> = 110 mA, P <sub>i</sub> = 800 mW
- Effective internal inductance/capacitance	L <sub>i</sub> = 0.24 μH/C <sub>i</sub> = 3.29 nF
• Type of protection for Zone 2	
- Marking	Ex II 3G Ex ec IIC T4/T6 Gc
- Permissible ambient temperature "ec"	-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +40 °C (-40 ... +104 °F) temperature class T6
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6
- "ec" connection	To a circuit with the operating values: U <sub>n</sub> = 10.5 ... 30 V, 4 ... 20 mA
• Explosion protection acc. to FM	Available soon
- Marking (XP/DIP) or IS; NI; S	CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4 ... T6; CL I, DIV 2, GP ABCD T4 ... T6; CL II, DIV 2, GP FG; CL III
• Explosion protection according to CSA	Available soon
- Marking (XP/DIP) or (IS)	CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4 ... T6; CL I, DIV 2, GP ABCD T4 ... T6; CL II, DIV 2, GP FG; CL III
NAMUR recommendations	
• NE 06	Standardized Electrical Signals and Questions Relating to Engineering Technology
• NE 21	Electromagnetic Compatibility (EMC) of Industrial Process and Laboratory Control Equipment
• NE 23	Extra Low Voltage Circuits with Safe Separation
• NE 43	Standardization of the Signal Level for the Failure Information of Digital Transmitters
• NE 53	Software and Hardware of Field Devices and Signal Processing Devices with Digital Electronics
• NE 80	The Application of the Pressure Equipment Directive to Process Control Devices
• NE 105	Specifications for Integrating Fieldbus Devices in Engineering Tools for Field Devices
• NE 107	Self-Monitoring and Diagnosis of Field Devices
• NE 131	NAMUR Standard Device - Field Devices for Standard Applications

<sup>1)</sup> Han 8D is identical to Han 8U.

## Technical specifications (continued)

Mounting flange	
Nominal diameter	Nominal pressure
<ul style="list-style-type: none"> <li>According to EN 1092-1</li> <li>- DN 80</li> <li>- DN100</li> <li>According to ASME B16.5</li> <li>- 3 inches</li> <li>- 4 inches</li> </ul>	PN 40 PN 16, PN 40 Class 150, Class 300 Class 150, Class 300

Communication	
<b>HART</b>	
HART Protocol	230 ... 1 100 Ω HART 7
Software for computer	SIMATIC PDM
<b>PROFIBUS PA</b>	
Simultaneous communication with master class 2 (max.)	4
The address can be set using	Configuration tool or local operation (default setting address 126)
Cyclic data usage	
<ul style="list-style-type: none"> <li>Output byte</li> <li>Input byte</li> </ul>	≤ 35 (7 measured values) 0, 1, or 2 (register operation mode and reset function for dosing)
Internal preprocessing	
Device profile	PROFIBUS PA Profile Version 4.01 Class B. Cyclic data usage compatible with version 3.XX
Number of function blocks	7
<ul style="list-style-type: none"> <li>Analog input</li> <li>Adaptation to user-specific process variable</li> <li>Electrical damping adjustable</li> <li>Simulation function</li> <li>Limit monitoring</li> <li>Register (totalizer)</li> <li>Limit monitoring</li> <li>Physical block</li> </ul>	Yes, linearly rising or falling characteristic curve 0 ... 100 s Output/input Yes, one upper and lower warning limit and one alarm limit respectively Can be reset, preset, optional direction of counting, simulation function of register output One upper and lower warning limit and one alarm limit respectively 1
Transducer blocks	1

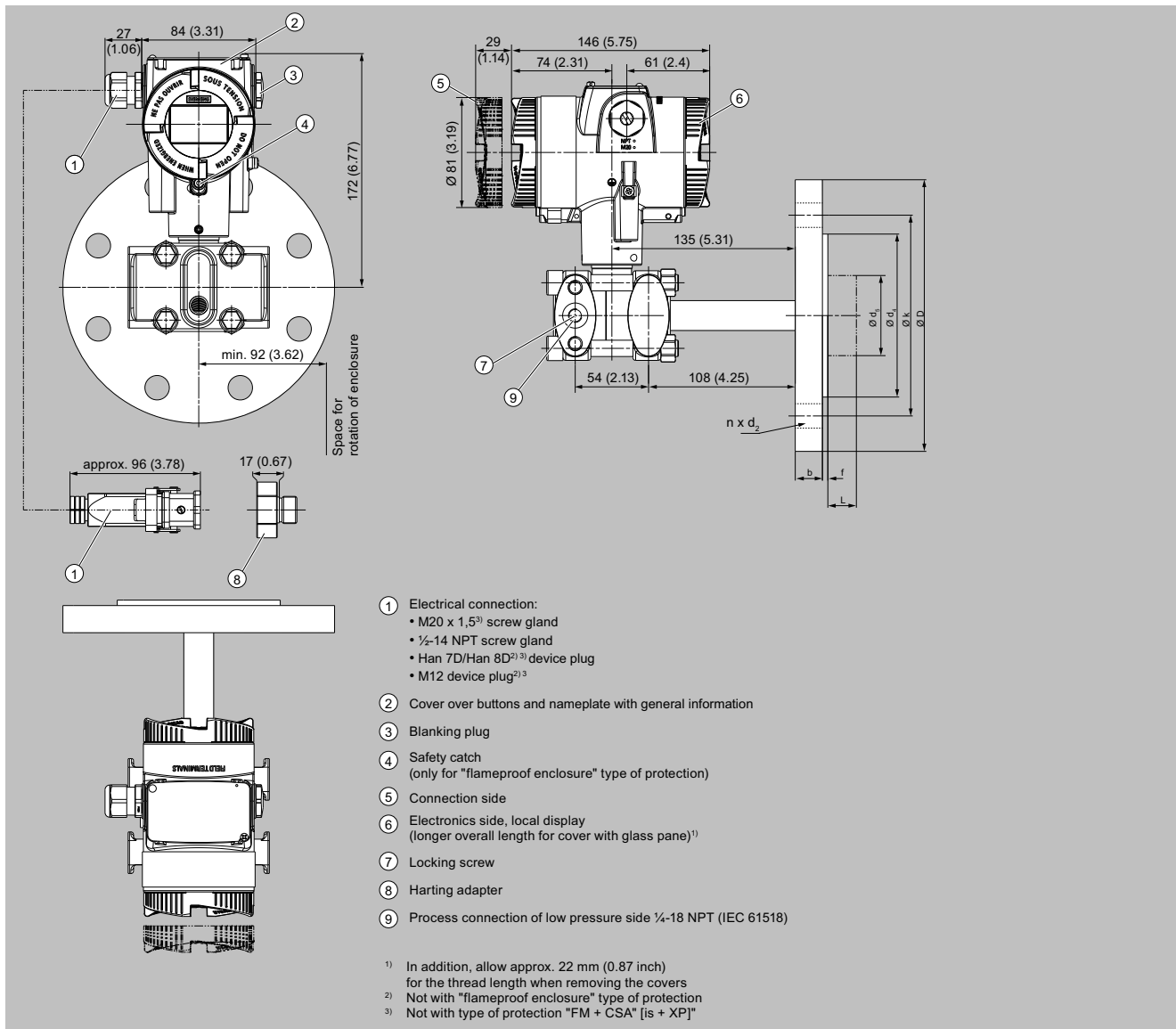
Communication	
<ul style="list-style-type: none"> <li>Pressure transducer block</li> <li>Can be calibrated by applying two pressures</li> <li>Monitoring of sensor limits</li> <li>Specification of a vessel characteristic curve with</li> <li>Square-rooted characteristic curve for flow measurement</li> <li>Tank characteristic curve for volume measurement</li> <li>Low flow cut-off and implementation point of square-root extraction</li> <li>Simulation function for measured pressure value and sensor temperature</li> </ul>	Yes Yes Max. 30 nodes Yes Yes Parameterizable Constant value or by means of parameterizable ramp function
<b>FOUNDATION Fieldbus</b>	
Device profile	FF ITK 6
Function blocks	3 function blocks analog input, 1 function block PID
<ul style="list-style-type: none"> <li>Analog input</li> <li>Adaptation to user-specific process variable</li> <li>Electrical damping adjustable</li> <li>Simulation function</li> <li>Failure mode</li> <li>Limit monitoring</li> <li>Square-rooted characteristic curve for flow measurement</li> <li>PID</li> <li>Physical block</li> </ul>	Yes, linearly rising or falling characteristic curve 0 ... 100 s Output/input (can be locked within the device with a bridge) Parameterizable (last good value, substitute value, incorrect value) Yes, one upper and lower warning limit and one alarm limit respectively Yes Standard FOUNDATION Fieldbus function block 1 resource block
Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block LCD
<ul style="list-style-type: none"> <li>Pressure transducer block</li> <li>Can be calibrated by applying two pressures</li> <li>Monitoring of sensor limits</li> <li>Simulation function: pressure measurement, sensor temperature and electronics temperature</li> </ul>	Yes Yes Constant value or by means of parameterizable ramp function

# Pressure measurement

## Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Level

### Dimensional drawings



SITRANS P320/P420 pressure transmitter for level, including mounting flange, dimensions in mm (inch)

### Connection to EN 1092-1

Nominal diameter	Nominal pressure	b	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub> with tube	d <sub>M</sub> Without tube	f	k	n	L
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
DN 40	PN 10/16/25/40	16	150	18	88	38	30	42	2	110	4	0, 50, 100, 150 or 200
	PN 63/100	24	170	22	88	38	30	42	2	125	4	
	PN 160	26	170	22	88	38	30	42	2	125	4	
DN 50	PN 10/16/25/40	18	165	18	102	48.3	40	51	2	125	4	
	PN 63/100	26	195	26	102	48.3	40	51	2	145	4	
	PN 160	28	195	26	102	48.3	40	51	2	145	4	
DN 80	PN 10/16/25/40	22	200	18	138	76	65	85	2	160	8	
	PN 100	30	230	26	138	76	65	85	2	180	8	

## Dimensional drawings (continued)

Nominal diameter	Nominal pressure	b	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub> with tube	d <sub>M</sub> Without tube	f	k	n	L
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
DN 100	PN 10/16	18	220	18	158	94	85	85	2	180	8	0, 50, 100, 150 or 200
	PN 25/40	22	235	22	162	94	85	85	2	190	8	
DN 125	PN 16	20	250	18	188	127	85	116	2	210	8	4
	PN 40	24	270	26	188	127	85	116	2	220	8	

## Connection according to ASME B16.5

Nominal diameter	Nominal pressure	b	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub> with tube	d <sub>M</sub> Without tube	f	k	n	L
		lb/sq.in.	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)
1½ inches	150	0.63 (15.9)	4.92 (125)	0.63 (15.9)	2.87 (73)	1.5 (38)	1,18 (30)	1.42 (36)	0.08 (2)	3.87 (98.4)	4	0, 2, 3.94, 5.94 or 7.87 (0, 50, 100, 150 or 200)
	300	0.75 (19.1)	6.10 (155)	0.87 (22.2)	2.87 (73)	1.5 (38)	1,18 (30)	1.42 (36)	0.08 (2)	4.5 (114.3)	4	
	400/600	0.88 (22.3)	6.10 (155)	0.87 (22.2)	2.87 (73)	1.5 (38)	1,18 (30)	1.42 (36)	0.28 (7)	4.5 (114.3)	4	
	900/1500	1.25 (31.8)	7.09 (180)	1.13 (28.6)	2.87 (73)	1.5 (38)	1,18 (30)	1.42 (36)	0.28 (7)	4.87 (123.8)	4	
2 inches	150	0.69 (17.5)	5.91 (150)	0.75 (19.1)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.08 (2)	4.75 (120.7)	4	8
	300	0.81 (20.7)	6.5 (165)	0.75 (19.1)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.08 (2)	5 (127)	8	
	400/600	1.00 (25.4)	6.5 (165)	0.75 (19.1)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.28 (7)	5 (127)	8	
	900/1500	1.5 (38.1)	8.46 (215)	1.00 (25.4)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.28 (7)	6.5 (165.1)	8	
3 inches	150	0.88 (22.3)	7.48 (190)	0.75 (19.1)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.08 (2)	6 (152.4)	4	8
	300	1.06 (27)	8.27 (210)	0.87 (22.2)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.08 (2)	6.63 (168.3)	8	
	600	1.23 (31.8)	8.27 (210)	0.87 (22.2)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.28 (7)	6.63 (168.3)	8	
	1500	1.88 (47.7)	10.43 (265)	1.25 (31.8)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.28 (7)	8 (203.2)	8	
4 inches	150	0.88 (22.3)	9.06 (230)	0.75 (19.1)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.08 (2)	7.5 (190.5)	8	8
	300	1.19 (30.2)	10.04 (255)	0.87 (22.2)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.08 (2)	7.87 (200)	8	
	400	1.38 (35)	10.04 (255)	0.87 (22.2)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.28 (7)	7.87 (200)	8	
	1500	2.13 (54)	12.20 (310)	1.37 (34.9)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.28 (7)	9.5 (241.3)	8	
5 inches	150	0.88 (22.3)	10.04 (255)	0.87 (22.2)	7.31 (185.7)	5 (127)	4.57 (116)	4.57 (116)	0.08 (2)	8.5 (215.9)	8	8
	300	1.31 (33.4)	11.02 (280)	0.87 (22.2)	7.31 (185.7)	5 (127)	4.57 (116)	4.57 (116)	0.08 (2)	9.25 (235)	8	
	400	1.50 (38.1)	11.02 (280)	0.87 (22.2)	7.31 (185.7)	5 (127)	4.57 (116)	4.57 (116)	0.28 (7)	9.25 (235)	8	

## Process connection according to J.I.S

Nominal diameter	Nominal pressure	b	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub> with tube	d <sub>M</sub> Without tube	f	k	n	L
		mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	
DN 50	10 K	14 (0.55)	155 (6.10)	19 (0.75)	96 (3.78)	48.3 (1.9)	40 (1.57)	51 (2.01)	2	120 (4.72)	4	0, 50, 100, 150 or 200 (0, 2, 3.94, 5.94 or 7.87)
	20 K	16 (0.63)	165 (6.50)	19 (0.75)	96 (3.78)	48.3 (1.9)	40 (1.57)	51 (2.01)	2	120 (4.72)	8	
	40 K	26 (1.02)	165 (6.50)	19 (0.75)	105 (4.13)	48.3 (1.9)	40 (1.57)	51 (2.01)	2	130 (5.12)	8	
DN 80	10 K	16 (0.63)	185 (7.28)	19 (0.75)	126 (4.96)	76 (2.99)	65 (2.56)	85 (3.35)	2	150 (5.91)	8	8
	20 K	20 (0.79)	200 (7.87)	23 (0.91)	132 (5.20)	76 (2.99)	65 (2.56)	85 (3.35)	2	160 (6.30)	8	
	40 K	32 (1.26)	210 (8.27)	23 (0.91)	140 (5.51)	76 (2.99)	65 (2.56)	85 (3.35)	2	170 (6.30)	8	
DN 100	10 K	16 (0.63)	210 (8.27)	19 (0.75)	151 (5.94)	94 (3.7)	85 (3.35)	85 (3.35)	2	175 (6.89)	8	8
	20 K	22 (0.87)	225 (8.86)	23 (0.91)	160 (6.30)	94 (3.7)	85 (3.35)	85 (3.35)	2	185 (7.28)	8	
	40 K	36 (1.42)	250 (9.84)	25 (0.98)	165 (6.50)	94 (3.7)	85 (3.35)	85 (3.35)	2	205 (8.07)	8	

d: Inside diameter of gasket according to DIN 2690

d<sub>M</sub>: Effective diaphragm diameter

## Pressure measurement

### Pressure transmitters

for applications with advanced requirements / SITRANS P320/P420 / Level

#### More information

##### *Specification of process conditions for selection and ordering data*

###### Ambient temperature range

The standard remote seal systems are optimized for an ambient temperature range of -10 to +50 °C (14 to +122 °F). Therefore, in the ordering options, the **order code "D66"** is preset.

If the range of the ambient temperature deviates from this, you have the possibility to choose other ambient temperature ranges:

- With the **order code D67**, a range from -40 to +50 °C (-40 to +122 °F)
- With the **order code D68**, a range from -10 to +85 °C (14 to +185 °F)

In the case of a **special design**, which you can select with the **order option Y99** in the device settings, it is possible to enter the ambient temperature as a numerical value.

###### Process temperature

The standard optimization for the process temperature depends on the filling liquid used:


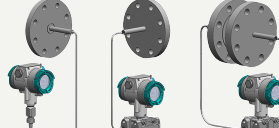
Filling liquid	Code	Optimized temperature range as standard
Silicone M50	B	-10 ... +200 °C (14 ... +392 °F)
High-temperature oil	C	-10 ... +300 °C (14 ... +572 °F)
Silicone oil M5	A	-40 ... +140 °C (-40 ... +284 °F)
Food oil (FDA-listed)	E	-10 ... +140 °C (14 ... +284 °F)
Halocarbon oil	D	-20 ... +60 °C (-4 ... +140 °F)
Neobee M20 (FDA-listed)	R	-10 ... +140 °C (14 ... +284 °F)

- **If the process temperatures** deviate from the temperature ranges mentioned in the table above, we ask you to send the process temperature with the **order code Y50** along with the order.
- If the remote seal has a small diameter (< DN 50/2") or a long capillary (> 4 m), we also ask you to provide the process data with the **following order code** when ordering.

These entries are transmitted and ensure the correct functioning of the remote seal systems.

	Order code
<b>Ambient temperature range</b>	
• -10 ... +50 °C (14 ... +122 °F) preset	<b>D66</b>
• -40 ... +50 °C (-40 ... +122 °F)	<b>D67</b>
• -10 ... +85 °C (14 ... +185 °F)	<b>D68</b>
<b>Process temperature min. ... °C/(°F)/max. ... °C/(°F)</b>	<b>Y50</b>

## Overview

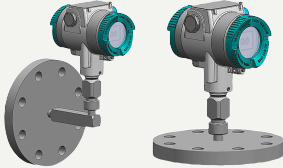
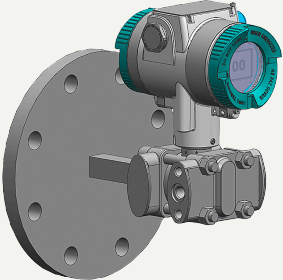
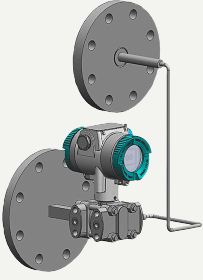
Type	7MF0800, 7MF0801, 7MF0802		7MF0810, 7MF0811, 7MF0812	
				
<b>Description</b>	Diaphragm seal		Diaphragm seal	
<b>Application</b>	For the process industry		For the process industry	
<b>Version</b>	Sandwich design		Flange design	
<b>Type</b>	Flexible with flexible capillary		Flexible with flexible capillary	
<b>Article No.</b>	7MF0800*, 7MF0801*, 7MF0802*		7MF0810*/7MF0811*/7MF0812*	
<b>Process connection standard</b>	<b>Nominal diameter</b>	<b>Nominal pressure</b>	<b>Nominal diameter</b>	<b>Nominal pressure</b>
• EN 1092-1	DN 25, DN 40, DN 50, DN 65, DN 80, DN 100, DN 125	PN 16 ... 400	DN 25 DN 40 DN 50 DN 80 DN 100 DN 125	PN 10, PN 16, PN 25, PN 40, PN 63, PN 100, PN 160, PN 250 PN 10, PN 16, PN 25, PN 40, PN 63, PN 100, PN 160 PN 10, PN 16, PN 25, PN 40, PN 63, PN 100 PN 10, PN 16, PN 25, PN 40, PN 100 PN 10, PN 16, PN 25, PN 40 PN 16, PN 40
• SME B16.5	1", 1½", 2", 2½", 3", 4", 5"	Class 150 ... 2500	1" 1½" 2" 3" 4" 5"	Class 150/300/600/1500 Class 150/300/400/600/900/1500 Class 150/300/400/600/900/1500 Class 150/300/600/1500 Class 150/300/400/1500 Class 150/300/400
• J.I.S.	DN 25, DN 40, DN 50, DN 65, DN 80, DN 100, DN 125	10 ... 63K	DN 50, DN 80, DN 100	10K/20K/40K
<b>Sealing surface</b>	For <b>stainless steel</b> mat. no. 1.4404/316L According to EN 1092-1, form B1 or ASME B16.5 RF 125 ... 250 AA For the <b>other materials</b> according to EN 1092-1, form B2 or ASME B16.5 RFSF		For <b>stainless steel</b> mat. no. 1.4404/316L According to EN 1092-1, form B1 or ASME B16.5 RF 125 ... 250 AA For the <b>other materials</b> according to EN 1092-1, form B2 or ASME B16.5 RFSF	
<b>Materials</b>	<ul style="list-style-type: none"> <li>• Basic body stainless steel mat. no. 1.4404/316L</li> <li>• Wetted parts</li> <li>• Stainless steel, mat. no. 1.4404/316L <ul style="list-style-type: none"> <li>- No coating</li> <li>- PTFE coating</li> <li>- ECTFE coating</li> <li>- PFA coating</li> </ul> </li> <li>• Monel 400, mat. no. 2.4360</li> <li>• Hastelloy C276, mat. no. 2.4819</li> <li>• Hastelloy C4, mat. no. 2.4610</li> <li>• Hastelloy C22, mat. no. 2.4602</li> <li>• Tantalum</li> <li>• Titanium, mat. no. 3.7035</li> <li>• Nickel 201</li> <li>• Duplex 2205, mat. no. 1.4462</li> <li>• Stainless steel 316L, gold plated, layer thickness approx. 25 µm</li> </ul>		<ul style="list-style-type: none"> <li>• Basic body stainless steel mat. no. 1.4404/316L</li> <li>• Wetted parts</li> <li>• Stainless steel, mat. no. 1.4404/316L <ul style="list-style-type: none"> <li>- No coating</li> <li>- PTFE coating</li> <li>- ECTFE coating</li> <li>- PFA coating</li> </ul> </li> <li>• Monel 400, mat. no. 2.4360</li> <li>• Hastelloy C276, mat. no. 2.4819</li> <li>• Hastelloy C4, mat. no. 2.4610</li> <li>• Hastelloy C22, mat. no. 2.4602</li> <li>• Tantalum</li> <li>• Titanium, mat. no. 3.7035</li> <li>• Nickel 201</li> <li>• Duplex 2205, mat. no. 1.4462</li> <li>• Stainless steel 316L, gold plated, layer thickness approx. 25 µm</li> </ul>	
<b>Capillary length</b>	≤ 10 m (32.8 ft), longer lengths on request		≤ 10 m (32.8 ft), longer lengths on request	
<b>Filling liquid</b>	Silicone oil M5, silicone oil M50, high-temperature oil, halocarbon oil (for O2 measurements), food oil (FDA listed), Neobee M20 (FDA listed)		Silicone oil M5, silicone oil M50, high-temperature oil, halocarbon oil (for O2 measurements), food oil (FDA listed), Neobee M20 (FDA listed)	
<b>Tube length</b>	Without tube, 50 mm (1.97"), 100 mm (3.94"), 150 mm (5.91"), 200 mm (7.87"), 250 mm (9.84")		Without tube, 50 mm (1.97"), 100 mm (3.94"), 150 mm (5.91"), 200 mm (7.87"), 250 mm (9.84")	

# Pressure measurement

## Remote seals

### Detailed product overview

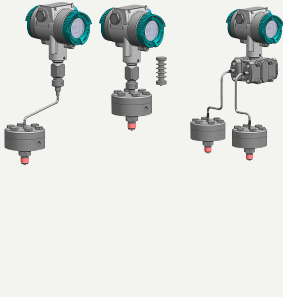
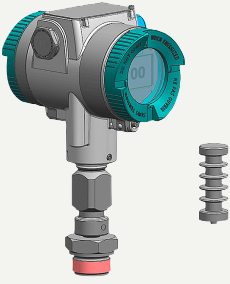
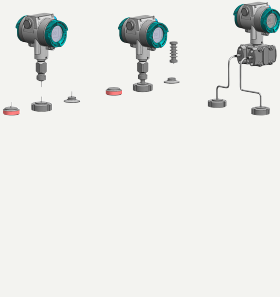
#### Overview (continued)

Type	7MF0810		7MF0814		7MF0813	
						
<b>Description</b>	Diaphragm seal		Diaphragm seal		Diaphragm seal	
<b>Application</b>	For the process industry		For the process industry		For the process industry	
<b>Version</b>	Flange design		Flange design		Flange design	
<b>Type</b>	Mounted directly		Mounted directly		Mounting flange (with optional tube) Direct mounting at high side and with flexible capillary connected at low side	
<b>Article No.</b>	7MF0810*		7MF0814*		7MF0813*	
<b>Process connection standard</b>	<b>Nominal diameter</b>	<b>Nominal pressure</b>	<b>Nominal diameter</b>	<b>Nominal pressure</b>	<b>Nominal diameter</b>	<b>Nominal pressure</b>
• EN 1092-1	DN 25	PN 10, PN 16, PN 25, - PN 40, PN 63, PN 100, PN 160, PN 250	-	-	-	-
	DN 40	PN 10, PN 16, PN 25, DN 40 PN 40, PN 63, PN 100, PN 160	DN 40	PN 10, PN 16, PN 25, DN 40 PN 40, PN 63, PN 100, PN 160	DN 40	PN 10, PN 16, PN 25, PN 40, PN 63, PN 100, PN 160
	DN 50	PN 10, PN 16, PN 25, DN 50 PN 40, PN 63, PN 100	DN 50	PN 10, PN 16, PN 25, DN 50 PN 40, PN 63, PN 100	DN 50	PN 10, PN 16, PN 25, PN 40, PN 63, PN 100
	DN 80	PN 10, PN 16, PN 25, DN 80 PN 40, PN 100	DN 80	PN 10, PN 16, PN 25, DN 80 PN 40, PN 100	DN 80	PN 10, PN 16, PN 25, PN 40, PN 100
	DN 100	PN 10, PN 16, PN 25, DN 100 PN 40	DN 100	PN 10, PN 16, PN 25, DN 100 PN 40	DN 100	PN 10, PN 16, PN 25, PN 40
• SME B16.5	DN 125	PN 16, PN 40	DN 125	PN 16, PN 40	DN 125	PN 16, PN 40
	1"	Class 150/300/600/- 1500	-	-	-	-
	1½"	Class 150/300/400/- 600/900/1500	1½"	Class 150/300/400/- 600/900/1500	1½"	Class 150/300/400/- 600/900/1500
	2"	Class 150/300/400/- 600/900/1500	2"	Class 150/300/400/- 600/900/1500	2"	Class 150/300/400/- 600/900/1500
	3"	Class 150/300/600/- 1500	3"	Class 150/300/600/- 1500	3"	Class 150/300/600/- 1500
	4"	Class 150/300/400/- 1500	4"	Class 150/300/400/- 1500	4"	Class 150/300/400/- 1500
	5"	Class 150/300/400	5"	Class 150/300/400	5"	Class 150/300/400
• J.I.S.	DN 50, DN 80, DN 100	10K/20K/40K	DN 50, DN 80, DN 100	10K/20K/40K	DN 50, DN 80, DN 100	10K/20K/40K
<b>Sealing surface</b>	For <b>stainless steel</b> mat. no. 1.4404/316L According to EN 1092-1, form B1 or ASME B16.5 RF 125 ... 250 AA For the <b>other materials</b> according to EN 1092-1, form B2 or ASME B16.5 RFSF		For <b>stainless steel</b> mat. no. 1.4404/316L According to EN 1092-1, form B1 or ASME B16.5 RF 125 ... 250 AA For the <b>other materials</b> according to EN 1092-1, form B2 or ASME B16.5 RFSF		For <b>stainless steel</b> mat. no. 1.4404/316L According to EN 1092-1, form B1 or ASME B16.5 RF 125 ... 250 AA For the <b>other materials</b> according to EN 1092-1, form B2 or ASME B16.5 RFSF	



## Overview (continued)

Type	7MF0810	7MF0814	7MF0813
<b>Materials</b>	<ul style="list-style-type: none"> <li>Basic body stainless steel mat. no. 1.4404/316L</li> <li>Wetted parts</li> <li>Stainless steel, mat. no. 1.4404/316L               <ul style="list-style-type: none"> <li>No coating</li> <li>PTFE coating</li> <li>ECTFE coating</li> <li>PFA coating</li> </ul> </li> <li>Monel 400, mat. no. 2.4360</li> <li>Hastelloy C276, mat. no. 2.4819</li> <li>Hastelloy C4, mat. no. 2.4610</li> <li>Hastelloy C22, mat. no. 2.4602</li> <li>Tantalum</li> <li>Titanium, mat. no. 3.7035</li> <li>Nickel 201</li> <li>Duplex 2205, mat. no. 1.4462</li> <li>Stainless steel 316L, gold plated, layer thickness approx. 25 µm</li> </ul>	<ul style="list-style-type: none"> <li>Basic body stainless steel mat. no. 1.4404/316L</li> <li>Wetted parts</li> <li>Stainless steel, mat. no. 1.4404/316L               <ul style="list-style-type: none"> <li>No coating</li> <li>PTFE coating</li> <li>ECTFE coating</li> <li>PFA coating</li> </ul> </li> <li>Monel 400, mat. no. 2.4360</li> <li>Hastelloy C276, mat. no. 2.4819</li> <li>Hastelloy C4, mat. no. 2.4610</li> <li>Hastelloy C22, mat. no. 2.4602</li> <li>Tantalum</li> <li>Titanium, mat. no. 3.7035</li> <li>Nickel 201</li> <li>Duplex 2205, mat. no. 1.4462</li> <li>Stainless steel 316L, gold plated, layer thickness approx. 25 µm</li> </ul>	<ul style="list-style-type: none"> <li>Basic body stainless steel mat. no. 1.4404/316L</li> <li>Wetted parts</li> <li>Stainless steel, mat. no. 1.4404/316L               <ul style="list-style-type: none"> <li>No coating</li> <li>PTFE coating</li> <li>ECTFE coating</li> <li>PFA coating</li> </ul> </li> <li>Monel 400, mat. no. 2.4360</li> <li>Hastelloy C276, mat. no. 2.4819</li> <li>Hastelloy C4, mat. no. 2.4610</li> <li>Hastelloy C22, mat. no. 2.4602</li> <li>Tantalum</li> <li>Titanium, mat. no. 3.7035</li> <li>Nickel 201</li> <li>Duplex 2205, mat. no. 1.4462</li> <li>Stainless steel 316L, gold plated, layer thickness approx. 25 µm</li> </ul>
<b>Capillary length</b>			≤ 10 m (32.8 ft), longer lengths on request
<b>Filling liquid</b>	Silicone oil M5, silicone oil M50, high-temperature oil, halocarbon oil (for O2 measurements), food oil (FDA listed), Neobee M20 (FDA listed)	Silicone oil M5, silicone oil M50, high-temperature oil, halocarbon oil (for O2 measurements), food oil (FDA listed), Neobee M20 (FDA listed)	Silicone oil M5, silicone oil M50, high-temperature oil, halocarbon oil (for O2 measurements), food oil (FDA listed), Neobee M20 (FDA listed)
<b>Tube length</b>	Without tube, 50 mm (1.97"), 100 mm (3.94"), 150 mm (5.91"), 200 mm (7.87"), 250 mm (9.84")	Without tube, 50 mm (1.97"), 100 mm (3.94"), 150 mm (5.91"), 200 mm (7.87"), 250 mm (9.84")	Without tube, 50 mm (1.97"), 100 mm (3.94"), 150 mm (5.91"), 200 mm (7.87"), 250 mm (9.84")

Type	7MF0840, 7MF0842		7MF0850	7MF0830, 7MF0832		
						
<b>Description</b>	Diaphragm seal		Diaphragm seal	Diaphragm seal		
<b>Application</b>	For the process industry		For the process industry	For the process industry		
<b>Version</b>	With inner membrane (nominal diameter 50/2"), process connection: open		Mounted directly	Flange design		
<b>Type</b>	Direct mounting or connected via flexible capillary		Remote seal, miniature type	With quick release, with flexible capillary or direct mounting		
<b>Article No.</b>	7MF0840*, 7MF0842*		7MF0850*	7MF0830*, 7MF0832*		
<b>Process connection standard, nominal diameter and rated pressure</b>	<b>Nominal diameter</b>	<b>Nominal pressure</b>	<b>Nominal diameter</b>	<b>Nominal pressure</b>	<b>Nominal diameter</b>	<b>Nominal pressure</b>
	<i>Open flange according to EN 1092-1</i>		<i>DIN 3852, form A</i>		<i>DIN 11851 with groove nut</i>	
	DN 15	PN 10, PN 16, PN 25, PN 40, PN 63, PN 100, PN 160, PN 250	G 1"	PN 400	DN 25, DN 32, DN 40	PN 40

# Pressure measurement

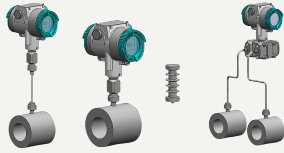
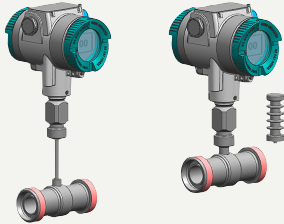
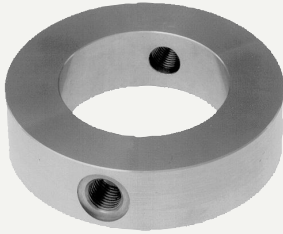
## Remote seals

### Detailed product overview

#### Overview (continued)

Type	7MF0840, 7MF0842	7MF0850	7MF0830, 7MF0832	
Process connection standard, nominal diameter and rated pressure	DN 20	PN 10, PN 16, PN 25, G 1½"	PN 250	
	DN 25	PN 10, PN 16, PN 25, G 2" PN 40, PN 63, PN 100, PN 160, PN 250	PN 250	
	<b>Open flange per ASME B16.5</b>		<b>ASME B1.20.1</b>	
	½", ¾", 1"	Class 150/300/600/-1500	1" NPT-M	Class 3625
	<b>Thread according to EN 837-1</b>		1½" NPT-M	Class 1450
	G¼"B, G½"B, G¾"B, G1"B	PN 100, PN 250	2" NPT-M	Class 1450
	<b>Thread per ASME B1.20.1</b>			
	¼" NPT-M, ¼" NPT-F	Class 1500/3675		
	½" NPT-M, ½" NPT-F	Class 1500/3675		
	¾" NPT-M, ¾" NPT-F	Class 1500/3675		
	1" NPT-M, 1" NPT-F	Class 1500/3675		
				DN 50, DN 65, DN 80
			<b>DIN 11851 with thread</b>	
			DN 25, DN 32, DN 40	
			PN 40	
			DN 50, DN 65, DN 80	
			PN 25	
			<b>Clamp ISO 2852</b>	
			DN 25, DN 38, DN 51	
			PN 16	
			DN 63.5, DN 76.1	
			PN 10	
			<b>Clamp DIN 32676, series C</b>	
			1", 1½"	
			PN 25	
			2", 2½"	
			PN 16	
			3"	
			PN 10	
			<b>Clamp DIN 32676, series A metric</b>	
			DN 25, DN 32, DN 40	
			PN 25	
			DN 50	
			PN 16	
			DN 65	
			PN 10	
			<b>Varivent</b>	
			DN 25, DN 32, DN 40, DN 50	
			PN 25	
			<b>DRD flange</b>	
			DN 50	
			PN 40	
Sealing surface	For <b>stainless steel</b> mat. no. 1.4404/316L According to EN 1092-1, form B1 or ASME B16.5 RF 125 ... 250 AA			
Materials	<b>Base:</b> <ul style="list-style-type: none"> <li>Stainless steel, mat. no. 1.4404/316L</li> </ul> <b>Membrane:</b> <ul style="list-style-type: none"> <li>Stainless steel, mat. no. 1.4404/316L</li> <li>No coating</li> <li>PTFE coating</li> <li>Monel 400, mat. no. 2.4360</li> <li>Hastelloy C276, mat. no. 2.4819</li> <li>Hastelloy C4, mat. no. 2.4610</li> <li>Hastelloy C22, mat. no. 2.4602</li> <li>Tantalum</li> <li>Titanium, mat. no. 3.7035</li> <li>Nickel 201</li> <li>Stainless steel 316L, gold-plated, layer thickness approx. 25 µm</li> </ul>	<b>Basic body:</b> <ul style="list-style-type: none"> <li>Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819</li> </ul> <b>Membrane:</b> <ul style="list-style-type: none"> <li>Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819</li> </ul>	<b>Basic body:</b> <ul style="list-style-type: none"> <li>Stainless steel, mat. no. 1.4404/316L</li> </ul> <b>Wetted parts:</b> <ul style="list-style-type: none"> <li>Stainless steel, mat. no. 1.4404/316L</li> </ul> <b>Capillary:</b> <ul style="list-style-type: none"> <li>Stainless steel</li> </ul>	
Capillary length	≤ 10 m (32.8 ft), longer lengths on request		≤ 10 m (32.8 ft), longer lengths on request	
Filling liquid	Silicone oil M5, silicone oil M50, high-temperature oil, halocarbon oil (for O2 measurements), food oil (FDA listed), Neobee M20 (FDA listed)	Silicone oil M5, food oil (FDA listed), Neobee M20 (FDA listed)	Food oil (FDA-listed), Neobee M20 (FDA-listed)	

## Overview (continued)

Type	7MF0900, 7MF0902	7MF0930	7MF4925
			
<b>Description</b>	Diaphragm seal	Diaphragm seal	Flushing ring
<b>Application</b>	For the process industry	For the process industry	For the process industry
<b>Version</b>	Inline seal	Inline seal	
<b>Type</b>	In sandwich design, direct mounting or with a flexible capillary	With quick release, flange type design, with flexible capillary or direct mounting	Flushing ring for diaphragm seals 7MF0800 to 7MF0814
<b>Article No.</b>	7MF0900*, 7MF0902*	7MF0930*	7MF4925*
<b>Process connection standard, nominal diameter and rated pressure</b>	<b>EN 1092-1</b> DN 25, DN 40, DN 50, DN 65, DN 80, DN 100, DN 125 <b>ASME B16.5</b> 1", 1½", 2", 2½", 3", 4", 5"	<b>DIN 11851 with thread</b> DN 25, DN 32, DN 40 DN 50, DN 65, DN 80 <b>Clamp ISO 2852</b> DN 25, DN 38, DN 51 DN 63.5, DN 76.1, DN 51 <b>Clamp DIN 32676, series C</b> 1", 1½" 2", 2½" 3" <b>Clamp DIN 32676, series A metric</b> DN 25, DN 32, DN 40 DN 50 DN 65	<b>EN 1092-1 1</b> DN 50, DN 80, DN 100, DN 125 PN 16 ... 100 <b>ASME B 16.5</b> 2", 3", 4", 5" Class 150 ... 600
<b>Sealing surface</b>	For <b>stainless steel</b> mat. no. 1.4404/316L According to EN 1092-1, form B1 or ASME B16.5 RF 125 ... 250 AA For the <b>other materials</b> Smooth according to EN 1092-1, form B2 or ASME B16.5 RFSF		<b>EN 1092-1</b> Form B1 Form B2 Form D/Form D Form C/Form C Form D/Form C Form E Form F <b>ASME B16.5</b> RF 125 ... 250 AA RFSF RJF ring groove
<b>Materials</b>	<b>Main body</b> Stainless steel, mat. no. 1.4404/316L <b>Diaphragm</b> Stainless steel, mat. no. 1.4404/316L <b>Wetted parts</b> Stainless steel, mat. no. 1.4404/316L, no coating <b>Capillary</b> Stainless steel	<b>Main body</b> Stainless steel, mat. no. 1.4404/316L <b>Diaphragm</b> Stainless steel, mat. no. 1.4404/316L <b>Capillary</b> Stainless steel	Stainless steel 1.4404/316L

## Pressure measurement

### Remote seals

#### Detailed product overview

#### Overview (continued)

Type	7MF0900, 7MF0902	7MF0930	7MF4925
Capillary length	≤ 10 m (32.8 ft), longer lengths on request	≤ 10 m (32.8 ft), longer lengths on request	
Filling liquid	Silicone oil M5, silicone oil M50, high-temperature oil, halocarbon oil (for O2 measurements), food oil (FDA listed), Neobee M20 (FDA listed)	Silicone oil M5, food oil (FDA listed), Neobee M20 (FDA listed)	Food oil (FDA-listed), Neobee M20 (FDA-listed)  Flushing holes (2 units), female thread: G $\frac{1}{4}$ , G $\frac{1}{2}$ , $\frac{1}{4}$ -18 NPT, $\frac{1}{2}$ -14 NPT

## Overview

In many cases, the pressure transmitter and the measured medium have to be physically separated. It is then necessary to use a remote seal.

The remote seals can be used with the following SITRANS P320/420 pressure transmitter series:

- Gauge pressure
- Absolute pressure
- Differential pressure and flow

### Note

When configuring your remote seal, be sure to read the information about transmission response, temperature error and response time to be found in the sections "Function" and "Technical specification". Only then will the remote seal work to optimum effect.

## Benefits

- No direct contact between pressure transmitter and medium
- Individual configuration of the pressure transmitter for perfect adaptation to the operating conditions
- Available in many versions
- Specially designed for difficult operating conditions
- Quick-release versions available for the food industry

## Application

Remote seal systems should be used when it is necessary or expedient to separate the medium and measuring instrument.

Some examples of such cases:

- The medium temperature is outside the limits specified for the pressure transmitter.
- The medium is corrosive and requires diaphragm materials that are not available for the pressure transmitter.
- The medium is highly viscous or has a high solids content and would block the sample chambers of the pressure transmitter.
- The medium could freeze in the sample chambers or the pulse cable.
- The medium is heterogeneous or fibrous.
- The medium has a tendency towards polymerization or crystallization.
- The process requires quick-release remote seals, as required in the food & beverages industry for fast cleaning, for example.
- The process requires cleaning of the measuring point, like in a batch process, for example.

## Design

A remote seal system consists of the following components.

- Pressure transmitter
- One or two remote seals
- Filling liquid
- Connection between the pressure transmitter and remote seal (direct mounting or via a capillary)

The space for the medium is sealed off with a flat embedded elastic diaphragm. Between the diaphragm and the pressure transmitter is the filling liquid.

In many cases, a capillary must be connected between the remote seal and the pressure transmitter in order, for example, to reduce the temperature effects on the pressure transmitter when the measured medium is hot.

However, the capillary influences the response time and the temperature response of the overall remote seal system. When capillaries are used to connect a remote seal to a pressure transmitter for differential pressure, two capillaries of equal length must always be used.

Optionally, the remote seal with diaphragm extension (tube) can be ordered.

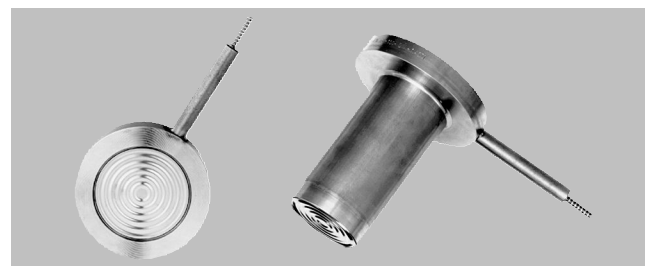
The remote seals in sandwich design are secured with a blank flange.

### Designs

#### Diaphragm seal

With diaphragm seals, the pressure is sensed by a flat embedded diaphragm.

Diaphragm seals are differentiated as follows:



Diaphragm seal in sandwich design without (left) and with diaphragm extension (tube)

- Sandwich design
- Sandwich design with diaphragm extension (tube) according to EN or ASME and secured with a blank flange



Diaphragm seal in flange design without (left) and with diaphragm extension (tube)

- Flange design

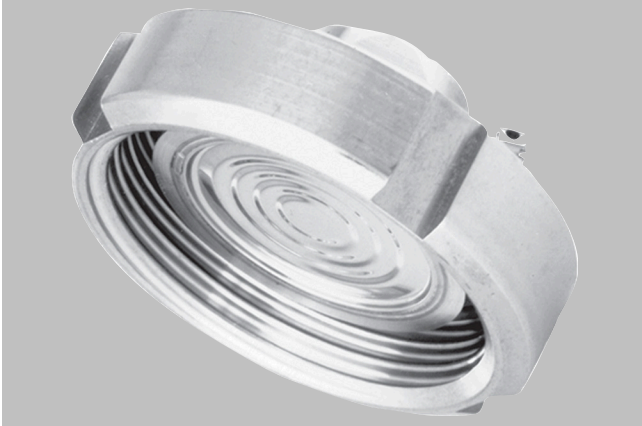
## Pressure measurement

### Remote seals

for SITRANS P320/P420 / Technical reference

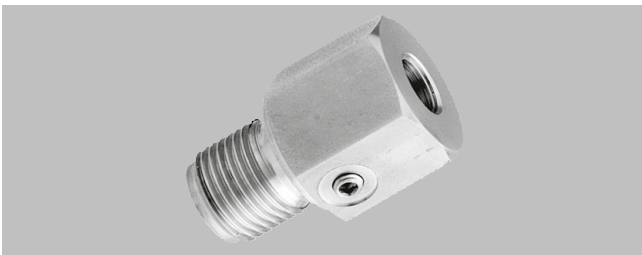
#### Design (continued)

- Flange design with diaphragm extension (tube) according to EN or ASME and secured using holes on the flange



Quick-release diaphragm seal

- Remote seal with quick release, e.g., according to DIN 11851, SMS Standard, IDF Standard, APV-RJF Standard, clamp connection, etc.
- Miniature remote seal with male thread for screwing into threaded holes
- Remote seal with customer-specific process connections

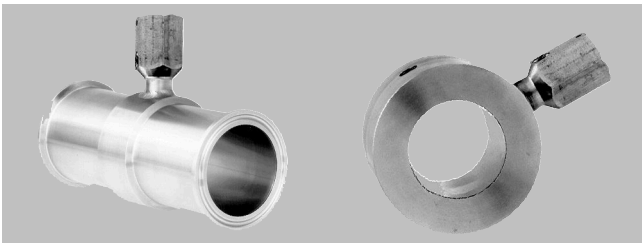


Miniature diaphragm seal with flush-mounted diaphragm

- Miniature diaphragm seal

Remote seals with quick release are used mainly in the food industry. Their design means that the medium cannot accumulate in dead volumes. The remote seal's quick release mechanism enables fast disassembly for cleaning.

#### Inline seal



Quick-release inline seal (left) and for flange mounting

With inline seals, the pressure is sensed using a cylindrical diaphragm inside the pipe and then transmitted with the filling liquid to the pressure transmitter.

#### Design (continued)

The inline seal is a special design for flowing media. It consists of a cylindrical pipe in which a cylindrical diaphragm is embedded. Because it is completely integrated in the process line, there are no turbulences, dead spaces or other obstacles in the flow direction. The inline seal is also piggable.

Inline seals are differentiated as follows:

- Quick-release inline seal, e.g., according to DIN 11851, SMS Standard, IDF Standard, APV/RJF Standard, clamp connection, etc. The remote seal's quick release mechanism enables fast disassembly for cleaning.
- Inline seal for flange mounting according to EN or ASME
- Inline seal with customer-specific process connections

#### **Note:**

The pressure information on the transmitter and the remote seal must be observed in accordance with the pressure-temperature relationship.

## Function

The measured pressure is transferred to the filling liquid by the diaphragm and enters the measuring chamber of the pressure transmitter through the capillary. The filling liquid completely fills the inside of the diaphragm seal, the capillary and the measuring chamber of the pressure transmitter so that it is free of gas.

### Transmission response

The transmission response of a remote seal is characterized by the following variables:

- Temperature error
- Adjustment time

### Temperature error

Temperature errors are caused by changes in the volume of the filling liquid as a result of temperature fluctuations. To select the right remote seal, you must calculate the temperature error.

Below is an overview of the factors which affect the extent of the temperature error, and information on how to calculate the temperature error.

The temperature error depends on the following variables:

- Rigidity of the diaphragm used
- Filling liquid used
- Effect of the filling liquid underneath the process flanges or in the connection shank of the pressure transmitter
- Inside diameter of the capillary: The greater the inside diameter, the greater the temperature error
- Capillary length: The longer the capillary, the greater the temperature error

### Diaphragm rigidity

The rigidity of the diaphragm is extremely important. The greater the diameter of the diaphragm, the softer the diaphragm and the more sensitive it is to temperature-induced changes in the volume of the filling liquid.

Large-diameter diaphragms are therefore always required for small measuring ranges.

Apart from diaphragm rigidity, the following factors are also important:

- Diaphragm thickness
- Diaphragm material
- Any coatings

### Filling liquid

Temperature fluctuations cause volume changes in all filling liquids. Choosing the right filling liquid can minimize the temperature error; however, the filling liquid must be appropriate for the temperature limits and operating pressure. The filling liquid must also be harmless to health.

There is filling liquid underneath the diaphragm, in the capillary and under the process flange of the pressure transmitter (or in the connection shank). The temperature error must therefore be calculated separately for each combination.

### Note:

A vacuum-resistant remote seal is recommended for continuous negative pressure operation at 500 mbar a or below, including during commissioning (see ordering data).

You can find an example of how to calculate the temperature error in "Technical specifications".

### Adjustment time

The adjustment time depends on the following factors:

- Inside diameter of the capillary: The greater the inside diameter, the shorter the adjustment time.
- Filling liquid viscosity: The greater the viscosity, the longer the adjustment time.
- Capillary length: The longer the capillary, the longer the adjustment time.
- Pressure in the pressure measurement system: The higher the pressure, the shorter the adjustment time.

### Recommendations

For the best possible pressure transmitter and remote seal combination, please note the following:

- Use a diameter as large as possible for the remote seal. This makes the effective diameter of the remote seal diaphragms larger and reduces the temperature error.
- Use a capillary as short as possible. This reduces the adjustment time and the temperature error.
- Use the filling liquid with the lowest viscosity and smallest coefficients of expansion. Make sure, however, that the filling liquid meets the high-pressure, low-pressure and temperature process requirements. The filling liquid and the medium must also be compatible.
- Please note the following points for operation in the negative pressure range:
  - The pressure transmitter must always be positioned below the lowest shank.
  - The operating range of some filling liquids may be extremely limited in terms of the permissible temperature of the medium.
  - A vacuum-resistant remote seal is required for continuous operation in the low-pressure range.
- You can find recommendations for the minimum measuring span in "Technical specifications".

### Note

The remote seals listed here are merely a selection of the most common remote seals. As there is a wide range of process connections, this list may not include all remote seals available.

Other versions may include:

- Different process connections and standards
- Aseptic or sterile screw glands
- Different dimensions
- Different nominal pressures
- Special diaphragm materials and coatings
- Different sealing surfaces
- Different filling liquids
- Different capillary lengths
- Capillary sheathed in protective tubing
- Calibration at higher/lower temperatures, etc.

**Please contact your local Siemens office for further information.**

### Negative pressure service

Filling liquids, such as silicone oils, inert or those suitable for food, are used in remote seal systems for transmission of the process pressure to the pressure transmitter.

## Pressure measurement

### Remote seals

#### for SITRANS P320/P420 / Technical reference

#### Function (continued)

In each liquid, particles have the tendency to leave the liquid compound with increasing temperature (transition from liquid to gaseous aggregate state). This means the vapor pressure increases with increasing temperature and is dependent on the substance or mixture present.

The higher the temperature and the lower the associated process pressure in the liquid, the more difficult it is to guarantee the desired transmission properties of the remote seal's filling liquid and therefore the measuring arrangement.

In addition, the sealing elements at the transmitter must be designed so that a diffusion of molecules from the atmosphere into the remote seal system is prevented due to the constantly occurring negative pressure.

In addition to the influencing variables process pressure and process temperature, the vapor pressure curve of the filling liquid at the remote seal end and the stiffness of the remote seal membrane impact the functionality of the remote seal in the negative pressure range.

This means you have to pay special attention to the physical properties of filling liquids with applications in the negative pressure range.

There are three stages for the negative pressure resistance:

- **Standard version** of the remote seal without additional protective measures, suitable for the overpressure range and low negative pressure range. This design is identified with (1) in the diagrams below.

- **Negative pressure service** with suitable seals and treated filling liquid, identified with (2) in the diagrams below. Here you select the order codes D81 or D83, depending on the mounting type.

- **Extended negative pressure service** with more extended treatment of the filling liquid and the remote seals, identified in the diagrams below with (3). Here you select the order codes D85 or D88, depending on the mounting type.

There are two more areas in the charts. The area (4) identifies an area that has to be clarified with Technical Support prior to placing the order. The area (5) describes the area in which the remote seal filling liquid is permanently destroyed and the entire remote seal is therefore without function.

#### Technical specifications of the remote seal filling liquids

Filling liquid	Reference in the article no.	Density at 20 °C (68 °F) [kg/dm <sup>3</sup> ]	Viscosity at 20 °C [mm <sup>2</sup> /s]	Suitable for negative pressure service	Suitable for extended negative pressure service
Silicone oil M5	A	0.914	4	x	-
Silicone oil M50	B	0.966	50	x	x
High-temperature oil	C	1.079	57	x	x
Halocarbon oil	D	1.968	14	x	-
Food oil (FDA-listed)	E	0.920	10	x	x
Neobee M20	R	0.921	10	x	x

The suitable negative pressure service is specified with the pressure/temperature curves of the respective liquids described below.

**Note:** For reasons of operational safety, the transmitter must not exceed the height of the remote seal - with differential pressure applications, the height of the bottom remote seal - for measurements in the negative pressure range. The associated mounting types B, C1, C2 or H are described at the end of this section under the topic "Measuring arrangements".

#### Selection of the required negative pressure service

The procedure for determining the required negative pressure service is described below using the silicone oil M5 as filling liquid. The minimum existing process pressure of a fictitious process is 200 mbar<sub>abs</sub> (2.9 psi) (at a maximum process temperature of 150 °C (302 °F). This

intersection is identified by an "X" in the chart below. This means the negative pressure service D81 or D83 (depending on the application) is sufficient in this example.

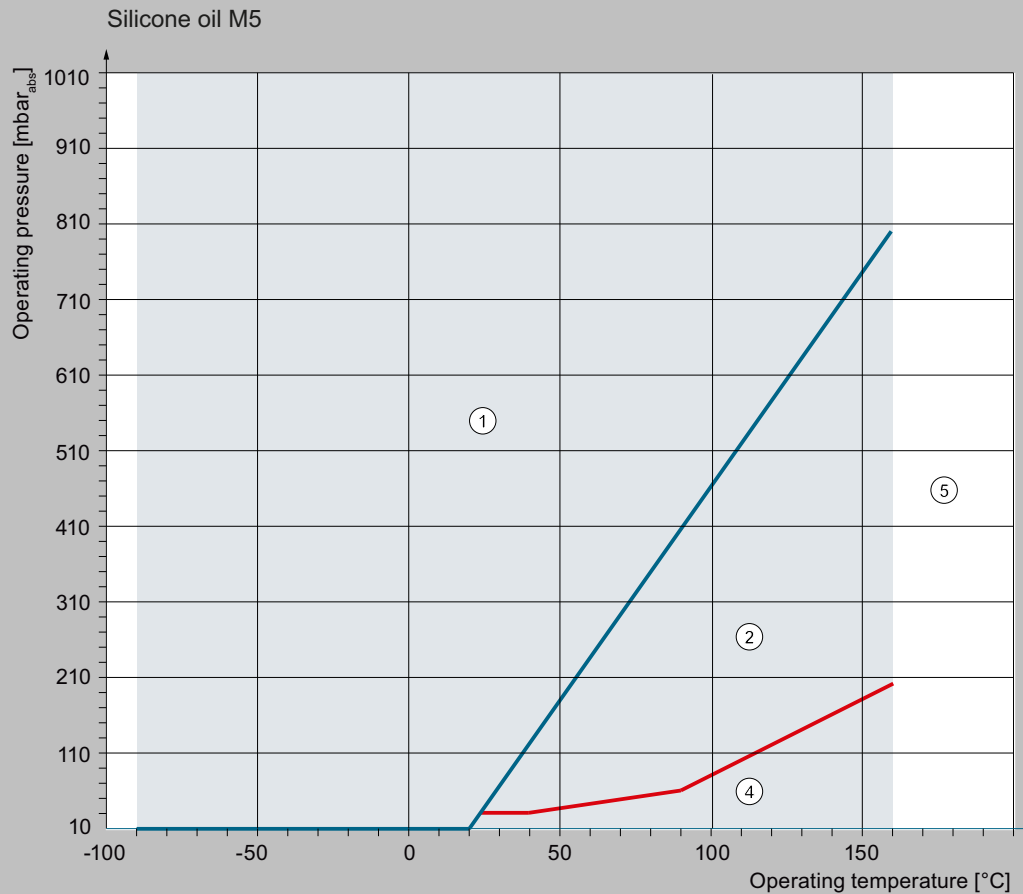
The suitable negative pressure resistance is determined this way for all other filling liquids also.

#### **Note:**

**Note the response times according to the table "Response times" (see Technical specifications).**



## Function (continued)



- ① Operating range of the standard remote seal design without special measures.
- ② Operating range for which the **negative pressure service D81 or D83** is required.  
Note: An extended negative pressure service is **not** possible for this fill fluid.
- ④ Please contact Technical Support for applications in this area.  
Detailed information regarding application, process and ambient data are necessary.
- ⑤ Area in which you have to expect the destruction of the fill fluid.  
A function of the remote seal is not specified here.

Permissible operating range:  
Max. temperature limit: 160 °C  
Min. temperature limit: -90 °C

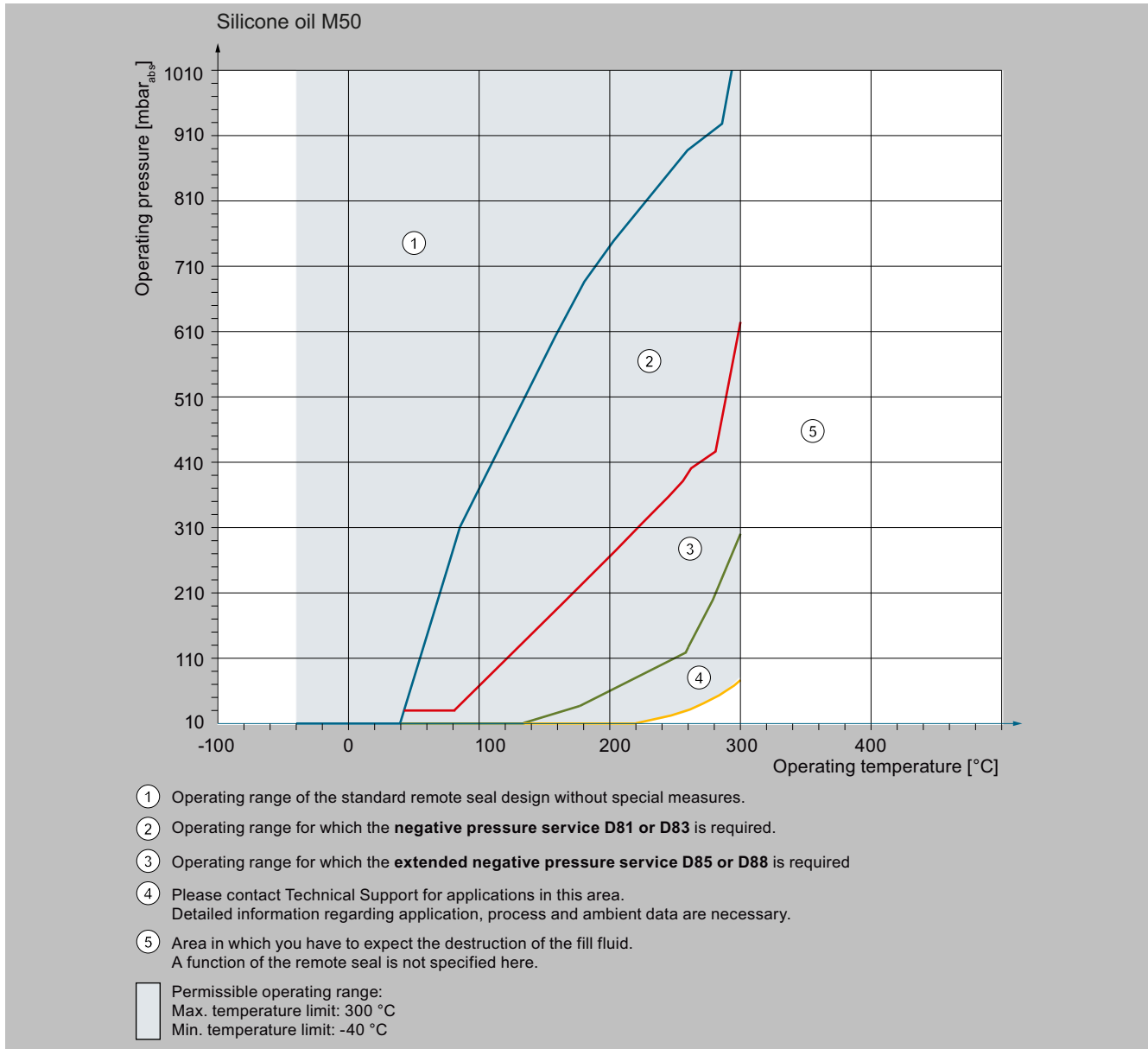
Negative pressure applications with silicone oil M5

# Pressure measurement

## Remote seals

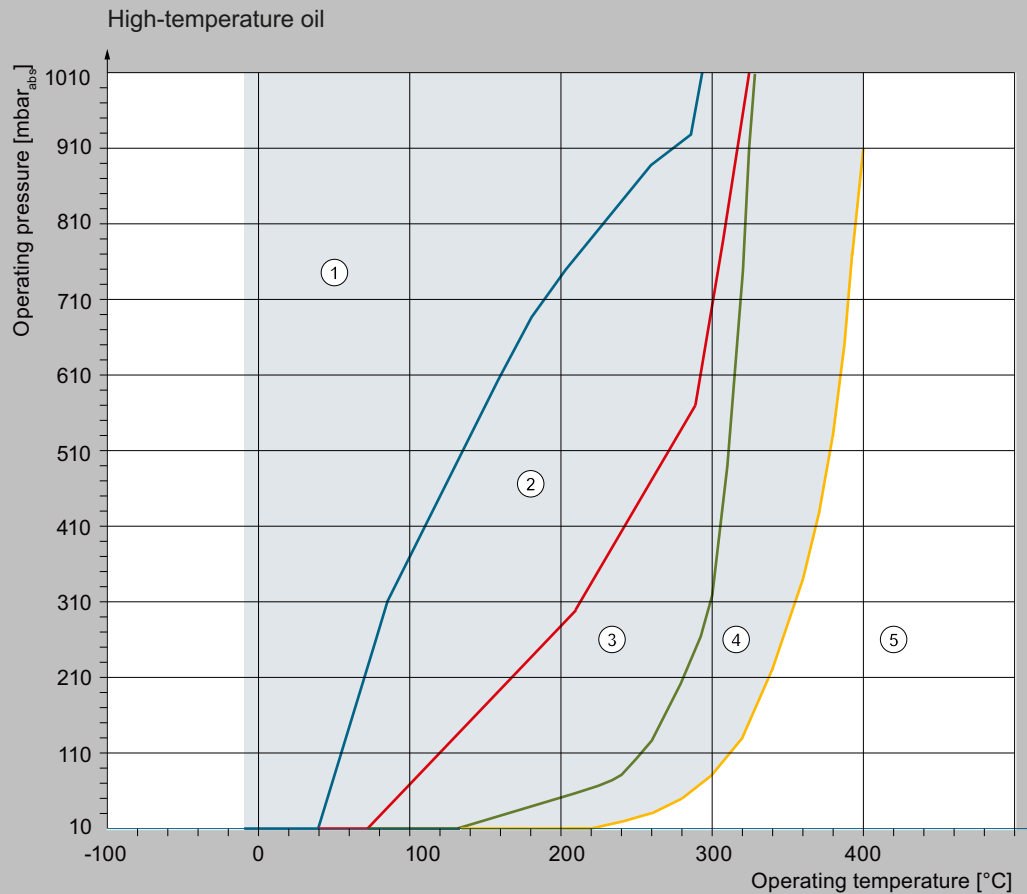
for SITRANS P320/P420 / Technical reference

### Function (continued)



Negative pressure applications with silicone oil M50

## Function (continued)



- ① Operating range of the standard remote seal design without special measures.
- ② Operating range for which the **negative pressure service D81 or D83** is required.
- ③ Operating range for which the **extended negative pressure service D85 or D88** is required
- ④ Please contact Technical Support for applications in this area.  
Detailed information regarding application, process and ambient data are necessary.
- ⑤ Area in which you have to expect the destruction of the fill fluid.  
A function of the remote seal is not specified here.

Permissible operating range:  
Max. temperature limit: 400 °C  
Min. temperature limit: -10 °C

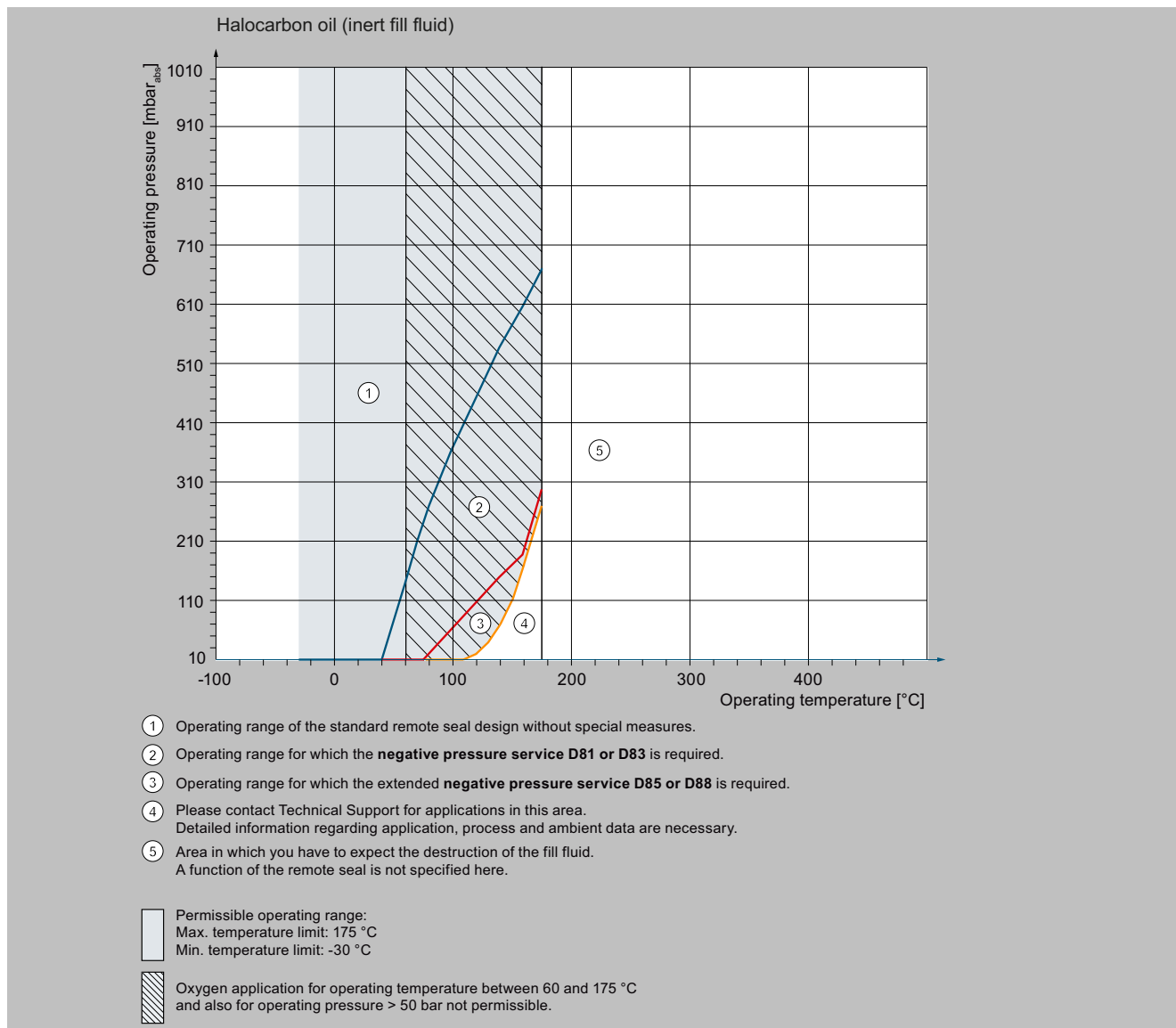
Negative pressure applications with high-temperature oil

## Pressure measurement

### Remote seals

for SITRANS P320/P420 / Technical reference

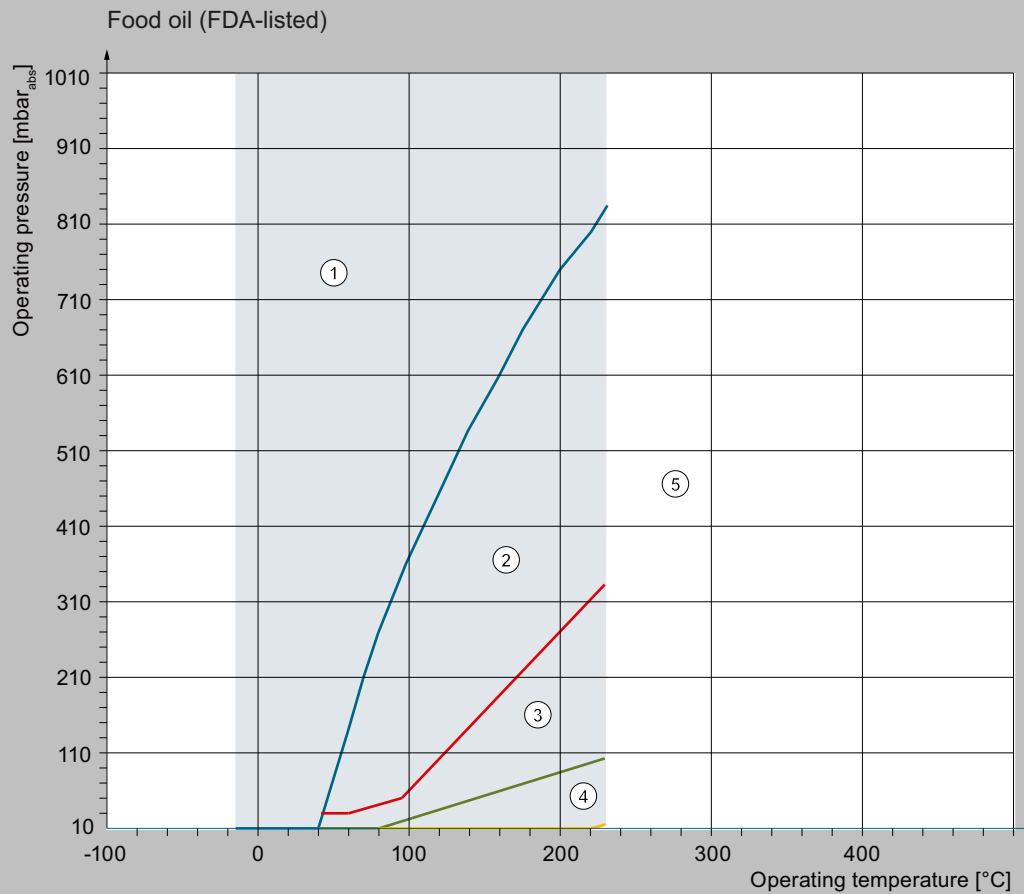
#### Function (continued)



Negative pressure applications with halocarbon oil (inert filling liquid)

A BAM approval for process temperatures up to 60 °C (140 °F) and system pressures up to 50 bar (725 psi) is available for the oxygen application.

## Function (continued)



- ① Operating range of the standard remote seal design without special measures.
- ② Operating range for which the **negative pressure service D81 or D83** is required.
- ③ Operating range for which the **extended negative pressure service D85 or D88** is required.
- ④ Please contact Technical Support for applications in this area. Detailed information regarding application, process and ambient data are necessary.
- ⑤ Area in which you have to expect the destruction of the fill fluid. A function of the remote seal is not specified here.

Permissible operating range:  
 Max. temperature limit: 230 °C  
 Min. temperature limit: -15 °C

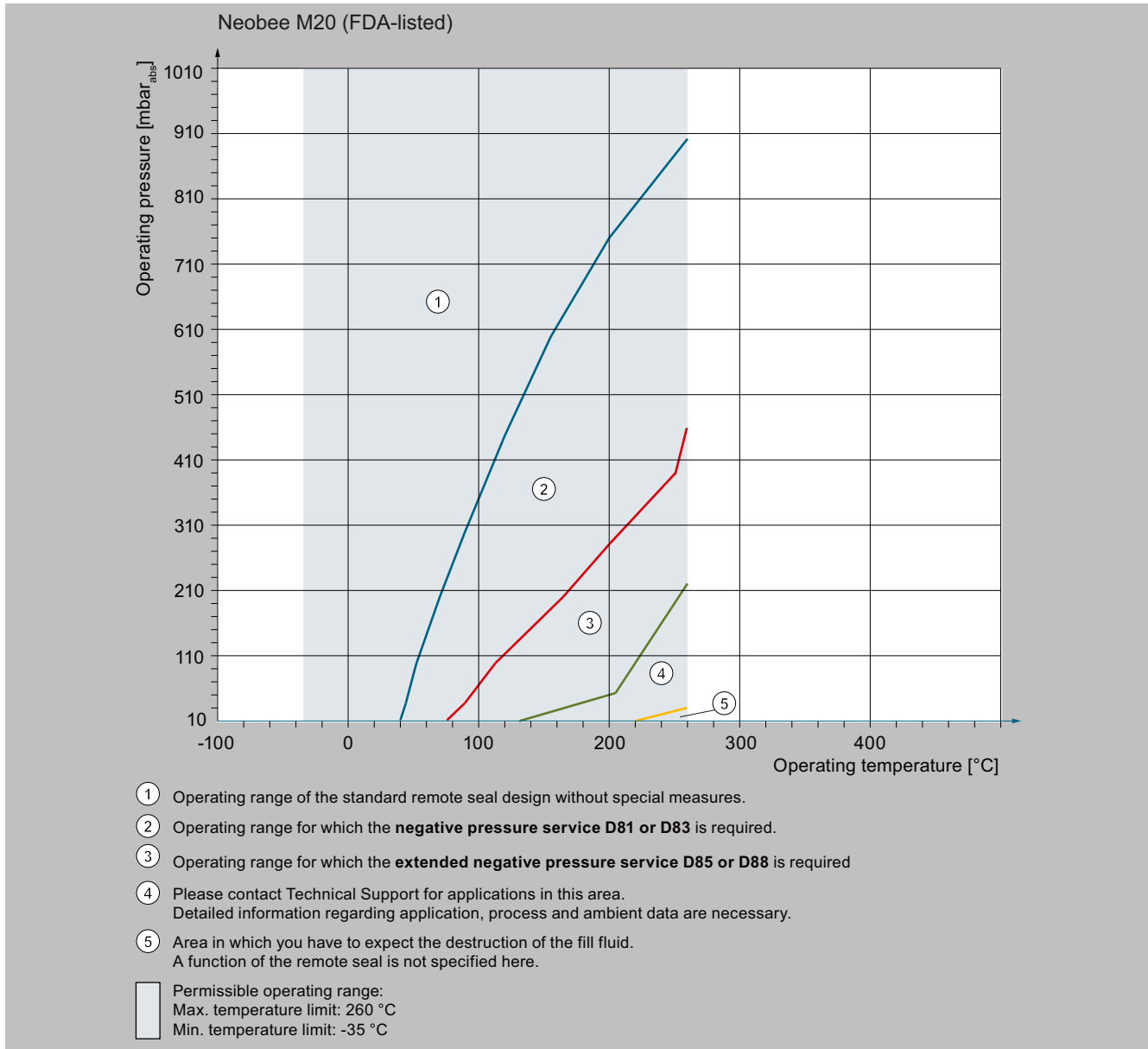
Negative pressure applications with food oil (FDA-listed)

# Pressure measurement

## Remote seals

for SITRANS P320/P420 / Technical reference

### Function (continued)



Negative pressure applications with Neobee M20 (FDA-listed)

## Technical specifications

### Diaphragm seal temperature error

Temperature errors of diaphragm seals when connected to pressure transmitters for gauge pressure, absolute pressure, differential pressure (single-sided) and level

#### Notes

Table values apply to:

- The filling liquids silicone oil M5, silicone oil M50, high-temperature oil, halocarbon oil and food oil (FDA listed), Neobee M20

- Diaphragm material stainless steel

With selected order code W01:

- The values listed in the table for "High-temperature oil" filling liquid and for the wetted parts made of stainless steel 316L, mat no. 1.4404/1.4435, apply.

- For the other filling liquids, the following supplements must be applied to the determined table values for the temperature errors<sup>1)</sup>:

- For "FDA oil": 5%
- For "Silicone oil M5": 35%
- For "Silicone oil M50": 35%
- For "Halocarbon oil": 20%
- For "Neobee M20": 20%

<sup>1)</sup> The specified surcharges for the various wetted parts are unaffected. They still need to be included in the calculation.

	Nominal diameter/design	Diaphragm diameter		Temperature error of remote seal $f_{RS}$		Temperature error of capillary $f_{Cap}$	
		mm	(inch)	mbar/10 K	(psi/10 K)	mbar/(10 K · $m_{Cap}$ )	(psi/(10 K · $m_{Cap}$ ))
Sandwich design or with flange according to EN 1092-1	DN 25 without tube	27	(1.06)	5	(0.073)	16	(0.232)
	DN 40 without tube	40	(1.57)	1.6	(0.023)	2.9	(0.042)
	DN 50 without tube	59	(2.32)	1.5	(0.022)	2	(0.029)
	DN 50 with tube	45	(1.89)	5	(0.073)	10	(0.145)
	DN 80 without tube	89	(3.50)	0.2	(0.003)	0.2	(0.003)
	DN 80 with tube	72	(2.83)	1	(0.015)	1	(1.015)
	DN 100 without tube	89	(3.50)	0.2	(0.003)	0.4	(0.006)
	DN 100 with tube	89	(3.50)	0.4	(0.006)	0.4	(0.006)
	DN 125 without tube	124	(4.88)	0.2	(0.003)	0.1	(0.002)
DN 125 with tube	124	(4.88)	0.2	(0.003)	0.1	(0.002)	
Sandwich design or with flange according to ASME B16.5	1 inch without tube	27	(1.06)	5	(0.073)	16	(0.232)
	1½ without tube	40	(1.57)	1.6	(0.023)	2.9	(0.042)
	2 inches without tube	59	(2.32)	1.5	(0.022)	2	(0.029)
	2 inches with tube	45	(1.89)	5	(0.073)	10	(0.145)
	3 inches without tube	89	(3.50)	0.2	(0.003)	0.2	(0.003)
	3 inches with tube	72	(2.83)	1	(0.015)	1	(1.015)
	4 inches without tube	89	(3.50)	0.2	(0.003)	0.4	(0.006)
	4 inches with tube	89	(3.50)	0.4	(0.006)	0.4	(0.006)
	5 inches without tube	124	(4.88)	0.2	(0.003)	0.1	(0.002)
5 inches with tube	124	(4.88)	0.2	(0.003)	0.1	(0.002)	
Remote seal with union nut according to DIN 11851	DN 25	25	(0.98)	20	(0.290)	60	(0.870)
	DN 32	32	(1.26)	8	(0.116)	25	(0.363)
	DN 40	40	(1.57)	4	(0.058)	10	(0.145)
	DN 50	52	(2.05)	4	(0.058)	5	(0.073)
	DN 65	59	(2.32)	3	(0.044)	4	(0.058)
	DN 80	72	(2.83)	1	(0.015)	1	(0.015)
Remote seal, screw gland design	DN 50	52	(2.05)	4	(0.058)	5	(0.073)
Remote seal with screwed connector according to DIN 11851	DN 25	25	(0.98)	20	(0.290)	60	(0.870)
	DN 32	32	(1.26)	8	(0.116)	25	(0.363)
	DN 40	40	(1.57)	4	(0.058)	10	(0.145)
	DN 50	52	(2.05)	4	(0.058)	5	(0.073)
	DN 65	59	(2.32)	3	(0.044)	4	(0.058)
	DN 80	72	(2.83)	1	(0.015)	1	(0.015)
Clamp connection	1½ inches	32	(1.26)	8	(0.116)	25	(0.363)
	2 inches	40	(1.57)	4	(0.058)	10	(0.145)
	2½ inches	59	(2.32)	3	(0.044)	5	(0.073)

# Pressure measurement

## Remote seals

for SITRANS P320/P420 / Technical reference

### Technical specifications (continued)

	Nominal diameter/design	Diaphragm diameter		Temperature error of remote seal $f_{RS}$		Temperature error of capillary $f_{Cap}$	
		mm	(inch)	mbar/10 K	(psi/10 K)	mbar/(10 K · $m_{Cap}$ )	(psi/(10 K · $m_{Cap}$ ))
	3 inches	72	(2.83)	1	(0.015)	1	(0.015)
Miniature diaphragm seal	G1B	25	(0.98)	20	(0.290)	60	(0.870)
	G1½B	40	(1.57)	4	(0.058)	10	(0.145)
	G2B	52	(2.05)	4	(0.058)	5	(0.073)

	Nominal diameter/design	Diaphragm diameter		Temperature error of process flange/connection shank $f_{PF}$		Recommended min. measuring spans (guidance values, note temperature error)	
		mm	(inch)	mbar/10 K	(psi/10 K)	mbar	(psi)
Sandwich design or with flange according to EN 1092-1	DN 25 without tube	27	(1.06)	23.6	(0.342)	4000	(58)
	DN 40 without tube	40	(1.57)	4.3	(0.062)	1000	(14.5)
	DN 50 without tube	59	(2.32)	2	(0.029)	200	(2.90)
	DN 50 with tube	45	(1.89)	10	(0.145)	500	(7.25)
	DN 80 without tube	89	(3.50)	0.2	(0.003)	100	(1.45)
	DN 80 with tube	72	(2.83)	1	(1.015)	250	(3.63)
	DN 100 without tube	89	(3.50)	0.4	(0.006)	100	(1.45)
	DN 100 with tube	89	(3.50)	0.4	(0.006)	100	(1.45)
	DN 125 without tube	124	(4.88)	0.1	(0.002)	20	(0.29)
DN 125 with tube	124	(4.88)	0.1	(0.002)	20	(0.29)	
Sandwich design or with flange according to ASME B16.5	1 inch without tube	27	(1.06)	23.6	(0.342)	4000	(58)
	1½ without tube	40	(1.57)	4.3	(0.062)	1000	(14.5)
	2 inches without tube	59	(2.32)	2	(0.029)	200	(2.90)
	2 inches with tube	45	(1.89)	10	(0.145)	500	(7.25)
	3 inches without tube	89	(3.50)	0.2	(0.003)	100	(1.45)
	3 inches with tube	72	(2.83)	1	(1.015)	250	(3.63)
	4 inches without tube	89	(3.50)	0.4	(0.006)	100	(1.45)
	4 inches with tube	89	(3.50)	0.4	(0.006)	100	(1.45)
	5 inches without tube	124	(4.88)	0.1	(0.002)	20	(0.29)
5 inches with tube	124	(4.88)	0.1	(0.002)	20	(0.29)	
Remote seal with union nut according to DIN 11851	DN 25	25	(0.98)	60	(0.870)	6000	(87)
	DN 32	32	(1.26)	25	(0.363)	4000	(58)
	DN 40	40	(1.57)	10	(0.145)	2000	(29)
	DN 50	52	(2.05)	5	(0.073)	500	(7.25)
	DN 65	59	(2.32)	4	(0.058)	500	(7.25)
	DN 80	72	(2.83)	1	(0.015)	250	(3.63)
Remote seal, screw gland design	DN 50	52	(2.05)	5	(0.073)	500	(7.25)
Remote seal with screwed connector according to DIN 11851	DN 25	25	(0.98)	60	(0.870)	6000	(87)
	DN 32	32	(1.26)	25	(0.363)	4000	(58)
	DN 40	40	(1.57)	10	(0.145)	2000	(29)
	DN 50	52	(2.05)	5	(0.073)	500	(7.25)
	DN 65	59	(2.32)	4	(0.058)	500	(7.25)
	DN 80	72	(2.83)	1	(0.015)	250	(3.63)
Clamp connection	1½ inches	32	(1.26)	25	(0.363)	4000	(58)
	2 inches	40	(1.57)	10	(0.145)	2000	(29)
	2½ inches	59	(2.32)	5	(0.073)	500	(7.25)
	3 inches	72	(2.83)	1	(0.015)	250	(3.63)
Miniature diaphragm seal	G1B	25	(0.98)	60	(0.870)	6000	(87)
	G1½B	40	(1.57)	10	(0.145)	2000	(29)
	G2B	52	(2.05)	5	(0.073)	500	(7.25)



## Technical specifications (continued)

**Temperature errors of diaphragm seals with connection to differential pressure transmitters (double-sided)**

## Notes

Table values apply to:

- The filling liquids silicone oil M5, silicone oil M50, high-temperature oil, halocarbon oil and food oil (FDA listed), Neobee M20

- Diaphragm material stainless steel

With selected order code W01:

- The values listed in the table for "High-temperature oil" filling liquid and for the wetted parts made of stainless steel 316L, mat no. 1.4404/1.4435, apply.

- For the other filling liquids, the following supplements must be applied to the determined table values for the temperature errors<sup>1)</sup>:

- For "FDA oil": 5%

- For "Silicone oil M5": 35%

- For "Silicone oil M50": 35%

- For "Halocarbon oil": 20%

- For "Neobee M20": 20%

<sup>1)</sup> The specified surcharges for the various wetted parts are unaffected. They still need to be included in the calculation.

	Nominal diameter/design	Diaphragm diameter		Temperature error of remote seal $f_{RS}$		Temperature error of capillary $f_{Cap}$	
		mm	(inch)	mbar/10 K	(psi/10 K)	mbar/(10 K · $m_{Cap}$ )	(psi/(10 K · $m_{Cap}$ ))
Sandwich design or with flange according to EN 1092-1	DN 40 without tube	40	(1.57)	0.2	(0.003)	0.4	(0.006)
	DN 50 without tube	59	(2.32)	0.3	(0.0043)	0.3	(0.0045)
	DN 50 with tube	45	(1.89)	1.26	(0.018)	1.7	(0.025)
	DN 80 without tube	89	(3.50)	0.05	(0.001)	0.05	(0.001)
	DN 80 with tube	72	(2.83)	0.24	(0.004)	0.17	(0.003)
	DN 100 without tube	89	(3.50)	0.05	(0.001)	0.07	(0.001)
	DN 100 with tube	89	(3.50)	0.1	(0.002)	0.07	(0.001)
	DN 125 without tube	124	(4.88)	0.05	(0.001)	0.03	(0.0004)
	DN 125 with tube	124	(4.88)	0.05	(0.001)	0.03	(0.0004)
Sandwich design with flange according to ASME B16.5	1½ without tube	40	(1.57)	0.2	(0.003)	0.4	(0.006)
	2 inches without tube	59	(2.32)	0.3	(0.0043)	0.3	(0.0043)
	2 inches with tube	45	(1.89)	1.26	(0.018)	1.7	(0.025)
	3 inches without tube	89	(3.50)	0.05	(0.001)	0.05	(0.0007)
	3 inches with tube	72	(2.83)	0.24	(0.004)	0.17	(0.003)
	4 inches without tube	89	(3.50)	0.05	(0.001)	0.07	(0.001)
	4 inches with tube	89	(3.50)	0.1	(0.002)	0.07	(0.001)
	5 inches without tube	124	(4.88)	0.05	(0.001)	0.03	(0.0004)
	5 inches with tube	124	(4.88)	0.05	(0.001)	0.03	(0.0004)
Remote seal, screw gland design	DN 50	52	(2.05)	1	(0.015)	0.83	(0.012)
Remote seal with union nut according to DIN 11851	DN 50	52	(2.05)	1	(0.015)	0.83	(0.012)
	DN 65	59	(2.32)	0.7	(0.010)	0.67	(0.010)
	DN 80	72	(2.83)	0.24	(0.004)	0.17	(0.003)
Remote seal with screwed connector according to DIN 11851	DN 50	52	(2.05)	1	(0.015)	0.83	(0.012)
	DN 65	59	(2.32)	0.7	(0.010)	0.67	(0.010)
	DN 80	72	(2.83)	0.24	(0.004)	0.17	(0.003)
Clamp connection	2 inches	40	(1.57)	1	(0.015)	2.5	(0.036)
	2½ inches	59	(2.32)	0.7	(0.010)	0.67	(0.010)
	3 inches	72	(2.83)	0.24	(0.004)	0.17	(0.003)

	Nominal diameter/design	Diaphragm diameter		Temperature error of process flange/connection shank $f_{PF}$		Recommended min. measuring spans (guidance values, note temperature error)	
		mm	(inch)	mbar/10 K	(psi/10 K)	mbar	(psi)
Sandwich design or with flange according to EN 1092-1	DN 40 without tube	40	(1.57)	0.4	(0.006)	1600	(23.2)
	DN 50 without tube	59	(2.32)	0.3	(0.0045)	250	(3.626)
	DN 50 with tube	45	(1.89)	1.7	(0.025)	250	(3.626)
	DN 80 without tube	89	(3.50)	0.05	(0.0007)	50	(0.725)
	DN 80 with tube	72	(2.83)	0.17	(0.003)	100	(1.45)
	DN 100 without tube	89	(3.50)	0.07	(0.001)	50	(0.725)
	DN 100 with tube	89	(3.50)	0.07	(0.001)	50	(0.725)
	DN 125 without tube	124	(4.88)	0.03	(0.0004)	20	(0.29)
	DN 125 with tube	124	(4.88)	0.03	(0.0004)	20	(0.29)

# Pressure measurement

## Remote seals

### for SITRANS P320/P420 / Technical reference

#### Technical specifications (continued)

	Nominal diameter/design	Diaphragm diameter		Temperature error of process flange/connection shank $f_{PF}$		Recommended min. measuring spans (guidance values, note temperature error)	
		mm	(inch)	mbar/10 K	(psi/10 K)	mbar	(psi)
Sandwich design with flange according to ASME B16.5	1½ without tube	40	(1.57)	0.4	(0.006)	1600	(23.2)
	2 inches without tube	59	(2.32)	0.3	(0.0045)	250	(3.626)
	2 inches with tube	45	(1.89)	1.7	(0.025)	250	(3.626)
	3 inches without tube	89	(3.50)	0.05	(0.0007)	50	(0.725)
	3 inches with tube	72	(2.83)	0.17	(0.003)	100	(1.45)
	4 inches without tube	89	(3.50)	0.07	(0.001)	50	(0.725)
	4 inches with tube	89	(3.50)	0.07	(0.001)	50	(0.725)
	5 inches without tube	124	(4.88)	0.03	(0.0004)	20	(0.29)
	5 inches with tube	124	(4.88)	0.03	(0.0004)	20	(0.29)
Remote seal, screw gland design	DN 50	52	(2.05)	0.83	(0.012)	250	(3.626)
Remote seal with union nut according to DIN 11851	DN 50	52	(2.05)	0.83	(0.012)	250	(3.626)
	DN 65	59	(2.32)	0.67	(0.010)	250	(3.626)
	DN 80	72	(2.83)	0.17	(0.003)	100	(1.450)
Remote seal with screwed connector according to DIN 11851	DN 50	52	(2.05)	0.83	(0.012)	250	(3.626)
	DN 65	59	(2.32)	0.67	(0.010)	250	(3.626)
	DN 80	72	(2.83)	0.17	(0.003)	100	(1.450)
Clamp connection	2 inches	40	(1.57)	2.5	(0.036)	2000	(29.01)
	2½ inches	59	(2.32)	0.67	(0.010)	250	(3.626)
	3 inches	72	(2.83)	0.17	(0.003)	100	(1.450)

#### Inline seal temperature errors

##### Notes

Table values apply to:

- The filling liquids silicone oil M5, silicone oil M50, high-temperature oil, halocarbon oil and food oil (FDA listed), Neobee M20
- Diaphragm material stainless steel

- Half the values apply to glycerin/water mixture as filling liquid

Diaphragm thickness:

- 0.05 mm (0.002 inches) for DN 25/DN 40/DN 50
- 0.1 mm (0.004 inches) for DN 80/DN 100

#### Temperature errors of inline seals for flange-mounting 7MF0900 for one-sided mounting

Nominal diameter/design	Process error		Transmitter error		Remote line error		Minimum measuring span	
	mbar/10 K	(psi/10 K)	mbar/10 K	(psi/10 K)	mbar/10 K	(psi/10 K)	mbar	(psi)
DN 25 (1 inch)	8.0	(0.116)	12.0	(0.174)	Not possible	Not possible	3000	(43.5)
DN 40 (1½ inches)	10.0	(0.145)	9.5	(0.138)	8.0	(0.116)	3000	(43.5)
DN 50 (2 inches)	12.0	(0.174)	9.0	(0.131)	19.0	(0.276)	3000	(43.5)
DN 80 (3 inches)	9.5	(0.138)	5.0	(0.073)	10.5	(0.152)	2000	(29)
DN 100 (4 inches)	16.0	(0.232)	7.0	(0.102)	16.0	(0.232)	3000	(43.5)

#### Temperature errors of inline seals for flange-mounting 7MF0902 for two-sided mounting

Nominal diameter/design	Process error		Transmitter error		Remote line error		Minimum measuring span	
	mbar/10 K	(psi/10 K)	mbar/10 K	(psi/10 K)	mbar/10 K	(psi/10 K)	mbar	(psi)
DN 25 (1 inch)	Not possible	Not possible	Not possible	Not possible	Not possible	Not possible	Not possible	Not possible
DN 40 (1½ inches)	10.0	(0.145)	9.5	(0.138)	7.5	(0.109)	600	(8.7)
DN 50 (2 inches)	13.5	(0.196)	12.5	(0.181)	19.0	(0.276)	600	(8.7)
DN 80 (3 inches)	11.0	(0.160)	12.5	(0.181)	10.5	(0.152)	600	(8.7)
DN 100 (4 inches)	14.0	(0.203)	9.0	(0.131)	14.0	(0.203)	3000	(43.5)

#### Temperature errors of quick-release inline seals 7MF0930 for one-sided mounting

Nominal diameter/design	Process error		Transmitter error		Remote line error		Minimum measuring span	
	mbar/10 K	(psi/10 K)	mbar/10 K	(psi/10 K)	mbar/10 K	(psi/10 K)	mbar	(psi)
DN 25 (1 inch)	30.0	(0.435)	23.0	(0.334)	13.0	(0.189)	6000	(87)
DN 32 (1¼ inches)	9.0	(0.131)	5.0	(0.073)	16.5	(0.239)	3000	(43.5)
DN 40 (1½ inches)	3.0	(0.044)	1.5	(0.022)	4.0	(0.058)	2000	(29)
DN 50 (2 inches)	4.0	(0.058)	1.0	(0.015)	3.0	(0.044)	2000	(29)
DN 65 (2½ inches)	5.5	(0.080)	2.0	(0.029)	6.0	(0.087)	2000	(29)

## Technical specifications (continued)

### Calculation of the temperature error

The following equation is used to calculate the temperature error:

$$dp = (\vartheta_{RS} - \vartheta_{Cal}) \cdot f_{RS} + (\vartheta_{Cap} - \vartheta_{Cal}) \cdot l_{Cap} \cdot f_{Cap} + (\vartheta_{MU} - \vartheta_{Cal}) \cdot f_{PF}$$

#### Legend:

dp	Additional temperature error (mbar)
$\vartheta_{RS}$	Temperature on remote seal diaphragm (generally corresponds to temperature of medium)
$\vartheta_{Cal}$	Calibration/reference temperature (20 °C (68 °F))
$f_{DM}$	Temperature error of remote seal
$f_{Cap}$	Ambient temperature on the capillaries
$l_{Cap}$	Capillary length
$f_{Cap}$	Temperature error of capillaries
$\vartheta_{TR}$	Ambient temperature on pressure transmitter
$f_{PF}$	Temperature error of the oil filling in the process flanges of the pressure transmitter

### Example of temperature error calculation

#### What are you looking for?

We are looking for an additional temperature error of the remote seals (**dp**).

#### Prevailing values:

SITRANS P pressure transmitter for differential pressure, 250 mbar, set to 0 ... 100 mbar, with DN 100 diaphragm seals without tube, diaphragm made of stainless steel, mat. no. 1.4404/316L	$f_{DM} = 0.05 \text{ mbar}/10 \text{ K (0.039 inH}_2\text{O}/10 \text{ K)}$
Capillary length	$l_{Cap} = 6 \text{ m (19.7 ft)}$
Capillaries fitted on both sides	$f_{Cap} = 0.07 \text{ mbar}/(10 \text{ K} \cdot m_{Cap}) \cdot 0.028 \text{ inH}_2\text{O}/(10 \text{ K} \cdot m_{Cap})$
Filling liquid silicone oil M5	$f_{PF} = 0.07 \text{ mbar}/10 \text{ K (0.028 inH}_2\text{O}/10 \text{ K)}$
Medium temperature	$\vartheta_{DM} = 100 \text{ °C (212 °F)}$
Temperature on the capillaries	$\vartheta_{Cap} = 50 \text{ °C (122 °F)}$
Temperature on pressure transmitter	$\vartheta_{MU} = 50 \text{ °C (122 °F)}$
Calibration temperature	$\vartheta_{Cal} = 20 \text{ °C (68 °F)}$

#### Calculation in mbar:

$$dp = (100 \text{ °C} - 20 \text{ °C}) \cdot 0.05 \text{ mbar}/10 \text{ K} + (50 \text{ °C} - 20 \text{ °C}) \cdot 6 \text{ m} \cdot 0.07 \text{ mbar}/(10 \text{ K} \cdot \text{m}) + (50 \text{ °C} - 20 \text{ °C}) \cdot 0.07 \text{ mbar}/10 \text{ K}$$

#### Calculation in inH<sub>2</sub>O:

$$dp = (212 \text{ °F} - 68 \text{ °F}) \cdot 0.039 \text{ inH}_2\text{O}/10 \text{ K} + (112 \text{ °F} - 68 \text{ °F}) \cdot 19.7 \text{ ft} \cdot 0.028 \text{ inH}_2\text{O}/(10 \text{ K} \cdot 3.28 \text{ ft}) + (112 \text{ °F} - 68 \text{ °F}) \cdot (0.028 \text{ inH}_2\text{O}/10 \text{ K})$$

$$dp = 0.16 \text{ inH}_2\text{O} + 0.51 \text{ inH}_2\text{O} + 0.08 \text{ inH}_2\text{O}$$

#### Result:

$$dp = 1.87 \text{ mbar (0.75 inH}_2\text{O)}$$

(corresponds to 2.27% of set measuring span)

#### Note:

The determined temperature error only applies to the error resulting from connection of the remote seal.

The transmission response of the respective pressure transmitter is **not** taken into account here!

The transmission response must be calculated separately, and the resulting measuring error **added** to the temperature error determined above from connection of the remote seal.

#### Dependence of temperature error on diaphragm material

The temperature errors listed in the previous table are based on the use of stainless steel as the diaphragm material. If other diaphragm materials are used, the temperature errors change as follows:

Diaphragm material	Change in temperature error of remote seal
	<i>Increase in values by:</i>
Stainless steel, duplex, ...	See previous tables
Hastelloy C4, mat. no. 2.4610	50%
Hastelloy C276, mat. no. 2.4819	50%
Monel 400, mat. no. 2.4360	60%
Tantalum	50%
Titanium	50%
PTFE coating on stainless steel diaphragm	80%
ECTFE coating or PFA coating on stainless steel diaphragm	100%
Gold coating on stainless steel diaphragm	40%
Inconel	50%
Incoloy	50%

#### Maximum medium temperature

##### Note

When taking into account the maximum medium temperature, the application limits of the filling liquids and gaskets used as well as the pressure/temperature limits of the respective process connections must also be taken into consideration.

The following maximum medium temperatures apply depending on the material of wetted parts.

Material	Max. medium temperature	Min./max. Pressure
Stainless steel, mat. no. 1.4404/316L	400 °C (752 °F)	No restrictions
PTFE coating	200 °C (392 °F)	< 0 bar (0 psi); gauge pressure
	260 °C (500 °F)	0 bar (0 psi) ... 25 bar (363 psi); gauge pressure
	150 °C (302 °F)	25 bar (363 psi) ... 40 bar (580 psi); gauge pressure
	50 °C (302 °F)	40 bar (580 psi) ... 60 bar (870 psi); gauge pressure
ECTFE coating	150 °C (302 °F)	For pressures < 1 bar (14.5 psi) on request
PFA coating	200 °C (392 °F)	< 0 bar (0 psi); gauge pressure
	260 °C (500 °F)	0 bar (0 psi) ... 25 bar (363 psi); gauge pressure
	150 °C (302 °F)	25 bar (363 psi) ... 40 bar (580 psi); gauge pressure
	50 °C (302 °F)	40 bar (580 psi) ... 100 bar (1450 psi); gauge pressure

# Pressure measurement

## Remote seals

### for SITRANS P320/P420 / Technical reference

#### Technical specifications (continued)

Material	Max. medium temperature	Min./max. Pressure
Hastelloy C4, mat. no. 2.4610	400 °C (752 °F)	No restrictions
Hastelloy C276, mat. no. 2.4819	400 °C (752 °F)	No restrictions
Hastelloy C22, mat. no. 2.4602	400 °C (752 °F)	No restrictions
Monel 400, mat. no. 2.4360	400 °C (752 °F)	No restrictions
Tantalum	300 °C (572 °F) 150 °C (302 °F)	No restrictions No restrictions
Duplex, mat. no. 1.4462	250 °C (482 °F)	No restrictions
Titanium	150 °C (302 °F)	No restrictions
Inconel	400 °C (752 °F)	No restrictions
Incoloy	400 °C (752 °F)	No restrictions
Gold coating	400 °C (752 °F)	No restrictions

#### Maximum length of the capillary for diaphragm seals (guidance values)

Nominal diameter DN		Max. length of the capillary Diaphragm seal		Inline seal 7MF0900*		7MF0902*		7MF0930*	
		m	(ft)	m	(ft)	m	(ft)	m	(ft)
DN 25	(1")	2.5	(8.2)	Only direct mounting possible	Only direct mounting possible	Not possible	Not possible	1	(3.2)
DN 32	(1¼")	2.5	(8.2)	-	-	-	-	6	(19.7)
DN 40	(1½")	4	(13.1)	1.66	(5.5)	1	(3.2)	6	(19.7)
DN 50	(2")	6	(19.7)	4	(13.1)	4	(13.1)	6	(19.7)
DN 65	(2½")	8	(26.2)	-	-	-	-	6	(19.7)
DN 80	(3")	15	(49.1)	4	(13.1)	6	(19.7)	-	-
DN 100	(4")	15	(49.1)	4	(13.1)	4	(13.1)	-	-
DN 125	(5")	15	(49.1)	-	-	-	-	-	-

#### Response times

The response times specified in the following table (in seconds per meter length of the capillary) apply to a change in pressure which corresponds to the set measuring span.

The listed values must be multiplied by the respective length of the capillary, or with pressure transmitters for differential pressure and flow by the total length of both capillaries.

The response times are independent of the set measuring span within the range of the respective pressure transmitter. The response times are of insignificant importance for measuring spans above 10 bar (145 psi). The response times of the pressure transmitters are not considered in the table.

Filling liquid	Density		Temperature on capillary		Response time in s/m (s/ft) with max. measuring span of pressure transmitter					
	kg/dm <sup>3</sup>	(lb/in <sup>3</sup> )	°C	(°F)	250 mbar	(101 inH <sub>2</sub> O)	600 mbar	(241 inH <sub>2</sub> O)	1600 mbar	(643 inH <sub>2</sub> O)
Silicone oil M5	0.914	(0.033)	+60	(140)	0.06	(0.018)	0.02	(0.006)	0.01	(0.003)
			+20	(68)	0.11	(0.034)	0.02	(0.006)	0.02	(0.006)
			-20	(-4)	0.3	(0.091)	0.12	(0.037)	0.05	(0.015)
Silicone oil M50	0.966	(0.035)	+60	(140)	0.6	(0.183)	0.25	(0.076)	0.09	(0.027)
			+20	(68)	0.61	(0.186)	0.26	(0.079)	0.1	(0.030)
			-20	(-4)	1.69	(0.515)	0.71	(0.216)	0.27	(0.082)
High-temperature oil	1.070	(0.039)	+60	(140)	0.14	(0.043)	0.06	(0.018)	0.02	(0.006)
			+20	(68)	0.65	(0.198)	0.27	(0.082)	0.1	(0.030)
			-10	(14)	3.96	(1.207)	1.65	(0.503)	0.62	(0.189)
Halocarbon oil	1.968	(0.071)	+60	(140)	0.07	(0.021)	0.03	(0.009)	0.01	(0.003)
			+20	(68)	0.29	(0.088)	0.12	(0.037)	0.05	(0.015)
			-20	(-4)	2.88	(0.878)	1.2	(0.366)	0.45	(0.137)
Food oil (FDA-listed)	0.920	(0.033)	+60	(140)	0.75	(0.229)	0.33	(0.101)	0.17	(0.052)
			+20	(68)	4	(1.220)	1.75	(0.534)	0.67	(0.204)
			-20	(-4)	20	(6.100)	8.5	(2.593)	3.25	(0.991)
Neobee M20	0.920	(0.033)	+60	(140)	0.69	(0.210)	0.29	(0.884)	0.11	(0.034)
			+20	(68)	1.81	(0.552)	0.76	(0.232)	0.29	(0.088)
			-20	(-4)	6.46	(1.969)	2.71	(0.826)	1.04	(0.317)

See charts under "Function" for permissible data of filling liquid for pressure and temperatures.

## More information

### Specification of process conditions for selection and ordering data

#### Ambient temperature range

The standard remote seal systems are optimized for an ambient temperature range of -10 to +50 °C (14 to +122 °F). Therefore, in the ordering options, the **order code "D66"** is preset.

If the range of the ambient temperature deviates from this, you have the possibility to choose other ambient temperature ranges:

- With the **order code D67**, a range from -40 to +50 °C (-40 to +122 °F)
- With the **order code D68**, a range from -10 to +85 °C (14 to +185 °F)

In the case of a **special design**, which you can select with the **order option Y99** in the device settings, it is possible to enter the ambient temperature as a numerical value.

#### Process temperature

The standard optimization for the process temperature depends on the filling liquid used:

Filling liquid	Code	Optimized temperature range as standard
Silicone M50	B	-10 ... +200 °C (14 ... +392 °F)
High-temperature oil	C	-10 ... +300 °C (14 ... +572 °F)
Silicone oil M5	A	-40 ... +140 °C (-40 ... +284 °F)
Food oil (FDA-listed)	E	-10 ... +140 °C (14 ... +284 °F)
Halocarbon oil	D	-20 ... +60 °C (-4 ... +140 °F)
Neobee M20 (FDA-listed)	R	-10 ... +140 °C (14 ... +284 °F)

- If the **process temperatures** deviate from the temperature ranges mentioned in the table above, we ask you to send the process temperature with the **order code Y50** along with the order.
- If the remote seal has a small diameter (< DN 50/2") or a long capillary (> 4 m), we also ask you to provide the process data with the **following order code** when ordering.

These entries are transmitted and ensure the correct functioning of the remote seal systems.

	Order code
<b>Ambient temperature range</b>	
• -10 ... +50 °C (14 ... +122 °F) preset	<b>D66</b>
• -40 ... +50 °C (-40 ... +122 °F)	<b>D67</b>
• -10 ... +85 °C (14 ... +185 °F)	<b>D68</b>
<b>Process temperature min. ... °C/(°F)/max. ... °C/(°F)</b>	<b>Y50</b>

## Pressure measurement

### Remote seals

for SITRANS P320/P420 / Diaphragm seals in sandwich design with flexible capillary

#### Overview



Diaphragm seals in sandwich design

## Selection and ordering data

		Article No.	Order code
<b>Diaphragm seal</b>			
In sandwich design, connected with flexible capillary tube to a transmitter			
SITRANS P320/P420 or SITRANS P300 for gauge and absolute pressure (only in conjunction with underpressure service)		7MF0800-	
7MF03../7MF04../7MF802. to be ordered separately; scope of delivery: 1 unit			
SITRANS P320/P420 for absolute pressure from differential pressure		7MF0801-	
7MF03../7MF04.. order separately, scope of delivery: 1 unit			
SITRANS P320/P420 transmitter for differential pressure and flow		7MF0802-	
7MF03../7MF04.. order separately, scope of delivery: 2 units			
		● ● ● ● ● - 0 ● ● ● ● ● ● ● ●	
Click the article number for online configuration in the PIA Life Cycle Portal.			
<b>Nominal diameter</b>	<b>Nominal pressure</b>		
<u>Process connection standard EN 1092-1</u>			
(DN 25, DN 40 and DN 50 only recommended for pressure transmitters for gauge pressure)			
DN 25	PN 16 ... 400	0 B Q	
DN 40	PN 16 ... 400	0 D Q	
DN 50	PN 16 ... 400	0 E Q	
DN 65	PN 16 ... 400	0 F Q	
DN 80	PN 16 ... 400	0 G Q	
DN 100	PN 16 ... 400	0 H Q	
DN 125	PN 16 ... 400	0 J Q	
<u>Process connection standard ASME B16.5</u>			
(1 inch, 1½ inches and 2 inches only recommended for pressure transmitters for gauge pressure)			
1 inch	Class 150 ... 2500	1 K X	
1½ inches	Class 150 ... 2500	1 L X	
2 inches	Class 150 ... 2500	1 M X	
2½ inches	Class 150 ... 2500	1 N X	
3 inches	Class 150 ... 2500	1 P X	
4 inches	Class 150 ... 2500	1 Q X	
5 inches	Class 150 ... 2500	1 R X	
<u>Process connection standard J.I.S.</u>			
(DN 25, DN 40 and DN 50 only recommended for pressure transmitters for gauge pressure)			
DN 25	10K ... 63K	2 B W	
DN 40	10K ... 63K	2 D W	
DN 50	10K ... 63K	2 E W	
DN 65	10K ... 63K	2 F W	
DN 80	10K ... 63K	2 G W	
DN 100	10K ... 63K	2 H W	
DN 125	10K ... 63K	2 J W	
Other version, add order code and plain text		9 A A	H 1 Y
<b>Capillary length</b>			
1 m (38.37 inches)		1 0	
1.6 m (63 inches)		1 1	
2 m (78.7 inches)		1 2	
2.5 m (98.4 inches)		1 3	
3 m (118.1 inches)		1 4	
4 m (157.5 inches)		1 5	
5 m (196.9 inches)		1 6	
6 m (236.2 inches)		1 7	
7 m (275.6 inches)		1 8	
8 m (315 inches)		2 0	
9 m (354.3 inches)		2 1	
10 m (393.7 inches)		2 2	
11 m (433.1 inches); only for 7MF0802		2 3	
12 m (472.4 inches); only for 7MF0802		2 4	
13 m (511.811 inches); only for 7MF0802		2 5	
14 m (551.2 inches); only for 7MF0802		2 6	
15 m (590.6 inches); only for 7MF0802		2 7	
Other version, add order code and plain text		9 8	L 1 Y
<b>Filling liquid</b>			
Silicone oil M50			B
High-temperature oil			C

# Pressure measurement

## Remote seals

for SITRANS P320/P420 / Diaphragm seals in sandwich design with flexible capillary

### Selection and ordering data (continued)

	Article No.	Order code
<b>Diaphragm seal</b>		
In sandwich design, connected with flexible capillary tube to a transmitter		
SITRANS P320/P420 or SITRANS P300 for gauge and absolute pressure (only in conjunction with underpressure service)	7MF0800-	
7MF03../7MF04../7MF802. to be ordered separately; scope of delivery: 1 unit		
SITRANS P320/P420 for absolute pressure from differential pressure	7MF0801-	
7MF03../7MF04.. order separately, scope of delivery: 1 unit		
SITRANS P320/P420 transmitter for differential pressure and flow	7MF0802-	
7MF03../7MF04.. order separately, scope of delivery: 2 units		
	● ● ● ● ● - 0 ● ● ● ● ● ● ● ●	
Silicone oil M5		A
Food oil (FDA-listed)		E
Halocarbon oil		D
Neobee M20 (FDA listed)		R
Other version, add order code and plain text		Z P 1 Y
<b>Material of wetted parts</b>		
Stainless steel 316L		
• Without coating		A
• With PFA coating		D
• With PTFE coating		E 0
• With ECTFE coating		F
Monel 400, 2.4360		G
Hastelloy C276, 2.4819		J
Tantalum		K
Titanium, 3.7035		L 0
Nickel 201		M 0
Diaphragm Duplex, 1.4462		Q
Diaphragm and flange Duplex, 1.4462		R
Stainless steel 316L, gold-plated		S 0
Hastelloy C4, 2.4610		U 0
Hastelloy C22, 2.4602		V 0
Other version, add order code and plain text		Z 8 Q 1 Y
<b>Tube length</b>		
None		0
50 mm (2 inches)		1
100 mm (4 inches)		2
150 mm (6 inches)		3
200 mm (8 inches)		4
250 mm (10 inches)		5
Other version, add order code and plain text		Z 8 Q 1 Y
<b>Customer-specific tube length</b>		
<b>Wetted parts: Stainless steel without coating</b>		
<u>Range</u>	<u>Standard length</u>	
20 ... 50 mm (0.79 ... 1.97 inches)	50 mm (1.97 inches)	A 1
51 ... 100 mm (2.01 ... 3.94 inches)	100 mm (3.94 inches)	A 2
101 ... 150 mm (3.98 ... 5.91 inches)	150 mm (5.91 inches)	A 3
151 ... 200 mm (5.94 ... 7.87 inches)	200 mm (7.87 inches)	A 4
201 ... 250 mm (7.91 ... 9.84 inches)	250 mm (9.84 inches)	A 5
<b>Wetted parts: Stainless steel with ECTFE coating</b>		
<u>Range</u>	<u>Standard length</u>	
20 ... 50 mm (0.79 ... 1.97 inches)	50 mm (1.97 inches)	F 1
51 ... 100 mm (2.01 ... 3.94 inches)	100 mm (3.94 inches)	F 2
101 ... 150 mm (3.98 ... 5.91 inches)	150 mm (5.91 inches)	F 3
151 ... 200 mm (5.94 ... 7.87 inches)	200 mm (7.87 inches)	F 4
201 ... 250 mm (7.91 ... 9.84 inches)	250 mm (9.84 inches)	F 5
<b>Wetted parts: Stainless steel with PFA coating</b>		
<u>Range</u>	<u>Standard length</u>	
20 ... 50 mm (0.79 ... 1.97 inches)	50 mm (1.97 inches)	D 1



## for SITRANS P320/P420 / Diaphragm seals in sandwich design with flexible capillary

## Selection and ordering data (continued)

		Article No.	Order code
<b>Diaphragm seal</b>			
In sandwich design, connected with flexible capillary tube to a transmitter			
SITRANS P320/P420 or SITRANS P300 for gauge and absolute pressure (only in conjunction with underpressure service)		7MF0800-	
7MF03../7MF04../7MF802. to be ordered separately; scope of delivery: 1 unit			
SITRANS P320/P420 for absolute pressure from differential pressure		7MF0801-	
7MF03../7MF04.. order separately, scope of delivery: 1 unit			
SITRANS P320/P420 transmitter for differential pressure and flow		7MF0802-	
7MF03../7MF04.. order separately, scope of delivery: 2 units			
		● ● ● ● ● - 0 ● ● ● ● ● ● ● ●	
51 ... 100 mm (2.01 ... 3.94 inches)	100 mm (3.94 inches)		D 2
101 ... 150 mm (3.98 ... 5.91 inches)	150 mm (5.91 inches)		D 3
151 ... 200 mm (5.94 ... 7.87 inches)	200 mm (7.87 inches)		D 4
201 ... 250 mm (7.91 ... 9.84 inches)	250 mm (9.84 inches)		D 5
<b>Wetted parts: Monel 400</b>			
<b>Range</b>	<b>Standard length</b>		
20 ... 50 mm (0.79 ... 1.97 inches)	50 mm (1.97 inches)		G 1
51 ... 100 mm (2.01 ... 3.94 inches)	100 mm (3.94 inches)		G 2
101 ... 150 mm (3.98 ... 5.91 inches)	150 mm (5.91 inches)		G 3
151 ... 200 mm (5.94 ... 7.87 inches)	200 mm (7.87 inches)		G 4
<b>Wetted parts: Hastelloy C276</b>			
<b>Range</b>	<b>Standard length</b>		
20 ... 50 mm (0.79 ... 1.97 inches)	50 mm (1.97 inches)		J 1
51 ... 100 mm (2.01 ... 3.94 inches)	100 mm (3.94 inches)		J 2
101 ... 150 mm (3.98 ... 5.91 inches)	150 mm (5.91 inches)		J 3
151 ... 200 mm (5.94 ... 7.87 inches)	200 mm (7.87 inches)		J 4
<b>Wetted parts: Tantalum</b>			
<b>Range</b>	<b>Standard length</b>		
20 ... 50 mm (0.79 ... 1.97 inches)	50 mm (1.97 inches)		K 1
51 ... 100 mm (2.01 ... 3.94 inches)	100 mm (3.94 inches)		K 2
101 ... 150 mm (3.98 ... 5.91 inches)	150 mm (5.91 inches)		K 3
151 ... 200 mm (5.94 ... 7.87 inches)	200 mm (7.87 inches)		K 4

Options	Order code
<b>Add "-Z" to article number and specify order code.</b>	
<b>Factory certificates</b>	
Quality inspection certificate (5-point characteristic curve test) acc. to IEC 62828-2	C11
Inspection certificate to EN 10204-3.1 for material of body and diaphragm	C12
Manufacturer declaration acc. to NACE (MR 0103-2012 and MR 0175-2009) (only together with wetted parts made of stainless steel 316 L and Hastelloy)	C13
Inspection certificate according to EN 10204-3.1, PMI test of pressure containing and wetted parts	C15
Certificate of FDA-approved fill oil according to EN 10204-2.2	C17
Factory certificate functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511 (includes SIL Declaration of Conformity)	C20
<b>Accessories</b>	
Remote seal nameplate Attached, made of stainless steel, contains Article No. and order number of the remote seal	D42
Volume deflagration flame arrester (VDEF)	
• For gauge pressure and absolute pressure transmitters	D61
• For differential pressure and level transmitters	D62

Options	Order code
<b>Add "-Z" to article number and specify order code.</b>	
<b>Negative pressure service</b>	
Negative pressure service	
• For gauge pressure and absolute pressure transmitters	D81
• For differential pressure transmitters	D83
Extended negative pressure service	
• For gauge pressure and absolute pressure transmitters (only 7MF0800)	D85
• For differential pressure transmitters	D88
<b>Marine approvals</b>	
<b>Note:</b>	
If one of the order codes E50 to E60 is selected, the corresponding option must also be selected for the transmitter!	
DNV-GL (Det Norske Veritas/Germanischer Lloyd)	E50
LR (Lloyds Register)	E51
BV (Bureau Veritas)	E52
ABS (American Bureau of Shipping)	E53
RMR (Russian Maritime Register)	E55
KR (Korean Register of Shipping)	E56
RINA (Registro Italiano Navale)	E57
CCS (China Classification Society)	E58

## Pressure measurement

### Remote seals

#### for SITRANS P320/P420 / Diaphragm seals in sandwich design with flexible capillary

#### Selection and ordering data (continued)

Options Add "-Z" to article number and specify order code.	Order code
<b>Country-specific approval</b>	
CRN approval Canada (Canadian Registration Number)	E60
<b>General product approvals without explosion proof approvals</b>	
Oil-free and grease-free cleaned version for oxygen application including certificate EN 10204-2.2 (only with filling liquid halocarbon oil max. temperature 60 °C and max. pressure 50 bar)	E80
Oil-free and grease-free cleaned version not for oxygen application, including certificate EN 10204-2.2	E87
<b>Sealing surface</b>	
Sealing surface smooth, form B2/EN 1092-1 resp. RFSF/ANSI 16.5 (for wetted parts made of stainless steel 316L only)	M50
Sealing surface groove according to EN 1092-1, form D (instead of sealing surface B1, only for wetted parts made of stainless steel 316L)	M54
Sealing surface RJF (groove) according to ASME B16.5 (instead of sealing surface RF 125 ... 250AO, only for wetted parts made of stainless steel 316L)	M64
Sealing surface with tongue to EN 1092-1, form C (for wetted parts made of stainless steel 316L only)	
• DN 25	M70
• DN 40	M71
• DN 50	M72
• DN 80	M73
• DN 100	M74
• DN 125	M75
Sealing surface with spigot according to EN 1092-1, form E (for wetted parts made of stainless steel 316L only)	
• DN 25	M76
• DN 40	M77
• DN 50	M78
• DN 80	M79
• DN 100	M80
• DN 125	M81
Sealing surface female face according to EN 1092-1, form F (only for wetted parts made of stainless steel 316L)	
• DN 25	M82
• DN 40	M83
• DN 50	M84
• DN 80	M85
• DN 100	M86
• DN 125	M87
<b>Capillary connection</b> (Only for 7MF0800)	
Single-side mounted at differential pressure transmitter at high side	S03
Single-side mounted at differential pressure transmitter at low side	S04
<b>Capillary coating</b>	
PE protective tube	
• 1 m (38.37 inches)	S10

Options Add "-Z" to article number and specify order code.	Order code
• 1.6 m (63 inches)	S11
• 2 m (78.7 inches)	S12
• 2.5 m (98.4 inches)	S13
• 3 m (118.1 inches)	S14
• 4 m (157.5 inches)	S15
• 5 m (196.9 inches)	S16
• 6 m (236.2 inches)	S17
• 7 m (275.6 inches)	S18
• 8 m (315 inches)	S19
• 9 m (354.3 inches)	S20
• 10 m (393.7 inches)	S21
• 11 m (433.1 inches); only for 7MF0802	S22
• 12 m (472.4 inches); only for 7MF0802	S23
• 13 m (511.811 inches); only for 7MF0802	S24
• 14 m (551.2 inches); only for 7MF0802	S25
• 15 m (590.6 inches); only for 7MF0802	S26
PTFE protective tube	
• 1 m (38.37 inches)	S40
• 1.6 m (63 inches)	S41
• 2 m (78.7 inches)	S42
• 2.5 m (98.4 inches)	S43
• 3 m (118.1 inches)	S44
• 4 m (157.5 inches)	S45
• 5 m (196.9 inches)	S46
• 6 m (236.2 inches)	S47
• 7 m (275.6 inches)	S48
• 8 m (315 inches)	S49
• 9 m (354.3 inches)	S50
• 10 m (393.7 inches)	S51
• 11 m (433.1 inches); only for 7MF0802	S52
• 12 m (472.4 inches); only for 7MF0802	S53
• 13 m (511.811 inches); only for 7MF0802	S54
• 14 m (551.2 inches); only for 7MF0802	S55
• 15 m (590.6 inches); only for 7MF0802	S56
PVC protective tube	
• 1 m (38.37 inches)	S70
• 1.6 m (63 inches)	S71
• 2 m (78.7 inches)	S72
• 2.5 m (98.4 inches)	S73
• 3 m (118.1 inches)	S74
• 4 m (157.5 inches)	S75
• 5 m (196.9 inches)	S76
• 6 m (236.2 inches)	S77
• 7 m (275.6 inches)	S78
• 8 m (315 inches)	S79

## for SITRANS P320/P420 / Diaphragm seals in sandwich design with flexible capillary

## Selection and ordering data (continued)

Options	Order code
<b>Add "-Z" to article number and specify order code.</b>	
• 9 m (354.3 inches)	<b>S80</b>
• 10 m (393.7 inches)	<b>S81</b>
• 11 m (433.1 inches); only for 7MF0802	<b>S82</b>
• 12 m (472.4 inches); only for 7MF0802	<b>S83</b>
• 13 m (511.811 inches); only for 7MF0802	<b>S84</b>
• 14 m (551.2 inches); only for 7MF0802	<b>S85</b>
• 15 m (590.6 inches); only for 7MF0802	<b>S86</b>
<b>Desired remote seal supplier</b>	
<b>Note:</b>	
If the remote seal is to be supplied only by one of the suppliers specified below, this option needs to be selected. For orders without this option, the remote seal supplier is selected through the dispatch center.	
Company WIKA, Klingenberg	<b>W01</b>
Company Labom, Hude	<b>W02</b>

Options	Order code
<b>Add "-Z" to article number and specify order code.</b>	
<b>Special design</b>	
Welded filling hole	<b>X01</b>
<b>Customer-specific tube length</b>	
Customer-specific tube length (specify in plain text in mm)	<b>Y44</b>
<b>Specification of process conditions<sup>1)</sup></b>	
Ambient temperature range	
• +10 ... +50 °C (+50 ... +122 °F) preset	<b>D66</b>
• -40 ... +50 °C (-40 ... +122 °F)	<b>D67</b>
• -10 ... +85 °C (+14 ... +185 °F)	<b>D68</b>
Process temperature min. ... °C/(°F)/max. ... °C/(°F)	<b>Y50</b>

<sup>1)</sup> See also "Specification of process conditions for selection and ordering data" in the section "More information" under "Technical reference" for SITRANS P320/P420.

# Pressure measurement

## Remote seals

### for SITRANS P320/P420 / Diaphragm seals in sandwich design with flexible capillary

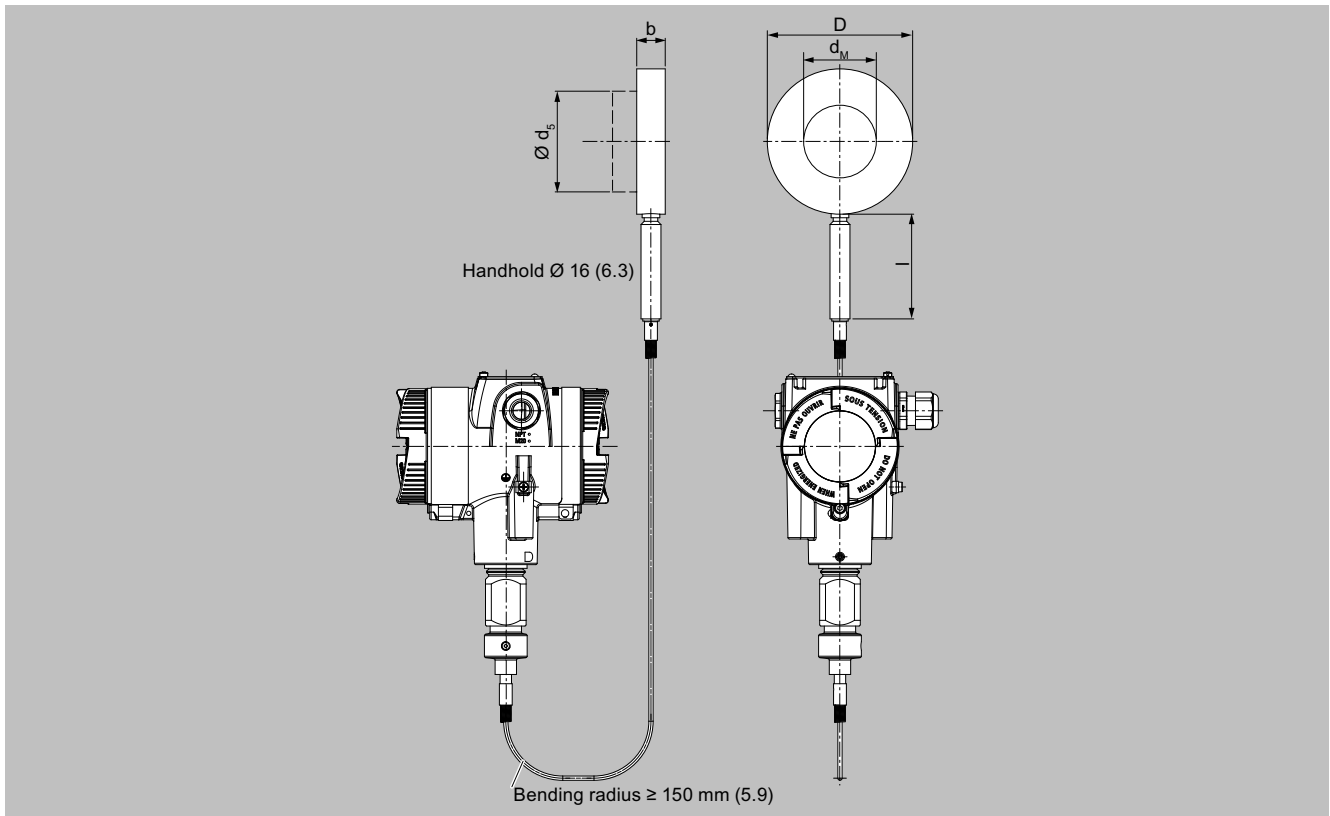
#### Technical specifications

SITRANS P320/P420 diaphragm seals in sandwich design with flexible capillary	
<b>Nominal diameter</b> Standard of process connection EN 1092-1 <ul style="list-style-type: none"> <li>DN 25, DN 40, DN 50, DN 65, DN 80, DN 100, DN 125</li> </ul> Standard of process connection ASME B16.5 <ul style="list-style-type: none"> <li>1 inch, 1½ inch, 2 inch, 2½ inch, 3 inch, 4 inch, 5 inch</li> </ul> Process connection standard J.I.S. <ul style="list-style-type: none"> <li>DN 25, DN 40, DN 50, DN 65, DN 80, DN 100, DN 125</li> </ul>	<b>Nominal pressure</b> PN 16 ... PN 400 Class 150 ... Class 2500 10K ... 63K
<b>Sealing surface</b> <ul style="list-style-type: none"> <li>For stainless steel mat. no. 1.4404/316L</li> <li>For the other materials</li> </ul>	According to EN 1092-1, form B1 or ASME B16.5 RF 125 ... 250 AA According to EN 1092-1, form B2 or ASME B16.5 RFSF
<b>Materials</b> <ul style="list-style-type: none"> <li>Main body</li> <li>Wetted parts</li> <li>Capillary</li> <li>Sheath</li> </ul>	Stainless steel, mat. no. 1.4404/316L Stainless steel, mat. no. 1.4404/316L <ul style="list-style-type: none"> <li>Without coating</li> <li>PTFE coating</li> <li>ECTFE coating (for negative pressure on request)</li> <li>PFA coating</li> </ul> Monel 400, mat. no. 2.4360 Hastelloy C276, mat. no. 2.4819 Hastelloy C4, mat. no. 2.4610 Hastelloy C22, mat. no. 2.4602 Tantalum Titanium, mat. no. 3.7035 Nickel 201 Duplex 2205, mat. no. 1.4462 Stainless steel 316L, gold plated, layer thickness approx. 25 µm Stainless steel, mat. no. 1.4571/316Ti (with options W01 and E50 ... E58) or mat. no. 1.4301/304 Flexible spiral coiled tube made of stainless steel, mat. no. 1.4404/316L
<b>Gasket material in the process flanges</b> <ul style="list-style-type: none"> <li>For gauge pressure transmitters, absolute pressure transmitters and negative pressure applications</li> <li>For other applications</li> </ul>	Copper Viton
<b>Permissible pressure load</b>	See above and the technical specifications of the pressure transmitters
<b>Tube length</b>	Without tube as standard. A custom tube length can be selected as an order code.
<b>Capillary</b> <ul style="list-style-type: none"> <li>Length</li> <li>Inside diameter</li> <li>Minimum bending radius</li> </ul>	≤ 10 m (32.8 ft), longer lengths on request ≤ 1.3 mm (0.051 inch) 150 mm (5.9 inches)
<b>Filling liquid</b>	<ul style="list-style-type: none"> <li>Silicone oil M5</li> <li>Silicone oil M50</li> <li>High-temperature oil</li> <li>Halocarbon oil (for measuring O<sub>2</sub>)</li> <li>Food oil (FDA-listed)</li> <li>Neobee M20 (FDA-listed)</li> </ul>

#### Technical specifications (continued)

SITRANS P320/P420 diaphragm seals in sandwich design with flexible capillary	
<b>Permissible ambient temperature</b>	Dependent on the pressure transmitter and the filling liquid of the remote seal. <b>More information</b> In the technical specifications of the pressure transmitters and in the sections in the technical reference of the remote seals: <ul style="list-style-type: none"> <li>"Function" - "Technical specifications of the remote seal filling liquids"</li> <li>"More information" - "Specification of process conditions for selection and ordering data"</li> </ul>
<b>Weight</b>	Approx. 4 kg (8.82 lbs)
<b>Certificates and approvals</b> Classification according to pressure equipment directive (PED 2014/68/EU)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)

## Dimensional drawings



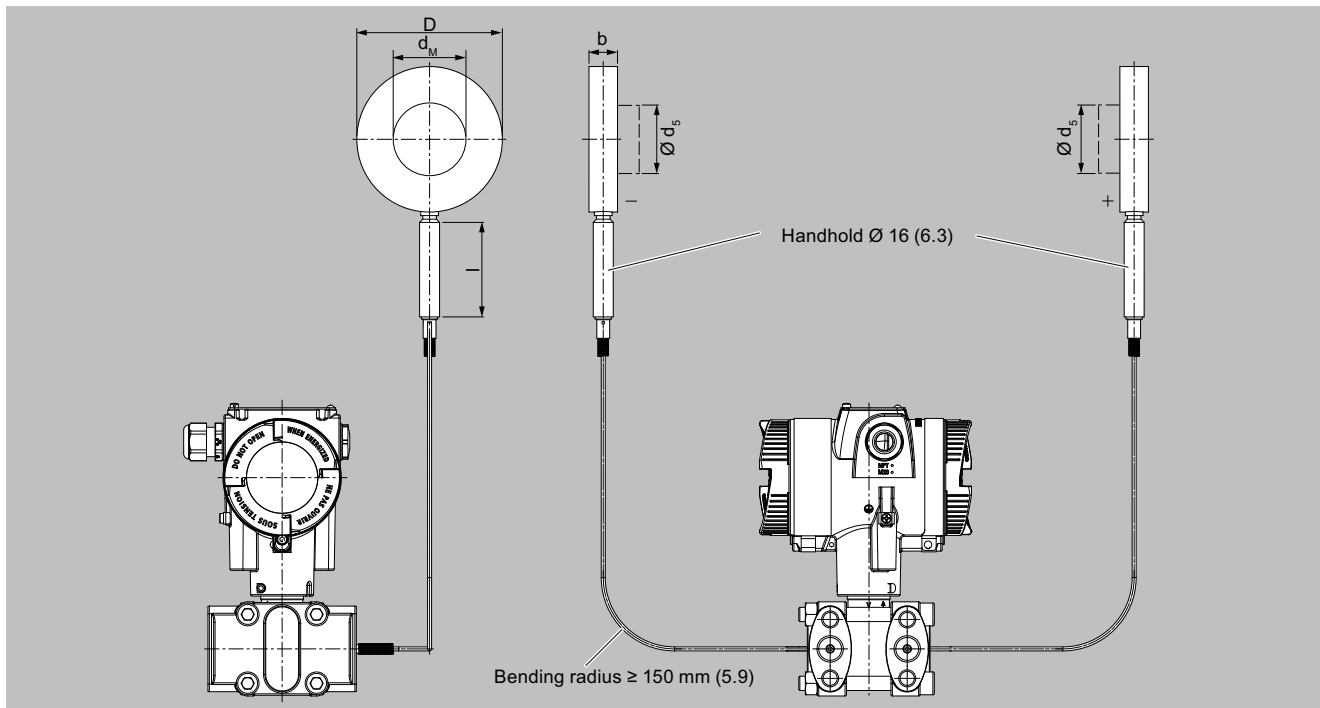
Diaphragm seals of sandwich design with flexible capillary for connection to SITRANS P320/420 pressure transmitters for gauge pressure, dimensions in mm (inch)

## Pressure measurement

### Remote seals

for SITRANS P320/P420 / Diaphragm seals in sandwich design with flexible capillary

#### Dimensional drawings (continued)



Diaphragm seals of sandwich design (without flange) with flexible capillary for connection to SITRANS P320/420 pressure transmitters for absolute pressure or differential pressure and flow, dimensions in mm (inch)

#### Connection according to EN 1092-1

Nominal diameter	Nominal pressure	b	D	d <sub>5</sub>	d <sub>M</sub> with tube	d <sub>M</sub> without tube	l
		mm	mm	mm	mm	mm	
DN 25	PN 16 ... PN 400	20	68	24.5	22.6	27	100
DN 40		20	88	38	30	40	100
DN 50		20	102	48.3	40	51	100
DN 65		20	122	48.3	40	65	100
DN 80		20	138	76	65	85	100
DN 100		20	158	94	85	85	100
DN 125		22	188	125	16	116	100

d: Inside diameter of gasket according to EN 1092-1/ASME B16.5

d<sub>M</sub>: Effective diaphragm diameter

#### Connection according to ASME B16.5

Nominal diameter	Nominal pressure lb/sq.in.	b	D	d <sub>5</sub>	d <sub>M</sub> with tube	d <sub>M</sub> without tube	l
		mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	
1"	150 ... 2500	20 (0.79)	51 (2.01)	24.5 (0.96)	22.6 (0.89)	30 (1.18)	100 (3.94)
1½"		20 (0.79)	73 (2.9)	38 (1.5)	30 (1.18)	40 (1.57)	100 (3.94)
2"		20 (0.79)	100 (3.94)	48.3 (1.9)	40 (1.57)	51 (2.01)	100 (3.94)
2½"		20 (0.79)	105 (4.13)	48.3 (1.9)	40 (1.57)	65 (2.56)	100 (3.94)
3"		20 (0.79)	134 (5.28)	72 (2.8)	65 (2.56)	85 (3.35)	100 (3.94)
4"		20 (0.79)	158 (6.22)	94 (3.69)	85 (3.35)	85 (3.35)	100 (3.94)
5"		22 (0.87)	186 (7.32)	125 (4.92)	116 (4.57)	116 (4.57)	100 (3.94)

d: Inside diameter of gasket according to EN 1092-1/ASME B16.5

d<sub>M</sub>: Effective diaphragm diameter

## Dimensional drawings (continued)

Connection according to J.I.S.

Nominal diameter	Nominal pressure	b mm (inch)	D 10K, 20K mm (inch)	D 30K ... 63K mm (inch)	d <sub>5</sub> mm (inch)	d <sub>M</sub> with tube mm (inch)	d <sub>M</sub> without tube mm (inch)	l mm (inch)
DN 25	10K ... 63K	20 (0.79)	67 (2.64)	70 (2.76)	24.5 (0.96)	22.6 (0.89)	30 (1.18)	100 (3.94)
DN 40		20 (0.79)	81 (3.19)	90 (3.54)	38 (1.5)	30 (1.18)	36 (1.42)	100 (3.94)
DN 50		20 (0.79)	96 (3.78)	105 (4.13)	48.3 (1.9)	40 (1.57)	51 (2.01)	100 (3.94)
DN 65		20 (0.79)	116 (4.57)	130 (5.12)	48.3 (1.9)	40 (1.57)	65 (2.56)	100 (3.94)
DN 80		20 (0.79)	132 (5.2)	140 (5.51)	76 (2.99)	65 (2.56)	85 (3.35)	100 (3.94)
DN 100		20 (0.79)	160 (6.3)	160 (6.3)	94 (3.69)	85 (3.35)	85 (3.35)	100 (3.94)
DN 125		20 (0.79)	195 (7.68)	195 (7.68)	125 (4.92)	116 (4.57)	116 (4.57)	100 (3.94)

d: Inside diameter of gasket according to EN 1092-1/ASME B16.5

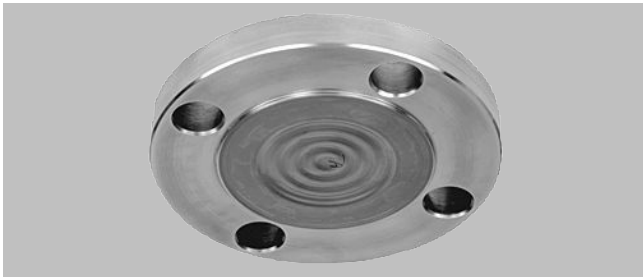
d<sub>M</sub>: Effective diaphragm diameter

## Pressure measurement

### Remote seals

for SITRANS P320/P420 / Diaphragm seals in flange design with flexible capillary

#### Overview



Diaphragm seals of flange design



## Selection and ordering data

		Article No.	Order code
<b>Diaphragm seal</b>			
Flange type design, connected to a transmitter with flexible capillary			
SITRANS P320/P420 or SITRANS P300 for gauge and absolute pressure (only together with negative pressure service), 7MF03../7MF04../7MF802 is to be ordered separately, scope of delivery: 1 unit		7MF0810-	
SITRANS P320/P420 for absolute pressure from differential pressure 7MF03../7MF04.. order separately, scope of delivery: 1 unit		7MF0811-	
SITRANS P320/P420 transmitter for differential pressure and flow 7MF03../7MF04.. order separately, scope of delivery: 2 units		7MF0812-	
		● ● ● ● ● - 0 ● ● ● ● ● ● ● ●	
Click the article number for online configuration in the PIA Life Cycle Portal.			
<b>Nominal diameter</b>	<b>Nominal pressure</b>		
<u>Process connection standard EN 1092-1</u>			
(DN 25, DN 40 and DN 50 only recommended for pressure transmitters for gauge pressure)			
DN 25	PN 10/16/25/40	0 B D	
	PN 63/100	0 B F	
	PN 160	0 B G	
	PN 250	0 B H	
DN 40	PN 10/16/25/40	0 D D	
	PN 63/100	0 D F	
	PN 160	0 D G	
DN 50	PN 10/16/25/40	0 E D	
	PN 63	0 E E	
	PN 100	0 E F	
DN 80	PN 10/16/25/40	0 G D	
	PN 100	0 G F	
DN 100	PN 10/16	0 H B	
	PN 25/40	0 H D	
DN 125	PN 16	0 J B	
	PN 40	0 J D	
<u>Process connection standard ASME B16.5</u>			
(1 inch, 1½ inches and 2 inches only recommended for pressure transmitters for gauge pressure)			
1 inch	Class 150	1 K L	
	Class 300	1 K M	
	Class 600	1 K N	
	Class 1500	1 K P	
1½ inches	Class 150	1 L A	
	Class 300	1 L B	
	Class 400/600	1 L D	
	Class 900/1500	1 L F	
2 inches	Class 150	1 M A	
	Class 300	1 M B	
	Class 400/600	1 M D	
	Class 900/1500	1 M F	
3 inches	Class 150	1 P A	
	Class 300	1 P B	
	Class 600	1 P D	
	Class 1500	1 P F	
4 inches	Class 150	1 Q A	
	Class 300	1 Q B	
	Class 400	1 Q C	
	Class 1500	1 Q F	
5 inches	Class 150	1 R A	
	Class 300	1 R B	
	Class 400	1 R C	
<u>Process connection standard J.I.S.</u>			
(DN 50 only recommended for pressure transmitters for gauge pressure)			
DN 50	10 K	2 E S	
	20 K	2 E T	
	40 K	2 E U	
DN 80	10 K	2 G S	
	20 K	2 G T	

# Pressure measurement

## Remote seals

for SITRANS P320/P420 / Diaphragm seals in flange design with flexible capillary

### Selection and ordering data (continued)

		Article No.	Order code
<b>Diaphragm seal</b>			
Flange type design, connected to a transmitter with flexible capillary			
SITRANS P320/P420 or SITRANS P300 for gauge and absolute pressure (only together with negative pressure service), 7MF03../7MF04../7MF802 is to be ordered separately, scope of delivery: 1 unit		7MF0810-	
SITRANS P320/P420 for absolute pressure from differential pressure 7MF03../7MF04.. order separately, scope of delivery: 1 unit		7MF0811-	
SITRANS P320/P420 transmitter for differential pressure and flow 7MF03../7MF04.. order separately, scope of delivery: 2 units		7MF0812-	
		● ● ● ● ● - 0 ● ● ● ● ● ● ● ●	
DN 100	40 K	2 G U	
	10 K	2 H S	
	20 K	2 H T	
	40 K	2 H U	
Other version, add order code and plain text		9 A A	H 1 Y
<b>Transmitter connection</b>			
Connection via capillary			
Capillary length			
1 m (38.37 inches)		1 0	
1.6 m (63 inches)		1 1	
2 m (78.7 inches)		1 2	
2.5 m (98.4 inches)		1 3	
3 m (118.1 inches)		1 4	
4 m (157.5 inches)		1 5	
5 m (196.9 inches)		1 6	
6 m (236.2 inches)		1 7	
7 m (275.6 inches)		1 8	
8 m (315 inches)		2 0	
9 m (354.3 inches)		2 1	
10 m (393.7 inches)		2 2	
11 m (433.1 inches); only for 7MF0812		2 3	
12 m (472.4 inches); only for 7MF0812		2 4	
13 m (511.811 inches); only for 7MF0812		2 5	
14 m (551.2 inches); only for 7MF0812		2 6	
15 m (590.6 inches); only for 7MF0812		2 7	
Other version, add order code and plain text		9 8	L 1 Y
<b>Filling liquid</b>			
Silicone oil M50			B
High-temperature oil			C
Silicone oil M5			A
Food oil (FDA-listed)			E
Halocarbon oil			D
Neobee M20 (FDA listed)			R
Other version, add order code and plain text			Z P 1 Y
<b>Material of wetted parts</b>			
Stainless steel 316L			
• Without coating			A
• With PFA coating			D
• With PTFE coating			E 0
• With ECTFE coating			F
Monel 400, 2.4360			G
Hastelloy C276, 2.4819			J
Tantalum			K
Titanium, 3.7035			L 0
Nickel 201			M 0
Diaphragm Duplex, 1.4462			Q
Diaphragm and flange Duplex, 1.4462			R
Stainless steel 316L, gold-plated			S 0
Hastelloy C4, 2.4610			U 0
Hastelloy C22, 2.4602			V 0
Other version, add order code and plain text			Z 8 Q 1 Y

## for SITRANS P320/P420 / Diaphragm seals in flange design with flexible capillary

## Selection and ordering data (continued)

	Article No.	Order code
<b>Diaphragm seal</b>		
<b>Flange type design, connected to a transmitter with flexible capillary</b>		
SITRANS P320/P420 or SITRANS P300 for gauge and absolute pressure (only together with negative pressure service), 7MF03../7MF04../7MF802 is to be ordered separately, scope of delivery: 1 unit	7MF0810-	
SITRANS P320/P420 for absolute pressure from differential pressure 7MF03../7MF04.. order separately, scope of delivery: 1 unit	7MF0811-	
SITRANS P320/P420 transmitter for differential pressure and flow 7MF03../7MF04.. order separately, scope of delivery: 2 units	7MF0812-	
	● ● ● ● ● - 0 ● ● ● ● ● ● ● ●	
<b>Tube length</b>		
Without tube		0
50 mm (2 inches)		1
100 mm (4 inches)		2
150 mm (6 inches)		3
200 mm (8 inches)		4
250 mm (10 inches)		5
Other version, add order code and plain text		Z 8 Q 1 Y
<b>Customer-specific tube length</b>		
<i>Wetted parts: Stainless steel without coating</i>		
<b>Range</b>	<b>Standard length</b>	
20 ... 50 mm (0.79 ... 1.97 inches)	50 mm (1.97 inches)	A 1
51 ... 100 mm (2.01 ... 3.94 inches)	100 mm (3.94 inches)	A 2
101 ... 150 mm (3.98 ... 5.91 inches)	150 mm (5.91 inches)	A 3
151 ... 200 mm (5.94 ... 7.87 inches)	200 mm (7.87 inches)	A 4
201 ... 250 mm (7.91 ... 9.84 inches)	250 mm (9.84 inches)	A 5
<i>Wetted parts: Stainless steel with ECTFE coating</i>		
<b>Range</b>	<b>Standard length</b>	
20 ... 50 mm (0.79 ... 1.97 inches)	50 mm (1.97 inches)	F 1
51 ... 100 mm (2.01 ... 3.94 inches)	100 mm (3.94 inches)	F 2
101 ... 150 mm (3.98 ... 5.91 inches)	150 mm (5.91 inches)	F 3
151 ... 200 mm (5.94 ... 7.87 inches)	200 mm (7.87 inches)	F 4
201 ... 250 mm (7.91 ... 9.84 inches)	250 mm (9.84 inches)	F 5
<i>Wetted parts: Stainless steel with PFA coating</i>		
<b>Range</b>	<b>Standard length</b>	
20 ... 50 mm (0.79 ... 1.97 inches)	50 mm (1.97 inches)	D 1
51 ... 100 mm (2.01 ... 3.94 inches)	100 mm (3.94 inches)	D 2
101 ... 150 mm (3.98 ... 5.91 inches)	150 mm (5.91 inches)	D 3
151 ... 200 mm (5.94 ... 7.87 inches)	200 mm (7.87 inches)	D 4
201 ... 250 mm (7.91 ... 9.84 inches)	250 mm (9.84 inches)	D 5
<i>Wetted parts: Monel 400</i>		
<b>Range</b>	<b>Standard length</b>	
20 ... 50 mm (0.79 ... 1.97 inches)	50 mm (1.97 inches)	G 1
51 ... 100 mm (2.01 ... 3.94 inches)	100 mm (3.94 inches)	G 2
101 ... 150 mm (3.98 ... 5.91 inches)	150 mm (5.91 inches)	G 3
151 ... 200 mm (5.94 ... 7.87 inches)	200 mm (7.87 inches)	G 4
<i>Wetted parts: Hastelloy C276</i>		
<b>Range</b>	<b>Standard length</b>	
20 ... 50 mm (0.79 ... 1.97 inches)	50 mm (1.97 inches)	J 1
51 ... 100 mm (2.01 ... 3.94 inches)	100 mm (3.94 inches)	J 2
101 ... 150 mm (3.98 ... 5.91 inches)	150 mm (5.91 inches)	J 3
151 ... 200 mm (5.94 ... 7.87 inches)	200 mm (7.87 inches)	J 4
<i>Wetted parts: Tantalum</i>		
<b>Range</b>	<b>Standard length</b>	
20 ... 50 mm (0.79 ... 1.97 inches)	50 mm (1.97 inches)	K 1
51 ... 100 mm (2.01 ... 3.94 inches)	100 mm (3.94 inches)	K 2
101 ... 150 mm (3.98 ... 5.91 inches)	150 mm (5.91 inches)	K 3

## Pressure measurement

### Remote seals

#### for SITRANS P320/P420 / Diaphragm seals in flange design with flexible capillary

#### Selection and ordering data (continued)

	Article No.	Order code
<b>Diaphragm seal</b>		
Flange type design, connected to a transmitter with flexible capillary		
SITRANS P320/P420 or SITRANS P300 for gauge and absolute pressure (only together with negative pressure service), 7MF03../7MF04../7MF802 is to be ordered separately, scope of delivery: 1 unit	7MF0810-	
SITRANS P320/P420 for absolute pressure from differential pressure 7MF03../7MF04.. order separately, scope of delivery: 1 unit	7MF0811-	
SITRANS P320/P420 transmitter for differential pressure and flow 7MF03../7MF04.. order separately, scope of delivery: 2 units	7MF0812-	
	● ● ● ● ● - 0 ● ● ● ● ● ● ● ●	
151 ... 200 mm (5.94 ... 7.87 inches)	200 mm (7.87 inches)	K 4

Options	Order code
<b>Add "-Z" to article number and specify order code.</b>	
<b>Factory certificates</b>	
Quality inspection certificate (5-point characteristic curve test) acc. to IEC 62828-2	C11
Inspection certificate to EN 10204-3.1 for material of body and diaphragm	C12
Manufacturer declaration acc. to NACE (MR 0103-2012 and MR 0175-2009) (only together with wetted parts made of stainless steel 316 L and Hastelloy)	C13
Inspection certificate according to EN 10204-3.1, PMI test of pressure containing and wetted parts	C15
Certificate of FDA-approved fill oil according to EN 10204-2.2	C17
Factory certificate functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511 (includes SIL Declaration of Conformity)	C20
<b>Accessories</b>	
Representation of the epoxy resin coating Color: Transparent coverage: Front and rear of the remote seal, connecting pipe, process connection of the transmitter. Maximum process medium temperature for epoxy lacquering: 140 °C	D15
Remote seal nameplate Attached, made of stainless steel, contains Article No. and order number of the remote seal	D42
Volume deflagration flame arrester (VDEF)	
• For gauge pressure and absolute pressure transmitters	D61
• For differential pressure and level transmitters	D62
<b>Negative pressure service</b>	
Negative pressure service	
• For gauge pressure and absolute pressure transmitters (only 7MF0810)	D81
• For differential pressure transmitters	D83
Extended negative pressure service	
• For gauge pressure and absolute pressure transmitters (only 7MF0810)	D85
• For differential pressure transmitters	D88
<b>Marine approvals</b>	
<b>Note:</b> If one of the order codes E50 to E60 is selected, the corresponding option must also be selected for the transmitter!	
DNV-GL (Det Norske Veritas/Germanischer Lloyd)	E50
LR (Lloyds Register)	E51
BV (Bureau Veritas)	E52
ABS (American Bureau of Shipping)	E53

Options	Order code
<b>Add "-Z" to article number and specify order code.</b>	
RMR (Russian Maritime Register)	E55
KR (Korean Register of Shipping)	E56
RINA (Registro Italiano Navale)	E57
CCS (China Classification Society)	E58
<b>Country-specific approval</b>	
CRN approval Canada (Canadian Registration Number)	E60
<b>General product approvals without explosion proof approvals</b>	
Oil-free and grease-free cleaned version for oxygen application including certificate EN 10204-2.2 (only with filling liquid halocarbon oil max. temperature 60 °C and max. pressure 50 bar)	E80
Oil-free and grease-free cleaned version not for oxygen application, including certificate EN 10204-2.2	E87
<b>Sealing surface</b>	
Sealing surface smooth, form B2/EN 1092-1 or RFSF/ANSI 16.5 (only for wetted parts made of stainless steel 316L)	M50
Sealing surface groove according to EN 1092-1, form D (instead of sealing surface B1, only for wetted parts made of stainless steel 316L)	M54
Sealing surface RJF (groove) according to ASME B16.5 (instead of sealing surface RF 125 ... 250AO, only for wetted parts made of stainless steel 316L)	M64
Sealing surface with tongue to EN 1092-1, form C (for wetted parts made of stainless steel 316L only)	
• DN 25	M70
• DN 40	M71
• DN 50	M72
• DN 80	M73
• DN 100	M74
• DN 125	M75
Sealing surface with spigot according to EN 1092-1, form E (for wetted parts made of stainless steel 316L only)	
• DN 25	M76
• DN 40	M77
• DN 50	M78
• DN 80	M79
• DN 100	M80
• DN 125	M81
Sealing surface female face according to EN 1092-1, form F (only for wetted parts made of stainless steel 316L)	
• DN 25	M82
• DN 40	M83

## for SITRANS P320/P420 / Diaphragm seals in flange design with flexible capillary

## Selection and ordering data (continued)

Options	Order code
<b>Add "-Z" to article number and specify order code.</b>	
• DN 50	<b>M84</b>
• DN 80	<b>M85</b>
• DN 100	<b>M86</b>
• DN 125	<b>M87</b>
<b>Capillary connection</b>	
For 7MF0810	
• Radial capillary outlet (for single-side mounting)	<b>S01</b>
• Single-side mounted at differential pressure transmitter at high side	<b>S03</b>
• Single-side mounted at differential pressure transmitter at low side	<b>S04</b>
For 7MF0811	
• Radial capillary outlet (for single-side mounting)	<b>S01</b>
For 7MF0812	
• Radial capillary pipe outlet (for double-side mounting)	<b>S02</b>
<b>Capillary coating</b>	
PE protective tube	
• 1 m (38.37 inches)	<b>S10</b>
• 1.6 m (63 inches)	<b>S11</b>
• 2 m (78.7 inches)	<b>S12</b>
• 2.5 m (98.4 inches)	<b>S13</b>
• 3 m (118.1 inches)	<b>S14</b>
• 4 m (157.5 inches)	<b>S15</b>
• 5 m (196.9 inches)	<b>S16</b>
• 6 m (236.2 inches)	<b>S17</b>
• 7 m (275.6 inches)	<b>S18</b>
• 8 m (315 inches)	<b>S19</b>
• 9 m (354.3 inches)	<b>S20</b>
• 10 m (393.7 inches)	<b>S21</b>
• 11 m (433.1 inches); only for 7MF0812	<b>S22</b>
• 12 m (472.4 inches); only for 7MF0812	<b>S23</b>
• 13 m (511.811 inches); only for 7MF0812	<b>S24</b>
• 14 m (551.2 inches); only for 7MF0812	<b>S25</b>
• 15 m (590.6 inches); only for 7MF0812	<b>S26</b>
PTFE protective tube	
• 1 m (38.37 inches)	<b>S40</b>
• 1.6 m (63 inches)	<b>S41</b>
• 2 m (78.7 inches)	<b>S42</b>
• 2.5 m (98.4 inches)	<b>S43</b>
• 3 m (118.1 inches)	<b>S44</b>
• 4 m (157.5 inches)	<b>S45</b>
• 5 m (196.9 inches)	<b>S46</b>
• 6 m (236.2 inches)	<b>S47</b>
• 7 m (275.6 inches)	<b>S48</b>
• 8 m (315 inches)	<b>S49</b>
• 9 m (354.3 inches)	<b>S50</b>
• 10 m (393.7 inches)	<b>S51</b>
• 11 m (433.1 inches); only for 7MF0812	<b>S52</b>

Options	Order code
<b>Add "-Z" to article number and specify order code.</b>	
• 12 m (472.4 inches); only for 7MF0812	<b>S53</b>
• 13 m (511.811 inches); only for 7MF0812	<b>S54</b>
• 14 m (551.2 inches); only for 7MF0812	<b>S55</b>
• 15 m (590.6 inches); only for 7MF0812	<b>S56</b>
PVC protective tube	
• 1 m (38.37 inches)	<b>S70</b>
• 1.6 m (63 inches)	<b>S71</b>
• 2 m (78.7 inches)	<b>S72</b>
• 2.5 m (98.4 inches)	<b>S73</b>
• 3 m (118.1 inches)	<b>S74</b>
• 4 m (157.5 inches)	<b>S75</b>
• 5 m (196.9 inches)	<b>S76</b>
• 6 m (236.2 inches)	<b>S77</b>
• 7 m (275.6 inches)	<b>S78</b>
• 8 m (315 inches)	<b>S79</b>
• 9 m (354.3 inches)	<b>S80</b>
• 10 m (393.7 inches)	<b>S81</b>
• 11 m (433.1 inches); only for 7MF0812	<b>S82</b>
• 12 m (472.4 inches); only for 7MF0812	<b>S83</b>
• 13 m (511.811 inches); only for 7MF0812	<b>S84</b>
• 14 m (551.2 inches); only for 7MF0812	<b>S85</b>
• 15 m (590.6 inches); only for 7MF0812	<b>S86</b>
<b>Desired remote seal supplier</b>	
<b>Note:</b>	
If the remote seal is to be supplied only by one of the suppliers specified below, this option needs to be selected. For orders without this option, the remote seal supplier is selected through the dispatch center.	
Company WIKA, Klingenberg	<b>W01</b>
Company Labom, Hude	<b>W02</b>
<b>Special design</b>	
Welded filling hole	<b>X01</b>
<b>Customer-specific tube length</b>	
Customer-specific tube length (specify in plain text in mm)	<b>Y44</b>
<b>Specification of process conditions<sup>1)</sup></b>	
Ambient temperature range	
• +10 ... +50 °C (+50 ... +122 °F) preset	<b>D66</b>
• -40 ... +50 °C (-40 ... +122 °F)	<b>D67</b>
• -10 ... +85 °C (+14 ... +185 °F)	<b>D68</b>
Process temperature min. ... °C/(°F)/max. ... °C/(°F)	<b>Y50</b>

<sup>1)</sup> See also "Specification of process conditions for selection and ordering data" in the section "More information" under "Technical reference" for SITRANS P320/P420.

# Pressure measurement

## Remote seals

### for SITRANS P320/P420 / Diaphragm seals in flange design with flexible capillary

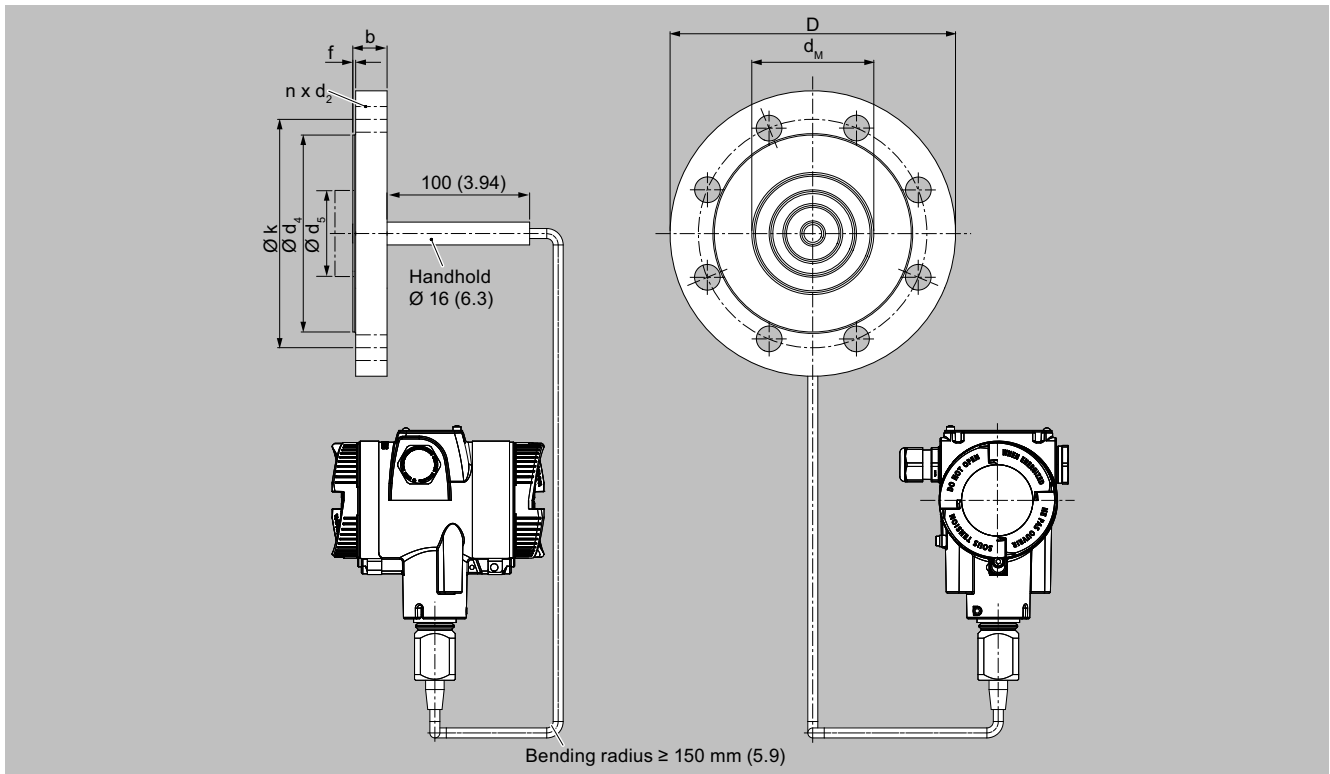
#### Technical specifications

SITRANS P320/P420 diaphragm seals in flange design with flexible capillary	
<b>Nominal diameter</b>	<b>Nominal pressure</b>
Standard of process connection EN 1092-1	
• DN 25	PN 10/16/25/40/63/100/160/250
• DN 40	PN 10/16/25/40/63/100/160
• DN 50	PN 10/16/25/40/63/100
• DN 80	PN 10/16/25/40/100
• DN 100	PN 10/16/25/40
• DN 125	PN 16/40
Process connection standard ASME B16.5	
• 1 inch	Class 150/300/600/1500
• 1½ inches	Class 150/300/400/600/900/1500
• 2 inches	Class 150/300/400/600/900/1500
• 3 inches	Class 150/300/600/1500
• 4 inches	Class 150/300/400/1500
• 5 inches	Class 150/300/400
Process connection standard J.I.S.	
• DN 50	10K
• DN 80	20K
• DN 100	40K
<b>Sealing surface</b>	
• For stainless steel mat. no. 1.4404/316L	According to EN 1092-1, form B1 or ASMR B16.5 RF 125 ... 250 AO
• For other materials	According to EN 1092-1, form B2 or ASME B16.5 RFSF
<b>Materials</b>	
• Main body	Stainless steel, mat. no. 1.4404/316L
• Wetted parts	Stainless steel, mat. no. 1.4404/316L
	<ul style="list-style-type: none"> <li>Without coating</li> <li>PTFE coating</li> <li>ECTFE coating (for negative pressure on request)</li> <li>PFA coating</li> </ul>
	Monel 400, mat. no. 2.4360
	Hastelloy C276, mat. no. 2.4819
	Hastelloy C4, mat. no. 2.4610
	Hastelloy C22, mat. no. 2.4602
	Tantalum
	Titanium, mat. no. 3.7035
	Nickel 201
	Duplex 2205, mat. no. 1.4462
	Stainless steel 316L, gold plated, layer thickness approx. 25 µm
• Capillary	Stainless steel, mat. no. 1.4571/316Ti (with options W01 and E50 to E58) or mat. no. 1.4301/304
• Sheath	Flexible spiral coiled tube made of stainless steel mat. no. 1.4404/316L
<b>Gasket material in the process flanges</b>	
• For pressure transmitters, absolute pressure transmitters and negative pressure applications	Copper
• For other applications	Viton
<b>Permissible pressure load</b>	See above and the technical specifications of the pressure transmitter
<b>Tube length</b>	Without tube as standard. A custom tube length can be selected as an order code.

#### Technical specifications (continued)

SITRANS P320/P420 diaphragm seals in flange design with flexible capillary	
<b>Capillary</b>	
• Length	≤ 10 m (32.8 ft), longer lengths on request
• Inside diameter	≤ 1.3 mm (0.051 inch)
• Minimum bending radius	150 mm (5.9 inches)
<b>Filling liquid</b> (for remote seals of sandwich and flange type)	<ul style="list-style-type: none"> <li>Silicone oil M5</li> <li>Silicone oil M50</li> <li>High-temperature oil</li> <li>Halocarbon oil (for measuring O<sub>2</sub>)</li> <li>Food oil (FDA-listed)</li> <li>Neobee M20 (FDA-listed)</li> </ul>
<b>Permissible ambient temperature</b>	Dependent on the pressure transmitter and the filling liquid of the remote seal. <b>More information</b> In the technical specifications of the pressure transmitters and in the sections in the technical reference of the remote seals: <ul style="list-style-type: none"> <li>"Function" - "Technical specifications of the remote seal filling liquids"</li> <li>"More information" - "Specification of process conditions for selection and ordering data"</li> </ul>
<b>Weight</b>	Approx. 4 kg (8.82 lb)
<b>Certificates and approvals</b>	
Classification according to pressure equipment directive (PED 2014/68/EU)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)

## Dimensional drawings



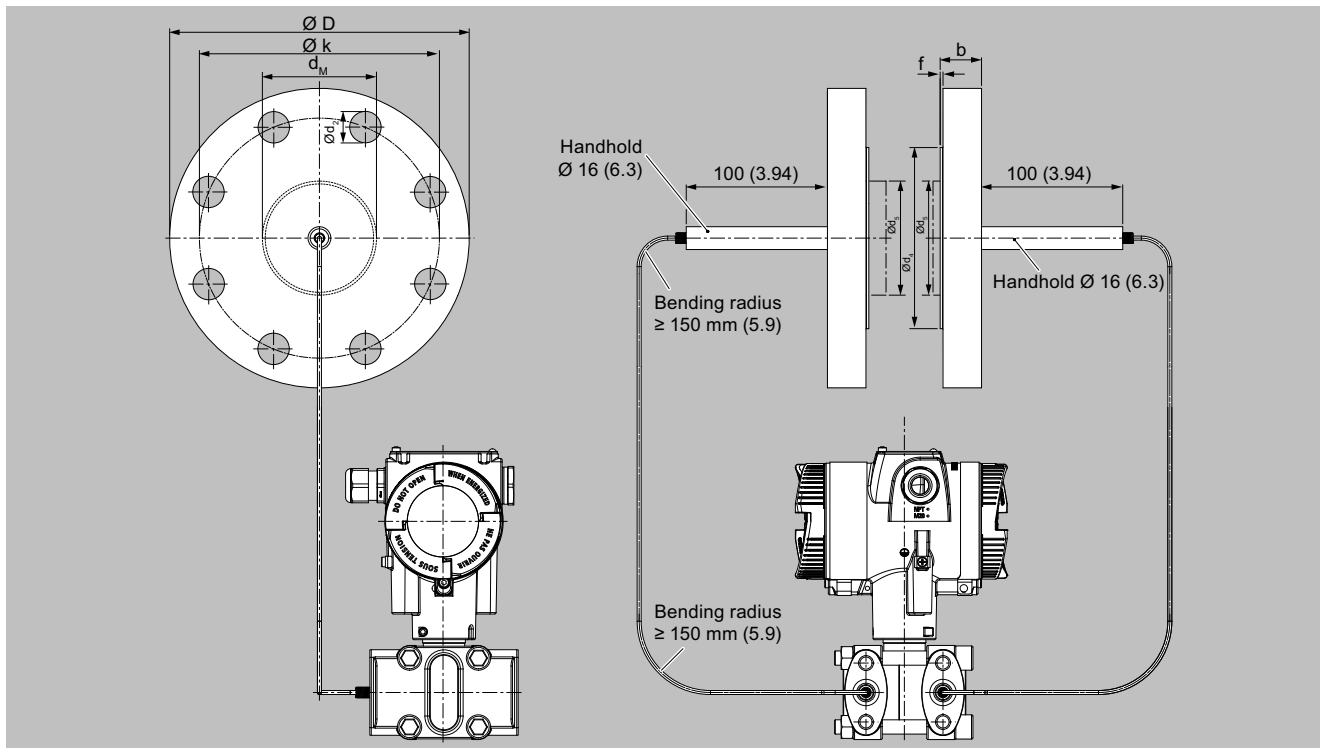
Diaphragm seals of flange design with flexible capillary for connection to SITRANS P320/P420 pressure transmitters for gauge pressure, dimensions in mm (inch)

## Pressure measurement

### Remote seals

for SITRANS P320/P420 / Diaphragm seals in flange design with flexible capillary

### Dimensional drawings (continued)



Diaphragm seals of flange design with flexible capillary for connection to SITRANS P320/420 pressure transmitters for absolute pressure or for differential pressure and flow, dimensions in mm (inch)

### Connection according to EN 1092-1

Nominal diameter	Nominal pressure	b	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub> with tube	d <sub>M</sub> without tube	f	k	n	L
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	
DN 25	PN 10/16/25/40	18	115	14	68	24.5	22.6	27	2	85	4	0, 50, 100, 150 or 200
	PN 63/100	24	140	18	68	24.5	22.6	27	2	100	4	
	PN 160	24	140	18	68	24.5	22.6	27	2	100	4	
	PN 250	28	150	22	68	24.5	22.6	27	2	105	4	
DN 40	PN 10/16/25/40	16	150	18	88	38	30	42	2	110	4	
	PN 63/100	24	170	22	88	38	30	42	2	125	4	
	PN 160	26	170	22	88	38	30	42	2	125	4	
DN 50	PN 10/16/25/40	18	165	18	102	48.3	40	51	2	125	4	
	PN 63/100	26	195	26	102	48.3	40	51	2	145	4	
	PN 160	28	195	26	102	48.3	40	51	2	145	4	
DN 80	PN 10/16/25/40	22	200	18	138	76	65	85	2	160	8	
	PN 100	30	230	26	138	76	65	85	2	180	8	
DN 100	PN 10/16	18	220	18	158	94	85	85	2	180	8	
	PN 25/40	22	235	22	162	94	85	85	2	190	8	
DN 125	PN 16	20	250	18	188	127	85	116	2	210	8	
	PN 40	24	270	26	188	127	85	116	2	220	8	

d: Inside diameter of gasket according to EN 1092-1/ASME B16.5

d<sub>M</sub>: Effective diaphragm diameter



## Dimensional drawings (continued)

## Connection according to ASME B16.5

Nominal diameter	Nominal pressure lb/sq.in.	b	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub> with tube	d <sub>M</sub> without tube	f	k	n	L
		Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)
1"	150	0.71 (18)	4.33 (110)	0.61 (15.6)	2 (50.8)	0.96 (24.5)	0.89 (22.6)	1,18 (30)	0.08 (2)	3.13 (79.4)	4	0, 2, 3.94, 5.94 or 7.87 (0, 50, 100, 150 or 200)
	300	0.77 (19.5)	4.92 (125)	0.75 (19.1)	2 (50.8)	0.96 (24.5)	0.89 (22.6)	1,18 (30)	0.08 (2)	3.5 (88.9)	4	
	600	0.96 (24.5)	4.92 (125)	0.75 (19.1)	2 (50.8)	0.96 (24.5)	0.89 (22.6)	1,18 (30)	0.28 (7)	3.5 (88.9)	4	
	1500	1.4 (35.6)	5.91 (150)	1 (25.4)	2 (50.8)	0.96 (24.5)	0.89 (22.6)	1,18 (30)	0.28 (7)	4 (101.6)	4	
1½"	150	0.63 (15.9)	4.92 (125)	0.63 (15.9)	2.87 (73)	1.5 (38)	1,18 (30)	1.42 (36)	0.08 (2)	3.87 (98.4)	4	
	300	0.75 (19.1)	6.10 (155)	0.87 (22.2)	2.87 (73)	1.5 (38)	1,18 (30)	1.42 (36)	0.08 (2)	4.5 (114.3)	4	
	400/600	0.88 (22.3)	6.10 (155)	0.87 (22.2)	2.87 (73)	1.5 (38)	1,18 (30)	1.42 (36)	0.28 (7)	4.5 (114.3)	4	
	900/1500	1.25 (31.8)	7.09 (180)	1.13 (28.6)	2.87 (73)	1.5 (38)	1,18 (30)	1.42 (36)	0.28 (7)	4.87 (123.8)	4	
2"	150	0.69 (17.5)	5.91 (150)	0.75 (19.1)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.08 (2)	4.75 (120.7)	4	
	300	0.81 (20.7)	6.5 (165)	0.75 (19.1)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.08 (2)	5 (127)	8	
	400/600	1.00 (25.4)	6.5 (165)	0.75 (19.1)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.28 (7)	5 (127)	8	
	900/1500	1.5 (38.1)	8.46 (215)	1.00 (25.4)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.28 (7)	6.5 (165.1)	8	
3"	150	0.88 (22.3)	7.48 (190)	0.75 (19.1)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.08 (2)	6 (152.4)	4	
	300	1.06 (27)	8.27 (210)	0.87 (22.2)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.08 (2)	6.63 (168.3)	8	
	600	1.23 (31.8)	8.27 (210)	0.87 (22.2)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.28 (7)	6.63 (168.3)	8	
	1500	1.88 (47.7)	10.43 (265)	1.23 (31.8)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.28 (7)	8 (203.2)	8	
4"	150	0.88 (22.3)	9.06 (230)	0.75 (19.1)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.08 (2)	7.5 (190.5)	8	
	300	1.19 (30.2)	10.04 (255)	0.87 (22.2)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.08 (2)	7.87 (200)	8	
	400	1.38 (35)	10.04 (255)	0.87 (22.2)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.28 (7)	7.87 (200)	8	
	1500	2.13 (54)	12.20 (310)	1.37 (34.9)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.28 (7)	9.5 (241.3)	8	
5"	150	0.88 (22.3)	10.04 (255)	0.87 (22.2)	7.31 (185.7)	5 (127)	4.57 (116)	4.57 (116)	0.08 (2)	8.5 (215.9)	8	
	300	1.31 (33.4)	11.02 (280)	0.87 (22.2)	7.31 (185.7)	5 (127)	4.57 (116)	4.57 (116)	0.08 (2)	9.25 (235)	8	
	400	1.50 (38.1)	11.02 (280)	0.87 (22.2)	7.31 (185.7)	5 (127)	4.57 (116)	4.57 (116)	0.28 (7)	9.25 (235)	8	

d: Inside diameter of gasket according to EN 1092-1/ASME B16.5

d<sub>M</sub>: Effective diaphragm diameter

## Connection according to J.I.S.

Nominal diameter	Nominal pressure	b	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub> with tube	d <sub>M</sub> without tube	f	k	n	L
		mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)
DN 50	10K	14 (0.55)	155 (6.10)	19 (0.75)	96 (3.78)	48.3 (1.9)	40 (1.57)	51 (2.01)	2	120 (4.72)	4	0, 50, 100, 150 or 200 (0, 2, 3.94, 5.94 or 7.87)
	20K	16 (0.63)	165 (6.50)	19 (0.75)	96 (3.78)	48.3 (1.9)	40 (1.57)	51 (2.01)	2	120 (4.72)	8	
	40K	26 (1.02)	165 (6.50)	19 (0.75)	105 (4.13)	48.3 (1.9)	40 (1.57)	51 (2.01)	2	130 (5.12)	8	
DN 80	10K	16 (0.63)	185 (7.28)	19 (0.75)	126 (4.96)	76 (2.99)	65 (2.56)	85 (3.35)	2	150 (5.91)	8	
	20K	20 (0.79)	200 (7.87)	23 (0.91)	132 (5.20)	76 (2.99)	65 (2.56)	85 (3.35)	2	160 (6.30)	8	
	40K	32 (1.26)	210 (8.27)	23 (0.91)	140 (5.51)	76 (2.99)	65 (2.56)	85 (3.35)	2	170 (6.30)	8	
DN 100	10K	16 (0.63)	210 (8.27)	19 (0.75)	151 (5.94)	94 (3.7)	85 (3.35)	85 (3.35)	2	175 (6.89)	8	
	20K	22 (0.87)	225 (8.86)	23 (0.91)	160 (6.30)	94 (3.7)	85 (3.35)	85 (3.35)	2	185 (7.28)	8	
	40K	36 (1.42)	250 (9.84)	25 (0.98)	165 (6.50)	94 (3.7)	85 (3.35)	85 (3.35)	2	205 (8.07)	8	

d: Inside diameter of gasket according to EN 1092-1/ASME B16.5

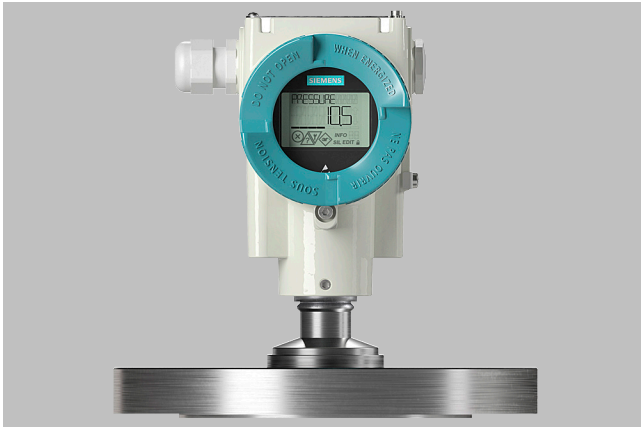
d<sub>M</sub>: Effective diaphragm diameter

## Pressure measurement

### Remote seals

for SITRANS P320/P420 / Diaphragm seals in flange design, direct mount

#### Overview



Diaphragm seals of flange design, directly fitted on a pressure transmitter for gauge pressure

## Selection and ordering data

		Article No.	Order code
Diaphragm seal Flange type design, mounted directly onto the transmitter SITRANS P320/P420 or SITRANS P300 for gauge and absolute pressure (only together with negative pressure service), 7MF03../7MF04../7MF802 is to be ordered separately, scope of delivery: 1 unit		7MF0810-	
		● ● ● ● ● - 0 ● ● ● ● ● ● ● ●	
Click the article number for online configuration in the PIA Life Cycle Portal.			
Nominal diameter	Nominal pressure		
<u>Process connection standard EN 1092-1</u>			
DN 25	PN 10/16/25/40	0 B D	
	PN 63/100	0 B F	
	PN 160	0 B G	
	PN 250	0 B H	
DN 40	PN 10/16/25/40	0 D D	
	PN 63/100	0 D F	
	PN 160	0 D G	
DN 50	PN 10/16/25/40	0 E D	
	PN 63	0 E E	
	PN 100	0 E F	
DN 80	PN 10/16/25/40	0 G D	
	PN 100	0 G F	
DN 100	PN 10/16	0 H B	
	PN 25/40	0 H D	
DN 125	PN 16	0 J B	
	PN 40	0 J D	
<u>Process connection standard ASME B16.5</u>			
1 inch	Class 150	1 K L	
	Class 300	1 K M	
	Class 600	1 K N	
	Class 1500	1 K P	
1½ inches	Class 150	1 L A	
	Class 300	1 L B	
	Class 400/600	1 L D	
	Class 900/1500	1 L F	
2 inches	Class 150	1 M A	
	Class 300	1 M B	
	Class 400/600	1 M D	
	Class 900/1500	1 M F	
3 inches	Class 150	1 P A	
	Class 300	1 P B	
	Class 600	1 P D	
	Class 1500	1 P F	
4 inches	Class 150	1 Q A	
	Class 300	1 Q B	
	Class 400	1 Q C	
	Class 1500	1 Q F	
5 inches	Class 150	1 R A	
	Class 300	1 R B	
	Class 400	1 R C	
<u>Process connection standard J.I.S.</u>			
DN 50	10 K	2 E S	
	20 K	2 E T	
	40 K	2 E U	
DN 80	10 K	2 G S	
	20 K	2 G T	
	40 K	2 G U	
DN 100	10 K	2 H S	
	20 K	2 H T	
	40 K	2 H U	
Other version, add order code and plain text		9 A A	H 1 Y

# Pressure measurement

## Remote seals

for SITRANS P320/P420 / Diaphragm seals in flange design, direct mount

### Selection and ordering data (continued)

	Article No.	Order code
<b>Diaphragm seal</b>		
<b>Flange type design, mounted directly onto the transmitter</b>		
<b>SITRANS P320/P420 or SITRANS P300 for gauge and absolute pressure (only together with negative pressure service), 7MF03../7MF04../7MF802 is to be ordered separately, scope of delivery: 1 unit</b>	7MF0810-	
	● ● ● ● ● - 0 ● ● ● ● ● ● ●	
<b>Transmitter connection</b>		
Without capillary pipe, direct mount, straight connection (for gauge pressure transmitters)	0 0	
Without capillary pipe, direct mount, connection with 90° elbow (for gauge pressure transmitters)	0 1	
<b>Filling liquid</b>		
Silicone oil M50		B
High-temperature oil		C
Silicone oil M5		A
Food oil (FDA-listed)		E
Halocarbon oil		D
Neobee M20 (FDA listed)		R
Other version, add order code and plain text		Z P 1 Y
<b>Material of wetted parts</b>		
Stainless steel 316L		
• Without coating		A
• With PFA coating		D
• With PTFE coating		E 0
• With ECTFE coating		F
Monel 400, 2.4360		G
Hastelloy C276, 2.4819		J
Tantalum		K
Titanium, 3.7035		L 0
Nickel 201		M 0
Diaphragm Duplex, 1.4462		Q
Diaphragm and flange Duplex, 1.4462		R
Stainless steel 316L, gold-plated		S 0
Hastelloy C4, 2.4610		U 0
Hastelloy C22, 2.4602		V 0
Other version, add order code and plain text		Z 8 Q 1 Y
<b>Tube length</b>		
Without tube		0
50 mm (2 inches)		1
100 mm (4 inches)		2
150 mm (6 inches)		3
200 mm (8 inches)		4
250 mm (10 inches)		5
Other version, add order code and plain text		Z 8 Q 1 Y
<b>Customer-specific tube length</b>		
<b>Wetted parts: Stainless steel without coating</b>		
<u>Range</u>	<u>Standard length</u>	
20 ... 50 mm (0.79 ... 1.97 inches)	50 mm (1.97 inches)	A 1
51 ... 100 mm (2.01 ... 3.94 inches)	100 mm (3.94 inches)	A 2
101 ... 150 mm (3.98 ... 5.91 inches)	150 mm (5.91 inches)	A 3
151 ... 200 mm (5.94 ... 7.87 inches)	200 mm (7.87 inches)	A 4
201 ... 250 mm (7.91 ... 9.84 inches)	250 mm (9.84 inches)	A 5
<b>Wetted parts: Stainless steel with ECTFE coating</b>		
<u>Range</u>	<u>Standard length</u>	
20 ... 50 mm (0.79 ... 1.97 inches)	50 mm (1.97 inches)	F 1
51 ... 100 mm (2.01 ... 3.94 inches)	100 mm (3.94 inches)	F 2
101 ... 150 mm (3.98 ... 5.91 inches)	150 mm (5.91 inches)	F 3
151 ... 200 mm (5.94 ... 7.87 inches)	200 mm (7.87 inches)	F 4
201 ... 250 mm (7.91 ... 9.84 inches)	250 mm (9.84 inches)	F 5

## Selection and ordering data (continued)

		Article No.	Order code
<b>Diaphragm seal</b>			
<b>Flange type design, mounted directly onto the transmitter</b>			
<b>SITRANS P320/P420 or SITRANS P300 for gauge and absolute pressure</b>		7MF0810-	
<b>(only together with negative pressure service), 7MF03../7MF04../7MF802 is to be ordered separately, scope of delivery: 1 unit</b>			
		● ● ● ● ● - 0 ● ● ● ● ● ● ●	
<b>Wetted parts: Stainless steel with PFA coating</b>			
<u>Range</u>	<u>Standard length</u>		
20 ... 50 mm (0.79 ... 1.97 inches)	50 mm (1.97 inches)		D 1
51 ... 100 mm (2.01 ... 3.94 inches)	100 mm (3.94 inches)		D 2
101 ... 150 mm (3.98 ... 5.91 inches)	150 mm (5.91 inches)		D 3
151 ... 200 mm (5.94 ... 7.87 inches)	200 mm (7.87 inches)		D 4
201 ... 250 mm (7.91 ... 9.84 inches)	250 mm (9.84 inches)		D 5
<b>Wetted parts: Monel 400</b>			
<u>Range</u>	<u>Standard length</u>		
20 ... 50 mm (0.79 ... 1.97 inches)	50 mm (1.97 inches)		G 1
51 ... 100 mm (2.01 ... 3.94 inches)	100 mm (3.94 inches)		G 2
101 ... 150 mm (3.98 ... 5.91 inches)	150 mm (5.91 inches)		G 3
151 ... 200 mm (5.94 ... 7.87 inches)	200 mm (7.87 inches)		G 4
<b>Wetted parts: Hastelloy C276</b>			
<u>Range</u>	<u>Standard length</u>		
20 ... 50 mm (0.79 ... 1.97 inches)	50 mm (1.97 inches)		J 1
51 ... 100 mm (2.01 ... 3.94 inches)	100 mm (3.94 inches)		J 2
101 ... 150 mm (3.98 ... 5.91 inches)	150 mm (5.91 inches)		J 3
151 ... 200 mm (5.94 ... 7.87 inches)	200 mm (7.87 inches)		J 4
<b>Wetted parts: Tantalum</b>			
<u>Range</u>	<u>Standard length</u>		
20 ... 50 mm (0.79 ... 1.97 inches)	50 mm (1.97 inches)		K 1
51 ... 100 mm (2.01 ... 3.94 inches)	100 mm (3.94 inches)		K 2
101 ... 150 mm (3.98 ... 5.91 inches)	150 mm (5.91 inches)		K 3
151 ... 200 mm (5.94 ... 7.87 inches)	200 mm (7.87 inches)		K 4

Options	Order code
<b>Add "-Z" to article number and specify order code.</b>	
<b>Factory certificates</b>	
Quality inspection certificate (5-point characteristic curve test) acc. to IEC 62828-2	C11
Inspection certificate to EN 10204-3.1 for material of body and diaphragm	C12
Manufacturer declaration acc. to NACE (MR 0103-2012 and MR 0175-2009) (only together with wetted parts made of stainless steel 316 L and Hastelloy)	C13
Inspection certificate according to EN 10204-3.1, PMI test of pressure containing and wetted parts	C15
Certificate of FDA-approved fill oil according to EN 10204-2.2	C17
Factory certificate functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511 (includes SIL Declaration of Conformity)	C20
<b>Accessories</b>	
Representation of the epoxy resin coating Color: Transparent coverage: Front and rear of the remote seal, connecting pipe, process connection of the transmitter. Maximum process medium temperature for epoxy lacquering: 140 °C	D15
Remote seal nameplate Attached, made of stainless steel, contains Article No. and order number of the remote seal	D42

Options	Order code
<b>Add "-Z" to article number and specify order code.</b>	
Volume deflagration flame arrester (VDEF) for gauge pressure and absolute pressure transmitters	D61
<b>Negative pressure service</b>	
Negative pressure service for gauge pressure and absolute pressure transmitters	D81
Extended negative pressure service for gauge pressure and absolute pressure transmitters (only for 7MF0810)	D85
<b>Country-specific approval</b>	
CRN approval Canada (Canadian Registration Number)	E60
<b>Note:</b> If the order code E60 is selected, the option E60 must also be selected for the transmitter!	
<b>General product approvals without explosion proof approvals</b>	
Oil-free and grease-free cleaned version for oxygen application including certificate EN 10204-2.2 (only with filling liquid halocarbon oil max. temperature 60 °C and max. pressure 50 bar)	E80
Oil-free and grease-free cleaned version not for oxygen application, including certificate EN 10204-2.2	E87

## Pressure measurement

### Remote seals

#### for SITRANS P320/P420 / Diaphragm seals in flange design, direct mount

#### Selection and ordering data (continued)

Options Add "-Z" to article number and specify order code.	Order code
<b>Sealing surface</b>	
Sealing surface smooth, form B2/EN 1092-1 or RFSF/ANSI 16.5 (only for wetted parts made of stainless steel 316L)	<b>M50</b>
Sealing surface groove according to EN 1092-1, form D (instead of sealing surface B1, only for wetted parts made of stainless steel 316L)	<b>M54</b>
Sealing surface RJF (groove) according to ASME B16.5 (instead of sealing surface RF 125 ... 250AO, only for wetted parts made of stainless steel 316L)	<b>M64</b>
Sealing surface with tongue to EN 1092-1, form C (for wetted parts made of stainless steel 316L only)	
• DN 25	<b>M70</b>
• DN 40	<b>M71</b>
• DN 50	<b>M72</b>
• DN 80	<b>M73</b>
• DN 100	<b>M74</b>
• DN 125	<b>M75</b>
Sealing surface with spigot according to EN 1092-1, form E (for wetted parts made of stainless steel 316L only)	
• DN 25	<b>M76</b>
• DN 40	<b>M77</b>
• DN 50	<b>M78</b>
• DN 80	<b>M79</b>
• DN 100	<b>M80</b>
• DN 125	<b>M81</b>
Sealing surface female face according to EN 1092-1, form F (only for wetted parts made of stainless steel 316L)	
• DN 25	<b>M82</b>
• DN 40	<b>M83</b>
• DN 50	<b>M84</b>
• DN 80	<b>M85</b>
• DN 100	<b>M86</b>
• DN 125	<b>M87</b>

Options Add "-Z" to article number and specify order code.	Order code
<b>Capillary connection</b>	
Elongated pipe elbow, 150 mm instead of 100 mm, max. media temperature 250 °C (482 °F), observe the max. permissible media temperature of the filling liquid.	<b>S05</b>
Elongated pipe elbow, 200 mm instead of 100 mm, max. media temperature 300 °C (572 °F), observe the max. permissible media temperature of the filling liquid.	<b>S06</b>
Elongated pipe elbow, 200 mm instead of 130 mm, max. media temperature 300 °C (572 °F), observe the max. permissible media temperature of the filling liquid.	<b>S07</b>
Cooling element, max. medium temperature 300 °C (572 °F), observe the max. permissible media temperature of the filling liquid.	<b>S08</b>
<b>Desired remote seal supplier</b>	
<b>Note:</b> If the remote seal is to be supplied only by one of the suppliers specified below, this option needs to be selected. For orders without this option, the remote seal supplier is selected through the dispatch center.	
Company WIKA, Klingenberg	<b>W01</b>
Company Labom, Hude	<b>W02</b>
<b>Special design</b>	
Welded filling hole	<b>X01</b>
<b>Customer-specific tube length</b>	
Customer-specific tube length (specify in plain text in mm)	<b>Y44</b>
<b>Specification of process conditions<sup>1)</sup></b>	
Ambient temperature range	
• +10 ... +50 °C (+50 ... +122 °F) preset	<b>D66</b>
• -40 ... +50 °C (-40 ... +122 °F)	<b>D67</b>
• -10 ... +85 °C (+14 ... +185 °F)	<b>D68</b>
Process temperature min. ... °C/(°F)/max. ... °C/(°F)	<b>Y50</b>

<sup>1)</sup> See also "Specification of process conditions for selection and ordering data" in the section "More information" under "Technical reference" for SITRANS P320/P420.

## Technical specifications

## SITRANS P320/P420 diaphragm seals in flange design, mounted directly on the transmitter

<b>Nominal diameter</b>	<b>Nominal pressure</b>
Standard of process connection EN 1092-1	
• DN 25	PN 10/16/25/40/63/100/160/250
• DN 40	PN 10/16/25/40/63/100/160
• DN 50	PN 10/16/25/40/63/100
• DN 80	PN 10/16/25/40/100
• DN 100	PN 10/16/25/40
• DN 125	PN 16/40
Process connection standard ASME B16.5	
• 1 inch	Class 150/300/600/1500
• 1½ inches	Class 150/300/400/600/900/1500
• 2 inches	Class 150/300/400/600/900/1500
• 3 inches	Class 150/300/600/1500
• 4 inches	Class 150/300/400/1500
• 5 inches	Class 150/300/400
Process connection standard J.I.S.	
• DN 50	10K
• DN 80	20K
• DN 100	40K
<b>Sealing surface</b>	
• For stainless steel mat. no. 1.4404/316L	According to EN 1092-1, form B1 or ASME B16.5 RF 125 ... 250 AA
• For the other materials	Smooth according to EN 1092-1, form B2 or ASME B16.5 RFSF
<b>Materials</b>	
• Main body	Stainless steel, mat. no. 1.4404/316L
• Wetted parts	Stainless steel, mat. no. 1.4404/316L
	<ul style="list-style-type: none"> <li>• No coating</li> <li>• PTFE coating</li> <li>• ECTFE coating (for negative pressure on request)</li> <li>• PFA coating</li> </ul>
	Monel 400, mat. no. 2.4360
	Hastelloy C276, mat. no. 2.4819
	Hastelloy C4, mat. no. 2.4610
	Hastelloy C22, mat. no. 2.4602
	Tantalum
	Titanium, mat. no. 3.7035
	Nickel 201
	Duplex 2205, mat. no. 1.4462
	Stainless steel 316L, gold plated, layer thickness approx. 25 µm
• Capillary	Stainless steel, mat. no. 1.4404/316L
• Gasket material at the transmitter connection	Copper
<b>Permissible pressure load</b>	See above and the technical specifications of the transmitter
<b>Tube length</b>	<ul style="list-style-type: none"> <li>• Without tube</li> <li>• 50 mm (1.97 inches)</li> <li>• 100 mm (3.94 inches)</li> <li>• 150 mm (5.91 inches)</li> <li>• 200 mm (7.87 inches)</li> </ul>
<b>Capillary</b>	
• Length	≤ 10 m (32.8 ft), longer lengths on request
• Inside diameter	≤ 1.3 mm (0.051 inch)

## Technical specifications (continued)

## SITRANS P320/P420 diaphragm seals in flange design, mounted directly on the transmitter

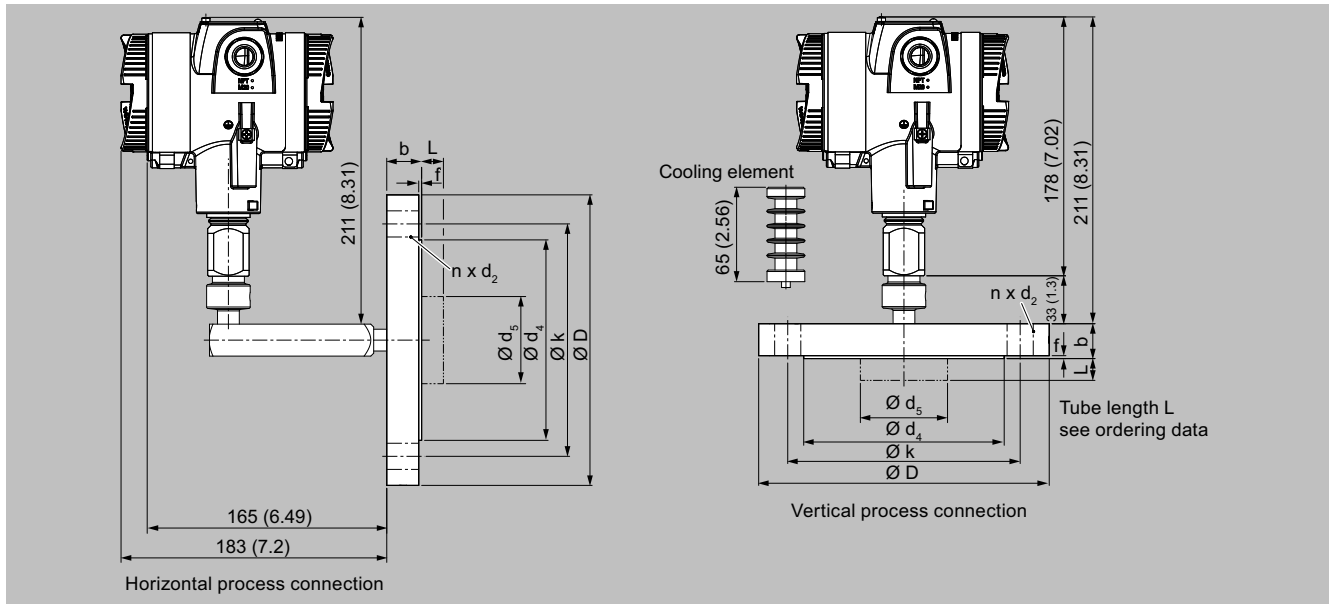
• Minimum bending radius	150 mm (5.9 inches)
<b>Filling liquid</b>	<ul style="list-style-type: none"> <li>• Silicone oil M5</li> <li>• Silicone oil M50</li> <li>• High-temperature oil</li> <li>• Halocarbon oil (for measuring O<sub>2</sub>)</li> <li>• Food oil (FDA-listed)</li> <li>• Neobee M20 (FDA-listed)</li> </ul>
<b>Max. recommended medium temperature</b>	170 °C (338 °F)
<b>Permissible ambient temperature</b>	Dependent on the pressure transmitter and the filling liquid of the remote seal. <b>More information</b> In the technical specifications of the pressure transmitters and in the sections in the technical reference of the remote seals: <ul style="list-style-type: none"> <li>• "Function" - "Technical specifications of the remote seal filling liquids"</li> <li>• "More information" - "Specification of process conditions for selection and ordering data"</li> </ul>
<b>Weight</b>	Approx. 4 kg (8.82 lbs)
<b>Certificates and approvals</b>	
Classification according to pressure equipment directive (PED 2014/68/EU)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)

# Pressure measurement

## Remote seals

for SITRANS P320/P420 / Diaphragm seals in flange design, direct mount

### Dimensional drawings



Diaphragm seals of flange design, direct connection to a SITRANS P320/420 pressure transmitter (process connection vertical (top) and horizontal (bottom)), dimensions in mm (inch)

### Connection according to EN 1092-1

Nominal diameter	Nominal pressure	b	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub> with tube	d <sub>M</sub> without tube	f	k	n	L
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
DN 25	PN 10/16/25/40	18	115	14	68	24.5	22.6	27	2	85	4	0, 50, 100, 150 or 200
	PN 63/100	24	140	18	68	24.5	22.6	27	2	100	4	
	PN 160	24	140	18	68	24.5	22.6	27	2	100	4	
	PN 250	28	150	22	68	24.5	22.6	27	2	105	4	
DN 40	PN 10/16/25/40	16	150	18	88	38	30	42	2	110	4	
	PN 63/100	24	170	22	88	38	30	42	2	125	4	
	PN 160	26	170	22	88	38	30	42	2	125	4	
DN 50	PN 10/16/25/40	18	165	18	102	48.3	40	51	2	125	4	
	PN 63/100	26	195	26	102	48.3	40	51	2	145	4	
	PN 160	28	195	26	102	48.3	40	51	2	145	4	
DN 80	PN 10/16/25/40	22	200	18	138	76	65	85	2	160	8	
	PN 100	30	230	26	138	76	65	85	2	180	8	
DN 100	PN 10/16	18	220	18	158	94	85	85	2	180	8	
	PN 25/40	22	235	22	162	94	85	85	2	190	8	
DN 125	PN 16	20	250	18	188	127	85	116	2	210	8	
	PN 40	24	270	26	188	127	85	116	2	220	8	

d: Inside diameter of gasket according to EN 1092-1/ASME B16.5

d<sub>M</sub>: Effective diaphragm diameter

### Connection according to ASME B16.5

Nominal diameter	Nominal pressure	b	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub> with tube	d <sub>M</sub> without tube	f	k	n	L
		lb/sq.in.	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)
1"	150	0.71 (18)	4.33 (110)	0.61 (15.6)	2 (50.8)	0.96 (24.5)	0.89 (22.6)	1,18 (30)	0.08 (2)	3.13 (79.4)	4	0, 2, 3.94, 5.94 or 7.87 (0, 50, 100, 150 or 200)
	300	0.77 (19.5)	4.92 (125)	0.75 (19.1)	2 (50.8)	0.96 (24.5)	0.89 (22.6)	1,18 (30)	0.08 (2)	3.5 (88.9)	4	
	600	0.96 (24.5)	4.92 (125)	0.75 (19.1)	2 (50.8)	0.96 (24.5)	0.89 (22.6)	1,18 (30)	0.28 (7)	3.5 (88.9)	4	
	1500	1.4 (35.6)	5.91 (150)	1 (25.4)	2 (50.8)	0.96 (24.5)	0.89 (22.6)	1,18 (30)	0.28 (7)	4 (101.6)	4	



## Dimensional drawings (continued)

Nominal diameter	Nominal pressure lb/sq.in.	b	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub> with tube	d <sub>M</sub> without tube	f	k	n	L
		Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)
1½"	150	0.63 (15.9)	4.92 (125)	0.63 (15.9)	2.87 (73)	1.5 (38)	1,18 (30)	1.42 (36)	0.08 (2)	3.87 (98.4)	4	0, 2, 3.94, 5.94 or 7.87 (0, 50, 100, 150 or 200)
	300	0.75 (19.1)	6.10 (155)	0.87 (22.2)	2.87 (73)	1.5 (38)	1,18 (30)	1.42 (36)	0.08 (2)	4.5 (114.3)	4	
	400/600	0.88 (22.3)	6.10 (155)	0.87 (22.2)	2.87 (73)	1.5 (38)	1,18 (30)	1.42 (36)	0.28 (7)	4.5 (114.3)	4	
	900/1500	1.25 (31.8)	7.09 (180)	1.13 (28.6)	2.87 (73)	1.5 (38)	1,18 (30)	1.42 (36)	0.28 (7)	4.87 (123.8)	4	
2"	150	0.69 (17.5)	5.91 (150)	0.75 (19.1)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.08 (2)	4.75 (120.7)	4	
	300	0.81 (20.7)	6.5 (165)	0.75 (19.1)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.08 (2)	5 (127)	8	
	400/600	1.00 (25.4)	6.5 (165)	0.75 (19.1)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.28 (7)	5 (127)	8	
	900/1500	1.5 (38.1)	8.46 (215)	1.00 (25.4)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.28 (7)	6.5 (165.1)	8	
3"	150	0.88 (22.3)	7.48 (190)	0.75 (19.1)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.08 (2)	6 (152.4)	4	
	300	1.06 (27)	8.27 (210)	0.87 (22.2)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.08 (2)	6.63 (168.3)	8	
	600	1.23 (31.8)	8.27 (210)	0.87 (22.2)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.28 (7)	6.63 (168.3)	8	
	1500	1.88 (47.7)	10.43 (265)	1.25 (31.8)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.28 (7)	8 (203.2)	8	
4"	150	0.88 (22.3)	9.06 (230)	0.75 (19.1)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.08 (2)	7.5 (190.5)	8	
	300	1.19 (30.2)	10.04 (255)	0.87 (22.2)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.08 (2)	7.87 (200)	8	
	400	1.38 (35)	10.04 (255)	0.87 (22.2)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.28 (7)	7.87 (200)	8	
	1500	2.13 (54)	12.20 (310)	1.37 (34.9)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.28 (7)	9.5 (241.3)	8	
5"	150	0.88 (22.3)	10.04 (255)	0.87 (22.2)	7.31 (185.7)	5 (127)	4.57 (116)	4.57 (116)	0.08 (2)	8.5 (215.9)	8	
	300	1.31 (33.4)	11.02 (280)	0.87 (22.2)	7.31 (185.7)	5 (127)	4.57 (116)	4.57 (116)	0.08 (2)	9.25 (235)	8	
	400	1.50 (38.1)	11.02 (280)	0.87 (22.2)	7.31 (185.7)	5 (127)	4.57 (116)	4.57 (116)	0.28 (7)	9.25 (235)	8	

d: Inside diameter of gasket according to EN 1092-1/ASME B16.5

d<sub>M</sub>: Effective diaphragm diameter

## Connection according to J.I.S.

Nominal diameter	Nominal pressure	b	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub> with tube	d <sub>M</sub> without tube	f	k	n	L
		mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	Inch (mm)
DN 50	10K	14 (0.55)	155 (6.10)	19 (0.75)	96 (3.78)	48.3 (1.9)	40 (1.57)	51 (2.01)	2	120 (4.72)	4	0, 50, 100, 150 or 200 (0, 2, 3.94, 5.94 or 7.87)
	20K	16 (0.63)	165 (6.50)	19 (0.75)	96 (3.78)	48.3 (1.9)	40 (1.57)	51 (2.01)	2	120 (4.72)	8	
	40K	26 (1.02)	165 (6.50)	19 (0.75)	105 (4.13)	48.3 (1.9)	40 (1.57)	51 (2.01)	2	130 (5.12)	8	
DN 80	10K	16 (0.63)	185 (7.28)	19 (0.75)	126 (4.96)	76 (2.99)	65 (2.56)	85 (3.35)	2	150 (5.91)	8	
	20K	20 (0.79)	200 (7.87)	23 (0.91)	132 (5.20)	76 (2.99)	65 (2.56)	85 (3.35)	2	160 (6.30)	8	
	40K	32 (1.26)	210 (8.27)	23 (0.91)	140 (5.51)	76 (2.99)	65 (2.56)	85 (3.35)	2	170 (6.30)	8	
DN 100	10K	16 (0.63)	210 (8.27)	19 (0.75)	151 (5.94)	94 (3.7)	85 (3.35)	85 (3.35)	2	175 (6.89)	8	
	20K	22 (0.87)	225 (8.86)	23 (0.91)	160 (6.30)	94 (3.7)	85 (3.35)	85 (3.35)	2	185 (7.28)	8	
	40K	36 (1.42)	250 (9.84)	25 (0.98)	165 (6.50)	94 (3.7)	85 (3.35)	85 (3.35)	2	205 (8.07)	8	

d: Inside diameter of gasket according to EN 1092-1/ASME B16.5

d<sub>M</sub>: Effective diaphragm diameter

## Pressure measurement

### Remote seals

for SITRANS P320/P420 / Diaphragm seals in flange design, direct mount, with capillary

#### Overview



Diaphragm seal of flange design for pressure transmitters for differential pressure, fixed connection and with flexible capillary

## Selection and ordering data

		Article No.	Order code
<b>Diaphragm seal</b> Flange design, mounted directly and with capillary Mounting flange (optionally with tube) for direct mounting on high side and flange remote seal without tube, mounted via capillary on low side of SITRANS P for differential pressure; SITRANS P320/420 SITRANS P320/P420 transmitter for differential pressure and flow 7MF03../7MF04.. order separately, scope of delivery: 2 units		7MF0813-	
		● ● ● ● ● - 0 ● ● ● ● ● ● ● ●	
Click the article number for online configuration in the PIA Life Cycle Portal.			
Nominal diameter	Nominal pressure		
<u>Process connection standard EN 1092-1</u>			
DN 40	PN 10/16/25/40	0 D D	
	PN 63/100	0 D F	
	PN 160	0 D G	
DN 50	PN 10/16/25/40	0 E D	
	PN 63	0 E E	
	PN 100	0 E F	
DN 80	PN 10/16/25/40	0 G D	
	PN 100	0 G F	
DN 100	PN 10/16	0 H B	
	PN 25/40	0 H D	
DN 125	PN 16	0 J B	
	PN 40	0 J D	
<u>Process connection standard ASME B16.5</u>			
1½ inches	Class 150	1 L A	
	Class 300	1 L B	
	Class 400/600	1 L D	
	Class 900/1500	1 L F	
2 inches	Class 150	1 M A	
	Class 300	1 M B	
	Class 400/600	1 M D	
	Class 900/1500	1 M F	
3 inches	Class 150	1 P A	
	Class 300	1 P B	
	Class 600	1 P D	
	Class 1500	1 P F	
4 inches	Class 150	1 Q A	
	Class 300	1 Q B	
	Class 400	1 Q C	
	Class 1500	1 Q F	
5 inches	Class 150	1 R A	
	Class 300	1 R B	
	Class 400	1 R C	
<u>Process connection standard J.I.S.</u>			
DN 50	10K	2 E S	
	20K	2 E T	
	40K	2 E U	
DN 80	10K	2 G S	
	20K	2 G T	
	40K	2 G U	
DN 100	10K	2 H S	
	20K	2 H T	
	40K	2 H U	
Other version, add order code and plain text		9 A A	H 1 Y
<u>Capillary length at low side</u>			
1 m (38.37 inches)		1 0	
1.6 m (63 inches)		1 1	
2 m (78.7 inches)		1 2	
2.5 m (98.4 inches)		1 3	
3 m (118.1 inches)		1 4	

# Pressure measurement

## Remote seals

for SITRANS P320/P420 / Diaphragm seals in flange design, direct mount, with capillary

### Selection and ordering data (continued)

	Article No.	Order code
<b>Diaphragm seal</b> Flange design, mounted directly and with capillary Mounting flange (optionally with tube) for direct mounting on high side and flange remote seal without tube, mounted via capillary on low side of SITRANS P for differential pressure; SITRANS P320/420 SITRANS P320/P420 transmitter for differential pressure and flow 7MF03../7MF04.. order separately, scope of delivery: 2 units		
	7MF0813-	
	● ● ● ● ● - 0 ● ● ● ● ● ● ● ●	
4 m (157.5 inches)	1 5	
5 m (196.9 inches)	1 6	
6 m (236.2 inches)	1 7	
7 m (275.6 inches)	1 8	
8 m (315 inches)	2 0	
9 m (354.3 inches)	2 1	
10 m (393.7 inches)	2 2	
Other version, add order code and plain text	9 8	L 1 Y
<b>Filling liquid</b>		
Silicone oil M50		B
High-temperature oil		C
Silicone oil M5		A
Food oil (FDA-listed)		E
Halocarbon oil		D
Neobee M20 (FDA listed)		R
Other version, add order code and plain text		Z P 1 Y
<b>Material of wetted parts</b>		
Stainless steel 316L		
• Without coating		A
• With PFA coating		D
• With PTFE coating		E 0
• With ECTFE coating		F
Monel 400, 2.4360		G
Hastelloy C276, 2.4819		J
Tantalum		K
Titanium, 3.7035		L 0
Nickel 201		M 0
Diaphragm Duplex, 1.4462		Q
Diaphragm and flange Duplex, 1.4462		R
Stainless steel 316L, gold-plated		S 0
Hastelloy C4, 2.4610		U 0
Hastelloy C22, 2.4602		V 0
Other version, add order code and plain text		Z 8 Q 1 Y
<b>Tube length</b>		
Note: If a tube is ordered, only the directly mounted remote seal is equipped with a tube.		
None		0
50 mm (2 inches)		1
100 mm (4 inches)		2
150 mm (6 inches)		3
200 mm (8 inches)		4
250 mm (10 inches)		5
Other version, add order code and plain text		Z 8 Q 1 Y
<b>Customer-specific tube length</b>		
<b>Wetted parts: Stainless steel without coating</b>		
<b>Range</b>	<b>Standard length</b>	
20 ... 50 mm (0.79 ... 1.97 inches)	50 mm (1.97 inches)	A 1
51 ... 100 mm (2.01 ... 3.94 inches)	100 mm (3.94 inches)	A 2
101 ... 150 mm (3.98 ... 5.91 inches)	150 mm (5.91 inches)	A 3
151 ... 200 mm (5.94 ... 7.87 inches)	200 mm (7.87 inches)	A 4
201 ... 250 mm (7.91 ... 9.84 inches)	250 mm (9.84 inches)	A 5
<b>Wetted parts: Stainless steel with ECTFE coating</b>		

## Selection and ordering data (continued)

		Article No.	Order code
<b>Diaphragm seal</b>			
<b>Flange design, mounted directly and with capillary</b>			
<b>Mounting flange (optionally with tube) for direct mounting on high side and flange</b>			
<b>remote seal without tube, mounted via capillary on low side of SITRANS P for</b>			
<b>differential pressure; SITRANS P320/420</b>			
<b>SITRANS P320/P420 transmitter for differential pressure and flow</b>		7MF0813-	
<b>7MF03../7MF04.. order separately, scope of delivery: 2 units</b>			
		● ● ● ● ● - 0 ● ● ● ● ● ● ●	
<u>Range</u>	<u>Standard length</u>		
20 ... 50 mm (0.79 ... 1.97 inches)	50 mm (1.97 inches)		F 1
51 ... 100 mm (2.01 ... 3.94 inches)	100 mm (3.94 inches)		F 2
101 ... 150 mm (3.98 ... 5.91 inches)	150 mm (5.91 inches)		F 3
151 ... 200 mm (5.94 ... 7.87 inches)	200 mm (7.87 inches)		F 4
201 ... 250 mm (7.91 ... 9.84 inches)	250 mm (9.84 inches)		F 5
<b>Wetted parts: Stainless steel with PFA coating</b>			
<u>Range</u>	<u>Standard length</u>		
20 ... 50 mm (0.79 ... 1.97 inches)	50 mm (1.97 inches)		D 1
51 ... 100 mm (2.01 ... 3.94 inches)	100 mm (3.94 inches)		D 2
101 ... 150 mm (3.98 ... 5.91 inches)	150 mm (5.91 inches)		D 3
151 ... 200 mm (5.94 ... 7.87 inches)	200 mm (7.87 inches)		D 4
201 ... 250 mm (7.91 ... 9.84 inches)	250 mm (9.84 inches)		D 5
<b>Wetted parts: Monel 400</b>			
<u>Range</u>	<u>Standard length</u>		
20 ... 50 mm (0.79 ... 1.97 inches)	50 mm (1.97 inches)		G 1
51 ... 100 mm (2.01 ... 3.94 inches)	100 mm (3.94 inches)		G 2
101 ... 150 mm (3.98 ... 5.91 inches)	150 mm (5.91 inches)		G 3
151 ... 200 mm (5.94 ... 7.87 inches)	200 mm (7.87 inches)		G 4
<b>Wetted parts: Hastelloy C276</b>			
<u>Range</u>	<u>Standard length</u>		
20 ... 50 mm (0.79 ... 1.97 inches)	50 mm (1.97 inches)		J 1
51 ... 100 mm (2.01 ... 3.94 inches)	100 mm (3.94 inches)		J 2
101 ... 150 mm (3.98 ... 5.91 inches)	150 mm (5.91 inches)		J 3
151 ... 200 mm (5.94 ... 7.87 inches)	200 mm (7.87 inches)		J 4
<b>Wetted parts: Tantalum</b>			
<u>Range</u>	<u>Standard length</u>		
20 ... 50 mm (0.79 ... 1.97 inches)	50 mm (1.97 inches)		K 1
51 ... 100 mm (2.01 ... 3.94 inches)	100 mm (3.94 inches)		K 2
101 ... 150 mm (3.98 ... 5.91 inches)	150 mm (5.91 inches)		K 3
151 ... 200 mm (5.94 ... 7.87 inches)	200 mm (7.87 inches)		K 4

Options	Order code
<b>Add "-Z" to article number and specify order code.</b>	
<b>Factory certificates</b>	
Quality inspection certificate (5-point characteristic curve test) acc. to IEC 62828-2	C11
Inspection certificate to EN 10204-3.1 for material of body and diaphragm	C12
Manufacturer declaration acc. to NACE (MR 0103-2012 and MR 0175-2009) (only together with wetted parts made of stainless steel 316 L and Hastelloy)	C13
Inspection certificate according to EN 10204-3.1, PMI test of pressure containing and wetted parts	C15
Certificate of FDA-approved fill oil according to EN 10204-2.2	C17
Factory certificate functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511 (includes SIL Declaration of Conformity)	C20

Options	Order code
<b>Add "-Z" to article number and specify order code.</b>	
<b>Accessories</b>	
Representation of the epoxy resin coating Color: Transparent coverage: Front and rear of the remote seal, connecting pipe, process connection of the transmitter. Maximum process medium temperature for epoxy lacquering: 140 °C	D15
Remote seal nameplate Attached, made of stainless steel, contains Article No. and order number of the remote seal	D42
Volume deflagration flame arrester (VDEF) for differential pressure and level transmitters	D62

## Pressure measurement

### Remote seals

for SITRANS P320/P420 / Diaphragm seals in flange design, direct mount, with capillary

#### Selection and ordering data (continued)

Options Add "-Z" to article number and specify order code.	Order code
<b>Negative pressure service</b>	
Negative pressure service for differential pressure transmitters	<b>D83</b>
Extended negative pressure service for differential pressure transmitters	<b>D88</b>
<b>Country-specific approval</b>	
CRN approval Canada (Canadian Registration Number)	<b>E60</b>
<b>Note:</b> If the order code E60 is selected, the option E60 must also be selected for the transmitter!	
<b>General product approvals without explosion proof approvals</b>	
Oil-free and grease-free cleaned version for oxygen application including certificate EN 10204-2.2 (only with filling liquid halocarbon oil max. temperature 60 °C and max. pressure 50 bar)	<b>E80</b>
Oil-free and grease-free cleaned version not for oxygen application, including certificate EN 10204-2.2	<b>E87</b>
<b>Sealing surface</b>	
Sealing surface smooth, form B2/EN 1092-1 or RFSF/ANSI 16.5 (only for wetted parts made of stainless steel 316L)	<b>M50</b>
Sealing surface groove according to EN 1092-1, form D (instead of sealing surface B1, only for wetted parts made of stainless steel 316L)	<b>M54</b>
Sealing surface RJF (groove) according to ASME B16.5 (instead of sealing surface RF 125 ... 250AO, only for wetted parts made of stainless steel 316L)	<b>M64</b>
Sealing surface with tongue to EN 1092-1, form C (for wetted parts made of stainless steel 316L only)	
• DN 25	<b>M70</b>
• DN 40	<b>M71</b>
• DN 50	<b>M72</b>
• DN 80	<b>M73</b>
• DN 100	<b>M74</b>
• DN 125	<b>M75</b>
Sealing surface with spigot according to EN 1092-1, form E (for wetted parts made of stainless steel 316L only)	
• DN 25	<b>M76</b>
• DN 40	<b>M77</b>
• DN 50	<b>M78</b>
• DN 80	<b>M79</b>
• DN 100	<b>M80</b>
• DN 125	<b>M81</b>
Sealing surface female face according to EN 1092-1, form F (only for wetted parts made of stainless steel 316L)	
• DN 25	<b>M82</b>
• DN 40	<b>M83</b>
• DN 50	<b>M84</b>
• DN 80	<b>M85</b>
• DN 100	<b>M86</b>
• DN 125	<b>M87</b>
<b>Capillary coating</b>	
PE protective tube	
• 1 m (38.37 inches)	<b>S10</b>

Options Add "-Z" to article number and specify order code.	Order code
• 1.6 m (63 inches)	<b>S11</b>
• 2 m (78.7 inches)	<b>S12</b>
• 2.5 m (98.4 inches)	<b>S13</b>
• 3 m (118.1 inches)	<b>S14</b>
• 4 m (157.5 inches)	<b>S15</b>
• 5 m (196.9 inches)	<b>S16</b>
• 6 m (236.2 inches)	<b>S17</b>
• 7 m (275.6 inches)	<b>S18</b>
• 8 m (315 inches)	<b>S19</b>
• 9 m (354.3 inches)	<b>S20</b>
• 10 m (393.7 inches)	<b>S21</b>
PTFE protective tube	
• 1 m (38.37 inches)	<b>S40</b>
• 1.6 m (63 inches)	<b>S41</b>
• 2 m (78.7 inches)	<b>S42</b>
• 2.5 m (98.4 inches)	<b>S43</b>
• 3 m (118.1 inches)	<b>S44</b>
• 4 m (157.5 inches)	<b>S45</b>
• 5 m (196.9 inches)	<b>S46</b>
• 6 m (236.2 inches)	<b>S47</b>
• 7 m (275.6 inches)	<b>S48</b>
• 8 m (315 inches)	<b>S49</b>
• 9 m (354.3 inches)	<b>S50</b>
• 10 m (393.7 inches)	<b>S51</b>
PVC protective tube	
• 1 m (38.37 inches)	<b>S70</b>
• 1.6 m (63 inches)	<b>S71</b>
• 2 m (78.7 inches)	<b>S72</b>
• 2.5 m (98.4 inches)	<b>S73</b>
• 3 m (118.1 inches)	<b>S74</b>
• 4 m (157.5 inches)	<b>S75</b>
• 5 m (196.9 inches)	<b>S76</b>
• 6 m (236.2 inches)	<b>S77</b>
• 7 m (275.6 inches)	<b>S78</b>
• 8 m (315 inches)	<b>S79</b>
• 9 m (354.3 inches)	<b>S80</b>
• 10 m (393.7 inches)	<b>S81</b>
<b>Desired remote seal supplier</b>	
<b>Note:</b> If the remote seal is to be supplied only by one of the suppliers specified below, this option needs to be selected. For orders without this option, the remote seal supplier is selected through the dispatch center.	
Company WIKA, Klingenberg	<b>W01</b>
Company Labom, Hude	<b>W02</b>
<b>Special design</b>	
Welded filling hole	<b>X01</b>
<b>Customer-specific tube length</b>	
Customer-specific tube length (specify in plain text in mm)	<b>Y44</b>

## Selection and ordering data (continued)

Options	Order code
Add "-Z" to article number and specify order code.	
<b>Specification of process conditions<sup>1)</sup></b>	
Ambient temperature range	
• +10 ... +50 °C (+50 ... +122 °F) preset	D66

Options	Order code
Add "-Z" to article number and specify order code.	
• -40 ... +50 °C (-40 ... +122 °F)	D67
• -10 ... +85 °C (+14 ... +185 °F)	D68
Process temperature min. ... °C(°F)/max. ... °C(°F)	Y50

<sup>1)</sup> See also "Specification of process conditions for selection and ordering data" in the section "More information" under "Technical reference" for SITRANS P320/P420.

## Technical specifications

## SITRANS P320/P420 diaphragm seals in flange design, mounted directly and with capillary

<b>Nominal diameter</b>	<b>Nominal pressure</b>
Standard of process connection EN 1092-1	
• DN 40	PN 10/16/25/40/63/100/160
• DN 50	PN 10/16/25/40/63/100
• DN 80	PN 10/16/25/40/100
• DN 100	PN 10/16/25/40
• DN 125	PN 16/40
Process connection standard ASME B16.5	
• 1½ inches	Class 150/300/400/600/900/1500
• 2 inches	Class 150/300/400/600/900/1500
• 3 inches	Class 150/300/600/1500
• 4 inches	Class 150/300/400/1500
• 5 inches	Class 150/300/400
Process connection standard J.I.S.	
• DN 50	10K
• DN 80	20K
• DN 100	40K
<b>Sealing surface</b>	
• For stainless steel mat. no. 1.4404/316L	According to EN 1092-1, form B1 or ASME B16.5 RF 125 ... 250 AO
• For the other materials	According to EN 1092-1, form B2 or ASME B16.5 RFSF
<b>Materials</b>	
• Main body	Stainless steel, mat. no. 1.4404/316L
• Wetted parts	Stainless steel, mat. no. 1.4404/316L
	<ul style="list-style-type: none"> <li>• Without coating</li> <li>• PTFE coating</li> <li>• ECTFE coating (for negative pressure on request)</li> <li>• PFA coating</li> </ul>
	Monel 400, mat. no. 2.4360
	Hastelloy C276, mat. no. 2.4819
	Hastelloy C4, mat. no. 2.4610
	Hastelloy C22, mat. no. 2.4602
	Tantalum
	Titanium, mat. no. 3.7035
	Nickel 201
	Duplex 2205, mat. no. 1.4462

## Technical specifications (continued)

## SITRANS P320/P420 diaphragm seals in flange design, mounted directly and with capillary

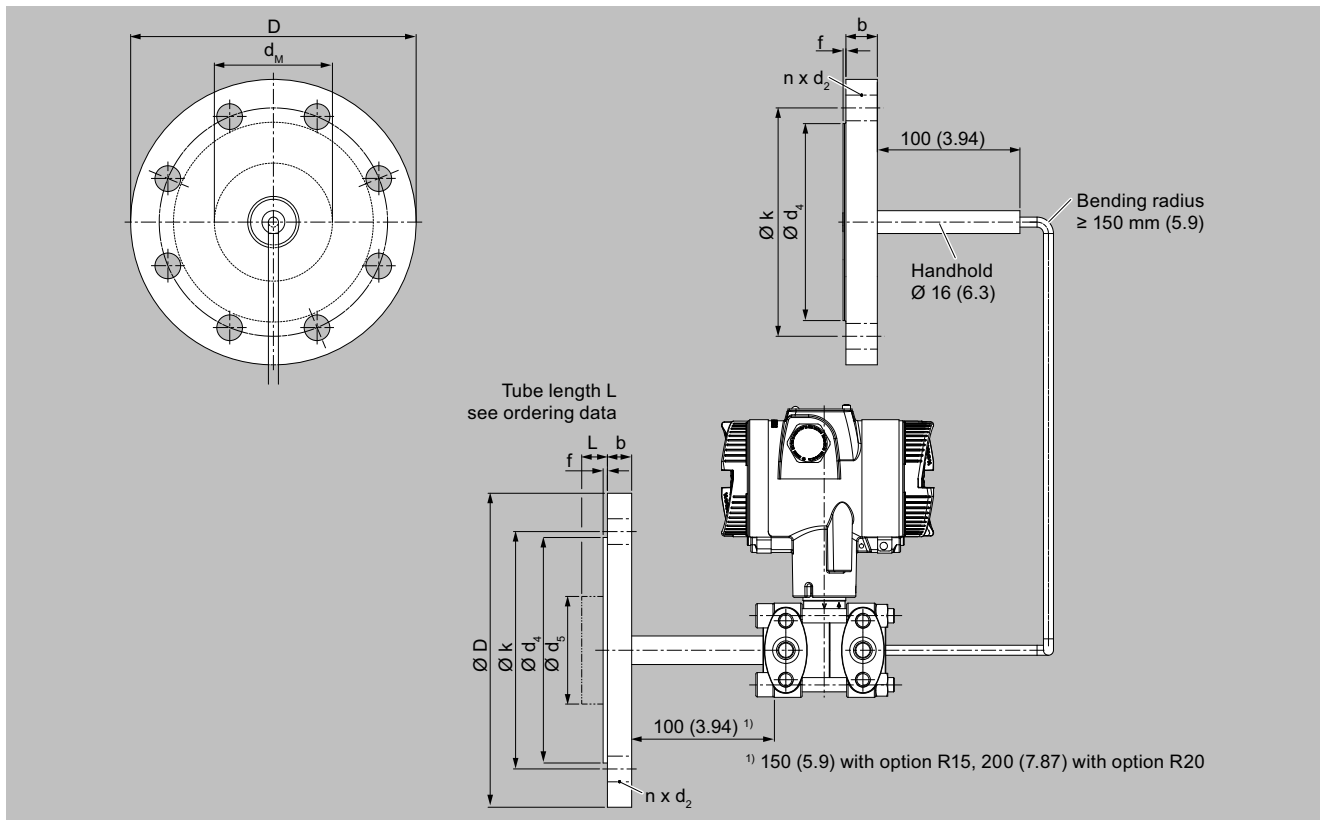
• Wetted parts	Stainless steel 316L, gold plated, layer thickness approx. 25 µm
• Capillary	Stainless steel, mat. no. 1.4571/316Ti (with option W01) or mat. no. 1.4301/304
• Sheath	Flexible spiral coiled tube made of stainless steel, mat. no. 1.4404/316L
<b>Gasket material in the process flanges</b>	
• For gauge pressure transmitters, absolute pressure transmitters and negative pressure applications	Copper
• For other applications	Viton
<b>Permissible pressure load</b>	See above and the technical specifications of the pressure transmitter
<b>Tube length</b>	<ul style="list-style-type: none"> <li>• Without tube</li> <li>• 50 mm (1.97 inch)</li> <li>• 100 mm (3.94 inches)</li> <li>• 150 mm (5.91 inches)</li> <li>• 200 mm (7.87 inches)</li> </ul>
	Note: If a tube is ordered, only the directly mounted remote seal is equipped with a tube.
<b>Capillary</b>	
• Length	≤ 10 m (32.8 ft), longer lengths on request
• Inside diameter	≤ 1.3 mm (0.051 inch)
• Minimum bending radius	150 mm (5.9 inches)
<b>Filling liquid</b>	<ul style="list-style-type: none"> <li>• Silicone oil M5</li> <li>• Silicone oil M50</li> <li>• High-temperature oil</li> <li>• Halocarbon oil (for measuring O<sub>2</sub>)</li> <li>• Food oil (FDA-listed)</li> <li>• Neobee M20 (FDA-listed)</li> </ul>
<b>Max. recommended medium temperature</b>	170 °C (338 °F)
<b>Permissible ambient temperature</b>	Dependent on the pressure transmitter and the filling liquid of the remote seal.
	<b>More information</b> In the technical specifications of the pressure transmitters and in the sections in the technical reference of the remote seals:
	<ul style="list-style-type: none"> <li>• "Function" - "Technical specifications of the remote seal filling liquids"</li> <li>• "More information" - "Specification of process conditions for selection and ordering data"</li> </ul>
<b>Weight</b>	Approx. 4 kg (8.82 lb)
<b>Certificates and approvals</b>	
Classification according to pressure equipment directive (PED 2014/68/EU)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)

## Pressure measurement

### Remote seals

for SITRANS P320/P420 / Diaphragm seals in flange design, direct mount, with capillary

### Dimensional drawings



Diaphragm seals of flange design with flexible capillary, rigid mounting, for connection to a SITRANS P320/420 pressure transmitter for differential pressure, dimensions in mm (inch)

### Connection according to EN 1092-1

Nominal diameter	Nominal pressure	b	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub> with tube	d <sub>M</sub> without tube	f	k	n	L
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
DN 40	PN 10/16/25/40	16	150	18	88	38	30	42	2	110	4	0, 50, 100, 150 or 200
	PN 63/100	24	170	22	88	38	30	42	2	125	4	
	PN 160	26	170	22	88	38	30	42	2	125	4	
DN 50	PN 10/16/25/40	18	165	18	102	48.3	40	51	2	125	4	
	PN 63/100	26	195	26	102	48.3	40	51	2	145	4	
	PN 160	28	195	26	102	48.3	40	51	2	145	4	
DN 80	PN 10/16/25/40	22	200	18	138	76	65	85	2	160	8	
	PN 100	30	230	26	138	76	65	85	2	180	8	
DN 100	PN 10/16	18	220	18	158	94	85	85	2	180	8	
	PN 25/40	22	235	22	162	94	85	85	2	190	8	
DN 125	PN 16	20	250	18	188	127	85	116	2	210	8	
	PN 40	24	270	26	188	127	85	116	2	220	8	

d: Inside diameter of gasket according to EN 1092-1/ASME B16.5

d<sub>M</sub>: Effective diaphragm diameter



## Dimensional drawings (continued)

## Connection according to ASME B16.5

Nominal diameter	Nominal pressure lb/sq.in.	b	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub> with tube	d <sub>M</sub> without tube	f	k	n	L
		Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	
1½"	150	0.63 (15.9)	4.92 (125)	0.63 (15.9)	2.87 (73)	1.5 (38)	1.18 (30)	1.42 (36)	0.08 (2)	3.87 (98.4)	4	0, 2, 3.94, 5.94 or 7.87 (0, 50, 100, 150 or 200)
	300	0.75 (19.1)	6.10 (155)	0.87 (22.2)	2.87 (73)	1.5 (38)	1.18 (30)	1.42 (36)	0.08 (2)	4.5 (114.3)	4	
	400/600	0.88 (22.3)	6.10 (155)	0.87 (22.2)	2.87 (73)	1.5 (38)	1.18 (30)	1.42 (36)	0.28 (7)	4.5 (114.3)	4	
	900/1500	1.25 (31.8)	7.09 (180)	1.13 (28.6)	2.87 (73)	1.5 (38)	1.18 (30)	1.42 (36)	0.28 (7)	4.87 (123.8)	4	
2"	150	0.69 (17.5)	5.91 (150)	0.75 (19.1)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.08 (2)	4.75 (120.7)	4	
	300	0.81 (20.7)	6.5 (165)	0.75 (19.1)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.08 (2)	5 (127)	8	
	400/600	1.00 (25.4)	6.5 (165)	0.75 (19.1)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.28 (7)	5 (127)	8	
	900/1500	1.5 (38.1)	8.46 (215)	1.00 (25.4)	3.63 (92.1)	1.9 (48.3)	1.57 (40)	2.01 (51)	0.28 (7)	6.5 (165.1)	8	
3"	150	0.88 (22.3)	7.48 (190)	0.75 (19.1)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.08 (2)	6 (152.4)	4	
	300	1.06 (27)	8.27 (210)	0.87 (22.2)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.08 (2)	6.63 (168.3)	8	
	600	1.23 (31.8)	8.27 (210)	0.87 (22.2)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.28 (7)	6.63 (168.3)	8	
	1500	1.88 (47.7)	10.43 (265)	1.25 (31.8)	5 (127)	3 (76)	2.65 (65)	3.35 (85)	0.28 (7)	8 (203.2)	8	
4"	150	0.88 (22.3)	9.06 (230)	0.75 (19.1)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.08 (2)	7.5 (190.5)	8	
	300	1.19 (30.2)	10.04 (255)	0.87 (22.2)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.08 (2)	7.87 (200)	8	
	400	1.38 (35)	10.04 (255)	0.87 (22.2)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.28 (7)	7.87 (200)	8	
	1500	2.13 (54)	12.20 (310)	1.37 (34.9)	6.19 (157.2)	3.69 (94)	3.35 (85)	3.35 (85)	0.28 (7)	9.5 (241.3)	8	
5"	150	0.88 (22.3)	10.04 (255)	0.87 (22.2)	7.31 (185.7)	5 (127)	4.57 (116)	4.57 (116)	0.08 (2)	8.5 (215.9)	8	
	300	1.31 (33.4)	11.02 (280)	0.87 (22.2)	7.31 (185.7)	5 (127)	4.57 (116)	4.57 (116)	0.08 (2)	9.25 (235)	8	
	400	1.50 (38.1)	11.02 (280)	0.87 (22.2)	7.31 (185.7)	5 (127)	4.57 (116)	4.57 (116)	0.28 (7)	9.25 (235)	8	

d: Inside diameter of gasket according to EN 1092-1/ASME B16.5

d<sub>M</sub>: Effective diaphragm diameter

## Connection according to J.I.S.

Nominal diameter	Nominal pressure	b	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub> with tube	d <sub>M</sub> without tube	f	k	n	L
		mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	
DN 50	10K	14 (0.55)	155 (6.10)	19 (0.75)	96 (3.78)	48.3 (1.9)	40 (1.57)	51 (2.01)	2	120 (4.72)	4	0, 50, 100, 150 or 200 (0, 2, 3.94, 5.94 or 7.87)
	20K	16 (0.63)	165 (6.50)	19 (0.75)	96 (3.78)	48.3 (1.9)	40 (1.57)	51 (2.01)	2	120 (4.72)	8	
	40K	26 (1.02)	165 (6.50)	19 (0.75)	105 (4.13)	48.3 (1.9)	40 (1.57)	51 (2.01)	2	130 (5.12)	8	
DN 80	10K	16 (0.63)	185 (7.28)	19 (0.75)	126 (4.96)	76 (2.99)	65 (2.56)	85 (3.35)	2	150 (5.91)	8	
	20K	20 (0.79)	200 (7.87)	23 (0.91)	132 (5.20)	76 (2.99)	65 (2.56)	85 (3.35)	2	160 (6.30)	8	
	40K	32 (1.26)	210 (8.27)	23 (0.91)	140 (5.51)	76 (2.99)	65 (2.56)	85 (3.35)	2	170 (6.30)	8	
DN 100	10K	16 (0.63)	210 (8.27)	19 (0.75)	151 (5.94)	94 (3.7)	85 (3.35)	85 (3.35)	2	175 (6.89)	8	
	20K	22 (0.87)	225 (8.86)	23 (0.91)	160 (6.30)	94 (3.7)	85 (3.35)	85 (3.35)	2	185 (7.28)	8	
	40K	36 (1.42)	250 (9.84)	25 (0.98)	165 (6.50)	94 (3.7)	85 (3.35)	85 (3.35)	2	205 (8.07)	8	

d: Inside diameter of gasket according to EN 1092-1/ASME B16.5

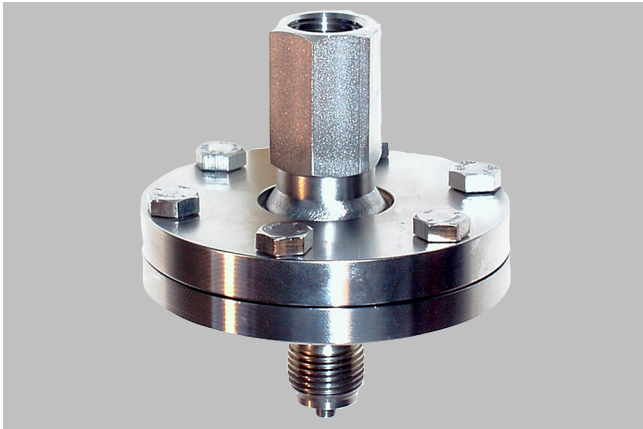
d<sub>M</sub>: Effective diaphragm diameter

## Pressure measurement

### Remote seals

for SITRANS P320/P420 / Diaphragm seals in screwed design

#### Overview



Diaphragm seal, screwed design with inside diaphragm for gauge, absolute and differential pressure for direct mounting



Process connection: open measurement flange

## Selection and ordering data

		Article No.	Order code
<b>Diaphragm seals, screwed</b>			
With inside diaphragm, direct mounting or connected via flexible capillary pipe to a transmitter			
SITRANS P320/P420 or SITRANS P300 for gauge and absolute pressure (only in conjunction with underpressure service)		7MF0840-	
7MF03../7MF04../7MF802. to be ordered separately; scope of delivery: 1 unit			
SITRANS P320/P420 for differential pressure and flow		7MF0842-	
7MF03../7MF04.. to be ordered separately; scope of delivery: 2 units			
		● ● ● ● ● - 0 ● ● 0 ● ● ●	
Click the article number for online configuration in the PIA Life Cycle Portal.			
<b>Nominal diameter</b>	<b>Nominal pressure</b>		
<u>Open flange, process connection standard EN 1092-1</u>			
DN 15	PN 10/16/25/40	0 A D	
	PN 63/100	0 A F	
	PN 160	0 A G	
	PN 250	0 A H	
DN 20	PN 10/16/25/40	0 A M	
DN 25	PN 10/16/25/40	0 B D	
	PN 63/100	0 B F	
	PN 160	0 B G	
	PN 250	0 B H	
<u>Open flange, process connection standard ASME B16.5</u>			
½ inch	Class 150	1 K A	
	Class 300	1 K B	
	Class 600	1 K C	
	Class 1500	1 K D	
¾ inch	Class 150	1 K F	
	Class 300	1 K G	
	Class 600	1 K H	
	Class 1500	1 K J	
1 inch	Class 150	1 K L	
	Class 300	1 K M	
	Class 600	1 K N	
	Class 1500	1 K P	
<u>Process connection: Thread according to EN 837-1</u>			
G¼"B	PN 100	3 S B	
G¼"B	PN 250	3 S C	
G½"B	PN 100	3 S F	
G½"B	PN 250	3 S G	
G¾"B	PN 100	3 S K	
G¾"B	PN 250	3 S L	
G1"B	PN 100	3 S P	
G1"B	PN 250	3 S Q	
<u>Process connection: thread according to ASME B1.20.1</u>			
¼" NPTM	Class 1500	5 T A	
¼" NPTM	Class 3675	5 T B	
¼" NPTF	Class 1500	5 T C	
¼" NPTF	Class 3675	5 T D	
½" NPTM	Class 1500	5 T E	
½" NPTM	Class 3675	5 T F	
½" NPTF	Class 1500	5 T G	
½" NPTF	Class 3675	5 T H	
¾" NPTM	Class 1500	5 T J	
¾" NPTM	Class 3675	5 T K	
¾" NPTF	Class 1500	5 T L	
¾" NPTF	Class 3675	5 T M	
1" NPTM	Class 1500	5 T N	
1" NPTM	Class 3675	5 T P	

# Pressure measurement

## Remote seals

### for SITRANS P320/P420 / Diaphragm seals in screwed design

#### Selection and ordering data (continued)

		Article No.	Order code
<b>Diaphragm seals, screwed</b>			
With inside diaphragm, direct mounting or connected via flexible capillary pipe to a transmitter			
SITRANS P320/P420 or SITRANS P300 for gauge and absolute pressure (only in conjunction with underpressure service)		7MF0840-	
7MF03../7MF04../7MF802. to be ordered separately; scope of delivery: 1 unit			
SITRANS P320/P420 for differential pressure and flow		7MF0842-	
7MF03../7MF04.. to be ordered separately; scope of delivery: 2 units			
		● ● ● ● ● - 0 ● ● 0 ● ● ●	
1" NPTF	Class 1500	5 T Q	
1" NPTF	Class 3675	5 T R	
Other version, add order code and plain text		9 A A	H 1 Y
<b>Transmitter connection</b>			
Without capillary pipe, direct mount, straight connection (for gauge pressure transmitters)		0 0	
Other version, add order code and plain text			
1 m (38.37 inches)		1 0	
1.6 m (63 inches)		1 1	
2 m (78.7 inches)		1 2	
2.5 m (98.4 inches)		1 3	
3 m (118.1 inches)		1 4	
4 m (157.5 inches)		1 5	
5 m (196.9 inches)		1 6	
6 m (236.2 inches)		1 7	
7 m (275.6 inches)		1 8	
8 m (315 inches)		2 0	
9 m (354.3 inches)		2 1	
10 m (393.7 inches)		2 2	
Other version, add order code and plain text		9 8	L 1 Y
<b>Filling liquid</b>			
Silicone oil M50			B
High-temperature oil			C
Silicone oil M5			A
Food oil (FDA-listed)			E
Neobee M20 (FDA-listed)			R
Halocarbon oil			D
Other version, add order code and plain text			Z P 1 Y
<b>Material of wetted parts</b>			
Stainless steel 316L without coating			A
Stainless steel 316L with PTFE coating			E
Monel 400, 2.4360			G
Hastelloy C276, 2.4819			J
Tantalum			K
Stainless steel 316L, gold-plated			S
Neobee M20 (FDA listed)			R
Hastelloy C4, 2.4610			U
Other version, add order code and plain text			Z Q 1 Y

Options	Order code
<b>Add "-Z" to article number and specify order code.</b>	
<b>Factory certificates</b>	
Quality inspection certificate (5-point characteristic curve test) acc. to IEC 62828-2	C11
Inspection certificate to EN 10204-3.1 for material of body and diaphragm	C12
Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009) (only together with wetted parts made of stainless steel 316 L and Hastelloy)	C13
Inspection certificate according to EN 10204-3.1, PMI test of pressure containing and wetted parts	C15
Certificate of FDA-approved fill oil according to EN 10204-2.2	C17

Options	Order code
<b>Add "-Z" to article number and specify order code.</b>	
Factory certificate functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511 (includes SIL Declaration of Conformity)	C20
<b>Accessories</b>	
Representation of the epoxy resin coating Color: Transparent coverage: Front and rear of the remote seal, connecting pipe, process connection of the transmitter. Maximum process medium temperature for epoxy lacquer-ing: 140 °C	D15
Flushing port ¼" 18 NPT unsealed	D70

## Selection and ordering data (continued)

Options	Order code
<b>Add "-Z" to article number and specify order code.</b>	
Flushing port ¼" 18 NPT sealed with stainless steel plug	D71
Gasket material between upper and lower enclosure PTFE (instead of FKM viton)	D75
Gasket material between upper and lower enclosure metal C spring lock washer (instead of FKM viton)	D76
PTFE coating of lower section (only for G½B PN 100, DN 25 PN 10 ... 40, 1 inch Class 150/300)	D77
<b>Country-specific approval</b>	
CRN approval Canada (Canadian Registration Number)	E60
<b>Note:</b>	
If the order code E60 is selected, the option E60 must also be selected for the transmitter!	
<b>Negative pressure service</b>	
Negative pressure service (for gauge pressure and absolute pressure transmitters)	D81
Negative pressure service (for differential pressure transmitters)	D83
Extended negative pressure service (for gauge pressure and absolute pressure transmitters) (only 7MF0800)	D85
Extended negative pressure service (for differential pressure transmitters)	D88
<b>General product approvals without explosion proof approvals</b>	
Oil-free and grease-free cleaned version for oxygen application including certificate EN 10204-2.2 (only with filling liquid halocarbon oil max. temperature 60 °C and max. pressure 50 bar)	E80
Oil-free and grease-free cleaned version not for oxygen application, including certificate EN 10204-2.2	E87
<b>Capillary connection</b> (Only for 7MF0840)	
Single-side mounted at differential pressure transmitter at high side	S03
Single-side mounted at differential pressure transmitter at low side	S04
Cooling element	S08
<b>Capillary coating</b>	
PE protective tube	
• 1 m (38.37 inches)	S10
• 1.6 m (63 inches)	S11
• 2 m (78.7 inches)	S12
• 2.5 m (98.4 inches)	S13
• 3 m (118.1 inches)	S14
• 4 m (157.5 inches)	S15
• 5 m (196.9 inches)	S16
• 6 m (236.2 inches)	S17
• 7 m (275.6 inches)	S18
• 8 m (315 inches)	S19
• 9 m (354.3 inches)	S20
• 10 m (393.7 inches)	S21
PTFE protective tube	
• 1 m (38.37 inches)	S40
• 1.6 m (63 inches)	S41
• 2 m (78.7 inches)	S42

Options	Order code
<b>Add "-Z" to article number and specify order code.</b>	
• 2.5 m (98.4 inches)	S43
• 3 m (118.1 inches)	S44
• 4 m (157.5 inches)	S45
• 5 m (196.9 inches)	S46
• 6 m (236.2 inches)	S47
• 7 m (275.6 inches)	S48
• 8 m (315 inches)	S49
• 9 m (354.3 inches)	S50
• 10 m (393.7 inches)	S51
PVC protective tube	
• 1 m (38.37 inches)	S70
• 1.6 m (63 inches)	S71
• 2 m (78.7 inches)	S72
• 2.5 m (98.4 inches)	S73
• 3 m (118.1 inches)	S74
• 4 m (157.5 inches)	S75
• 5 m (196.9 inches)	S76
• 6 m (236.2 inches)	S77
• 7 m (275.6 inches)	S78
• 8 m (315 inches)	S79
• 9 m (354.3 inches)	S80
• 10 m (393.7 inches)	S81
<b>Desired remote seal supplier</b>	
<b>Note:</b>	
If the remote seal is to be supplied only by one of the suppliers specified below, this option needs to be selected. For orders without this option, the remote seal supplier is selected through the dispatch center.	
Company WIKA, Klingenberg	W01
Company Labom, Hude	W02
<b>Special design</b>	
Welded filling holes	X01
<b>Customer-specific tube length</b>	
Customer-specific tube length (specify in plain text)	Y44
<b>Specification of process conditions<sup>1)</sup></b>	
Ambient temperature range	
• +10 ... +50 °C (+50 ... +122 °F) preset	D66
• -40 ... +50 °C (-40 ... +122 °F)	D67
• -10 ... +85 °C (+14 ... +185 °F)	D68
Process temperature min. ... °C/(°F)/max. ... °C/(°F)	Y50

<sup>1)</sup> See also "Specification of process conditions for selection and ordering data" in the section "More information" under "Technical reference" for SITRANS P320/P420.

# Pressure measurement

## Remote seals

### for SITRANS P320/P420 / Diaphragm seals in screwed design

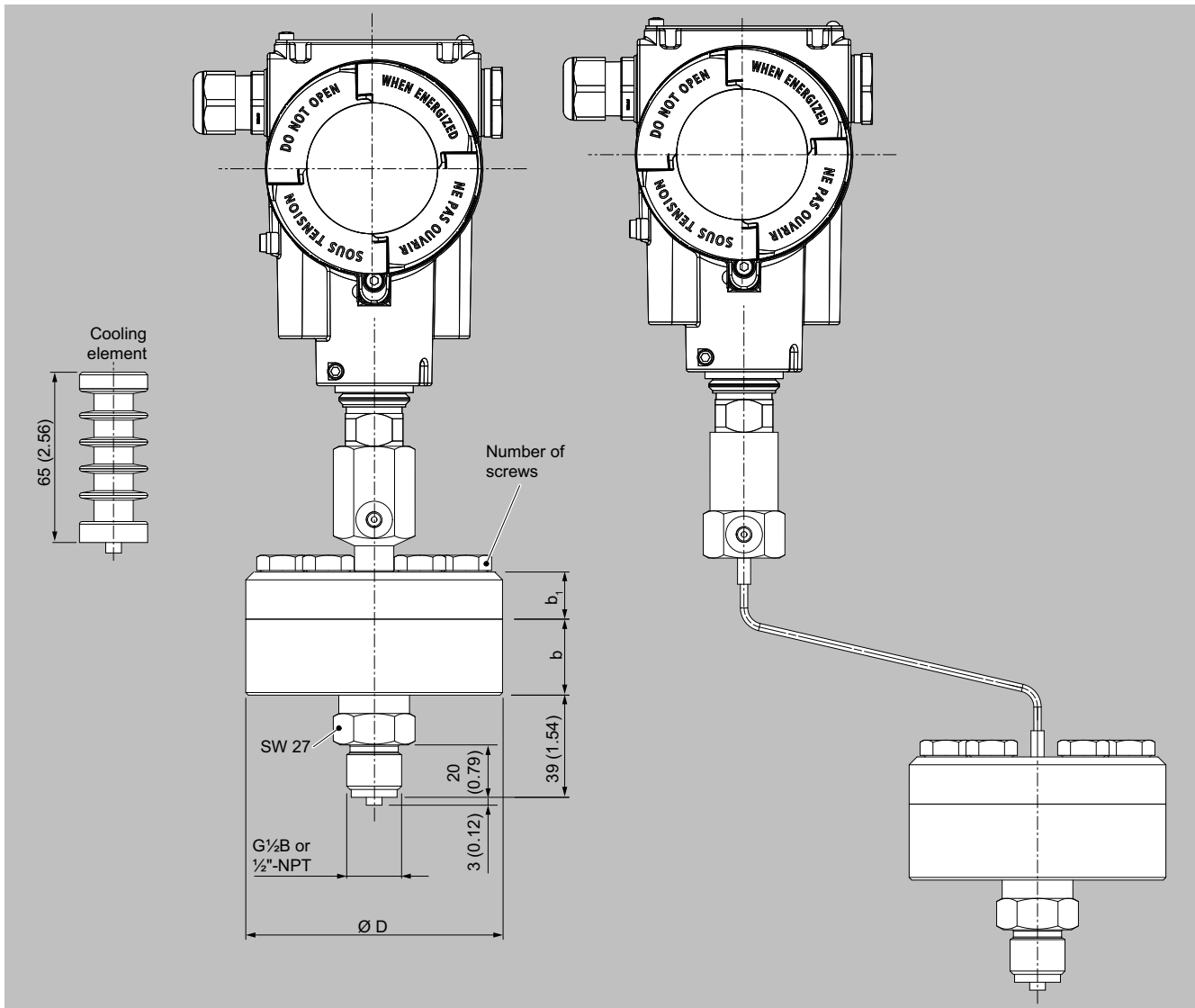
#### Technical specifications

SITRANS P320/P420 diaphragm seals, screwed design	
<b>Process connection</b> - Open flange EN 1092-1  • DN 15 • DN 20 • DN 25  Open flange ASME B16.5 • ½ inch, ¾ inch, 1 inch  Thread EN 837-1 • G¼"B, G½"B, G¾"B, G1"B  Thread ASME B1.20.1 • ¼" NPT-M, ¼" NPT-F • ½" NPT-M, ½" NPT-F • ¾" NPT-M, ¾" NPT-F • 1" NPT-M, 1" NPT-F	<b>Nominal pressure</b>  PN 10/16/25/40/63/100/160/250  PN 10/16/25/40  PN 10/16/25/40/63/100/160/250  Class 150/300/600/1500  PN 100/250  Class 1500/3675 Class 1500/3675 Class 1500/3675 Class 1500/3675
<b>Sealing surface for open measurement flange</b> • For stainless steel mat. no. 1.4404/316L	According to EN 1092-1, form B1 or ASMR B16.5 RF 125 ... 250 AA
<b>Materials</b> • Lower section (in the case of process connection thread) • Diaphragm  • Top section (process connection in the case of an open measurement flange) • Capillary • Gasket material on the process connection • Gasket material between top and bottom section	Stainless steel, mat. no. 1.4404/316L  Stainless steel, mat. no. 1.4404/316L • Without coating • With PTFE coating  Monel 400, mat. no. 2.4360 Hastelloy C276, mat. no. 2.4819 Hastelloy C4, mat. no. 2.4610 Hastelloy C22, mat. no. 2.4602 Tantalum Titanium, mat. no. 3.7035 Nickel 201 Stainless steel 316L, gold plated, layer thickness approx. 25 µm  Stainless steel, mat. no. 1.4404/316L  Stainless steel, mat. no. 1.4571/316Ti (with option W01) or mat. no. 1.4301/304  Viton or copper (in the case of vacuum-free version)  Viton (FKM) (standard) Teflon (PTFE) metal spring ring (silver-coated)
<b>Capillary</b> • Length • Inside diameter • Minimum bending radius • Sheath	≤ 10 m (32.8 ft) ≤ 1.3 mm (0.051 inch) 150 mm (5.9 inches) Flexible spiral coiled tube made of stainless steel, mat. no. 14301/304
<b>Filling liquid</b> (for remote seals of sandwich and flange type)	• Silicone oil M5 • Silicone oil M50 • High-temperature oil • Halocarbon oil (for measuring O <sub>2</sub> ) • Food oil (FDA-listed) • Neobee M20 (FDA-listed)
<b>Max. recommended medium temperature</b>	170 °C (338 °F)

#### Technical specifications (continued)

SITRANS P320/P420 diaphragm seals, screwed design	
<b>Permissible ambient temperature</b>	Dependent on the pressure transmitter and the filling liquid of the remote seal. <b>More information</b> In the technical specifications of the pressure transmitters and in the sections in the technical reference of the remote seals: • "Function" - "Technical specifications of the remote seal filling liquids" • "More information" - "Specification of process conditions for selection and ordering data"
<b>Weight</b>	Approx. 1.5 kg (3.3 lbs)
<b>Certificates and approvals</b> Classification according to pressure equipment directive (PED 2014/68/EU)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)

## Dimensional drawings



Diaphragm seal, screwed design with interior diaphragm, for gauge and absolute pressure, attached to the transmitter directly and with capillaries, dimensions in mm (inch)

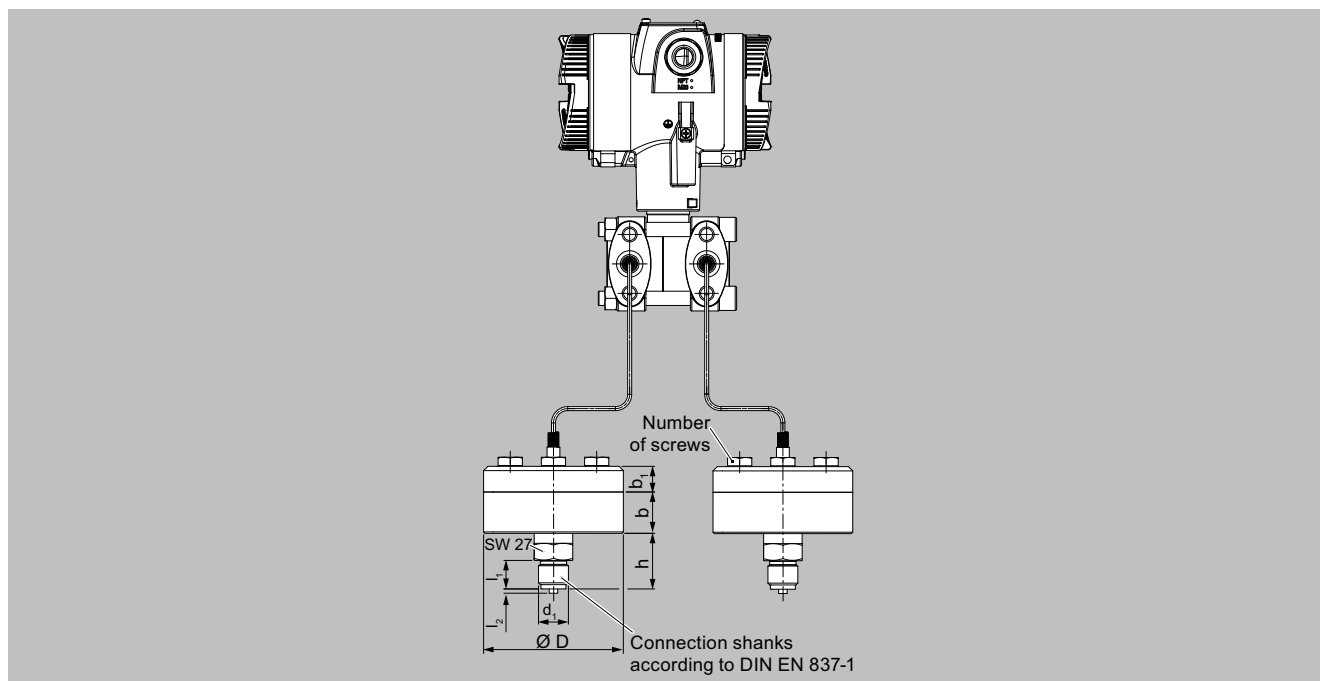
Range	D mm (inch)	b mm (inch)	b <sub>1</sub> mm (inch)	Number of screws
Up to 100 bar	98 (3.86)	14 (0.55)	16 (0.63)	6
Up to 250 bar	98 (3.86)	14 (0.55)	20 (0.79)	12

## Pressure measurement

### Remote seals

for SITRANS P320/P420 / Diaphragm seals in screwed design

#### Dimensional drawings (continued)



Diaphragm seal, screwed design with interior diaphragm, for differential pressure, attached to the transmitter directly and with capillaries, dimensions in mm (inch)

Nominal diameter	Nominal pressure	D mm (inch)	d4	k	M	Number of holes	b mm (inch)	b1	f
DN 25	PN 10/16/25/40	115 (4.53)	68 (2.68)	85 (3.35)	M12	4	26 (1.02)	12 (0.47)	21 (0.83)
1"	150 lb/sq.in	110 (4.33)	50.8 (2)	79.4 (3.13)	M12	4	32 (1.26)	12 (0.47)	1.6 (0.063)
1"	300 lb/sq.in	125 (4.92)	50.8 (2)	88.9 (3.5)	M16	4	32 (1.26)	12 (0.47)	1.6 (0.063)



**Overview**

Quick-release diaphragm seals, acc. to DIN 11851 with slotted union nut



Quick-release diaphragm seals, with clamp connection

Quick-release diaphragm seals can be supplied for the pressure transmitters of the SITRANS P320/420 series.

The quick-release remote seals are common designs in the food industry. Their design means that the medium cannot accumulate in dead volumes. The remote seal's quick release mechanism enables fast disassembly for cleaning.

# Pressure measurement

## Remote seals

for SITRANS P320/P420 / Diaphragm seals with quick-release

### Selection and ordering data

		Article No.	Order code
Diaphragm seal with quick-release			
Flange type design, with flexible capillary pipe or direct mounting on pressure transmitter			
SITRANS P320/P420 or SITRANS P300 for gauge and absolute pressure (only in conjunction with underpressure service)		7MF0830-	
7MF03../7MF04../7MF802. to be ordered separately; scope of delivery: 1 unit			
SITRANS P320/P420 for absolute pressure from differential pressure		7MF0832-	
7MF03../7MF04.. order separately, scope of delivery: 2 units			
		● ● ● ● ● - 0 ● A 0 ● ● ●	
Click the article number for online configuration in the PIA Life Cycle Portal.			
Nominal diameter	Nominal pressure		
<u>Process connection standard DIN 11851 with groove nut</u>			
DN 25	PN 40	0 B M	
DN 32	PN 40	0 C D	
DN 40	PN 40	0 D M	
DN 50	PN 25	0 E K	
DN 65	PN 25	0 F L	
DN 80	PN 25	0 G K	
<u>Process connection standard DIN 11851 with thread</u>			
DN 25	PN 40	1 B M	
DN 32	PN 40	1 C D	
DN 40	PN 40	1 D M	
DN 50	PN 25	1 E K	
DN 65	PN 25	1 F L	
DN 80	PN 25	1 G K	
<u>Process connection standard clamp ISO 2852</u>			
DN 25	PN 16	2 B K	
DN 38	PN 16	2 C Q	
DN 51	PN 16	2 F H	
DN 63.5	PN 10	2 F J	
DN 76.1	PN 10	2 G J	
<u>Process connection standard clamp DIN 32676, schedule C</u>			
DN 1 inch	PN 25	3 K V	
DN 1½ inch	PN 25	3 L V	
DN 2 inch	PN 16	3 M V	
DN 2½ inch	PN 16	3 N V	
DN 3 inch	PN 10	3 P V	
<u>Process connection standard clamp DIN 32676, schedule A metric</u>			
DN 25	PN 25	4 B L	
DN 32	PN 25	4 C C	
DN 40	PN 25	4 D L	
DN 50	PN 16	4 E J	
DN 65	PN 10	4 F K	
<u>Varivent</u>			
DN 25/32	PN 25	5 C L	
DN 40/50	PN 25	5 D K	
<u>DRD flange</u>			
DN 50	PN 40	6 E M	
Other version, add order code and plain text		9 A A	H 1 Y
<b>Transmitter connection</b>			
Without capillary pipe, direct mount, straight connection (for gauge pressure transmitters)		0 0	
Connection via capillary			
Capillary length:			
1 m (38.37 inches)		1 0	
1.6 m (63 inches)		1 1	
2 m (78.7 inches)		1 2	
2.5 m (98.4 inches)		1 3	
3 m (118.1 inches)		1 4	
4 m (157.5 inches)		1 5	

## Selection and ordering data (continued)

	Article No.	Order code
<b>Diaphragm seal with quick-release</b>		
<b>Flange type design, with flexible capillary pipe or direct mounting on pressure transmitter</b>		
<b>SITRANS P320/P420 or SITRANS P300 for gauge and absolute pressure (only in conjunction with underpressure service)</b>	7MF0830-	
<b>7MF03../7MF04../7MF802. to be ordered separately; scope of delivery: 1 unit</b>		
<b>SITRANS P320/P420 for absolute pressure from differential pressure</b>	7MF0832-	
<b>7MF03../7MF04.. order separately, scope of delivery: 2 units</b>		
	● ● ● ● ● - 0 ● A 0 ● ● ●	
5 m (196.9 inches)	1 6	
6 m (236.2 inches)	1 7	
7 m (275.6 inches)	1 8	
8 m (315 inches)	2 0	
9 m (354.3 inches)	2 1	
10 m (393.7 inches)	2 2	
Other version, add order code and plain text	9 8	L 1 Y
<b>Filling liquid</b>		
Food oil (FDA-listed)		E
Neobee M20 (FDA listed)		R
Other version, add order code and plain text		Z P 1 Y

Options	Order code
<b>Add "-Z" to article number and specify order code.</b>	
<b>Factory certificates</b>	
Quality inspection certificate (5-point characteristic curve test) acc. to IEC 62828-2	C11
Inspection certificate to EN 10204-3.1 for material of body and diaphragm	C12
Inspection certificate according to EN 10204-3.1, PMI test of pressure containing and wetted parts	C15
Certificate of FDA-approved fill oil according to EN 10204-2.2	C17
Factory certificate functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511 (includes SIL Declaration of Conformity)	C20
<b>Accessories</b>	
Remote seal nameplate Attached, made of stainless steel, contains Article No. and order number of the remote seal	D42
<b>Negative pressure service</b>	
Negative pressure service	
• For gauge pressure and absolute pressure transmitters	D81
• For differential pressure transmitters	D83
Extended negative pressure service	
• For gauge pressure and absolute pressure transmitters	D85
• For differential pressure transmitters	D88
<b>Country-specific approval</b>	
CRN approval Canada (Canadian Registration Number)	E60
<b>Note:</b> If the order code E60 is selected, the option E60 must also be selected for the transmitter!	
<b>Capillary connection</b> (Only for 7MF0830)	
Single-side mounted at differential pressure transmitter at high side	S03
Single-side mounted at differential pressure transmitter at low side	S04
Cooling element	S08

Options	Order code
<b>Add "-Z" to article number and specify order code.</b>	
<b>Capillary coating</b>	
PE protective tube	
• 1 m (38.37 inches)	S10
• 1.6 m (63 inches)	S11
• 2 m (78.7 inches)	S12
• 2.5 m (98.4 inches)	S13
• 3 m (118.1 inches)	S14
• 4 m (157.5 inches)	S15
• 5 m (196.9 inches)	S16
• 6 m (236.2 inches)	S17
• 7 m (275.6 inches)	S18
• 8 m (315 inches)	S19
• 9 m (354.3 inches)	S20
• 10 m (393.7 inches)	S21
PTFE protective tube	
• 1 m (38.37 inches)	S40
• 1.6 m (63 inches)	S41
• 2 m (78.7 inches)	S42
• 2.5 m (98.4 inches)	S43
• 3 m (118.1 inches)	S44
• 4 m (157.5 inches)	S45
• 5 m (196.9 inches)	S46
• 6 m (236.2 inches)	S47
• 7 m (275.6 inches)	S48
• 8 m (315 inches)	S49
• 9 m (354.3 inches)	S50
• 10 m (393.7 inches)	S51
PVC protective tube	
• 1 m (38.37 inches)	S70
• 1.6 m (63 inches)	S71

## Pressure measurement

### Remote seals

#### for SITRANS P320/P420 / Diaphragm seals with quick-release

#### Selection and ordering data (continued)

Options	Order code
<b>Add "-Z" to article number and specify order code.</b>	
• 2 m (78.7 inches)	S72
• 2.5 m (98.4 inches)	S73
• 3 m (118.1 inches)	S74
• 4 m (157.5 inches)	S75
• 5 m (196.9 inches)	S76
• 6 m (236.2 inches)	S77
• 7 m (275.6 inches)	S78
• 8 m (315 inches)	S79
• 9 m (354.3 inches)	S80
• 10 m (393.7 inches)	S81

Options	Order code
<b>Add "-Z" to article number and specify order code.</b>	
<b>Desired remote seal supplier</b>	
<b>Note:</b>	
If the remote seal is to be supplied only by one of the suppliers specified below, this option needs to be selected. For orders without this option, the remote seal supplier is selected through the dispatch center.	
Company WIKA, Klingenberg	W01
Company Labom, Hude	W02
<b>Special design</b>	
Welded filling holes	X01
<b>Customer-specific tube length</b>	
Customer-specific tube length (specify in plain text in mm)	Y44
<b>Specification of process conditions<sup>1)</sup></b>	
Ambient temperature range	
• +10 ... +50 °C (+50 ... +122 °F) preset	D66
• -40 ... +50 °C (-40 ... +122 °F)	D67
• -10 ... +85 °C (+14 ... +185 °F)	D68
Process temperature min. ... °C/(°F)/max. ... °C/(°F)	Y50

<sup>1)</sup> See also "Specification of process conditions for selection and ordering data" in the section "More information" under "Technical reference" for SITRANS P320/P420.

## Technical specifications

SITRANS P320/P420 quick-release diaphragm seals	
<b>Connection, nominal diameter</b>	<b>Nominal pressure</b>
Process connection standard DIN 11851 with groove nut	
• DN 25/32/40	PN 40
• DN 50/65/80	PN 25
Process connection standard DIN 11851 with thread	
• DN 25/32/40	PN 40
• DN 50/65/80	PN 25
Standard of process connection clamp ISO 2852	
• DN 25/38/51	PN 16
• DN 63.5/76.1	PN 10
Standard of process connection clamp DIN 32676, schedule C Tri-Clamp	
• 1 inch, 1½ inches	PN 25
• 2 inches, 2½ inch	PN 16
• 3 inches	PN 10
Standard of process connection clamp DIN 32676, schedule A metric	
• DN 25/32/40	PN 25
• DN 50	PN 16
• DN 65	PN 10
Varivent	
• DN 25/32/40/50	PN 25
DRD flange	
• DN 50	PN 40
<b>Materials</b>	
• Main body	Stainless steel, mat. no. 1.4404/316L
• Wetted parts	Stainless steel, mat. no. 1.4404/316L
• Capillary	Stainless steel, mat. no. 1.4571/316Ti (with option W01) or mat. no. 1.4301/304
• Sheath	Spiral coiled tube made of stainless steel, mat. no. 1.4404/316L
<b>Permissible pressure load</b>	See above and the technical specifications of the pressure transmitter
<b>Tube length</b>	Without tube
<b>Capillary</b>	
• Length	≤ 10 m (32.8 ft), longer lengths on request
• Inside diameter	≤ 1.3 mm (0.051 inch)
• Minimum bending radius	150 mm (5.9 inches)
• Sheath	Flexible spiral coiled tube made of stainless steel mat. no. 1.4404/316L
<b>Filling liquid</b>	<ul style="list-style-type: none"> <li>• Food oil (FDA-listed)</li> <li>• Neobee M20 (FDA-listed)</li> </ul>
<b>Permissible ambient temperature</b>	Dependent on the pressure transmitter and the filling liquid of the remote seal. <b>More information</b> In the technical specifications of the pressure transmitters and in the sections in the technical reference of the remote seals: <ul style="list-style-type: none"> <li>• "Function" - "Technical specifications of the remote seal filling liquids"</li> <li>• "More information" - "Specification of process conditions for selection and ordering data"</li> </ul>
<b>Weight</b>	Approx. 4 kg (8.82 lbs)

## Technical specifications (continued)

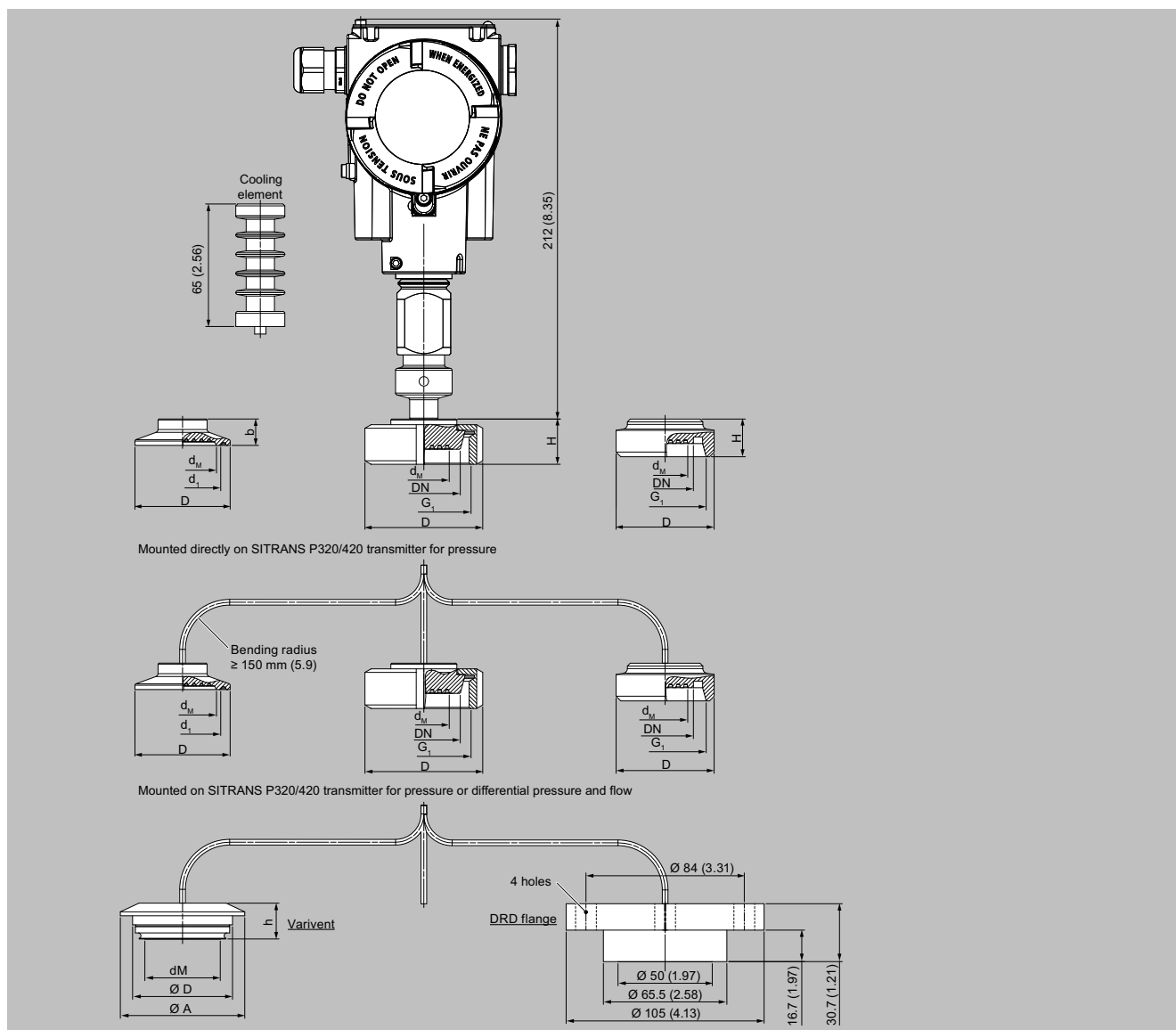
SITRANS P320/P420 quick-release diaphragm seals	
<b>Certificates and approvals</b>	
Classification according to pressure equipment directive (PED 2014/68/EU)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)
EHDG	Complies with EHDG recommendations

# Pressure measurement

## Remote seals

for SITRANS P320/P420 / Diaphragm seals with quick-release

### Dimensional drawings



Quick-release diaphragm seals

### Connection according to DIN 11851 with groove nut

Nominal diameter	Ø d <sub>M</sub> mm	Ø D mm	H mm	G <sub>1</sub> mm
DN 25	25	63	36	Radius 52x1/6
DN 32	32	70	36	Radius 52x1/6
DN 40	40	78	36	Radius 65x1/6
DN 50	52	112	36	Radius 78x1/6
DN 65	65	112	36	Radius 95x1/6
DN 80	72	127	36	Radius 110x1/6

d<sub>M</sub> effective diaphragm diameter

## Dimensional drawings (continued)

## Connection according to DIN 11851 with thread

Nominal diameter	Ø d <sub>M</sub> mm	H mm	G <sub>1</sub> mm
DN 25	25	36	Radius 52x1/6
DN 32	32	36	Radius 52x1/6
DN 40	40	36	Radius 65x1/6
DN 50	52	36	Radius 78x1/6
DN 65	65	36	Radius 95x1/6
DN 80	72	36	Radius 110x1/6

d<sub>M</sub> effective diaphragm diameter

## Clamp connection according to ISO 2852 for pipes according to ISO 2037

Nominal diameter	Nominal pressure	d <sub>M</sub> mm	d <sub>1</sub> mm	b mm	D mm
DN 25	PN 16	22.6	43.5	14	50.5
DN 38	PN 16	34	43.5	12	50.5
DN 51	PN 16	46	56.5	14	64
DN 63.5	PN 10	51	70.5	14	77.5
DN 76.1	PN 10	65	83.5	14	91

d<sub>M</sub> effective diaphragm diameter

## Clamp connection according to DIN 32676 row C for pipes according to ASME BPE

Nominal diameter	Nominal pressure	d <sub>M</sub> mm (inch)	d <sub>1</sub> mm (inch)	b mm (inch)	D mm (inch)
1"	PN 25	22.6 (0.89)	43.5 (1.71)	14 (0.55)	50.5 (1.99)
1½"	PN 25	34 (1.34)	43.5 (1.71)	12 (0.47)	50.5 (1.99)
2"	PN 16	46 (1.81)	56.5 (2.22)	14 (0.55)	64 (2.52)
2½"	PN 16	51 (2.01)	70.5 (2.78)	14 (0.55)	77.5 (3.05)
3"	PN 16	65 (2.56)	83.5 (3.29)	14 (0.55)	91 (3.58)

d<sub>M</sub> effective diaphragm diameter

## Clamp connection according to DIN 32676 row A (metric) for pipes according to EN 10357 (DIN 11850)

Nominal diameter	Nominal pressure	Ø d <sub>M</sub> mm	d <sub>1</sub> mm	b mm	D mm
DN 25	PN 25	22.6	43.5	14	50.5
DN 32	PN 25	27	43.5	12	50.5
DN 40	PN 25	34	43.5	12	50.5
DN 50	PN 16	46	56.5	14	64
DN 65	PN 16	65	83.5	14	91

d<sub>M</sub> effective diaphragm diameter

## Varivent

Nominal diameter	d <sub>M</sub> mm (inch)	A mm (inch)	D mm (inch)	h mm (inch)
DN 25, DN 32, 1", 1¼"	40 (1.57)	66 (2.6)	50 (1.97)	19 (0.75)
DN 40 ... 125, 1 ½" ... 6"	58 (2.28)	84 (3.3)	68 (2.68)	19 (0.75)

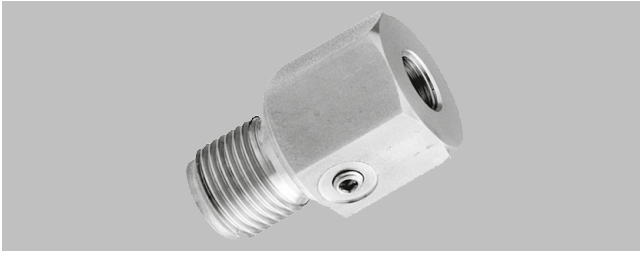
d<sub>M</sub> effective diaphragm diameter

## Pressure measurement

### Remote seals

for SITRANS P320/P420 / Diaphragm seals, miniature type

#### Overview



The miniature diaphragm seals are available for the pressure transmitters of the SITRANS P320/420 series.

For high pressures, contaminated, fibrous and viscous media in the chemical, paper, food and drink industries.

#### Design

The miniature diaphragm seals consist of a flush diaphragm, a fixed threaded pin and are free of dead space.



## Selection and ordering data

	Article No.	Order code
<b>Diaphragm seals, miniature type</b> Installed directly on pressure transmitter SITRANS P320/P420 or SITRANS P300 for gauge and absolute pressure (only together with negative pressure service), 7MF03../7MF04../7MF802 is to be ordered separately, scope of delivery: 1 unit	7MF0850-	
	● ● ● 0 0 - 0 ● ● 0 ● ● ●	
Click the article number for online configuration in the PIA Life Cycle Portal.		
<b>Process connection</b>		
<i>Process connection standard DIN 3852-2 form A</i>		
G 1"	PN 400	4 S V
G 1½"	PN 250	4 S W
G 2"	PN 250	4 S X
<i>Process connection standard ASME B1.20.1</i>		
1" NPTM	PN 250	5 T U
1½" NPT-M	PN 100	5 T V
2" NPTM	PN 100	5 T W
Other version, add order code and plain text	9 A A	H 1 Y
<b>Filling liquid</b>		
Silicone oil M5		A
Food oil (FDA-listed)		E
Neobee M20 (FDA listed)		R
Other version, add order code and plain text		Z P 1 Y
<b>Material of wetted parts</b>		
Stainless steel 316L without coating		A
Hastelloy C276, 2.4819		J

Options	Order code
<b>Add "-Z" to article number and specify order code.</b>	
<b>Factory certificates</b>	
Quality inspection certificate (5-point characteristic curve test) acc. to IEC 62828-2	C11
Inspection certificate to EN 10204-3.1 for material of body and diaphragm	C12
Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009) (only together with wetted parts made of stainless steel 316 L and Hastelloy)	C13
Inspection certificate according to EN 10204-3.1, PMI test of pressure containing and wetted parts	C15
Certificate of FDA-approved fill oil according to EN 10204-2.2	C17
Factory certificate functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511 (includes SIL Declaration of Conformity)	C20
<b>Accessories</b>	
Remote seal nameplate Attached, made of stainless steel, contains Article No. and order number of the remote seal	D42
<b>Negative pressure service</b>	
Negative pressure service for gauge pressure and absolute pressure transmitters	D81
Extended negative pressure service for gauge pressure and absolute pressure transmitters	D85
<b>Country-specific approval</b>	
CRN approval Canada (Canadian Registration Number)	E60
<b>Note:</b>	
If the order code E60 is selected, the option E60 must also be selected for the transmitter!	

Options	Order code
<b>Add "-Z" to article number and specify order code.</b>	
<b>Capillary connection</b>	
Cooling element between transmitter and remote seal	S08
<b>Desired remote seal supplier</b>	
<b>Note:</b>	
If the remote seal is to be supplied only by one of the suppliers specified below, this option needs to be selected. For orders without this option, the remote seal supplier is selected through the dispatch center.	
Company WIKA, Klingenberg	W01
Company Labom, Hude	W02
<b>Special design</b>	
Welded filling hole	X01
<b>Customer-specific tube length</b>	
Customer-specific tube length (specify in plain text in mm)	Y44
<b>Specification of process conditions<sup>1)</sup></b>	
Ambient temperature range	
• +10 ... +50 °C (+50 ... +122 °F) preset	D66
• -40 ... +50 °C (-40 ... +122 °F)	D67
• -10 ... +85 °C (+14 ... +185 °F)	D68
Process temperature min. ... °C/(°F)/max. ... °C/(°F)	Y50

<sup>1)</sup> See also "Specification of process conditions for selection and ordering data" in the section "More information" under "Technical reference" for SITRANS P320/P420.

# Pressure measurement

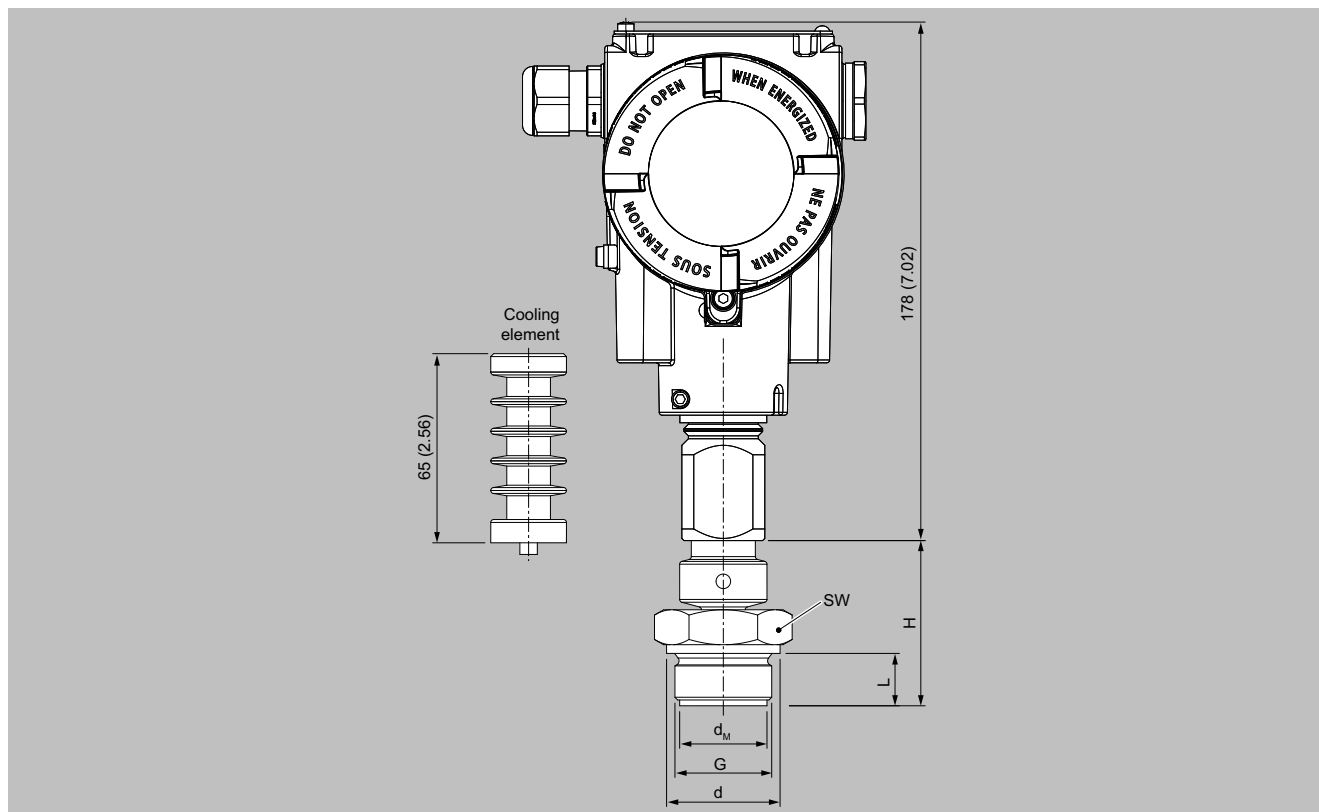
## Remote seals

### for SITRANS P320/P420 / Diaphragm seals, miniature type

#### Technical specifications

SITRANS P320/P420 miniature diaphragm seals	
Measuring span when	
• G1B and 1" NPT	> 6 bar (> 87 psi)
• G1½B and 1½" NPT	> 2 bar (> 29 psi)
• G2B and 2" NPT	> 600 mbar (> 8.7 psi)
Filling liquid	<ul style="list-style-type: none"> <li>• Silicone oil M5</li> <li>• Food oil (FDA-listed)</li> <li>• Neobee M20 (FDA-listed)</li> </ul>
Material	
• Main body	Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819
• Diaphragm	Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819
Maximum pressure	100% of the nominal pressure of the pressure transmitter, but a maximum of PN 400 (5802 psi) (depending on the seal used)
Temperature of use	As for pressure transmitter
Medium temperature range	As for pressure transmitter
Max. recommended medium temperature	150 °C (302 °F)
Weight	
• G1B and 1" NPT	Approx. 0.3 kg (approx. 0.66 lb)
• G1½B and 1½" NPT	Approx. 0.5 kg (approx. 1.10 lb)
• G2B and 2" NPT	Approx. 0.8 kg (approx. 1.76 lb)
<b>Certificates and approvals</b>	
Classification according to pressure equipment directive (PED 2014/68/EU)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)

## Dimensional drawings



Diaphragm seal, miniature type, dimensions in mm (inch)

G	Ø d <sub>M</sub> mm (inch)	Width across flats mm (inch)	Ø d mm (inch)	L mm (inch)	H mm (inch)
G1B	25 (0.98)	41 (1.61)	39 (1.53)	28 (1.1)	56 (2.21)
G1½B	40 (1.57)	55 (2.17)	60 (2.36)	30 (1.18)	50 (1.97)
G2B	50 (1.97)	60 (2.36)	70 (2.76)	30 (1.18)	63 (2.48)

G	Ø d <sub>M</sub> mm (inch)	Width across flats mm (inch)	L mm (inch)	H mm (inch)
1" NPT	27 (1.06)	41 (1.61)	25 (0.98)	40 (1.57)
1½" NPT	34 (1.34)	55 (2.17)	26 (1.02)	45 (1.77)
2" NPT	46 (1.81)	60 (2.56)	26 (1.02)	45 (1.77)

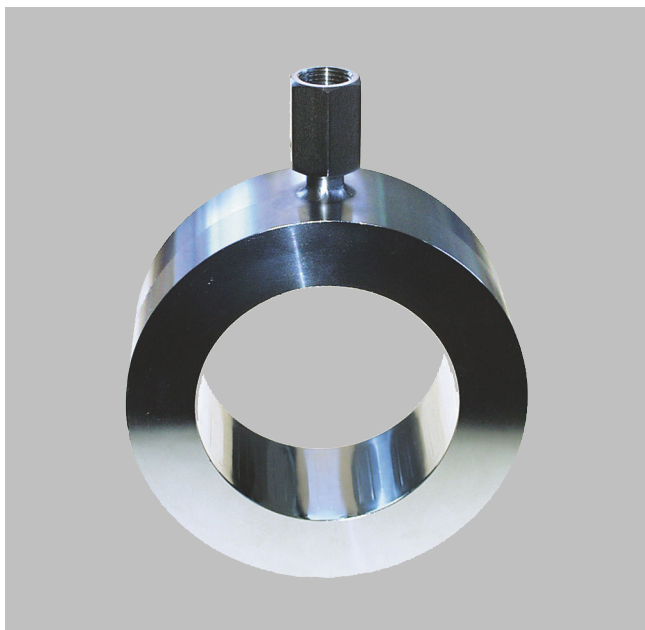
d<sub>M</sub>: Effective diaphragm diameter

## Pressure measurement

### Remote seals

#### for SITRANS P320/P420 / Inline seals in sandwich design

##### Overview



Inline seals for flange-mounting

The inline seal is fully integrated into the process control. It is especially suitable for flowing and high-viscosity media.

The inline seal consists of a cylindrical jacket into which a thin-walled tube is welded. It is clamped directly between two flanges in the pipeline.

##### Design

- Inline seals for flange-mounting (flange design) according to EN/ASME for SITRANS P320/420 pressure transmitters
  - For gauge and absolute pressure (only in connection with negative pressure service)
  - For differential pressure and flow
- Sealing surface according to EN 1092-1 or ASME B16.5
- Connection to the pressure transmitter directly or by means of a flexible capillary (max. 10 m long)
- See Technical specifications for details of materials used for the wetted parts
- Material used for the capillary, the protective jacket, the remote seal's main body and the measuring cell: Stainless steel, mat. no. 1.4571
- Filling liquid: Silicone oil, high-temperature oil, halocarbon oil, food oil (FDA-listed) vegetable oil or glycerin/water (not suitable for applications in negative pressure range).

##### Function

The measured pressure is transferred to the filling liquid by the diaphragm and enters the sample chamber of the pressure transmitter either directly or through the capillary. The filling fluid completely fills the inside of the diaphragm seal, the capillary and the sample chamber of the pressure transmitter so that it is free of gas.

##### Note:

A vacuum-resistant remote seal is recommended for low-pressure operation, including during commissioning (see ordering data).

## Selection and ordering data

		Article No.	Order code
<b>Inline seals in sandwich design,</b> <b>direct mounting or with a flexible capillary connected with pressure transmitter</b> <b>SITRANS P320/P420 or SITRANS P300 for gauge and absolute pressure</b> <b>(only together with negative pressure service), 7MF03../7MF04../7MF802 is to be ordered separately,</b> <b>scope of delivery: 1 unit</b> <b>SITRANS P320/P420 for differential pressure and flow</b> <b>7FM03../7MF04.. to be ordered separately, scope of delivery: 2 units</b>		7MF0900-  7MF0902-	
		● ● ● ● ● - 0 ● ● 0 ● ● ●	
Click the article number for online configuration in the PIA Life Cycle Portal.			
<b>Nominal diameter</b>	<b>Nominal pressure</b>		
<b><u>Process connection standard EN 1092-1</u></b>			
DN 25	PN 6 ... 100	0 B P	
DN 40	PN 6 ... 100	0 D P	
DN 50	PN 6 ... 100	0 E P	
DN 65	PN 6 ... 100	0 F P	
DN 80	PN 6 ... 100	0 G P	
DN 100	PN 6 ... 100	0 H P	
DN 125	PN 6 ... 100	0 J P	
<b><u>Process connection standard ASME B16.5</u></b>			
1 inch	Class 150 ... 2500	1 K X	
1½ inches	Class 150 ... 2500	1 L X	
2 inches	Class 150 ... 2500	1 M X	
2½ inches	Class 150 ... 2500	1 N X	
3 inches	Class 150 ... 2500	1 P X	
4 inches	Class 150 ... 2500	1 Q X	
5 inches	Class 150 ... 2500	1 R X	
Different version, add order code and plain text.		9 A A	H 1 Y
<b>Transmitter connection</b>			
Without capillary pipe, direct mount, straight connection (for gauge pressure transmitters)		0 0	
Without capillary pipe, direct mount, connection with 90° elbow (for gauge pressure transmitters)		0 1	
Connection via capillary			
Capillary length:			
1 m (38.37 inches)		1 0	
1.6 m (63 inches)		1 1	
2 m (78.7 inches)		1 2	
2.5 m (98.4 inches)		1 3	
3 m (118.1 inches)		1 4	
4 m (157.5 inches)		1 5	
5 m (196.9 inches)		1 6	
6 m (236.2 inches)		1 7	
7 m (275.6 inches)		1 8	
8 m (315 inches)		2 0	
9 m (354.3 inches)		2 1	
10 m (393.7 inches)		2 2	
11 m (433.1 inches); only for 7MF0902		2 3	
12 m (472.4 inches); only for 7MF0902		2 4	
13 m (511.811 inches); only for 7MF0902		2 5	
14 m (551.2 inches); only for 7MF0902		2 6	
15 m (590.6 inches); only for 7MF0902		2 7	
Other version, add order code and plain text		9 8	L 1 Y
<b>Filling liquid</b>			
Silicone oil M50			B
High-temperature oil			C
Silicone oil M5			A
Food oil (FDA-listed)			E
Halocarbon oil			D
Neobee M20 (FDA listed)			R
Other version, add order code and plain text			Z P 1 Y
<b>Material of wetted parts</b>			
Stainless steel 316L			A
Other version, add order code and plain text			Z Q 1 Y

# Pressure measurement

## Remote seals

### for SITRANS P320/P420 / Inline seals in sandwich design

#### Selection and ordering data (continued)

Options Add "-Z" to article number and specify order code.	Order code
<b>Factory certificates</b>	
Quality inspection certificate (5-point characteristic curve test) acc. to IEC 62828-2	C11
Inspection certificate to EN 10204-3.1 for material of body and diaphragm	C12
Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009) (only together with wetted parts made of stainless steel 316 L and Hastelloy)	C13
Inspection certificate according to EN 10204-3.1, PMI test of pressure containing and wetted parts	C15
Certificate of FDA-approved fill oil according to EN 10204-2.2	C17
Factory certificate functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511 (includes SIL Declaration of Conformity)	C20
<b>Accessories</b>	
Remote seal nameplate Attached, made of stainless steel, contains Article No. and order number of the remote seal	D42
Volume deflagration flame arrester (VDEF)	
• For gauge pressure and absolute pressure transmitters	D61
• For differential pressure and level transmitters	D62
<b>Negative pressure service</b>	
Negative pressure service	
• For gauge pressure and absolute pressure transmitters	D81
• For differential pressure transmitters	D83
Extended negative pressure service	
• For gauge pressure and absolute pressure transmitters	D85
• For differential pressure transmitters	D88
<b>Country-specific approval</b>	
CRN approval Canada (Canadian Registration Number)	E60
<b>Note:</b> If the order code E60 is selected, the option E60 must also be selected for the transmitter!	
<b>General product approvals without explosion proof approvals</b>	
Oil-free and grease-free cleaned version for oxygen application including certificate EN 10204-2.2 (only with filling liquid halocarbon oil max. temperature 60 °C and max. pressure 50 bar)	E80
Oil-free and grease-free cleaned version not for oxygen application, including certificate EN 10204-2.2	E87
<b>Sealing surface</b>	
Sealing surface smooth, form B2/EN 1092-1 or RFSF/ANSI 16.5 (only for wetted parts made of stainless steel 316L)	M50
Sealing surface groove according to EN 1092-1, form D (instead of sealing surface B1, only for wetted parts made of stainless steel 316L)	M54
Sealing surface RJF (groove) according to ASME B16.5 (instead of sealing surface RF 125 ... 250AO, only for wetted parts made of stainless steel 316L)	M64
Sealing surface with tongue to EN 1092-1, form C (for wetted parts made of stainless steel 316L only)	
• DN 25	M70
• DN 40	M71
• DN 50	M72
• DN 80	M73

Options Add "-Z" to article number and specify order code.	Order code
• DN 100	M74
• DN 125	M75
Sealing surface with spigot according to EN 1092-1, form E (for wetted parts made of stainless steel 316L only)	
• DN 25	M76
• DN 40	M77
• DN 50	M78
• DN 80	M79
• DN 100	M80
• DN 125	M81
Sealing surface female face according to EN 1092-1, form F (only for wetted parts made of stainless steel 316L)	
• DN 25	M82
• DN 40	M83
• DN 50	M84
• DN 80	M85
• DN 100	M86
• DN 125	M87
<b>Capillary connection</b>	
For 7MF0900	
• Single-side mounted at differential pressure transmitter at high side	S03
• Single-side mounted at differential pressure transmitter at low side	S04
• Cooling element	S08
<b>Capillary coating</b>	
PE protective tube	
• 1 m (38.37 inches)	S10
• 1.6 m (63 inches)	S11
• 2 m (78.7 inches)	S12
• 2.5 m (98.4 inches)	S13
• 3 m (118.1 inches)	S14
• 4 m (157.5 inches)	S15
• 5 m (196.9 inches)	S16
• 6 m (236.2 inches)	S17
• 7 m (275.6 inches)	S18
• 8 m (315 inches)	S19
• 9 m (354.3 inches)	S20
• 10 m (393.7 inches)	S21
• 11 m (433.1 inches); only for 7MF0902	S22
• 12 m (472.4 inches); only for 7MF0902	S23
• 13 m (511.811 inches); only for 7MF0902	S24
• 14 m (551.2 inches); only for 7MF0902	S25
• 15 m (590.6 inches); only for 7MF0902	S26
PTFE protective tube	
• 1 m (38.37 inches)	S40
• 1.6 m (63 inches)	S41
• 2 m (78.7 inches)	S42
• 2.5 m (98.4 inches)	S43

## Selection and ordering data (continued)

Options	Order code
Add "-Z" to article number and specify order code.	
• 3 m (118.1 inches)	S44
• 4 m (157.5 inches)	S45
• 5 m (196.9 inches)	S46
• 6 m (236.2 inches)	S47
• 7 m (275.6 inches)	S48
• 8 m (315 inches)	S49
• 9 m (354.3 inches)	S50
• 10 m (393.7 inches)	S51
• 11 m (433.1 inches); only for 7MF0902	S52
• 12 m (472.4 inches); only for 7MF0902	S53
• 13 m (511.811 inches); only for 7MF0902	S54
• 14 m (551.2 inches); only for 7MF0902	S55
• 15 m (590.6 inches); only for 7MF0902	S56
PVC protective tube	
• 1 m (38.37 inches)	S70
• 1.6 m (63 inches)	S71
• 2 m (78.7 inches)	S72
• 2.5 m (98.4 inches)	S73
• 3 m (118.1 inches)	S74
• 4 m (157.5 inches)	S75
• 5 m (196.9 inches)	S76
• 6 m (236.2 inches)	S77
• 7 m (275.6 inches)	S78
• 8 m (315 inches)	S79

Options	Order code
Add "-Z" to article number and specify order code.	
• 9 m (354.3 inches)	S80
• 10 m (393.7 inches)	S81
• 11 m (433.1 inches); only for 7MF0902	S82
• 12 m (472.4 inches); only for 7MF0902	S83
• 13 m (511.811 inches); only for 7MF0902	S84
• 14 m (551.2 inches); only for 7MF0902	S85
• 15 m (590.6 inches); only for 7MF0902	S86
<b>Desired remote seal supplier</b>	
<b>Note:</b>	
If the remote seal is to be supplied only by one of the suppliers specified below, this option needs to be selected. For orders without this option, the remote seal supplier is selected through the dispatch center.	
Company WIKA, Klingenberg	W01
Company Labom, Hude	W02
<b>Special design</b>	
Welded filling holes	X01
<b>Customer-specific tube length</b>	
Customer-specific tube length (specify in plain text in mm)	Y44
<b>Specification of process conditions<sup>1)</sup></b>	
Ambient temperature range	
• +10 ... +50 °C (+50 ... +122 °F) preset	D66
• -40 ... +50 °C (-40 ... +122 °F)	D67
• -10 ... +85 °C (+14 ... +185 °F)	D68
Process temperature min. ... °C/(°F)/max. ... °C/(°F)	Y50

<sup>1)</sup> See also "Specification of process conditions for selection and ordering data" in the section "More information" under "Technical reference" for SITRANS P320/P420.

# Pressure measurement

## Remote seals

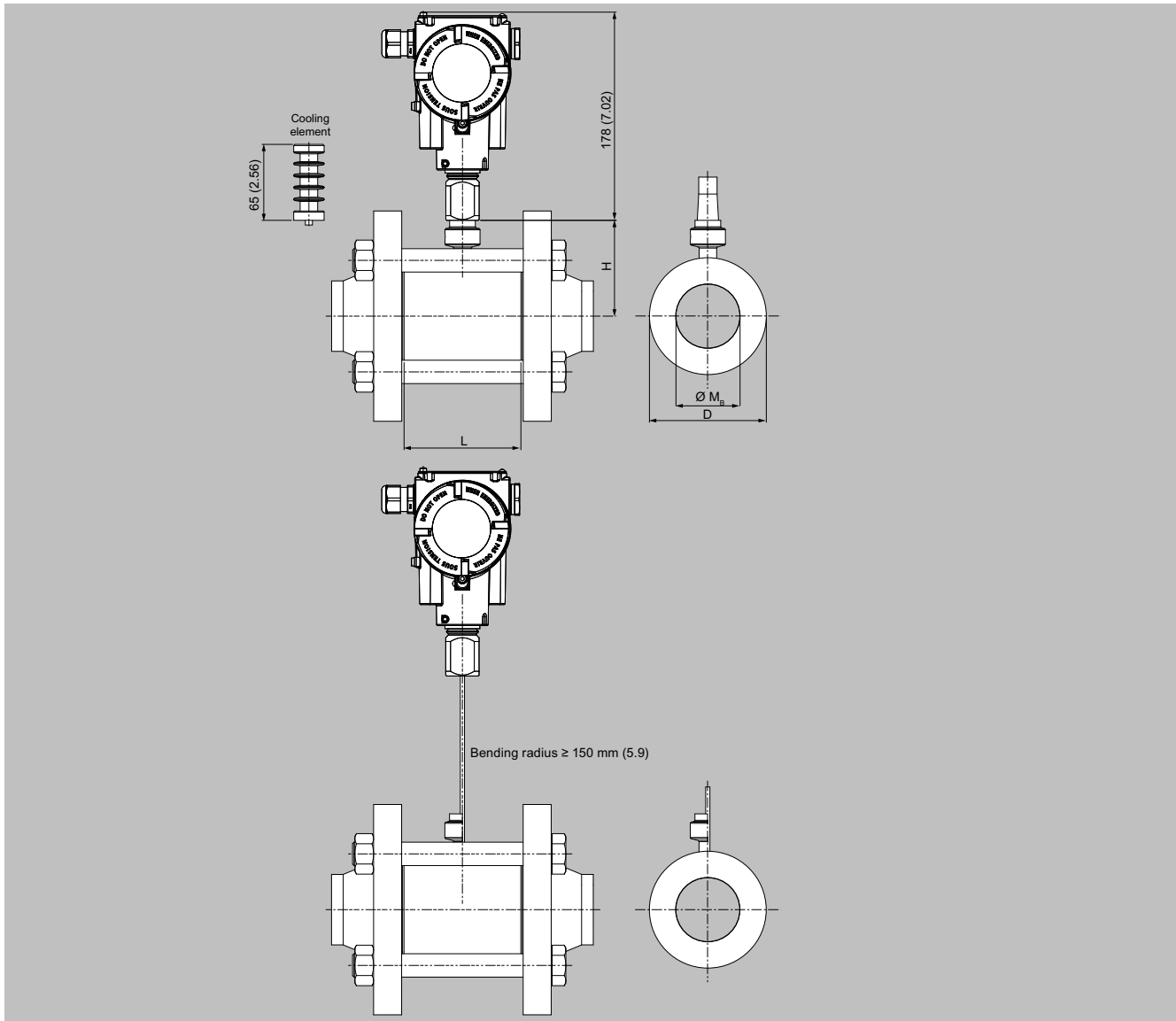
### for SITRANS P320/P420 / Inline seals in sandwich design

#### Technical specifications

SITRANS P320/P420 inline seals in sandwich design	
Nominal diameter	Nominal pressure
Standard of process connection EN 1092-1	PN 6 ... PN 100
• DN 25/40/50/65/80/100/125	
Standard of process connection ASME B16.5	Class 150 ... Class 2500
• 1, 1½, 2, 2½, 3, 4, 5 inch	
Process connection	Flange according to EN 1092-1 or ASME B 16.5
Sealing surface	<ul style="list-style-type: none"> <li>• For stainless steel mat. no. 1.4404/316L according to EN 1092-1, form B1 or ASME B16.5 RF 125 ... 250 AA</li> <li>• For the other materials according to EN 1092-1, form B2 or ASME B16.5 RFSF</li> </ul>
Materials	
• Main body	Stainless steel, mat. no. 1.4404/316L
• Diaphragm	Stainless steel, mat. no. 1.4404/316L
• Wetted parts	Stainless steel, mat. no. 1.4404/316L
• Capillary	Stainless steel, mat. no. 1.4571/316Ti (with option W01) or mat. no. 1.4301/304
• Sheath	Flexible spiral coiled tube made of stainless steel, mat. no. 1.4404/316L
Capillary	
• Length	≤ 10 m (32.8 ft)
• Inside diameter	≤ 1.3 mm (0.051 inch)
• Minimum bending radius	150 mm (5.9 inches)
Filling liquid	<ul style="list-style-type: none"> <li>• Silicone oil M5</li> <li>• Silicone oil M50</li> <li>• High-temperature oil</li> <li>• Halocarbon oil</li> <li>• Food oil (FDA-listed)</li> <li>• Neobee M20 (FDA-listed)</li> </ul>
Permissible ambient temperature	<p>Dependent on the pressure transmitter and the filling liquid of the remote seal.</p> <p><b>More information</b></p> <p>In the technical specifications of the pressure transmitters and in the sections in the technical reference of the remote seals:</p> <ul style="list-style-type: none"> <li>• "Function" - "Technical specifications of the remote seal filling liquids"</li> <li>• "More information" - "Specification of process conditions for selection and ordering data"</li> </ul>
Weight	Approx. 4 kg (8.82 lbs)
<b>Certificates and approvals</b>	
Classification according to pressure equipment directive (PED 2014/68/EU)	For gases of fluid group 1 and liquids of fluid group 1; complies with the requirements of Article 4, Paragraph 1 (annex 1); assigned to category III, conformity evaluation module H by the TÜV Nord



## Dimensional drawings



Inline seal for flange-mounting, installed on SITRANS P320/P420 pressure transmitter, dimensions in mm (inch)

## Connection according to EN 1092-1

Nominal diameter	PN bar	D mm	Mb mm	L mm	H mm
DN 25	6 ... 100	68	28.5	60	81
DN 40		88	43.1	60	91
DN 50		100	54.5	60	93
DN 65		120	70.3	60	107
DN 80		138	82.5	60	116
DN 100		160	107.1	60	127
DN 125		188	127	60	141

## Pressure measurement

### Remote seals

for SITRANS P320/P420 / Inline seals in sandwich design

#### Dimensional drawings (continued)

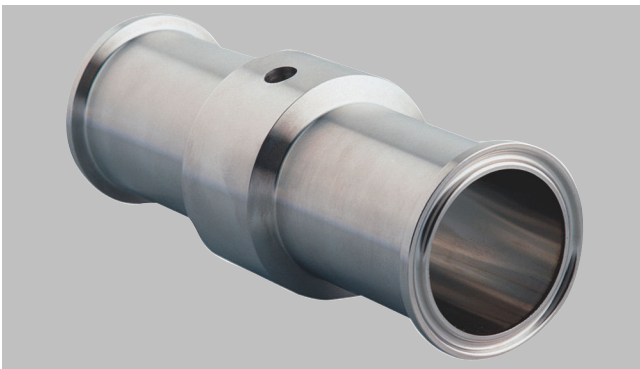
Connection according to ASME B16.5

Nominal diameter	Class	D mm (inch)	Mb mm (inch)	L mm (inch)	H mm (inch)
1"	150 ... 2500	50 (1.97)	28.5 (1.12)	60 (2.36)	72 (2.83)
1½"		73.5 (2.89)	43.1 (1.70)	60 (2.36)	84 (3.31)
2"		91.9 (3.62)	54.5 (2.15)	60 (2.36)	93 (3.66)
2½"		104.6 (4.12)	70.3 (2.77)	60 (2.36)	99 (3.9)
3"		127 (5)	82.5 (3.25)	60 (2.36)	110 (4.33)
4"		157.2 (6.19)	107.1 (4.22)	60 (2.36)	125 (4.92)
5"		188 (7.4)	127 (5)	60 (2.36)	141 (5.55)

## Overview



Quick-release inline seal, according to DIN 11851 with screwed connector



Quick-release inline seal, with clamp connection

Quick-release inline seals are available for pressure transmitters of the SITRANS P320/420 series.

## Application

The quick-release inline seal is a special design for flowing and high-viscosity media. Because it is completely integrated in the process line, there are no turbulences, dead spaces or other obstacles in the flow direction. The medium flows almost unhindered through the inline seal and causes self-cleaning of the sample chamber. The inline seal is also piggable.

## Design

The quick-release lock is available in two versions:

- DIN 11851 with threaded socket
- Clamp connection

The inline seal is connected to the pressure transmitter either directly or via a capillary tube.

## Function

The measured pressure is transferred to the filling liquid by the measuring diaphragm located around the circumference inside the inline seal and enters the sample chamber of the pressure transmitter through the capillary. The filling fluid completely fills the inside of the inline seal, the capillary and the sample chamber of the pressure transmitter so that it is free of gas.

### Note:

A vacuum-resistant remote seal is recommended for low-pressure operation, including during commissioning (see ordering data).

# Pressure measurement

## Remote seals

for SITRANS P320/P420 / Inline seals with quick-release

### Selection and ordering data

	Article No.	Order code
<b>Inline seal with quick-release</b> Flange type design, with flexible capillary pipe or direct mounting on pressure transmitter SITRANS P320/P420 or SITRANS P300 for gauge and absolute pressure (only together with negative pressure service), 7MF03../7MF04../7MF802 is to be ordered separately, scope of delivery: 1 unit	7MF0930-	
	● ● ● ● ● - 0 ● A 0 ● ● ●	
Click the article number for online configuration in the PIA Life Cycle Portal.		
<b>Nominal diameter</b>	<b>Nominal pressure</b>	
<u>Process connection standard</u> <u>DIN 11851 with thread</u>		
DN 25	PN 40	1 B M
DN 32	PN 40	1 C D
DN 40	PN 40	1 D M
DN 50	PN 25	1 E K
DN 65	PN 25	1 F L
DN 80	PN 25	1 G K
<u>Process connection standard</u> <u>Clamp ISO 2852</u>		
DN 25	PN 16	2 B K
DN 38	PN 16	2 C Q
DN 51	PN 16	2 F H
DN 63.5	PN 10	2 F J
DN 76.1	PN 10	2 G J
<u>Process connection standard</u> <u>Clamp DIN 32676, schedule C</u>		
DN 1 inch	PN 25	3 K V
DN 1½ inch	PN 25	3 L V
DN 2 inch	PN 16	3 M V
DN 2½ inch	PN 16	3 N V
DN 3 inch	PN 10	3 P V
<u>Process connection standard</u> <u>Clamp DIN 32676, schedule A metric</u>		
DN 25	PN 25	4 B L
DN 32	PN 25	4 C C
DN 40	PN 25	4 D L
DN 50	PN 16	4 E J
DN 65	PN 10	4 F K
Other version Add order code and plain text.	9 A A	H 1 Y
<b>Transmitter connection</b>		
Without capillary pipe, direct mount, straight connection (for gauge pressure transmitters)	0 0	
Connection via capillary Capillary length:		
1 m (38.37 inches)	1 0	
1.6 m (63 inches)	1 1	
2 m (78.7 inches)	1 2	
2.5 m (98.4 inches)	1 3	
3 m (118.1 inches)	1 4	
4 m (157.5 inches)	1 5	
5 m (196.9 inches)	1 6	
6 m (236.2 inches)	1 7	
7 m (275.6 inches)	1 8	
8 m (315 inches)	2 0	
9 m (354.3 inches)	2 1	
10 m (393.7 inches)	2 2	
Other version, add order code and plain text	9 8	L 1 Y
<b>Filling liquid</b>		
Food oil (FDA-listed)		E
Neobee M20 (FDA listed)		R
Other version, add order code and plain text		Z P 1 Y

## Selection and ordering data (continued)

Options Add "-Z" to article number and specify order code.	Order code
<b>Factory certificates</b>	
Quality inspection certificate (5-point characteristic curve test) acc. to IEC 62828-2	C11
Inspection certificate to EN 10204-3.1 for material of body and diaphragm	C12
Inspection certificate according to EN 10204-3.1, PMI test of pressure containing and wetted parts	C15
Certificate of FDA-approved fill oil according to EN 10204-2.2	C17
Factory certificate functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511 (includes SIL Declaration of Conformity)	C20
<b>Accessories</b>	
Remote seal nameplate Attached, made of stainless steel, contains Article No. and order number of the remote seal	D42
<b>Negative pressure service</b>	
Negative pressure service for gauge pressure and absolute pressure transmitters	D81
Extended negative pressure service for gauge pressure and absolute pressure transmitters	D85
<b>Country-specific approval</b>	
CRN approval Canada (Canadian Registration Number)	E60
<b>Note:</b> If the order code E60 is selected, the option E60 must also be selected for the transmitter!	
<b>Capillary connection</b>	
Single-side mounted at differential pressure transmitter at high side	S03
Single-side mounted at differential pressure transmitter at low side	S04
Cooling element	S08
<b>Capillary coating</b>	
PE protective tube	
• 1 m (38.37 inches)	S10
• 1.6 m (63 inches)	S11
• 2 m (78.7 inches)	S12
• 2.5 m (98.4 inches)	S13
• 3 m (118.1 inches)	S14
• 4 m (157.5 inches)	S15
• 5 m (196.9 inches)	S16
• 6 m (236.2 inches)	S17
• 7 m (275.6 inches)	S18
• 8 m (315 inches)	S19
• 9 m (354.3 inches)	S20
• 10 m (393.7 inches)	S21
PTFE protective tube	
• 1 m (38.37 inches)	S40
• 1.6 m (63 inches)	S41
• 2 m (78.7 inches)	S42

Options Add "-Z" to article number and specify order code.	Order code
• 2.5 m (98.4 inches)	S43
• 3 m (118.1 inches)	S44
• 4 m (157.5 inches)	S45
• 5 m (196.9 inches)	S46
• 6 m (236.2 inches)	S47
• 7 m (275.6 inches)	S48
• 8 m (315 inches)	S49
• 9 m (354.3 inches)	S50
• 10 m (393.7 inches)	S51
PVC protective tube	
• 1 m (38.37 inches)	S70
• 1.6 m (63 inches)	S71
• 2 m (78.7 inches)	S72
• 2.5 m (98.4 inches)	S73
• 3 m (118.1 inches)	S74
• 4 m (157.5 inches)	S75
• 5 m (196.9 inches)	S76
• 6 m (236.2 inches)	S77
• 7 m (275.6 inches)	S78
• 8 m (315 inches)	S79
• 9 m (354.3 inches)	S80
• 10 m (393.7 inches)	S81
<b>Desired remote seal supplier</b>	
<b>Note:</b> If the remote seal is to be supplied only by one of the suppliers specified below, this option needs to be selected. For orders without this option, the remote seal supplier is selected through the dispatch center.	
Company WIKA, Klingenberg	W01
Company Labom, Hude	W02
<b>Special design</b>	
Welded filling holes	X01
<b>Customer-specific tube length</b>	
Customer-specific tube length (specify in plain text in mm)	Y44
<b>Specification of process conditions<sup>1)</sup></b>	
Ambient temperature range	
+10 ... +50 °C (+50 ... +122 °F) preset	D66
-40 ... +50 °C (-40 ... +122 °F)	D67
-10 ... +85 °C (+14 ... +185 °F)	D68
Process temperature min. ... °C/(°F)/max. ... °C/(°F)	Y50

<sup>1)</sup> See also "Specification of process conditions for selection and ordering data" in the section "More information" under "Technical reference" for SITRANS P320/P420.

# Pressure measurement

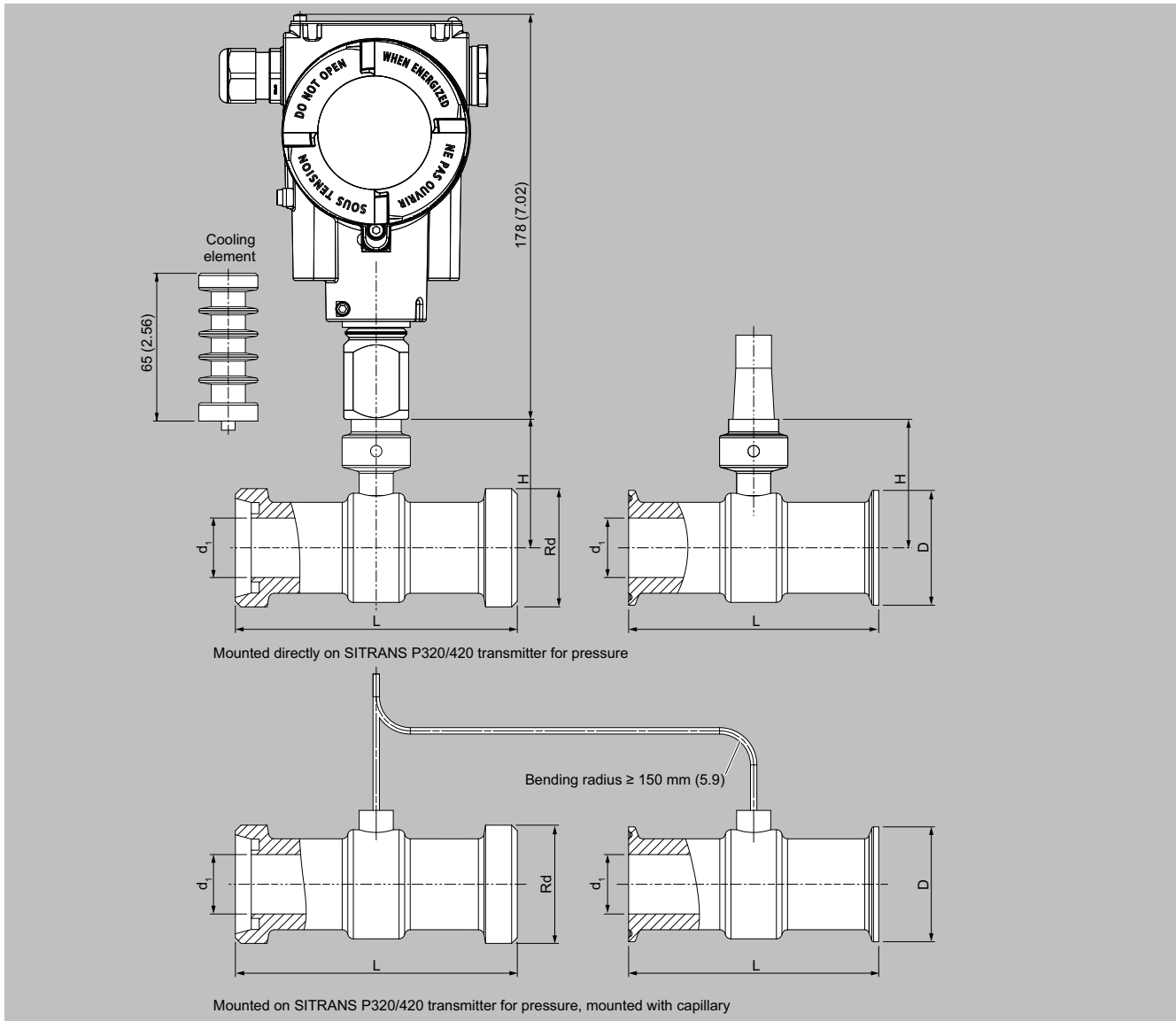
## Remote seals

### for SITRANS P320/P420 / Inline seals with quick-release

#### Technical specifications

SITRANS P320/P420 quick-release inline seals			
Connection	Nominal diameter	Nominal pressure	
<ul style="list-style-type: none"> <li>Process connection standard DIN 11851 with thread</li> <li>Standard of process connection clamp ISO 2852</li> <li>Standard of process connection clamp DIN 32676, schedule C Tri-Clamp</li> <li>Process connection standard clamp DIN 32676, schedule A metric</li> </ul>	DN 25/32/40	PN 40	
	DN 50/65/80	PN 25	
	DN 25/38/51	PN 16	
	DN 63.5/76.1	PN 10	
	1, 1½ inch	PN 25	
	2, 2½ inch	PN 16	
	3 inches	PN 10	
	DN 25/32/40	PN 25	
	DN 50	PN 16	
	DN 65	PN 10	
	Material		
	<ul style="list-style-type: none"> <li>Main body</li> <li>Capillary</li> <li>Diaphragm</li> </ul>	Stainless steel, mat. no. 1.4404/316L	
Capillary			
<ul style="list-style-type: none"> <li>Length</li> <li>Inside diameter</li> <li>Minimum bending radius</li> <li>Sheath</li> </ul>	<ul style="list-style-type: none"> <li>Stainless steel, mat. no. 1.4571/316Ti (with option W01) or mat. no. 1.4301/304</li> <li>Stainless steel, mat. no. 1.4404/316L</li> </ul>		
Filling liquid	<ul style="list-style-type: none"> <li>≤ 10 m (32.8 ft)</li> <li>≤ 1.3 mm (0.051 inch)</li> <li>150 mm (5.9 inches)</li> <li>Flexible spiral coiled tube made of stainless steel, mat. no. 1.4404/316L</li> </ul>		
Permissible ambient temperature	<ul style="list-style-type: none"> <li>Food oil (FDA-listed)</li> <li>Neobee M20 (FDA-listed)</li> </ul>		
Weight	Dependent on the pressure transmitter and the filling liquid of the remote seal. <b>More information</b> In the technical specifications of the pressure transmitters and in the sections in the technical reference of the remote seals: <ul style="list-style-type: none"> <li>"Function" - "Technical specifications of the remote seal filling liquids"</li> <li>"More information" - "Specification of process conditions for selection and ordering data"</li> </ul>		
Certificates and approvals	Approx. 4 kg (approx. 8.82 lbs)		
Classification according to pressure equipment directive (PED 2014/68/EU)	For gases of fluid group 1 and liquids of fluid group 1; complies with the requirements of Article 4, Paragraph 1 (annex 1); assigned to category III, conformity evaluation module H by the TÜV Nord		
EHEDG	Complies with EHEDG recommendations		

## Dimensional drawings



Quick-release inline seal, dimensions in mm (inch)

## Pressure measurement

### Remote seals

for SITRANS P320/P420 / Inline seals with quick-release

#### Dimensional drawings (continued)

##### Inline seals for pipes according to EN 10357 (DIN 11851)

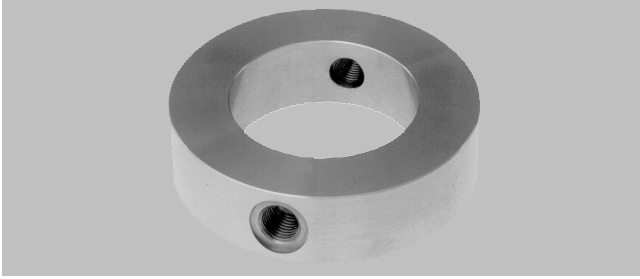
Nominal diameter	Length	Inside diameter	Connection height	Food connections DIN 11851 Nominal pressure	Round thread connection according to DIN 11851 Thread radius	DIN 32676 Nominal pressure	Clamp connection according to DIN 32676
	L [mm]	di (mm)	h (mm)				D (mm)
DN 10	96	10	27.5	PN 40	28 × 1/8"	PN 16	34
DN 15	150	16	12	PN 40	34 × 1/8"	PN 16	34
DN 25	110	26	21	PN 40	52 × 1/6"	PN 16	50.5
DN 32	110	32	26	PN 40	58 × 1/6"	PN 16	50.5
DN 40	110	38	28.5	PN 40	65 × 1/6"	PN 16	50.5
DN 50	110	50	34	PN 25	78 × 1/6"	PN 16	64
DN 65	110	66	42	PN 25	95 × 1/6"	PN 10	91
DN 80	60	81	47.5	PN 25	110 × 1/4"	PN 10	106
DN 100	60	100	60	PN 25	130 × 1/4"	PN 10	119

##### Inline seals for pipes according to BS 4825 Part 3 and pipe outer diameter (suitable for pipes according to ASME-BPE)

Nominal diameter		Length	Inside diameter	Connection height	Food connections IDF according to ISO 2853	Clamp connection according to ISO 2852	Clamp connection according to ISO 2852 D (mm)	
Inch	mm				Nominal pressure	IDF thread according to ISO 2853		Nominal pressure
		L [mm]	di (mm)	h (mm)	IDF thread (Tr)			
1	25.4	110	22.2	21	PN 40	37 × 3.175	PN 16	50.5
1½	38	110	34.8	28.5	PN 40	50 × 3.175	PN 16	50.5
2	51	110	47.8	34	PN 25	64 × 3.175	PN 16	64
1½	63.5	110	60.3	38	PN 25	77.5 × 3.175	PN 16	77.5
3	76.1	60	72.9	44.5	PN 25	91 × 3.175	PN 10	91
4	101.6	60	97.6	59.5	PN 25	118 × 3.175	PN 10	119



## Overview



Flushing rings are required for remote seals in flange and sandwich design (article numbers 7MF0800 ... 7MF0814) when the medium has a tendency to form deposits or blockages due to the process conditions and the geometry of the connection.

The ferrule is clamped in between the process flange and the remote seal.

Due to the lateral flushing holes, particles accumulated in front of the membrane can be washed away and the pressure space can be vented. Different nominal diameters and forms enable adaption to the relevant process flange.

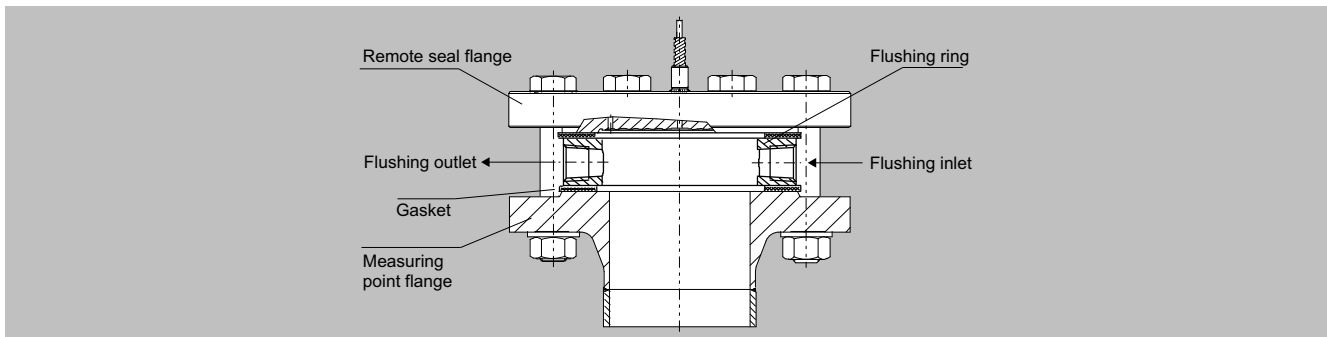
### Process connection

For flanges according to EN and ASME:  
DN 50, 80, 100, 125; PN 16 ... 100 or  
DN 2 inch, 3 inch, 4 inch, 5 inch; Class 150 ... 600

### Standard version

Material: CrNi steel, mat. no. 1.4404/316L  
Sealing surfaces and flushing holes: See ordering data

## Design



Example of installation

# Pressure measurement

## Remote seals

for SITRANS P320/P420 / Flushing ring for diaphragm seals

### Selection and ordering data

		Article No.	Order code			
<b>Flushing ring</b>		7MF4925-				
<b>For remote seals 7MF0800 to 7MF0814</b>		1	•	•	•	•
Click the article number for online configuration in the PIA Life Cycle Portal.						
<b>Nominal diameter</b>	<b>Nominal pressure</b>					
DN 50	PN 16 ... PN 100	A				
DN 80	PN 16 ... PN 100	B				
DN 100	PN 16 ... PN 100	C				
DN 125	PN 16 ... PN 100	D				
2 inches	Class 150 ... 600	G				
3 inches	Class 150 ... 600	H				
4 inches	Class 150 ... 600	J				
5 inches	Class 150 ... 600	K				
<b>Only for RJF ring groove, 7MF4925-1*R....:</b>						
2 inches	Class 150	N	R			
3 inches	Class 150	P	R			
4 inches	Class 150	Q	R			
5 inches	Class 150	R	R			
2 inches	Class 300 ... 600	U	R			
3 inches	Class 300 ... 600	V	R			
4 inches	Class 300 ... 600	W	R			
5 inches	Class 300 ... 600	X	R			
Other version, add Order Code and plain text: Nominal diameter ...; Nominal pressure ...		Z			J	1 Y
<b>Sealing surface</b>						
EN 1092-1						
• Form B1		A				
• Form B2		C				
• Form C / Form C		D				
• Form D / Form C		E				
• Form D / Form D		F				
• Form E		G				
• Form F		H				
ASME B16.5						
• RF 125 ... 250 AA		M				
• RFSF		Q				
• RJF ring groove		R				
Other version, add Order Code and plain text: Sealing surface ...		Z			K	1 Y
<b>Flushing holes (2 units)</b>						
Female thread G¼					1	
Female thread G½					2	
Female thread ¼-18 NPT					3	
Female thread ½-14 NPT					4	
<b>Material</b>						
Stainless steel mat. no. 1.4404/316L					0	
Other version, add Order Code and plain text: Material ...					9	M 1 Y

Options	Order code
<b>Add "-Z" to article number and specify order code.</b>	
Inspection certificate according to EN 10204-3.1	C12

## Technical specifications

SITRANS P320/P420 flushing ring for diaphragm seals	
Nominal diameter	Nominal pressure
• DN 50	PN 16 ... PN 100
• DN 80	PN 16 ... PN 100
• DN 100	PN 16 ... PN 100
• DN 125	PN 16 ... PN 100
• 2 inches	Class 150 ... Class 600
• 3 inches	Class 150 ... Class 600
• 4 inches	Class 150 ... Class 600
• 5 inches	Class 150 ... Class 600
Sealing surface	
• According to EN 1092-1	<ul style="list-style-type: none"> <li>• Form B1</li> <li>• Form B2</li> <li>• Form D/Form D</li> <li>• Form C/Form C</li> <li>• Form D/Form C</li> <li>• Form E</li> <li>• Form F</li> </ul>
• According to ASME B16.5	<ul style="list-style-type: none"> <li>• RF 125 ... 250 AA</li> <li>• RFSF</li> <li>• RJF ring groove</li> </ul>
Flushing holes (2 units), female thread:	<ul style="list-style-type: none"> <li>• G<math>\frac{1}{4}</math></li> <li>• G<math>\frac{1}{2}</math></li> <li>• <math>\frac{1}{4}</math>-18 NPT</li> <li>• <math>\frac{1}{2}</math>-14 NPT</li> </ul>
Material	Stainless steel 1.4404/316L

## Pressure measurement

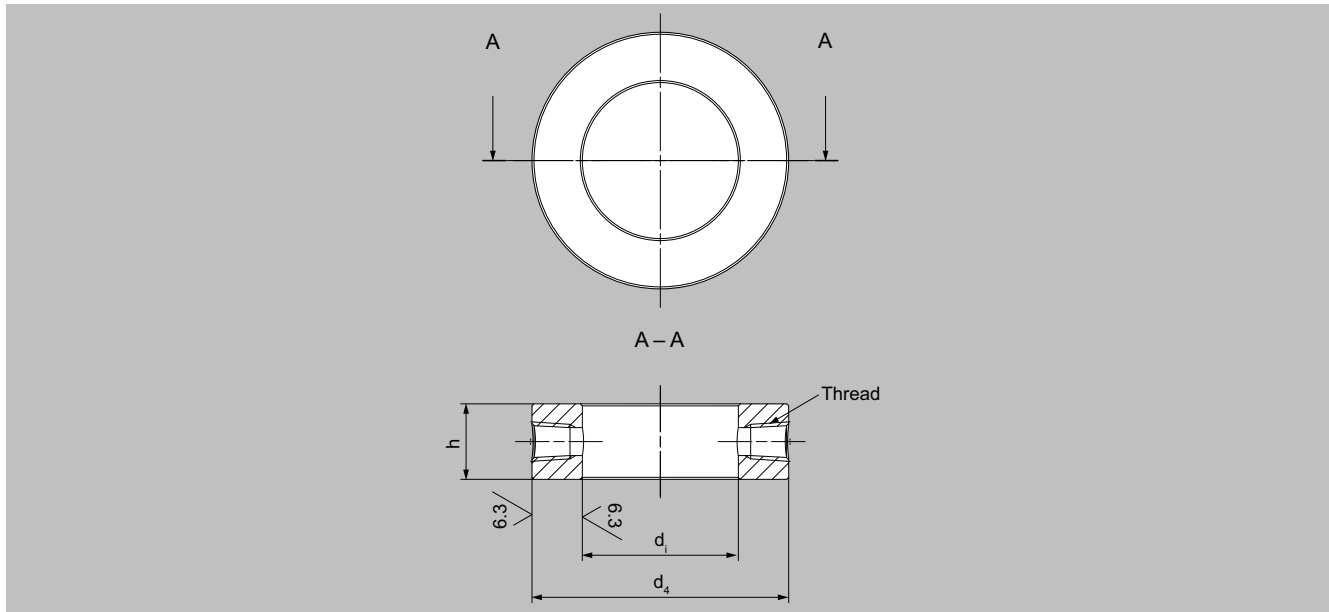
### Remote seals

#### for SITRANS P320/P420 / Flushing ring for diaphragm seals

#### Dimensional drawings

Connection according to EN 1092-1

Form B1 and form B2

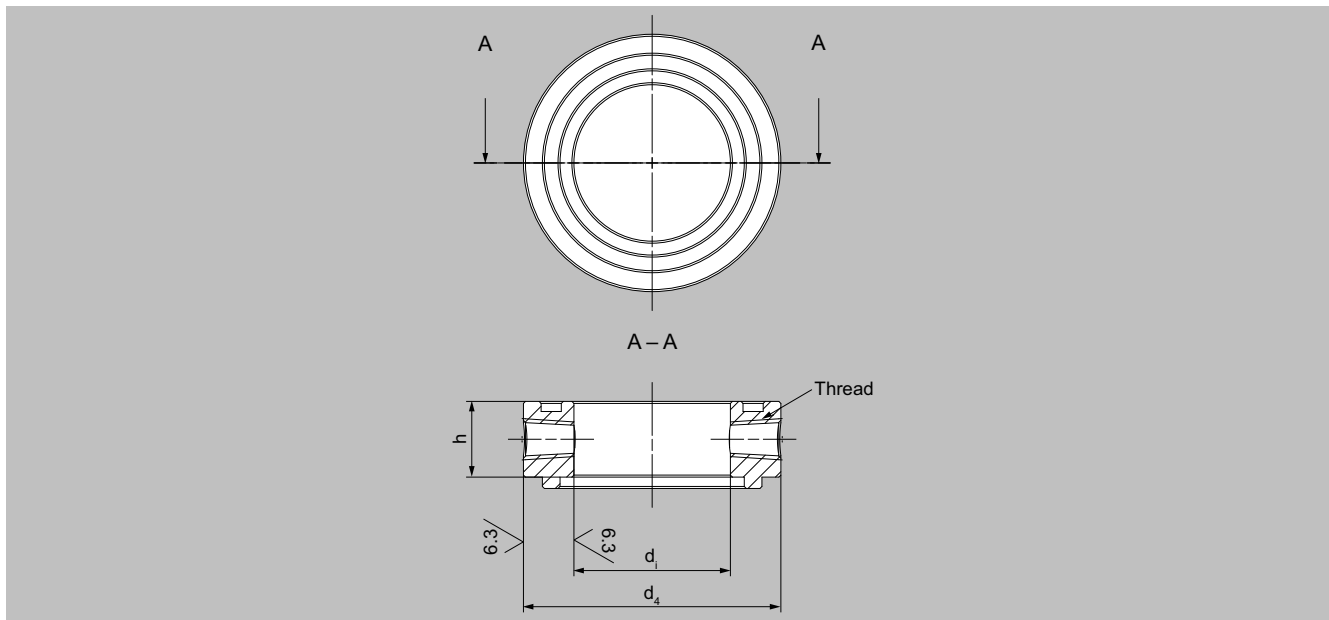


Flushing ring; sealing surface (EN 1092-1), form B1 and form B2

Nominal diameter	PN bar	Thread	$d_4$ Ø in mm (inch)	$d_i$ Ø in mm (inch)	$h$ Ø in mm (inch)	Weight kg (lb)
DN 50	16 ... 100	¼ NPT	102 (4.02)	62 (2.44)	30 (1.18)	1.24 (2.73)
DN 80	16 ... 100	¼ NPT	138 (5.43)	92 (3.62)	30 (1.18)	1.99 (4.39)
DN 100	16 ... 100	¼ NPT	162 (6.38)	92 (3.62)	30 (1.18)	3.35 (7.39)
DN 125	16 ... 100	¼ NPT	188 (7.40)	132 (5.2)	30 (1.18)	3.38 (7.45)
DN 50	16 ... 100	½ NPT	102 (4.02)	62 (2.44)	30 (1.18)	1.24 (2.73)
DN 80	16 ... 100	½ NPT	138 (5.43)	92 (3.62)	30 (1.18)	1.99 (4.39)
DN 100	16 ... 100	½ NPT	162 (6.38)	92 (3.62)	30 (1.18)	3.35 (7.39)
DN 125	16 ... 100	½ NPT	188 (7.40)	132 (5.2)	30 (1.18)	3.38 (7.45)

## Dimensional drawings (continued)

Form D / Form C



Flushing ring; sealing surface (EN 1092-1), form D / form C

Nominal diameter	PN bar	Thread	$d_4$ Ø in mm (inch)	$d_i$ Ø in mm (inch)	h Ø in mm (inch)	Weight kg (lb)
DN 50	16 ... 100	¼ NPT	102 (4.02)	62 (2.44)	35.5 (1.40)	1.46 (3.22)
DN 80	16 ... 100	¼ NPT	138 (5.43)	92 (3.62)	35.5 (1.40)	2.36 (5.2)
DN 100	16 ... 100	¼ NPT	162 (6.38)	92 (3.62)	35.5 (1.40)	3.96 (8.73)
DN 125	16 ... 100	¼ NPT	188 (7.40)	132 (5.2)	35.5 (1.40)	4.00 (8.82)
DN 50	16 ... 100	½ NPT	102 (4.02)	62 (2.44)	40.5 (1.595)	1.67 (3.68)
DN 80	16 ... 100	½ NPT	138 (5.43)	92 (3.62)	40.5 (1.595)	2.69 (5.93)
DN 100	16 ... 100	½ NPT	162 (6.38)	92 (3.62)	40.5 (1.595)	4.52 (9.97)
DN 125	16 ... 100	½ NPT	188 (7.40)	132 (5.2)	40.5 (1.595)	4.56 (10.05)

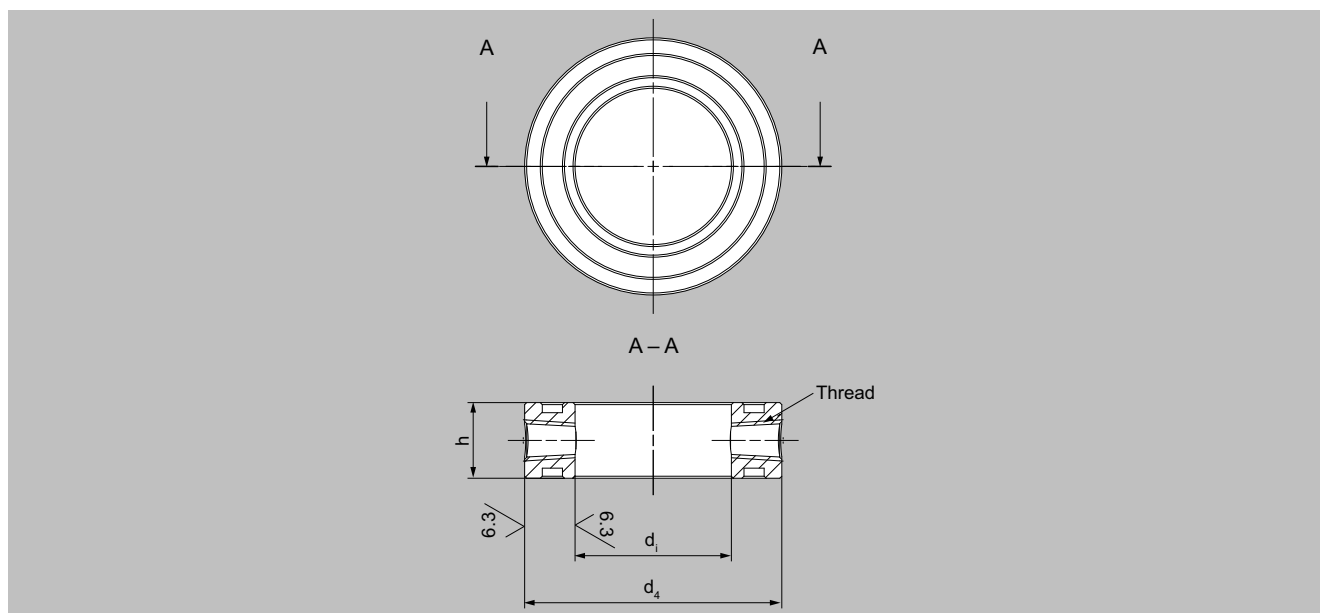
## Pressure measurement

### Remote seals

#### for SITRANS P320/P420 / Flushing ring for diaphragm seals

#### Dimensional drawings (continued)

##### Form D / Form D

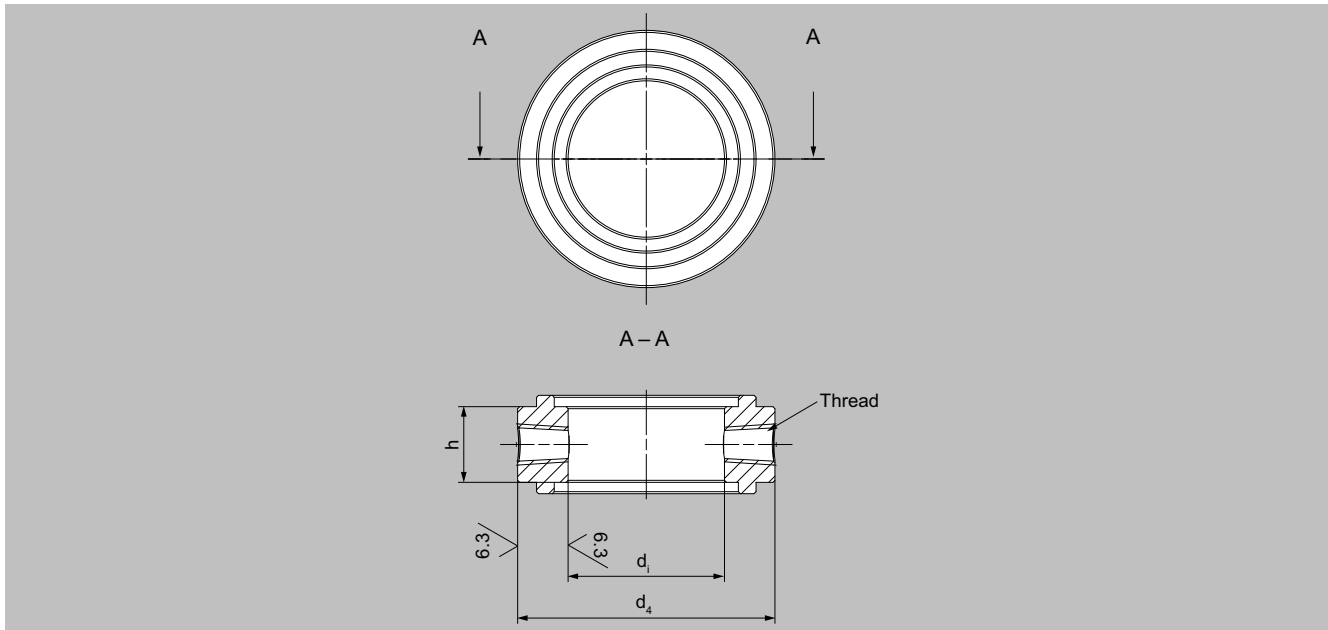


Flushing ring; sealing surface (EN 1092-1), form D/form D

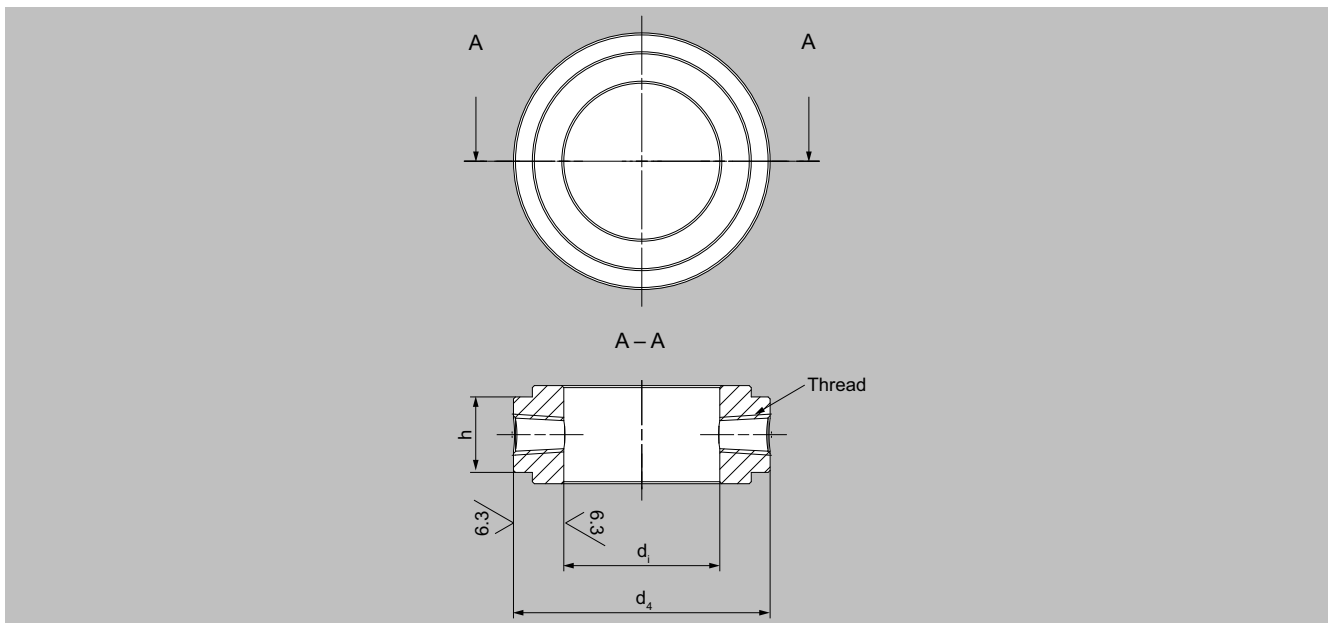
Nominal diameter	PN bar	Thread	$d_4$ Ø in mm (inch)	$d_i$ Ø in mm (inch)	$h$ Ø in mm (inch)	Weight kg (lb)
DN 50	16 ... 100	¼ NPT	102 (4.02)	62 (2.44)	40 (1.58)	1.65 (3.64)
DN 80	16 ... 100	¼ NPT	138 (5.43)	92 (3.62)	40 (1.58)	2.66 (5.86)
DN 100	16 ... 100	¼ NPT	162 (6.38)	92 (3.62)	40 (1.58)	4.47 (9.86)
DN 125	16 ... 100	¼ NPT	188 (7.40)	132 (5.2)	40 (1.58)	4.50 (9.92)
DN 50	16 ... 100	½ NPT	102 (4.02)	62 (2.44)	40 (1.58)	1.65 (3.64)
DN 80	16 ... 100	½ NPT	138 (5.43)	92 (3.62)	40 (1.58)	2.66 (5.86)
DN 100	16 ... 100	½ NPT	162 (6.38)	92 (3.62)	40 (1.58)	4.47 (9.86)
DN 125	16 ... 100	½ NPT	188 (7.40)	132 (5.2)	40 (1.58)	4.50 (9.92)

## Dimensional drawings (continued)

Form C / form C and form E



Flushing ring; sealing surface (EN 1092-1), form C / form C



Flushing ring; sealing surface (EN 1092-1), form E

## Pressure measurement

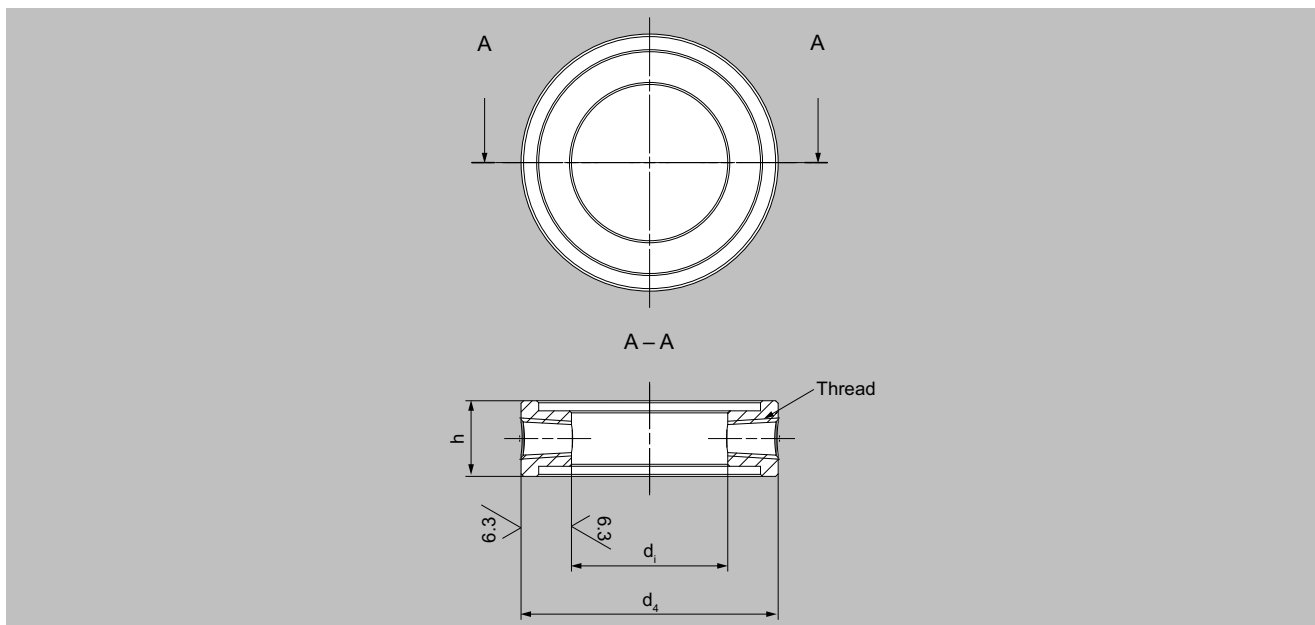
### Remote seals

#### for SITRANS P320/P420 / Flushing ring for diaphragm seals

#### Dimensional drawings (continued)

Nominal diameter	PN bar	Thread	d <sub>4</sub> Ø in mm (inch)	d <sub>i</sub> Ø in mm (inch)	h Ø in mm (inch)	x Ø in mm (inch)	f3 Ø in mm (inch)	Weight kg (lb)
DN 50	16 ... 100	¼ NPT	102 (4.02)	62 (2.44)	31 (1.22)	87 (3.43)	4.5 (0.18)	1.49 (3.28)
DN 80	16 ... 100	¼ NPT	138 (5.43)	92 (3.62)	31 (1.22)	120 (4.72)	4.5 (0.18)	2.40 (5.29)
DN 100	16 ... 100	¼ NPT	162 (6.38)	92 (3.62)	30 (1.18)	149 (5.87)	5 (0.2)	4.21 (9.28)
DN 125	16 ... 100	¼ NPT	188 (7.40)	132 (5.2)	30 (1.18)	175 (6.89)	5 (0.2)	4.21 (9.28)
DN 50	16 ... 100	½ NPT	102 (4.02)	62 (2.44)	31 (1.22)	87 (3.43)	4.5 (0.18)	1.49 (3.28)
DN 80	16 ... 100	½ NPT	138 (5.43)	92 (3.62)	31 (1.22)	120 (4.72)	4.5 (0.18)	2.40 (5.29)
DN 100	16 ... 100	½ NPT	162 (6.38)	92 (3.62)	30 (1.18)	149 (5.87)	5 (0.2)	4.21 (9.28)
DN 125	16 ... 100	½ NPT	188 (7.40)	132 (5.2)	30 (1.18)	175 (6.89)	5 (0.2)	3.38 (7.45)

#### Form F



Flushing ring; sealing surface (EN 1092-1), form F

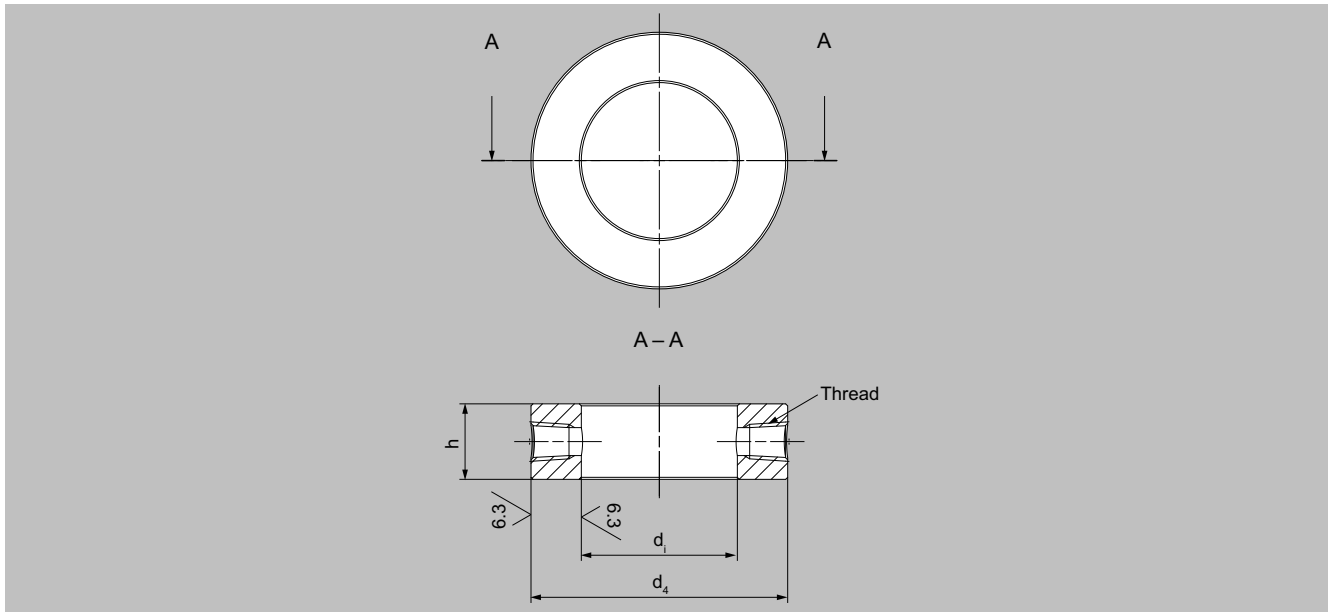
Nominal diameter	PN bar	Thread	d <sub>4</sub> Ø in mm (inch)	d <sub>i</sub> Ø in mm (inch)	h Ø in mm (inch)	x Ø in mm (inch)	f3 Ø in mm (inch)	Weight kg (lb)
DN 50	16 ... 100	¼ NPT	102 (4.02)	62 (2.44)	35 (1.38)	88 (3.46)	4 (0.16)	1.25 (2.76)
DN 80	16 ... 100	¼ NPT	138 (5.43)	92 (3.62)	35 (1.38)	121 (4.76)	4 (0.16)	2.02 (4.45)
DN 100	16 ... 100	¼ NPT	162 (6.38)	92 (3.62)	35 (1.38)	150 (5.91)	4.5 (0.18)	3.11 (6.86)
DN 125	16 ... 100	¼ NPT	188 (7.40)	132 (5.2)	35 (1.38)	175 (6.89)	4.5 (0.18)	3.19 (7.03)
DN 50	16 ... 100	½ NPT	102 (4.02)	62 (2.44)	40 (1.58)	88 (3.46)	4 (0.16)	1.45 (3.2)
DN 80	16 ... 100	½ NPT	138 (5.43)	92 (3.62)	40 (1.58)	121 (4.76)	4 (0.16)	2.35 (5.18)
DN 100	16 ... 100	½ NPT	162 (6.38)	92 (3.62)	40 (1.58)	150 (5.91)	4.5 (0.18)	3.67 (8.09)
DN 125	16 ... 100	½ NPT	188 (7.40)	132 (5.2)	40 (1.58)	175 (6.89)	4.5 (0.18)	3.76 (8.29)



## Dimensional drawings (continued)

## Connection according to ASME B 16.5

## RFSF and RF 125 ... 250 AO



Flushing ring; sealing surface (ASME B 16.5), RFSF and RF 125 to 250 AO

Nominal diameter	Class	Thread	$d_4$ Ø in mm (inch)	$d_i$ Ø in mm (inch)	$h$ Ø in mm (inch)	Weight kg (lb)
2"	150 ... 600	¼ NPT	92 (3.62)	62 (2.44)	30 (1.18)	0.87 (1.92)
3"	150 ... 600	¼ NPT	127 (5)	92 (3.62)	30 (1.18)	1.44 (3.17)
4"	150 ... 600	¼ NPT	157 (6.18)	92 (3.62)	30 (1.18)	3.05 (6.72)
5"	150 ... 600	¼ NPT	186 (7.32)	141 (5.55)	30 (1.18)	2.77 (6.11)
2"	150 ... 600	½ NPT	92 (3.62)	62 (2.44)	30 (1.18)	0.87 (1.92)
3"	150 ... 600	½ NPT	127 (5)	92 (3.62)	30 (1.18)	1.44 (3.17)
4"	150 ... 600	½ NPT	157 (6.18)	92 (3.62)	30 (1.18)	3.05 (6.72)
5"	150 ... 600	½ NPT	186 (7.32)	141 (5.55)	30 (1.18)	2.77 (6.11)

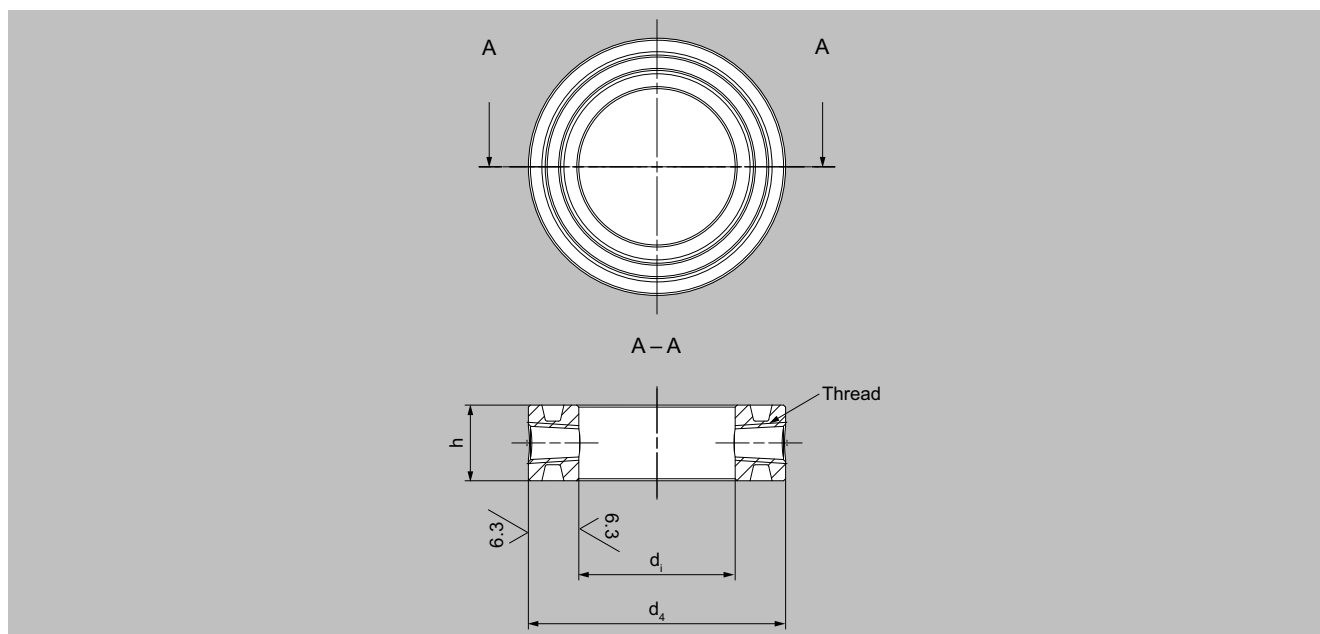
## Pressure measurement

### Remote seals

for SITRANS P320/P420 / Flushing ring for diaphragm seals

### Dimensional drawings (continued)

#### RJF ring groove



Flushing ring; sealing surface (ASME B 16.5), RJF ring groove

Nominal diameter	Class	Thread	$d_4$ Ø in mm (inch)	$d_i$ Ø in mm (inch)	$h$ Ø in mm (inch)	Weight kg (lb)
2"	150	¼ NPT	102 (4.02)	62 (2.44)	40 (1.58)	1.65 (3.64)
3"	150	¼ NPT	133 (5.24)	92 (3.62)	40 (1.58)	2.32 (5.12)
4"	150	¼ NPT	171 (6.73)	92 (3.62)	40 (1.58)	5.22 (11.51)
5"	150	¼ NPT	194 (7.64)	141 (5.55)	40 (1.58)	4.46 (9.83)
2"	150	½ NPT	102 (4.02)	62 (2.44)	46 (1.81)	1.90 (4.19)
3"	150	½ NPT	133 (5.24)	92 (3.62)	46 (1.81)	2.66 (5.86)
4"	150	½ NPT	171 (6.73)	92 (3.62)	46 (1.81)	6.00 (13.23)
5"	150	½ NPT	194 (7.64)	141 (5.55)	46 (1.81)	5.13 (11.31)
2"	300 ... 600	¼ NPT	108 (4.25)	62 (2.44)	40 (1.58)	1.96 (4.32)
3"	300 ... 600	¼ NPT	146 (5.75)	92 (3.62)	40 (1.58)	3.23 (7.12)
4"	300 ... 600	¼ NPT	175 (6.89)	92 (3.62)	40 (1.58)	5.57 (12.28)
5"	300 ... 600	¼ NPT	210 (8.27)	141 (5.55)	40 (1.58)	6.08 (13.4)
2"	300 ... 600	½ NPT	108 (4.25)	62 (2.44)	46 (1.81)	2.26 (4.98)
3"	300 ... 600	½ NPT	146 (5.75)	92 (3.62)	46 (1.81)	3.71 (8.18)
4"	300 ... 600	½ NPT	175 (6.89)	92 (3.62)	46 (1.81)	6.4 (14.11)
5"	300 ... 600	½ NPT	210 (8.27)	141 (5.55)	46 (1.81)	7 (15.43)

## Dimensional drawings

## Mounting types for gauge pressure and level measurements (open vessels)

**Installation type A**

Pressure transmitter above the measuring point

**Installation type B**

Pressure transmitter below the measuring point

$H_1 \leq 7 \text{ m (23 ft)}$ , with halocarbon oil as filling liquid only  $H_1 \leq 4 \text{ m (13.1 ft)}$

**Installation type A**

Lower range value:  $p_{MA} = \rho_{FL} \cdot g \cdot H_U - \rho_{OIL} \cdot g \cdot H_1$

Upper range value:  $p_{ME} = \rho_{FL} \cdot g \cdot H_O - \rho_{OIL} \cdot g \cdot H_1$

**Installation type B**

Lower range value:  $p_{MA} = \rho_{FL} \cdot g \cdot H_U + \rho_{OIL} \cdot g \cdot H_1$

Upper range value:  $p_{ME} = \rho_{FL} \cdot g \cdot H_O + \rho_{OIL} \cdot g \cdot H_1$

**Legend**

$p_{MA}$	Lower range value to be set
$p_{ME}$	Upper range value to be set
$\rho_{FL}$	Density of medium in vessel
$\rho_{OIL}$	Density of filling oil in the capillary to the remote seal
$g$	Local acceleration due to gravity
$H_U$	Lower range value
$H_O$	Upper range value
$H_1$	Distance between vessel flange and pressure trans.

## Mounting type for absolute pressure measurements (closed vessels)

**Installation type C<sub>1</sub>**

**Installation type C<sub>2</sub>**

Pressure transmitter for absolute pressure always below the measuring point:  $H_1 \geq 200 \text{ mm (7.9 inch)}$

**Installation type C<sub>1</sub> and C<sub>2</sub>**

Lower range value:  $p_{MA} = p_{START} + \rho_{OIL} \cdot g \cdot H_1$

Upper range value:  $p_{ME} = p_{END} + \rho_{OIL} \cdot g \cdot H_1$

**Legend**

$p_{MA}$	Lower range value to be set
$p_{ME}$	Upper range value to be set
$p_{START}$	Lower range value
$p_{END}$	Upper range value
$\rho_{OIL}$	Density of filling oil in the capillary to the remote seal
$g$	Local acceleration due to gravity
$H_1$	Distance between vessel flange and pressure trans.

## Pressure measurement

### Remote seals

for SITRANS P320/P420 / Measuring setups with remote seal

### Dimensional drawings (continued)

#### Mounting types for differential pressure and flow measurements

Installation type D Filter monitoring



Installation type D

Lower range value:  $p_{MA} = p_{START} - \rho_{Oil} \cdot g \cdot H_V$

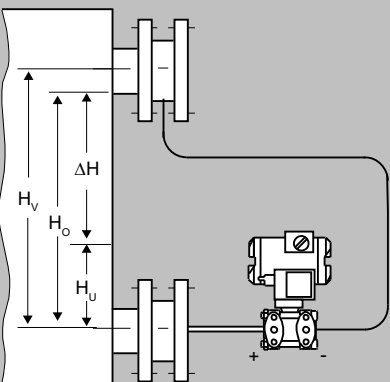
Upper range value:  $p_{ME} = p_{END} - \rho_{Oil} \cdot g \cdot H_V$

**Legend**

$p_{MA}$	Lower range value to be set
$p_{ME}$	Upper range value to be set
$p_{START}$	Lower range value
$p_{END}$	Upper range value
$\rho_{Oil}$	Density of filling oil in the capillary to the remote seal
$g$	Local acceleration due to gravity
$H_V$	Distance between the measuring points (spigots)

#### Mounting type for level measurements (closed vessels)

Installation type E



Installation type E

Lower range value:  $p_{MA} = \rho_{FL} \cdot g \cdot H_U - \rho_{Oil} \cdot g \cdot H_V$

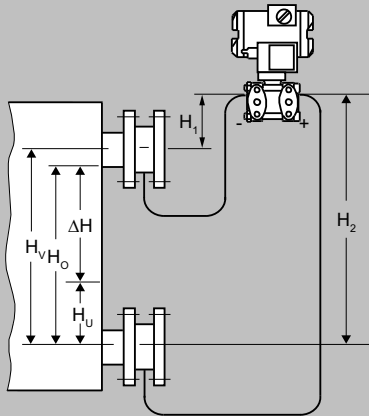
Upper range value:  $p_{ME} = \rho_{FL} \cdot g \cdot H_O - \rho_{Oil} \cdot g \cdot H_V$

**Legend**

$p_{MA}$	Lower range value to be set
$p_{ME}$	Upper range value to be set
$\rho_{FL}$	Density of medium in vessel
$\rho_{Oil}$	Density of filling oil in the capillary to the remote seal
$g$	Local acceleration due to gravity
$H_U$	Lower range value
$H_O$	Upper range value
$H_V$	Distance between the measuring points (spigots)

## Dimensional drawings (continued)

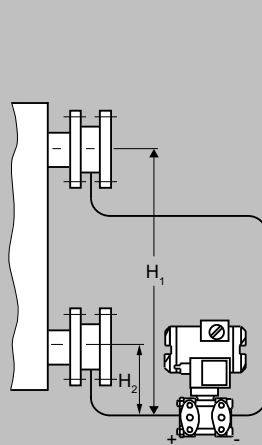
Installation type G



Pressure transmitter for differential pressure above the upper measuring point, no vacuum

$H_2 \leq 7 \text{ m (23 ft)}$ , with halocarbon oil as filling liquid only  $H_1 \leq 4 \text{ m (13.1 ft)}$

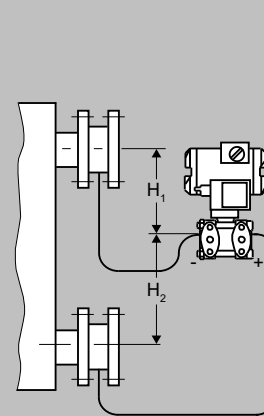
Installation type H



below the lower measuring point

Installation type for vacuum applications

Installation type J



between the measuring points, no vacuum

$H_2 \leq 7 \text{ m (23 ft)}$ , with halocarbon oil as filling liquid only  $H_2 \leq 4 \text{ m (13.1 ft)}$

## Installation type G, H and J

Lower range value:

$$P_{MA} = \rho_{FL} \cdot g \cdot H_U - \rho_{Oil} \cdot g \cdot H_V$$

Upper range value:

$$P_{ME} = \rho_{FL} \cdot g \cdot H_O - \rho_{Oil} \cdot g \cdot H_V$$

## Legend

$P_{MA}$

Lower range value to be set

$P_{ME}$

Upper range value to be set

$\rho_{FL}$

Density of medium in vessel

$\rho_{Oil}$

Density of filling oil in the capillary to the remote seal

$g$

Local acceleration due to gravity

$H_U$

Lower range value

$H_O$

Upper range value

$H_V$

Distance between the measuring points (spigots)

# Pressure measurement

## Remote seals

### for SITRANS P320/P420 / Measuring setups without remote seals

#### Overview

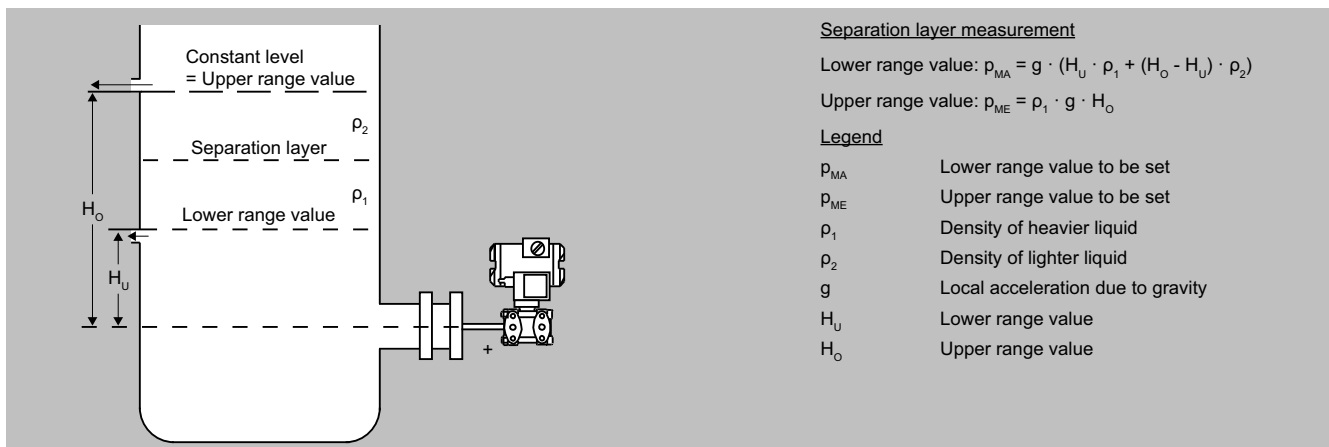
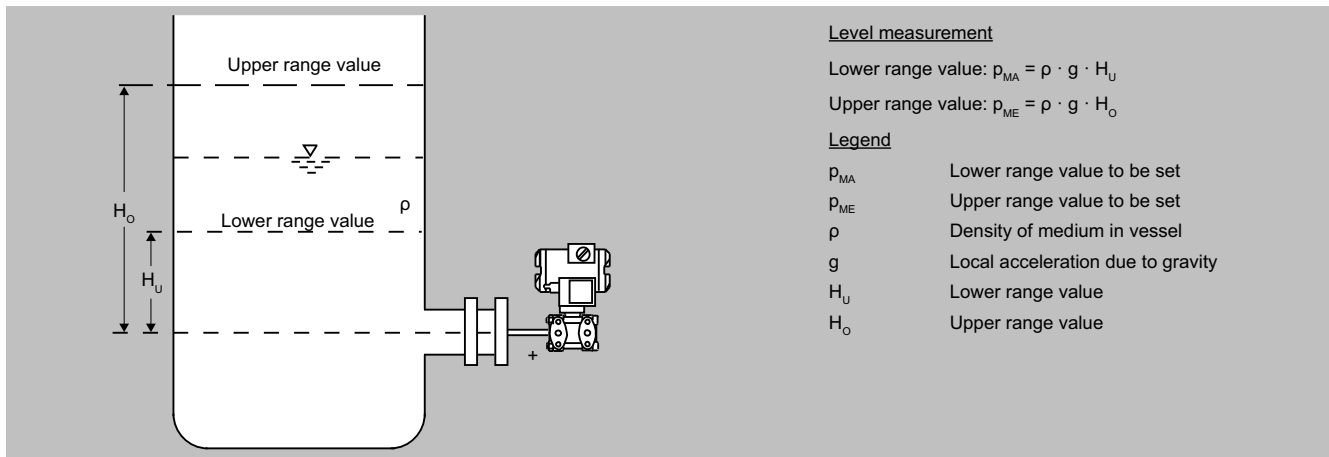
##### Notes

- For interface measurements, the interface must be located between the two nozzles. In addition, the fill level of the container must always be above the top nozzle.
- A constant level of the process medium is required for density measurement. The level should be above the top nozzle.

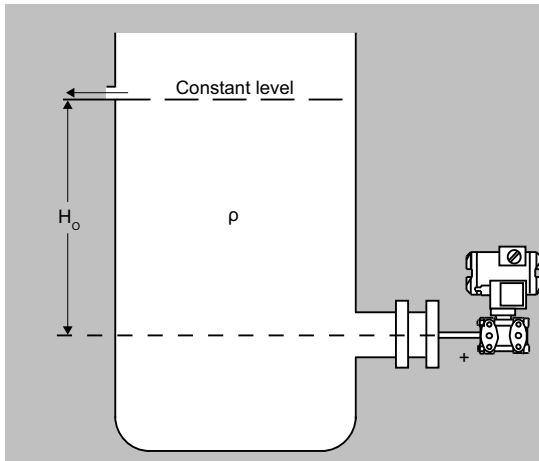
#### Dimensional drawings

##### Pressure transmitters for differential pressure for flanging

###### Measuring arrangements for open containers



## Dimensional drawings (continued)

Density measurement

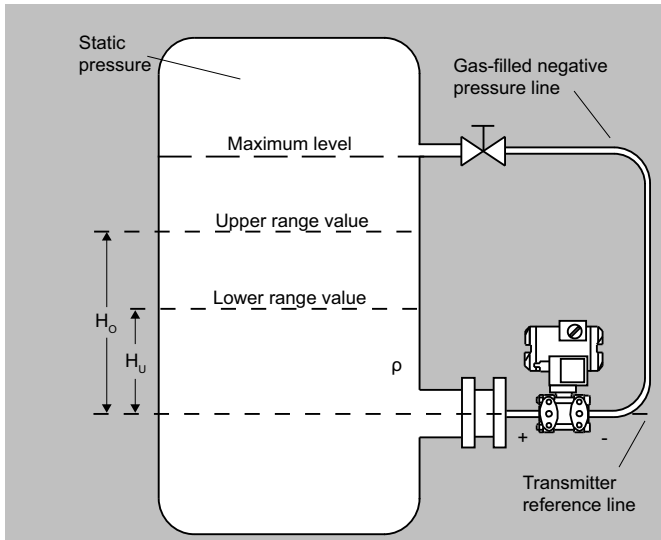
$$\text{Lower range value: } p_{MA} = \rho_{MIN} \cdot g \cdot H_O$$

$$\text{Upper range value: } p_{ME} = \rho_{MAX} \cdot g \cdot H_O$$

Legend

$p_{MA}$	Lower range value to be set
$p_{ME}$	Upper range value to be set
$\rho_{MIN}$	Minimum density of medium in vessel
$\rho_{MAX}$	Maximum density of medium in vessel
$g$	Local acceleration due to gravity
$H_O$	Upper range value in m

## Measuring arrangements for closed containers

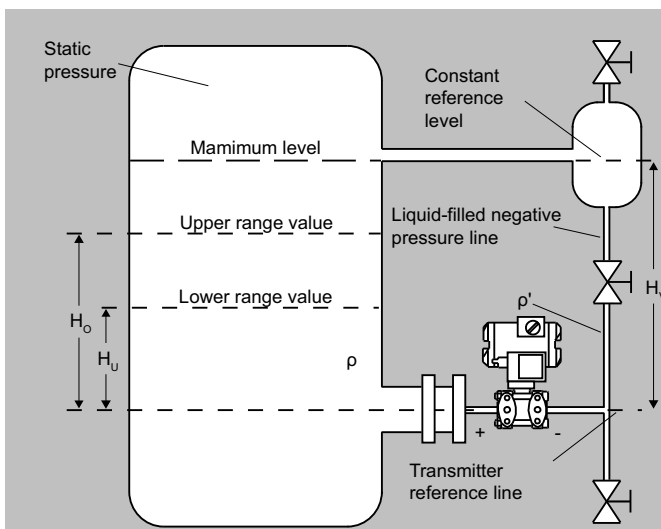
Level measurement, Version 1

$$\text{Lower range value: } \Delta p_{MA} = \rho \cdot g \cdot H_U$$

$$\text{Upper range value: } \Delta p_{ME} = \rho \cdot g \cdot H_O$$

Legend

$\Delta p_{MA}$	Lower range value to be set
$\Delta p_{ME}$	Upper range value to be set
$\rho$	Density of medium in vessel
$g$	Local acceleration due to gravity
$H_U$	Lower range value
$H_O$	Upper range value

Level measurement, Version 2

$$\text{Lower range value: } \Delta p_{MA} = g \cdot (H_U \cdot \rho - H_V \cdot \rho')$$

$$\text{Upper range value: } \Delta p_{ME} = g \cdot (H_O \cdot \rho - H_V \cdot \rho')$$

Legend

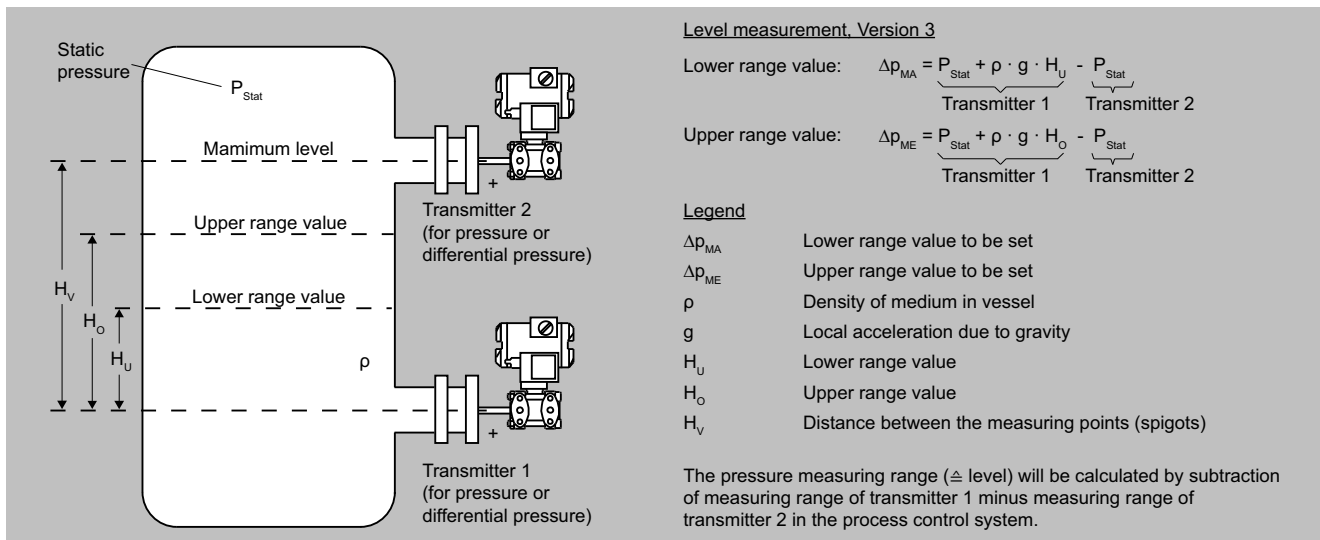
$\Delta p_{MA}$	Lower range value to be set
$\Delta p_{ME}$	Upper range value to be set
$\rho$	Density of medium in vessel
$\rho'$	Density of liquid in the negative pressure line (corresponding to the temperature existing there)
$g$	Local acceleration due to gravity
$H_U$	Lower range value
$H_O$	Upper range value
$H_V$	Distance between the measuring points (spigots)

# Pressure measurement

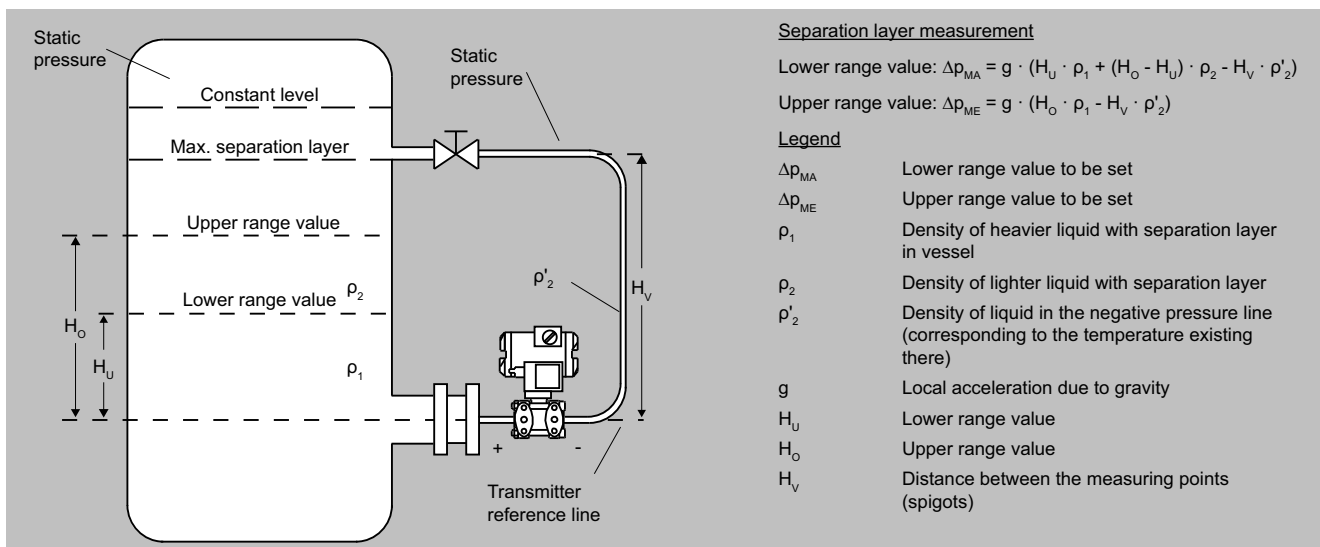
## Remote seals

for SITRANS P320/P420 / Measuring setups without remote seals

### Dimensional drawings (continued)



Pressure transmitters for differential pressure for flanging, measuring arrangement for closed containers, level measurement





## Overview

All shut-off fittings can be secured onto walls, racks (72 mm grid size) and vertical and horizontal pipes.

This offers the advantage when assembling a plant that the shut-off fittings can be secured first and the lines for the medium and differential pressure lines connected to them. It is then possible to check all connections for leaks and to blow out or flush the pipes in order to remove dirt (welding residues, shavings etc.).

Finally, when all piping is completed, the measuring instruments are screwed onto the shut-off fittings.

If a measuring instrument has to be removed for maintenance, the fittings and pipes remain intact. Only the valves have to be closed. The measuring instrument can then be detached and re-installed after maintenance.

### Classification according to pressure equipment directive (PED 2014/68/EU):

For gasses of fluid group 1 and liquids of fluid group 1; compliance with requirements of article 4, paragraph 3 (sound engineering practice).

### Norm IEC 61518/EN 61518

The flange connection between pressure transmitter and valve manifold was modified in the standard IEC 61518/EN 61518. The only connection thread approved for use in the process flanges of the pressure transmitter is  $7/16-20$  UNF.

The valve manifolds for M12 screws, including the accessory sets, have therefore been deleted.

### Material inspection certificate to EN 10204-3.1

If a material inspection certificate according to EN 10204-3.1 is required for ordering valve manifolds or shut-off fittings, be aware that one certificate is sufficient for each valve type ordered. This means that you will only be charged for one certificate in the cost calculations.

### Minimum/maximum operating temperatures

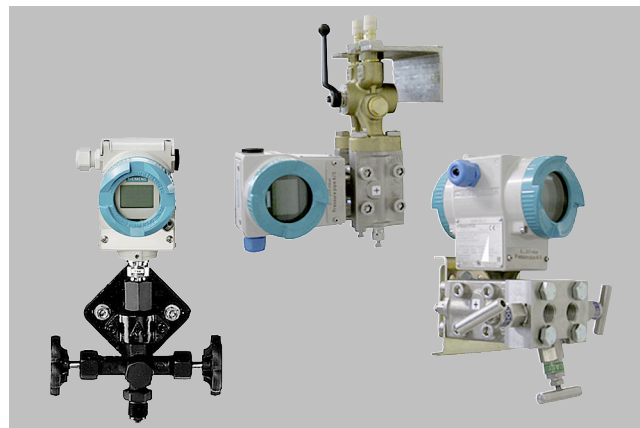
The maximum operating temperatures are given for each valve or valve manifold.

The minimum operating temperatures depend on the material used for the valves or valve manifold. They are:

Material	Minimum operating temperature
Brass	-10 °C (+14 °F) according to EN 12516-4
Steel	-10 °C (+14 °F) according to AD200-W10
Stainless steel	-40 °C (-40 °F)

## Overview (continued)

### Pressure transmitters with shut-off fittings – mounting examples



SITRANS P transmitter for gauge pressure with double shut-off valve, SITRANS P differential pressure transmitter with multiway cock or 3-spindle valve manifold



SITRANS P transmitter for differential pressure with 3-way valve manifold, 3-spindle valve manifold or valve manifold combination DN 5/DN 8



SITRANS P pressure transmitter for differential pressure, mounted in protective box (available on request)

## Pressure measurement

### Fittings

#### Introduction

#### Overview (continued)

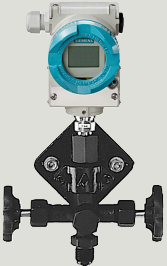

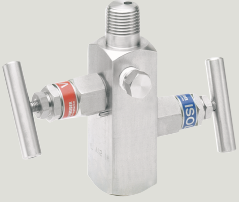
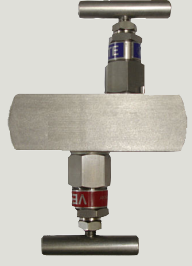




SITRANS P pressure transmitter mounted on "Monoflange" valve combination for direct connection to flanges (available on request)

## Configuration

## Selection aid

Selection of possible shut-off valves

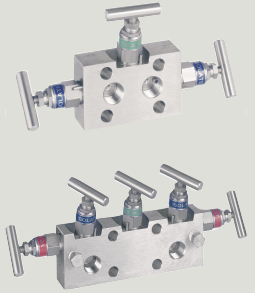



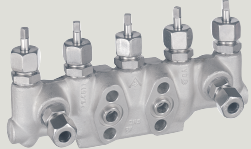
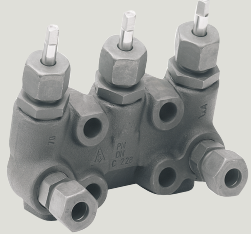
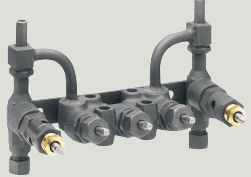
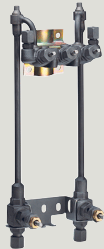
Transmitters	Shut-off valves for general applications		Shut-off valves for special applications	
<p><b>Gauge and absolute pressure transmitters with process connection G<math>\frac{1}{2}</math>" external thread</b></p> <p>e.g.</p> <ul style="list-style-type: none"> <li>• SITRANS P200 7MF1565-...</li> <li>• SITRANS P210 7MF1566-...</li> <li>• SITRANS P220 7MF1567-...</li> <li>• SITRANS P300 7MF802-...0-.....</li> <li>• SITRANS P 320/420 7MF030-...D-..... 7MF032-...D-..... 7MF040-...D-..... 7MF042-...D-.....</li> </ul>	<p>Shut-off valves / double shut-off valves according to DIN 16270, DIN 16271, and DIN 16272</p>		<p>Double shut-off valve DN 5 for cross-over <math>\frac{1}{2}</math> NPT-F to nipple connection G<math>\frac{1}{2}</math> 7MF9011-4EA</p> <p>2-spindle valve manifold DN 5 for installation in protective boxes 7MF9412-1B</p>	
<p><b>Gauge and absolute pressure transmitters with process connection <math>\frac{1}{2}</math>"-14 NPT external or external thread</b></p> <p>e.g.</p> <ul style="list-style-type: none"> <li>• SITRANS P200 7MF1565-...</li> <li>• SITRANS P210 7MF1566-...</li> <li>• SITRANS P220 7MF1567-</li> <li>• SITRANS P300 7MF802-...1-.....</li> <li>• SITRANS P 320/420 7MF030-...E-..... 7MF030-...F-..... 7MF032-...E-..... 7MF032-...F-..... 7MF040-...E-..... 7MF040-...F-..... 7MF042-...E-..... 7MF042-...F-.....</li> </ul>	<p>Double shut-off valve DN 5 7MF9011-4EA, -4FA, -4GA and -4KA</p>	 <p>7MF9011-4FA 7MF9011-4KA</p>	<p>Double shut-off valve DN 5 for process connection <math>\frac{1}{2}</math>-NPT 7MF9011-4DA</p>	
<p><b>Absolute pressure transmitter with process connection according to IEC 61518/EN 61518</b></p> <p>e.g.</p> <ul style="list-style-type: none"> <li>• SITRANS P 320/420 7MF033-.....-..... 7MF043-.....-.....</li> </ul>	<p>2-spindle valve manifold DN 5 7MF9411-5A.</p>		<p>2-spindle valve manifold DN 5 for installation in protective boxes 7MF9412-1C.</p>	

## Pressure measurement



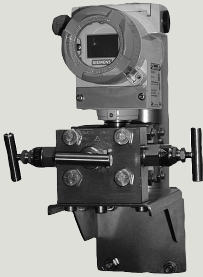

## Fittings

## Introduction

## Configuration (continued)

Transmitters	Shut-off valves for general applications	Shut-off valves for special applications
<p>Differential pressure transmitter with process connection according to IEC 61518/EN 61518 e.g.</p> <ul style="list-style-type: none"> <li>• SITRANS P 320/420 7MF034.-.....</li> <li>7MF044.-.....</li> </ul>	<p>3/5-spindle valve manifold DN 5 7MF9411-5B. and 7MF9411-5C.</p>  <p>PN 100 multiway cock 7MF9004-...</p>  	<p>3-way valve manifold DN 5 forged version 7MF9410-1..</p>  <p>5-way valve manifold DN 5 forged version 7MF9410-3..</p>  <p>3-way valve manifold DN 8 forged version 7MF9416-1.. and 7MF9416-2..</p>  <p>Valve manifold combination DN 5/DN 8 for vapor measure- ment 7MF9416-6..</p>  <p>Valve manifold combination DN 8 for vapor measurement 7MF9416-4..</p> 

## Configuration (continued)

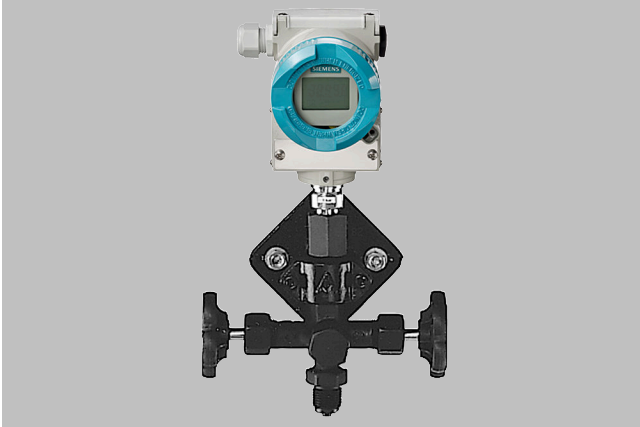
Transmitters	Shut-off valves for general applications	Shut-off valves for special applications
<p>Differential pressure transmitter with process connection according to IEC 61518/EN 61518 e.g.</p> <ul style="list-style-type: none"> <li>SITRANS P 320/420</li> <li>7MF034.-.....-....</li> <li>7MF044.-.....-....</li> </ul>	<p>PN 100 multiway cock 7MF9004-...</p> 	<p>Valve manifold for DN 5 for installation in protective boxes 7MF9412-1D. and 7MF9412-1E.</p>  <p>Valve manifold for vertical differential pressure line 7MF9413-1..</p>  <p>Low-pressure multiway cock 7MF9004-4..</p> 

## Pressure measurement

### Fittings

Shut-off valves for gauge and absolute pressure / Shut-off valves acc. to DIN 16270, DIN 16271 and DIN 16272

#### Overview



Pressure transmitters with double shut-off valve 7MF9401-...

The shut-off valves for pressure gauges are used to shut off the measured medium line for corrosive and non-corrosive gases, vapors and liquids.

#### Design

A siphon is installed in front of the shutoff valve for measured materials with temperatures above 120 °C. The form B shut-off valves have a shaft with which a measuring instrument holder can be attached. No adapter is therefore required for fastening these valves. With double shut-off valves DN 5, the air-release/test connection can be shut off. This enables a zero point check on the pressure gauge. In addition, a characteristic curve test can be conducted on the pressure gauge using an external pressure sensor. The valve packing material is PTFE.

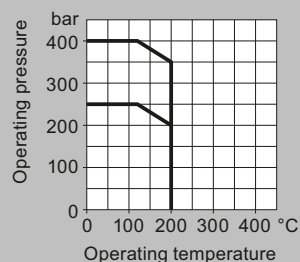
## Shut-off valves for gauge and absolute pressure / Shut-off valves acc. to DIN 16270, DIN 16271 and DIN 16272

## Selection and ordering data

		Article No.
<b>Shut-off valves, form B, DIN 16270</b>		
Without test collar, connection shank, without certificate		
<b>Material valve enclosure</b>	<b>Max. permissible operating overpressure</b>	
CW614N (CuZn39Pb3) (mat. no. 2.0402)	250 bar (3626 psi)	7MF9401-7AA
P250GH (mat. no. 1.0460)	400 bar (5800 psi)	7MF9401-7AB
X 6 CrNiMoTi 17 12 2 (mat. no. 1.4571/316Ti)	400 bar (5800 psi)	7MF9401-7AC
<b>Shut-off valves, form B, DIN 16271</b>		
With test collar, connection shank, without certificate		
<b>Material valve enclosure</b>	<b>Max. permissible operating overpressure</b>	
CW614N (CuZn39Pb3) (mat. no. 2.0402)	250 bar (3626 psi)	7MF9401-7BA
P250GH (mat. no. 1.0460)	400 bar (5800 psi)	7MF9401-7BB
X 6 CrNiMoTi 17 12 2 (mat. no. 1.4571/316Ti)	400 bar (5800 psi)	7MF9401-7BC
<b>Shut-off valves, form B, DIN 16270</b>		
Without test collar, cutting ring 12 S EN ISO 8434-1, without certificate		
<b>Material valve enclosure</b>	<b>Max. permissible operating overpressure</b>	
P250GH (mat. no. 1.0460)	400 bar (5800 psi)	7MF9401-8AB
X 6 CrNiMoTi 17 12 2 (mat. no. 1.4571/316Ti)	400 bar (5800 psi)	7MF9401-8AC
<b>Shut-off valves, form B, DIN 16271</b>		
With test collar, cutting ring 12 S EN ISO 8434-1, without certificate		
<b>Material valve enclosure</b>	<b>Max. permissible operating overpressure</b>	
P250GH (mat. no. 1.0460)	400 bar (5800 psi)	7MF9401-8BB
X 6 CrNiMoTi 17 12 2 (mat. no. 1.4571/316Ti)	400 bar (5800 psi)	7MF9401-8BC
<b>Double shut-off valves, form B, DIN 16272</b>		
With test collar, connection shank, without certificate		
<b>Material valve enclosure</b>	<b>Max. permissible operating overpressure</b>	
CW614N (CuZn39Pb3) (mat. no. 2.0402)	250 bar (3626 psi)	7MF9401-7DA
P250GH (mat. no. 1.0460)	400 bar (5800 psi)	7MF9401-7DB
X 6 CrNiMoTi 17 12 2 (mat. no. 1.4571/316Ti)	400 bar (5800 psi)	7MF9401-7DC
<b>Double shut-off valves, form B, DIN 16272</b>		
With test collar, cutting ring 12 S EN ISO 8434-1, without certificate		
<b>Material valve enclosure</b>	<b>Max. permissible operating overpressure</b>	
P250GH (mat. no. 1.0460)	400 bar (5800 psi)	7MF9401-8DB
X 6 CrNiMoTi 17 12 2 (mat. no. 1.4571/316Ti)	400 bar (5800 psi)	7MF9401-8DC
<b>Accessories</b>		
Factory certificate according to EN 10204-2.2		7MF9000-8AB
Material inspection certificate to EN 10204-3.1		7MF9000-8AD

Measuring instrument holders, see under "Accessories for shut-off valves and double shut-off valves".

## Characteristic curves



Steel or stainless steel version  
 400 bar (5800 psi) at 120 °C  
 (248 °F)  
 350 bar (5076 psi) at 200 °C  
 (392 °F)

Brass version  
 250 bar (3626 psi) at 120 °C  
 (248 °F)  
 200 bar (2901 psi) at 200 °C  
 (392 °F)

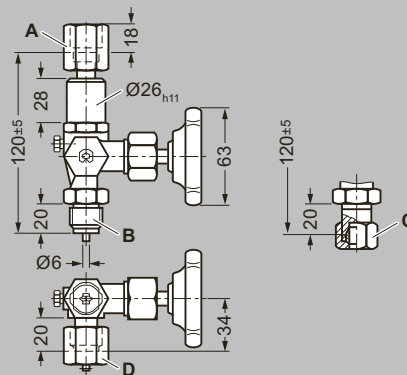
Permissible operating overpressure depends on the permissible operating temperature

## Pressure measurement

### Fittings

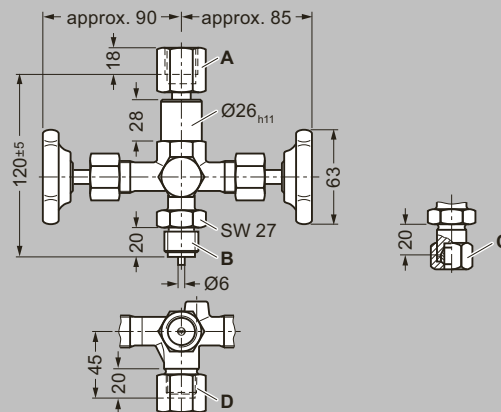
Shut-off valves for gauge and absolute pressure / Shut-off valves acc. to DIN 16270, DIN 16271 and DIN 16272

#### Dimensional drawings



- A Connection on device side: to DIN 16284, G $\frac{1}{2}$ , SW 27
- B Connection on measurement side: connection shank to DIN EN 837-1, G $\frac{1}{2}$
- C Connection on measurement side: pipe union with ferrule 12 mm diameter, S series, to DIN EN ISO 8434-1
- D Connection on test collar (with sealing cap): thread M20 x 1.5

Shut-off valve, Form B, dimension drawing, dimensions in mm



- A Connection on device side: to DIN 16284, G $\frac{1}{2}$ , SW 27
- B Connection on measurement side: connection shank to DIN EN 837-1, G $\frac{1}{2}$
- C Connection on measurement side: pipe union with ferrule 12 mm diameter, S series, to DIN EN ISO 8434-1
- D Connection on test collar (with sealing cap): thread M20 x 1.5

Double shut-off valve, Form B, dimension drawing, dimensions in mm



## Overview



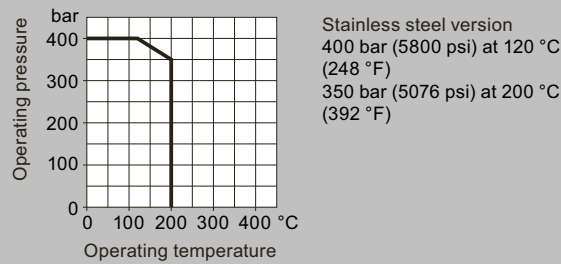
P300 pressure transmitters with shut-off valve and angled adapter

The angled adapter serves to allow transmitters with display on top to be read from the front.

## Selection and ordering data

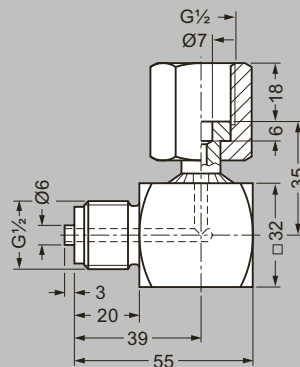
	Article No.
<b>Angled adapter</b> Material: X 12 CrNiMoTi 17 12 2 (mat. no. 1.45714/316Ti), max. permissible operating overpressure 400 bar (5800 psi)	7MF9401-7WA
<b>Accessories</b> Factory certificate according to EN 10204-2.2	7MF9000-8AB
Material inspection certificate to EN 10204-3.1	7MF9000-8AD

## Characteristic curves



Permissible operating overpressure depends on the permissible operating temperature

## Dimensional drawings



Angled adapter, dimensions in mm

## Pressure measurement

### Fittings

#### Shut-off valves for gauge and absolute pressure / Shut-off valves

##### Overview

The double shut-off valves DN 5 are suitable for pressure measuring devices and pressure transmitters and available in 5 versions:

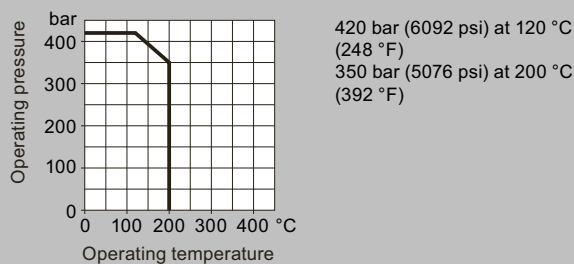
- Sleeve-nipple
- Sleeve-sleeve
- Sleeve-collar
- Collar-collar
- Collar-sleeve

The valve packing material is PTFE.

##### Selection and ordering data

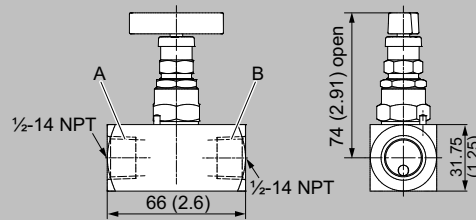
Shut-off valves DN 5	Article No.
Material: X 6 CrNiMoTi 17 13 2 (mat. no. 1.4404/316L), max. permissible operating overpressure 420 bar (6092 psi) • Sleeve-sleeve	7MF9011-3HA
<b>Double shut-off valves DN 5</b> Material: X 6 CrNiMoTi 17 13 2 (mat. no. 1.4404/316L), max. permissible operating overpressure 420 bar (6092 psi) • Sleeve-nipple • Sleeve-sleeve • Sleeve-collar • Collar-collar • Collar-sleeve	7MF9011-4EA 7MF9011-4HA 7MF9011-4FA 7MF9011-4GA 7MF9011-4KA
<b>Accessories</b> Factory certificate according to EN 10204-2.2 Material inspection certificate to EN 10204-3.1	7MF9000-8AB 7MF9000-8AD
<b>Options</b> Add "-Z" to article number and specify order code. Oil-free and grease-free cleaned version for oxygen applications, max. pressure PN 100 (1450 psi) and max. temperature 60 °C (140 °F) Suitable for hydrogen applications in ventilated environment	Order code S12 S22
<b>Certification according to NACE MR-0175</b> Including inspection certificate 3.1 according to EN 10204	D07

##### Characteristic curves



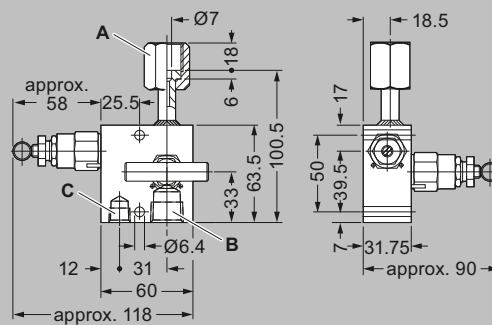
Permissible operating overpressure depends on the permissible operating temperature

## Dimensional drawings



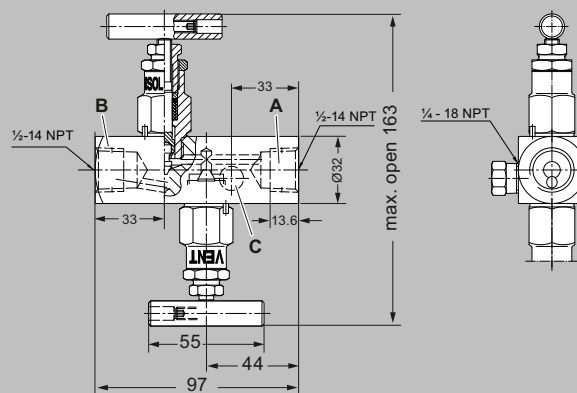
- A Connection on device side: 1/2-14 NPT  
 B Connection on measurement side: 1/2-14 NPT

Shut-off valve DN 5 (sleeve-sleeve) 7MF9011-3HA, dimensions in mm (inch)



- A Connection on device side: nipple to DIN 16284, G1/2, SW 27  
 B Connection on measurement side: 1/2-14 NPT  
 C Vent and test connection: 1/4-18 NPT

Double shut-off valve DN 5 (sleeve-nipple connection) 7MF9011-4EA, dimensions in mm (inch)



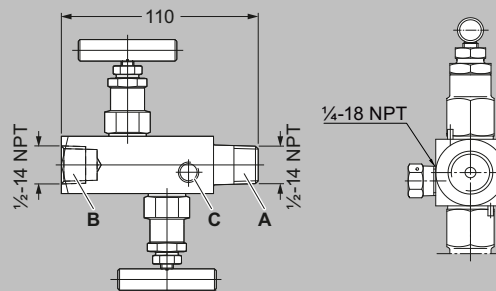
Double shut-off valve DN 5 (sleeve-sleeve) 7MF9011-4HA, dimensions in mm (inch)

## Pressure measurement

### Fittings

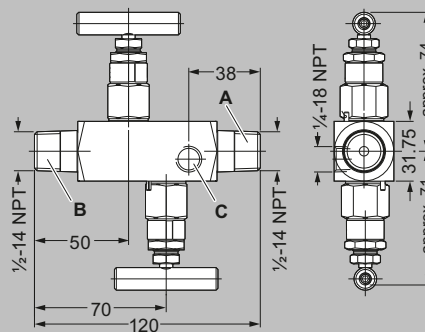
#### Shut-off valves for gauge and absolute pressure / Shut-off valves

#### Dimensional drawings (continued)

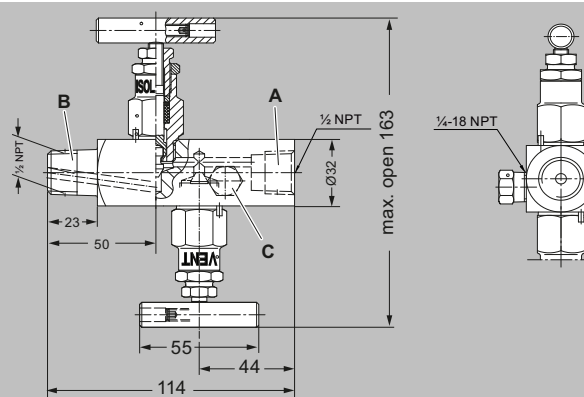


- A Connection on device side : 1/2-14 NPT
- B Connection on measurement side: 1/2-14 NPT
- C Vent and test connection: 1/4-18 NPT

Double shut-off valve DN 5 (sleeve-collar) 7MF9011-4FA, dimensions in mm (inch)



Double shut-off valve DN 5 (collar-collar) 7MF9011-4GA, dimensions in mm (inch)



- A Connection on device side : 1/2-14 NPT
- B Connection on measurement side: 1/2-14 NPT
- C Vent and test connection: 1/4-18 NPT

Double shut-off valve DN 5 (collar-sleeve) 7MF9011-4KA, dimensions in mm (inch)

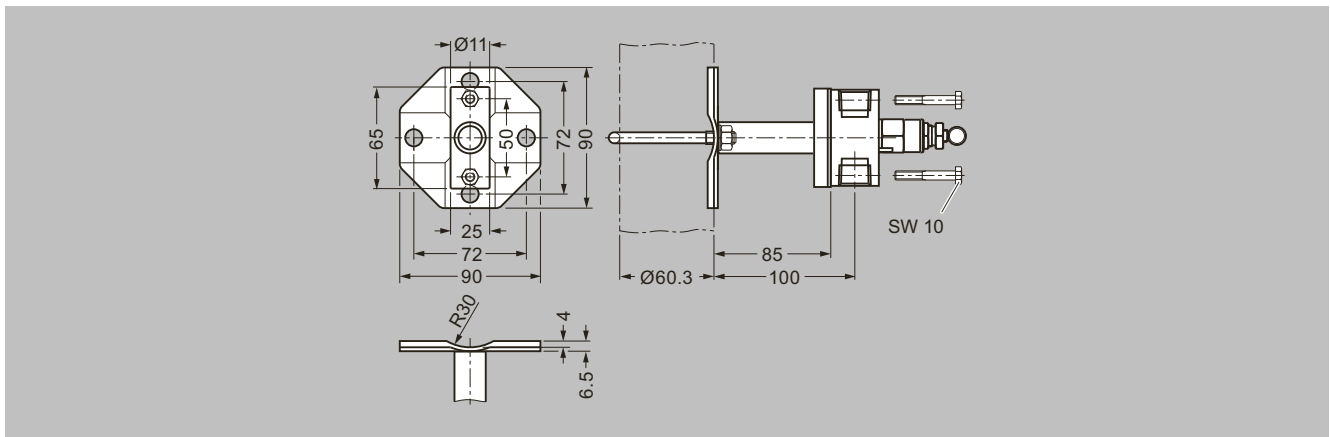
### Overview

The mounting kit is suitable for the double shut-off valves 7MF9011-4.A and for wall, rack and tube mounting.

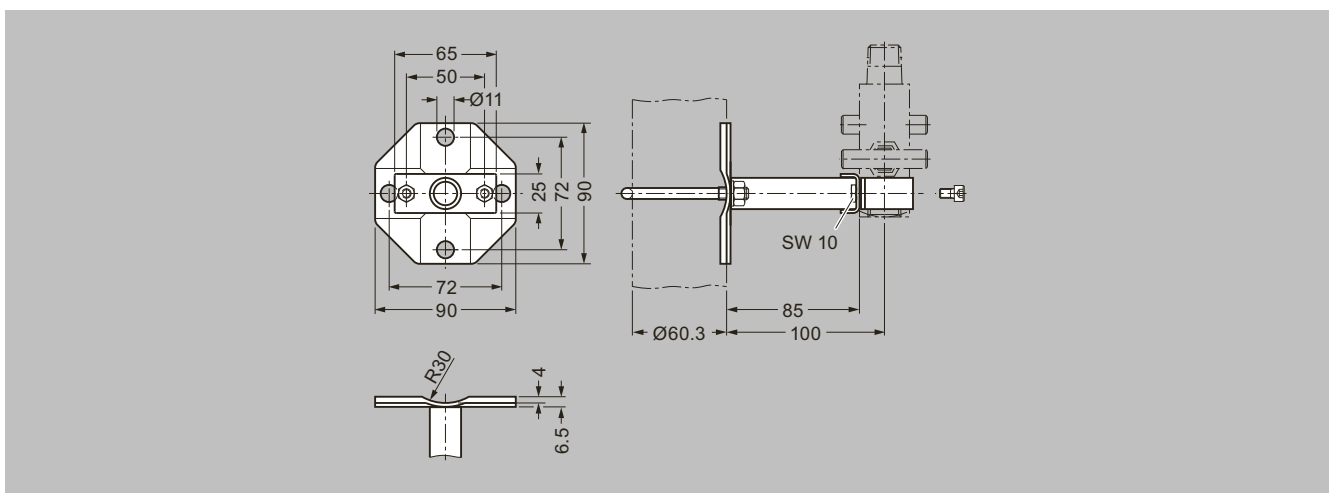
### Selection and ordering data

Mounting set for shut-off valves	Article No.
<b>7MF9011-4DA and -4EA</b> Made of stainless steel, scope of delivery: 1 × mounting brackets 2 × hexagon head screws M6x40 1 × mounting bracket 2 × washers 8.4 according to DIN 125 2 × hexagon nut M8 according to EN 24032	7MF9011-8AB
<b>7MF9011-4FA, -4GA, 4HA, -4KA and -3HA</b> Made of stainless steel, scope of delivery: 1 × mounting brackets 2 × hexagon head screws M6x10 1 × mounting bracket 2 × washers 8.4 according to DIN 125 2 × hexagon nut M8 according to EN 24032	7MF9011-8AC

### Dimensional drawings



Mounting bracket (7MF9011-8AB) for shut-off valves 7MF9011-4DA and 7MF9011-4EA for wall, rack or pipe mounting, dimensions in mm



Mounting bracket (7MF9011-8AC) for shut-off valves 7MF9011-4FA and 7MF9011-4GA for wall, rack or pipe mounting, dimensions in mm

## Pressure measurement

### Fittings

#### Shut-off valves for gauge and absolute pressure / Accessories for shut-off valves / Measuring instrument holder

#### Overview

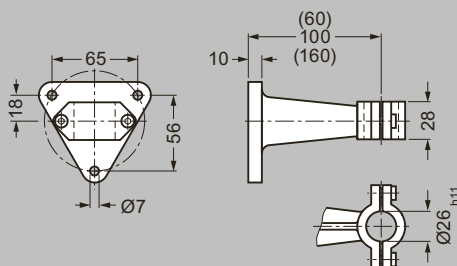
The measuring instrument holders are required to mount the following devices:

- Pressure gauges with threaded connection underneath
- Shut-off valves according to DIN 16270, DIN 16271 and DIN 16272 (7MF9401-7.. and 7MF9401-8..)

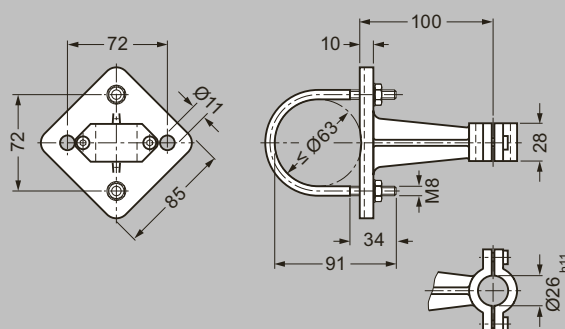
#### Selection and ordering data

	Article No.
<b>Measuring instrument holder, form H, DIN 16281</b> (E.g. for pressure gauge) Out of aluminum alloy, painted black, for <b>wall mounting</b> , removable holder lid	
• Projection length 60 mm	M56340-A0046
• Projection length 100 mm	M56340-A0047
<b>Measuring instrument holder, form A, DIN 16281</b> (E.g. for integrator) Out of malleable cast iron, zinc-plated and primed; for <b>wall mounting</b> , fastened to a rack or mounting rail (horizontal/vertical); removable holder lid	M56340-A0053
<b>Measuring instrument holder, form A, DIN 16281</b> (E.g. for transmitter) Out of malleable cast iron, zinc-plated and primed; with pipe collar for <b>wall and pipe mounting</b> (horizontal/vertical); removable holder lid	M56340-A0079

#### Dimensional drawings



Measuring instrument holder form H for wall mounting M56340-A0046/-A0047, dimensions in mm



Measuring instrument holder form A for wall and pipe mounting M56340-A0053/-A0079, dimensions in mm

## Shut-off valves for differential pressure / DN 5 2-, 3- and 5-spindle valve manifold

## Overview



The 2-spindle, 3-spindle and 5-spindle valve manifolds 7MF9411-5.. are for pressure transmitters for absolute pressure or gauge pressure.

The valve manifolds are used to shut off the differential pressure lines and to check the transmitter zero point.

The 2-spindle and the 5-spindle valve manifolds also enable venting on the transmitter side and checking of the pressure transmitter characteristic.

## Benefits

- Max. operating overpressure 420 bar (6092 psi)
- Each available in version for oxygen

## Application

The spindle valve manifolds DN 5 are designed for liquids and gases. A version for oxygen is also available on request.

## Design

All versions of the valve manifolds have a process connection  $\frac{1}{2}$ -14 NPT. The connection for the pressure transmitter is always designed as a flange connection according to IEC 61518/EN 61518, Form A. The 2-spindle and the 5-spindle valve manifold have a vent and test connection  $\frac{1}{4}$ -18 NPT in addition.

The valves have an external spindle thread.

## Materials used

Component	Material	Mat. no.
Enclosure	X 2 CrNiMo 17 13 2	1.4404/316L
Cones	X 6 CrNiMoTi 17 12 2	1.4571/316Ti
Spindles	X 2 CrNiMo 18 10	1.4404/316L
Head parts	X 5 CrNiMo 18 10	1.4401/316
Packings	PTFE	-

## Function

Functions of all valve manifolds:

- Shutting off the differential pressure lines
- Monitoring of pressure transmitter zero point

Additional functions of the 2-spindle or 5-spindle valve manifolds via the venting and test connection:

- Venting on transmitter side
- Monitoring of the pressure transmitter characteristic

# Pressure measurement

## Fittings

### Shut-off valves for differential pressure / DN 5 2-, 3- and 5-spindle valve manifold

#### Selection and ordering data

Valve manifolds DN 5	Article No. 7MF9411-	●	●	A
Click the article number for online configuration in the PIA Life Cycle Portal.				
For liquids and gases, for flanging to pressure transmitter for absolute and differential pressure, max. operating overpressure 420 bar, (order accessory kit using order code), without certificate				
• 2-spindle valve manifold			5	A
• 3-spindle valve manifold			5	B
• 5-spindle valve manifold			5	C

Accessories	
Factory certificate EN 10204-2.2	7MF9000-8AB
Material inspection certificate to EN 10204-3.1	7MF9000-8AD

Options <sup>1)</sup>	Order code	Article No.
Add "-Z" to article number and specify order code.		
<b>Accessory kit according to EN</b> (Connection valve manifold – pressure transmitter) <b>For valve manifold 7MF9411-5A.</b>		
2 × screws $\frac{7}{16}$ -20 UNF × 1 $\frac{3}{4}$ inches according to ASME B18.2.1; chromated steel 1 × flat sealing made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)	K35	7MF9411-7DB
2 × screws $\frac{7}{16}$ -20 UNF × 1 $\frac{3}{4}$ inches according to ASME B18.2.1; <b>stainless steel</b> 1 × flat sealing made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)	K45	7MF9411-7DC
<b>For valve manifold 7MF9411-5B. and -5C.</b>		
4 × screws $\frac{7}{16}$ -20 UNF × 1 $\frac{3}{4}$ inches according to ASME B18.2.1; chromated steel 2 × flat sealings made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)	K36	7MF9411-5DB
4 × screws $\frac{7}{16}$ -20 UNF × 1 $\frac{3}{4}$ inches according to ASME B18.2.1; <b>stainless steel</b> 2 × flat sealings made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)	K46	7MF9411-5DC
<b>Accessory kit according to DIN<sup>2)</sup></b> (Connection valve manifold – pressure transmitter) <b>For valve manifold 7MF9411-5A.</b>		
2 × screws M10×45 according to EN 24014; chromated steel 2 × washers Ø 10.5 mm according to DIN 125; 1 × flat sealing made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)	K15	7MF9411-7BB
2 × screws M10×45 according to EN 24014; <b>stainless steel</b> 2 × washers Ø 10.5 mm according to DIN 125, <b>stainless steel</b> ; 1 × flat sealing made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)	K25	7MF9411-7BC

Options <sup>1)</sup>	Order code	Article No.
4 × screws M10×45 according to EN 24014; chromated steel 4 × washers Ø 10.5 mm according to DIN 125; 2 × flat sealings made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F); flange connection with screws M10 only permissible up to PN 160.	K16	7MF9411-6BB
4 × screws M10×45 according to EN 24014; <b>stainless steel</b> 4 × washers Ø 10.5 mm according to DIN 125, <b>stainless steel</b> ; 2 × flat sealings made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F); flange connection with screws M10 only permissible up to PN 160	K26	7MF9411-6BC
<b>Mounting plate</b>		
• For valve manifold, made of electrogalvanized sheet steel		
• For <b>wall mounting</b> or fastening on rack (72 mm grid), weight 0.5 kg Scope of delivery: 1 × mounting plate with fixing screws for mounting on valve manifold	M11	7MF9006-6EA
• For <b>pipe mounting</b> , weight 0.7 kg Scope of delivery: 1 × mounting plate M11, 2 × pipe collar with nuts and washers (for pipe with max. Ø 60.3 mm) and fixing screws for mounting on valve manifold	M12	7MF9006-6GA
• For valve manifold, made of <b>stainless steel 316L</b>		
• For <b>wall mounting</b> or fastening on rack (72 mm grid), weight 0.5 kg Scope of delivery: 1 × mounting plate with fixing screws for mounting on valve manifold	M21	7MF9006-6EC
• For <b>pipe mounting</b> , weight 0.7 kg Scope of delivery: 1 × mounting plate M21, 2 × pipe collar with nuts and washers (for pipe with max. Ø 60.3 mm)	M22	7MF9006-6GC
<b>Valve manifold 100 bar</b> Oil-free and grease-free cleaned version for oxygen applications, max. pressure PN 100 (1450 psi) and max. temperature 60 °C (140 °F)		
• For 7MF9411-5A.	S12	
• For 7MF9411-5B.	S13	
• For 7MF9411-5C.	S14	
Suitable for hydrogen applications in ventilated environment	S22	
<b>Certification according to NACE MR-0175</b>	D07	
Including inspection certificate 3.1 according to EN 10204		

<sup>1)</sup> If accessory kit or mounting brackets are ordered together with the valve manifolds, please use order code; otherwise, use the article number.

<sup>2)</sup> Flange connections according to DIN 19213 only permissible up to PN 160 (2321 psi).



## Shut-off valves for differential pressure / DN 5 2-, 3- and 5-spindle valve manifold

## Accessories

**Accessory set for 2-, 3- and 5-spindle valve manifolds****2-spindle valve manifold DN 5**

- K35: 2 screws  $7/16$ -20 UNF x  $1\frac{3}{4}$  inch to ASME B18.2.1, 1 flat gasket
- K15: 2 screws M10x45 according to EN 24 014, 2 washers, 1 flat gasket

**3-spindle and 5-way valve manifold DN 5**

- K36: 4 screws  $7/16$ -20 UNF x  $1\frac{3}{4}$  inch to ASME B18.2.1, 2 flat gaskets
- K16: 4 screws M10x45 according to EN 24 014, 4 washers, 2 flat gaskets

Washers  $\varnothing$  10.5 according to DIN 125

Flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)

**Note:** Flange connection with M10 screws only permissible up to PN 160!

**Mounting plate**

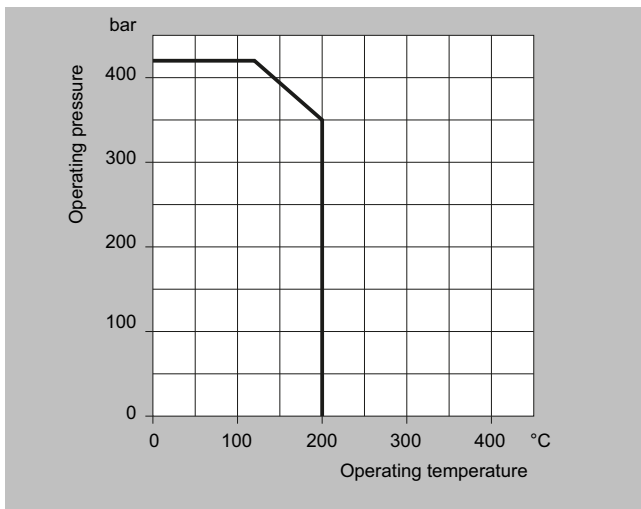
Made of electrogalvanized sheet-steel

- M11: For wall mounting or for securing on rack (72 mm grid)  
Scope of delivery:  
- 1 mounting plate with bolts for mounting on valve manifold
- M12: For pipe mounting  
Scope of delivery:  
- 1 mounting plate M11  
- 2 pipe brackets with nuts and washers for pipes with max.  $\varnothing$  60.3 mm

**Valve manifold 100 bar, suitable for oxygen**

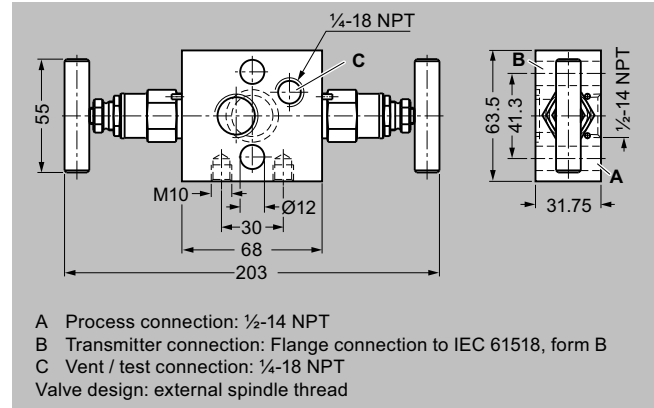
- S12: For 2-way valve manifold
- S13: For 3-way valve manifold
- S14: For 5-way valve manifold

## Characteristic curves

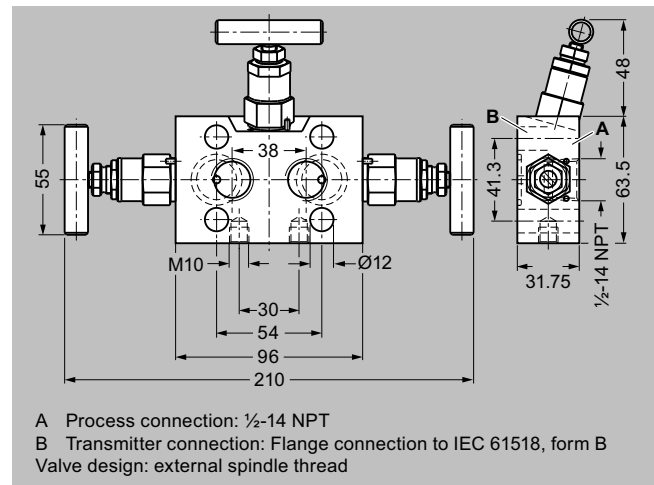


Valve manifolds DN 5 (7MF9411-5..), permissible operating overpressure depends on the permissible operating temperature

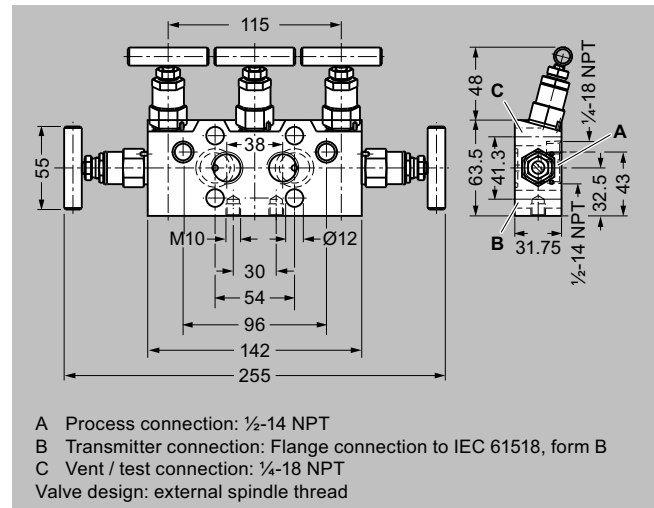
## Dimensional drawings



2-spindle valve manifold DN 5 (7MF9411-5A.), dimensions in mm



3-spindle valve manifold DN 5 (7MF9411-5B.), dimensions in mm



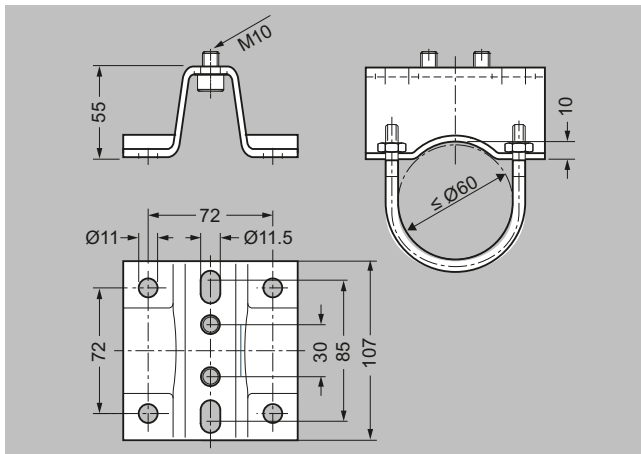
5-spindle valve manifold DN 5 (7MF9411-5C.), dimensions in mm

## Pressure measurement

### Fittings

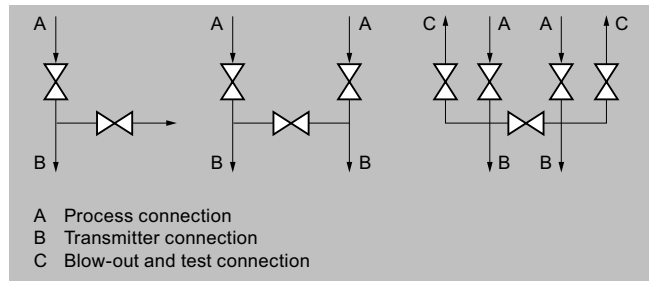
#### Shut-off valves for differential pressure / DN 5 2-, 3- and 5-spindle valve manifold

##### Dimensional drawings (continued)



Mounting plate 7MF9006-6.. (M11, M12) for valve manifold, dimensions in mm

##### Circuit diagrams



2-spindle, 3-spindle and 5-spindle valve manifold DN 5, connections

## Overview



The multiway cock PN 100 (1450 psi) can be flanged to pressure transmitters for differential pressure.

## Benefits

- Version for corrosive liquids, gases and vapors available
- Robust design
- Oil- and grease-free variant possible
- One-hand operation

## Application

The PN 100 (1450 psi) multiway cock is available in versions for corrosive and non-corrosive liquids, gases and vapors.

## Selection and ordering data

PN 100 multiway cocks (1450 psi)	Article No.			
	7MF9004-	•	•	A
Click the article number for online configuration in the PIA Life Cycle Portal.				
For flanging to pressure transmitter, weight 2.5 kg (without accessory kit), without certificate				
For water and non-corrosive liquids, gases and vapors			1	P
For corrosive liquids, gases and vapors			1	Q

## Accessories

Factory certificate EN 10204-2.2	7MF9000-8AB
Material inspection certificate to EN 10204-3.1	7MF9000-8AD

Options <sup>1)</sup>	Order code	Article No.
Add "-Z" to article number and specify order code.		
<b>Accessory kit according to EN</b> (Required for flanging, weight 0.2 kg) 4 x screws 7/16-20 UNF x 1 inch according to ASME B18.2.1; chromated 2 x flat gaskets made of PTFE, max. permissible 80 °C (176 °F)	L31	7MF9004-5CC
<b>Accessory kit according to DIN</b> (Required for flanging, weight 0.2 kg) 4 x screws M10x25 according to EN 24017; chromated steel 4 x washers Ø 10.5 mm according to DIN 125; 2 x flat gaskets made of PTFE, max. permissible 80 °C (176 °F)		
• Standard design	L11	7MF9004-6AD

## Design

The multiway cock can be flanged with four screws to pressure transmitters for differential pressure.

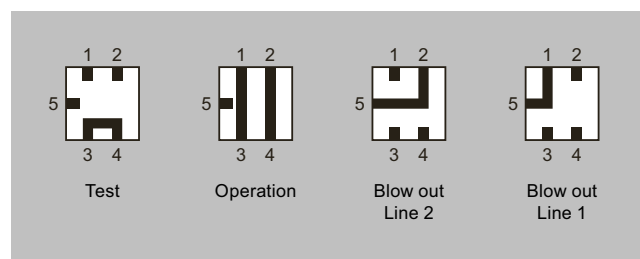
The PN 100 (1450 psi) has 2 process connections and one blow-out connection. A steel version of the multiway cock is available for non-corrosive media, and a stainless steel version for corrosive media. The enclosure is forged in one piece. The switching lever is removable.

Sealing can be improved during operation.

**Note:** An accessory set is always required for flanging of the multiway cock to a differential pressure transmitter:

## Function

- Shutting off the differential pressure lines
- Blowing out differential pressure lines
- Checking the zero point of the pressure transmitter.



Cock settings, the symbols are on the cock

Options <sup>1)</sup>	Order code	Article No.
• Version for oxygen (in connection with order code S11)	L15	7MF9004-6AE
<b>Multway cock in oil-free and grease-free design</b> Oil-free and grease-free cleaned version for oxygen applications, max. pressure PN 100 (1450 psi) and max. temperature 60 °C (140 °F), BAM-tested lubricant, sealing socket suitable for oxygen (only for article no. 7MF9004-1Q, -Z)	S11	
<b>Mounting brackets</b> Required <b>forwall mounting</b> or for fastening on rack (72 mm grid); made of electrogalvanized sheet steel, weight 0.85 kg	M13	7MF9004-6AA
<b>Certification according to NACE MR-0175</b> Including inspection certificate 3.1 according to EN 10204 (only for version 7MF9004-1QA)	D07	

<sup>1)</sup> If accessory kit or mounting brackets are ordered together with the multiway cock, please use order code; otherwise, use the article number.

## Pressure measurement

### Fittings

#### Shut-off valves for differential pressure / PN 100 multiway cock

##### Accessories

###### Accessory set for multiway cock PN 100

- L31: 4 screws  $7/16$ -20 UNF x 1 inch, 2 flat gaskets
- L11: 4 screws M10x25 according to EN 24017, 4 washers, 2 flat gaskets
- L15 (suitable for oxygen): 4 screws M10x25 according to EN 24017, 4 washers, 2 flat gaskets

Washers  $\varnothing$  10.5 according to DIN 125

Flat gaskets made of PTFE, max. permissible temperature 80 °C (176 °F)

###### Multiway cock in oil-free and grease-free design

- S11 (only for corrosive liquids, gases and vapors (7MF9004-1Q.)): Max. PN 63 (914 psi) (instead of PN 100 (1450 psi)), BAM-tested lubricant, gasket suitable for oxygen

###### Mounting brackets

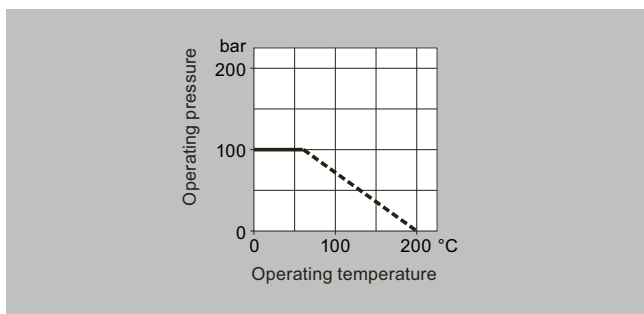
- M13: Required for wall mounting or for securing on rack (72 mm grid); made of electrogalvanized sheet-steel

##### Technical specifications

###### PN 100 multiway cocks

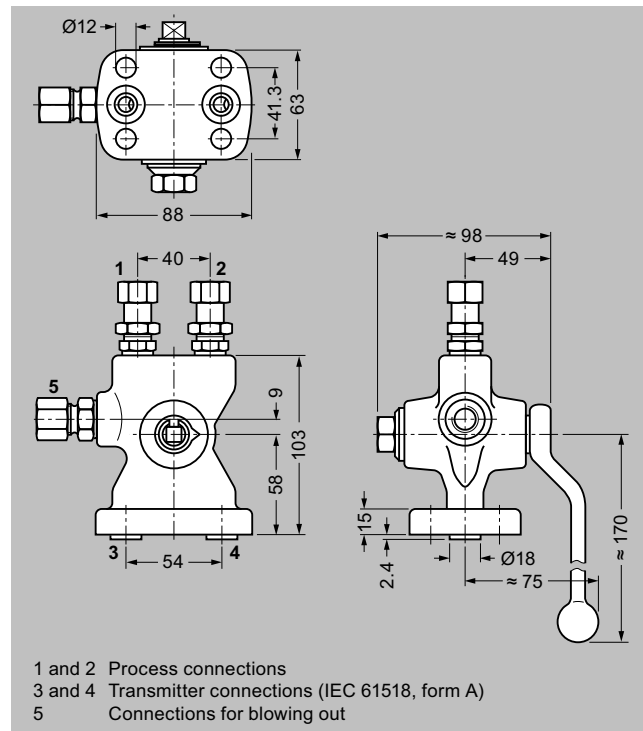
Measured medium	Water, non-corrosive liquids and gases	Corrosive liquids, gases and vapors
Material	P250GH, mat. no.: 1.0460	X 6 CrNiMoTi 17 12 2, mat. no. 1.4571/316Ti
Connections	Steel, for pipe $\varnothing$ 12 mm, schedule L	Stainless steel, for pipe $\varnothing$ 12 mm, schedule L
• Process connection	2 bulkhead glands	
• Connection for blowing out	Cutting ring fitting	
Max. permissible working temperature	200 °C (392 °F)	
Max. permissible operating overpressure	100 bar (1450 psi) (up to max. 60 °C (140 °F))	
Weight	2.5 kg	

##### Characteristic curves

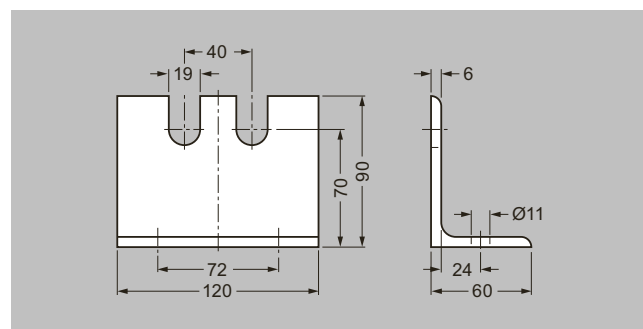


Multiway cock PN 100 (1450 psi), permissible operating pressure as a function of the permissible operating temperature

##### Dimensional drawings



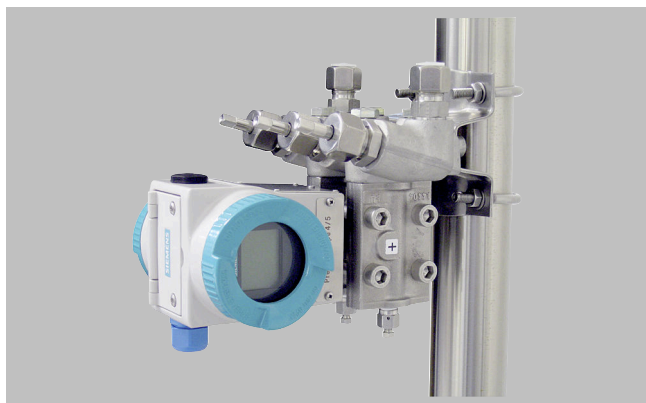
Multiway cock 7MF9004-1P, for flanging to pressure transmitter for differential pressure, dimensions in mm



Mounting bracket 7MF9004-6AA (M13), dimensions in mm

## Shut-off valves for differential pressure / DN 5 3-way and 5-way valve manifold

## Overview



The 3-way and 5-way valve manifolds DN 5 (7MF9410-1../-3..) are used to shut off the differential pressure lines and to check the transmitter zero point.

The 5-way valve manifold also enables blowing out of differential pressure lines.

## Benefits

- Available for corrosive and non-corrosive liquids and gases
- Max. working pressure 420 bar (6092 psi), with version for oxygen max. 100 bar (1450 psi)

## Application

The 3-way and 5-way valve manifolds are available in versions for corrosive and non-corrosive liquids and gases.

Wall mounting, securing on rack and tube mounting are possible with the appropriate mounting plate.

## Design

The process connection of the 3-way and 5-way valve manifolds is a pipe union with cutting ring.

Both valve manifolds have 2 flange connections for connecting a pressure transmitter.

The 5-way valve manifold also has 2 blowout connections.

Depending on the version, the valve manifold has 3 or 5 valves, each with an internal spindle thread.

## Materials used

Component	For non-corrosive liquids and gases		For corrosive liquids and gases	
	Material	Mat. no.	Material	Mat. no.
Enclosure	P250GH	1.0460	X 6 CrNiMoTi 17 12 2	1.4571/316Ti
Head parts	C 35	1.0501		
Spindles	X 12 CrMoS 17	1.4104		
Cones	X 35 CrMo 17 hardened and tempered	1.4122		
Valve seats	X 6 CrNiMoTi 17 12 2	1.4571/316Ti		
Packings	PTFE	-	PTFE	-

## Function

- Shutting off the differential pressure lines
- Monitoring of transmitter zero point
- The 5-way valve manifold also enables blowing out of differential pressure lines.

# Pressure measurement

## Fittings

### Shut-off valves for differential pressure / DN 5 3-way and 5-way valve manifold

#### Selection and ordering data

	Article No.											
<b>DN 5 3-way valve manifold</b>	<b>7MF9410-</b>											
Click the article number for online configuration in the PIA Life Cycle Portal.												
For flanging to pressure transmitter for differential pressure, process connection: Pipe union with cutting ring, max. operating overpressure 420 bar (6092 psi), weight 2.9 kg (order accessory kit and mounting plate using order code)												
• For non-corrosive liquids and gases											1	E
• For corrosive liquids and gases											1	F
<b>DN 5 5-way valve manifold</b>												
Click the article number for online configuration in the PIA Life Cycle Portal.												
For flanging to pressure transmitter for differential pressure, process connection: Pipe union with cutting ring, max. operating overpressure 420 bar (6092 psi), weight 4.4 kg (order accessory kit and mounting plate using order code)												
• For non-corrosive liquids and gases											3	E
• For corrosive liquids and gases											3	F

Accessories	
Factory certificate EN 10204-2.2	7MF9000-8AB
Material inspection certificate to EN 10204-3.1	7MF9000-8AD

Options <sup>1)</sup>	Order code	Article No.
Add "-Z" to article number and specify order code.		
<b>Accessory kit according to EN</b> (Required for flanging, weight 0.2 kg)		
4 × screws $\frac{7}{16}$ -20 UNF × 2 $\frac{1}{8}$ inches according to ASME B18.2.1; chromated steel	B31	7MF9010-5CC
2 × flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)		
4 × screws $\frac{7}{16}$ -20 UNF × 2 $\frac{1}{8}$ inches according to ASME B18.2.1; chromated steel	B34	7MF9410-5CA
2 × O-rings according to DIN 3771, 20 × 2.65 - S - FPM90, max. permissible 420 bar (6092 psi), 120 °C (248 °F)		
<b>Accessory kit according to DIN<sup>2)</sup></b> (Required for flanging, weight 0.2 kg)		
4 × screws M10×55 according to EN 24014; chromated steel	B11	7MF9010-6AD
4 × washers Ø 10,5 mm according to DIN 125;		
2 × flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)		
• Standard design	B15	7MF9010-6AE
• Version for oxygen	B16	7MF9010-6CC
4 × screws M10×55 according to EN 24014; chromated steel		
4 × washers Ø 10,5 mm according to DIN 125;		
2 × O-rings according to DIN 3771, 20 × 2.65 - S - FPM90, max. permissible 420 bar (6092 psi), 120 °C (248 °F)		

Options <sup>1)</sup>	Order code	Article No.
<b>Mounting plate</b>		
For valve manifold, made of electrogalvanized sheet steel	M11	7MF9006-6EA
For <b>wall mounting</b> or for fastening on rack (72 mm grid), weight 0.5 kg Scope of delivery: 1 × mounting plate with bolts for mounting on valve manifold		
For <b>pipe mounting</b> , weight 0.7 kg Scope of delivery: 1 × mounting plate M11, 2 × pipe collars with nuts and washers (for pipes with max. Ø 60,3 mm)	M12	7MF9006-6GA
<b>Valve manifold 100 bar</b>		
Oil-free and grease-free cleaned version for oxygen applications, max. pressure PN 100 (1450 psi) and max. temperature 60 °C (140 °F)	S13	
For 7MF9410-1F.		
For 7MF9410-3F.		
<b>Certification according to NACE MR-0175</b>	D07	
Including inspection certificate 3.1 according to EN 10204 (only for version 7MF9410-1FA and -3FA)		

- <sup>1)</sup> If accessory kit or mounting brackets are ordered together with the valve manifolds, please use order code; otherwise, use the article number.
- <sup>2)</sup> Flange connections according to DIN 9213 only permissible up to PN 160 (2321 psi)!

## Shut-off valves for differential pressure / DN 5 3-way and 5-way valve manifold

## Accessories

**Accessory set for 3-way and 5-way valve manifold DN 5 for flanging**

- B31: 4 screws  $7/16$ -20 UNF x  $2\frac{1}{8}$  inches to ASME B 18.2.1, 2 flat gaskets
- B34: 4 screws  $7/16$ -20 UNF x  $2\frac{1}{8}$  inches to ASME B 18.2.1, 2 O-rings (FPM 90)
- B11: 4 screws M10x55 according to EN 24014, 4 washers, 2 flat gaskets
- B15 (suitable for oxygen): 4 screws M10x55 according to EN 24014, 4 washers, 2 flat gaskets
- B16: 4 screws M10x55 according to EN 24014, 4 washers, 2 O-rings (FPM 90)

Washers  $\varnothing$  10.5 according to DIN 125

Flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)

O-ring acc. to DIN 3771, 20 x 2.65 – S – FPM90, max. permissible 420 bar (6092 psi), 120 °C (176 °F)

**Note:** M10 screws only permissible up to PN 160 (2320 psi)!

**Mounting plate**

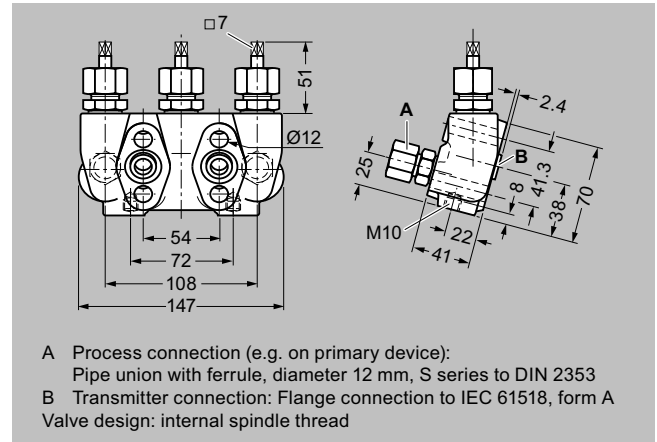
Made of electrogalvanized sheet-steel

- M11: For wall mounting or for securing on rack (72 mm grid)  
Scope of delivery:
  - 1 mounting plate 7MF9006-6EA with bolts for mounting on valve manifold
- M12: For pipe mounting  
scope of delivery:
  - 1 mounting plate M11
  - 2 pipe brackets with nuts and washers for pipes with max.  $\varnothing$  60.3 mm

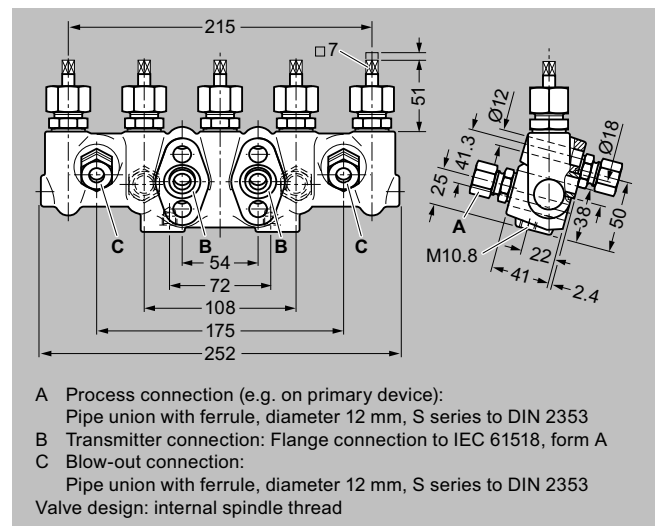
**Valve manifold 100 bar, suitable for oxygen**

S12: Only in combination with versions for corrosive liquids and gases

## Dimensional drawings

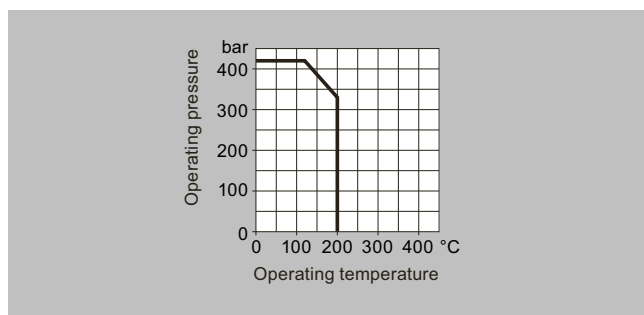


3-way valve manifold DN 5 (7MF9410-1..), dimensions in mm

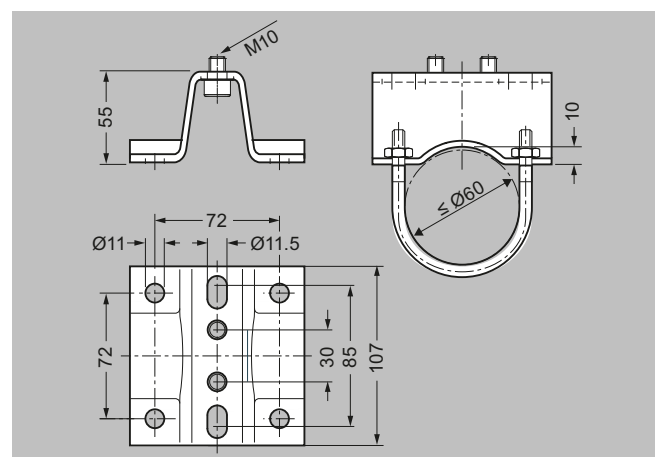


5-way valve manifold DN 5 (7MF9410-3..), dimensions in mm

## Characteristic curves



Permissible operating overpressure depends on the permissible operating temperature



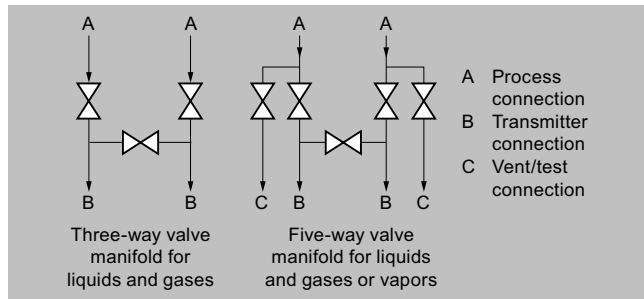
Mounting plate 7MF9006-6.. (M11, M12) for valve manifold, dimensions in mm

## Pressure measurement

### Fittings

#### Shut-off valves for differential pressure / DN 5 3-way and 5-way valve manifold

#### Circuit diagrams

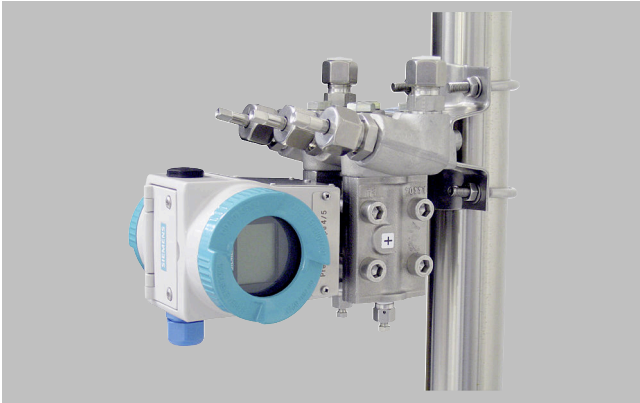


3-way and 5-way valve manifolds, schematic diagram



## Shut-off valves for differential pressure / DN 8 3-way valve manifold

## Overview



The 3-way valve manifold DN 8 (7MF9416-1../-2..) is for pressure transmitters for differential pressure. It is used to shut off the differential pressure lines and to check the transmitter zero point.

In the versions with test connection, a test device can be connected to check the characteristic of the pressure transmitter.

## Benefits

- For corrosive and non-corrosive liquids and gases
- The maximum working pressure is 420 bar (6092 psi).

## Application

The 3-way valve manifold is available in versions for corrosive and non-corrosive liquids and gases.

Wall mounting, securing on rack and tube mounting are possible with the appropriate mounting plate.

## Design

In the version for non-corrosive measured mediums, you can choose between a pipe union with cutting ring and welding pins for the process connection.

The version for corrosive measuring media always has a pipe union with cutting ring.

The two versions are optionally available with a test connection M20x1.5.

The valves have an internal spindle thread.

## Materials used

Component	For non-corrosive liquids and gases		For corrosive liquids and gases	
	Material	Mat. no.	Material	Mat. no.
Enclosure	P250GH	1.0460	X 6 CrNiMoTi 17 12 2	1.4571/316Ti
Head parts	C 35	1.0501		
Spindles	X 12 CrMoS 17	1.4104		
Cones	X 35 CrMo 17 hardened and tempered	1.4122		
Valve seats	X 6 CrNiMoTi 17 12 2	1.4571/316Ti		
Packings	PTFE	-	PTFE	-

## Function

The 3-way valve manifold DN 8 fulfills two functions as standard:

- Shutting off the differential pressure lines
- Monitoring of pressure transmitter zero point

All versions are also available with test connection to which the test device can be connected to check the characteristic of the transmitter.

## Pressure measurement

### Fittings

#### Shut-off valves for differential pressure / DN 8 3-way valve manifold

#### Selection and ordering data

DN 8 3-way valve manifold	Article No.																			
	7MF9416-																			• • A
<p>Click the article number for online configuration in the PIA Life Cycle Portal.</p> <p>For flanging to the pressure transmitter for differential pressure, max. operating overpressure 420 bar (6092 psi), (order accessory kit and mounting plate using order code), without certificate</p> <p>For non-corrosive liquids and gases, process connection: Pipe union with cutting ring <math>\varnothing</math> 12 mm</p> <ul style="list-style-type: none"> <li>Without test connection</li> <li>With test connection</li> </ul> <p>For non-corrosive liquids and gases, process connection: Welding pins <math>\varnothing</math> 14 x 2.5</p> <ul style="list-style-type: none"> <li>Without test connection</li> <li>With test connection</li> </ul> <p>For corrosive liquids and gases, process connection: Pipe union with cutting ring <math>\varnothing</math> 12 mm</p> <ul style="list-style-type: none"> <li>Without test connection</li> <li>With test connection</li> </ul>																				
																				1 B
																				1 C
																				2 C
																				2 D
																				1 D
																				1 E

Accessories	
Factory certificate EN 10204-2.2	7MF9000-8AB
Material inspection certificate to EN 10204-3.1	7MF9000-8AD

Options <sup>1)</sup>	Order code	Article No.
Add "-Z" to article number and specify order code.		
<b>Accessory kit according to EN</b> (Required for flanging, weight 0.2 kg)		
4 x screws $\frac{7}{16}$ -20 UNF x $2\frac{1}{8}$ inches according to ASME B18.2.1; chromated steel	B31	7MF9010-5CC
2 x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)		
4 x screws $\frac{7}{16}$ -20 UNF x $2\frac{1}{8}$ inches according to ASME B18.2.1; chromated steel	B34	7MF9410-5CA
2 x O-rings according to DIN 3771, 20 x 2.65 - S - FPM90, max. permissible 420 bar (6092 psi), 120 °C (248 °F)		
<b>Accessory kit according to DIN<sup>2)</sup></b> (Required for flanging, weight 0.2 kg)		
4 x screws M10x55 according to EN 24014; chromated steel	B11	7MF9010-6AD
4 x washers $\varnothing$ 10.5 mm according to DIN 125;		
2 x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)		

Options <sup>1)</sup>	Order code	Article No.
4 x screws M10x55 according to EN 24014; chromated steel	B16	7MF9010-6CC
4 x washers $\varnothing$ 10.5 mm according to DIN 125;		
2 x O-rings according to DIN 3771, 20 x 2.65 - S - FPM90, max. permissible 420 bar (6092 psi), 120 °C (248 °F)		
<b>Mounting plate</b>		
For valve manifold, made of electrogalvanized sheet steel		
For wall mounting or for fastening on rack (72 mm grid), weight 0.5 kg	M11	7MF9006-6EA
Scope of delivery: 1 x mounting plate with bolts for mounting on valve manifold		
For pipe mounting, weight 0.7 kg	M12	7MF9006-6GA
Scope of delivery: 1 x mounting plate M11, 2 x pipe collars with nuts and washers (for pipes with max. $\varnothing$ 60.3 mm)		
<b>Certification according to NACE MR-0175</b>	D07	
Including inspection certificate 3.1 according to EN 10204 (only for version 7MF9416-1DA and -1EA)		

- 1) If accessory kit or mounting brackets are ordered together with the valve manifold, please use order code; otherwise, use the article number.
- 2) Flange connections according to DIN 19213 only permissible up to PN 160 (2321 psi).

## Shut-off valves for differential pressure / DN 8 3-way valve manifold

## Accessories

**Accessory set for 3-way valve manifold DN 8 for flanging**

- B31: 4 screws  $7/16$ -20 UNF x  $2\frac{1}{8}$  inches to ASME B 18.2.1, 2 flat gaskets
- B34: 4 screws  $7/16$ -20 UNF x  $2\frac{1}{8}$  inches to ASME B 18.2.1, 2 O-rings (FPM 90)
- B11: 4 screws M10x55 according to EN 24014, 4 washers, 2 flat gaskets
- B16: 4 screws M10x55 according to EN 24014, 4 washers, 2 O-rings (FPM 90)

Washers  $\varnothing$  10.5 according to DIN 125

Flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)

O-ring acc. to DIN 3771, 20 x 2.65 – S – FPM90, max. permissible 420 bar (6092 psi), 120 °C (248 °F)

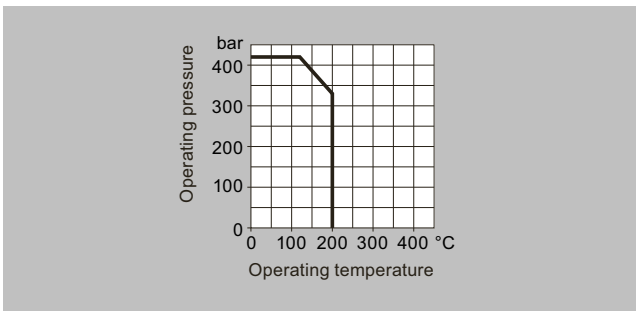
**Note:** M10 screws only permissible up to PN 160 (2320 psi)!

**Mounting plate**

Made of electrogalvanized sheet-steel

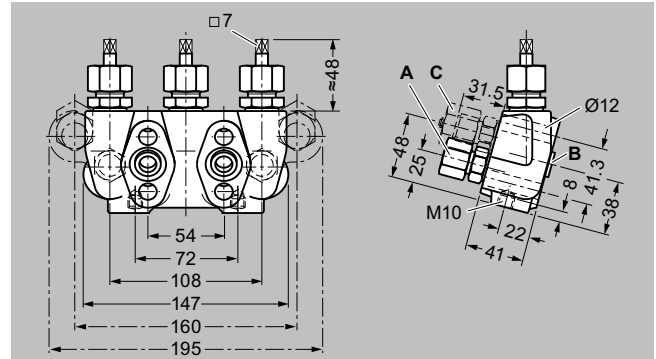
- M11: For wall mounting or for securing on rack (72 mm grid)  
Scope of delivery:
  - 1 mounting plate with bolts for mounting on valve manifold
- M12: For pipe mounting  
scope of delivery:
  - 1 mounting plate M11
  - 2 pipe brackets with nuts and washers for pipes with max.  $\varnothing$  60.3 mm

## Characteristic curves



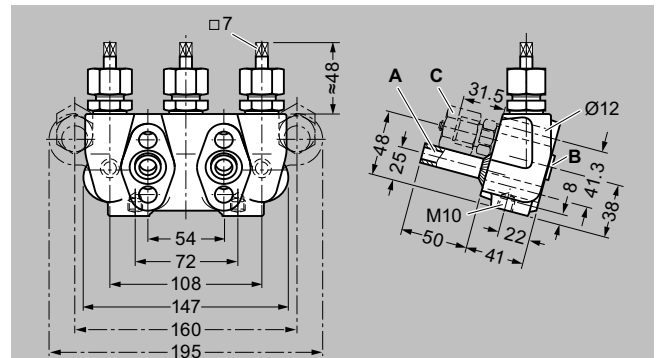
3-way valve manifold DN 8, permissible operating overpressure depends on the permitted operating temperature

## Dimensional drawings



- A Process connection (e.g. on primary device):  
Pipe union with ferrule, diameter 12 mm, S series to DIN 2353
- B Transmitter connection: Flange connection to IEC 61518, form A
- C Test connection: M20 x 1.5
- Valve design: internal spindle thread

3-way valve manifold DN 8 (7MF9416-1..) with pipe union, dimensions in mm



- A Process connection (e.g. on primary device):  
Welding pin, diameter 14 x 2.5
- B Transmitter connection: Flange connection to IEC 61518, form A
- C Test connection: M20 x 1.5
- Valve design: internal spindle thread

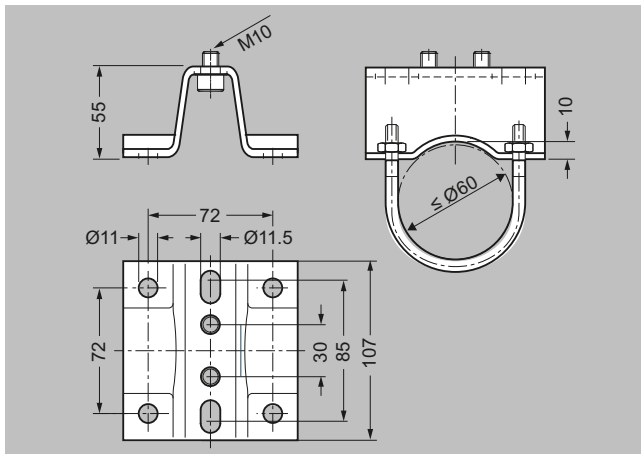
3-way valve manifold DN 8 (7MF9416-2..) with welding pins, dimensions in mm

## Pressure measurement

### Fittings

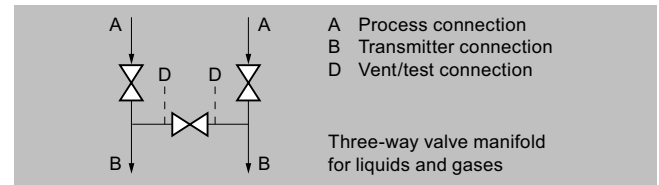
#### Shut-off valves for differential pressure / DN 8 3-way valve manifold

##### Dimensional drawings (continued)



Mounting plate 7MF9006-6.. (M11, M12) for valve manifold, dimensions in mm

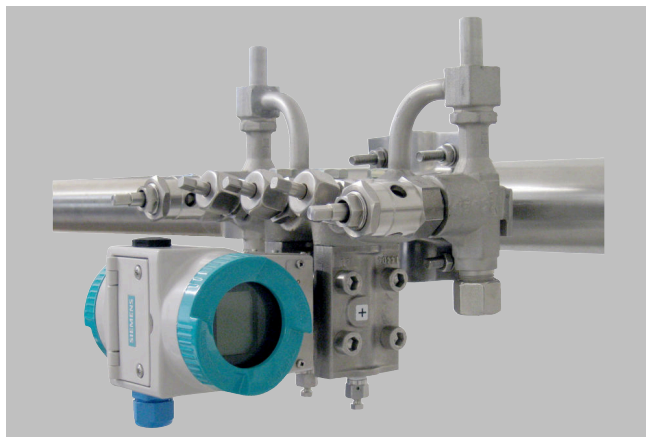
##### Circuit diagrams



3-way valve manifold DN 8, schematic diagram

### Shut-off valves for differential pressure / DN 5/DN 8 valve manifold combination

#### Overview



The valve manifold combination DN 5/DN 8 (7MF9416-6..) is for pressure transmitters for differential pressure.

The combination is used to shut off and blow out the differential pressure lines and to check the transmitter zero point.

In the versions with test connection, a test device can be connected to check the characteristic of the pressure transmitter.

#### Benefits

Max. operating overpressure 420 bar (6092 psi)

#### Application

The valve manifold combination DN 5/DN 8 is designed for vapors.

#### Design

The valve manifold combination DN 5/DN 8 has a process connection with welding pins.

The connection for the pressure transmitter is designed as a flange connection, the blowout connection as a pipe union with cutting ring.

The block valves have an internal spindle thread, the blowout valves have an external spindle thread.

The optional test connections are M20x1.5.

#### Materials used

Component	Valve manifold DN 5		Blowout valves DN 8	
	Material	Mat. No.	Material	Mat. No.
Enclosure	P250GH	1.0460	16 Mo 3	1.5415
Head parts	C 35	1.0501	21 CrMo V 57	1.7709
Spindles	X 12 CrMoS 17	1.4104	X 20 Cr 13	1.4021
Cones	X 35 CrMo 17	1.4122	X 35 CrMo 17 hardened and tempered	1.4122
Valve seats	X 6 CrNiMoTi	1.4571/316Ti	X 20 Cr 13	1.4021
Packings	PTFE	-	Pure graphite	-
Welding pins	-	-	16 Mo 3	1.5415

#### Function

- Shutting off the differential pressure lines
- Blowing out differential pressure lines
- Monitoring of pressure transmitter zero point

A version with test connection to which a test device to check the characteristic of the pressure transmitter can be connected can be ordered optionally.

# Pressure measurement

## Fittings

### Shut-off valves for differential pressure / DN 5/DN 8 valve manifold combination

#### Selection and ordering data

DN 5/DN 8 valve manifold combination for vapors	Article No.
	7MF9416- 6 ● A
Click the article number for online configuration in the PIA Life Cycle Portal.	
For flanging to the pressure transmitter for differential pressure, max. operating overpressure 420 bar (6092 psi), available in stainless steel on request (order accessory kit using order code), without certificate	
• Without test connection	C
• With test connection M20 × 1.5	D

Accessories	
Factory certificate EN 10204-2.2	7MF9000-8AB
Material inspection certificate to EN 10204-3.1	7MF9000-8AD

Options <sup>1)</sup>	Order code	Article No.
Add "-Z" to article number and specify order code.		
<b>Accessory kit according to EN</b> (Required for flanging, weight 0.2 kg)		
4 × screws $7/16$ -20 UNF × $2\frac{1}{8}$ inches according to ASME B18.2.1; chromated steel	B34	7MF9410-5CA
2 × O-rings according to DIN 3771, 20 × 2.65 - S - FPM90, max. permissible 420 bar (6092 psi), 120 °C (248 °F)		

Options <sup>1)</sup>	Order code	Article No.
<b>Accessory kit according to DIN<sup>2)</sup></b> (Required for flanging, weight 0.2 kg)		
4 × screws M10×55 according to DIN EN 24014; chromated steel	B16	7MF9010-6CC
4 × washers Ø 10.5 mm according to DIN 125;		
2 × O-rings according to DIN 3771, 20 × 2.65 - S - FPM90, max. permissible 420 bar (6092 psi), 120 °C (248 °F)		

- 1) If accessory kit is ordered together with the valve manifold combination, please use order code; otherwise, use the article number.  
2) Flange connections according to DIN 19213 only permissible up to PN 160 (2321 psi).

#### Accessories

##### Accessory set for valve manifold combination DN 5/DN 8 for flanging

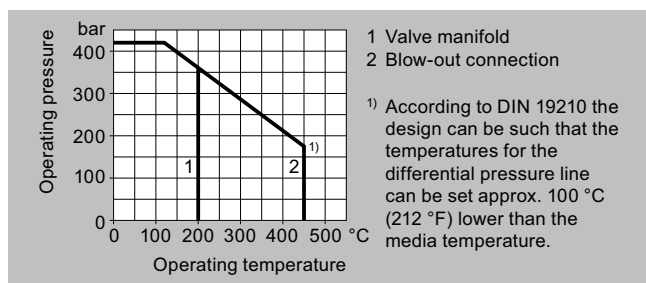
- B34: 4 screws  $7/16$ -20 UNF ×  $2\frac{1}{8}$  inches to ASME B 18.2.1, 2 O-rings (FPM 90)
- B16: 4 screws M10x55 according to EN 24014, 4 washers, 2 O-rings (FPM 90)

Washers Ø 10.5 according to DIN 125

O-ring acc. to DIN 3771, 20 × 2.65 – S – FPM90, max. permissible 420 bar (6092 psi), 120 °C (248 °F)

**Note:** M10 screws only permissible up to PN 160 (2321 psi)!

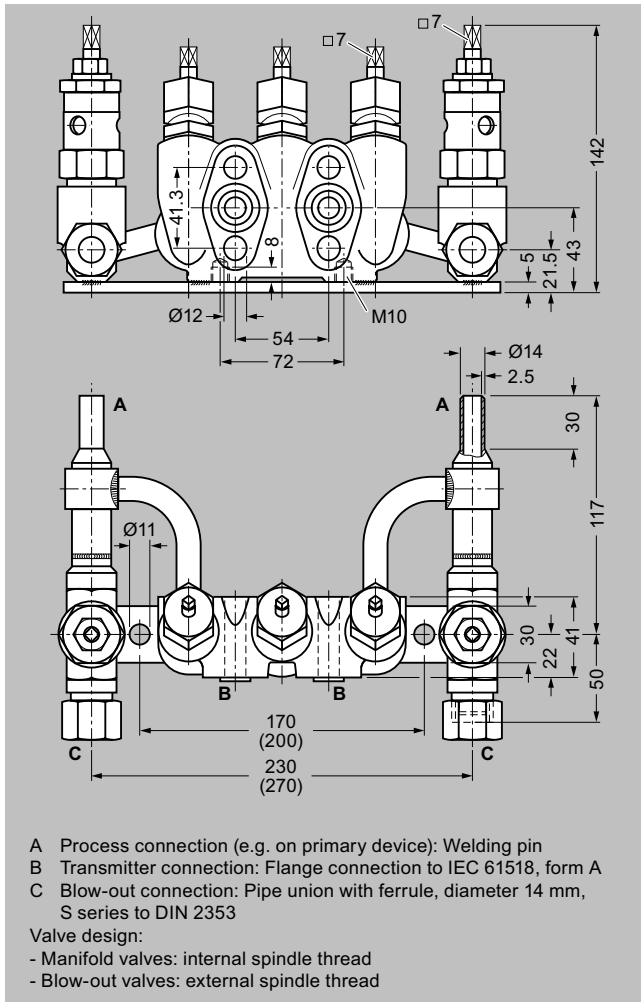
#### Characteristic curves



Permissible operating overpressure depends on the permissible operating temperature

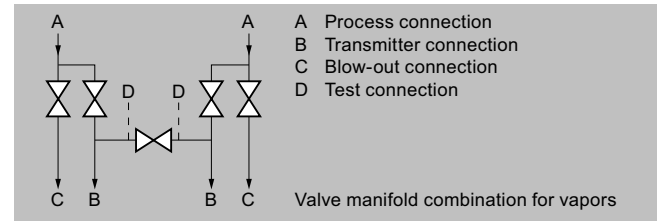
## Shut-off valves for differential pressure / DN 5/DN 8 valve manifold combination

## Dimensional drawings



Valve manifold combination DN 5/DN 8 (7MF9416-6C.), dimensions in mm (deviating dimensions for 7MF9416-6D. in brackets)

## Circuit diagrams



DN 5/DN 8 valve manifold combination, connections

## Pressure measurement

### Fittings

#### Shut-off valves for differential pressure / DN 8 valve manifold combination

##### Overview



The valve manifold combination DN 8 (7MF9416-4..) is for pressure transmitters for differential pressure.

They are used to shut off and blow out the differential pressure lines and to check the transmitter zero point.

In the versions with test connection, a test device can be connected to check the characteristic of the pressure transmitter.

##### Benefits

Max. operating overpressure 420 bar (6092 psi)

##### Application

The valve manifold combination DN 8 is designed for vapors.

##### Design

The valve manifold combination DN 8 has a process connection with welding pins.

The connection for the pressure transmitter is designed as a flange connection, the blowout connection as a pipe union with cutting ring.

The block valves have an internal spindle thread, the blowout valves have an external spindle thread.

The optional test connection is M20x1.5.

The valve manifold combination DN 8 is supplied with a mounting plate.

##### Materials used

Component	Valve manifold		Blowout valves	
	Material	Mat. No.	Material	Mat. No.
Enclosure	P250GH	1.0460	16 Mo 3	1.5415
Head parts	C 35	1.0501	21 CrMo V 57	1.7709
Spindles	X 12 CrMoS 17	1.4104	X 20 Cr 13	1.4021
Cones	X 35 CrMo 17	1.4122	X 35 CrMo 17 hardened and tempered	1.4122
Valve seats	X 6 CrNiMoTi	1.4571/316Ti	X 20 Cr 13	1.4021
Packings	PTFE	-	Pure graphite	-
Welding pins	-	-	16 Mo 3	1.5415



## Shut-off valves for differential pressure / DN 8 valve manifold combination

## Function

- Shutting off the differential pressure lines
- Blowing out differential pressure lines
- Monitoring of pressure transmitter zero point

A version with test connection to which a test device to check the characteristic of the pressure transmitter can be connected can be ordered optionally.

## Selection and ordering data

DN 8 valve manifold combination for vapors		Article No.		
		7MF9416-	•	• A
Click the article number for online configuration in the PIA Life Cycle Portal.				
For flanging to the pressure transmitter for differential pressure, with mounting plate, max. operating overpressure 420 bar (6092 psi), available in stainless steel on request (order accessory kit using order code), without certificate				
• Without test connection			4	C
• With test connection M20 × 1.5			4	D

Accessories	
Factory certificate EN 10204-2.2	7MF9000-8AB
Material inspection certificate to EN 10204-3.1	7MF9000-8AD

Options <sup>1)</sup>	Order code	Article No.
Add "-Z" to article number and specify order code.		
<b>Accessory kit according to EN</b> (Required for flanging, weight 0.2 kg)	<b>B34</b>	<b>7MF9410-5CA</b>
4 × screws $\frac{7}{16}$ -20 UNF × 2 $\frac{1}{8}$ inches according to ASME B18.2.1; chromated steel 2 × O-rings according to DIN 3771, 20 × 2.65 - S - FPM90, max. permissible 420 bar, 120 °C (248 °F)		

Options <sup>1)</sup>	Order code	Article No.
<b>Accessory kit according to DIN<sup>2)</sup></b> (Required for flanging, weight 0.2 kg)	<b>B16</b>	<b>7MF9010-6CC</b>
4 × screws M10×55 according to EN 24014; chromated steel 4 × washers Ø 10.5 mm according to DIN 125; 2 × O-rings according to DIN 3771, 20 × 2.65 - S - FPM90, max. permissible 420 bar, 120 °C (248 °F)		

- <sup>1)</sup> If accessory kit is ordered together with the valve manifold combination, please use order code; otherwise, use the article number.
- <sup>2)</sup> Flange connections according to DIN 19213 only permissible up to PN 160 (2321 psi).

## Accessories

**Accessory set for valve manifold combination DN 8 for flanging**

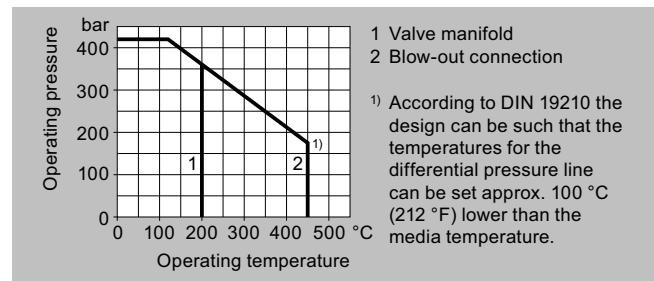
- B34: 4 screws  $\frac{7}{16}$ -20 UNF × 2 $\frac{1}{8}$  inches to ASME B 18.2.1, 2 O-rings (FPM 90)
- B16: 4 screws M10x55 according to EN 24 014, 4 washers, 2 O-rings (FPM 90)

Washers Ø 10.5 according to DIN 125

O-ring acc. to DIN 3771, 20 × 2.65 – S – FPM90, max. permissible 420 bar (6092 psi), 120 °C (248 °F)

**Note:** M10 screws only permissible up to PN 160 (2321 psi)!

## Characteristic curves



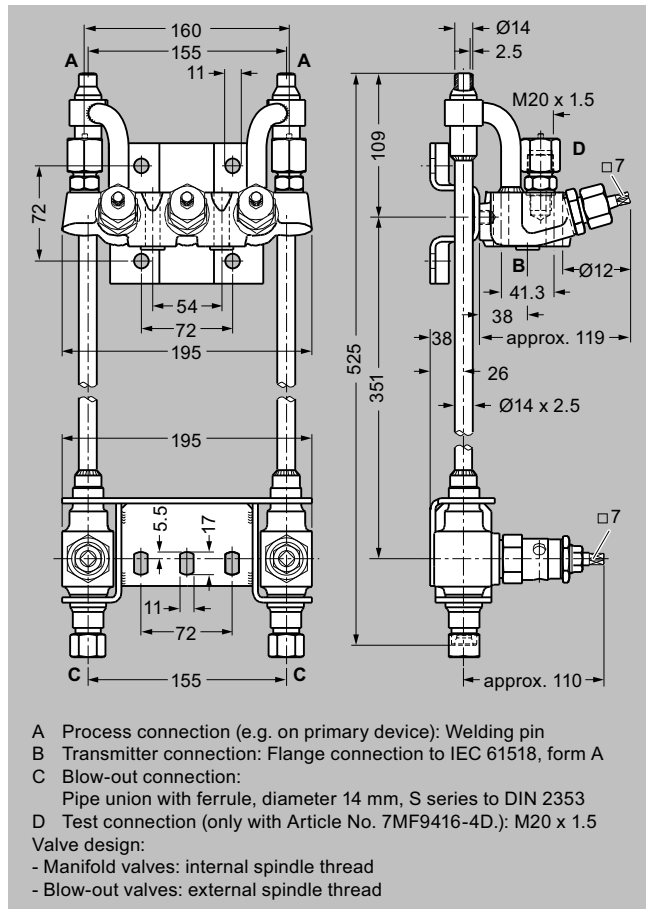
Permissible operating overpressure depends on the permissible operating temperature

## Pressure measurement

### Fittings

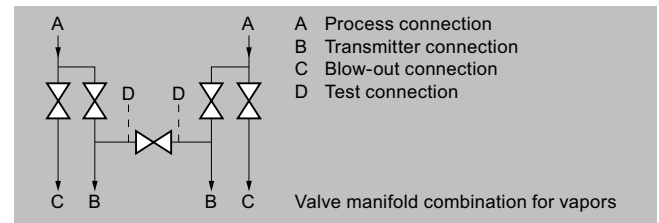
#### Shut-off valves for differential pressure / DN 8 valve manifold combination

##### Dimensional drawings



Valve manifold combination DN 8 (7MF9416-4..), dimensions in mm

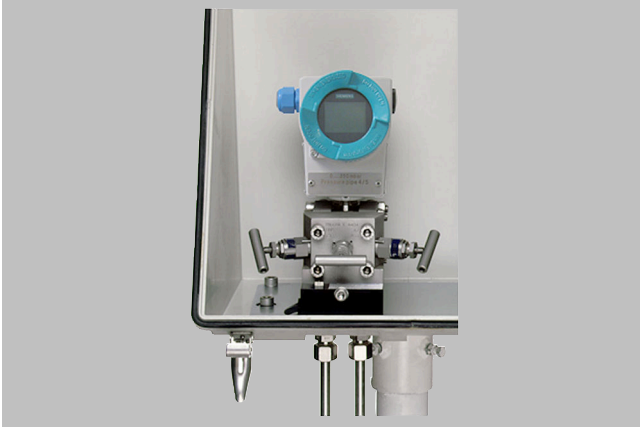
##### Circuit diagrams



DN 8 valve manifold combination, connections

## Shut-off valves for differential pressure / 2-, 3- and 5-spindle valve manifold for protective casing

## Overview



The 2-spindle, 3-spindle and 5-spindle valve manifolds (7MF9412-1..) are used to shut off the differential pressure lines and to check the pressure transmitter zero point.

The 2-spindle and the 5-spindle valve manifolds also enable venting on the transmitter side and checking of the pressure transmitter characteristic.

These valve manifolds are designed for installation in protective boxes. However, using a mounting bracket, they can also be used for wall, frame or pipe mounting.

## Application

The DN 5 valve manifolds are designed for liquids and gases and for installation in protective boxes.

A version for oxygen is also available on request.

## Design

All versions of the spindle valve manifolds have a process connection  $\frac{1}{2}$ -14 NPT.

The connection for the pressure transmitter is always designed as a flange connection according to IEC 61518/EN 61518, Form A.

The 2-spindle and the 5-spindle valve manifold have a vent and test connection  $\frac{1}{4}$ -18 NPT in addition.

The valves have an external spindle thread.

Materials used:

Component	Material	Mat. no.
Enclosure	X 2 CrNiMo 17 13 2	1.4404/316L
Cones	X 6 CrNiMoTi 17 12 2	1.4571/316Ti
Spindles	X 2 CrNiMo 18 10	1.4404/316L
Head parts	X 5 CrNiMo 18 10	1.4401/316
Packings	PTFE	-

## Function

Functions of all valve manifolds:

- Shutting off the differential pressure lines
- Monitoring of pressure transmitter zero point

Additional functions of the 2-spindle or 5-spindle valve manifolds via the venting and test connection:

- Venting on transmitter side
- Monitoring of the pressure transmitter characteristic



## Shut-off valves for differential pressure / 2-, 3- and 5-spindle valve manifold for protective casing

**Accessories**

**Accessory set for 2, 3 and 5-spindle valve manifolds (connection: valve manifold-pressure transmitter)**

**For 2-spindle valve manifold DN 5 with flange connection**

- F32: 2 screws  $7/16$ -20 UNF x 2 inches to ASME B 18.2.1, 1 O-ring (FPM 90)
- F35: 2 screws  $7/16$ -20 UNF x 2 inches to ASME B 18.2.1, 1 flat gasket
- F12: 2 screws M10x50 according to EN 24 014, 2 washers, 1 O-ring (FPM90)
- F15: 2 screws M10x50 according to EN 24 014, 2 washers, 1 flat gasket

**For 3-spindle and 5-spindle valve manifold DN 5**

- F34: 4 screws  $7/16$ -20 UNF x 2 inches to ASME B 18.2.1, 2 O-rings (FPM90)
- F36: 4 screws  $7/16$ -20 UNF x 2 inches to ASME B 18.2.1, 2 flat gaskets
- F14: 4 screws M10x50 according to EN 24 014, 4 washers, 2 O-rings (FPM 90)
- F16: 4 screws M10x50 according to EN 24 014, 4 washers, 2 flat-gaskets

Washers  $\varnothing$  10.5 according to DIN 125

Flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)

O-ring acc. to DIN 3771, 20 x 2.65 – S – FPM90, max. permissible 420 bar (6092 psi), 120 °C (248 °F)

**Note:** Flange connection with M10 screws only permissible up to PN 160 (2321 psi)!

**Mounting bracket for wall mounting or for securing to mounting rack**

With bolts for mounting on valve manifold

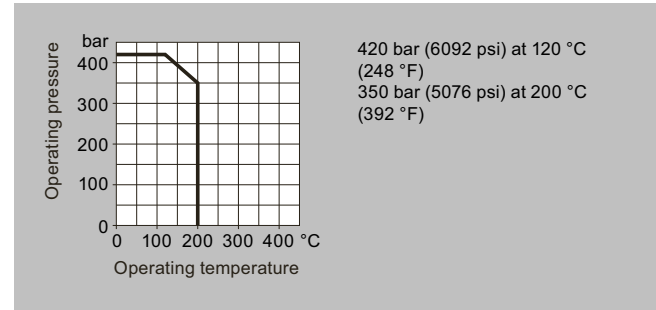
- M14: For 2-spindle valve manifold DN 5
- M17: For 3-spindle valve manifold DN 5
- M18: For 5-spindle valve manifold DN 5

**Mounting clip (2 units)**

- M16: For securing the mounting brackets M14, M17 and M18 to pipe

**Valve manifold 100 bar, suitable for oxygen**

- S12: For 2-spindle valve manifold DN 5
- S13: For 3-spindle valve manifold DN 5
- S14: For 5-spindle valve manifold DN 5

**Characteristic curves**

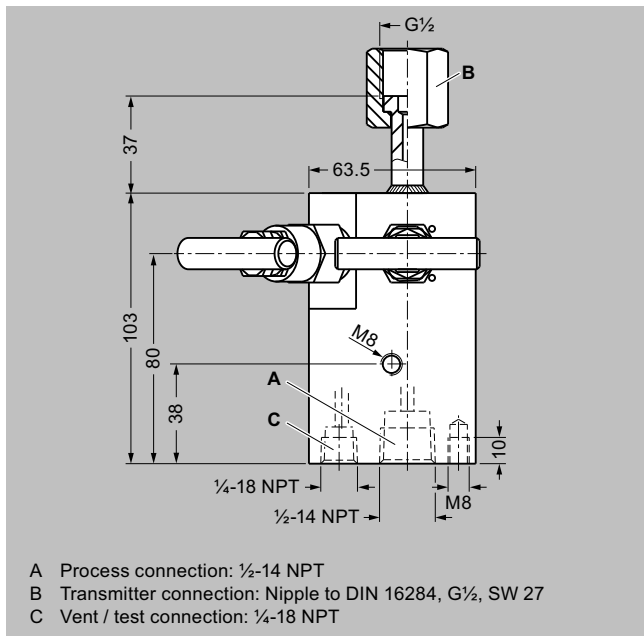
Permissible operating overpressure depends on the permissible operating temperature

## Pressure measurement

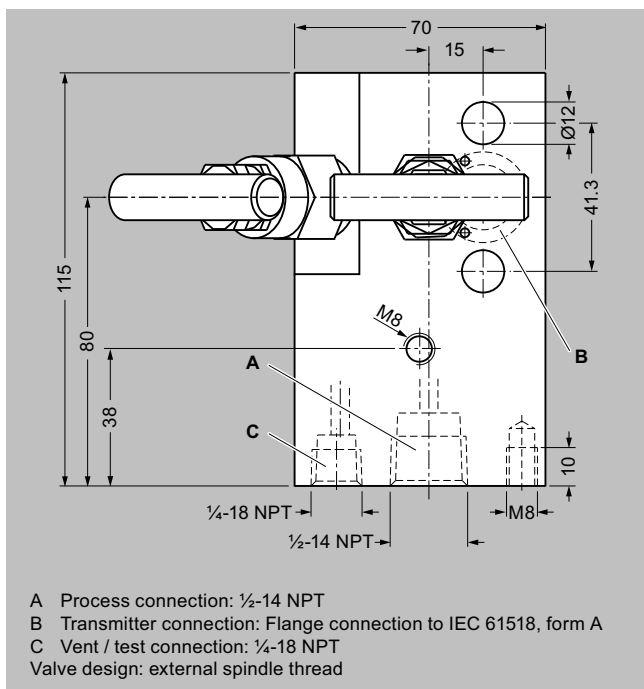
### Fittings

#### Shut-off valves for differential pressure / 2-, 3- and 5-spindle valve manifold for protective casing

##### Dimensional drawings

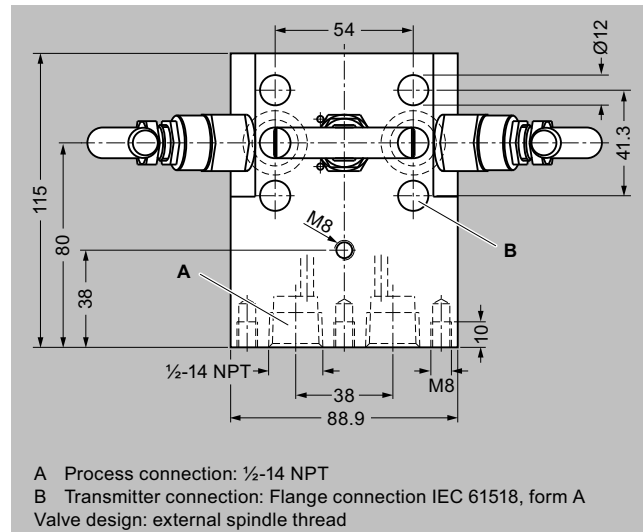


2-spindle valve manifold DN 5 (7MF9412-1B..) with rotatable sleeve, dimensions in mm

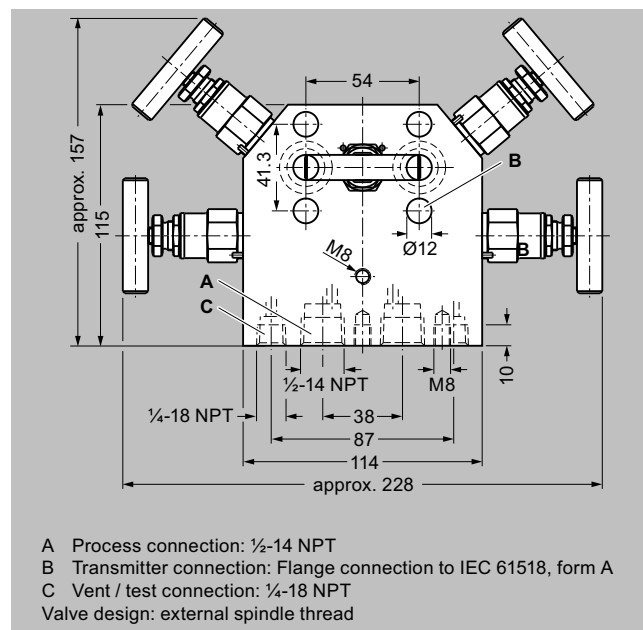


2-spindle valve manifold DN 5 (7MF9412-1C..), dimensions in mm

##### Dimensional drawings (continued)



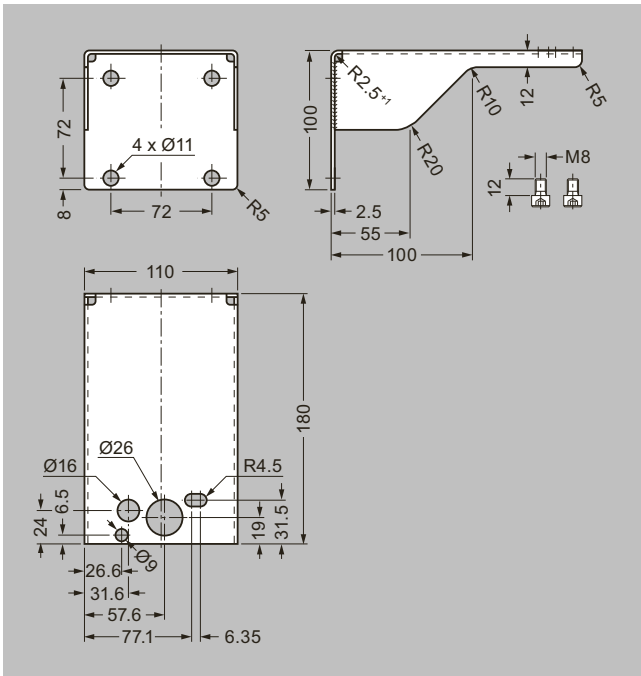
3-spindle valve manifold DN 5 (7MF9412-1D..), dimensions in mm



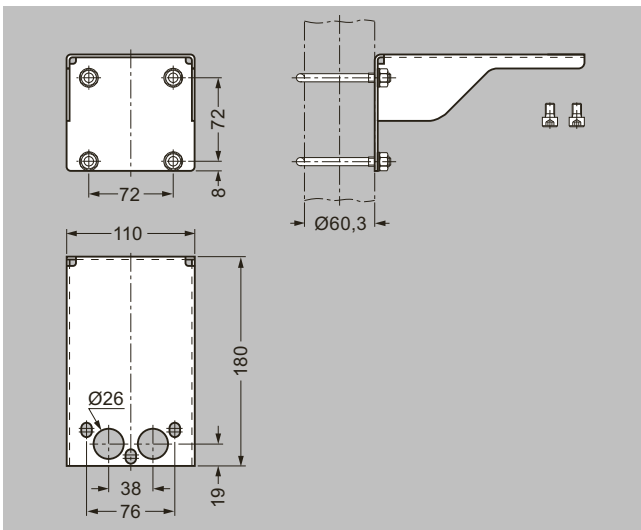
5-spindle valve manifold DN 5 (7MF9412-1E..), dimensions in mm

Shut-off valves for differential pressure / 2-, 3- and 5-spindle valve manifold for protective casing

Dimensional drawings (continued)

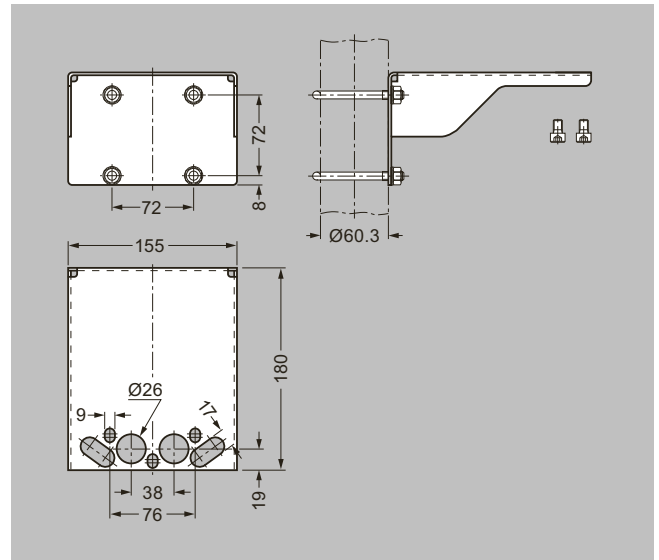


Mounting bracket (7MF9006-6LA)/(M14) for 2-spindle valve manifold, dimensions in mm



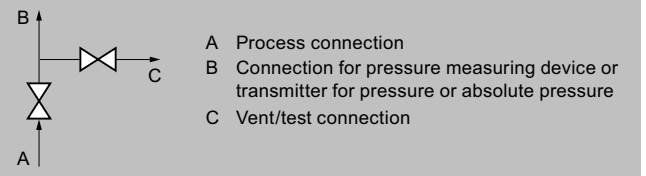
Mounting bracket (7MF9006-6NA)/(M17) for 3-spindle valve manifold, dimensions in mm

Dimensional drawings (continued)

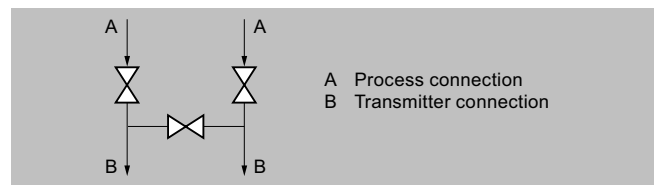


Mounting bracket (7MF9006-6PA)/(M18) for 5-spindle valve manifold, dimensions in mm

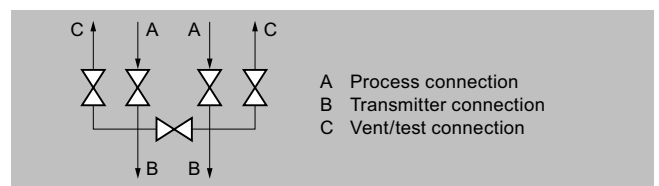
Circuit diagrams



2-spindle valve manifold DN 5 (with rotating sleeve G $\frac{1}{2}$  or flange connection), connections



3-spindle valve manifold DN 5, connections



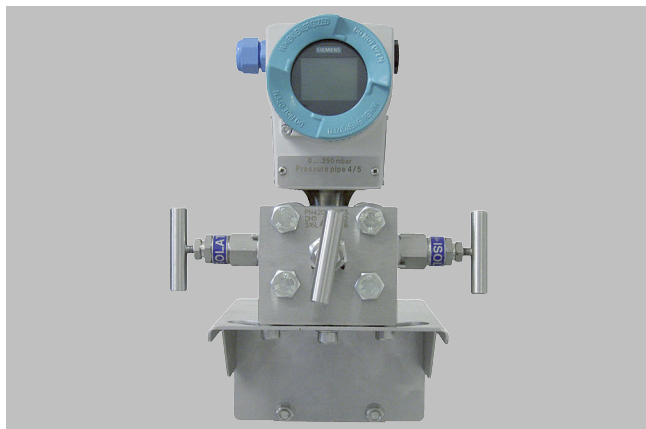
5-spindle valve manifold DN 5, connections

## Pressure measurement

### Fittings

#### Shut-off valves for differential pressure / 3- and 5-spindle valve manifold for vertical differential pressure lines

##### Overview



These 3-spindle and 5-spindle valve manifolds 7MF9413-1.. were developed specifically for vertical differential pressure lines.

The valve manifolds are used to shut off the differential pressure lines and to check the transmitter zero point.

The 5-spindle valve manifold also enables venting on the transmitter side and checking of the pressure transmitter characteristic.

##### Benefits

- For vertical differential pressure lines
- Max. operating overpressure 420 bar (6092 psi)

##### Application

The 3-spindle and 5-spindle valve manifolds for vertical differential pressure lines are for liquids and gases. The valve manifolds are flanged to the pressure transmitter.

##### Design

All versions of the spindle valve manifolds have a process connection 1/2-14 NPT.

The connection for the pressure transmitter is always designed as a flange connection according to IEC 61518/EN 61518, Form A.

The 2-spindle and the 5-spindle valve manifold have a vent and test connection 1/4-18 NPT in addition.

Materials used:

Component	Material	Mat. no.
Enclosure	X 2 CrNiMo 17 13 2	1.4404/316L
Cones	X 6 CrNiMoTi 17 12 2	1.4571/316Ti
Spindles	X 2 CrNiMo 18 10	1.4404/316L
Head parts	X 5 CrNiMo 18 10	1.4401/316
Packings	PTFE	-

##### Function

Functions of all valve manifolds:

- Shutting off the differential pressure lines
- Monitoring of pressure transmitter zero point

Additional functions of the 2-spindle or 5-spindle valve manifolds via the venting and test connection:

- Venting on transmitter side
- Monitoring of the pressure transmitter characteristic



## Shut-off valves for differential pressure / 3- and 5-spindle valve manifold for vertical differential pressure lines

## Selection and ordering data

Valve manifolds for vertically arranged differential pressure lines	Article No. 7MF9413-	● ● A
Click the article number for online configuration in the PIA Life Cycle Portal.		
For liquids and gases, for flanging to pressure transmitter for absolute and differential pressure; material: Stainless steel, mat. no.: 1.4404/316L; max. operating overpressure 420 bar (6092 psi) (order accessory kit using order code), without certificate		
• 3-spindle valve manifold		1 D
• 5-spindle valve manifold		1 E

Accessories	
Factory certificate EN 10204-2.2	7MF9000-8AB
Material inspection certificate to EN 10204-3.1	7MF9000-8AD

Options <sup>1)</sup>	Order code	Article No.
Add "-Z" to article number and specify order code.		
<b>Accessory kit according to EN</b> (Connection valve manifold – pressure transmitter)		
4 × screws $7/16-20$ UNF × $1\frac{3}{4}$ inches according to ASME B18.2.1; chromated steel, 2 × flat sealings made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)	K36	7MF9411-5DB
<b>Accessory kit according to DIN<sup>2)</sup></b> (Connection valve manifold – pressure transmitter)		
4 × screws M10×45 according to EN 24014; chromated steel 4 × washers Ø 10,5 mm according to DIN 125; 2 × flat sealings made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F); flange connection with screws M10 only permissible up to PN 160 (2321 psi).	K16	7MF9411-6BB
<b>Mounting bracket</b> Required for <b>wall mounting</b> for fastening to rack, with fixing screws for mounting on valve manifold		
• For valve manifold 7MF9413-1D.	M17	7MF9006-6NA

Options <sup>1)</sup>	Order code	Article No.
• For valve manifold 7MF9413-1E.	M18	7MF9006-6PA
Required for <b>mounting on 2" standpipe</b> , with fixing screws for mounting on valve manifold		
• For valve manifold 7MF9413-1D.	M19	7MF9006-6QA
<b>Mounting bracket</b> 2 units, for fastening the mounting bracket to the pipe	M16	7MF9006-6KA
<b>Valve manifold 100 bar (1450 psi)</b> Oil-free and grease-free cleaned version for oxygen applications, max. pressure PN 100 (1450 psi) and max. temperature 60 °C (140 °F)		
• For valve manifold 7MF9413-1D.	S13	
• For valve manifold 7MF9413-1E.	S14	
Suitable for hydrogen applications in ventilated environment	S22	
<b>Certification according to NACE MR-0175</b> Including inspection certificate 3.1 according to EN 10204	D07	

- <sup>1)</sup> If accessory kit or mounting brackets are ordered together with the multi-way cock, please use order code; otherwise, use the article number.  
<sup>2)</sup> Flange connections according to DIN 19213 only permissible up to PN 160 (2321 psi).

## Pressure measurement

### Fittings

#### Shut-off valves for differential pressure / 3- and 5-spindle valve manifold for vertical differential pressure lines

#### Accessories

##### Accessory set (connection between valve manifold and pressure transmitter)

- K36: 4 screws  $7/16$ -20 UNF x 1 3/4 inches to ASME B 18.2.1, 2 flat gaskets
- K16: 4 screws M10x45 according to EN 24 014, 4 washers, 2 flat gaskets

Washers  $\varnothing$  10.5 according to DIN 125

Flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)

**Note:** Flange connection with M10 screws only permissible up to PN 160 (2321 psi)!

##### Mounting bracket for wall mounting or for securing to mounting rack

With bolts for mounting on valve manifold

- M17: For 3-spindle valve manifold
- M18: For 5-spindle valve manifold

##### Mounting bracket for mounting on 2" standpipe

With bolts for mounting on valve manifold

- M19: For 3-spindle valve manifold

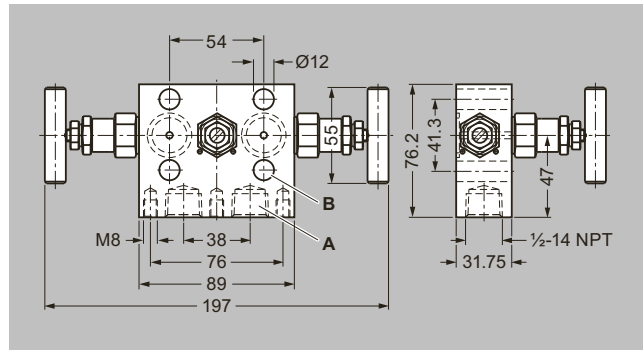
##### Mounting clip (2 units)

For securing the mounting brackets M17, M18 and M19 to pipe

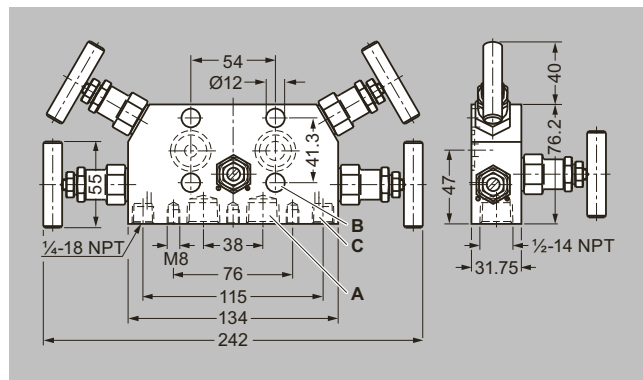
##### Valve manifold 100 bar, suitable for oxygen

- For 3-spindle valve manifold
- For 5-spindle valve manifold

#### Dimensional drawings

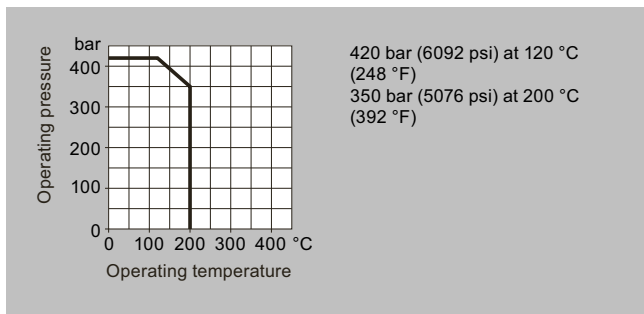


3-spindle valve manifold 7MF9413-1D. for vertical differential pressure lines, dimensions in mm

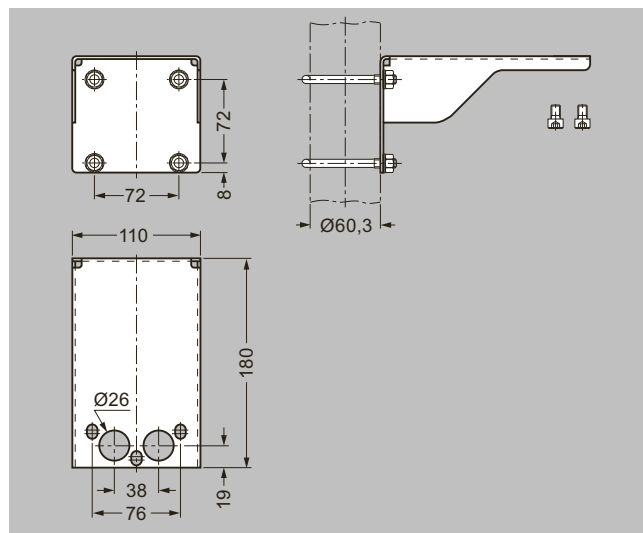


5-spindle valve manifold 7MF9413-1E. for vertical differential pressure lines, dimensions in mm

#### Characteristic curves



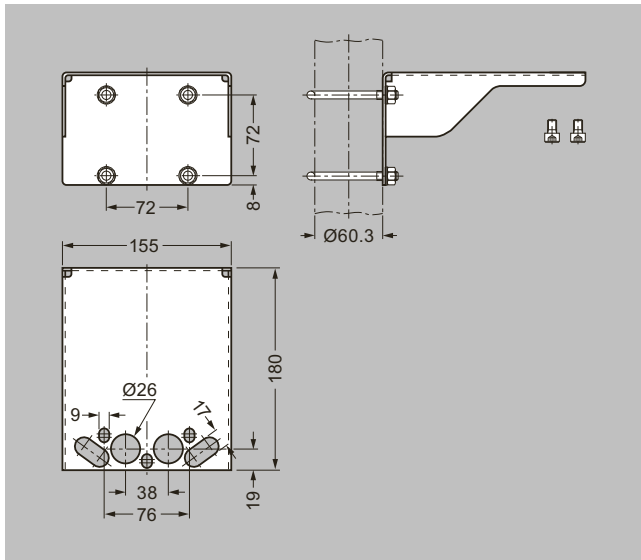
Permissible operating overpressure depends on the permissible operating temperature



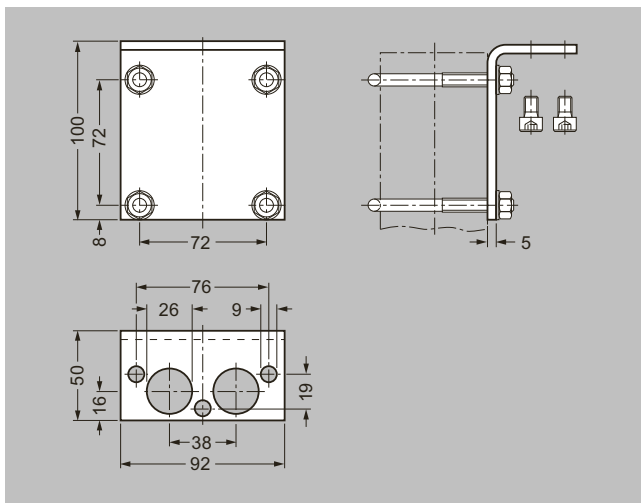
Mounting bracket (7MF9006-6NA)/(M17) for 3-spindle valve manifold, dimensions in mm

### Shut-off valves for differential pressure / 3- and 5-spindle valve manifold for vertical differential pressure lines

#### Dimensional drawings (continued)

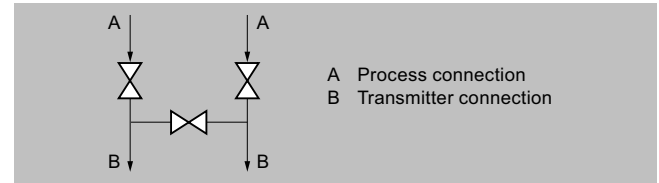


Mounting bracket (7MF9006-6PA)/(M18) for 5-spindle valve manifold, dimensions in mm

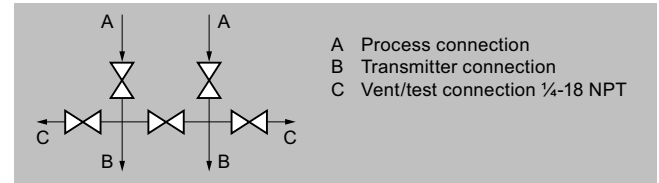


Mounting bracket (7MF9006-6QA)/(M19) for 3-spindle valve manifold, dimensions in mm

#### Circuit diagrams



3-spindle valve manifold for vertical differential pressure lines, connections



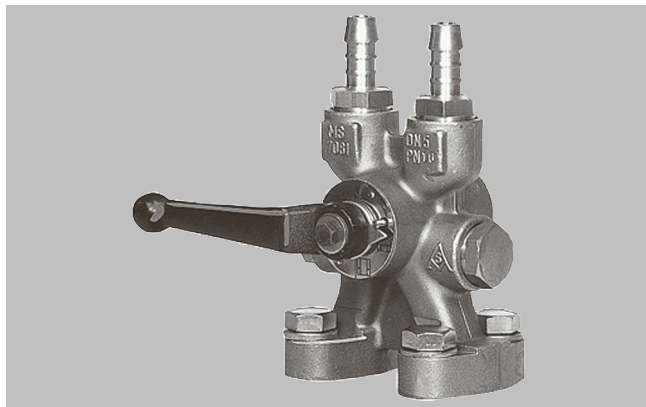
5-spindle valve manifold for vertical differential pressure lines, connections

## Pressure measurement

### Fittings

#### Shut-off valves for differential pressure / Low-pressure multiway cock

##### Overview



The low-pressure multiway cock can be flanged to pressure transmitters for differential pressure.

##### Benefits

- Robust design
- For liquids and gases
- One-hand operation

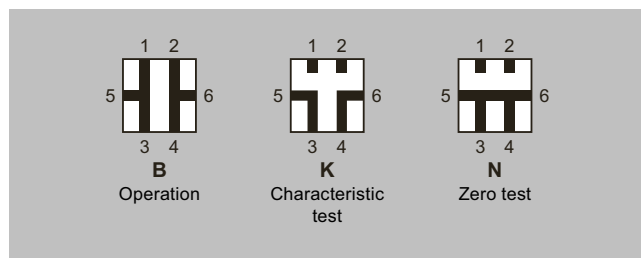
##### Design

The multiway cock has two process connections and two test connections which are available in two versions ( $G^{3/8}$  sealing screws or quick-release couplings). The enclosure is made of pressed brass CuZn39Pb3, CW 614N. Test connections with screw plugs or with self-sealing quick-release couplings.

**Note:** An accessory set is always required for flanging of the multiway cock to a differential pressure transmitter.

##### Function

- Shutting off the differential pressure lines
- Checking the zero point of the pressure transmitter.
- Checking the characteristic of the pressure transmitter.



Cock settings, the symbols are on the cock

#### Selection and ordering data

Low-pressure multiway cock	Article No.
For liquids and gases, for flanging to pressure transmitter, max. operating overpressure 25 bar (363 psi), max. operating temperature 60 °C (140 °F) (briefly up to 80 °C (176 °F)), weight 1.75 kg (without accessory kit)	
<b>Test connections</b>	
• 2 × screw plugs $G^{3/8}$	7MF9004-4CA
• 2 × quick-action couplings	7MF9004-4DA

Accessories	
Factory certificate EN 10204-2.2	7MF9000-8AB
Material inspection certificate to EN 10204-3.1	7MF9000-8AD

Options <sup>1)</sup>	Order code	Article No.
Add "-Z" to article number and specify order code.		
<b>Accessory kit according to EN</b> (Required for flanging, weight 0.2 kg) 4 × screws $7/16$ -20 UNF × 1 inch according to ASME B18.2.1; chromated steel 2 × flat gaskets made of PTFE, max. permissible 80 °C (176 °F)	L31	7MF9004-5CC

Options <sup>1)</sup>	Order code	Article No.
<b>Accessory kit according to DIN</b> (Required for flanging, weight 0.2 kg) 4 × screws M10×25 according to EN 24017; chromated steel 4 × washers Ø 10.5 mm according to DIN 125, 2 × flat sealings made of PTFE, max. permissible 80 °C (176 °F)		
• Standard design	L11	7MF9004-6AD
• Version for oxygen	L15	7MF9004-6AE
<b>Multiway cock in oil-free and grease-free design</b> BAM-tested lubricant, sealing socket suitable for oxygen	S11	
<b>Mounting brackets</b> Required for <b>wall mounting</b> or for fastening on rack (72 mm grid); made of electrogalvanized sheet steel, weight 0.85 kg	M13	7MF9004-6AA

<sup>1)</sup> If accessory kit or mounting brackets are ordered together with the multiway cock, please use order code; otherwise, use the article number.

### Accessories

#### Accessory set for low-pressure multiway cock

- L31: 4 screws  $7/16$ -20 UNF x 1 inch, 2 flat gaskets
- L11: 4 screws M10x25 according to EN 24017, 4 washers, 2 flat gaskets
- L15 (suitable for oxygen): 4 screws M10x25 according to EN 24017, 4 washers, 2 flat gaskets

Washers  $\varnothing$  10.5 according to DIN 125

Flat gaskets made of PTFE, max. permissible temperature 80 °C (176 °F)

#### Multiway cock in oil-free and grease-free design

- S11: BAM-tested lubricant, sealing socket suitable for oxygen

#### Mounting brackets

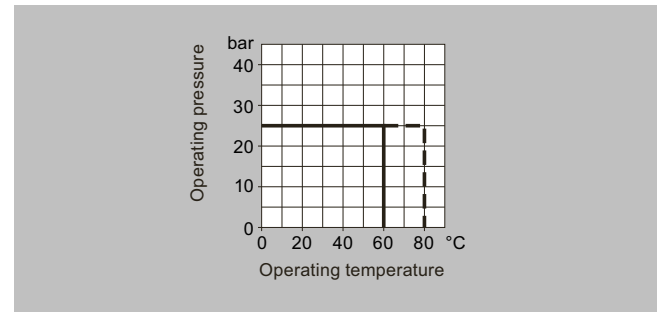
- M13: Required for wall mounting or for securing on rack (72 mm grid); made of electrogalvanized sheet-steel

### Options

Test connections

- 2 screw plugs  $G^{3/8}$
- 2 quick-action couplings

### Characteristic curves



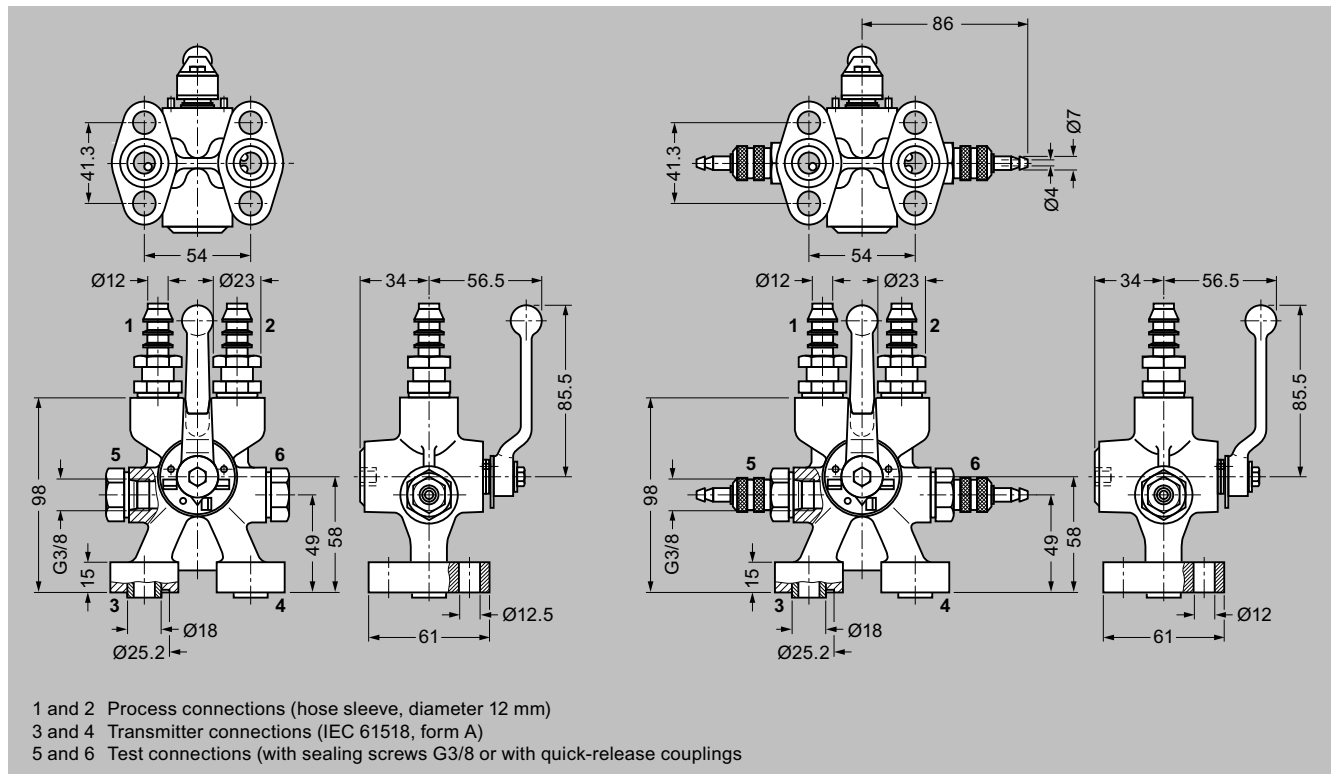
Low-pressure multiway cock, permissible operating overpressure depends on the permissible operating temperature

## Pressure measurement

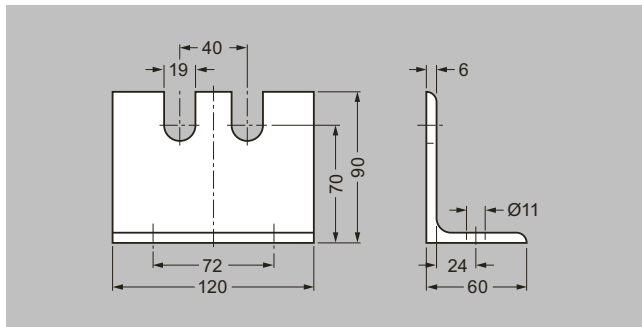
### Fittings

#### Shut-off valves for differential pressure / Low-pressure multiway cock

#### Dimensional drawings



Low-pressure multiway cock 7MF9004-4CA/-4DA for direct flanging to pressure transmitter for differential pressure, dimensions in mm



Mounting bracket 7MF9004-6AA (M13), dimensions in mm

## Overview



The 7MF9408-2C oval flange for pressure transmitters for absolute pressure and differential pressure has a 1/2-14 NPT internal thread and is designed for a max. operating pressure of 420 bar (6092 psi).

## Selection and ordering data

	Article No.
<b>Oval flange</b>	
With internal thread 1/2-14 NPT, max. operating overpressure 420 bar (6092 psi), flange connection according to IEC 61518/EN 61518, form A	
<b>Material</b>	
P250GH, mat. no. 1.0460	7MF9408-2CE
X 2 CrNiMo 17 13 2, mat. no. 1.4404/316L	7MF9408-2CL

Options <sup>1)</sup>	Order code	Article No.
Add "-Z" to article number and specify order code.		
<b>Accessory kit according to EN</b>		
2 x screws 7/16-20 UNF x 1 1/2 inches according to ASME B 18.2.3; chromated steel	E36	7MF9408-5DA
1 x flat gasket made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)		
2 x screws 7/16-20 UNF x 1 1/2 inches according to ASME B 18.2.3; chromated steel	E34	7MF9408-5CA
1 x O-ring according to DIN 3771, 20 x 2.65 - S - FPM90, max. permissible 420 bar (6092 psi), 120 °C (248 °F)		

Options <sup>1)</sup>	Order code	Article No.
<b>Accessory kit according to DIN</b>		
2 x screws M10x40 according to EN 4762; chromated steel	E13	7MF9408-6AA
2 x washers Ø 10.5 mm according to DIN 125; 1 x O-ring according to DIN 3771, 20 x 2.65 - S - FPM90, max. permissible 160 bar (2321 psi), 120 °C (248 °F)		
2 x screws M10x40 according to EN 4762; chromated steel	E16	7MF9408-6BA
2 x washers Ø 10.5 mm according to DIN 125; 1 x flat gasket made of PTFE, max. permissible 160 bar (2321 psi), 80 °C (176 °F) <sup>2)</sup>		
<b>Certification according to NACE MR-0175</b>	D07	
Including inspection certificate 3.1 according to EN 10204		

<sup>1)</sup> If accessory kit is ordered together with the oval flange, please use order code; otherwise, use the article number.

<sup>2)</sup> Flange connections with screws M10 only permissible up to PN 160 (2321 psi).

## Pressure measurement

### Fittings

#### Accessories / Oval flange

##### Accessories

- E36: 2 screws  $7/16$ -20 UNF  $\times$  1 1/2 inch according to ASME B18.2.1, 1 flat gasket
- E34: 2 screws  $7/16$ -20 UNF  $\times$  1 1/2 inch according to ASME B18.3, 1 O-ring (FPM 90)
- E13: 2 screws M10x40 according to EN 4762, 2 washers, 1 O-ring (FPM 90)
- E16: 2 screws M10x40 according to EN ISO 4762, 2 washers, 1 flat gasket

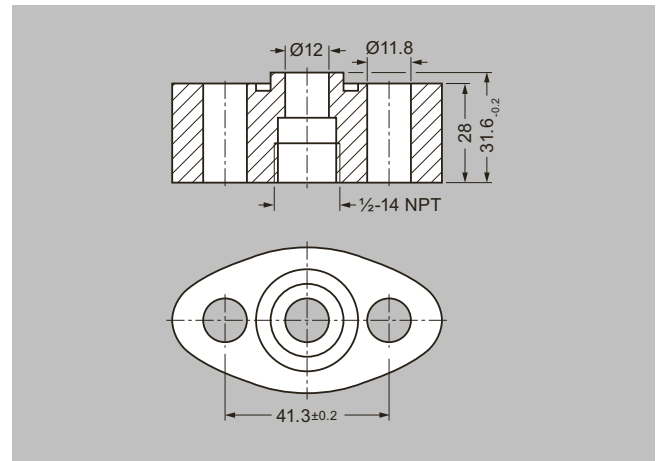
Washers  $\varnothing$  10.5 according to DIN 125

Flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)

O-ring acc. to DIN 3771, 20  $\times$  2.65 – S – FPM90, max. permissible 420 bar (6092 psi), 120 °C (248 °F)

**Note:** M10 screws only permissible up to PN 160 (2321 psi)!

##### Dimensional drawings



Oval flange 7MF9408-2C., dimensions in mm



**Overview**

Adapters enable, for example, a transition from measured medium connections with NPT thread to shut-off valves according to DIN 16270 ... 16272 or to tubes in connection with a connection gland (e.g. 7MF9008).

**Design**

The adapters are made of X 6 CrNiMoTi 17 12 2, mat. no. 1.4571 and are available in 3 versions:

- Thread ¼-18 NPT and connection shank G½ according to EN 837-1
- Thread ½-14 NPT and connection shank G½ according to EN 837-1
- Thread ½-14 NPT and thread ½-14 NPT

**Selection and ordering data**

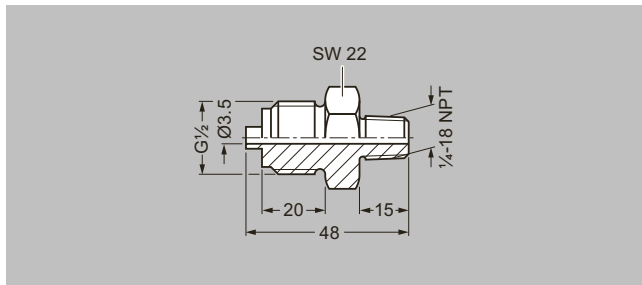
	Article No.
<b>Connection piece</b>	
Max. operating pressure: 689 bar (10 000 psi), weight: 0.2 kg	
With thread ¼-18 NPT – G½	7MF9001-1AA
With thread ½-14 NPT – G½	7MF9001-1CA
With thread ½-14 NPT – ½-14 NPT	7MF9001-1DA
With thread ½-14 NPT – M20 × 1.5	7MF9001-1EA
With cutting ring 12 S, max. operating pressure 630 bar (9 100 psi), Ø 12 mm – ½-14 NPT	
• 9 SMnPb 28, mat. No. .0718	7MF9008-1CA
• X 6 CrNiMoTi 17 122, mat. No. 1.4571	7MF9008-1CB
With cutting ring 14 S, max. operating pressure 630 bar (9 100 psi), Ø 14 mm – ½-14 NPT	
• 9 SMnPb 28, mat. No. 1.0718	7MF9008-1CC
• X 6 CrNiMoTi 17 122, mat. No. 1.4571	7MF9008-1CD

# Pressure measurement

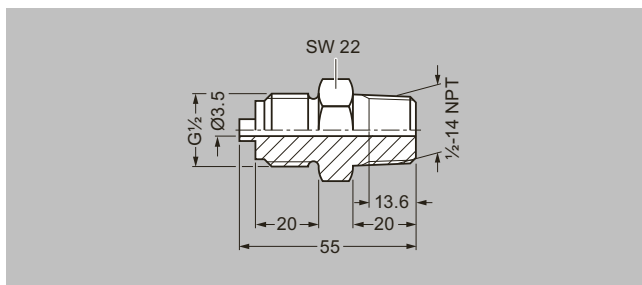
## Fittings

### Accessories / Connection pieces

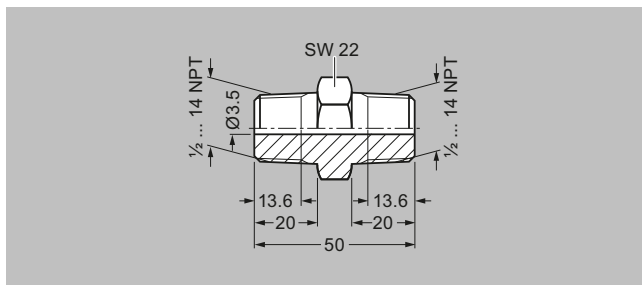
#### Dimensional drawings



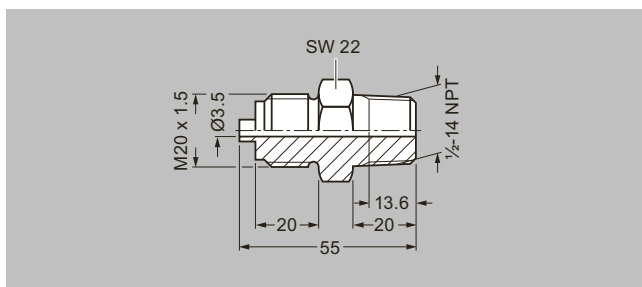
Mounting collar with thread 1/4-18 NPT and connection shank G1/2 (7MF9001-1AA), dimensions in mm



Mounting collar with thread 1/2-14 NPT and connection shank G1/2 (7MF9001-1CA), dimensions in mm

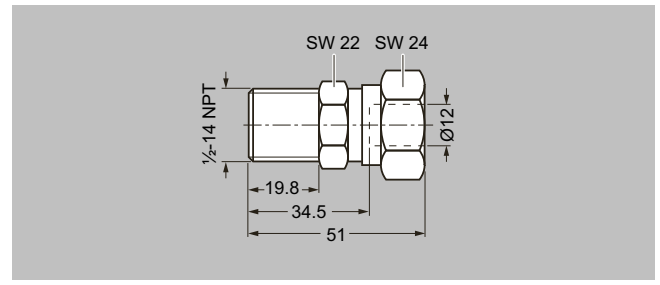


Mounting collar with 1/2-14 NPT thread and 1/2-14 NPT thread (7MF9001-1DA), dimensions in mm

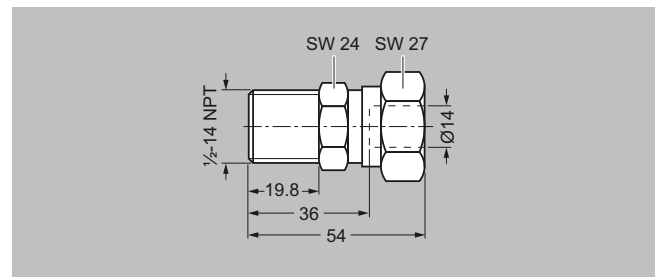


Mounting collar with thread 1/2-14 NPT and connection shank M20 x 1.5 (7MF9001-1EA), dimensions in mm

#### Dimensional drawings (continued)



Mounting collar with cutting ring fitting 12 S, Ø12 mm and thread 1/2-14 NPT (7MF9008-1CA and -1CB), dimensions in mm



Mounting collar with cutting ring fitting 14 S, Ø14 mm and thread 1/2-14 NPT (7MF9008-1CC and -1CD), dimensions in mm

## Overview

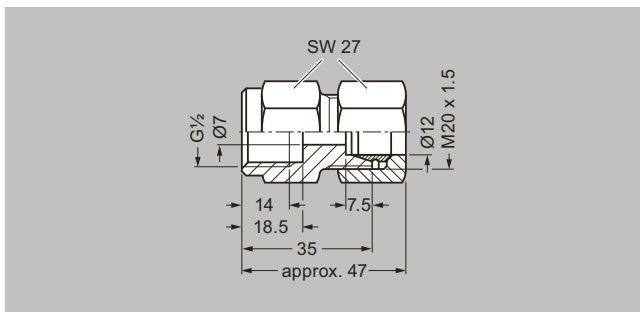
Connection glands for connecting measured-medium or differential pressure lines to connection shank G $\frac{1}{2}$  according to EN 837-1

- For rated pressures up to PN 630 (9137 psi)
- For oxygen only up to PN 250 (3626 psi)

## Selection and ordering data

		Article No.
<b>Connection glands for pipes</b> (weight 0.2 kg)		
<b>Material</b>	<b>Version</b>	
11SMn30 (mat. No. 1.0715)	Normal	7MF9008-1GA
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)	Normal	7MF9008-1GB
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)	Grease-free	7MF9008-1GC

## Dimensional drawings



Connection gland 7MF9008-1G., dimensions in mm

# Pressure measurement

## Fittings

### Accessories / Connection parts G 1/2

#### Overview

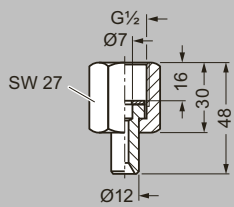
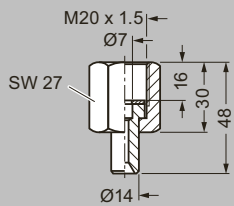
Connection parts G $\frac{1}{2}$  for pressure gauges and shut-off valves are available in 3 versions:

- Nipple connection
- Clamping sleeve
- Shank mounting collar

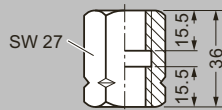
#### Selection and ordering data

		Article No.
<b>Connection parts G<math>\frac{1}{2}</math></b>		
For pressure measuring devices and shut-off valves		
<b>Nipple connection</b>		
G $\frac{1}{2}$ according to DIN 16284 (union nut with nipple and gasket); Max. Operating overpressure 400 bar (5802 psi); weight 0.1 kg; Connection: G $\frac{1}{2}$ according to EN 837-1; female thread G $\frac{1}{2}$		
<b>Material</b>	<b>Mat. no.</b>	
CuZn39Pb3	CW 614N	M56340-A0001
Union nut: 9 SMn 28 k	1.0715	M56340-A0002
Nipple: RSt 37-2	1.0037	
Union nut: X 8 CrNiS 18 9	1.4305	M56340-A0003
Nipple: X 6 CrNiMoTi 17 12 2	1.4571/316Ti	
<b>Nipple connection</b>		
M20 x 1.5 according to DIN 16284 (union nut with nipple and gasket); Max. Operating overpressure 400 bar (5802 psi); weight 0.1 kg; Connection: M20 x 1.5 according to EN 837-1; female thread M20 x 1.5		
<b>Material</b>	<b>Mat. no.</b>	
Union nut: X 8 CrNiS 18 9	1.4305	M56340-A0008
Nipple: X 6 CrNiMoTi 17 12 2	1.4571/316Ti	
<b>Clamping sleeve</b>		
G $\frac{1}{2}$ according to DIN 16283; max. operating overpressure 400 bar (5802 psi); weight 0.1 kg; Connections: G $\frac{1}{2}$ according to EN 837-1; Female thread: G $\frac{1}{2}$ right, G $\frac{1}{2}$ left		
<b>Material</b>	<b>Mat. no.</b>	
CuZn39Pb3	CW614N	M56340-A0004
9 SMn 28 k	1.0715	M56340-A0005
<b>Collar connection piece</b>		
Max. operating pressure; weight 0.1 kg; Connections: G $\frac{1}{2}$ according to EN 837-1; Male thread: G $\frac{1}{2}$ , G $\frac{1}{2}$		
<b>Material</b>	<b>Mat. no.</b>	
CuZn39Pb3	CW614N	M56340-A0006
9 SMn 28 k	1.0715	M56340-A0007

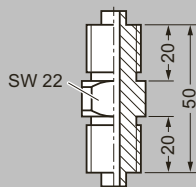
## Dimensional drawings

G $\frac{1}{2}$  (M56340-A0001 to -A0003) nipple connection, dimensions in mm

M20 x 1.5 nipple connection (M56340-A0008), dimensions in mm



Clamping sleeve (M56340-A0004/-A0005), dimensions in mm



Collar connection piece (M56340-A0006/-A0007), dimensions in mm

## Pressure measurement

### Fittings

#### Accessories / Water traps

##### Overview

Water traps protect pressure measuring devices and shut-off fittings from heating up (e.g. by steam) by the water column produced by the water trap.

The max. operating temperature is 120 °C (248 °F) at 100 bar (1450 psi), 300 °C (572 °F) at 80 bar (1160 psi), 400 °C (752 °F) at 63 bar (914 psi). If the temperature of the measured medium is higher, a sufficiently long line has to be connected upstream of the trap to enable heat dissipation.

##### Design

The water traps are available in U form (type B) or in circular form (type D) according to DIN 16282. On the measuring cell side, they consist of a weld-in end  $\varnothing 20 \text{ mm} \times 2.6 \text{ mm}$ . The connection on the device side is a clamping sleeve  $G\frac{1}{2}$  to DIN 16283.

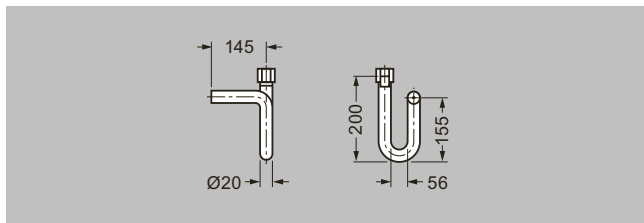
The water traps are made of steel (P250GH) or stainless steel (X 6 CrNiMoTi 17 12 2)

Water traps are designed as standard for max. operating temperature 120 °C (248 °F) at a max. operating pressure of 100 bar (1450 psi) (300 °C (572 °F) at 80 bar (1160 psi), 400 °C (752 °F) at 63 bar (914 psi)). Water traps for higher operating pressures and temperatures are available on request.

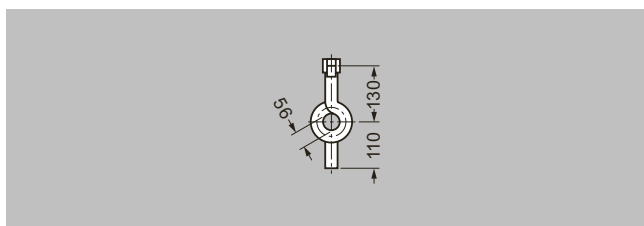
##### Selection and ordering data

Water traps		Article No.
For pressure measuring devices and pressure transmitters; max. operating temperature 120 °C (248 °F), max. operating pressure 100 bar (1450 psi) (or 300 °C (572 °F) at 80 bar (1160 psi), or 400 °C (752 °F) at 63 bar (914 psi)), weight 0.7 kg		
Water trap B according to DIN 16282		
<b>Material</b>	<b>Mat. no.</b>	
P235GH	1.0345	M56340-A0043
X 6 CrNiMoTi 17 12 2	1.4571/316Ti	M56340-A0061
Water trap D according to DIN 16282		
<b>Material</b>	<b>Mat. no.</b>	
P235GH	1.0345	M56340-A0045
X 6 CrNiMoTi 17 12 2	1.4571/316Ti	M56340-A0063

##### Dimensional drawings



Water traps, type B, M56340-A0043/-A0061, measurements in mm



Water traps, type D, M56340-A0045/-A0063, measurements in mm

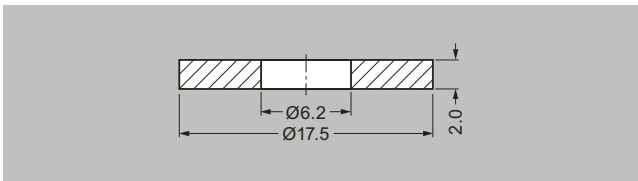
## Overview

The sealing rings according to EN 837-1 are required to seal the pressure measuring devices with process connection G½B.

## Selection and ordering data

	Article No.
<b>Sealing ring according to EN 837-1 for G½ thread</b> (Packing unit 100 units)	
<ul style="list-style-type: none"> <li>made of copper</li> </ul>	7MF9007-7AA
<ul style="list-style-type: none"> <li>made of soft iron</li> </ul>	7MF9007-7AB
<ul style="list-style-type: none"> <li>made of stainless steel, mat. no. 1.4571</li> </ul>	7MF9007-7AC
<ul style="list-style-type: none"> <li>made of PTFE</li> </ul>	7MF9007-7AD

## Dimensional drawings



Sealing ring 7MF9007-7A according to EN 837-1, measurements in mm

## Pressure measurement

### Fittings

#### Accessories / Pressure surge reducers

##### Overview

The pressure surge reducer protects the pressure gauge from damage, premature wear-and-tear, and an imprecise or vibrating display.

##### Application

The pressure reducer is used when pulsations of the measured medium occur (e.g. in slow-running steam engines, piston pumps and compressors) or when sudden pressure increases and drops of the measured medium can be expected (e.g. in hydraulic presses and tensile testing machines).

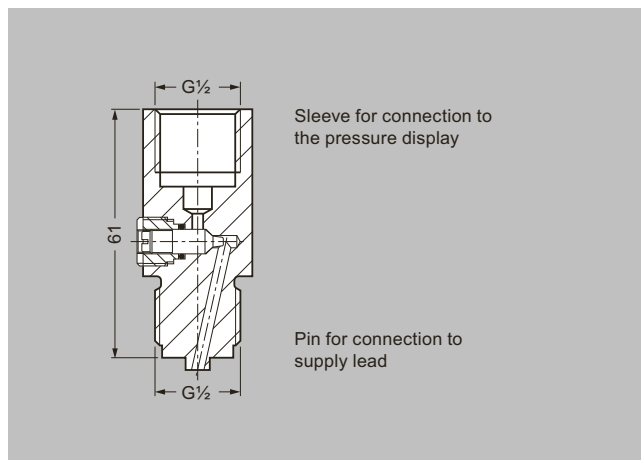
##### Design

- Brass or stainless steel enclosure (mat. no. 1.4571)
- Adjustable nozzle
- Sleeve for connection to the pressure gauge
- Shank for connection to the supply line

##### Selection and ordering data

			Article No.
Pressure surge reducers			
Weight approx. 0.21 kg			
Material	Full-scale value	Weight approx. in kg	
Brass	250 bar (3626 psi)	0.21	M56340-A0054
Stainless steel	600 bar (8702 psi)	0.21	M56340-A0059

##### Dimensional drawings



Pressure surge reducer, dimensions in mm



## Overview

The primary shut-off valves are available in the following versions:

- For non-corrosive liquids, gases and vapors
- For corrosive liquids and gases
- Grease-free for oxygen

The shut-off valves are available in different materials and with different connections (see ordering data).

## Selection and ordering data

Primary shut-off valves							Article No.		
Without certificate							7MF9017- ● ● A		
Click the article number for online configuration in the PIA Life Cycle Portal.									
Max. operating overpressure	Characteristic curve <sup>1)</sup>	Material	Mat. no.	Spindle thread	Connections	Weight in kg			
<b>Shut-off valve for non-corrosive liquids, gases and vapors</b>									
160 bar (2321 psi)	A	P250GH	1.0460	Female	Screwed connectors G½, form R, DIN 19207	0.8			1 A
160 bar (2321 psi)	A	P250GH	1.0460	Female	Screwed connectors G½ form R, DIN 19207 and pipe union with cutting ring for pipe Ø 12 mm, schedule S	0.8			1 B
400 bar (5800 psi)	C	P250GH	1.0460	Female	Pipe union with cutting ring for pipe Ø 12 mm, schedule S	1			1 C
400 bar (5800 psi)	C	P250GH	1.0460	Female	Pipe union with cutting ring for pipe Ø 14 mm, schedule S	1			1 D
500 bar (7252 psi)	D	16 Mo 3	1.5415	Male	Welding sleeve Ø 14 mm × 2.5 mm	1.6			1 F
500 bar (7252 psi)	E	11 CrMo 9 10	1.7383	Male	Welding sleeve Ø 14 mm × 2.5 mm	1.6			1 G
500 bar (7252 psi)	D	16 Mo 3	1.5415	Male	Welding sleeve Ø 21.3 mm × 6.3 mm and Ø 14 mm × 2.5 mm	1.6			1 H
500 bar (7252 psi)	D	16 Mo 3	1.5415	Male	Welding sleeve Ø 24 mm × 7.1 mm and Ø 14 mm × 2.5 mm	1.6			1 J
500 bar (7252 psi)	E	11 CrMo 9 10	1.7383	Male	Welding sleeve Ø 24 mm × 7.1 mm and Ø 14 mm × 2.5 mm	1.6			1 K
<b>Shut-off valve for corrosive liquids and gases</b>									
160 bar (2321 psi)	F	X 6 CrNiMoTi 17 12 2	1.4571/316Ti	Female	Screwed connectors G½ form R, DIN 19207 and pipe union with cutting ring for pipe Ø 12 mm, schedule S	0.8			2 B
400 bar (5800 psi)	G	X 6 CrNiMoTi 17 12 2	1.4571/316Ti	Female	Pipe union with cutting ring for pipe Ø 12 mm, schedule S	1			2 C
400 bar (5800 psi)	H	X 6 CrNiMoTi 17 12 2	1.4571/316Ti	Male	Welding sleeve Ø 21.3 mm × 6.3 mm and Ø 14 mm × 2.5 mm	1.6			2 H
400 bar (5800 psi)	H	X 6 CrNiMoTi 17 12 2	1.4571/316Ti	Male	Welding sleeve Ø 24 mm × 7.1 mm and Ø 14 mm × 2.5 mm	1.6			2 J

## Accessories

Factory certificate EN 10204-2.2	7MF9000-8AB
Material inspection certificate to EN 10204-3.1	7MF9000-8AD

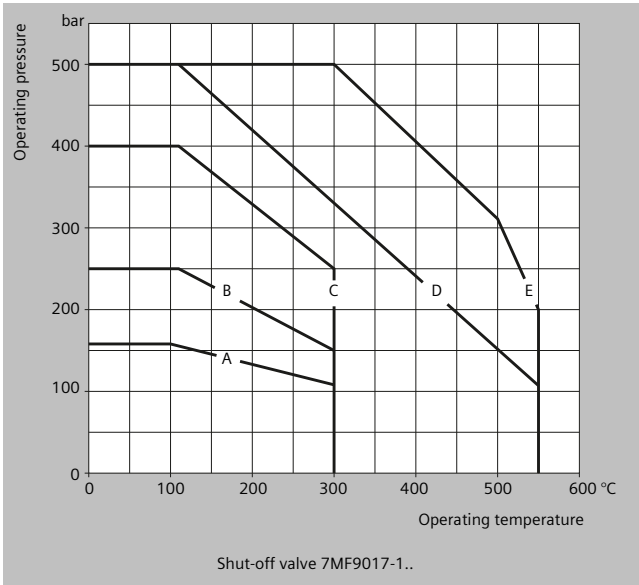
<sup>1)</sup> See characteristic curve "Permissible operating overpressure depends on the permissible operating temperature"

## Pressure measurement

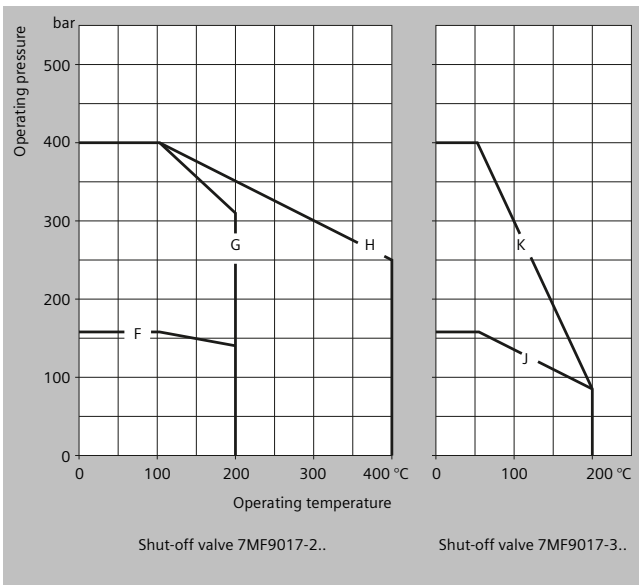
### Fittings

#### Accessories / Primary shut-off valves

##### Characteristic curves

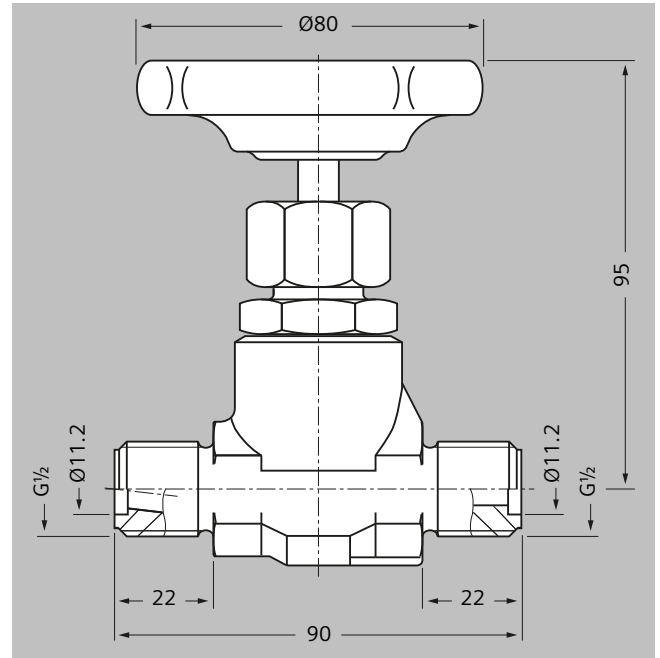


Shut-off valve 7MF9017-1.., permissible operating overpressure depends on permissible operating temperature

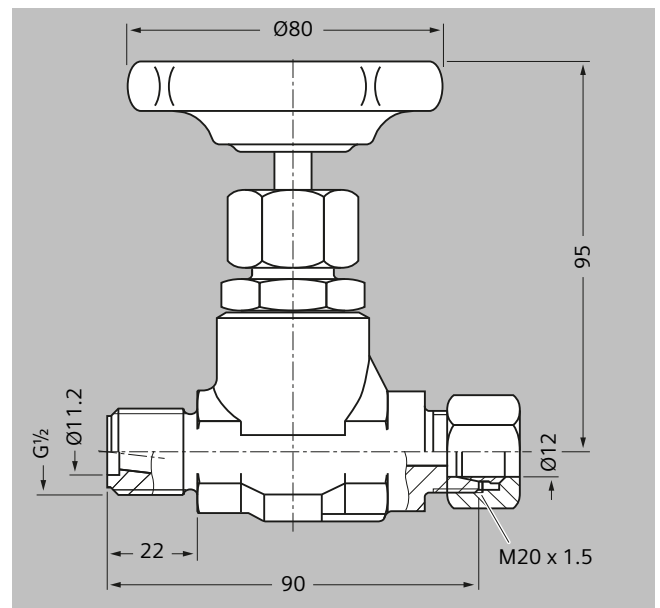


Shut-off valves 7MF9017-2.. and -3.., permissible operating overpressure depends on permissible operating temperature

##### Dimensional drawings

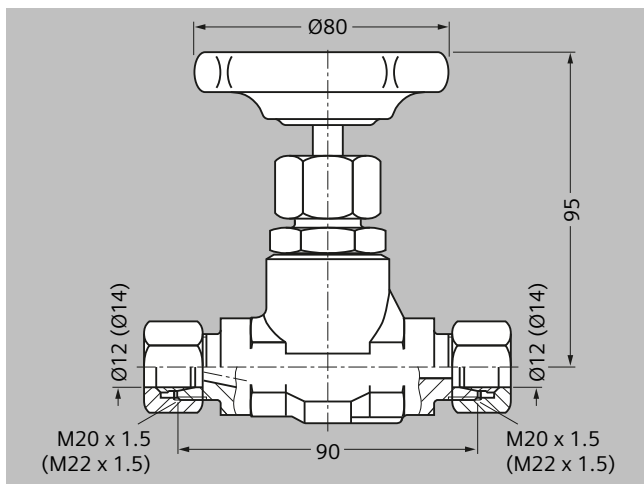


Shut-off valves 7MF9017-1A., dimensions in mm

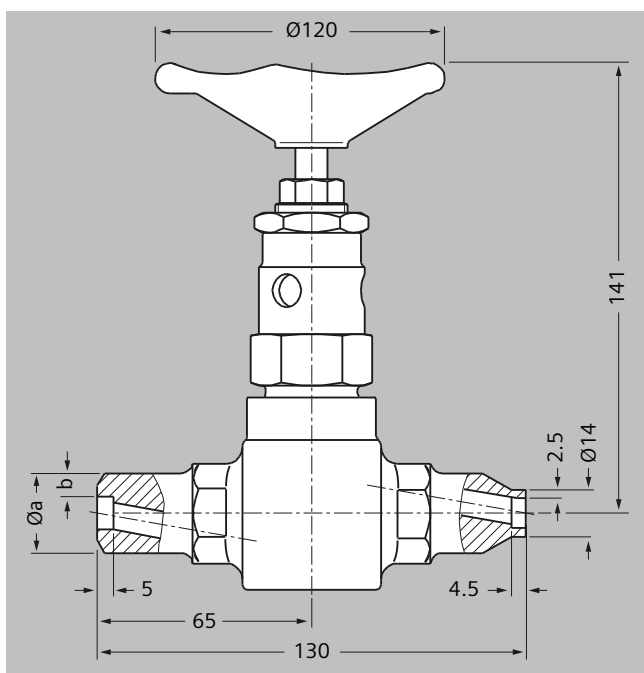


Shut-off valves 7MF9017-1B. and -2B., dimensions in mm

## Dimensional drawings (continued)



Shut-off valves 7MF9017-1C., -1D. and -2C., dimensions in mm



Shut-off valves 7MF9017-...., dimensions in mm

Ø A x b	7MF9017-
14 mm x 2.5 mm	1F. and 1G.
21.3 mm x 6.3 mm	1H. and 2H.
24 mm x 7.1 mm	1J., 1K. and 2J.

## Pressure measurement

### Fittings

#### Accessories / Compensation vessels

#### Overview

The compensation vessels prevent the level difference in the differential pressure lines on a change in pressure, which corrupts the measurement result.

According to DIN 19211, for calculating the wall thickness, the prevailing temperature in the compensation vessel should be assumed to be 50 K lower than the steam temperature in the pipeline. The reason is that the temperature in the condensate vessels during operation can rise no higher than the saturated steam temperature.

There is a material inspection certificate A according to EN 10204-3.1 for materials from which the compensation vessels are manufactured.

#### Selection and ordering data

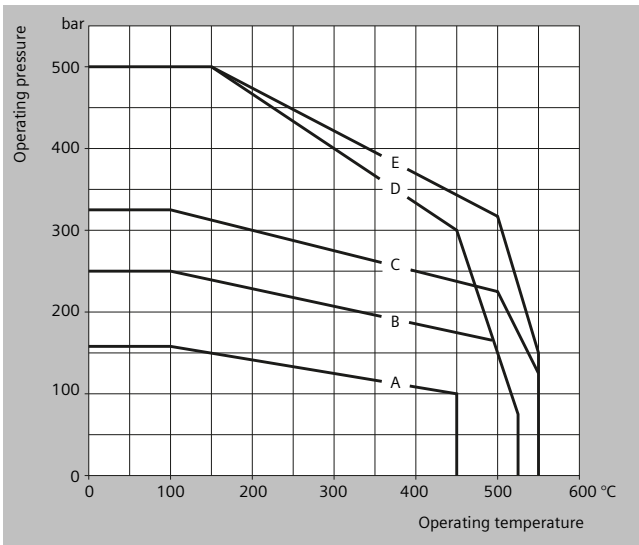
Condensate vessel								Article No.		
Without certificate								7MF9015- ● ● A		
Click the article number for online configuration in the PIA Life Cycle Portal.										
Max. operating overpressure	Characteristic curve <sup>1)</sup>	Material	Mat. no.	Connections:		Content approx. cm <sup>3</sup>	Weight approx. kg			
				Input	Output					
160 bar (2321 psi)	A	16 Mo 3	1.5415	Screwed connectors G½, form R, DIN 19207	Screwed connectors G½, form V, DIN 19207	250	0.8			1 A
250 bar (3626 psi)	B	16 Mo 3	1.5415	Welding sleeve Ø 21.3 mm × 6.3-mm	Welding sleeve Ø 21.3 mm × 6.3-mm	250	0.8			1 B
250 bar (3626 psi)	B	16 Mo 3	1.5415	Welding sleeve Ø 24 mm × 7.1-mm	Welding sleeve Ø 24 mm × 7.1-mm	250	1			1 C
500 bar (7252 psi)	E	11 CrMo 9 10	1.7383	Welding sleeve Ø 24 mm × 7.1-mm	Welding sleeve Ø 24 mm × 7.1-mm	170	1			1 D
250 bar (3626 psi)	B	16 Mo 3	1.5415	Welding sleeve Ø 33.7 mm × 4.5-mm	Welding sleeve Ø 24 mm × 7.1-mm	700	0.7			1 E
160 bar (2321 psi)	A	16 Mo 3	1.5415	Screwed connectors G½, form R, DIN 19207	Screwed connectors G½, form V, DIN 19207	20	1.6			5 A
500 bar (7252 psi)	D	16 Mo 3	1.5415	Welding sleeve Ø 21.3 mm × 6.3-mm	Welding sleeve Ø 21.3 mm × 6.3-mm	20	1.6			5 B
500 bar (7252 psi)	D	16 Mo 3	1.5415	Welding sleeve Ø 24 mm × 7.1-mm	Welding sleeve Ø 24 mm × 7.1-mm	20	1.6			5 C
500 bar (7252 psi)	E	11 CrMo 9 10	1.7383	Welding sleeve Ø 24 mm × 7.1-mm	Welding sleeve Ø 24 mm × 7.1-mm	20	1.6			5 D

#### Accessories

Factory certificate EN 10204-2.2	7MF9000-8AB
Material inspection certificate to EN 10204-3.1	7MF9000-8AD

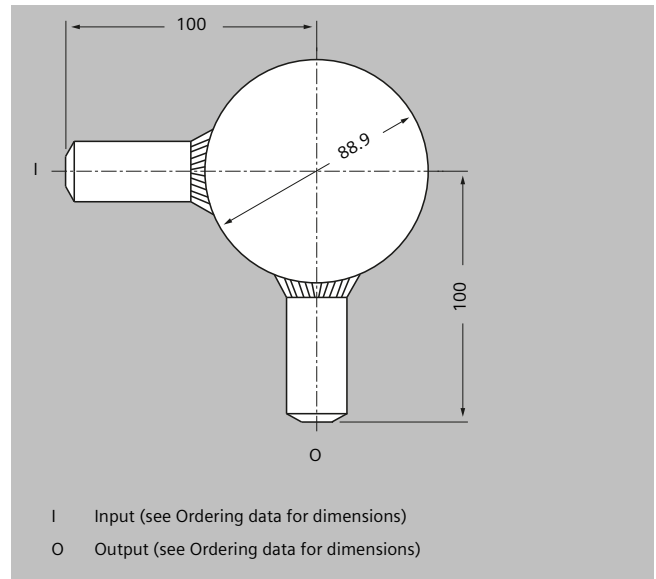
<sup>1)</sup> See characteristic curve "Permissible operating overpressure depends on the permissible operating temperature"

## Characteristic curves

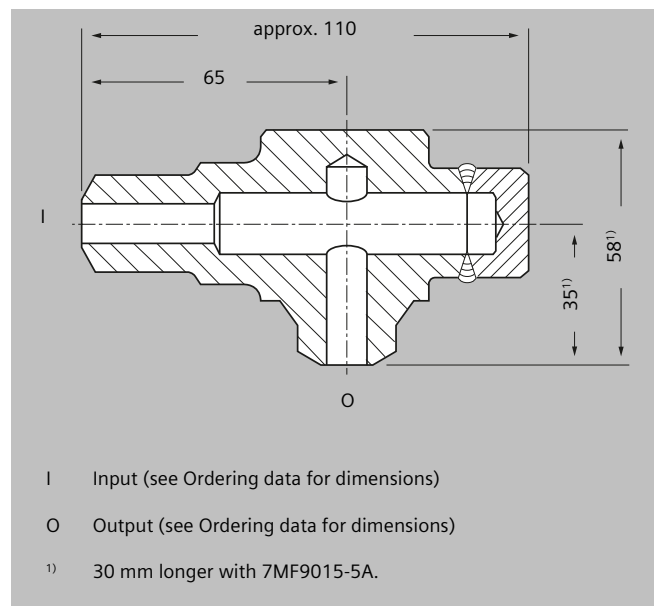


Permissible operating overpressure depends on the permissible operating temperature

## Dimensional drawings



Compensation vessel 7MF9015-1.., dimensions in mm



Compensation vessel 7MF9015-5.., dimensions in mm

# Pressure measurement

## Fittings

### Accessories / Connection parts

#### Overview

Connection parts are available in the following versions:

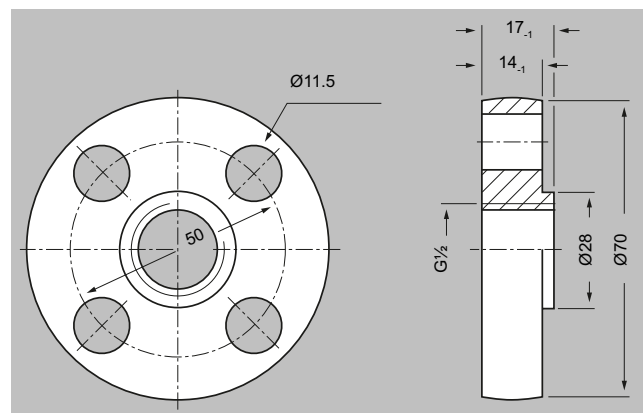
- G $\frac{1}{2}$  threaded flange pair with stainless steel gasket
- G $\frac{1}{2}$  nipple connection, form V to DIN 19207
- G $\frac{1}{2}$  C 35 union nut to DIN 16284
- B $\frac{1}{2}$  sealing ring (grooved) to DIN 19207

All connection parts are also available grease-free for oxygen.

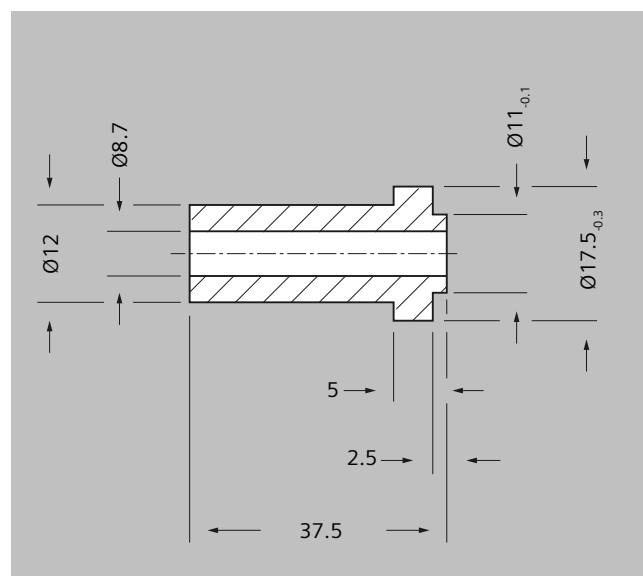
#### Selection and ordering data

	Article No.
<b>Threaded flange pair G<math>\frac{1}{2}</math></b> • With stainless steel gasket • Grease-free for oxygen, with stainless steel gasket  Scope of delivery: 2 x threaded flange G $\frac{1}{2}$ according to DIN 19207; material: P250GH (mat. no. 1.0460) 4 x hexagonal screws M10x45 According to EN 24014; material: C35E (mat. no. 1.1181) 4 x hexagon nut M10 according to EN 24032 1 x sealing ring G $\frac{1}{2}$ (7MF9007-6BA) grooved, according to DIN 19207; material: X 6 CrNiMoTi 17 12 2 (mat. no. 1.4571/316Ti); only for 7MF9007-4CA! 1 x sealing ring G $\frac{1}{2}$ (7MF9007-6CA), grease-free for oxygen, grooved, according to DIN 19207; material: X 6 CrNiMoTi 17 12 2 (mat. no. 1.4571/316Ti); only for 7MF9007-4DA!	<b>7MF9007-4CA</b> <b>7MF9007-4DA</b>
<b>Nipple G<math>\frac{1}{2}</math></b> According to DIN 19207 • Material: 16 Mo 3 (mat. no. 1.5415) • Grease-free for oxygen; material: X 6 CrNiMoTi 17 12 2 (mat. no. 1.4571/316Ti)	<b>7MF9007-4KA</b> <b>7MF9007-4LA</b>
<b>Union nut G<math>\frac{1}{2}</math></b> According to DIN 16284 • Material: C35E (mat. no. 1.1181) • Grease-free for oxygen; material: X 6 CrNiMoTi 17 12 2 (mat. no. 1.4571/316Ti)	<b>7MF9007-4MA</b> <b>7MF9007-4NA</b>
<b>Sealing ring G<math>\frac{1}{2}</math></b> According to DIN 19207, grooved • Material: X 6 CrNiMoTi 17 12 2 (mat. no. 1.4571/316Ti) • Grease-free for oxygen; material: X 6 CrNiMoTi 17 12 2 (mat. no. 1.4571/316Ti)	<b>7MF9007-6BA</b> <b>7MF9007-6CA</b>

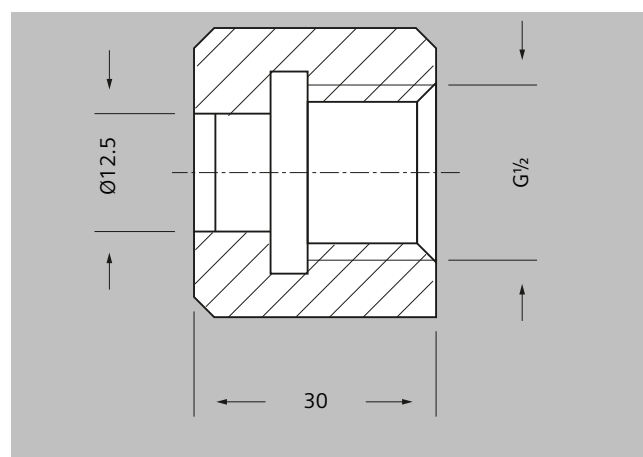
#### Dimensional drawings



Threaded flange 7MF9007-4CA/-4DA, dimensions in mm

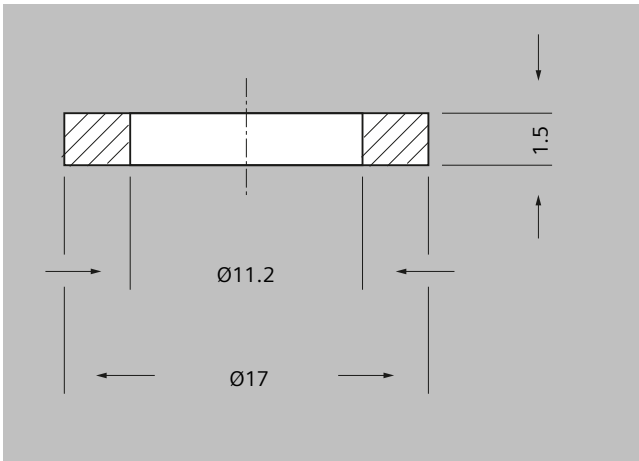


G $\frac{1}{2}$  nipple connection, 7MF9007-4KA/-4LA, dimensions in mm



G $\frac{1}{2}$  union nut 7MF9007-4MA/-4N, dimensions in mm

## Dimensional drawings (continued)



Sealing ring 7MF9007-6BA/-6CA, dimensions in mm