**Product overview** 

## **Pressure Measurement**



1/5 1/11 1/16 1/22 1/27 1/31 1/36 1/45	Transmitters for basic requirements SITRANS P200 for gauge and absolute pressure SITRANS P210 for gauge pressure SITRANS P220 for gauge pressure SITRANS P250 for differential pressure SITRANS P250 for differential pressure SITRANS P400 Transmitter for hydro- static level SITRANS P MPS Transmitter for hydro- static level SITRANS P Compact for gauge and ab- solute pressure Transmitters with WirelessHART SITRANS P280 for gauge and abs. pressure Transmitters for food, pharma-
1/50 1/70 1/71	ceuticals and biotechnology SITRANS P300 for gauge and abs. pressure SITRANS P300 Spare parts/Accessories SITRANS P300 - Factory-mounting of valve manifolds on transmitters
1/73 1/78 1/84	<b>Transmitters for the paper industry</b> SITRANS P300 and DS III for gauge pressure with PMC connection Technical description Technical specifications, ordering data, dimensional drawings - SITRANS P DS III with PMC connection - SITRANS P300 with PMC connection
1/90	<b>Transmitters for general requirements</b> SITRANS P DS III Technical description
	Technical specifications, ordering data,
1/97 1/106 1/119 1/128 1/137 1/152 1/164 1/166 1/172	<ul> <li>dimensional drawings</li> <li>for gauge pressure</li> <li>for gauge and absolute pressure with front-flush diaphragm</li> <li>for absolute pressure (from gauge pressure series)</li> <li>for absolute pressure (from differential pressure series)</li> <li>for differential pressure and flow</li> <li>for level</li> <li>SITRANS P DS III Supplementary</li> <li>electronics for 4-wire connection</li> <li>SITRANS P DS III Accessories/Spare parts</li> <li>SITRANS P DS III - Factory-mounting of</li> </ul>
1/106 1/119 1/128 1/137 1/152 1/164 1/166	<ul> <li>dimensional drawings</li> <li>for gauge pressure</li> <li>for gauge and absolute pressure with front-flush diaphragm</li> <li>for absolute pressure (from gauge pressure series)</li> <li>for absolute pressure (from differential pressure series)</li> <li>for differential pressure and flow</li> <li>for level</li> <li>SITRANS P DS III Supplementary</li> <li>electronics for 4-wire connection</li> <li>SITRANS P DS III Accessories/Spare parts</li> </ul>

	Remote seals for transmitters and
	pressure gauges
/206	Technical description
	Diaphragm seals of sandwich design
/214	- with flexible capillary
	Diaphragm seals of flange design
/218	<ul> <li>with flexible capillary</li> </ul>
/223	<ul> <li>directly fitted on transmitter</li> </ul>
/227	<ul> <li>fixed connection and with capillary</li> </ul>
	Diaphragm seal, screwed design
/231	- directly mounted or/and with capillary
/235	Quick-release diaphragm seals
/239	Miniature diaphragm seals
/241	Flushing rings for diaphragm seals
/243	Inline seals for flange-mounting
/247	Quick-release inline seals
/250	Measuring setups
/251	- with remote seals
/253	- without remote seals
/255	Questionnaire
	Fittings
/258	Technical description
/259	Selection aid
	Shut-off valves for gauge and absolute
	pressure transmitters
/261	- Shut-off valves to DIN 16270, DIN 16271 and DIN 16272
/263	- Angle adapter
/264	- Double shut-off valves
/266	- Accessories for shut-off
1/200	valves/double shut-off valves
	Shut-off valves for differential pressure
	transmitters
/267	- 2-, 3- and 5-spindle valve manifolds DN 5
/270	- Multiway cocks PN 100
/272	- 3-way and 5-way valve manifolds DN 5
/275	- 3-way valve manifold DN 8
/278	- Valve manifold combination DN 5/DN 8
/280	- Valve manifold combination DN 8
/282	- 2-, 3- and 5-spindle valve manifolds
1000	for installing in protective boxes
/286	- 3- and 5-spindle valve manifolds for
/289	vertical angular diff. pressure lines
1209	<ul> <li>Low-pressure multiway cock</li> <li>Accessories</li> </ul>
/291	- Oval flange
/292	- Adapters
/293	- Connection glands
/294	- Connection parts G <sup>1</sup> / <sub>2</sub>
/295	- Water traps, Sealing rings to EN 837-1
/296	- Pressure surge reducers
/297	- Primary shut-off valves
/299	- Compensation vessels
/300	- Connection parts
	You can download all instructions,

free of charge at the following Internet address: www.siemens.com/sitransp

Product overview

	Application	Description		Software for parameteriza tion
TRANS P · Transmitters for ba	asic requirements			
<b>1</b>	Two or three-wire transmitters for measuring gauge and	SITRANS P200 • Single-range transmitters for gauge and absolute	1/5	-
	absolute pressure	Ceramic measuring cell		
		For general applications		
		SITRANS P210	1/11	-
		Single-range transmitters for gauge pressure		
í 🔟 👝		Stainless steal measuring cell		
		<ul> <li>For low-pressure applications</li> </ul>		
U		SITRANS P220	1/16	-
		Single-range transmitters for gauge pressure		
Φ		Stainless steel measuring cell, fully welded		
		<ul> <li>For high-pressure applications and refrigeration technology</li> </ul>		
1 TT	Two or three-wire transmitter for	SITRANS P250	1/22	-
12 12	measuring differential pressure	<ul> <li>Compact single-range transmitters</li> </ul>		
0-02 1		Analog electronics		
		Available ex stock		
	Two-wire transmitter for mea-	SITRANS LH100 NEW	1/27	-
	suring hydrostatic levels	• For measuring liquid levels in wells, tanks, channels, dams etc.		
		With ceramic diaphragm, Ø 23.4 mm		
	Two-wire transmitter for mea-	SITRANS P MPS	1/31	-
	suring hydrostatic levels	• For measuring liquid levels in wells, tanks, channels, dams etc.		
		• With staninless steel diaphragm, Ø 27 mm		
II	Transmitters for gauge and absolute pressure for food, pharmaceuticals and biotech- nology	<ul> <li>SITRANS P Compact</li> <li>Single-range transmitters in two-wire system</li> <li>Hygiene-based design with various aseptic connections according to EHEDG, FDA and GMP recom-</li> </ul>	1/36	-
	CHEDG	mendations.		
TRANS P · Transmitters with V	WirelessHART communication			
	Wireless transmitter with Wire- less HART for measuring gauge and absolute pressure	SITRANS P280 • Wireless communication with WirelessHART • Battery operation	1/45	SIMATIC PDM
		Parameterization using 3 buttons and SIMATIC PDM with HART modem or wireless with WirelessHART		

Product overview

	Application	Description		Software for parameteriza- tion
SITRANS P · Transmitters for for	od, pharmaceuticals and bioted	chnology		
AND OF STAN	Two-wire transmitters for mea- suring gauge and absolute pressure	<ul> <li>SITRANS P300</li> <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 G½", ½-NPT and front-flush process connections available</li> <li>Range adjustment 100 : 1</li> </ul>	1/50	SIMATIC PDM
		Factory-mounting of valve manifolds on SITRANS P300 transmitters • Simplified assembly • With pressure test • Stainless steel valve manifolds	1/71	-
SITRANS P · Transmitter for gau	ge pressure for the paper indu	stry		
	Two-wire transmitters for mea- suring gauge pressure	<ul> <li>SITRANS P300 and SITRANS P DS III with PMC connection for the paper industry</li> <li>Range adjustment 100 : 1</li> <li>Process connections for the paper industry</li> <li>Parameterization using 3 buttons and HART, PROFIBUS PA or FOUNDATION Fieldbus</li> </ul>	1/73	SIMATIC PDM
SITRANS P · Transmitter for gen	eral requirements			
	Two-wire transmitters for measuring: • Gauge pressure, • Absolute pressure, • Differential pressure and • Flow or • Level	SITRANS P DS III Range adjustment: 100 : 1 Parameterization using: • 3 buttons and HART for SITRANS P DS III HART • 3 buttons and PROFIBUS PA for SITRANS P DS III PA series • 3 buttons and FOUNDATION Fieldbus for SITRANS P DS III FF series • Available ex stock	1/90	SIMATIC PDM
	Supplementary electronics for adaptation of two-wire transmit- ters for four-wire connections	Output: 0/4 20 mA Power supply: 24 V AC/DC, 230 V AC	1/164	-
		Factory mounting of valve manifolds on gauge, absolute or differential pressure transmitters SITRANS P DS III • Simplified assembly • With pressure test • Stainless steel valve manifolds	1/172	_

Product overview

	Application	Description		Software for parameteriza- tion
SITRANS P - Transmitters for H	igh Performance requirements			
	Two-wire transmitters for measuring: • Differential pressure • Volume flow • Mass flow • Level • Volume • Mass	SITRANS P500 • Range adjustment: 200 :1 • High measuring accuracy • Very fast response time • Extremely good long-term stability Parameterization: • 3 buttons or HART	1/176	SIMATIC PDM
	Supplementary electronics for adaptation of two-wire transmit- ters for four-wire connections	Output: 0/4 20 mA Power supply: 24 V AC/DC, 230 V AC	1/198	-
		Factory-mounting of manifolds on differential pres- sure transmitters SITRANS P500 • Simplified assembly • With pressure test • Stainless steel valve manifolds	1/203	-
Remote seals for transmitters a	nd pressure gauges			
a la	Remote seals for measuring viscous, corrosive or fibrous media (as well as media at extreme temperatures)	Remote seals in sandwich and flange designs Quick-release remote seals for the food industry Wide range of diaphragm materials and fill fluid avail- able	1/206	-
ittings				
	Shutting off the lines for the medium and differential pres- sure Mounting of transmitter on valve manifold or shut-off fitting	Shut-off fittings and valve manifolds available in steel, brass or stainless steel Valve manifolds available for the various process connections of the SITRANS P transmitters	1/258	-

Transmitters for basic requirements

SITRANS P200 for gauge and absolute pressure

#### Overview



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

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

#### Benefits

- High measuring accuracy
- Rugged stainless steel enclosure
- High overload withstand capability
- · For aggressive and non-aggressive 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 used with a connector per EN 175301-803-A (IP65), a round plug M12 (IP67), a cable (IP67) or a Quickon cable quick screw connection (IP67) connected electrically. The output signal is between 4 and 20 mA or 0 and 10 V.

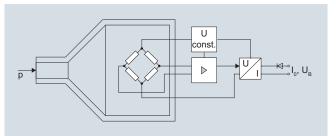
#### Device structure with explosion protection

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

#### Function

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

### Mode of operation



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

The ceramic measuring cell has a thin-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.

## **Pressure Measurement**

Transmitters for basic requirements

# SITRANS P200 for gauge and absolute pressure

# Technical sp

Technical specifications	
Application	
Gauge and absolute pressure measurement	Liquids, gases and vapors
Mode of operation	
Measuring principle	Piezo-resistive measuring cell (ceramic diaphragm)
Measured variable	Gauge and absolute pressure

Gauge and absolute pressure
1 60 bar (15 870 psi) 15 1000 psi
0.6 16 bar a (10 232 psia) 10 300 psia
4 20 mA
(U <sub>B</sub> - 10 V)/0.02 A
DC 7 33 V (10 30 V for Ex)
0 10 V DC
$\geq$ 10 k $\Omega$
12 33 V DC
< 7 mA at 10 kΩ
Linear rising
0
Typical: 0.25 % of full-scale value
value • Maximum: 0.5 % of full-scale
<ul> <li>Maximum: 0.5 % of full-scale value</li> </ul>
<ul> <li>Maximum: 0.5 % of full-scale value</li> </ul>
value • Maximum: 0.5 % of full-scale value < 5 ms
value • Maximum: 0.5 % of full-scale value < 5 ms
value • Maximum: 0.5 % of full-scale value < 5 ms 0.25 % of full-scale value/year
value • Maximum: 0.5 % of full-scale value < 5 ms 0.25 % of full-scale value/year 0.25 %/10 K of full-scale value
value • Maximum: 0.5 % of full-scale value < 5 ms 0.25 % of full-scale value/year 0.25 %/10 K of full-scale value
value • Maximum: 0.5 % of full-scale value < 5 ms 0.25 % of full-scale value/year 0.25 %/10 K of full-scale value

Neoprene	-35 +100 °C (-31 +212 °F)
• Perbunan	-20 +100 °C (-4 +212 °F)
• EPDM	-40 +145 °C (-40 +293 °F), usable for drinking water
Ambient temperature	-25 +85 °C (-13 +185 °F)
Storage temperature	-50 +100 °C (-58 +212 °F)
Degree of protection (to EN 60529)	<ul> <li>IP 65 with connector per EN 175301-803-A</li> </ul>
	<ul> <li>IP 67 with M12 connector</li> </ul>
	<ul> <li>IP 67 with cable</li> </ul>
	IP 67 with apple quick corow

• IP 67 with cable quick screw connection

- acc. IEC 61326-1/-2/-3
- acc. NAMUR NE21, only for ATEX versions and with a max. measuring deviation ≤ 1 %

Design	
Weight	Approx. 0.090 kg (0.198 lb)
Process connections	See dimension drawings
Electrical connections	Connector per EN 175301-803-A Form A with cable inlet M16x1.5 or ½-14 NP1 or Pg 11
	<ul> <li>M12 connector</li> <li>2 or 3-wire (0.5 mm<sup>2</sup>) cable (Ø ± 5.4 mm)</li> </ul>
	<ul> <li>Quickon cable quick screw con nection</li> </ul>
Wetted parts materials	
Measuring cell	Al <sub>2</sub> O <sub>3</sub> - 96 %
Process connection	Stainless steel, mat. No. 1.4404 (SST 316 L)
• Gasket	<ul> <li>FPM (Standard)</li> </ul>
	Neoprene
	Perbunan     FPDM
Non-watted parts materials	• EPDM
Non-wetted parts materials <ul> <li>Enclosure</li> </ul>	Staiplage steel mat No. 1 4404
• Enclosure	Stainless steel, mat. No. 1.4404 (SST 316 L)
• Rack	Plastic
• Cables	PVC
Certificates and approvals	
Classification according to pressure equipment directive (PED 97/23/EC)	For gases of fluid group 1 and liq uids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)
Lloyd's Register of Shipping (LR)	12/20010
Germanischer Lloyd (GL)	GL19740 11 HH00
American Bureau of Shipping (ABS)	ABS_11_HG 789392_PDA
Bureau Veritas (BV)	BV 271007A0 BV
Det Norske Veritas (DNV)	A 12553
Drinking water approval (ACS)	ACS 11 ACC NY 055
GOST	GOST-R
Underwriters Laboratories (UL)	
<ul> <li>for USA and Canada</li> </ul>	UL 20110217 - E34453
• worldwide	IEC UL DK 21845
Explosion protection	
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 IIIC T125 °C Da/Db
EC type-examination certificate	SEV 10 ATEX 0146
Connection to certified intrinsically- safe resistive circuits with maxi- mum values:	$U_i \leq 30$ V DC; $I_i \leq 100$ mA; $P_i \leq 0.75$ W
Effective internal inductance and	L = 0  pH C = 0  pE

Effective internal inductance and  $L_i = 0 \text{ nH}; C_i = 0 \text{ nF}$ capacity for versions with plugs per EN 175301-803-A and M12

Electromagnetic compatibility

Transmitters for basic requirements

ITRANS	P200 f	or dau	ne and	absolute	pressure
	1 200 1	or guu	ge und		pressure

rve deviation t erials: Cerami materials: sta	typ. 0.25 ° c and sta iinless ste	% iinless steel + eel configuration	- sealing m in the PIA Max. 2.5 bar 4 bar	•			► <b>•</b>	7M F 1 5 6 5 -	3 B A 3 B B		
erials: Cerami materials: sta ticle No. for th         	-1 bar -1 bar	(-14.5 psi) (-14.5 psi)	In the PIA           Max.           2.5 bar           4 bar           6.25 bar           10 bar           15 bar           25 bar	(36.26 psi) (58.02 psi) (90.65 psi) (145 psi)	<b>Burst press</b> > 2.5 bar > 4 bar > 6.25 bar	(> 36.3 psi) (> 58.0 psi)					
materials: sta ticle No. for th 14.5 psi) 23.2 psi) 36.3 psi) 36.3 psi) 36.3 psi) 145 psi) 145 psi) 232 psi) 232 psi) 363 psi) 580 psi) 580 psi) 580 psi) 580 psi) d Order code ssure	-1 bar -1 bar	(-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi)	In the PIA           Max.           2.5 bar           4 bar           6.25 bar           10 bar           15 bar           25 bar	(36.26 psi) (58.02 psi) (90.65 psi) (145 psi)	<b>Burst press</b> > 2.5 bar > 4 bar > 6.25 bar	(> 36.3 psi) (> 58.0 psi)					
ticle No. for the second secon	-1 bar -1 bar	(-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi)	<b>Max.</b> 2.5 bar 4 bar 6.25 bar 10 bar 15 bar 25 bar	(36.26 psi) (58.02 psi) (90.65 psi) (145 psi)	<b>Burst press</b> > 2.5 bar > 4 bar > 6.25 bar	(> 36.3 psi) (> 58.0 psi)					
ure 14.5 psi) 23.2 psi) 36.3 psi) 58.0 psi) 87.0 psi) 145 psi) 232 psi) 363 psi) 363 psi) 580 psi) 870 psi) d Order code	Overloa Min. -1 bar -1 bar	(-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi)	<b>Max.</b> 2.5 bar 4 bar 6.25 bar 10 bar 15 bar 25 bar	(36.26 psi) (58.02 psi) (90.65 psi) (145 psi)	<b>Burst press</b> > 2.5 bar > 4 bar > 6.25 bar	(> 36.3 psi) (> 58.0 psi)					
ure 14.5 psi) 23.2 psi) 36.3 psi) 58.0 psi) 87.0 psi) 145 psi) 232 psi) 363 psi) 363 psi) 870 psi) d Order code	-1 bar -1 bar -1 bar -1 bar -1 bar -1 bar -1 bar -1 bar -1 bar -1 bar	(-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi)	2.5 bar 4 bar 6.25 bar 10 bar 15 bar 25 bar	(58.02 psi) (90.65 psi) (145 psi)	> 2.5 bar > 4 bar > 6.25 bar	(> 36.3 psi) (> 58.0 psi)					
ure 14.5 psi) 23.2 psi) 36.3 psi) 58.0 psi) 87.0 psi) 145 psi) 232 psi) 363 psi) 363 psi) 580 psi) 870 psi) d Order code	-1 bar -1 bar -1 bar -1 bar -1 bar -1 bar -1 bar -1 bar -1 bar -1 bar	(-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi)	2.5 bar 4 bar 6.25 bar 10 bar 15 bar 25 bar	(58.02 psi) (90.65 psi) (145 psi)	> 2.5 bar > 4 bar > 6.25 bar	(> 36.3 psi) (> 58.0 psi)					
14.5 psi) 23.2 psi) 36.3 psi) 58.0 psi) 45 psi) 145 psi) 232 psi) 363 psi) 580 psi) 580 psi) d Order code	-1 bar -1 bar -1 bar -1 bar -1 bar -1 bar -1 bar -1 bar -1 bar -1 bar	(-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi)	2.5 bar 4 bar 6.25 bar 10 bar 15 bar 25 bar	(58.02 psi) (90.65 psi) (145 psi)	> 4 bar > 6.25 bar	(> 58.0 psi)					
14.5 psi) 23.2 psi) 36.3 psi) 58.0 psi) 45 psi) 145 psi) 232 psi) 363 psi) 580 psi) 580 psi) d Order code	-1 bar -1 bar -1 bar -1 bar -1 bar -1 bar -1 bar -1 bar	(-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi)	4 bar 6.25 bar 10 bar 15 bar 25 bar	(58.02 psi) (90.65 psi) (145 psi)	> 4 bar > 6.25 bar	(> 58.0 psi)					
23.2 psi) 36.3 psi) 58.0 psi) 87.0 psi) 145 psi) 232 psi) 363 psi) 580 psi) 870 psi) d Order code	-1 bar -1 bar -1 bar -1 bar -1 bar -1 bar -1 bar -1 bar	(-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi)	4 bar 6.25 bar 10 bar 15 bar 25 bar	(58.02 psi) (90.65 psi) (145 psi)	> 4 bar > 6.25 bar	(> 58.0 psi)					
36.3 psi) 58.0 psi) 87.0 psi) 145 psi) 232 psi) 363 psi) 580 psi) d Order code	-1 bar -1 bar -1 bar -1 bar -1 bar -1 bar -1 bar	(-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi)	6.25 bar 10 bar 15 bar 25 bar	(90.65 psi) (145 psi)	> 6.25 bar	· · · · ·			3 B B		
58.0 psi) 87.0 psi) 145 psi) 232 psi) 363 psi) 580 psi) 870 psi) d Order code	-1 bar -1 bar -1 bar -1 bar -1 bar -1 bar	(-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi)	10 bar 15 bar 25 bar	(145 psi)		(> 90.7 psi)					
87.0 psi) 145 psi) 232 psi) 363 psi) 580 psi) 870 psi) d Order code	-1 bar -1 bar -1 bar -1 bar -1 bar	(-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi)	15 bar 25 bar	· · · /	> 10 bar				3 B D		
145 psi) 232 psi) 363 psi) 580 psi) 870 psi) d Order code	-1 bar -1 bar -1 bar -1 bar	(-14.5 psi) (-14.5 psi) (-14.5 psi)	25 bar	(217 psi)		(> 145 psi)			3 B E		
232 psi) 363 psi) 580 psi) 870 psi) d Order code <b>ssure</b>	-1 bar -1 bar -1 bar	(-14.5 psi) (-14.5 psi)			> 15 bar	(> 217 psi)			3 B G		
232 psi) 363 psi) 580 psi) 870 psi) d Order code <b>ssure</b>	-1 bar -1 bar -1 bar	(-14.5 psi) (-14.5 psi)		(362 psi)	> 25 bar	(> 362 psi)			3 C A		
363 psi) 580 psi) 870 psi) d Order code	-1 bar -1 bar	(-14.5 psi)		(580 psi)	> 40 bar	(> 580 psi)			3 C B		
580 psi) 870 psi) d Order code	-1 bar		62,5 bar	(906 psi)	> 62.5 bar	(> 906 psi)			3 C D		
870 psi) d Order code ssure		, · · · · · · · · /		(1450 psi)	> 100 bar	(> 1450 psi)			3 C E		
d Order code		(-14.5 psi)	150 bar	(2175 psi)	> 150 bar	(> 2175 psi)			3 C G		
ssure	and plain					( o pol)	. –				μ.
	anu piair	i lexi: Measu	inng range	up to ba	u (psi)				9 A A		H.
87 nsia)		<i>i</i>									
	0 bar a	(0 psia)		(43.51 psia)		(> 36.3 psia)			5 A G		
14.5 psia)	0 bar a	(0 psia)		(36.26 psia)		(> 36.3 psia)			5 B A		
23.2 psia)	0 bar a	(0 psia)		(58.02 psia)	> 4 bar a	(> 58.0 psia)			5 B B		
36.3 psia)	0 bar a	(0 psia)	6.25 bar a	a (90.65 psia)	> 6.25 bar a	(> 90.7 psia)			5 B D		
58.0 psia)	0 bar a	(0 psia)	10 bar a	(145 psia)	> 10 bar a	(> 145 psia)	•		5 B E		
87.0 psia)	0 bar a	(0 psia)	15 bar a	(217 psia)	> 15 bar a	(> 217 psia)	►		5 B G		
145 psi)	0 bar a	(0 psia)	25 bar a	(362 psia)	> 25 bar a	(> 362 psia)	►		5 C A		
232 psi)	0 bar a	(0 psia)	40 bar a	(580 psia)	> 40 bar a	(> 580 psia)			5 C B		
d Order code	and plair	n text: Measu	ring range	: up to m	bar a (nsia)				9 A A		н
			0 0								
	picasule		, mai ket)	(35 nsi)	1	(> 35 nei)			4 B B		
		,		· · · /		,					
		,				· · · ·					
,											
						,					
300 psi)		(-14.5 psi)		(800 psi)		(> 800 psi)			4 C D		
500 psi)		(-14.5 psi)		(1400 psi)		(> 1400 psi)			4 C E		
750 psi)		(-14.5 psi)		(2000 psi)		(> 2000 psi)					
1000 psi)		(-14.5 psi)		(2000 psi)		(> 2000 psi)			4 C G		
d Order code	and plair	n text: Measu	iring range	: up to p	si				9 A A		H 1
10 psia)					1	(> 35 psia)			6 A G		
20 psia)											
30 psia)											
				,							
200 neia)											
		(u psia)		(SUU psia)	1	(> 800  nsia)					
	15 psi) 15 psi) 20 psi) 20 psi) 30 psi) 100 psi) 100 psi) 150 psi) 200 psi) 300 psi) 500 psi) 750 psi) 1000 psi) d Order code <b>s for absolut</b> 10 psia) 15 psia) 20 psia) 30 psia) 150 psia) 150 psia) 150 psia) 150 psia) 150 psia) 150 psia) 200 psia) 300 psia) 300 psia)	15 psi) 15 psi) 20 psi) 30 psi) 30 psi) 100 psi) 100 psi) 150 psi) 200 psi) 300 psi) 750 psi) 750 psi) 1000 psi) d Order code and plain <b>s for absolute pressu</b> 10 psia) 15 psia) 20 psia) 30 psia) 30 psia) 100 psia) 150 psia) 150 psia) 150 psia) 150 psia) 150 psia) 150 psia) 150 psia) 150 psia)	15 psi) (-14.5 psi) 15 psi) (-14.5 psi) 20 psi) (-14.5 psi) 20 psi) (-14.5 psi) 20 psi) (-14.5 psi) 30 psi) (-14.5 psi) 100 psi) (-14.5 psi) 100 psi) (-14.5 psi) 200 psi) (-14.5 psi) 300 psi) (-14.5 psi) 300 psi) (-14.5 psi) 300 psi) (-14.5 psi) 500 psi) (-14.5 psi) 750 psi) (-14.5 psi) 1000 psi) (0 psia) 10 psia) (0 psia) 20 psia) (0 psia) 30 psia) (0 psia) 100 psia) (0 psia)	15 psi) (-14.5 psi) 20 psi) (-14.5 psi) 30 psi) (-14.5 psi) 30 psi) (-14.5 psi) 100 psi) (-14.5 psi) 100 psi) (-14.5 psi) 150 psi) (-14.5 psi) 200 psi) (-14.5 psi) 300 psi) (-14.5 psi) 300 psi) (-14.5 psi) 500 psi) (-14.5 psi) 750 psi) (-14.5 psi) 1000 psi) (0 psia) 15 psia) (0 psia) 15 psia) (0 psia) 30 psia) (0 psia) 100 psia) (0 psia)	15 psi)       (-14.5 psi)       (35 psi)         15 psi)       (-14.5 psi)       (35 psi)         20 psi)       (-14.5 psi)       (50 psi)         20 psi)       (-14.5 psi)       (50 psi)         30 psi)       (-14.5 psi)       (80 psi)         60 psi)       (-14.5 psi)       (140 psi)         100 psi)       (-14.5 psi)       (200 psi)         150 psi)       (-14.5 psi)       (350 psi)         150 psi)       (-14.5 psi)       (350 psi)         200 psi)       (-14.5 psi)       (350 psi)         150 psi)       (-14.5 psi)       (800 psi)         200 psi)       (-14.5 psi)       (2000 psi)         300 psi)       (-14.5 psi)       (2000 psi)         500 psi)       (-14.5 psi)       (2000 psi)         750 psi)       (-14.5 psi)       (2000 psi)         100 psia)       (-14.5 psi)       (2000 psi)         100 psia)       (0 psia)       (35 psia)         10 psia)       (0 psia)       (35 psia)         10 psia)       (0 psia)       (50 psia)         20 psia)       (0 psia)       (50 psia)         30 psia)       (0 psia) <td< td=""><td> 15 psi)       (-14.5 psi)       (35 psi)         15 psi)       (-14.5 psi)       (35 psi)         20 psi)       (-14.5 psi)       (35 psi)         20 psi)       (-14.5 psi)       (50 psi)         30 psi)       (-14.5 psi)       (80 psi)         60 psi)       (-14.5 psi)       (80 psi)         100 psi)       (-14.5 psi)       (200 psi)         150 psi)       (-14.5 psi)       (200 psi)         150 psi)       (-14.5 psi)       (350 psi)         200 psi)       (-14.5 psi)       (350 psi)         200 psi)       (-14.5 psi)       (800 psi)         200 psi)       (-14.5 psi)       (800 psi)         300 psi)       (-14.5 psi)       (2000 psi)         500 psi)       (-14.5 psi)       (2000 psi)         750 psi)       (-14.5 psi)       (2000 psi)         100 psi)       (-14.5 psi)       (2000 psi)         10 psia)       (0 psia)       (35 psia)         10 psia)       (0 psia)       (35 psia)         10 psia)       (0 psia)       (50 psia)         20 psia)       (0 psia)       (80 psia)         30 psia)       (0 psia)       (14</td><td> 15 psi)       (-14.5 psi)       (35 psi)       (&gt; 35 psi)         15 psi)       (-14.5 psi)       (35 psi)       (&gt; 35 psi)         20 psi)       (-14.5 psi)       (50 psi)       (&gt; 50 psi)         20 psi)       (-14.5 psi)       (80 psi)       (&gt; 80 psi)         30 psi)       (-14.5 psi)       (140 psi)       (&gt; 140 psi)         60 psi)       (-14.5 psi)       (200 psi)       (&gt; 200 psi)         100 psi)       (-14.5 psi)       (350 psi)       (&gt; 350 psi)         200 psi)       (-14.5 psi)       (350 psi)       (&gt; 350 psi)         200 psi)       (-14.5 psi)       (350 psi)       (&gt; 550 psi)         200 psi)       (-14.5 psi)       (300 psi)       (&gt; 800 psi)         200 psi)       (-14.5 psi)       (2000 psi)       (&gt; 500 psi)         200 psi)       (-14.5 psi)       (2000 psi)       (&gt; 2000 psi)         500 psi)       (-14.5 psi)       (2000 psi)       (&gt; 2000 psi)         750 psi)       (-14.5 psi)       (2000 psi)       (&gt; 2000 psi)         100 psia)       (0 psia)       (35 psia)       (&gt; 35 psia)         10 psia)       (0 psia)       (35 psia)       (&gt; 35 psia)         20 psia</td><td> 15 psi)       (-14.5 psi)       (35 psi)       (&gt; 35 psi)         15 psi)       (-14.5 psi)       (35 psi)       (&gt; 35 psi)         20 psi)       (-14.5 psi)       (50 psi)       (&gt; 50 psi)         20 psi)       (-14.5 psi)       (50 psi)       (&gt; 50 psi)         30 psi)       (-14.5 psi)       (80 psi)       (&gt; 80 psi)         60 psi)       (-14.5 psi)       (140 psi)       (&gt; 140 psi)         100 psi)       (-14.5 psi)       (200 psi)       (&gt; 200 psi)         150 psi)       (-14.5 psi)       (350 psi)       (&gt; 350 psi)         150 psi)       (-14.5 psi)       (350 psi)       (&gt; 550 psi)         200 psi)       (-14.5 psi)       (350 psi)       (&gt; 550 psi)         200 psi)       (-14.5 psi)       (800 psi)       (&gt; 800 psi)         300 psi)       (-14.5 psi)       (2000 psi)       (&gt; 2000 psi)         500 psi)       (-14.5 psi)       (2000 psi)       (&gt; 2000 psi)         750 psi)       (-14.5 psi)       (2000 psi)       (&gt; 2000 psi)         100 psia)       (0 psia)       (35 psia)       (&gt; 35 psia)         10 psia)       (0 psia)       (35 psia)       (&gt; 35 psia)         10 psia)<!--</td--><td> 15 psi)       (-14.5 psi)       (35 psi)       (&gt; 35 psi)         15 psi)       (-14.5 psi)       (35 psi)       (&gt; 35 psi)         20 psi)       (-14.5 psi)       (35 psi)       (&gt; 35 psi)         20 psi)       (-14.5 psi)       (50 psi)       (&gt; 50 psi)         30 psi)       (-14.5 psi)       (80 psi)       (&gt; 80 psi)         100 psi)       (-14.5 psi)       (200 psi)       (&gt; 200 psi)         100 psi)       (-14.5 psi)       (200 psi)       (&gt; 200 psi)         150 psi)       (-14.5 psi)       (200 psi)       (&gt; 350 psi)         150 psi)       (-14.5 psi)       (350 psi)       (&gt; 350 psi)         200 psi)       (-14.5 psi)       (550 psi)       (&gt; 550 psi)         300 psi)       (-14.5 psi)       (1400 psi)       (&gt; 1400 psi)         500 psi)       (-14.5 psi)       (2000 psi)       (&gt; 2000 psi)         500 psi)       (-14.5 psi)       (2000 psi)       (&gt; 2000 psi)         750 psi)       (-14.5 psi)       (2000 psi)       (&gt; 2000 psi)         100 psia)       (0 psia)       (35 psia)       (&gt; 35 psia)         10 psia)       (0 psia)       (35 psia)       (&gt; 50 psia)         20 psia</td><td> 15 psi)       (-14.5 psi)       (35 psi)       (&gt; 35 psi)       4 B B         15 psi)       (-14.5 psi)       (35 psi)       (&gt; 35 psi)       4 B C         20 psi)       (-14.5 psi)       (50 psi)       (&gt; 50 psi)       4 B C         30 psi)       (-14.5 psi)       (80 psi)       (&gt; 80 psi)       4 B C         60 psi)       (-14.5 psi)       (80 psi)       (&gt; 80 psi)       4 B C         100 psi)       (-14.5 psi)       (140 psi)       (&gt; 140 psi)       4 B C         100 psi)       (-14.5 psi)       (350 psi)       (&gt; 350 psi)       4 B C         200 psi)       (-14.5 psi)       (350 psi)       (&gt; 550 psi)       4 C A         200 psi)       (-14.5 psi)       (350 psi)       (&gt; 550 psi)       4 C B         200 psi)       (-14.5 psi)       (350 psi)       (&gt; 550 psi)       4 C B         200 psi)       (-14.5 psi)       (800 psi)       (&gt; 1400 psi)       4 C B         200 psi)       (-14.5 psi)       (2000 psi)       (&gt; 2000 psi)       4 C B         200 psi)       (-14.5 psi)       (2000 psi)       (&gt; 2000 psi)       4 C G         100 psi)       (-14.5 psi)       (2000 psi)       (&gt; 2000 psi)       4 C G</td><td> 15 psi)       (-14.5 psi)       (35 psi)       (&gt; 35 psi)       4BB         15 psi)       (-14.5 psi)       (35 psi)       (&gt; 35 psi)       4BC         20 psi)       (-14.5 psi)       (50 psi)       (&gt; 50 psi)       4BD         30 psi)       (-14.5 psi)       (80 psi)       (&gt; 80 psi)       4BE         30 psi)       (-14.5 psi)       (140 psi)       (&gt; 140 psi)       4BF         100 psi)       (-14.5 psi)       (200 psi)       (&gt; 200 psi)       4BG         100 psi)       (-14.5 psi)       (350 psi)       (&gt; 550 psi)       4CA         200 psi)       (-14.5 psi)       (50 psi)       (&gt; 550 psi)       4CB         200 psi)       (-14.5 psi)       (800 psi)       (&gt; 560 psi)       4CB         300 psi)       (-14.5 psi)       (800 psi)       (&gt; 560 psi)       4CB         200 psi)       (-14.5 psi)       (2000 psi)       (&gt; 2000 psi)       4CB         300 psi)       (-14.5 psi)       (2000 psi)       (&gt; 2000 psi)       4CB         200 psi)       (-14.5 psi)       (2000 psi)       (&gt; 2000 psi)       4CG         100 psi)       (-14.5 psi)       (2000 psi)       (&gt; 2000 psi)       4CG</td></td></td<>	15 psi)       (-14.5 psi)       (35 psi)         15 psi)       (-14.5 psi)       (35 psi)         20 psi)       (-14.5 psi)       (35 psi)         20 psi)       (-14.5 psi)       (50 psi)         30 psi)       (-14.5 psi)       (80 psi)         60 psi)       (-14.5 psi)       (80 psi)         100 psi)       (-14.5 psi)       (200 psi)         150 psi)       (-14.5 psi)       (200 psi)         150 psi)       (-14.5 psi)       (350 psi)         200 psi)       (-14.5 psi)       (350 psi)         200 psi)       (-14.5 psi)       (800 psi)         200 psi)       (-14.5 psi)       (800 psi)         300 psi)       (-14.5 psi)       (2000 psi)         500 psi)       (-14.5 psi)       (2000 psi)         750 psi)       (-14.5 psi)       (2000 psi)         100 psi)       (-14.5 psi)       (2000 psi)         10 psia)       (0 psia)       (35 psia)         10 psia)       (0 psia)       (35 psia)         10 psia)       (0 psia)       (50 psia)         20 psia)       (0 psia)       (80 psia)         30 psia)       (0 psia)       (14	15 psi)       (-14.5 psi)       (35 psi)       (> 35 psi)         15 psi)       (-14.5 psi)       (35 psi)       (> 35 psi)         20 psi)       (-14.5 psi)       (50 psi)       (> 50 psi)         20 psi)       (-14.5 psi)       (80 psi)       (> 80 psi)         30 psi)       (-14.5 psi)       (140 psi)       (> 140 psi)         60 psi)       (-14.5 psi)       (200 psi)       (> 200 psi)         100 psi)       (-14.5 psi)       (350 psi)       (> 350 psi)         200 psi)       (-14.5 psi)       (350 psi)       (> 350 psi)         200 psi)       (-14.5 psi)       (350 psi)       (> 550 psi)         200 psi)       (-14.5 psi)       (300 psi)       (> 800 psi)         200 psi)       (-14.5 psi)       (2000 psi)       (> 500 psi)         200 psi)       (-14.5 psi)       (2000 psi)       (> 2000 psi)         500 psi)       (-14.5 psi)       (2000 psi)       (> 2000 psi)         750 psi)       (-14.5 psi)       (2000 psi)       (> 2000 psi)         100 psia)       (0 psia)       (35 psia)       (> 35 psia)         10 psia)       (0 psia)       (35 psia)       (> 35 psia)         20 psia	15 psi)       (-14.5 psi)       (35 psi)       (> 35 psi)         15 psi)       (-14.5 psi)       (35 psi)       (> 35 psi)         20 psi)       (-14.5 psi)       (50 psi)       (> 50 psi)         20 psi)       (-14.5 psi)       (50 psi)       (> 50 psi)         30 psi)       (-14.5 psi)       (80 psi)       (> 80 psi)         60 psi)       (-14.5 psi)       (140 psi)       (> 140 psi)         100 psi)       (-14.5 psi)       (200 psi)       (> 200 psi)         150 psi)       (-14.5 psi)       (350 psi)       (> 350 psi)         150 psi)       (-14.5 psi)       (350 psi)       (> 550 psi)         200 psi)       (-14.5 psi)       (350 psi)       (> 550 psi)         200 psi)       (-14.5 psi)       (800 psi)       (> 800 psi)         300 psi)       (-14.5 psi)       (2000 psi)       (> 2000 psi)         500 psi)       (-14.5 psi)       (2000 psi)       (> 2000 psi)         750 psi)       (-14.5 psi)       (2000 psi)       (> 2000 psi)         100 psia)       (0 psia)       (35 psia)       (> 35 psia)         10 psia)       (0 psia)       (35 psia)       (> 35 psia)         10 psia) </td <td> 15 psi)       (-14.5 psi)       (35 psi)       (&gt; 35 psi)         15 psi)       (-14.5 psi)       (35 psi)       (&gt; 35 psi)         20 psi)       (-14.5 psi)       (35 psi)       (&gt; 35 psi)         20 psi)       (-14.5 psi)       (50 psi)       (&gt; 50 psi)         30 psi)       (-14.5 psi)       (80 psi)       (&gt; 80 psi)         100 psi)       (-14.5 psi)       (200 psi)       (&gt; 200 psi)         100 psi)       (-14.5 psi)       (200 psi)       (&gt; 200 psi)         150 psi)       (-14.5 psi)       (200 psi)       (&gt; 350 psi)         150 psi)       (-14.5 psi)       (350 psi)       (&gt; 350 psi)         200 psi)       (-14.5 psi)       (550 psi)       (&gt; 550 psi)         300 psi)       (-14.5 psi)       (1400 psi)       (&gt; 1400 psi)         500 psi)       (-14.5 psi)       (2000 psi)       (&gt; 2000 psi)         500 psi)       (-14.5 psi)       (2000 psi)       (&gt; 2000 psi)         750 psi)       (-14.5 psi)       (2000 psi)       (&gt; 2000 psi)         100 psia)       (0 psia)       (35 psia)       (&gt; 35 psia)         10 psia)       (0 psia)       (35 psia)       (&gt; 50 psia)         20 psia</td> <td> 15 psi)       (-14.5 psi)       (35 psi)       (&gt; 35 psi)       4 B B         15 psi)       (-14.5 psi)       (35 psi)       (&gt; 35 psi)       4 B C         20 psi)       (-14.5 psi)       (50 psi)       (&gt; 50 psi)       4 B C         30 psi)       (-14.5 psi)       (80 psi)       (&gt; 80 psi)       4 B C         60 psi)       (-14.5 psi)       (80 psi)       (&gt; 80 psi)       4 B C         100 psi)       (-14.5 psi)       (140 psi)       (&gt; 140 psi)       4 B C         100 psi)       (-14.5 psi)       (350 psi)       (&gt; 350 psi)       4 B C         200 psi)       (-14.5 psi)       (350 psi)       (&gt; 550 psi)       4 C A         200 psi)       (-14.5 psi)       (350 psi)       (&gt; 550 psi)       4 C B         200 psi)       (-14.5 psi)       (350 psi)       (&gt; 550 psi)       4 C B         200 psi)       (-14.5 psi)       (800 psi)       (&gt; 1400 psi)       4 C B         200 psi)       (-14.5 psi)       (2000 psi)       (&gt; 2000 psi)       4 C B         200 psi)       (-14.5 psi)       (2000 psi)       (&gt; 2000 psi)       4 C G         100 psi)       (-14.5 psi)       (2000 psi)       (&gt; 2000 psi)       4 C G</td> <td> 15 psi)       (-14.5 psi)       (35 psi)       (&gt; 35 psi)       4BB         15 psi)       (-14.5 psi)       (35 psi)       (&gt; 35 psi)       4BC         20 psi)       (-14.5 psi)       (50 psi)       (&gt; 50 psi)       4BD         30 psi)       (-14.5 psi)       (80 psi)       (&gt; 80 psi)       4BE         30 psi)       (-14.5 psi)       (140 psi)       (&gt; 140 psi)       4BF         100 psi)       (-14.5 psi)       (200 psi)       (&gt; 200 psi)       4BG         100 psi)       (-14.5 psi)       (350 psi)       (&gt; 550 psi)       4CA         200 psi)       (-14.5 psi)       (50 psi)       (&gt; 550 psi)       4CB         200 psi)       (-14.5 psi)       (800 psi)       (&gt; 560 psi)       4CB         300 psi)       (-14.5 psi)       (800 psi)       (&gt; 560 psi)       4CB         200 psi)       (-14.5 psi)       (2000 psi)       (&gt; 2000 psi)       4CB         300 psi)       (-14.5 psi)       (2000 psi)       (&gt; 2000 psi)       4CB         200 psi)       (-14.5 psi)       (2000 psi)       (&gt; 2000 psi)       4CG         100 psi)       (-14.5 psi)       (2000 psi)       (&gt; 2000 psi)       4CG</td>	15 psi)       (-14.5 psi)       (35 psi)       (> 35 psi)         15 psi)       (-14.5 psi)       (35 psi)       (> 35 psi)         20 psi)       (-14.5 psi)       (35 psi)       (> 35 psi)         20 psi)       (-14.5 psi)       (50 psi)       (> 50 psi)         30 psi)       (-14.5 psi)       (80 psi)       (> 80 psi)         100 psi)       (-14.5 psi)       (200 psi)       (> 200 psi)         100 psi)       (-14.5 psi)       (200 psi)       (> 200 psi)         150 psi)       (-14.5 psi)       (200 psi)       (> 350 psi)         150 psi)       (-14.5 psi)       (350 psi)       (> 350 psi)         200 psi)       (-14.5 psi)       (550 psi)       (> 550 psi)         300 psi)       (-14.5 psi)       (1400 psi)       (> 1400 psi)         500 psi)       (-14.5 psi)       (2000 psi)       (> 2000 psi)         500 psi)       (-14.5 psi)       (2000 psi)       (> 2000 psi)         750 psi)       (-14.5 psi)       (2000 psi)       (> 2000 psi)         100 psia)       (0 psia)       (35 psia)       (> 35 psia)         10 psia)       (0 psia)       (35 psia)       (> 50 psia)         20 psia	15 psi)       (-14.5 psi)       (35 psi)       (> 35 psi)       4 B B         15 psi)       (-14.5 psi)       (35 psi)       (> 35 psi)       4 B C         20 psi)       (-14.5 psi)       (50 psi)       (> 50 psi)       4 B C         30 psi)       (-14.5 psi)       (80 psi)       (> 80 psi)       4 B C         60 psi)       (-14.5 psi)       (80 psi)       (> 80 psi)       4 B C         100 psi)       (-14.5 psi)       (140 psi)       (> 140 psi)       4 B C         100 psi)       (-14.5 psi)       (350 psi)       (> 350 psi)       4 B C         200 psi)       (-14.5 psi)       (350 psi)       (> 550 psi)       4 C A         200 psi)       (-14.5 psi)       (350 psi)       (> 550 psi)       4 C B         200 psi)       (-14.5 psi)       (350 psi)       (> 550 psi)       4 C B         200 psi)       (-14.5 psi)       (800 psi)       (> 1400 psi)       4 C B         200 psi)       (-14.5 psi)       (2000 psi)       (> 2000 psi)       4 C B         200 psi)       (-14.5 psi)       (2000 psi)       (> 2000 psi)       4 C G         100 psi)       (-14.5 psi)       (2000 psi)       (> 2000 psi)       4 C G	15 psi)       (-14.5 psi)       (35 psi)       (> 35 psi)       4BB         15 psi)       (-14.5 psi)       (35 psi)       (> 35 psi)       4BC         20 psi)       (-14.5 psi)       (50 psi)       (> 50 psi)       4BD         30 psi)       (-14.5 psi)       (80 psi)       (> 80 psi)       4BE         30 psi)       (-14.5 psi)       (140 psi)       (> 140 psi)       4BF         100 psi)       (-14.5 psi)       (200 psi)       (> 200 psi)       4BG         100 psi)       (-14.5 psi)       (350 psi)       (> 550 psi)       4CA         200 psi)       (-14.5 psi)       (50 psi)       (> 550 psi)       4CB         200 psi)       (-14.5 psi)       (800 psi)       (> 560 psi)       4CB         300 psi)       (-14.5 psi)       (800 psi)       (> 560 psi)       4CB         200 psi)       (-14.5 psi)       (2000 psi)       (> 2000 psi)       4CB         300 psi)       (-14.5 psi)       (2000 psi)       (> 2000 psi)       4CB         200 psi)       (-14.5 psi)       (2000 psi)       (> 2000 psi)       4CG         100 psi)       (-14.5 psi)       (2000 psi)       (> 2000 psi)       4CG

Available ex stock

• We can offer shorter delivery times for configurations designated with the Quick Ship Symbol •. For details see page 9/5 in the appendix.

Transmitters for basic requirements

SITRANS P200 for gauge and absolute pressure

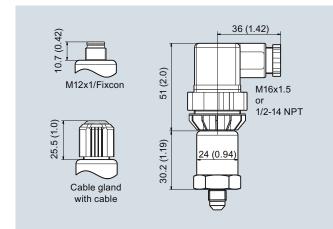
Selection and ordering data		Article No.		Orde	er coo	de
SITRANS P 200 pressure transmitters for pressure and absolute pressure for general application Accuracy typ. 0.25 %	ons	7MF1565-		-		
Wetted parts materials: Ceramic and stainless steel + sealing material						
Non-wetted parts materials: stainless steel						
Output signal						
<ul> <li>4 20 mA; two-wire system; power supply 7 33 V DC (10 30 V DC for ATEX versions)</li> <li>0 10 V; three-wire system; power supply 12 33 V DC</li> </ul>			0 1 0			
Explosion protection (only 4 20 mA)		-				
None With explosion protection Ex ia IIC T4			0 1			
Electrical connection		-				
Connector per DIN EN 175301-803-A, stuffing box thread M16 (with coupling) Round connector M12 per IEC 61076-2-101 (not for gauge pressure ranges ≤ 16 bar) Connection via fixed mounted cable, 2 m (not for type of protection "Intrinsic safety i") Quickon cable quick screw connection PG9 (not for type of protection "Intrinsic safety i") Connector per DIN EN 175301-803-A, stuffing box thread 1/2"-14 NPT (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with cou- pling) Fixed mounted cable, length 5 m Special version			0 0 0	1 2 3 4 5 6 7 9	N 1	1 Y
Process connection		-				
G <sup>1</sup> / <sub>2</sub> " male per EN 837-1 (½" BSP male) (standard for metric pressure ranges mbar, bar) G <sup>1</sup> / <sub>2</sub> " male thread and G1/8" female thread G <sup>1</sup> / <sub>4</sub> " male per EN 837-1 (¼" BSP male) 7/16"-20 UNF male	<b>*</b>			A B C D		
/4"-18 NPT male (standard for pressure ranges inH <sub>2</sub> O and psi) /4"-18 NPT female /2"-14 NPT male /2"-14 NPT female 7/16"-20 UNF female M20x1.5 male				E F H J P		
Special version				z	P 1	1 Y
Sealing material between sensor and enclosure						
Viton (FPM, standard) Neoprene (CR) Perbunan (NBR) EPDM Special version	<b>&gt;</b>			A B C D Z	Q1	1 Y
Version						
Standard version	<b>&gt;</b>			1		
Further designs						
Supplement the Article No. with "-Z" and add Order code.						
Manufacturer's test certificate M per IEC 60770-2 (calibration certificate) supplied		C11				
Oxygen application, oil and grease-free cleaning (only in conjunction with the sealing material Viton between sensor and enclosure and not with explo portection version)	osion	E10				

Available ex stock

• We can offer shorter delivery times for configurations designated with the Quick Ship Symbol •. For details see page 9/5 in the appendix.

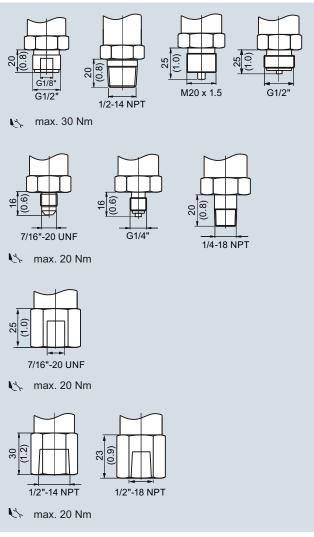
Transmitters for basic requirements

## SITRANS P200 for gauge and absolute pressure



Dimensional drawings

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

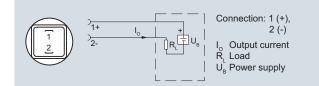


SITRANS P200, process connections, dimensions in mm (inch)

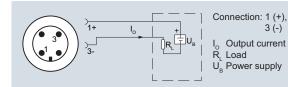
Transmitters for basic requirements

## SITRANS P200 for gauge and absolute pressure

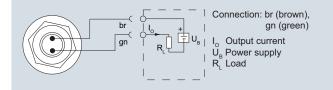
### Schematics



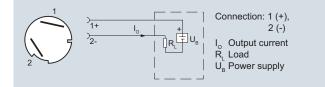
Connection with current output and connector per EN 175301



Connection with current output and connector M12x1



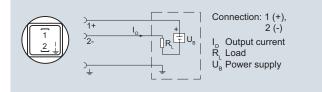
Connection with current output and cable



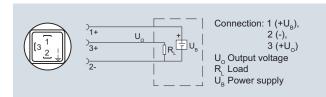
Connection with current output and Quickon cable quick screw connection

### Version with explosion protection: 4 ... 20 mA

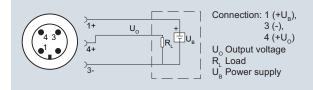
The grounding connection is conductively bonded to the transmitter enclosure



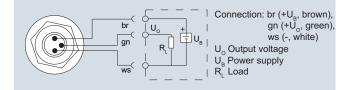
Connection with current output and connector per EN 175301 (Ex)



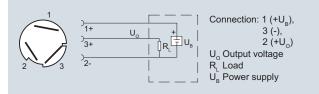
Connection with voltage output and connector per EN 175301



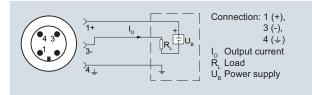
Connection with voltage output and connector M12x1



Connection with voltage output and cable



Connection with voltage output and Quickon cable quick screw connection



Connection with current output and connector M12x1 (Ex)

1

Transmitters for basic requirements

## SITRANS P210 for gauge pressure

### Overview



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

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

#### Benefits

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

#### Application

The pressure transmitter SITRANS P210 for gauge 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 used with a connector per EN 175301-803-A (IP65), a round plug M12 (IP67), a cable (IP67) or a Quickon cable quick screw connection (IP67) connected electrically. The output signal is between 4 and 20 mA or 0 and 10 V.

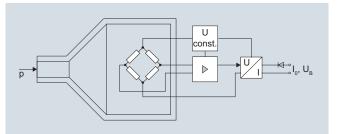
#### Device structure with explosion protection

The pressure transmitter consists of a piezoresistive measuring cell with a diaphragm installed in a stainless steel enclosure. It can be used with a connector per EN 175301-803-A (IP65) or a round plug M12 (IP67) connected electrically. 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 transmitters (7MF1566-...), functional diagram

The stainless steel measuring cell 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.

Transmitters for basic requirements

# SITRANS P210 for gauge pressure

l	specifications

Technical specifications			
Application		Design	
Gauge measurement	Liquids, gases and vapors	Weight	Approx. 0.090 kg (0.198 lb)
Mode of operation		Process connections	See dimension drawings
Measuring principle	Piezoresistive measuring cell (stainless steel diaphragm)	Electrical connections	Connector per EN 175301-803-A Form A with cable inlet M16x1.5 or ½-14 NPT
Measured variable	Gauge pressure		or Pg 11
Inputs			M12 connector
Measuring range			<ul> <li>2 or 3-wire (0.5 mm<sup>2</sup>) cable (Ø ± 5.4 mm)</li> </ul>
Gauge pressure	100 600 mbar (1.5 8.7 psi)		Quickon cable quick screw con- nection
Output		Wetted parts materials	
Current signal	4 20 mA	Measuring cell	Stainless steel, matNo. 1.4435
• Load	(U <sub>B</sub> - 10 V)/0.02 A	Process connection	Stainless steel, mat. No. 1.4404
<ul> <li>Auxiliary power U<sub>B</sub></li> </ul>	DC 7 33 V (10 30 V for Ex)		(SST 316 L)
Voltage signal	0 10 V DC	• Gasket	<ul> <li>FPM (Standard)</li> </ul>
• Load	$\geq$ 10 k $\Omega$		Neoprene
<ul> <li>Auxiliary power U<sub>B</sub></li> </ul>	12 33 V DC		<ul><li>Perbunan</li><li>EPDM</li></ul>
<ul> <li>Power consumption</li> </ul>	< 7 mA at 10 kΩ	Non-wetted parts materials	
Characteristic curve	Linear rising	Enclosure	Stainless steel, mat. No. 1.4404
Measuring accuracy		• Enclosure	(SST 316 L)
Error in measurement at limit setting incl. hysteresis and reproducibility	<ul> <li>Typical: 0.25 % of full-scale value</li> </ul>	• Rack	Plastic
	Maximum: 0.5 % of full-scale	• cables	PVC
	value	Certificates and approvals	
Step response time T <sub>99</sub>	< 5 ms	Classification according to pressure	For gases of fluid group 1 and liq-
Long-term stability		equipment directive (PED 97/23/EC)	uids of fluid group 1;
Lower range value and measuring span	0.25 % of full-scale value/year	(, _, _, _)	meets requirements as per article 3, paragraph 3 (good engineering practice)
Influence of ambient temperature		Lloyd's Register of Shipping (LR)	12/20010
<ul> <li>Lower range value and measuring span</li> </ul>	<ul> <li>0.25 %/10 K of full-scale value</li> <li>0.5 %/10K of full-scale value</li> </ul>	Germanischer Lloyd (GL)	GL19740 11 HH00
	for a measuring range 100 400 mbar	American Bureau of Shipping (ABS) Bureau Veritas (BV)	ABS_11_HG 789392_PDA BV 271007A0 BV
<ul> <li>Influence of power supply</li> </ul>	0.005 %/V	Det Norske Veritas (DNV)	A 12553
Conditions of use		Drinking water approval (ACS)	ACS 11 ACC NY 055
Process temperature with gasket made of:		GOST	GOST-R
• FPM (Standard)	-15 +125 °C (+5 +257 °F)	Underwriters Laboratories (UL)	
Neoprene	-35 +100 °C (-31 +212 °F)	for USA and Canada	UL 20110217 - E34453 IEC UL DK 21845
• Perbunan	-20 +100 °C (-4 +212 °F)	worldwide	IEC OL DK 21645
• EPDM	-40 +145 °C (-40 +293 °F), usable for drinking water	Explosion protection	Ex II 1/2 G Ex ia IIC T4 Ga/Gb
Ambient temperature	-25 +85 °C (-13 +185 °F)	(only with current output)	Ex II 1/2 D Ex ia IIIC T125 °C Da/Db
Storage temperature	-50 +100 °C (-58 +212 °F)	EC type-examination certificate	SEV 10 ATEX 0146
Degree of protection (to EN 60529)	<ul> <li>IP 65 with connector per EN 175301-803-A</li> </ul>	Connection to certified intrinsically-	$U_i \le 30 \text{ V DC}; I_i \le 100 \text{ mA};$
	IP 67 with M12 connector	safe resistive circuits with maxi- mum values:	$P_i \le 0.75 \text{ W}$
	<ul> <li>IP 67 with cable</li> <li>IP 67 with cable quick screw connection</li> </ul>	Effective internal inductance and capacity for versions with plugs per EN 175301-803-A and M12	$L_i = 0 \text{ nH}; C_i = 0 \text{ nF}$
Electromagnetic compatibility	• acc. IEC 61326-1/-2/-3		
	<ul> <li>acc. NAMUR NE21, only for ATEX versions and with a max. measuring deviation ≤ 1 %</li> </ul>		
Mounting position	upright		

Transmitters for basic requirements

SITEANS P 210 preserve transmitters for gauge pressure for low pressure applications       7	Selection and ordering da	ita					Article No.		Or	der c	:00
A Click on the Article No. for the online configuration in the PIA Life Cycle Portal.       Burst pressure         Measuring range       Vertical limit       max.         For gauge pressure      100 mbar (145 ps)       400 mbar (58 ps)       1bar (145 ps)       3 AA         0100 mbar (145 ps)       400 mbar (58 ps)       1bar (145 ps)       3 AA         0100 mbar (145 ps)       400 mbar (58 ps)       1bar (145 ps)       3 AA         000 mbar (145 ps)       -000 mbar (145 ps)       2 bar (230 ps)       3 AA         000 mbar (145 ps)       -1000 mbar (145 ps)       2 bar (230 ps)       3 AA         000 mbar (140 Order code not ps)       1000 mbar (145 ps)       3 bar (435 ps)       3 AA         000 mbar (145 ps)       -1000 mbar (145 ps)       2 bar (230 ps)       3 AA         000 The version, add Order code not plain text:       SAA       400 mbar (145 ps)       3 AA         Measuring range: up to mbar (ps)       000 mbar (145 ps)       3 bar (435 ps)       3 bar (435 ps)       3 bar (435 ps)         Output signal      20 mA; three-wire system; power supply 7 33 V DC (10 30 V DC for ATEX versions)       0       1         Output signal      20 mA; three-wire system; power supply 7 33 V DC (10 30 V DC for ATEX versions)       0       1         Connector per DIN	SITRANS P 210 pressure Accuracy typ. 0.25 % Wetted parts materials: Sta	transmitters for gauge pres	-	pplication	5	Z				_	
Measuring range     Overload limit min.     max.     Burst pressure       For gauge pressure    00 mbar     (145 psi)     -400 mbar     (58 psi)     1 bar     (145 psi)	•		the PIA Life Cycle Portal								
min.         max.         max.           For gauge pressure         -400 mbar (58 ps)         400 mbar (58 ps)         1 bar (14 5 ps)         5 AA           -100 mbar (12 28 ps)         -400 mbar (58 ps)         400 mbar (16 ps)         5 bs)         3 AA           0.180 mbar (13 5 ps)         -400 mbar (15 ps)         1 bar (14 5 ps)         5 bs)         3 AA           0.280 mbar (13 5 ps)         -400 mbar (14 5 ps)         2 bar (29 0 ps)         5 ad         3 AC           0.400 mbar (18 ps)         -1000 mbar (14 5 ps)         2 bar (29 0 ps)         5 ad         3 AC           0.400 mbar (18 ps)         -1000 mbar (14 5 ps)         2 bar (29 0 ps)         5 ad         3 AC           0.400 mbar (37 ps)         -1000 mbar (14 5 ps)         2 bar (29 0 ps)         5 ad         3 AC           0.400 mbar (37 ps)         -100 mbar (14 5 ps)         2000 mbar (14 5 ps)         2 bar (29 0 ps)         5 ad           0.400 mbar (14 5 ps)         2000 mbar (14 5 ps)         2 bar (29 0 ps)         5 ad         3 AC           0.400 mbar (14 5 ps)         -100 mbar (14 5 ps)         2 bar (29 0 ps)         5 ad         3 AC           0.400 mbar (14 5 ps)         -100 mbar (14 5 ps)         -100 mbar (14 5 ps)         10         10           0.500 mbar (14 5 ps)         -1			LITE FIA LITE CYCLE FOILL	-	rocouro				-	-	
Tor gauge pressure         Jum	measuring range		mov	Durst	ressure						
a. 100 mbar       (1.45 psi)       -400 mbar       (45 psi)       1 bar       (14 5 psi)       5 A A S A A S A A S A A S A A A S A		min.	max.								
0160 mbar       (2.32 pai)       -400 mbar       (5.8 pai)       1 bar       (14.5 pai)       > 3.4 B         0.260 mbar       (5.8 pai)       -800 mbar       (11.6 pai)       1000 mbar       (43.5 pai)       > 5.4 B         0400 mbar       (5.8 pai)       -800 mbar       (14.5 pai)       2 bar       (29.0 pai)       > 5.4 B         0400 mbar       (5.8 pai)       -800 mbar       (14.5 pai)       2 bar       (29.0 pai)       > 5.4 B         0400 mbar       (5.8 pai)       -1000 mbar       (14.5 pai)       2 bar       (29.0 pai)       > 5.4 B         0400 mbar       (5.8 pai)       -100 mbar       (14.5 pai)       2 bar       (29.0 pai)       > 5.4 B         0400 mbar       (5.8 pai)       -100 mbar       (14.5 pai)       2 bar       (29.0 pai)       > 5.4 B         0400 mbar       (5.8 pai)       -100 mbar       (14.5 pai)       2 bar       (29.0 pai)       > 5.4 B         0400 mbar       (5.8 pai)       -100 mbar       5.4 B       2 bar       (29.0 pai)       > 5.4 B         0400 mbar       (5.9 pai)       -00 mbar       -100 mbar       -100 mbar       -100 mbar       -100 mbar         0400 mbar       100 mbar       100 mbar       100 mbar	0 0 1		(5.0.1)	L	(445 )						
0. 250 mbar       (285 ps)       200 mbar       (11 6 ps)       1000 mbar       (14 5 ps)       2 bar       (290 ps)       3 AC         0.400 mbar       (87 ps)       -800 mbar       (11 6 ps)       1000 mbar       (14 5 ps)       2 bar       (290 ps)       3 AC         0600 mbar       (87 ps)       -1000 mbar       (14 5 ps)       2 bar       (290 ps)       3 AC         0600 mbar       (87 ps)       -1000 mbar       (14 5 ps)       2 bar       (290 ps)       3 AC         0600 mbar       (87 ps)       -1000 mbar       (14 5 ps)       2 bar       (290 ps)       3 AC         0600 mbar       (87 ps)       -1000 mbar       (14 5 ps)       2 bar       (290 ps)       3 AC         010 V; three-wire system; power supply 733 V DC       10      30 V DC for ATEX versions)       0       0       0       0         010 V; three-wire system; power supply 733 V DC       10 U      30 V DC for ATEX versions)       0       0       0       0         Connector per Win Keylosion protection Ex is IIC T4       •       0       1       1       0       1         Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling)       •       0       0       7       8 <td></td> <td></td> <td>( 1 /</td> <td></td> <td>· · · ·</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>			( 1 /		· · · ·						
0400 mbar (5.8 ps)   400 mbar (-11.6 ps) 2000 mbar (14.5 ps) 3 b ar (23.0 ps) + 3.0 3.0 3.0 0600 mbar (6.7 ps) -1000 mbar (-14.5 ps) 2000 mbar (29.0 ps) 3 b ar (43.5 ps) + 3.0 3.0 3.0 0600 mbar (5.7 ps) -1000 mbar (-14.5 ps) 2000 mbar (29.0 ps) 3 b ar (43.5 ps) + 3.0 0 3.0 0 0600 mbar (5.8 ps) + 0mbar (ps) -1000 mbar (-14.5 ps) 2000 mbar (29.0 ps) 3 b ar (43.5 ps) + 0mbar (ps) -1000 mbar (-14.5 ps) 2000 mbar (29.0 ps) - 0600 mbar (-14.5 ps) - 0600 mbar (-15.5 ps) + 0mbar (-15.5 ps) - 0mbar (-1			( )								
0600 mbar       (8.7 psi)       -1000 mbar       (29.0 psi)       3 bar       (43.5 psi)       9 AA       H         Other version, add Order code and plain text:       Measuring range.       9 AA       H       H         Output signal       420 mA; two-wire system; power supply 733 V DC (1030 V DC for ATEX versions)       0       0       1       H         Output signal      10 V: three-wire system; power supply 733 V DC (1030 V DC for ATEX versions)       0       0       0       1       H         With explosion protection (only 420 mA).      10 V: three-wire system; power supply 733 V DC       0       0       0       1       1       0       0       1       1       1       0       0       1       1       0       0       1 </td <td>( 1 /</td> <td></td> <td></td> <td></td> <td> ,</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	( 1 /				,						
Measuring range: up to mbar (bsi) Output signal 4 20 mA; two-wire system; power supply 7 33 V DC (10 30 V DC for ATEX versions) 0 10 V; three-wire system; power supply 12 33 V DC Explosion protection (only 4 20 mA) None With explosion protection (Ex ia IIC T4 Electrical connection Connector per DIN EN 175301-803-A, stuffing box thread M16 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread M16 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per EN 837-1 (½* BSP male) (standard for metric pressure ranges mbar, bar) G¼* male thread and G1/8* female thread G¼* male thread and G1/8* female thread G¼* male thread (standard for pressure ranges inH <sub>2</sub> O and psi) ¼*-18 NPT male ½*-14 NPT female ½*-14 NPT fema				3 bar	· · · ·			3 A G			
Output signal       4 20 mA; two-wire system; power supply 7 33 V DC (10 30 V DC for ATEX versions)       0         0 10 V; three-wire system; power supply 12 33 V DC       0.0 U DC for ATEX versions)       0         Explosion protection (only 4 20 mA)       0       0         None       0       0       0         Unit explosion protection Ex ia IIC T4       0       0         Electrical connection       1       0       0         Connector per DIN EN 175301-803-A, stuffing box thread M16 (with coupling)       0       0         Connector per DIN EN 175301-803-A, stuffing box thread 1/2'-14 NPT (with coupling)       0       4         Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling)       0       7         Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling)       0       7         Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling)       0       7         Connector per B 8371 (1/2' BSP male)       7       9       N         Process connection       8       C       7       9       N         Vir 18 NPT male       Vir 18 NPT male       2       P       P       P         Vir 18 NPT male       Special version       2       Z       P         Sealing materi			I	Ι				9 A A		H	11
0 10 V; three-wire system; power supply 12 33 V DC       10         Explosion protection (only 4 20 mA)       0         None       0         With explosion protection Ex la IIC T4       0         Electrical connection       1         Connector prot DIN EN 175301-803-A, stuffing box thread M16 (with coupling)       0         Connector prot DIN EN 175301-803-A, stuffing box thread 1/2*.14 NPT (with coupling)       0         Connector prot DIN EN 175301-803-A, stuffing box thread 1/2*.14 NPT (with coupling)       0         Connector prot DIN EN 175301-803-A, stuffing box thread PG11 (with coupling)       0         Connector prot DIN EN 175301-803-A, stuffing box thread PG11 (with coupling)       0         Connector prot DIN EN 175301-803-A, stuffing box thread PG11 (with coupling)       0         Connector prot DIN EN 175301-803-A, stuffing box thread PG11 (with coupling)       0         Connector prot DIN EN 175301-803-A, stuffing box thread PG11 (with coupling)       0         Gave male prot EN 837-1 (½* BSP male) (standard for metric pressure ranges mbar, bar)       0       7         GVa* male prot EN 837-1 (½* BSP male)       0       7       9         Y*18 NPT fremale       Y16*20 UNF fremale       C       C         Y*19 NPT fremale       Y16*20 UNF fremale       Y       Y         Y16*20 UNF fremale       Y											
None With explosion protection Ex is IIC T4 Electrical connection Connector per DIN EN 175301-803-A, stuffing box thread M16 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread M16 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread 1/2*14 NPT (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Fixed mounted cable, length 5 m Special version Process connection GVe male per EN 837-1 (Ve BSP male) (Standard for pressure ranges inH <sub>2</sub> O and psi) Wi-18 NPT male (standard for pressure ranges inH <sub>2</sub> O and psi) Wi-18 NPT male (standard for pressure ranges inH <sub>2</sub> O and psi) Wi-18 NPT female Wi-14 NPT male Wi-14 NPT male Special version Z P Firther designs				versions)					0		
With explosion protection Ex is IIC T4       Image: the set of the set	Explosion protection (onl	y 4 20 mA)									
Electrical connection         Connector per DIN EN 175301-803-A, stuffing box thread M16 (with coupling)       1         Connector per DIN EN 175301-803-A, stuffing box thread M16 (with coupling)       0         Connector per DIN EN 175301-803-A, stuffing box thread 1/2-14 NPT (with coupling)       0         Connector per DIN EN 175301-803-A, stuffing box thread 1/2-14 NPT (with coupling)       0         Connector per DIN EN 175301-803-A, stuffing box thread 1/2-14 NPT (with coupling)       0         Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling)       0         Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling)       0         Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling)       0         Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling)       0         Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling)       0         Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling)       0         Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling)       0         Goat version       0       7         Process connection       0       7         Giv male thread and G1/8' female thread       6         Giv' male thread and G1/8' female thread       7         Y'-14 NPT female       7	None								0		
Connector per DIN EN 175301-803-A, stuffing box thread M16 (with coupling) Connection via fixed mounted cable, 2 m (not for type of protection "Intrinsic safety i") Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Process connection GV2 male per EN 837-1 (V2 BSP male) (standard for metric pressure ranges mbar, bar) GV3 male per EN 837-1 (V2 BSP male) 7/16-20 UNF male V3-14 NPT male V4-14 NPT female V4-14 NPT female V4-14 NPT female V4-14 NPT female Special version  Sealing material between sensor and enclosure V100 (FPM, standard) Neoprene (CR) Perbuna (NBR) EPDM Special version  Special version  Further designs	With explosion protection E	x ia IIC T4						1	1		
Connection via fixed mounted cable, 2 m (not for type of protection "Intrinsic safety i") Quickon cable quick screw connection PG9 (not for type of protection "Intrinsic safety i") Connector per DIN EN 175301-803-A, stuffing box thread 1/2'-14 NPT (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Process connection GV/2' male per EN 837-1 (V/2' BSP male) (standard for metric pressure ranges mbar, bar) A GV/2' male per EN 837-1 (V/2' BSP male) GV/2' male thread and G1/8' female thread GV/2' male per EN 837-1 (V/2' BSP male) 7/16'-20 UNF male Wi-14 NPT male (standard for pressure ranges inH <sub>2</sub> O and psi) Wi-14 NPT female Wi-14 NPT female F Wi-14 NPT female M2Ox1.5 male Special version E E E Forbuna (NBR) C C C C C C C C C C C C C	Electrical connection										
GV/* male per EN 837-1 (V/* BSP male) (standard for metric pressure ranges mbar, bar)   GV/* male thread and G1/8" female thread   GV/* male thread and G1/8" female thread   GV/* male per EN 837-1 (V/* BSP male)   7/16"-20 UNF male   V/*-18 NPT male (standard for pressure ranges inH2O and psi)   V/*-18 NPT male   V/*-18 NPT male   V/*-14 NPT female   V/*-14 NPT male   V/*-14 NPT female   V/*-15 male   Special version   Sealing material between sensor and enclosure   Viton (FPM, standard)   Neoprene (CR)   Perbunan (NBR)   EPDM   Special version   Special version   C   There designs	Connector per DIN EN 175301-803-A, stuffing box thread 1/2"-14 NPT (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Fixed mounted cable, length 5 m								5 6 0 7	Ν	N 1
G½* male thread and G1/8* female thread       B         G¼* male per 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 male       F         ½*-14 NPT female       F         ½*-14 NPT female       J         ½*-14 NPT female       J         ½*-14 NPT female       J         ½*-15 male       J         M20x1.5 male       J         Special version       Z         Sealing material between sensor and enclosure       J         Viton (FPM, standard)       A         Neoprene (CR)       B         Perbunan (NBR)       C         EPDM       C         Special version       Z         Version       Z         Standard version       1	Process connection										
W <sup>+</sup> -18 NPT female       F         ½''-14 NPT male       G         ½''-14 NPT female       H         7/16'-20 UNF female       J         M20x1.5 male       J         Special version       Z         Sealing material between sensor and enclosure       P         Viton (FPM, standard)       A         Neoprene (CR)       B         Perbunan (NBR)       C         EPDM       D         Special version       Z         Version       Z         Standard version       1	G½" male thread and G1/8 G¼" male per EN 837-1 (¼	female thread	tric pressure ranges mba	ır, bar)		••			B C		
7/16"-20 UNF female M20x1.5 maleJM20x1.5 malePSpecial versionZSealing material between sensor and enclosureAViton (FPM, standard)ANeoprene (CR) Perbunan (NBR) EPDM Special versionCZCVersion Standard versionZFurther designsI	1/4"-18 NPT female	for pressure ranges inH <sub>2</sub> O ar	ıd psi)						F		
M20x1.5 male       P         Special version       Z       P         Sealing material between sensor and enclosure       A       A         Viton (FPM, standard)       B       B         Neoprene (CR)       B       C         Perbunan (NBR)       C       C         Special version       Z       Q         Version       Standard version       1         Further designs       C       C									Н		
Special version Z P   Sealing material between sensor and enclosure Image: Special version and enclosure Image: Special version and enclosure   Viton (FPM, standard) Image: Special version and enclosure Image: Special version and enclosure   Perbunan (NBR) Image: Special version and enclosure Image: Special version and enclosure   Special version Image: Special version and enclosure Image: Special version and enclosure   Version Image: Special version and enclosure Image: Special version and enclosure   Further designs Image: Special version and enclosure Image: Special version and enclosure											
Sealing material between sensor and enclosure Viton (FPM, standard) Neoprene (CR) Perbunan (NBR) EPDM Special version Version Standard version  Further designs											
Viton (FPM, standard) Neoprene (CR) Perbunan (NBR) EPDM Special version Version Standard version Further designs	•								Z	P	P 1
Neoprene (CR)       B         Perbunan (NBR)       C         EPDM       D         Special version       Z         Version       1         Standard version       1	•	sensor and enclosure									
Special version       Z       Q         Version       Standard version       ▲       1         Further designs	Neoprene (CR)					<b>•</b>			I	в	
Version Standard version > 1 Further designs											
Standard version									2	z G	ן נ
Further designs											
										1	1
	ũ.										
Vanufacturer's test certificate M per IEC 60770-2 (calibration certificate) supplied C11											

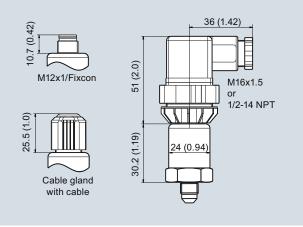
Available ex stock

• We can offer shorter delivery times for configurations designated with the Quick Ship Symbol •. For details see page 9/5 in the appendix.

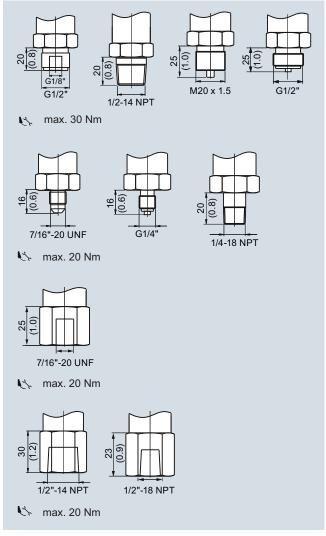
Transmitters for basic requirements

# SITRANS P210 for gauge pressure

## Dimensional drawings



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

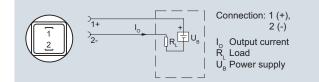


SITRANS P210, process connections, dimensions in mm (inch)

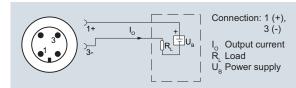
Transmitters for basic requirements

## SITRANS P210 for gauge pressure

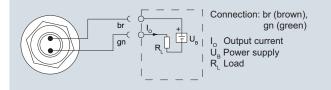
## Schematics



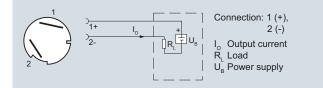
Connection with current output and connector per EN 175301



Connection with current output and connector M12x1



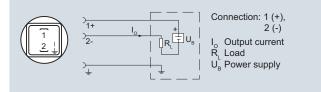
Connection with current output and cable



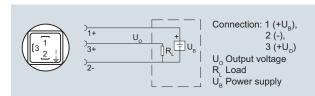
Connection with current output and Quickon cable quick screw connection

### Version with explosion protection: 4 ... 20 mA

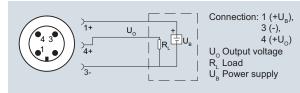
The grounding connection is conductively bonded to the transmitter enclosure



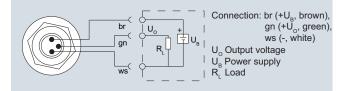
Connection with current output and connector per EN 175301 (Ex)



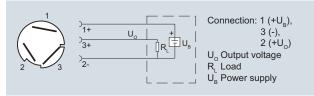
Connection with voltage output and connector per EN 175301



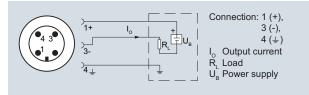
Connection with voltage output and connector M12x1



Connection with voltage output and cable



Connection with voltage output and Quickon cable quick screw connection



Connection with current output and connector M12x1 (Ex)

Transmitters for basic requirements

#### Overview



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

- Stainless steel measuring cell, fully welded
- Measuring ranges 2.5 to 600 bar (36.3 to 8702 psi) relative
- For high-pressure applications and refrigeration technology division

#### Benefits

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

### Application

The pressure transmitter SITRANS P220 for gauge 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 used with a connector per EN 175301-803-A (IP65), a round plug M12 (IP67), a cable (IP67) or a Quickon cable quick screw connection (IP67) connected electrically. The output signal is between 4 and 20 mA or 0 and 10 V.

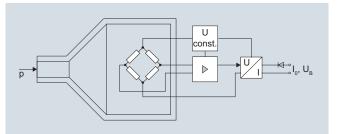
#### Device structure with explosion protection

The pressure transmitter consists of a piezoresistive measuring cell with a diaphragm installed in a stainless steel enclosure. It can be used with a connector per EN 175301-803-A (IP65) or a round plug M12 (IP67) connected electrically. 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.

Transmitters for basic requirements

# SITRANS P220 for gauge pressure

Application		Design			
Gauge pressure measurement	Liquids, gases and vapors	Weight	Approx. 0.090 kg (0.198 lb)		
Mode of operation		Process connections	See dimension drawings		
Measuring principle	Piezoresistive measuring cell (stainless steel diaphragm)	Electrical connections	Connector per EN 175301-803-A Form A with		
Measured variable	Gauge pressure		cable inlet M16x1.5 or ½-14 NP or Pg 11		
Inputs			• M12 connector		
Measuring range			<ul> <li>2 or 3-wire (0.5 mm<sup>2</sup>) cable (Ø ± 5.4 mm)</li> </ul>		
Gauge pressure     Metric	2.5 600 bar (36 8700 psi)		<ul> <li>Quickon cable quick screw con nection</li> </ul>		
- US measuring range	30 8700 psi	Wetted parts materials			
Output		Measuring cell	Stainless steel, matNo. 1.4016		
Current signal	4 20 mA	Process connection	Stainless steel, mat. No. 1.4404		
• Load	(U <sub>B</sub> - 10 V)/0.02 A		(SST 316 L)		
Auxiliary power U <sub>B</sub>	DC 7 33 V (10 30 V for Ex)	Non-wetted parts materials			
Voltage signal	0 10 V DC	• Enclosure	Stainless steel, mat. No. 1.4404 (SST 316 L)		
Load	≥ 10 kΩ	Rack	Plastic		
Auxiliary power U <sub>B</sub>	12 33 V DC	• cables	Plastic		
Power consumption	< 7 mA at 10 kΩ	Certificates and approvals	F V G		
Characteristic curve	Linear rising	Classification according to pressure	For gases of fluid group 1 and lic		
Measuring accuracy		equipment directive	uids of fluid group 1; complies		
Error in measurement at limit setting incl. hysteresis and reproducibility	• Typical: 0.25 % of full-scale value	(PED 97/23/EC)	with requirements of article 3, paragraph 3 (sound engineerin practice)		
	Maximum: 0.5 % of full-scale	Lloyd's Register of Shipping (LR)	12/20010		
	value	Germanischer Lloyd (GL)	GL19740 11 HH00		
Step response time T <sub>99</sub>	< 5 ms	American Bureau of Shipping (ABS)	ABS_11_HG 789392_PDA		
Long-term stability	0.25 % of full coole value/veer	Bureau Veritas (BV)	BV 271007A0 BV		
Lower range value and measuring span	0.25 % of full-scale value/year	Det Norske Veritas (DNV)	A 12553		
Influence of ambient temperature		Drinking water approval (ACS)	ACS 11 ACC NY 055		
Lower range value and measuring	0.25 %/10 K of full-scale value	GOST	GOST-R		
span		Underwriters Laboratories (UL)			
Influence of power supply	0.005 %/V	<ul> <li>for USA and Canada</li> </ul>	UL 20110217 - E34453		
Conditions of use		• worldwide	IEC UL DK 21845		
Process temperature	-30 +120 °C (-22 +248 °F)	Explosion protection			
Ambient temperature	-25 +85 °C (-13 +185 °F)	Intrinsic safety "i" (only with current	Ex II 1/2 G Ex ia IIC T4 Ga/Gb		
<ul> <li>Storage temperature</li> </ul>	-50 +100 °C (-58 +212 °F)	output)	Ex II 1/2 D Ex ia IIIC T125 °C Da/Db		
Degree of protection (to EN 60529)	<ul> <li>IP 65 with connector per EN 175301-803-A</li> </ul>	EC type-examination certificate	SEV 10 ATEX 0146		
	<ul> <li>IP 67 with M12 connector</li> <li>IP 67 with cable</li> </ul>	Connection to certified intrinsically- safe resistive circuits with maxi- mum values:	$\begin{array}{l} U_i \leq 30 \text{ V DC}; \ I_i \leq 100 \text{ mA}; \\ P_i \leq 0.75 \text{ W} \end{array}$		
Electromognotic competibility	IP 67 with cable quick screw connection	Effective internal inductance and capacity for versions with plugs per	$L_i = 0 \text{ nH}; C_i = 0 \text{ nF}$		
Electromagnetic compatibility	<ul> <li>acc. IEC 61326-1/-2/-3</li> <li>acc. NAMUR NE21, only for ATEX versions and with a max. measuring deviation ≤ 1 %</li> </ul>	EN 175301-803-A and M12			

Transmitters for basic requirements

Selection and	d ordering data							Article No.	Orde	r code
	fully-welded versi	mitters for gauge pr on	essure, hig	h-pressure a	nd refriger	ation	Z	7MF1567-	A	
	materials: stainless	steel								
1	arts materials: stain									
		online configuration	in the PIA I	ifo Cyclo Port	2					
		3								
Measuring ra	inge	Overload limit	1		Burst pr	essure				
		Mini- mum	Max.							
		mum								
For gauge pr 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	(870 psi)		3 B E		
0 6 bar	(0 87 psi)	-1 bar (-14.5 psi)	15 bar	(217 psi)	60 bar	(522 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	(1392 psi)		3 C B		
0 25 bar	(0 363 psi)	-1 bar (-14.5 psi)	62.5 bar	(906 psi)	150 bar	(2176 psi)		3 C D		
0 40 bar	(0 580 psi)	-1 bar (-14.5 psi)	100 bar	(1450 psi)	240 bar	(3481 psi)		3 C E		
0 60 bar	(0 870 psi)	-1 bar (-14.5 psi)	150 bar	(2175 psi)	360 bar	(5221 psi)		3 C G		
0 100 bar	(0 1450 psi)	-1 bar (-14.5 psi)	250 bar	(3625 psi)	600 bar	(8702 psi)		3 D A		
0 160 bar	(0 2320 psi)	-1 bar (-14.5 psi)	400 bar	(5801 psi)	960 bar	(13924 psi)		3 D B		
0 250 bar	(0 3625 psi)	-1 bar (-14.5 psi)	625 bar	(9064 psi)	1500 bar			3 D D		
0 400 bar	(0 5801 psi)	-1 bar (-14.5 psi)	1000 bar			(34809 psi)		3 D E		
0 600 bar	(0 8702 psi)	-1 bar (-14.5 psi)	1500 bar	(21755 psi)	2500 bar	(36260 psi)		3 D G		
	, add Order code a nge: up to bar (		I		I			9 A A		H 1 Y
Measuring ra	inges for gauge pr	essure (only for US	market)							
	(0 30 psi)	(-14.5 psi)		(75 psi)		(360 psi)		4 B E		
	(0 60 psi)	(-14.5 psi)		(150 psi)		(580 psi)		4 B F		
	(0 100 psi)	(-14.5 psi)		(250 psi)		(580 psi)		4 B G		
	(0 150 psi)	(-14.5 psi)		(375 psi)		(870 psi)		4 C A		
	(0 200 psi)	(-14.5 psi)		(500 psi)		(1390 psi)		4 C B		
	(0 300 psi)	(-14.5 psi)		(750 psi)		(2170 psi)		4 C D		
	(0 500 psi)	(-14.5 psi)		(1250 psi)		(3480 psi)		4 C E		
	(0 750 psi)	(-14.5 psi)		(1875 psi)		(5220 psi)		4 C F		
	(0 1000 psi)	(-14.5 psi)		(2500 psi)		(5220 psi)		4 C G		
	(0 1500 psi)	(-14.5 psi)		(3750 psi)		(8700 psi)		4 D A		
	(0 2000 psi)	(-14.5 psi)		(5000 psi)		(13920 psi)		4 D B		
	(0 3000 psi)	(-14.5 psi)		(7500 psi)		(21750 psi)		4 D D		
	(0 5000 psi)	(-14.5 psi)		(12500 psi)		(34800 psi)		4 D E		
	(0 6000 psi	(-14.5 psi)		(15000 psi)		(34800 psi)		4 D F		
	(0 8700 psi)	(-14.5 psi)		(21000 psi)		(52200 psi)		4 D G		
Other version	, add Order code a	nd plain text: Measur	ing range: .	up to psi				9 A A		H 1 Y
	vo-wire system; pov	ver supply 7 33 V [		) V DC for ATE	X versions)	)	<b>►</b>	0		
		er supply 12 33 V						1 0		
• •	otection (only 4	20 mA)								
None With explosion	n protection Ex ia II	C T4						0 1		
Electrical con	nnection									
Connector per DIN EN 175301-803-A, stuffing box thread M16 (with coupling) Round connector M12 per IEC 61076-2-101 (not for gauge pressure ranges ≤ 16 bar) Connection via fixed mounted cable, 2 m (not for type of protection "Intrinsic safety i") Quickon cable quick screw connection PG9 (not for type of protection "Intrinsic safety i") Connector per DIN EN 175301-803-A, stuffing box thread 1/2"-14 NPT (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling)								0	1 2 3 4 5 6	
Special version									7 9	N 1 Y
Available e	ex stock									

Available ex stock

• We can offer shorter delivery times for configurations designated with the Quick Ship Symbol •. For details see page 9/5 in the appendix.

1

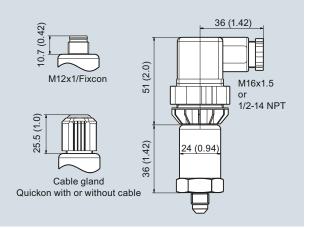
Transmitters for basic requirements

	SIT	RANS P220 fo	or gauge pi	ressure
Selection and ordering data		Article No.	Ord	er code
SITRANS P 220 pressure transmitters for gauge pressure, high-pressure and refrigeration applications, fully-welded version Accuracy typ. 0.25 %		7MF1567-	- A	
Wetted parts materials: stainless steel				
Non-wetted parts materials: stainless steel				
Process connection				
G½" male per EN 837-1 (½" BSP male) (standard for metric pressure ranges mbar, bar) G½" male thread and G1/8" female thread G¼" male per EN 837-1 (¼" BSP male) 7/16"-20 UNF male	Þ		A B C D	
¼"-18 NPT male (standard for pressure ranges inH <sub>2</sub> O and psi) ¼"-18 NPT female (Only for measuring ranges ≤ 60 bar (870 psi)) ½"-14 NPT male ½"-14 NPT female (Only for measuring ranges ≤ 60 bar (870 psi)) 7/16"-20 UNF female M20x1.5 male			E F H J P	
Special version			Z	P 1 Y
Version Standard version				1
Further designs				
Supplement the Article No. with "-Z" and add Order code.				
Manufacturer's test certificate M per IEC 60770-2 (calibration certificate) supplied		C11		
Oxygen application, oil and grease-free cleaning (Not in conjunction with explosion protection version	on)	E10		

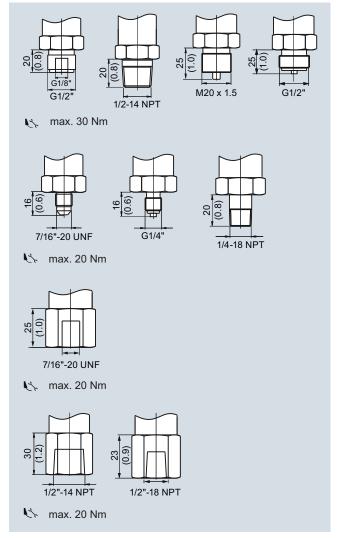
Available ex stock

• We can offer shorter delivery times for configurations designated with the Quick Ship Symbol •. For details see page 9/5 in the appendix.

Transmitters for basic requirements



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

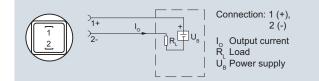


SITRANS P220, process connections, dimensions in mm (inch)

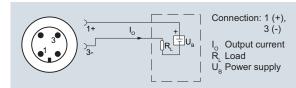
Transmitters for basic requirements

## SITRANS P220 for gauge pressure

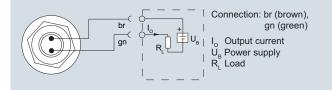
## Schematics



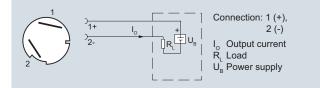
Connection with current output and connector per EN 175301



Connection with current output and connector M12x1



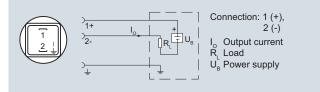
Connection with current output and cable



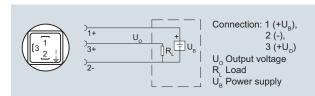
Connection with current output and cable quick screw connection Quickon

### Version with explosion protection: 4 ... 20 mA

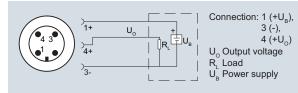
The grounding connection is conductively bonded to the transmitter enclosure



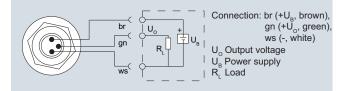
Connection with current output and connector per EN 175301 (Ex)



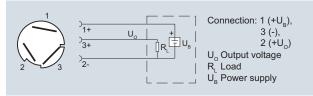
Connection with voltage output and connector per EN 175301



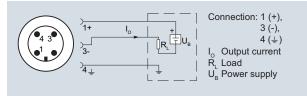
Connection with voltage output and connector M12x1



Connection with voltage output and cable



Connection with voltage output and cable quick screw connection Quickon



Connection with current output and connector M12x1 (Ex)

Transmitters for basic requirements

### SITRANS P250 for differential pressure

### Overview



The SITRANS P250 transmitter measures the differential pressure of liquids and gases.

#### Benefits

- High measuring accuracy
- Sturdy stainless steel enclosure
- For aggressive and non-aggressive media
- For the measurement of the differential pressure of liquids and gases
- Temperature-compensated measuring cell
- · Compact design

### Application

The SITRANS P250 transmitter for differential pressure is primarily used in the following industries:

- Chemical industry
- Heating, ventilation and air conditioning technology
- Food industry
- Mechanical engineering
- Shipbuilding
- · Water supply

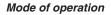
### Design

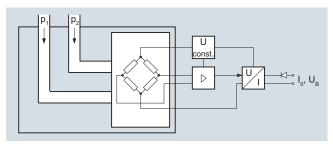
Main components:

- Stainless steel enclosure with piezo-resistive ceramic measuring cell (temperature-compensated) and electronics module
- Process connection made of stainless steel in diverse designs (see Selection and Ordering data)
- Electrical connection through connectors acc. to EN 175301-803-A and round connectors M12, as well as with permanently fixed cable

### Function

The pressure transmitter measures the differential pressure of liquids and gases.





SITRANS P250 pressure transmitter, function diagram

The piezo-resistive measuring cell (ceramic membrane) has a Wheatstone bridge circuit, on which the operating pressure P1 and P2 of the media acts at both ends.

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 5 or 10 V DC.

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

Technical specifications						
SITRANS P250 differential pressu	re transmitter					
Application						
Differential pressure transmitter	Liquids and neutral gases					
Mode of operation						
Measuring principle	Piezo-resistive measuring cell (ceramic diaphragm)					
Input						
Measured variable	Differential pressure					
Measuring range	0 0.1 to 0 25 bar (0 1.45 to 0 363 psi)					
Operating pressure	<ul> <li>≤ 25 bar at a differential pressure range &gt; 6 bar</li> <li>≤ 50 bar at a differential pressure range &gt; 10 bar</li> </ul>					
Burst pressure	1.5 x operating pressure					
Output						
Output signal						
<ul> <li>Current output signal</li> </ul>	4 20 mA					
<ul> <li>Voltage output signal</li> </ul>	0 5 V DC and 0 10 V DC					
Load						
• 3-wire	> 10 kΩ					
• 2-wire	$\leq$ (U <sub>H</sub> - 11 V) / 0.02 A					
Measuring accuracy						
Error in measurement at limit set- ting incl. hysteresis and reproduc- ibility	1 % of typical full-scale value, see "Measuring range" table"					
Long-term stability acc. to IEC 60770	$\leq 0.5$ % of full-scale value/year					
Influence of ambient temperature						
Start of scale	$\leq$ 0.6 % / 10 K of full-scale value ( $\leq$ 1.2 % / 10K for measuring cell 0 0.1 bar (1.45 psi))					
Full-scale value	≤ 0.22 % /10 K of full-scale value (≤ 0.37 % / 10K for measuring cell 0 0.1 bar (1.45 psi))					
Dynamic behavior	Suitable for static and dynamic measurements					
Step response time T <sub>99</sub>	< 5 ms					
Load variation	< 50 Hz					

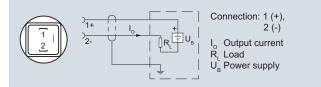
Transmitters for basic requirements

## SITRANS P250 for differential pressure

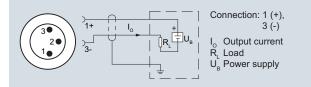
Rated conditions	
Ambient conditions	
Temperature of medium	-15+85 °C (5 185 °F)
Ambient temperature	-15+85 °C (5 185 °F)
Storage temperature	-40+85 °C (-40 +185 °F)
Degree of protection acc. to EN 60529	IP65
Mounting position	Any
Mounting	Mounting bracket, included in delivery
Design	
Weight	Approx. 430 g (approx. 0.95 lb)
Enclosure material	Stainless steel 1.4305/AISI 303
Electrical connection	• Plug EN 175301-803-A • Circular plug EN 60130-9 • Cable 1.5 m
Process connection	<ul> <li>Hose sleeve Ø 4 mm/6 mm</li> <li>Pipe union Ø 6 mm/8 mm</li> <li>Male thread 7/16-20 UNF, G1/8"</li> <li>Female thread 1/8-27 NPT</li> <li>(Standard), G1/8"</li> </ul>
Wetted parts materials	
Process connection	Stainless steel 1.4305/AISI 303, brass nickel-plated
• Diaphragm	Ceramic Al <sub>2</sub> O <sub>3</sub> (96 %)
Sealing material	FPM (standard), EPDM, NBR, MVQ, CR
Power supply U <sub>H</sub>	
Terminal voltage on pressure transmitter	
• 2-wire, 4 20 mA	11 33 V DC
• 3-wire, 0 5 V DC	11 33 V DC/24 V AC ±15 %
• 3-wire, 0 10 V DC	18 33 V DC/24 V AC ±15 %
Current consumption at nominal pressure	
• 2-wire	< 20 mA
• 3-wire	< 5 mA
Protection against polarity reversal	Protected against short-circuit and polarity reversal. Each con- nection against the other with max. supply voltage.
Certificates and approvals	
Certificates and approvais	

Measurin		Max. perm. oper- ating pres- sure (on either side)	Burst pressure	Max. perm. oper- ating pres- sure (on one side)	Accu- racy
[bar]	[inH <sub>2</sub> O]				
0 0.1	0 40.18	25 bar (363 psi)	37.5 bar (544 psi)	0.6 bar (241 inH <sub>2</sub> O)	≤ 1.0 %
0 0.2	0 80.37	25 bar (363 psi)	37.5 bar (544 psi)	0.6 bar (241 inH <sub>2</sub> O)	≤ 0.8 %
0 0.25	0 100.46	25 bar (363 psi)	37.5 bar (544 psi)	0.6 bar (241 inH <sub>2</sub> O)	≤ 0.5 %
0 0.3	0 120.56	25 bar (363 psi)	37.5 bar (544 psi)	0.6 bar (241 inH <sub>2</sub> O)	≤ 0.5 %
0 0.4	0 160.74	25 bar (363 psi)	37.5 bar (544 psi)	1.2 bar (482 inH <sub>2</sub> O)	≤ 0.8 %
0 0.5	0 200.9	25 bar (363 psi)	37.5 bar (544 psi)	1.2 bar (482 inH <sub>2</sub> O)	≤ 0.5 %
0 0.6	0 241.0	25 bar (363 psi)	37.5 bar (544 psi)	1.2 bar (482 inH <sub>2</sub> O)	≤ 0.5 %
0 1.0	0 402.0	25 bar (363 psi)	37.5 bar (544 psi)	2 bar (804 inH <sub>2</sub> O)	≤ 0.5 %
0 1.6	0 643.0	25 bar (363 psi)	37.5 bar (544 psi)	3.2 bar (1286 inH <sub>2</sub> O)	≤ 0.5 %
0 2.5	0 1005	25 bar (363 psi)	37.5 bar (544 psi)	5 bar (2009 H <sub>2</sub> O)	≤ 0.5 %
0 4	0 1607	25 bar (363 psi)	37.5 bar (544 psi)	8 bar (3215 inH <sub>2</sub> O)	≤ 0.5 %
0 6	0 2411	25 bar (363 psi)	37.5 bar (544 psi)	12 bar (4822 inH <sub>2</sub> O)	≤ 0.5 %
0 10	0 4019	50 bar (725 psi)	75 bar (1088 psi)	20 bar (8037 inH <sub>2</sub> O)	≤ 0.5 %
0 16	0 6430	50 bar (725 psi)	75 bar (1088 psi)	32 bar (464 psi)	≤ 0.5 %
0 25	0 10046	50 bar (725 psi)	75 bar (1088 psi)	50 bar (725 psi)	≤ 0.5 %

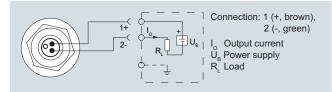
## Schematics



Connection with current output 4 ... 20 mA and plug to EN 175301-803-A



Connection with current output 4  $\dots$  20 mA and round connector

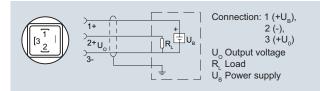


Connection with current output 4 ... 20 mA and permanently fixed cable

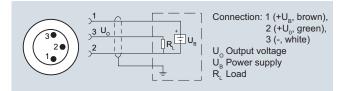
1/23

Transmitters for basic requirements

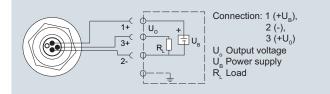
## SITRANS P250 for differential pressure



Connection with voltage output 0  $\dots$  5 V DC (0  $\dots$  10 V DC) and plug to EN 175301-803-A

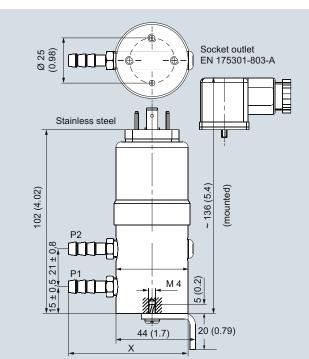


Connection with voltage output 0  $\dots$  5 V DC (0  $\dots$  10 V DC) and round connector

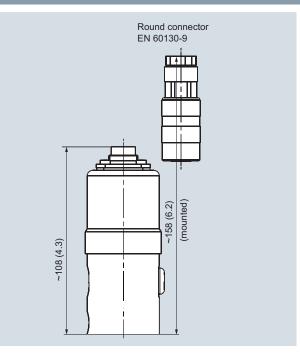


Connection with voltage output 0  $\dots$  5 V DC (0  $\dots$  10 V DC) and permanently fixed cable

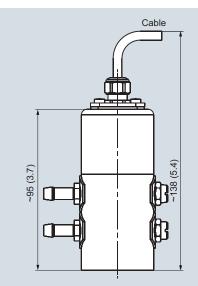
### Dimensional drawings



SITRANS P250 differential pressure transmitter with socket outlet to EN 175301-803-A, dimensions in mm (inch)



SITRANS P250 differential pressure transmitter with round connector to EN 60130-9, dimensions in mm (inch)



SITRANS P250 differential pressure transmitter with cable, dimensions in mm (inch)

Transmitters for basic requirements

				SITRANS P250	for dif	ferent	ial pre	essure
Process connections		Ø		Width across flats	L		x	
		[mm]	[inch]		[mm]	[inch]	[mm]	[inch]
	Hose connection for hose (brass nickel- plated)	4	0.16	a = 10	20	0.79	61	2.40
	piatou)	6	0.24	a = 10	25	0.99	66	2.60
L L	Pipe union with screw-in nipple for outer pipe (brass nickel-plated)	6	0.24	a = 10 b = 12	24	0.95	65	2.56
		8	0.32	a = 12 b = 14	25	0.99	66	2.60
	Pipe union with screw-in nipple for outer pipe (stainless steel 1.4305/AISI 303)	6	0.24	a = 10 b = 12	24	0.95	65	2.56
		8	0.32	a = 12 b = 14	26	1	67	2.64
7/16-20 UNF	Male thread 7/16-20 UNF (brass nickel-plated)	-	-	a = 14	18	0.71	59	2.32
G1/8	Female thread G1/8 (stainless steel 1.4305/AISI 303)	-	-	a = 14	12	0.47	53	2
	Male thread G1/8 (brass nickel-plated)	-	-	a = 10 b = 12	20	0.79	61	2.40

Transmitters for basic requirements

Selection and Ordering data		Article No.	Orde	er code
SITRANS P 250 pressure transmitter for differential pressure	7	7MF1641-	-	
Accuracy $\leq$ 1 %, wetted parts ceramic/stainless steel 1.4301, scope of delivery: transmitter, mounting bracket and instruction manual, without explosion protection				
✓ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.				
				_
Measuring range 0 0.1 bar (0 40.19 inH <sub>2</sub> O)		3 A A		
$0 \dots 0.2 \text{ bar}$ (0 80.37 inH <sub>2</sub> O)		3 A C		
0 0.25 bar (0 100.46 inH <sub>2</sub> O)	<b>&gt;</b>	3 A D		
0 0.3 bar (0 120.56 inH <sub>2</sub> O)	<b>&gt;</b>	3 A E		
00.4 bar (0160.74 inH <sub>2</sub> O)		3 A F		
00.5 bar (0201.0 inH <sub>2</sub> O)		3 A G		
00.6 bar (0241.0 inH <sub>2</sub> O) 01.0 bar (0402.0 inH <sub>2</sub> O)		3 A H 3 B A		
$0 \dots 1.6 \text{ bar}$ $(0 \dots 442.0 \text{ inH}_2 \text{ O})$ $0 \dots 1.6 \text{ bar}$ $(0 \dots 643.0 \text{ inH}_2 \text{ O})$		3 8 8		
$0 \dots 2.5 \text{ bar}$ (0 \ldots 1005.0 inH <sub>2</sub> O)		3 B D		
0 4.0 bar (0 1607.0 inH <sub>2</sub> O)		3 B E		
0 6.0 bar (0 2411.0 inH <sub>2</sub> O)	<b>&gt;</b>	3 B G		
0 10.0 bar (0 4019.0 inH <sub>2</sub> O)		3 C A		
0 16.0 bar (0 6430.0 inH <sub>2</sub> O)		3 C B		
0 25.0 bar (0 10046 inH <sub>2</sub> O)		3 C D		
Other version, add Order code and plain text (Note: smallest possible span 100 mbar (40.19 $inH_2O$ )		9 A A		H 1 Y
Output signal				
420 mA		0		
0 5 V DC 0 10 V DC		1		
		2		
Electrical connection Plug acc. to EN 175 301-803-A (suitable coupling included in scope of delivery)			1	
Round connector acc. to EN 60139-9			2	
Cable 1.5 m with cable gland			3	
Process connection				
Without connections, female thread 1/8-27 NPT			Α	
Hose connection				
• Brass nickel-plated, for hose $\varnothing$ 4 mm			В	
<ul> <li>Brass nickel-plated, for hose Ø 6 mm</li> </ul>			С	
• PVDF, for hose Ø 6 mm			D	
Pipe union				
<ul> <li>Brass nickel-plated, for pipe Ø 6 mm</li> <li>Stainless steel 1.4304, for pipe Ø 6 mm</li> </ul>			E	
Brass nickel-plated, for pipe Ø 8 mm			G	
Stainless steel 1.4304, for pipe Ø 8 mm			Н	
Male thread, 7/16-20 UNF (Brass nickel-plated)			L	
Adapter				
• Inner, G1/8 (stainless steel), for pipe $\varnothing$ 6 mm			М	
$\bullet$ Outer, G1/8 (Brass nickel-plated), with union nut, for pipe Ø 6 mm			N	
Sealing material				
Fluoro rubber (Viton/FPM)			A	
Ethylene propylene diene monomer rubber (EPDM) Nitrile butadiene rubber (NBR)			B C	
Silicone rubber (MVQ)			D	
Neoprene (CR)			E	
Further designs		Order code	-	
-				
Please add "-Z" to Article No. and specify Order code(s).				

Available ex stock

• We can offer shorter delivery times for configurations designated with the Quick Ship Symbol •. For details see page 9/5 in the appendix.

Transmitters for basic requirements

## SITRANS LH100 Transmitter for hydrostatic level



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 junction box and a cable hanger 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

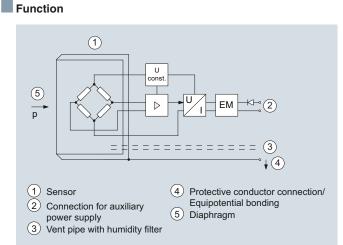
The pressure transmitter has a built-in ceramic sensor which is equipped with a Wheatstone resistance bridge.

These pressure transmitters are equipped with an electronic circuit fitted together with the sensor in a stainless steel housing. 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.



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 condenstation 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.

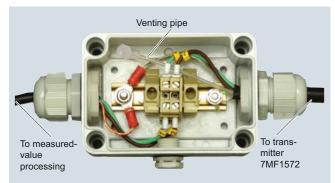
The output voltage of the sensor is applied to the electronic circuit where it is converted into an output current of 4 to 20 mA.

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

#### Integration

It is generally recommended that the connecting cable of the SITRANS LH100 transmitter is connected to the junction box, which can be ordered separately, and secured with the cable hanger, also available separately. The junction 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.



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

Transmitters for basic requirements

# SITRANS LH100 Transmitter for hydrostatic level



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

# Technical specifications

Pressure transmitter SITRANS LH100 (submersible sensor)							
Mode of operation							
Measuring principle	piezo-resistive						
Input							
Measured variable	Hydrostatic level						
Measuring range • 0 4 mH <sub>2</sub> O (0 12 ftH <sub>2</sub> O)	Max. permissible operating pressure • 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)	<ul> <li>3.0 bar (43.5 psi) (corresponds to 30 mH2O (90 ftH2O))</li> </ul>						
• 0 20 mH <sub>2</sub> O (0 60 ftH <sub>2</sub> O)	<ul> <li>5.0 bar (72.5 psi) (corresponds to 50 mH<sub>2</sub>O (150 ftH<sub>2</sub>O))</li> </ul>						
• 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						
Output							
Output signal	4 20 mA						
Measuring accuracy	According to IEC 60770-1						
Error in measurement at limit setting including hysteresis and reproducibil- ity	0.3% of full-scale value (typical)						
Influence of ambient temperature							
Zero and span							
<ul> <li>4 6 mH<sub>2</sub>O (12 18 ftH<sub>2</sub>O or 0.40.6 bar)</li> </ul>	0.45 %/10 K of full-scale value						
• > 6 mH <sub>2</sub> O (> 18 ftH <sub>2</sub> O or > 0.6 bar)	0.3 %/10 K of full-scale value						

Long-term stability	
Zero and span	
• 4 6 mH <sub>2</sub> O (12 18 ftH <sub>2</sub> O or 0.40.6 bar)	0.25% of full-scale value/year
• > 6 mH <sub>2</sub> O	0.2 % of full-scale value/year
( > 18 ftH <sub>2</sub> O or > 0.6 bar)	
Rated conditions	
<ul><li>Ambient conditions</li><li>Process temperature</li></ul>	-10 +80 °C (14 176 °F)
Storage temperature	-40 +80 °C (-40 +176 °F)
Degree of protection according to IEC 60529	IP68
Design	
Weight	
<ul><li>Pressure transmitter</li><li>Cable</li></ul>	≈ 0.2 kg ( ≈ 0.44 lb) 0.025 kg/m (≈ 0.015 lb/ft)
Electrical connection	Cable with 3 conductors, vent pipe
	and integrated humidity filter
Material	ALO acromia 00%
<ul><li>Seal diaphragm</li><li>Enclosure</li></ul>	Al <sub>2</sub> O <sub>3</sub> ceramic, 96% Stainless steel, mat. no. 1.4404/316L
• Gasket	FPM (standard)
Connecting cable	EPDM (optional)
<ul> <li>Connecting cable</li> </ul>	PE-HD (standard) PE-LD (in the case of versions with
	EPDM seal, suitable for drinking water)
Auxiliary power	water)
Terminal voltage on pressure transmit-	10 33 V DC
ter U <sub>B</sub>	10 30 V DC for transmitter with
	intrinsic safety explosion protection
Certificates and approvals	
Drinking water approval (ACS)	1403525
Drinking water approval (WRAS)	applied for
GOST	applied for
Underwriters Laboratories (UL) The transmitter is not subject to the	applied for
pressure equipment directive (PED 97/23/EC)	
Explosion protection	
Intrinsic safety "i"	IECEx SEV 14.0003 SEV 14 ATEX 0109
- Marking	II 1 G Ex ia IIC T4 Ga
Junction box	
Application	for connecting the transmitter cable
Design	
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
Enclosure material Vent pipe for atmospheric pressure	polycarbonate
Enclosure material Vent pipe for atmospheric pressure Screw for cable strength cord	polycarbonate
Enclosure material Vent pipe for atmospheric pressure Screw for cable strength cord Rated conditions	
Enclosure material Vent pipe for atmospheric pressure	polycarbonate
Enclosure material Vent pipe for atmospheric pressure Screw for cable strength cord Rated conditions Degree of protection according to IEC 60529 Cable hanger	
Enclosure material Vent pipe for atmospheric pressure Screw for cable strength cord Rated conditions Degree of protection according to IEC 60529 Cable hanger Application	
Enclosure material Vent pipe for atmospheric pressure Screw for cable strength cord Rated conditions Degree of protection according to IEC 60529 Cable hanger Application Design	IP65 for mounting the transmitter
Enclosure material Vent pipe for atmospheric pressure Screw for cable strength cord Rated conditions Degree of protection according to IEC 60529 Cable hanger Application	IP65

Transmitters for basic requirements

SITRANS LH10	0 Transmitter for h	vdrostatic level
		yai ostatio iovoi

	ering data	-	Article No. <b>7 MF 1 5 7 2 -</b>			Orde		
Pressure transmitt SITRANS LH100 (s	er ubmersible sensor		/ MF1572 -			A		
For measurement of								
level through subm	iersion,							
two-wire system, 4.	20 mA, enclosure							
material mat. no. 1.								
suring cell Al <sub>2</sub> O <sub>3</sub> ce with permanently m								
1 3	cle No. for the online							
	the PIA Life Cycle	:						
Measuring range	Cable length							
0 4 mH <sub>2</sub> O	10 m	►			D			
0 5 mH <sub>2</sub> O	10 m				E			
0 6 mH <sub>2</sub> O	10 m				F			
0 10 mH <sub>2</sub> O	20 m				Н			
0 20 mH <sub>2</sub> O	30 m			1	K			
0 12 ftH <sub>2</sub> O	33 ft			2	D			
0 15 ftH <sub>2</sub> O	33 ft			2	Е			
0 18 ftH <sub>2</sub> O	33 ft			2	F			
0 30 ftH <sub>2</sub> O	66 ft			2	Н			
0 60 ftH <sub>2</sub> O	98 ft			2	Κ			
0 0.4 bar	10 m			3	D			
0 0.5 bar	10 m				E			
0 0.6 bar	10 m				F			
0 1 bar	20 m			3	Н			
0 2 bar	30 m			3	κ			
Special versions:								
Measuring ranges	for special versions							
between	00 11 0							
0 4 mH <sub>2</sub> O and 0								
0 12 ftH <sub>2</sub> O and C	-							
0 0.4 bar and 0 .	3 bar possible.							
Special cable lengt	nt/Special measur-			9	Α		H	ł
ing range Please add "-Z" to .	Article No. and						Ŷ	,
specify Order code	and plain text.							
Note: Indication of								
Y01 is always nece	ssary.							
	e maximum possible	;						
	ing data have to be							
regarded: Transmitter:								
$C_i = 0 \ \mu F, \ L_i = 0 \ \mu H$								
Cable:								
$\overline{C_k} = 0.19 \text{ nF}$ per m $L_k = 1.5 \mu \text{H}$ per me								
K i i								
The maximum pern transmitter's power								
considered!								
3 m (10 ft)							н	l
5 m (16 ft)							Н	
7 m (23 ft)							Н	
10 m (33 ft)							Н	
15 m (49 ft)							Н	
20 m (66 ft)							H	
25 m (82 ft)							H	
30 m (98 ft)							H	
40 m (131 ft)							н	
50  m (164  m)	otwoon concer and						1	1
50 m (164 ft)	etween sensor and							
Sealing material b						1		
Sealing material b								
Sealing material b enclosure	g water applica-					2		
Sealing material be enclosure • FPM (Standard)	ıg water applica-					2		
Sealing material b enclosure • FPM (Standard) • EPDM (for drinkin	<u> </u>		-			2		
Sealing material b enclosure • FPM (Standard) • EPDM (for drinkin tions)	<u> </u>	•				2		

Additional versions	Order code				
Quality inspection certificate (factory calibration) acc. to IEC 60770-2, add "- Z" to article no. and add order code.	C11				
Indication of measuring range (only at special cable lengths) in " to $mH_2O$ " or " to $ftH_2O$ " or " to bar"	Y01				
Accessories/spare parts	Article No.				
Junction box for connecting the transmitter cable	7MF1572-8AA				
Cable hanger  for securing the pressure transmitter	7MF1572-8AB				
Protective caps as spare parts (10-pack)	7MF1572-8AD				
Humidity filters as spare parts (10-pack)	7MF1572-8AE				

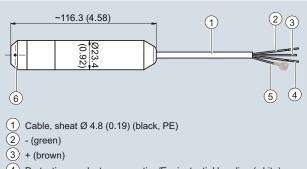
Available ex stock

1

Transmitters for basic requirements

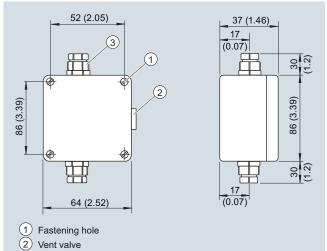
### Dimensional drawings

1



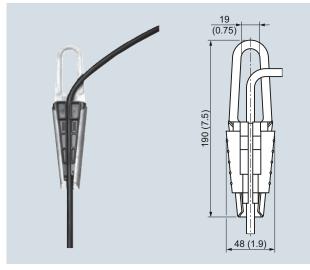
- Protective conductor connection/Equipotential bonding (white)
- (5) Vent pipe with humidity filter Ø 1 (0.04) (inner diameter)
- 6 Protective cap with 4 x Ø 2.5 (0.10) holes (black, PPE)

SITRANS LH100 pressure transmitter, dimensions in mm (inch)



(3) Cable gland Pg 9, cable diameter 4 ... 8 mm (0.16 ... 0.31)

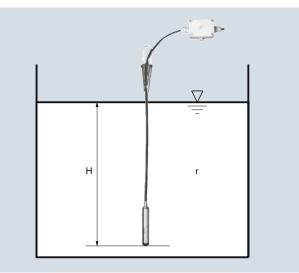
Junction box, dimensions in mm (inch)



Cable hanger, dimensions in mm (inch)

### More information

Determination of the measuring range for media with a density of  $\neq$  1000 kg/m<sup>3</sup> (medium  $\neq$  water)



Calculation of the measuring range:

#### $\mathbf{p} = \rho \mathbf{x} \mathbf{g} \mathbf{x} \mathbf{H}$

with:

- $\rho$  = density of medium
- g = local acceleration due to gravity

# H = maximum level

# Example:

Medium: Diesel fuel,  $\rho$  = 850 kg/m<sup>3</sup>

Acceleration due to gravity: 9.81 m/s<sup>2</sup>

Start-of-scale: 0 m

Maximum level: 6.0 m

Cable length: 10 m

# Calculation:

 $p = 850 \text{ kg/m}^3 \text{ x } 9.81 \text{ m/s}^2 \text{ x } 6.0 \text{ m}$ 

 $p = 50\ 031\ N/m^2$ 

p = 500 mbar

Transmitter to be ordered:

### 7MF1572-1FA11

Plus, if required, junction box 7MF1572-8AA and cable hanger 7MF1572-8AB

Transmitters for basic requirements

## SITRANS P MPS Transmitter for hydrostatic level

## Function



SITRANS P MPS pressure transmitters are submersible sensors for hydrostatic level measurements.

The SITRANS P MPS pressure transmitters are available for various measuring ranges and with explosion protection as an option.

A junction box and a cable hanger are available as accessories for simple installation.

### Benefits

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

### Application

SITRANS P MPS pressure transmitters are used in the following branches for example:

- Oil and gas industries
- Shipbuilding
- Water supply
- · For use in pressureless/open tanks and wells

### Design

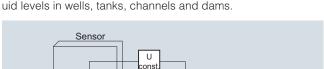
SITRANS P MPS pressure transmitters have a front-flush piezoresistive sensor with stainless steel diaphragm.

These pressure transmitters are equipped with an electronic circuit fitted together with the sensor in a stainless steel housing. The cable also contains a strength cord and vent pipe.

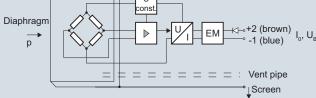
The diaphragm is protected against external influences by a protective cap.

The sensor, electronic circuit and cable are sealed in a common housing of small dimensions.

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



SITRANS P MPS pressure transmitters are for measuring the liq-



SITRANS P MPS pressure transmitter, mode of operation and wiring diagram

On one side of the sensor, the diaphragm 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 in the connection cable.

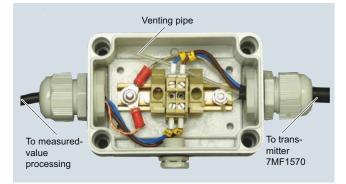
The hydrostatic pressure of the liquid column acts on the sensor diaphragm, and transmits the pressure to the piezo-resistive bridge in the sensor.

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

The cable of the 7MF1570 transmitter must always be connected in the supplied junction box. The junction 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.

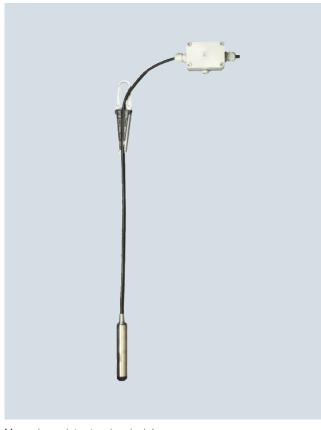
### Integration



Junction box 7MF1570-8AA, opened

Transmitters for basic requirements

# SITRANS P MPS Transmitter for hydrostatic level



Measuring point setup, in principle

# Technical specifications

Mode of operation				
Measuring principle	piezo-resistive			
Input				
Measured variable	Hydrostatic level			
Measuring range	Maximum operating pressure			
• 0 2 mH <sub>2</sub> O (0 6 ftH <sub>2</sub> O)	<ul> <li>1.4 bar (20.3 psi) (corresponds to 14 mH<sub>2</sub>O (42 ftH<sub>2</sub>O))</li> </ul>			
• 0 4 mH <sub>2</sub> O (0 12 ftH <sub>2</sub> O)	<ul> <li>1.4 bar (20.3 psi) (corresponds to 14 mH<sub>2</sub>O (42 ftH<sub>2</sub>O))</li> </ul>			
• 0 5 mH <sub>2</sub> O (0 15 ftH <sub>2</sub> O)	<ul> <li>1.4 bar (20.3 psi) (corresponds to 14 mH<sub>2</sub>O (42 ftH<sub>2</sub>O))</li> </ul>			
• 0 6 mH <sub>2</sub> O (0 18 ftH <sub>2</sub> O)	<ul> <li>3.0 bar (43.5 psi) (corresponds to 30 mH<sub>2</sub>O (90 ftH<sub>2</sub>O))</li> </ul>			
• 0 10 mH <sub>2</sub> O (0 30 ftH <sub>2</sub> O)	<ul> <li>3.0 bar (43.5 psi) (corresponds to 30 mH<sub>2</sub>O (90 ftH<sub>2</sub>O))</li> </ul>			
• 0 20 mH <sub>2</sub> O (0 60 ftH <sub>2</sub> O)	<ul> <li>6.0 bar (87psi) (corresponds to 50 mH<sub>2</sub>O (150 ftH<sub>2</sub>O))</li> </ul>			
Output				
Output signal	4 20 mA			
Measuring accuracy	Acc. to IEC 60770-1			
Error in measurement at limit setting incl. hysteresis and reproducibility	0.3 % of full-scale value (typical)			
Influence of ambient temperature				
Zero and span				
• 1 6 mH <sub>2</sub> O (3 18 ftH <sub>2</sub> O)	0.45 %/10 K of full-scale value			
• $\geq$ 6 mH <sub>2</sub> O ( $\geq$ 18 ftH <sub>2</sub> O)	0.3 %/10 K of full-scale value			

Long-term stability	
Zero and span	
• 1 6 mH <sub>2</sub> O (318 ftH <sub>2</sub> O)	0.25 % of full-scale value/year
• $\geq$ 6 mH <sub>2</sub> O ( $\geq$ 18 ftH <sub>2</sub> O)	0.2 % of full-scale value/year
Rated conditions	
Ambient conditions	
Process temperature	-10 +80 °C (14 176 °F)
Storage temperature	-40 +100 °C (-40 +212 °F)
Degree of prot. to DIN EN 60529	IP68
Design	
Weight	
Pressure transmitter	≈ 0.4 kg (≈ 0.88 lb)
Cable	0.08 kg/m (≈ 0.054 lb/ft)
Electrical connection	Cable with 2 conductors with
	screen and vent pipe, strength cord (max. 300 N (67.44 lbf)
Material	
Seal diaphragm	Stainl. steel, mat. no. 1.4571/316Ti
• Enclosure	Stainl. steel, mat. no. 1.4571/316Ti
• Gasket	Viton
Connecting cable	Either PE/HFFR sheath (non-halo- gen) or FEP sheath
Power supply	
Terminal voltage on pressure trans-	10 36 V DC
mitter $U_{\rm B}$	030 V DC for transmitter with
Cartificates and approvals	intrinsic safety explosion protection
Certificates and approvals Germanischer Lloyd (GL)	GL 75360-09 HH
Bureau Veritas (BV)	BV 27101/A0 BV
Det Norske Veritas (DNV)	DNV A-12553
Drinking water approval (ACS)	ACS 11 ACC NY 014
Drinking water approval (WRAS)	WRAS 1111055
GOST	GOST-R, GOST FR.C.30.004.A/
	42376/1 und PPC 00-04 1505
The transmitter is not subject to the pressure equipment directive (PED 97/23/EC)	
Explosion protection	
Intrinsic safety "i"	SEV 10 ATEX 0149
- Marking	II 1 G Ex ia IIC T4 Ga
Junction box	
Application	for connecting the transmitter cable
Design	
Weight	0.2 kg (0.44 lb)
Electrical connection	2 x 3-way (28 to 18 AWG)
Cable entry	2 x M20 x 1.5
Enclosure material	polycarbonate
Vent pipe for atmospheric pressure	
Screw for cable strength cord	
Rated conditions	
Degree of prot. to DIN EN 60529	IP65
Cable hanger	
Application	for mounting the transmitter
Design	
Weight	0.16 kg (0.35 lb)
Material	Galvanized steel, polyamide

1/32

Transmitters for basic requirements

SITRANS P MPS Transmitter for hydrostati	c level

Selection and Ord	•		Article No.		er code	Selection and Ord	ering data		Article No.	Orde	er coc
ITRANS P MPS per for gauge pres	oressure transmi sure (submers-	t- 7	7 M F 1 5 7 0 -	A 0		SITRANS P MPS p ter for gauge pres ible sensor)		t-	7 M F 1 5 7 0 -	A 0	
e-wire system						2-wire system					
lote: Junction box		r				Note: Junction box included in delivery		r			
Click on the Arti						With FEP cable					
Cycle Portal.	tion in the PIA Life	3				Measuring range	•				
Vith PE cable						0 2 mH <sub>2</sub> O 0 4 mH <sub>2</sub> O	10 m 10 m			C D	
leasuring range	Cable length L	_				0 5 mH <sub>2</sub> O	25 m		5	в	
) 2 mH <sub>2</sub> O	10 m			10		0 6 mH <sub>2</sub> O	25 m			E	
) 4 mH <sub>2</sub> O	10 m 25 m			1 D 1 B		0 10 mH <sub>2</sub> O	25 m			F	
) 5 mH <sub>2</sub> O ) 6 mH <sub>2</sub> O	25 m			1 E		0 20 mH <sub>2</sub> O	25 m			G	
) 10 mH <sub>2</sub> O	25 m			1 F		0 6 ftH <sub>2</sub> O	32 ft			K	
) 20 mH <sub>2</sub> O	25 m			1 G		0 12 ftH <sub>2</sub> O	32 ft			i L i M	
) 6 ftH <sub>2</sub> O	32 ft			1 K		0 18 ftH <sub>2</sub> O 0 30 ftH <sub>2</sub> O	82 ft 82 ft			N	
) 12 ftH <sub>2</sub> O	32 ft			1 L		0 60 ftH <sub>2</sub> O	82 ft			P	
) 18 ftH <sub>2</sub> O	82 ft			1 M		Special cable leng		r_		A	н.
) 30 ftH <sub>2</sub> O	82 ft			1 N		ing range <sup>1)</sup>	nyopecial measu	-	9	A	н. +
) 60 ftH <sub>2</sub> O	82 ft			1 P		Please add "-Z" to					Y 0
Special cable leng	ht/Special measur	-		9 A	н	specify Order code Note: Indication of	e and plain text.				
ng range <sup>1)</sup>					+	Y01 is always nece					
Please add "-Z" to specify Order code					Y 0 1	3 m	,				H 5
lote: Indication of						5 m					H 5
01 is always nece	essary.					7 m					H 5
8 m					H 1 A	10 m					H 5
ōm					H 1 B	15 m					H 5
<sup>7</sup> m					H1C	20 m					H 5
10 m					H1D	25 m					H 5
15 m					H1E	30 m					H 5
20 m					H1F	40 m					H 5
25 m					HIG	50 m					H 5
30 m 10 m					H 1 H H 1 J	60 m					H 5
50 m					H1K	70 m					H 5
						80 m					H 5
60 m 70 m					H1L H1M	90 m 100 m					H 5 H 5
30 m					H1N						
90 m					H1P	125 m					H 5
100 m					H 1 Q	150 m 175 m					H 5
25 m					H1R	200 m					H 5 H 5
50 m					H1S	225 m					H 5
75 m					H1T	250 m					H 5
200 m					H 1 U	275 m					H 5
25 m					H 1 V	300 m					H 6
250 m					H 1 W	350 m					H 6
275 m					H 1 X	400 m					H 6
00 m					H 2 A	450 m					H 6
50 m					H 2 B	500 m					H 6
.00 m					H 2 C	550 m					H 6
50 m					H 2 D	600 m					H 6
500 m					H 2 E	650 m					H 6
550 m 600 m					H 2 F H 2 G	700 m					H 6
600 m 650 m					H 2 H	750 m					H 2
						800 m					H 6
700 m 750 m					H 2 J	850 m					H 6
750 m 300 m					H 2 K H 2 L	900 m					H 6
350 m					H 2 M	950 m					H 6
900 m					H 2 N	1000 m					H 6
950 m					H 2 P						
JJU 111					H 2 Q						

Transmitters for basic requirements

SITRANS P MPS Transmitter for hydrostatic level

		·
Selection and Ordering data	Article No. Order code	Dimensional drawings
SITRANS P MPS pressure transmit- ter for gauge pressure (submers- ible sensor)	7 M F 1 5 7 0 - A 0	Protective cap Cable sheath + (brown)
2-wire system		
Note: Junction box and cable hanger included in delivery		● Kitength
Explosion protection		cord (white)
• None	1	158 (6.2) L – (blue)
<ul> <li>with type of protection "intrinsic safety" (Ex II 1 G Ex ia IIC T4)</li> </ul>	2	- Screen
Approvals		Cable sheath 8.3 (0.33) diam. (black, PE/HFFR)
<ul> <li>with drinking water approval to WRAS and ACS (with EPDM gasket)</li> </ul>	6	Flexible cable with 0.5 mm <sup>2</sup> (0.00078 inch <sup>2</sup> ) cross-section Vent pipe 1 (0.04) diam. (inner diameter) Protective cap with 4 x 3 diam. (4 x 0.12 diam.) holes (black, PA)
Further designs	Order code	
Quality inspection certificate (factory calibration) to IEC 60770-2, add "- <b>Z</b> " to Article No. and add Order code.	C11	SITRANS P MPS pressure transmitters, dimensions in mm (inch)
Indication of measuring range (only at special cable lengths) in , to $mH_2O^{\circ}$ or , to $ftH_2O^{\circ}$	Y01	50 (1.97) 22 (0.87)
Accessories (as spare part)	Article No.	
Junction box	7MF1570-8AA	
for connecting the transmitter cable		hole
Cable hanger for attachment of transmitter	7MF1570-8AB	Venting
Available ex stock		(F) Venting (F) valve

We can offer shorter delivery times for configurations designated with the Quick Ship Symbol 

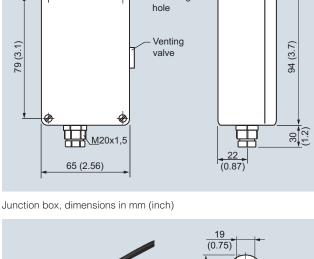
 For details see page 9/5 in the appendix.

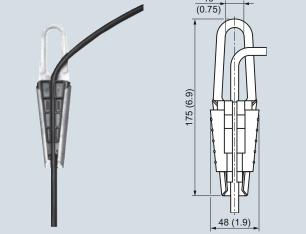
Power supply units see Chap. 7 "Supplementary Components".

- $^{1)}$  Special measuring ranges of between 0 ... 1 mH\_2O (0 ... 3 ftH\_2O) and 0 ... 200 mH\_2O (0 ... 656 ftH\_2O) and special cable lengths of up to 1000 m (3281 ft) are possible. For evaluation of the maximum possible cable length following data have
  - to be regarded:

Transmitter: C<sub>1</sub> = 0 µF, L<sub>1</sub> = 0 µH Cable: C<sub>k</sub> = 0.19 nF per meter cable, L<sub>k</sub> = 1.5 µH per meter cable The maximum permitted data of the transmitter's power supply have to be

The length of free hanging cable should not exceed 375 m (1230 ft). Note: Due to mounting reasons it has to be considered that the cable always must be longer than the height of the liquid column to be measured.





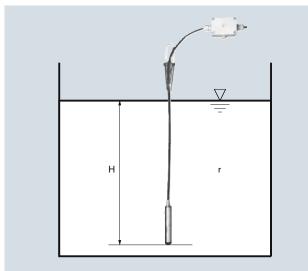
Cable hanger, dimensions in mm (inch)

Transmitters for basic requirements

SITRANS P MPS Transmitter for hydrostatic level

## More information

Determination of the measuring range in case of media with a density  $\neq$  1000 kg/m<sup>3</sup> (medium  $\neq$  water)



### Calculation of the measuring range:

## $\mathbf{p} = \rho \mathbf{x} \mathbf{g} \mathbf{x} \mathbf{H}$

with:

- $\rho$  = density of medium
- g = local acceleration due to gravity
- H = maximum level

### Example:

Medium: Diesel fuel,  $\rho = 850 \text{ kg/m}^3$ Acceleration due to gravity: 9.81 m/s<sup>2</sup> Start-of-scale: 0 m Maximum level: 6.2 m Cable length: 7 m, FEP cable

<u>Calculation:</u>  $p = 850 \text{ kg/m}^3 \times 9.81 \text{ m/s}^2 \times 6.2 \text{ m}$   $p = 51698.7 \text{ N/m}^2$ p = 517 mbar

Transmitter to be ordered: 7MF1570-9AA02-Z, H5C + Y01 Y01: 0 ... 517 mbar

Transmitters for basic requirements

### SITRANS P Compact for gauge and absolute pressure

### Overview



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

The use of high-grade materials guarantees compliance with hygiene regulations.

Particular value has been placed on a high surface quality. The system can be electropolished in addition.

A further important feature is the hygiene-based design of the process connection by means of various aseptic connections.

The completely welded stainless steel housing can be designed up to degree of protection IP67.

Using appropriate thermal decouplers, the SITRANS P Compact pressure transmitter can be used for process temperatures up to 200  $^{\circ}\text{C}$  (392  $^{\circ}\text{F}$ ).

## Benefits

- Measuring ranges from 0 to 160 mbar (0 to 2.32 psi) to 0 to 40 bar (0 to 580 psi)
- Linearity error including hysteresis < +0.2 % of 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 housing with degree of protection IP65 (IP67 as option)
- Process temperature up to 200 °C (392 °F)
- Explosion protection II 2G Ex [ib] IIC T6 to ATEX
- · Easy and safe to clean

### Application

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

The use of high-grade materials guarantees compliance with hygiene regulations.

The SITRANS P Compact pressure transmitter is available in many versions. Exact adaptation of the pressure transmitter to conditions at the place of use is thus possible

### Design

The electronics is potted to protect it against moisture, corrosive atmospheres and vibration.

#### Notes on operating the pressure transmitter

Compensation of internal atmospheric pressure

Compensation of the internal atmospheric pressure of the SITRANS P Compact pressure transmitters is performed as follows:

- in the plug versions by means of the screwed gland (IP65)
- in the field housings by means of an integral sintered filter (IP65) or a vented cable (IP67)
- in versions with cable outlet by means of a vented cable (IP67)

In the absolute pressure range there is no need for compensation with respect to atmospheric pressure.

**Note**: These degrees of protection are only achieved under the following conditions:

- if the pressure transmitter is installed correctly
- if the screwed glands are securely tightened
- if the cable diameters agree with the nominal diameters of the gaskets in the housing

**Note**: The integral EMC measures are only effective if the earth connection is made correctly.

### CE marking

The CE marking of the pressure transmitter certifies compliance with the guidelines of the European Council (9/336/EC), the EMC law (13.11.1992), as well as the applicable generic standards.

Interference-free operation in systems and plants is achieved only if the specifications for shielding, earthing, cable routing and electrical isolation are observed during installation and assembly.

### Hazardous areas

**Note**: Electrical equipment in hazardous areas must only be installed and operated by trained personnel.

Modifications to units and connections result in cancellation of the explosion protection and guarantee.

With intrinsically-safe circuits, make sure that equipotential bonding exists throughout the complete cabling inside and outside of the hazardous area. The limits specified in the ATEX approval must be observed.

Transmitters for basic requirements

	Iransmitter	s for basic requirements
	SITRANS P Compact for g	auge and absolute pressure
	Rated conditions	
	Installation conditions	
niconductor rsmission lia-	<ul> <li>Mounting position</li> </ul>	Any, vertical as standard
values into a	Ambient conditions	
	Ambient temperature	-10 +70 °C (14 158 °F)
argely inde-	Storage temperature	-10 +90 °C (14 194 °F)
a specially plume, the in- signal is	Process temperature	Max. 200 °C (392 °F), depending on design
connection.	Degree of protection (to EN 60529)	IP65, optional IP67
on-regulated	<ul> <li>Electromagnetic Compatibility</li> </ul>	
o measuring	- Emitted interference	To EN 50081 Part 1, issue 1993 (residential and industrial areas). The unit has no own emissions.
	- Noise immunity to	EN 50082 Part 2, issue March 1995 (industrial areas)
piotechnology	Design	
	Weight (without remote seal)	
	Field enclosure	≈ 460 G (≈ 1.01 (lb)
	<ul> <li>Enclosure with plug</li> </ul>	≈ 200 g (≈ 0.44 lb)
pressure	Enclosure	
2.32 psi)	• Designs	• Field housing IP65 or IP67, with
0 psi)		<ul><li>screwed gland</li><li>Angled plug DIN 43650, IP65</li></ul>
		Cable connection, IP67
		Round plug connector M12,
		IP65
	Material	Stainless steel, mat. no. 1.4404/316L/1.4305
1	Material of union nut	Polyamide (with electrical con-
e value	Matcharoranornat	nection using plug or cable)
ale value		Electronics unit potted with sili-
		cone Internal ventilation for measuring
		ranges < 16 bar (< 232 psi), through housing thread or con-
		nection cable depending on design
-scale value	Process connection	design
-scale value	Versions	See ordering data
s on design)	Material of coupling	Stainless steel, mat.
	• Material of coupling	no. 1.4404/316L
69 psi/10 K)	Power supply	
33 psi/10 K)	Terminal voltage on transmitter	10 30 V DC
23 psi/10 K)	Rated voltage	24 V DC
09 psi/10 K)	Certificates and approvals	
	Classification according to pressure	For gases of fluid group 1 and liq-
4 psi/10 K)	equipment directive (PED 97/23/EC)	uids of fluid group 1; complies with the requirements of article 3,
6 psi/10 K)		paragraph 1 (appendix 1); assigned to category III, confor-
5 psi/10 K)		mity evaluation module H by the
5 psi/10 K)		TÜV Nord
d be consid-	Explosion protection	
e a detailed ote seal errors	<ul> <li>Intrinsic safety "i"</li> </ul>	TÜV 03 ATEX 2099 X
010 3001 011015	- Marking	Ex II 2G Ex ib IIC T6

# Function

Technical specifications

The process pressure acts on a piezo-resistive sem measuring bridge through a remote seal and a trans uid. The pressure transmitter converts the pressure v load-independent current.

A compensation network makes the output signal la pendent of the ambient temperature. As a result of a adapted remote seal connection with minimized volu fluence of the process temperature on the output sig greatly reduced compared to a conventional screw

The pressure transmitters can be powered with a no DC voltage of 10 to 30 V. Output signals common to technology are available.

reennear opeennearene	
Pressure transmitters for food, ph	armaceuticals and biotechnolo
Mode of operation	
Measuring principle	piezo-resistive
Input	
Measured variable	gauge or absolute pressure
Measuring range	0 160 mbar (0 2.32 psi)
	 0 40 bar (0 580 psi)
Output	
Output signal	
• 2-wire system	4 20 mA
Three-wire system	0 20 mA
Measuring accuracy	Acc. to IEC 60770-1
Error in measurement at limit setting incl. hysteresis and reproducibility	$\leq$ 0.2 % of full-scale value
Adjustment accuracy	$\leq$ $\pm$ 0.2 % of full-scale value
Step response time	< 20 ms
Influence of ambient temperature	
On the enclosure	
• Zero point	< 0.2 %/10 K of full-scale value
<ul> <li>Measuring span</li> </ul>	< 0.2 %/10 K of full-scale value
On the process connection (remote seals)	Zero error (depends on design
<ul> <li>Flange remote seal</li> </ul>	
- 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 / 11/2"	1.6 mbar/10 K (0.023 psi/10 K)
- DN 50 / 2"	0.6 mbar/10 K (0.009 psi/10 K)
• Clamp-on seal	
- DN 25 / 1"	9.5 mbar/10 K (0.14 psi/10 K)
- DN 32 / 1¼"	4.1 mbar/10 K (0.06 psi/10 K)
- DN 40 / 11/2"	3.9 mbar/10 K (0.05 psi/10 K)
- DN 50 / 2"	3.9 mbar/10 K (0.05 psi/10 K)
The same error an estimation for the prop	and another should be access

The zero error specified for the process connection should ered as a guideline for a standard design. We will produce a detailed system calculation on request. Systems with reduced remote seal errors are available on request.

Transmitters for basic requirements

# SITRANS P Compact for gauge and absolute pressure

1

SITRANS P Compact for gauge a					
Selection and Ordering data	Article No.	Ord. code	Selection and Ordering data	Article No.	Ord. code
SITRANS P Compact pressure trans- mitters for pressure and absolute pressure with diaphragm flush at front	7 M F 8 0 1 0 -		SITRANS P Compact pressure trans- mitters for pressure and absolute pressure with diaphragm flush at front	7 M F 8 0 1 0 ·	
2-wire system Process temperature up to 140 °C (284 °F) Accuracy: 0.2 % of full-scale value Output 4 20 mA	1		2-wire system Process temperature up to 140 °C (284 °F) Accuracy: 0.2 % of full-scale value Output 4 20 mA	1	
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.			Diaphragm seal with aseptic connection Aseptic screwed gland to DIN 11864-1,		
Diaphragm seal			form A, with slotted union nut		
with quick-release clamp			• 1 inch	PM	
Milk pipe union to DIN 11851 with slotted union nut			<ul> <li>1½ inch</li> <li>2 inch</li> </ul>	P N P P	
• DN 25	AD		• 2½ inch	PQ	
• DN 32	AE		Aseptic screwed gland to		
• DN 40	A F		DIN 11864-1, form A		
• DN 50	AG		with threaded socket		
• DN 65	AH		• 1 inch	QM	
Milk pipe union to DIN 11851 with			• 1½ inch	QN	
threaded socket			• 2 inch	QP	
• DN 25	BD		• 2½ inch	QQ	
• DN 32	BE		Aseptic screwed NEUMO with slotted union nut <sup>1)</sup>		
• DN 40 • DN 50	B F B G		• DN 25	RD	
• DN 50	BH		• DN 32	RE	
Clamp connection to DIN 32676	DI		• DN 40	RF	
• DN 25	Ср		• DN 50	RG	
• DN 40	CF		Aseptic screwed NEUMO		
• DN 50	CG		with threaded socket <sup>1)</sup>		
Clamp connection to ISO 2852			• DN 25	S D S E	
• 1 inch	DM		• DN 32 • DN 40	SE	
• 1½ inch	DN		• DN 50	SG	
• 2 inch	DP		Aseptic screwed NEUMO	0 u	
• 2½ inch	DQ		with clamp connection, form R <sup>1)</sup>		
IDF standard with slotted union nut	<b>F</b> 14		• DN 25	TD	
• 1 inch • 1½ inch	EM		• DN 32	TE	
• 2 inch	EP		• DN 40	TF	
IDF standard with threaded socket			• DN 50	TG	
• 1 inch	FM		Aseptic screwed NEUMO with clamp connection, form V <sup>1)</sup>		
• 1½ inch	FN		• DN 25	UD	
• 2 inch	FP		• DN 32	UE	
SMS standard with slotted union nut			• DN 40	UF	
• 1 inch	GM		• DN 50	UG	
• 1½ inch	GN		Male thread DIN 3852 Form A		
• 2 inch	G P		• G½", min. meas. span 1.6 bar (23.2 psi)	XA	
SMS standard with threaded socket • 1 inch	нм		• G¾", min. meas. span 1 bar (14.5 psi)	ХВ	
• 1½ inch	HN		<ul> <li>G1", min. meas. span 0.4 bar (5.8 psi)</li> <li>G1½", min. meas. span 0.25 bar</li> </ul>	XC	
• 2 inch	HP		• G 1 1/2, min. meas. span 0.25 bar (3.63 psi)	X D	
DRD flange, without welding-type flange			• G2", min. meas. span 0.16 bar	XE	
• DN 50, PN 40	JH		(2.32 psi)		
Varivent connection (Tuchenhagen)			Special version	ZA	J 1 Y
• D = 50, for Varivent housing DN 25 and	KF		(add Order code and plain text)		
1 inch			Filling liquid		
• D = 68, for Varivent housing DN 40 DN 125 and 1½ 6 inch	KL		Food oil, FDA-listed	3	
Special version	ZA	J1Y	Medicinal white oil	2	1.1.1
(add Order code and plain text)			Special version (add Order code and plain text)	9	L1Y
Filling liquid			Output signal		
Food oil, FDA-listed	3		4 20 mA	1	
Medicinal white oil	2				
Special version	9	L 1 Y	Special version (add Order code and plain text)	9	M 1 Y
(add Order code and plain text)					
Output signal			<sup>1)</sup> Please specify as well:	o toblo "Evente e	doolans" ar '
4 20 mA	1		Connections for pipes: R01, R02 or R03, see	e table "Further	aesigns" on next

or R03, see table "Further designs" on next S: RU1, RU page

9

M 1 Y

Transmitters for basic requirements

SITRANS P Com	pact for gauge and	absolute pressure
	ipuot ioi guugo una	

Selection and Ord	ering data	Article No.	Ord. code	Selection and Order	ing data	Article No.	Ord. cod
mitters for pressu	act pressure trans- re and absolute bhragm flush at front	7 M F 8 0 1 0 -		SITRANS P Compac mitters for pressure pressure with diaph	and absolute	7 M F 8 0 1 0 -	
2-wire system Process temperature Accuracy: 0.2 % of Output 4 20 mA	e up to 140 °C (284 °F) full-scale value	1		2-wire system Process temperature u Accuracy: 0.2 % of fu Output 4 20 mA		1	
	tainless steel mat. electr. connection			Measured range	Overload pres- sure		
Housing with angle IP65	d plug to DIN 43650,	1		(continued)	20 har		
Housing with round union nut made of		2		-1 +9 bar (-14.5 +130.5 psi) -1 +15 bar	30 bar (435 psi) 50 bar	G A G B	
Housing with round union nut made of s		3		(-14.5 +217.6 psi) 0 1 bar a	(725 psi) 10 bar a	на	
	housing (small) with	4		(0 14.5 psia) 0 1.6 bar a	(145 psia) 10 bar a	НВ	
Stainless steel field	housing (small) with	5		(0 23.2 psia) 0 2.5 bar a	(145 psia) 16 bar a	нс	
cable gland, IP67 Internal ventilation < 10 bar (< 145 ps	or measuring ranges			(0 36.3 psia) 0 4 bar a	(232 psia) 16 bar a	НD	
Measured range 0 160 mbar	<b>Overload pressure</b> 2 bar	BB		(0 58 psia) 0 6 bar a (0 87 psia)	(232 psia) 30 bar a (435 psia)	HE	
(0 2.32 psi) 0 250 mbar	(29 psi) 2 bar	BC		0 10 bar a (0 145 psia)	(435 psia) 30 bar a (435 psia)	J A	
(0 3.63 psi) 0 400 mbar (0 5.8 psi)	(29 psi) 6 bar (87 psi)	ВD		Special version (add Order code and	plain text)	Z A	P 1 Y
0 600 mbar (0 8.7 psi)	6 bar (87 psi)	BE		Explosion protection without	n	-	1
0 1 bar (0 14.5 psi)	10 bar (145 psi)	CA		with, to ATEX 100a, II	2 G, Ex ib IIC T6		2
0 1.6 bar (0 23.2 psi)	10 bar (145 psi)	СВ		Further designs Please add "-Z" to Arti	icle No. and specify	Order code	
0 2.5 bar (0 36.3 psi)	16 bar (232 psi)	cc		Order code Hygiene version		P01	
0 4 bar (0 58 psi) 0 6 bar (0 87 psi)	16 bar (232 psi) 30 bar (435 psi)	C D C E		Roughness of proces Foil $R_a < 0.8 \ \mu m$ (3.15 Welded seams $R_a < (5.9 \cdot 10^{-8} \ inch)$	5·10 <sup>-8</sup> inch):		
0 10 bar	30 bar	DA		Integral cooling eler	nent	K01	
(0 145 psi) 0 16 bar (0 232 psi)	(435 psi) 50 bar (725 psi)	DB		Process temperature (392 °F) instead of 14			
0 25 bar (0 363 psi)	50 bar (725 psi)	DC		Connections for pip Pipes to DIN 11850	e	R01	
0 40 bar (0 580 psi)	70 bar (1015 psi)	D D		ISO pipes to DIN 246 Pipes to O. D. Tubing		R02 R03	
-160 0 mbar (-2.32 0 psi)	2 bar (29 psi)	EB		<b>Certificates</b> Quality inspection ce	rtificate	C11	
-250 0 bar (-3.73 0 psi)	2 bar (29 psi)	EC		(Factory calibration) t Inspection certificate		C12	
-400 0 bar (-5.8 0 psi) -600 0 bar	6 bar (87 psi) 6 bar (87 psi)	E D E E		Use of FDA-listed ren liquids certified by tes EN 10204-2.2	note seal filling	C17	
(-8.7 0 psi) -1 0 bar (-14.5 0 psi)	(87 psi) 10 bar (145 psi)	FA		Roughness depth me certified by test repor		C18	
-1 0.6 bar (-14.5 8.7 psi) -1 1.5 bar	10 bar (145 psi) 16 bar	F B F C		Certification to EHED seals with aseptic scr to DIN 11864		C19	
(-14.5 21.8 psi) -1 3 bar	(232 psi) 16 bar	FD					
(-14.5 43.5 psi) -1 5 bar (-14.5 72.5 psi)	(232 psi) 30 bar (435 psi)	FE					

Transmitters for basic requirements

# SITRANS P Compact for gauge and absolute pressure

Selection and Ordering data	Article No.	Ord. code	Selection and Ordering data	Article No.
SITRANS P Compact pressure trans-	7 MF 8 0 1 0 -		SITRANS P Compact pressure trans- mitters for pressure and absolute pressure with clamp-on remote seal	7 M F 8 0 1 (
2-wire system Process temperature up to 140 °C (284 °F) Accuracy: 0.2 % of full-scale value Output 4 20 mA	2		2-wire system Process temperature up to 140 °C (284 °F) Accuracy: 0.2 % of full-scale value Output 4 20 mA	2 -
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.			Clamp-on seal with aseptic connection Aseptic screwed gland to	
Clamp-on remote seal (screwed gland			DIN 11864-1, form A with threaded socket	
at both ends)			• 1 inch	QM
with quick-release clamps			• 1½ inch	QN
Milk pipe union to DIN 11851 with threaded socket			• 192 Inch	QP
• DN 25	AD		Aseptic screwed NEUMO	QF
• DN 32	AE		with threaded socket <sup>1)</sup>	
• DN 32	AE		• DN 25	SD
• DN 50	AG		• DN 32	SE
• DN 65	AG		• DN 40	SF
	АП		• DN 50	SG
Clamp connection to DIN 32676 • DN 25	0.0		• DN 65	SH
	CD		Aseptic screwed NEUMO	511
• DN 32	CECF		with clamp connection, form R <sup>1)</sup>	
• DN 40			• DN 25	тр
• DN 50	CG		• DN 32	TE
• DN 65	СН		• DN 40	TE
Clamp connection to ISO 2852 <sup>1)</sup>			• DN 50	TG
• 1 inch • 1½ inch	D M D N		Aseptic screwed gland SÜDMO with threaded socket W 501	
• 2 inch	DP		• 1 inch	VM
• 2½ inch	DQ	1.4.92	• 1½ inch	VN
Special version add Order code and plain text)	ZA	JIY	• 2 inch	VP
Filling liquid			Aseptic screwed gland SÜDMO with clamp connection W 601	
Food oil, FDA-listed	3		• 1 inch	WM
Medicinal white oil	2		• 1½ inch	WN
Special version (add Order code and plain text)	9	L1Y	• 2 inch	WP
Output signal	-		Special version (add Order code and plain text)	ZA
4 20 mA	1		Filling liquid	
	9	M1Y	Food oil. FDA-listed	3
Special version (add Order code and plain text)	9		Medicinal white oil	2
			Special version	2 0

Please note the internal diameter of the pipe. Please specify pipe classes (see "Further designs")

(add Order code and plain text) Please specify as well: Connections for pipes: R01, R02 or R03, see table "Further designs" on next

Special version

Output signal 4 ... 20 mA

Special version

(add Order code and plain text)

page

Ord. code

MF8010-

9

1

9

J 1 Y

L 1 Y

M 1 Y

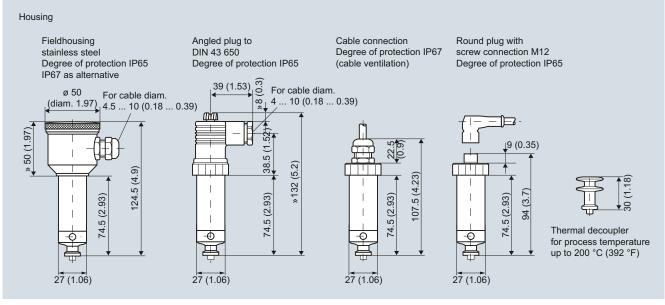
Transmitters for basic requirements

SITRANS P Compact for gauge and absolute pressure

Selection and Ord	•	Article No.	Ord. code	Selection and Ordering data		d. co
mitters for pressu	act pressure trans- re and absolute np-on remote seal	7 M F 8 0 1 0 -		SITRANS P Compact pressure trans- mitters for pressure and absolute pressure with clamp-on remote seal	7 M F 8 0 1 0 -	
2-wire system Process temperatur Accuracy: 0.2 % of Output 4 20 mA	e up to 140 °C (284 °F) full-scale value	2		2-wire system Process temperature up to 140 °C (284 °F Accuracy: 0.2 % of full-scale value Output 4 20 mA	2	
	stainless steel mat. electr. connection			Measured range Overload pressure		
,	ed plug to DIN 43650,	1		-1 9 bar 30 bar	G A	
Housing with round union nut made of	d plug M12, IP65,	2		(-14.5 130.5 psi) (435 psi) -1 15 bar 50 bar	GB	
Housing with round union nut made of	d plug M12, IP65,	3		(-14.5 217.6 psi) (725 psi) 0 1 bar a 10 bar a	НА	
	housing (small) with	4		(0 14.5 psia) (145 psia) 0 1.6 bar a 10 bar a	НВ	
Stainless steel field	I housing (small) with	5		(0 23.2 psia) (145 psia) 0 2.5 bar a 16 bar a	нс	
	for measuring ranges			(0 36.3 psia) (232 psia) 0 4 bar a 16 bar a	НD	
< 10 bar (< 145 ps Measured range	Overload pressure			(0 58 psia) (232 psia) 0 6 bar a 30 bar a	не	
0 160 mbar (0 2.32 psi)	2 bar (29 psi)	BB		(0 87 psia) (435 psia)		
0 250 mbar (0 3.63 psi)	(29 psi) 2 bar (29 psi)	вс		0 10 bar a 30 bar a (0 145 psia) (435 psia)	JA	
0 400 mbar (0 5.8 psi)	(29 psi) 6 bar (87 psi)	ВD		Special version (add Order code and plain text)	ZAF	9 1 Y
0 600 mbar (0 8.7 psi)	(87 psi) 6 bar (87 psi)	BE		Explosion protection without	1	
0 1 bar (0 14.5 psi)	10 bar (145 psi)	CA		with, to ATEX 100a, II 2 G, Ex ib IIC T6 Further designs	2 Order code	
0 1.6 bar (0 23.2 psi)	10 bar (145 psi)	СВ		Please add "-Z" to Article No. and specify		
0 2.5 bar (0 36.3 psi)	16 bar (232 psi)	cc		Order code Hygiene version	P01	
0 4 bar (0 58 psi)	16 bar (232 psi)	CD		Roughness of process connection: Foil $R_a < 0.8 \ \mu m (3.15 \cdot 10^{-8} \text{ inch});$		
0 6 bar (0 87 psi)	30 bar (435 psi)	CE		Welded seams R <sub>a</sub> < 1.5 µm (5.9·10 <sup>-8</sup> inch)		
0 10 bar (0 145 psi)	30 bar (435 psi)	DA		Integral cooling element Process temperature max. 200 °C	K01	
0 16 bar (0 232 psi)	50 bar (725 psi)	DB		(392 °F) instead of 140 °C (284 °F) Connections for pipe		
0 25 bar	50 bar	DC		Pipes to DIN 11850	R01	
(0 363 psi) 0 40 bar (0 500 psi)	(725 psi) 70 bar (1015 psi)	DD		ISO pipes to ISO 2463 Pipes to O. D. Tubing "BS 4825 Part 1"	R02 R03	
(0 580 psi) -160 0 mbar	(1015 psi) 2 bar	EB		Certificates		
(-2.32 0 psi) -250 0 bar	(29 psi) 2 bar	EC		Quality inspection certificate (Five-step factory calibration) to	C11	
(-3.73 0 psi) -400 0 bar	(29 psi) 6 bar	ED		IEC 60770-2 Inspection certificate to EN 10204-3.1	C12	
(-5.8 0 psi) -600 0 bar	(87 psi) 6 bar	EE		Use of FDA-listed remote seal filling liquids certified by test report	C17	
(-8.7 0 psi) -1 0 bar	(87 psi) 10 bar	FA		to EN 10204-2.2 Roughness depth measurement R <sub>a</sub>	C18	
(-14.5 0 psi) -1 0.6 bar	(145 psi) 10 bar	FB		certified by test report to EN 10204-3.1		
(-14.5 8.7 psi) -1 1.5 bar	(145 psi) 16 bar	FC		Certification to EHEDG for clamp-on seals with aseptic screwed gland	C19	
(-14.5 21.8 psi) -1 3 bar	(232 psi) 16 bar	F D		to DIN 11864		
(-14.5 43.5 psi) -1 5 bar	(232 psi) 30 bar	FE				
(-14.5 72.5 psi)	(435 psi)					

Transmitters for basic requirements

#### Dimensional drawings



Rd. 78 x 1/6"

Rd. 95 x 1/6"

SITRANS P Compact, dimensions in mm (inch)

#### **Process connections**

Diaphragm seal with quick-release clamp

Milk pipe union to DIN 11851 with slotted union nut						
	DN	PN	H mm (inch)	G		
	25	40	24 (0.95)	Rd. 52 x 1/6"		
G	32	40	24 (0.95)	Rd. 58 x 1/6"		
	40	40	24 (0.95)	Rd. 65 x 1/6"		

25

25

25.1 (0.99)

28.6 (1.13)

#### Milk pipe union to DIN 11851 with threaded socket

50

65

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

#### Clamp connection to DIN 32676

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

#### Clamp connection to ISO 2852

	DN	PN	H mm (inch)	D mm (inch)
	1"	16	14 (0.55)	50.5 (2)
' D '	1½"	16	12 (0.47)	50.5 (2)
	2"	16	14 (0.55)	64 (2.52)
	21/2"	16	14 (0.55)	77.5 (3.05)

#### IDF standard with slotted union nut

	DN	PN	H mm (inch)	G inch (IDF thread)
	1"	40	21 (0.83)	1"
G	11⁄2"	40	13.5 (0.53)	11⁄2"
1 1	2"	25	15 (0.59)	2"

#### IDF standard with threaded socket

	DN	PN	H mm (inch)	G inch (IDF thread)
	1"	40	21 (0.83)	1"
G	1½"	40	13.5 (0.53)	11⁄2"
	2"	25	15 (0 59)	2"

#### SMS standard with slotted union nut

	DN	PN	H mm (inch)	G
	1"	40	16 (0.63)	Rd 40 x 1.6"
G	11⁄2"	40	16 (0.63)	Rd 60 x 1.6"
	2"	25	16 (0.63)	Rd 70 x 1.6"

SMS standard with threaded socket						
	DN	PN	H mm (inch)	G		
	1"	40	16 (0.63)	Rd 40 x 1.6"		
G	<b>1</b> ½"	40	20 (0.79)	Rd 60 x 1.6"		
	2"	25	20 (0.79)	Rd 70 x 1.6"		

DRD flange, without welding-type flange					
[[]]]]]]]]]]]]]]]]]]]]]]]]]]]]]]]]]]]]	DN	PN	H mm (inch)	D mm (inch)	
	50	40	16.7 (0.66)	65.5 (2.58)	

Transmitters for basic requirements

# SITRANS P Compact for gauge and absolute pressure

Male thread	I DIN	3852,	form	
-------------	-------	-------	------	--

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

#### Diaphragm seal with aseptic connection

Varivent connection

Aseptic screwed gland to DIN 11864-1, form A, with slotted union nut

	DN	PN	H mm (inch)	G
	1"	40	20 (0.79)	Rd 52 x 1/6"
G	1½"	40	20 (0.79)	Rd 58 x 1/6"
	2"	25	20 (0.79)	Rd 65 x 1/6"
	21/2"	25	20 (0.79)	Rd 78 x 1/6"

#### Aseptic screwed gland to DIN 11864-1, form A, with threaded socket

S777/	DN	PN	H mm (inch)	G
	1"	40	15 (0.59)	Rd 52 x 1/6"
G ►	11⁄2"	40	15 (0.59)	Rd 58 x 1/6"
	2"	25	15 (0.59)	Rd 65 x 1/6"
	21⁄2"	25	15 (0.59)	Rd 78 x 1/6"

#### Aseptic screwed NEUMO BioConnect with slotted union nut

	DN	PN	H mm (inch)	G
	25	16	15 (0.59)	M 42 x 2
G	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

#### Aseptic screwed NEUMO BioConnect with threaded socket

	DN	PN	H mm (inch)	G
	25	16	20 (0.79)	M 42 x 2
G →	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

# Aseptic screwed NEUMO BioConnect with clamp connection, form R

DN	PN	H mm (inch)	D mm (inch)
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)

# Aseptic screwed NEUMO BioConnect with clamp connection, form V

\$777X7772 =+	DN	PN	H mm (inch)	D mm (inch)
	25	40	15 (0.59)	50.5 (2)
	32	40	15 (0.59)	50.5 (2)
	40	40	15 (0.59)	64 (2.52)
	50	25	15 (0.59)	77.4 (3.05)

ale thread DIN 3852, form A						
SW SW	G	d mm (inch)	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)
d	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)

Clamp-on remote seal (screwed gland at both ends) with quickrelease clamps

## Milk pipe union to DIN 11851 with threaded socket

	DN	PN	L mm (inch)	G
	25	40	110 (4.33)	Rd 52 x 1/6"
T₄→T	32	40	110 (4.33)	Rd 58 x 1/6"
	40	40	110 (4.33)	Rd 65 x 1/6"
	50	25	110 (4.33)	Rd 78 x 1/6"
	65	25	110 (4.33)	Rd 95 x 1/6"

#### Clamp connection to DIN 32676

	DN	PN	L mm (inch)	D mm (inch)
	25	16	110 (4.33)	50.5 (2)
L	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 to ISO 2852

DN	PN	L mm (inch)	D mm (inch)
1"	16	110 (4.33)	50.5 (2)
11⁄2"	16	110 (4.33)	50.5 (2)
2"	16	110 (4.33)	64 (2.52)
21/2"	16	110 (4.33)	91 (3.58)

#### Clamp-on seal with aseptic connection

Aseptic screwed gland to DIN 11864-1, form A, with threaded socket				
	DN	PN	L mm (inch)	G
	1"	40	110 (4.33)	Rd 52 x 1/6"
T <b>₄</b> L →T	11⁄2"	40	110 (4.33)	Rd 65 x 1/6"

#### 2" 25 110 (4.33) Rd 78 x 1/6" Aseptic screwed NEUMO BioConnect with threaded socket

Aseptic screwed NEOMO Dioconnect with threaded socket				
	DN	PN	L mm (inch)	G
	25	16	110 (4.33)	M 42 x 2
<b>∢</b>	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

Transmitters for basic requirements

# SITRANS P Compact for gauge and absolute pressure

Aseptic screwed NEUMO BioConnect with clamp connection, form R				
	DN	PN	L mm (inch)	D mm (inch)
	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)

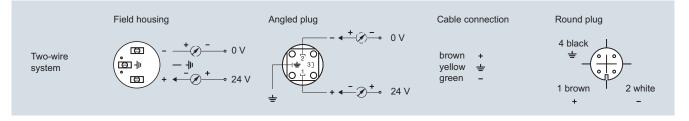
#### Aseptic screwed gland SÜDMO with threaded socket W 501

	DN	PN	L mm (inch)	G
	1"	25	110 (4.33)	Rd 44 x 1/6"
T₄→T	11⁄2"	25	110 (4.33)	Rd 58 x 1/6"
	2"	20	110 (4.33)	Rd 78 x 1/6"

#### Aseptic screwed gland SÜDMO with threaded socket W 601

DN	PN	L mm (inch)	D mm (inch)
1"	16	110 (4.33)	50.5 (2)
11⁄2"	16	110 (4.33)	64 (2.52)
2"	16	110 (4.33)	77.5 (3.05)

# Schematics



SITRANS P Compact, connection diagram

## Pressure Measurement Transmitters with WirelessHART

SITRANS P280 for gauge and absolute pressure

## Application

The SITRANS P280 is a WirelessHART field device for measuring absolute and gauge pressure.

The measuring ranges for absolute and gauge pressure measurements are 0 to 1.6, 10, 50, 200 and 320 bar (0 to 23, 145, 725, 2900 and 4641 psi).

The sensor is integrated into the transmitter housing

On the wireless communication side, the transmitter supports the WirelessHART standard. A HART modem can be connected to the transmitter particularly for initial comissioning, alternatively the device can be commissioned comfortably by means of the local pushbuttons w/o any additional handset devices.

It can be used in all industries and applications in non-explosive areas.

# Design

The SITRANS P280 has a robust aluminum enclosure and is suitable for outside use. It conforms with the IP65 safety class.

The operating temperature range is -40 to +80 °C (-40 to +176 °F). Power supply is provided through an integrated battery, which is available as an accessory. The device is only approved for operation with this battery.

The aerial features a rotatable joint which can be used for directional alignment. Wireless signals can thus be optimally received and transmitted.

A special highlight is the option for direct operation on the device. The operating strategy used in this case seamlessly integrates into the strategy of all new Siemens field devices.

Using the device's control buttons, it is easy to turn the HART modem interface of the device on and off. The device can be put to passive status and reactivated at any time. This helps to extend the service life of the battery.

The SITRANS P280 transmitter features a ceramic measuring cell for gauge and absolute pressure measurements.

## Function

The SITRANS P280 can join to a WirelessHART network. It can be parameterized and operated through this network. Measured process values are transported via the network to the SIEMENS IE/WSN-PA link.

Field device data received by the IE/WSN-PA LINK is transmitted to the connected systems, for example the process control system SIMATIC PCS 7. For an introduction of WirelessHART, please see the FI 01 catalogue, section 8 or http://www.siemens.com/wirelesshart.

Detailed information on IE/WSN-PA can be found in the FI 01 catalogue, section 7 or http://www.siemens.com/wirelesshart.



SITRANS P280 for flexible and cost-effective applications in pressure monitoring

- Supports the WirelessHART standard (HART V 7.1)
- Very high security level for wireless data transmission
- Built-in local user interface (LUI) with 3-button operation
- Optimum display and readability using graphical display (104 x 80 pixels) with integrated backlight
- Stand-by (deep sleep phase) can be activated and deactivated device with push of a button
- Battery power supply
- Battery service live up to 5 years
- Extend battery service life with HART modem interface which can be shut off
- Optimized power consumption through new design, and increase in battery service life.
- Simple configuration thanks to SIMATIC PDM
- Device meets IP65 degree of protection
- · Can be used for absolute and gauge pressure measurements

#### Benefits

Overview

The SITRANS P280 is a pressure transmitter that features Wireless HART as the standard communication interface.

Also available is a wired interface to connect a HART modem:

- Flexible pressure measurements
- Save costs on writing for difficult installation conditions. Wireless technology offers cost advantages in cases where extensive wiring cost would normally apply.
- It enables additional hitherto unfeasible measuring points, particularly for monitoring purposes.
- · Easy installation on moveable equipment
- Enables cost-effective temporary measurements, for example for process optimizations.
- Optimum solution in addition to wired communication and new possibilities for system solutions in process automation

Transmitters with WirelessHART

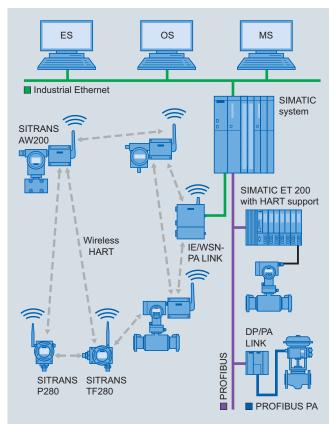
# SITRANS P280 for gauge and absolute pressure

#### Integration

#### Connecting to SIMATIC PCS 7

The integration of field devices in SIMATIC PCS 7 and other process control systems can now be done seamlessly and cost-effectively with wireless technology, especially in situations where high wiring costs may be expected. Of particular interest are measuring points which are to be added and for which no MSR wiring is available.

Where larger distances between the IW/WSN-PA LINK and control systems need to be overcome, this connection can also be implemented on a wireless and cost-effective basis using the products of the SCALANCE W family.



Integration of a meshed network in SIMATIC PCS7

#### Configuration

Configuration of the SITRANS P280 may be carried out as follows:

- Initial comissioning for the SITRANS P280 with SIMATIC PDM is generally carried out via a HART modem or the integrated local user interface, since the network ID and join key must be set up on the device before it can be accepted and integrated into the WirelessHART network.
- Once it is integrated into the network, the device can be conveniently operated with the WirelessHART network, the onsite HART modem or via the local user interface.
- Siemens WirelessHART devices operate with optimum coexistence to SCALANCE W family products.

# Technical specifications

Technical specifications				
SITRANS P280 WirelessHART pres	ssure transmitter			
Mode of operation				
Measuring principle	piezo-resistive			
Measured variable	Gauge and absolute pressure			
Gauge pressure input				
Measuring range	Overload limit/Bursting pressure			
0 1.6 bar (0 23 psi) 0 10 bar (0 145 psi) 0 50 bar (0 725 psi) 0 200 bar (0 2900 psi) 0 320 bar (0 4641 psi)	4 bar (58 psi) 20 bar (290 psi) 100 bar (1450 psi) 400 bar (5801 psi) 640 bar (9282 psi)			
Units	mbar, bar, m4H <sub>2</sub> O, i4H <sub>2</sub> O, atm, Torr, gcm <sup>2</sup> , kgcm <sup>2</sup> , Pa, kPa, Mpa, psi, mmHG, mmH <sub>2</sub> O, ftH <sub>2</sub> O, inHG, inH <sub>2</sub> O			
Absolute pressure input				
Measuring range	Overload limit/Bursting pressure			
0 1.6 bar a (0 23 psia) 0 10 bar a (0 145 psia) 0 50 bar a (0 725 psia) 0 200 bar a (0 2900 psia) 0 320 bar a (0 4641 psia)	4 bar a (58 psia) 20 bar a (290 psia) 100 bar a (1450 psia) 400 bar a (5801 psia) 640 bar a (9282 psia)			
Units	mbar, bar, m4H <sub>2</sub> O, i4H <sub>2</sub> O, atm, Torr, gcm <sup>2</sup> , kgcm <sup>2</sup> , Pa, kPa, MPa, psi, mmHG, mmH <sub>2</sub> O, ftH <sub>2</sub> O, inHG, inH <sub>2</sub> O			
Output				
Output signal	2.4 GHz Wireless signal with TSMP (Time Synchronized Mesh Protocol)			
Measuring accuracy	as per IEC 60770-1			
Error in measurement at limit setting incl. hysteresis and reproducibility	typ. 0.17 % of sensor's span max. 0.25 % of sensor's span			
Long-term stability	max. $\pm$ 0.25 % of sensor/year span			
Influence of ambient temperature	typ. 0.07 %/10K, max. 0.2 %/10 K of sensor's span			
Rated conditions				
Ambient conditions				
Ambient temperature	-40 +80 °C (-40 +176 °F) (in ambient temperatures below - 20 °C (-4 °F) and above +70 °C (158 °F), readability of the display is limited.)			
<ul> <li>Storage temperature</li> </ul>	-40 +85 °C (-40 +185 °F)			
Relative humidity	< 95 %			
Climatic class	4K4H in accordance with EN 60721-3-4(stationary use at loca- tions not protected against weather)			
Degree of protection	IP65/NEMA 4			
Allowable media temperature	-40 85 °C (-40 +185 °F)			

1

Transmitters with WirelessHART

Design		Selection and Ordering data	Article No.
Enclosure material	low-copper die-cast aluminum, AC-AlSi12(Fe)	SITRANS P280 WirelessHART 7 pressure transmitter	7 M P 1 1 2 0 -
Shock resistance	in accordance with DIN EN 60068-2-29 / 03.95	(Required battery not included with delivery, see accessories)	
Resistance to vibration	in accordance with DIN EN 60068-2-6/ 12.07	Click on the Article No. for the online configu- ration in the PIA Life Cycle Portal.	
Weight		Measuring cell filling	
<ul> <li>without battery</li> </ul>	1.5 kg (3.31 lb)	Dry measuring cell	0
• With battery	1.6 kg (3.53 lb)	Measuring span	
Dimensions (W x H x D)	See Dimensional drawing	Gauge pressure	
Process connection	• G1/2B male thread as per	0 1.6 bar (0 23 psi) 0 10 bar (0 145 psi)	DE
	EN837-1	0 50 bar (0 725 psi)	F
	• 1/2-14 NPT	0 200 bar (0 2900 psi)	G
Sensor break	Is recognized	0 320 bar (0 4641 psi)	н
Displays and controls		Absolute pressure	
Display (with illumination)		0 1.6 bar a (0 3 psia) 0 10 bar a (0 145 psia)	M
Size of display	104 x 80 pixels	0 50 bar a (0 725 psia)	P
<ul> <li>Number of digits</li> </ul>	adjustable	0 200 bar a (0 2900 psia)	Q
Number of spaces after comma	adjustable	0 320 bar a (0 4641 psia)	R
Setting options	• on site with 3 buttons	Wetted parts	
0.1	• with SIMATIC PDM or HART-	Ceramic	К
	Communicator	Display	
Power supply		Display, visible	1
Battery	3.6 V DC	Enclosure	
Communication		Die-cast aluminum	1
Radio	WirelessHART V7.1 conforming	Process connection	
Transmission frequency band	2.4 GHz (ISM-Band)	G½ as per EN 837-1	0
Transmission range under reference conditions	Up to 250 m (line of sight) in out- side areas	1/2-14 NPT Explosion protection	1
	Up to 50 m (greatly dependent on	Without	A
Communication interfaces	<ul><li>obstacles) in inside areas</li><li>HART communication with</li></ul>	Antenna	-
communication interfaces	HART communication with HART modem	Variable, attached to device	А
	WirelessHART	Further designs	Order code
Certificates and approvals		Please add "-Z" to Article No. and specify Order	
Wireless communication approvals		code(s) and plain text.	
General Product Safety	CSA <sub>US/C</sub> , CE, UL	Stainless steel tag plate (measuring point description)	Y15
Classification according to pressure	Gases: Fluid group 1	max. 16 digits entered in plain text	
equipment directive (PED 97/23/EC)	Liquids: Fluid group 1;	Y15:	_
,	meets requirements as per Sec- tion 3, Subsection 3 (sound engi- neering practice)	Measuring point message max. 27 characters entered in plain text: Y16:	Y16
		Accessories	Article No.
		Lithium battery for SITRANS TF280/P280	> 7MP1990-0AA0
		Mounting bracket, steel	7MF4997-1AC

Mounting bracket, stainless steel

HART modem with USB interface

IE/WSN-PA LINK

SIMATIC PDM

Available ex stock

Cover, die-cast aluminum, without window

Cover, die-cast aluminum, with window

> 7MF4997-1AJ

see Sec. 7

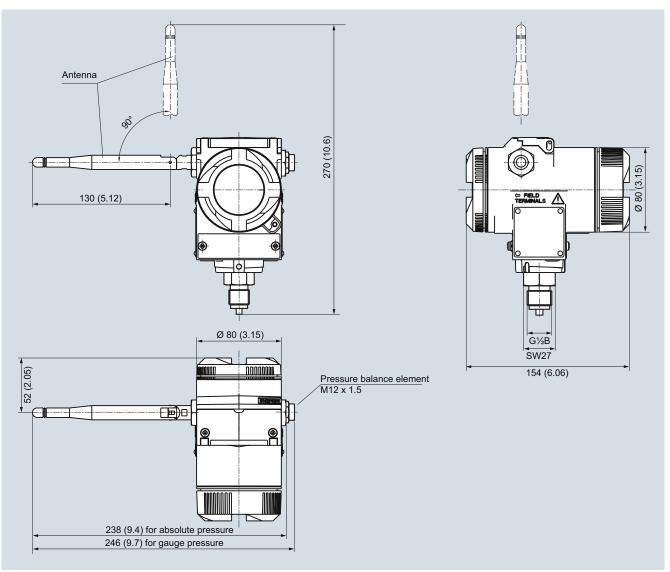
see Sec. 8

7MF4997-1DB

7MF4997-1BB > 7MF4997-1BE

Transmitters with WirelessHART

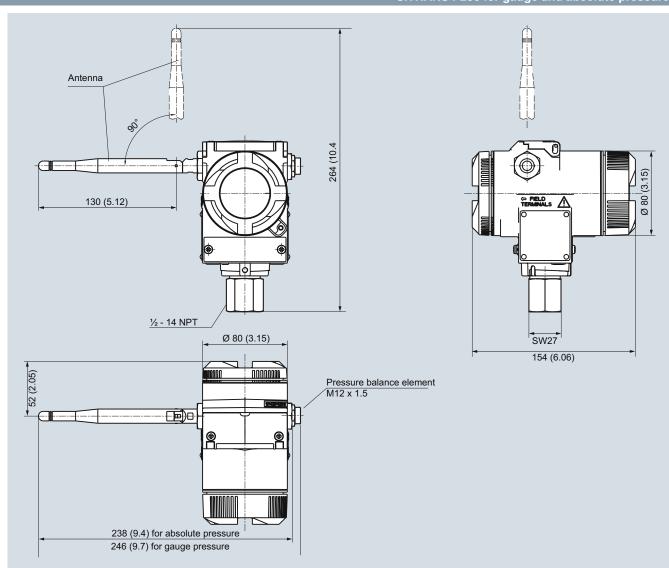
# Dimensional drawings



SITRANS P280 WirelessHART pressure transmitter, process connection G1/2", dimensions in mm (inch) The dimensional drawing of the mounting bracket see on page 1/171.

Transmitters with WirelessHART

SITRANS P280 for gauge and absolute pressure



SITRANS P280 WirelessHART pressure transmitter, process connection  $\frac{1}{2}$  - 14 NPT, dimensions in mm (inch) The dimensional drawing of the mounting bracket see on page 1/171.

Transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressure

#### 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 signal, which is linearly proportional to the input pressure. Communication is via HART protocol or PROFIBUS PA interface. Convenient buttons for easy local operation of the basic settings of the pressure transmitter.

The SITRANS P300 has a single-chamber stainless steel casing. The pressure transmitter is approved with "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 diagnosis and simulation functions
- Minimum conformity error
- · Small long-term drift
- Wetted parts made of high-grade materials (such as stainless steel, Hastelloy)
- Measuring range 0.008 bar to 400 bar (0.1 psi to 5802 psi)
- High measuring accuracy
- Parameterization over control keys and HART 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 Fieldbussignal, which is linearly proportional to the input pressure. The pressure transmitter measures aggressive, non-aggressive and hazardous gases, as well as 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 version of the transmitter can be installed in hazardous areas (zone 1). The transmitters are provided with an EC type examination certificate and comply with the respective harmonized European standards of ATEX.

#### Gauge pressure

This variant measures aggressive, non-aggressive and hazardous gases, vapors and liquids.

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

#### Level

With appropriate parameter settings, the gauge pressure variant measures the level of aggressive, non-aggressive and hazard-ous liquids.

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

#### Absolute pressure

This variant measures the absolute pressure of aggressive, nonaggressive and hazardous gases, vapors and liquids.

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

Function

## Pressure Measurement

Transmitters for food, pharmaceuticals and biotechnology

Operation of electronics with HART communication

SITRANS P300 for gauge and absolute pressure

# Design

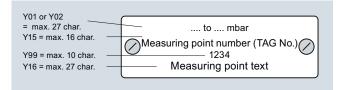
- The device comprises:
- Electronics
- Housing
- Measuring cell

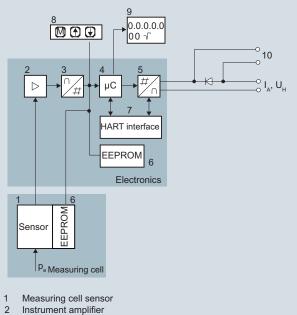


#### Perspective view of SITRANS P300

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





- 3
- Analog-to-digital converter 4 Microcontroller
- 5 Digital-to-analog converter
- 6 One non-volatile memory each in the measuring cell and
- electronics 7 HART interface
- 8 Three input keys (local operation)
- 9 Digital display
- 10 Diode circuit and connection for external ammeter
- Output current
- I Û, Power supply
- P Input variable

#### Function diagram of electronics

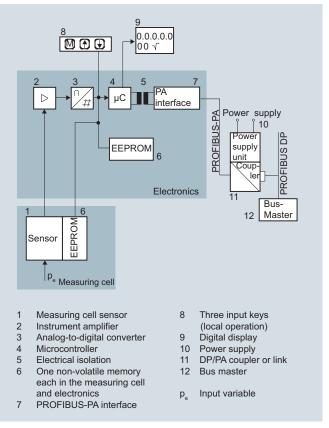
The input pressure is converted into an electrical signal by the sensor (1). This signal is amplified by the measuring amplifier (2) and digitalized in an analog-to-digital converter (3). The digital signal is analyzed in a microcontroller (4) and corrected according to linearity and thermal characteristics. 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 specific to the measuring cell, the electronic data and parameter settings are stored in two non-volatile memories (6). The first memory is linked to the measuring cell, the second to the electronics.

The buttons (8) can be used to call up individual functions, socalled modes. If you have a device with a 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).

Transmitters for food, pharmaceuticals and biotechnology

#### SITRANS P300 for gauge and absolute pressure

**Operation of electronics with PROFIBUS PA** communication



#### **Operation of electronics with FOUNDATION Fieldbus** communication

9

 $\square \oplus \bigcirc$ 

0.0.0.0.0

interface

Electronics

6

undation Fieldbus

Power supply

Powe

supply

10

loo√

5 FF

uС

EEPROM

#### EPRON ∫p<sub>e</sub> Measuring cell Measuring cell sensor Three input keys 1 8 2 Instrument amplifier (local operation) 3 Analog-to-digital converter 9 Digital display 4 Microcontroller Power supply 10 Electrical isolation 5 6 One non-volatile memory Input variable p, each in the measuring cell and electronics 7 FF interface

#### Function diagram of electronics

The input pressure is converted into an electrical signal by the sensor (1). This signal is amplified by the measuring amplifier (2) and digitalized in an analog-to-digital converter (3). The digital signal is analyzed in a microcontroller (4) and corrected according to linearity and thermal characteristics. It is then made avail-

able at the PROFIBUS PA over 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 memory is linked to the measuring cell, the second to the electronics.

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

#### Function diagram of electronics

Sensor

The bridge output voltage created by the sensor (1, Figure "Function diagram of electronics") amplified by the measuring amplifier (2) and digitized in the analog-to-digital converter (3). The digital information is evaluated in the microcontroller, its linearity and temperature response corrected, and provided on the FOUNDATION Fieldbus through 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). The 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 results, the error messages and the operating modes on the display (9).

The results with status values and diagnostic values are transferred by cyclic data transmission on the FOUNDATION Fieldbus. Parameterization 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

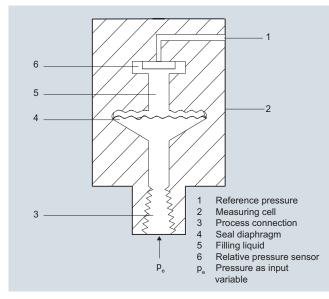
The process connections available include the following:

- G1/2
- ½-14 NPT
- Flush-mounted diaphragm:
  - Flanges to EN
  - Flanges to ASME
  - NuG and pharmaceutical connections

Transmitters for food, pharmaceuticals and biotechnology

#### Measuring cell for gauge pressure

# SITRANS P300 for gauge and absolute pressure

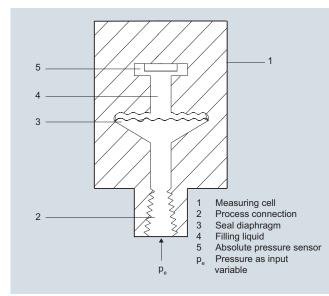


Measuring cell for gauge pressure, function diagram

The input pressure  $(p_e)$  is transferred to the gauge pressure sensor (6) via the seal diaphragm (4) and the filling liquid (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.

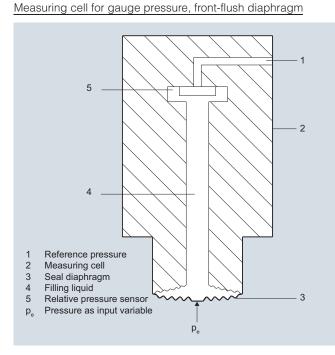
Transmitters with spans  $\leq$  63 bar ( $\leq$  926.1 psi) measure the input pressure compared to atmospheric, transmitters with spans of  $\geq$  160 bar ( $\geq$  2352 psi) compared to a vacuum.

#### Measuring cell for absolute pressure



Measuring cell for absolute pressure, function diagram

The input pressure ( $p_e$ ) is transferred to the absolute pressure sensor (5) via the seal diaphragm (3) and the filling liquid (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.

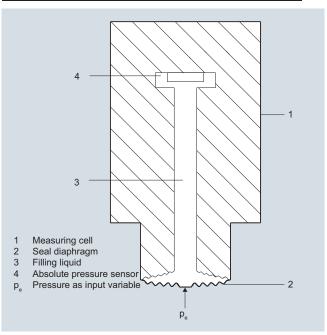


Measuring cell for gauge pressure, front-flush diaphragm, function diagram

The input pressure  $(p_e)$  is transferred to the gauge pressure sensor (6) via the seal diaphragm (4) and the filling liquid (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 spans  $\leq$  63 bar ( $\leq$  926.1 psi) measure the input pressure compared to atmospheric, transmitters with spans of  $\geq$  160 bar ( $\geq$  2352 psi) compared to a vacuum.

Measuring cell for absolute pressure, front-flush diaphragm



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

Transmitters for food, pharmaceuticals and biotechnology

#### SITRANS P300 for gauge and absolute pressure

The input pressure  $(p_e)$  is transferred to the absolute pressure sensor (5) via the seal diaphragm (3) and the filling liquid (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

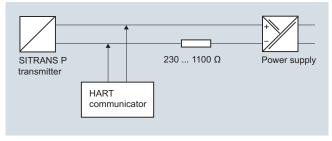
Depending on the version, there are a range of options for parameterizing the pressure transmitter and for setting or scanning the parameters.

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

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

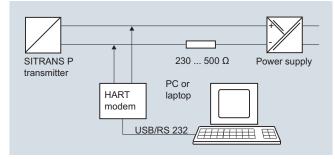
Parameterization using HART communication

Parameterization using HART communication 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 the Frequency Shift Keying (FSK) method.

# Adjustable parameters on SITRANS P300 with HART communication

Parameters Input keys HART communication Start of scale Х Х Full-scale value Х Х Electrical damping Х Х Start-of-scale value without applica-Х Х tion of a pressure ("Blind setting") Full-scale value without application Х х of a pressure ("Blind setting") Zero adjustment Х Х current transmitter х Х Fault current Х Х x<sup>1)</sup> Disabling of buttons, write protection x Type of dimension and actual Х Х dimension Input of characteristic Х Freely-programmable LCD Х **Diagnostic functions** Х 1) Cancel apart from write protection

Diagnostic functions for SITRANS P300 with HART

communication

- Zero correction display
- Event counter
- Limit transmitter
- Saturation alarm
- Slave pointer
- Simulation functions
- Maintenance timer

Available physical units of display for SITRANS P300 with HART communication

Table style: Technical specifications 2

Physical variable	Physical dimensions
Pressure (setting can also be made 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
Miscellaneous	%, mA

Transmitters for food, pharmaceuticals and biotechnology

#### SITRANS P300 for gauge and absolute pressure

#### Parameterization through PROFIBUS PA interface

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

For parameterization through 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 potentially explosive environment.

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 interface
Electrical damping	х	Х
Zero adjustment (correction of posi- tion)	х	х
Buttons and/or function disabling	х	х
Source of measured-value display	х	х
Physical dimension of display	х	х
Position of decimal point	х	х
Bus address	х	х
Adjustment of characteristic	х	х
Input of characteristic		х
Freely-programmable LCD		х
Diagnostic functions		х

Diagnostic functions for SITRANS P300 with PROFIBUS PA and

FOUNDATION Fieldbus

- Event counter
- Slave pointer
- Maintenance timer
- Simulation functions
- Display of zero correction
- Limit transmitter
- Saturation alarm

Physical dimensions available for the display **Physical variable Physical dimensions** Mpa, 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 (20 °C), mmHg, Pressure (setting can also be made in the factory) inHg Level (height data) m, cm, mm, ft, in, yd Mass g, kg, t, lb, Ston, Lton, oz m<sup>3</sup>, dm<sup>3</sup>, hl, yd<sup>3</sup>, ft<sup>3</sup>, in<sup>3</sup>, US gallon, lmp. gallon, bushel, barrel, barrel liquid Volume  $m^3/s,\,m^3/min,\,m^3/h,\,m^3/d,\,l/s,\,l/min,\,l/h,\,l/\,d,\,Ml/d,\,ft^3/s,\,ft^3/min,\,ft^3/h,\,ft^3/d,\,US gallon/s,\,US gallon/min,\,US gallon/h,\,US gallon/d,\,bbl/s,\,bbl/min,\,bbl/h,\,bbl/d$ volume 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, Mass flow lb/d, STon/s, STon/min, STon/h, STon/d, LTon/s, LTon/min, LTon/h, LTon/d t, kg, g, lb, oz, LTon, STon Total mass flow Temperature K, °C, °F, °R Miscellaneous %

Hygiene version

In the case of the SITRANS P300 with 7MF812.-... front-flush diaphragm, selected connections comply with the requirements of the EHEDG or 3A. You will 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.

Technical specifications

Transmitters for food, pharmaceuticals and biotechnology

# SITRANS P300 for gauge and absolute pressure

SITRANS P300 for gauge and absolute pressure

	HART		PROFIBUS PA and FC	UNDATION Fieldbus
Gauge pressure input				
Measured variable		Gauge	pressure	
Spans (infinitely adjustable) or nominal mea- suring range and max. permissible test pressure	Span (min max.)	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure
	0.01 1 bar (0.15 14.5 psi)	6 bar (87 psi)	1 bar (14.5 psi)	6 bar (87 psi)
	0.04 4 bar (0.58 58 psi)	10 bar (145 psi)	4 bar (58 psi)	10 bar (145 psi)
	0.16 16 bar (2.3 232 psi)	32 bar (464 psi)	16 bar (232 psi)	32 bar (464 psi)
	0.6 63 bar (9.1 914 psi)	100 bar (1450 psi)	63 bar (914 psi)	100 bar (1450 psi)
	1.6 160 bar (23.2 2321 psi)	250 bar (3626 psi)	160 bar (2321 psi)	250 bar (3626 psi)
	4.0 400 bar (58 5802 psi)	600 bar (8700 psi)	400 bar (5802 psi)	600 bar (8700 psi)
	Depending on the proce may differ from these va	ess connection, the span alues		cess connection, the nomi nay differ from these value
Lower measuring limit				
<ul> <li>Measuring cell with silicone oil</li> </ul>		30 mbar a	a (0.44 psia)	
Upper measuring limit				
<ul> <li>Measuring cell with silicone oil</li> </ul>	100% of max. span		100 % of the max. nom	iinal measuring range
Absolute pressure input				
Measured variable		Absolute	e pressure	
Spans (infinitely adjustable) or nominal mea- suring range and max. permissible test pressure	Span (min max.)	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure
	8 250 mbar a (0.123.63 psia)	6 bar a (87 psia)	250 mbar a (3.63 psia)	6 bar a (87 psia)
	43 1300 mbar a (0.6218.9 psia)	10 bar a (145 psia)	1.30 bar a (19 psia)	10 bar a (145 psia)
	0.16 5 bar a (2.3 73 psia)	30 bar a (435 psia)	5 bar a (73 psia)	30 bar a (435 psia)
	1 30 bar a (14.5 435 psia)	100 bar a (1450 psia)	30 bar a (435 psia)	100 bar a (1450 psia)
_ower measuring limit				
<ul> <li>Measuring cell with silicone oil</li> </ul>		0 mbar	a (0 psia)	
Upper measuring limit				
Measuring cell with silicone oil	100 % of max. span		100 % of the max. nom	iinal measuring range
nput of gauge pressure, with front-flush diaphragm				
Measured variable		Gauge press	sure, front-flush	
Spans (infinitely adjustable) or nominal mea- suring range and max. permissible test pres- sure	Span (min max.)	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure
	0.01 1 bar (0.15 14.5 psi)	6 bar (87 psi)	1 bar (14.5 psi)	6 bar (87 psi)
	0.04 4 bar (0.58 58 psi)	10 bar (145 psi)	4 bar (58 psi)	10 bar (145 psi)
	0.16 16 bar (2.32 232 psi)	32 bar (464 psi)	16 bar (232 psi)	32 bar (464 psi)
	0.6 63 bar (9.14 914 psi)	100 bar (1450 psi)	63 bar (914 psi)	100 bar (1450 psi)
Lower measuring limit		100 mbar	a (1.45 psia)	
Upper measuring limit				
• • · · · · · · · · · · · · · · · · · ·	10001 1		100.01 (1)	

1/56

100% of max. span

100 % of the max. nominal measuring range

Transmitters for food, pharmaceuticals and biotechnology

# SITRANS P300 for gauge and absolute pressure

SITRANS P300 for gauge and absolute pre-	ssure						
	HART			PROFIBUS PA and FOU	JNDATION F	ieldbus	
Input of absolute pressure, with front-flush diaphragm							
Measured variable			Absolute pres	sure, front-flush			
Spans (infinitely adjustable) or nominal mea- suring range and max. permissible test pressure	Span (min max.) Max. p pressu		n. test	Nominal measuring range	Max. perm pressure	. test	
	43 1300 mbar a (0.62 18.85 psia)	10 bar a (145 psia)		1300 mbar a (18.85 psia)	10 bar a (145 psia)		
	0.16 5 bar a (2.32 72.5 psi a)	30 bar a (435 psia)		5 bar a (72.5 psia)	30 bar a (435 psia)		
	1 30 bar a (14.5 435 psia)	100 bar a (1450 psia	l)	30 bar a (435 psia)	100 bar a (1450 psia	)	
	Depending on the proce may differ from these va		ion, the span	Depending on the proce nal measuring range ma			
Lower measuring limit	0 bar a (0 psia)						
Upper measuring limit							
<ul> <li>Measuring cell with silicone oil</li> </ul>	100% of max. span			100 % of the max. nomin	nal measurin	g range	
Output							
Output signal	4 20 mA			Digital PROFIBUS PA sig	gnal		
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 T <sub>63</sub> (step width 0.1 s)			Set to 2 s	(0 100 s)			
Measuring accuracy			According to	DIEC 60770-1			
Reference conditions (All error data refer always refer to the set				alue 0 bar, stainless steel room temperature 25 °C		agm,	
span)	Span ratio r = m	ax. span/se	t span		ng range ratio r = nominal je/set measuring range)		
Error in measurement at limit setting incl. hysteresis and reproducibility							
	Gauge pressure	Absolute pressure	Absolute pressure, front-flush	Gauge pressure	Absolute pressure	Absolute pressure, front-flush	
Linear characteristic							
• r + 10	$\leq (0.0029 \cdot r + 0.071) \%$	≤ 0.1 %	≤0.2 %	$\leq (0.0029 \cdot r + 0.071) \%$	≤0.1 %	≤0.2 %	
• 10 < r ≤ 30	$\leq (0.0045 \cdot r + 0.071) \%$	≤ 0.2 %	≤0.4 %	$\leq (0.0045 \cdot r + 0.071) \%$	≤0.2 %	≤0.4 %	
• 30 < r ≤ 100	$\leq$ (0.005 $\cdot$ r + 0.05) %	-	-	$\leq$ (0.005 $\cdot$ r + 0.05) %	-	-	
Step response time T <sub>63</sub>			appro	x. 0.2 s			
Long-term stability at $\pm$ 30 °C ( $\pm$ 54 °F)	$\leq$ (0.25 $\cdot$ r) %/5 years	$\leq$ (0.1 $\cdot$ r) $^{\circ}$	%/year	$\leq$ (0.25 $\cdot$ r)/5 years	$\leq$ (0.1 · r) %	6/year	
Influence of ambient temperature					1		
• at -10 +60 °C (14 140 °F)	$\leq (0.08 \cdot r + 0.1) \%^{1}$		≤ (0.2 · r + 0 3) %	$\leq (0.08 \cdot r + 0.1) \%^{1}$		≤ (0.2 · r + 0 3) %	
• at -4010 °C and +60 +85 °C (-40 14 °F and 140 185 °F)	≤ (0.1 · r + 0.15) %/10 K		≤ (0.2 · r + 0.3) %/10 K	≤ (0.2 · r + ≤ (0.1 · r + 0.15) %/10 K 0.3) %/10 K			
Influence of the medium temperature (only with front-flush diaphragm)							
<ul> <li>Temperature difference between medium temperature and ambient temperature</li> </ul>			3 mbar/10 K	(0.04 psi/10 K)			

• Temperature difference between medium temperature and ambient temperature

Transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressu	Ire
Jango and Lecone Process	HART PROFIBUS PA and FOUNDATION Fieldbus
Rated conditions	
Installation conditions	
Ambient temperature	Observe the temperature class in areas subject to explosion hazard.
<ul> <li>Measuring cell with silicone oil</li> </ul>	-40 +85 °C (-40 +185 °F)
Measuring cell with Neobee oil (FDA-compli- ant, with flush-mounted diaphragm)	-10 +85 °C (14 +185 °F)
Measuring cell with inert liquid (not with front- flush diaphragm)	-20 +85 °C (-4 +185 °F)
Display readable	-30 +85 °C (-22 +185 °F)
Storage temperature	-50 +85 °C (-58 +185 °F) (for Neobee: -20 +85 °C (-4 +185 °F)) (for temperature oil: -10 + 85 °C (14 +165 °F))
Climatic class	
Condensation	Relative humidity 0 100 % Condensation permissible, suitable for use in the tropics
Degree of protection acc. to EN 60529	IP65, IP68, NEMA X, enclosure cleaning, resistant to lyes, steam to 150 °C (302 °F)
Electromagnetic Compatibility	
• Emitted interference and interference immunity	Acc. to IEC 61326 and NAMUR NE 21
Medium conditions	
Temperature of medium	
<ul> <li>Measuring cell with silicone oil</li> </ul>	-40 +100 °C (-40 +212 °F)
• Measuring cell with silicone oil (FDA-compliant, with flush-mounted diaphragm)	-40 + 100 (-40 + 302 T)
<ul> <li>Measuring cell with Neobee oil "Measuring cell with Neobee oil (FDA-compliant, with flush- mounted diaphragm)</li> </ul>	-10 +150 °C (-14 +302 °F)
• Measuring cell with silicone oil, with tempera- ture decoupler (only for gauge pressure ver- sion with flush-mounted diaphragm)	-40 +200 °C (-40 +392 °F)
Measuring cell with Neobee oil, with tempera- ture 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)
<ul> <li>Measuring cell with high-temperature oil (only for gauge pressure version with flush-mounted</li> </ul>	-10 +250 °C (14 482 °F)

Measuring cell with high-temperature oil (only for gauge pressure version with flush-mounted diaphragm)

#### Design (standard version)

Weight (without options)

Enclosure material

Material of parts in contact with the medium

- Connection shank
- Oval flange
- Seal diaphragm
- Measuring cell filling

Process connection

Approx. 800 g (1.8 lb) Stainless steel, mat. no. 1.4301/304

Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819 Stainless steel, mat. no. 1.4404/316L

Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819

•Silicone oil Inert filling liquid

•G½B to EN 837-1 •Female thread ½-14 NPT •Oval flange PN 160 (MAWP 2320 psi) with fastening thread: -<sup>7</sup>/<sub>16</sub> -20 UNF to IEC 61518 •M10 as per DIN 19213

Transmitters for food, pharmaceuticals and biotechnology

# SITRANS P300 for gauge and absolute pressure

SITRANS P300 for gauge and absolute pressu	ire				
	HART	PROFIBUS PA and FOUNDATION Fieldbus			
Design (version with front-flush diaphragm)					
Weight (without options)	approx. 1 13	kg (2.2 29 lb)			
Enclosure material	Stainless steel, m	at. no. 1.4301/304			
Material of parts in contact with the medium • Process connection	Stainless steel ma	at. no. 1.4404/316L			
Seal diaphragm					
Measuring cell filling	Stainless steel, mat. no. 1.4404/316L •Silicone oil •Inert filling liquid •FDA compliant fill fluid (Neobee oil)				
Process connection	•Flanges as p	er EN and ASME naceutical flanges			
Surface quality touched-by-media		/welds $R_{a)} \le 1.6 \ \mu m$ (64 $\mu$ -inch) 1.8 $\mu m$ (32 $\mu$ -inch)/welds $R_{a} \le 0.8 \ \mu m$ (32 $\mu$ -inch)			
Power supply U <sub>H</sub>					
Terminal voltage on transmitter	10.5 42 V DC for intrinsically safe operation: 10.5 30 V DC	Supplied through bus			
Separate power supply	-	Not necessary			
Bus voltage					
Without Ex	-	9 32 V			
With intrinsically-safe operation	-	9 24 V			
Current consumption					
Max. basic current	-	12.5 mA			
<ul> <li>Start-up current ≤ basic current</li> </ul>	-	Yes			
Max. fault current in the event of a fault	-	15.5 mA			
Fault disconnection electronics (FDE)	-	Available			
Certificates and approvals					
Classification according to PED 97/23/EC		roup 1; complies with requirements of Article 3, engineering practice)			
Water, waste water	In prep	paration			
Explosion protection					
Intrinsic safety "i"	PTB 05 A	TEX 2048			
Marking	Ex II 1/2 G Ex ia/ib	o IIB/IIC T4, T5, T6			
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: $U_i = 30 \text{ V}, I_i = 100 \text{ mA},$	To certified intrinsically-safe circuits with peak values: FISCO supply unit:			
	$P_i = 750 \text{ mW}, R_i = 300 \Omega$	$U_i = 17.5 \text{ V}, I_i = 380 \text{ mA},$ $P_i = 5.32 \text{ W}$ Linear barrier:			
	0.05	$U_i = 24 \text{ V}, I_i = 250 \text{ mA}, P_i = 1.2 \text{ W}$			
Effective inner capacitance:	$C_i = 6 nF$	C <sub>i</sub> = 1.1 nF			
• Effective internal inductance: Explosion protection to FM for USA and Canada (cFM <sub>US</sub> )	L <sub>i</sub> = 0.4 mH	$L_i \leq 7 \ \mu H$			
<ul> <li>Identification (DIP) or (IS); (NI)</li> </ul>	Certificate of Con	npliance 3025099			
	CL I, DIV 1, GP ABCD T4 T6; CL II, DIV 1, GP E				
Identification (DIP) or (IS)	CL I, DIV 1, GP ABCD T4 T6; CL II, DIV 1,	npliance 3025099C GP EFG; CL III; Ex ia IIC 4 T6; CL I, DIV 2, II, DIV 2, GP FG; CL III			

Transmitters for food, pharmaceuticals and biotechnology

# SITRANS P300 for gauge and absolute pressure

SITRANS P300 for gauge and absolute pres	HART	PROFIBUS PA and FOUNDATION Fieldbus				
Dust surlasian protection for zone 20/01/00						
Dust explosion protection for zone 20/21/22		ATEX 2048				
Marking	Ex II 2D Ex ib	Ex II 1D Ex ia D 20 T 120 °C Ex II 2D Ex ib D 21 T 120 °C Ex II 3D Ex ib D 21 T 120 °C				
Permissible ambient temperature						
- Temperature class T4	-40 +85 °C (-40 +185 °F) (in the case of mine	ral glass windows only -20 +85 °C (-4 +185 °F))				
- Temperature class T5	-40 +70 °C (-40 +158 °F) (in the case of mine	eral glass windows only-20 +70 °C (-4 +158 °F))				
- Temperature class T6	-40 +60 °C (-40 +140 °F) (in the case of mine	ral glass windows only -20 +60 °C (-4 +140 °F))				
Connection	To certified intrinsically-safe circuits with peak values:	To certified intrinsically-safe circuits with peak values:				
	$U_i = 30 \text{ V}, I_i = 100 \text{ mA}, P_i = 750 \text{ mW}$	$U_i = 24 \text{ V}, I_i = 380 \text{ mA}, P_i = 5.32 \text{ mW}$				
Effective inner capacitance:	C <sub>i</sub> = 6 nF	C <sub>i</sub> = 5 nF				
Effective internal inductance:	$L_i = 0.4 \ \mu H$	$L_i = 10 \ \mu H$				
Type of protection Ex nA/nL/ic (Zone 2)	PTB 05 /	ATEX 2048				
Marking	II 2/3 G Ex	nA T4/T5/T6				
	II 2/3 G Ex nL	IIB/IIC T4/T5/T6				
Permissible ambient temperature						
- Temperature class T4	-40 +85 °C (-40 +185 °F) (in the case of mine	ral glass windows only -20 +85 °C (-4 +185 °F))				
- Temperature class T5	-40 +70 °C (-40 +158 °F) (in the case of mine	ral glass windows only -20 +70 °C (-4 +158 °F))				
- Temperature class T6	-40 +60 °C (-40 +140 °F) (in the case of mine	ral glass windows only -20 +60 °C (-4 +140 °F))				
• Ex nA/nL connection	To certified intrinsically-safe circuits with peak values:	To certified intrinsically-safe circuits with peak values:				
	U <sub>m</sub> = 45 V	U <sub>m</sub> = 32 V				
• Ex ic connection	To certified intrinsically-safe circuits with	To certified intrinsically-safe circuits with				
	peak values:	peak values:				
	$U_i = 45 V$	$U_i = 32 V$				
Effective inner capacitance:	C <sub>i</sub> = 6 nF	C <sub>i</sub> = 5 nF				
Effective internal inductance:	$L_i = 0.4 \text{ mH}$	$L_i = 20 \ \mu H$				

<sup>1)</sup> Conversion of temperature error per 28 °C. Valid for temperature range -3 ... +53 °C < (0.064  $\cdot$  r + 0.08) %/28 °C (50 °F).

Transmitters for food, pharmaceuticals and biotechnology

		nillers for food, pharmaceu	
		SITRANS P300 for g	auge and absolute pressure
HART Communication		FOUNDATION Fieldbus communication	
HART communication	230 1100 Ω	Function blocks	2 function blocks analog input
Protocol	HART Version 5.x	Function blocks	3 function blocks analog input, 1 function block PID
Software for computer	SIMATIC PDM	<ul> <li>Analog input</li> </ul>	
PROFIBUS PA communication		- Adaptation to customer-specif-	Yes, linearly rising or falling
Simultaneous communication with master class 2 (max.)	4	ic process variables	characteristic
The address can be set using	Configuration tool or	- Electrical damping, adjustable	0 100 s
5	local operation	- Simulation function	Output/input (can be locked within the device with a bridge)
	(standard setting Address 126)	- Failure mode	parameterizable (last good
Cyclic data usage			value, substitute value, incorrect value)
Output byte	5 (one measured value) or	- Limit monitoring	Yes, one upper and lower warn-
	10 (two measured values)	Linit monitoring	ing limit and one alarm limit
Input byte	0.1 or 2 (totalizer mode and reset function for dosing)	Coupro rooted abaractoristi-	respectively
<ul> <li>Internal preprocessing</li> </ul>		<ul> <li>Square-rooted characteristic for flow measurement</li> </ul>	Yes
Device profile	PROFIBUS PA Profile for Pro- cess Control Devices Version	• PID	Standard FOUNDATION Field- bus function block
	3.0, class B	Physical block	1 resource block
Function blocks	2	Transducer blocks	1 transducer block Pressure with
<ul> <li>Analog input</li> <li>Adaptation to customer-specif-</li> </ul>	Yes, linearly rising or falling		calibration, 1 transducer block LCD
ic process variables	characteristic	Pressure transducer block	
- Electrical damping adjustable	0 100 s	- Can be calibrated by applying	Yes
- Simulation function	Input /Output	two pressures	
- Failure function	parameterizable (last good	- Monitoring of sensor limits	Yes
	value, substitute value, incorrect value)	<ul> <li>Simulation function: Measured pressure value, sensor temper- ature and electronics tempera-</li> </ul>	Constant value or over parame- terizable ramp function
- Limit monitoring	Yes, one upper and lower warn- ing limit and one alarm limit respectively	ture	
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 respec- tively		
<ul> <li>Physical block</li> </ul>	1		
Transducer blocks	2		
Pressure transducer block			
<ul> <li>Can be calibrated by applying two pressures</li> </ul>	Yes		
- Monitoring of sensor limits	Yes		
- Specification of a container characteristic with	Max. 30 nodes		
<ul> <li>Simulation function for mea- sured pressure value and sen- sor temperature</li> </ul>	Constant value or over parame- terizable ramp function		

Transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 for	r gauge and absolute pr	essure		
Selection and Orderin	ng data	Article No.	Selection and Ordering data	Article No.
tive and absolute pre	ure transmitters for rela- ssure, single-chamber mea- plate inscription in English		SITRANS P300 pressure transmitters for rela- tive and absolute pressure, single-chamber mea- suring housing, rating plate inscription in English	
4 20 mA/HART		7 M F 8 0 2 3 -	4 20 mA/HART	7 M F 8 0 2 3 -
PROFIBUS PA	7	7 M F 8 0 2 4 -	PROFIBUS PA	7 M F 8 0 2 4 -
FOUNDATION Fieldbu	us (FF) 7	7 M F 8 0 2 5 -	FOUNDATION Fieldbus (FF)	7 M F 8 0 2 5 -
	No. for the online configura-		Display	
Measuring cell filling	Measuring cell cleaning		<ul> <li>Without display, with keys, closed lid</li> </ul>	1
Silicone oil	normal	1	<ul> <li>With display and keys, closed lid<sup>11)</sup></li> </ul>	2
Inert liquid	Cleanliness level 2 to DIN 25410	3	<ul> <li>With display and keys, lid with Makrolon pane (setting on HART devices: mA,</li> </ul>	4
max. span (min ma			with PROFIBUS PA and FOUNDATION Fieldbus equipment: pressure units) <sup>11)</sup>	
0.01 1 bar 0.04 4 bar	(0.145 14.5 psi) (0.58 58 psi)	BC	With display and keys (setting acc. to specifica-	5
0.16 16 bar 0.63 63 bar	(2.32 232 psi) (9.14 914 psi)	D	tions, Order code "Y21" or "Y22" required), lid with Makrolon pane <sup>11</sup>	
1.6 160 bar	(23.2 2320 psi)	F	With display and keys, lid with glass pane (setting	6
4 400 bar	(58 5802 psi)	Ğ	on HART devices: mA, with PROFIBUS and FOUNDATION Fieldbus equip-	
2.5 250 mbar a	(0.04 3.63 psia)	Q	ment: pressure units) <sup>11)</sup>	
13 1300 mbar a	(0.19 18.86 psia)	S	<ul> <li>With display and keys (setting acc. to specifica- tions, Order code "Y21" or "Y22" required), lid with</li> </ul>	7
0.05 5 bar a 0.3 30 bar a	(0.7 72.5 psia) (4.35 435 psia)	T U	glass pane <sup>11)</sup>	
Wetted parts material	ls		Power supply units see Chap. 7 "Supplementary Con	nponents".
Seal diaphragm	Measuring cell		<ul><li>Included in delivery of the device:</li><li>Brief instructions (Leporello)</li></ul>	
Stainless steel	Stainless steel	A	CD-ROM with detailed documentation	
Hastelloy Hastelloy	Stainless steel Hastellov	BC	<sup>1)</sup> When the manufacture's certificate (calibration certific	ate) has to be
Version for diaphragm	seal <sup>1) 2) 3) 4) 5)</sup>	Y	ordered for transmitters with diaphragm seals according	ng to IEC 60770-2, it
Process connection			is recommended only to order this certificate exclusive phragm seals. The measuring accuracy of the total co	
Connection shank G		0	fied here. <sup>2)</sup> If the acceptance test certificate 3.1 is ordered for the	transmittor with
<ul> <li>Female thread ½-14</li> <li>Stainless steel oval fl</li> </ul>	ange with process connec-	1	mounted diaphragm seals this certificate must also be	ordered with the
tion (Oval flange has	no female thread) <sup>6)</sup>		respective remote seals. <sup>3)</sup> The diaphragm seal is to be specified with a separate	ordor number and
<ul> <li>Mounting thread '/-</li> <li>Mounting thread M</li> </ul>	16-20 UNF to EN 61518	2	must be included with the transmitter order number, for	or example
- Mounting thread M		4	7MF802Y and 7MF4900-1B <sup>4)</sup> The standard measuring cell filling for configurations w	with remote seals (V)
<ul> <li>Male thread M20 x 1.</li> <li>Male thread ½ -14 NI</li> </ul>		5	is silicone oil.	
Non-wetted parts mat		-	<sup>5)</sup> Remote seal for direct mounting only available in complexity cess connection ½-14 NPT.	oination with pro-
•	-drawn and electrolytically	4	<sup>6)</sup> M10 fastening thread: Max. span 160 bar (2320 psi) 7/16-20 UNF and M12 fastening thread: Max. span 40	
Version			7) Only available together with electrical connection optic	
<ul> <li>Standard versions</li> </ul>		1	<sup>8)</sup> Only available together with electrical connection optic <sup>9)</sup> Only together with HART electronics.	ons B, C or G.
Explosion protection			<sup>10)</sup> Without cable gland.	
<ul><li>None</li><li>With ATEX, Type of p</li></ul>	rotaction	А	<sup>11)</sup> Display cannot be turned.	
<ul> <li>With ATEX, Type of p</li> <li>Intrinsic safety (Ex</li> </ul>		в		
• Zone 20/21/22 <sup>7)</sup>		С		
• Ex nA/nL (Zone 2) <sup>8)</sup>		E		
• with FM "intrinsic safe		М		
Electrical connection     Screwed gland M20		А		
Screwed gland M20x     Screwed gland M20x		B		
Screwed gland M20	<1.5 (stainless steel)	C		
	tal), without cable socket)	F		
<ul> <li>M12 connectors (stail</li> <li>Screwed gland ½-14</li> </ul>	inless steel), without cable	G		
	NPT stainless steel thread	H		
			1	

Transmitters for food, pharmaceuticals and biotechnology

	D000 4			
SHRANS	P300 for	<sup>,</sup> dauge and	labsolute	pressur

Selection and Ordering	g data		Article No.	Selection and Ordering data	Article No.
and absolute pressure	measuring housing, rating	•		SITRANS P300 pressure transmitters for relative and absolute pressure with front-flush mem- brane, single-chamber measuring housing, rating plate inscription in English	
4 20 mA/HART		7	7 M F 8 1 2 3 -	4 20 mA/HART	7 M F 8 1 2 3 -
PROFIBUS PA		7	7 M F 8 1 2 4 -	PROFIBUS PA	7 M F 8 1 2 4 -
FOUNDATION Fieldbus	s (FF)	↗	7 M F 8 1 2 5 -	FOUNDATION Fieldbus (FF)	7 M F 8 1 2 5 -
Click on the Article N tion in the PIA Life Cy	lo. for the online configura- vcle Portal.			Display	
Measuring cell filling Silicone oil Inert liquid FDA compliant fill fluid	Measuring cell cleaning normal Cleanliness level 2 to DIN 25410 <sup>1)</sup>	I	1 3	<ul> <li>Without display, with keys, closed lid</li> <li>With display and keys, closed lid<sup>8)</sup></li> <li>With display and keys, lid with Makrolon pane (setting on HART devices: mA, with PROFIBUS PA and FOUNDATION Fieldbus equipment: pressure</li> </ul>	
• Neobee oil <b>max. span</b> 0.01 1 bar	normal (0.15 14.5 psi)		4 B	units) <sup>8)</sup> <ul> <li>With display and keys (setting acc. to specifications, Order code "Y21" or "Y22" required), lid with Makrolon pane<sup>8)</sup></li> </ul>	
0.04 4 bar 0.16 16 bar 0.63 63 bar 13 1300 mbar a <sup>2)</sup>	(0.58 58 psi) (2.32 232 psi) (9.14 914 psi) (0.19 18.9 psia) <sup>2)</sup>		C D E S	<ul> <li>With display and keys, lid with glass pane (setting on HART devices: mA, with PROFIBUS PA and FOUNDATION Fieldbus equipment: pressure units)<sup>8)</sup></li> </ul>	
0.05 5 bar a <sup>2)</sup> 0.03 30 bar a <sup>2)</sup>	(0.7 72.5 psia) <sup>2)</sup> (4.35 435 psia) <sup>2)</sup>		T U	<ul> <li>With display and keys (setting acc. to specifica- tions, Order code "Y21" or "Y22" required), lid with</li> </ul>	
Wetted parts materials				glass pane <sup>8)</sup> Power supply units see Chap. 7 "Supplementary Con	apoponto"
Seal diaphragm	Measuring cell	_		Included in delivery of the device:	nponents
Stainless steel Hastelloy <sup>3)</sup>	Stainless steel Stainless steel		A B	Brief instruction (Leporello)     CD-ROM with detailed documentation	
<ul> <li>Flange version with Or (see "Further designs")</li> </ul>	der code M, N, R or Q )		7	<ol> <li>Not suitable for oxygen applications.</li> <li>Not with temperature decoupler P00 and P10, not for p</li> </ol>	
<ul> <li>Non-wetted parts mate</li> <li>Stainless steel, deep-opolished</li> </ul>	erials drawn and electrolytically		4	<ul> <li>R01, R02, R04, R10 and R11, and can only be ordered silicone oil.</li> <li>Only available for flanges with options M, N and Q</li> <li>Only together with electrical connection option A.</li> </ul>	,
Version <ul> <li>Standard versions</li> </ul>			1	<ul> <li><sup>5)</sup> Only available together with electrical connection option A.</li> <li><sup>6)</sup> Only together with HART electronics.</li> </ul>	ons B, C or G.
Explosion protection <ul> <li>None</li> <li>With ATEX, Type of production of the second secon</li></ul>	a)"		A B C E M	<ul> <li><sup>7)</sup> Without cable gland.</li> <li><sup>8)</sup> Display cannot be turned.</li> </ul>	
socket) • Screwed gland 1/2-14 N	I.5 (polyamide) <sup>6)</sup> I.5 (metal) I.5 (stainless steel) out cable socket) less steel), without cable	.)	A B C F G H J		

Transmitters for food, pharmaceuticals and biotechnology

# SITRANS P300 for gauge and absolute pressure

STRANS P300 for gauge and absol	ute pre	essure	9		
Selection and Ordering data	Order	code			
Further designs		HART	PA	FF	
Add "-Z" to Article No. and specify Order code.					
Pressure transmitter with mounting bracket (2 shackles, 4 nuts, 4 U-plates, 1 angle) made of: made completely of stainless steel, for wall or pipe mounting	A02	1	~	1	
Cable socket for M12 plug <ul> <li>Stainless steel</li> </ul>	A51		1	1	
Rating plate inscription	-				
(instead of English)					
• German	B10	1	1	1	
<ul><li>French</li><li>Spanish</li></ul>	B12 B13	√ √	√ √	1	
Italian	B13	1	¥.	1	
English rating plate	B21	1	1	1	
Pressure units in inH <sub>2</sub> 0 and/or psi			-		. :
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2 <sup>1)</sup>	C11	1	~	~	
Inspection certificate <sup>2)</sup> Acc. to EN 10204-3.1	C12	1	~	1	
Factory certificate Acc. to EN 10204-2.2	C14	~	~	~	
Degree of protection IP65/IP68 (only for M20x1.5 and ½-14 NPT)	D12	1	1	1	
Degree of protection IP6k9k (only for M20x1.5)	D46	~	~	1	
Export approval Korea	E11	✓	✓	1	
Ex Approval IEC Ex (Ex ia) (only for transmitter 7MF8B)	E45	~	~	~	
Ex Approval Ex ia/ib NEPSI	E55	~	~	1	
Only for SITRANS P300 with front-flush diaphragm (7MF81)					
Flange to EN 1092-1, Form B1					
• DN 25, PN 40 <sup>3)</sup>	M11	✓	✓	1	
• DN 25, PN 100 <sup>4)</sup>	M21	✓	✓	1	
• DN 40, PN 40	M13	1	1	×.	
• DN 40, PN 100	M23	1	1	1	
<ul> <li>DN 50, PN 16</li> <li>DN 50, PN 40</li> </ul>	M04 M14	4	1	1	
• DN 80, PN 40 • DN 80, PN 16	M06	<b>√</b>	✓	<b>√</b>	
• DN 80, PN 40	M16	1		1	
Flanges to ASME B16.5					
• 1", class 150 <sup>4)</sup>	M40	~	~	~	
• 1½", class 150	M41	1	1	1	
• 2", class 150	M42	~	1	1	
• 3", class 150	M43	✓	✓	✓	
• 4", class 150	M44	✓	✓	✓	
• 1", class 300 <sup>4)</sup>	M45	✓	✓	1	
• 1½", class 300	M46	~	✓	~	
• 2", class 300	M47	√	✓	1	
• 3", class 300	M48	<b>√</b>	1	1	
• 4", class 300	M49	1	✓	~	
Threaded connector to DIN 3852-2, form A, thread to ISO 229					
<b>thread to ISO 228</b> • G ¾"-A, front-flush <sup>4)</sup>	D01	1	1	1	
• G <sup>3</sup> / <sub>4</sub> <sup>-</sup> -A, front-flush <sup>4</sup> )	R01 R02	√ √	√ √	4	
• G 2"-A, front-flush <sup>4</sup> )	R02	✓ ✓	×	1	
Tank connection <sup>5)</sup>	104	,			
Sealing is included in delivery					
• TG 52/50, PN 40	R10	~	~	~	
• TG 52/150, PN 40	R11	¥	1	1	
, ,					

Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "-Z" to Article No. and specify Order code.				
Sanitary process connection according DIN 11851 (Dairy connection with slotted union nut) Certified to 3A <sup>6)</sup>				
<ul> <li>DN 50, PN 25</li> <li>DN 80, PN 25</li> </ul>	N04 N06	1	4	4
Tri-Clamp connection according	NUO	•	•	•
DIN 32676/ISO 2852 Certified to 3A <sup>6)</sup>	NH 4	,	,	
• DN 50/2", PN 16 • DN 65/3", PN 10	N14 N15	✓ ✓	<b>√</b>	✓ ✓
Varivent connection				
Certified to 3A and EHEDG <sup>6)</sup> • Type N = 68 for Varivent housing DN 40 125 und 1½" 6", PN 40	N28	*	~	✓
Temperature decoupler up to 200 °C <sup>7)</sup>	P00	~	✓	~
for front-flush diaphragm version Temperature decoupler up to 250 °C	P10	1	1	1
Measuring cell filling: High-temperature oil (Silicone oil)	PIU	•	•	•
<b>Bio-Control sanitary process connection</b> Certified to 3A and EHEDG <sup>6)</sup>				
• DN 50, PN 16	Q53	1	1	1
• DN 65, PN 16	Q54	*	*	<b>√</b>
• DN 50, PN 40	M32	~	✓	~
SMS socket with union nut • 2"	M67	~	1	~
• 2½"	M68	¥.	~	¥
• 3"	M69	✓	✓	~
SMS threaded socket				
• 2"	M73	✓	1	✓
• 21/2"	M74	1	1	1
• 3"	M75	*	~	~
IDF socket with union nut ISO 2853 • 2"	M82	1	~	1
• 21/2"	M83	1	1	1
• 3"	M84	✓	✓	✓
IDF threaded socket ISO 2853				
• 2"	M92	1	1	1
• 2½" • 3"	M93 M94	√ √	√ √	√ √
Sanitary process connection to NEUMO Bio-Connect screw connection				
Certified to 3A and EHEDG <sup>6)</sup>				
<ul> <li>DN 50, PN 16</li> <li>DN 65, PN 16</li> </ul>	Q05 Q06	√ √	√ √	~
• DN 80, PN 16	Q07	¥.	~	¥.
• DN 100, PN 16	Q08	1	1	✓
• DN 2", PN 16	Q13	✓	✓	✓
• DN 2½", PN 16	Q14	1	1	1
• DN 3", PN 16 • DN 4", PN 16	Q15 Q16	4	1	1
,	Grio			
Sanitary process connection to NEUMO Bio-Connect flange connection Certified to 3A and EHEDG <sup>6)</sup>				
• DN 50, PN 16	Q23	<b>√</b>	1	×.
• DN 65, PN 16	Q24	1	1	√ √
<ul> <li>DN 80, PN 16</li> <li>DN 100, PN 16</li> </ul>	Q25 Q26	√ √	√ √	✓ ✓
• DN 2", PN 16	Q31	¥.	1	×.
• DN 2½", PN 16	Q32	~	~	✓
• DN 3", PN 16	Q33	1	1	1
• DN 4", PN 16	Q34	1	1	1

Transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressure

Selection and Ordering data         Order code           Further designs         HART         PA         FF           Add '-Z' to Article No. and specify Order code.         Sanitary process connection to NEUMO Bio-Connect clamp connection Certified to 3A and EHEDG <sup>9)</sup> Q39         ✓         ✓         ✓           DN 50, PN 16         Q40         ✓         ✓         ✓         ✓           DN 80, PN 10         Q41         ✓         ✓         ✓         ✓           DN 80, PN 10         Q41         ✓         ✓         ✓         ✓           DN 80, PN 10         Q42         ✓         ✓         ✓         ✓         ✓           DN 10, PN 10         Q49         ✓         ✓         ✓         ✓         ✓         ✓           DN 4'', PN 10         Q50         ✓	Coloction and Ordening data	Order	aada		
Add "-Z" to Article No. and specify Order code.       Image: Construction to NEUMO Bio-Connect clamp connection Certified to 3A and EHEDG <sup>6)</sup> Q39       ✓       ✓       ✓         DN 50, PN 16       Q40       ✓       ✓       ✓       ✓         DN 50, PN 10       Q40       ✓       ✓       ✓       ✓         DN 80, PN 10       Q41       ✓       ✓       ✓       ✓         DN 100, PN 10       Q42       ✓       ✓       ✓       ✓         DN 3°, PN 16       Q48       ✓       ✓       ✓       ✓         DN 3°, PN 10       Q49       ✓       ✓       ✓       ✓         Sanitary process connection to NEUMO Bio-Connect S flange connection Certified to 3A and EHEDG       Q72       ✓       ✓       ✓         DN 2°, PN 16       Q72       ✓       ✓       ✓       ✓       ✓         Aseptic threaded socket to DIN 11864-1 Form A Certified to 3A and EHEDG       N33       ✓       ✓       ✓         DN 80, PN 25       N35       ✓       ✓       ✓       ✓       ✓         DN 80, PN 16       N43       ✓       ✓       ✓       ✓       ✓         DN 80, PN 16       N43       ✓       ✓       ✓       ✓       ✓	•	Order		D٨	EE
specify Order code.         Image: Specify Order code.           Sanitary process connection to NEUMO Bio-Connect Clamp connection Certified to 3A and EHEDG <sup>9)</sup> Q39         ✓         ✓         ✓           DN 50, PN 16         Q40         ✓         ✓         ✓         ✓           DN 65, PN 10         Q41         ✓         ✓         ✓           DN 80, PN10         Q42         ✓         ✓         ✓           DN 30, PN 10         Q42         ✓         ✓         ✓           DN 3°, PN 10         Q49         ✓         ✓         ✓           DN 4°, PN 10         Q50         ✓         ✓         ✓           Sanitary process connection to NEUMO Bio-Connect S flange connection         Q72         ✓         ✓         ✓           Septic threaded socket to DIN 11864-1 Form A Certified to 3A and EHEDG         Q72         ✓         ✓         ✓           DN 50, PN 25         N33         ✓         ✓         ✓         ✓           DN 80, PN 25         N35         ✓         ✓         ✓           DN 100, PN 25         N36         ✓         ✓         ✓           DN 80, PN 16         N43         ✓         ✓         ✓           DN 80, PN 16         N44 <td></td> <td></td> <td>NANI</td> <td>PA</td> <td>FF</td>			NANI	PA	FF
Bio-Connect clamp connection Certified to 3A and EHEDG <sup>6)</sup> Q39         ✓         ✓         ✓           DN 50, PN 16         Q40         ✓         ✓         ✓         ✓           DN 65, PN 10         Q41         ✓         ✓         ✓         ✓           DN 80, PN10         Q41         ✓         ✓         ✓         ✓           DN 100, PN 10         Q42         ✓         ✓         ✓         ✓           DN 37, PN 10         Q49         ✓         ✓         ✓         ✓           DN 37, PN 10         Q49         ✓         ✓         ✓         ✓           DN 37, PN 10         Q50         ✓         ✓         ✓         ✓           Sanitary process connection to NEUMO Bio-Connect S flange connection Certified to 3A and EHEDG         Q72         ✓         ✓         ✓           DN 50, PN 25         N33         ✓         ✓         ✓         ✓         ✓           DN 65, PN 25         N33         ✓         ✓         ✓         ✓         ✓           DN 65, PN 25         N36         ✓         ✓         ✓         ✓         ✓           DN 65, PN 16         N44         ✓         ✓         ✓         ✓         <					
Certified to 3A and EHEDG <sup>(5)</sup> Q39       ✓       ✓       ✓         • DN 50, PN 16       Q40       ✓       ✓       ✓         • DN 80, PN 10       Q41       ✓       ✓       ✓         • DN 30, PN 10       Q42       ✓       ✓       ✓         • DN 100, PN 10       Q42       ✓       ✓       ✓         • DN 3°, PN 10       Q49       ✓       ✓       ✓         • DN 3°, PN 10       Q50       ✓       ✓       ✓         • DN 4°, PN 10       Q50       ✓       ✓       ✓         Sanitary process connection to NEUMO Bio-Connect S flange connection       Q72       ✓       ✓       ✓         Septic threaded socket to DIN 11864-1 Form A Certified to 3A and EHEDG       Q72       ✓       ✓       ✓         • DN 80, PN 25       N33       ✓       ✓       ✓       ✓         • DN 80, PN 25       N36       ✓       ✓       ✓         • DN 80, PN 16       N43       ✓       ✓       ✓         • DN 80, PN 16       N43       ✓       ✓       ✓         • DN 80, PN 16       N43       ✓       ✓       ✓         • DN 80, PN 16       N44       ✓       ✓       ✓ </td <td></td> <td></td> <td></td> <td></td> <td></td>					
• DN 50, PN 16       Q39       ✓       ✓       ✓         • DN 65, PN 10       Q40       ✓       ✓       ✓         • DN 80, PN10       Q41       ✓       ✓       ✓         • DN 100, PN 10       Q42       ✓       ✓       ✓         • DN 2½*, PN 16       Q48       ✓       ✓       ✓         • DN 3*, PN 10       Q49       ✓       ✓       ✓         • DN 4*, PN 10       Q50       ✓       ✓       ✓         • DN 2*, PN 16       Q49       ✓       ✓       ✓         Sanitary process connection to NEUMO Bio-Connect S flange connection       Certified to 3A and EHEDG       ✓       ✓       ✓         • DN 50, PN 25       N33       ✓       ✓       ✓       ✓         • DN 65, PN 25       N35       ✓       ✓       ✓       ✓         • DN 60, PN 25       N36       ✓       ✓       ✓       ✓         • DN 80, PN 25       N36       ✓       ✓       ✓       ✓         • DN 80, PN 16       N43       ✓       ✓       ✓       ✓         • DN 80, PN 16       N43       ✓       ✓       ✓       ✓         • DN 80, PN 16       N43       ✓<					
• DN 65, PN 10       Q40       ✓       ✓       ✓         • DN 80, PN10       Q41       ✓       ✓       ✓         • DN 100, PN 10       Q42       ✓       ✓       ✓         • DN 37, PN 10       Q49       ✓       ✓       ✓         • DN 37, PN 10       Q50       ✓       ✓       ✓         • DN 4*, PN 10       Q50       ✓       ✓       ✓         Sanitary process connection to NEUMO Bio-Connect S flange connection       Q72       ✓       ✓       ✓         • DN 3*, PN 16       Q72       ✓       ✓       ✓       ✓         • DN 4*, PN 16       Q72       ✓       ✓       ✓       ✓         • DN 50, PN 25       N33       ✓       ✓       ✓       ✓         • DN 65, PN 25       N34       ✓       ✓       ✓       ✓         • DN 80, PN 25       N36       ✓       ✓       ✓       ✓         • DN 100, PN 25       N36       ✓       ✓       ✓       ✓         • DN 80, PN 16       N43       ✓       ✓       ✓       ✓       ✓         • DN 80, PN 16       N44       ✓       ✓       ✓       ✓       ✓       ✓ <tr< td=""><td></td><td>039</td><td>1</td><td>1</td><td>1</td></tr<>		039	1	1	1
• DN 80, PN10       Q41       ✓       ✓       ✓         • DN 100, PN 10       Q42       ✓       ✓       ✓         • DN 2½", PN 16       Q48       ✓       ✓       ✓         • DN 3", PN 10       Q50       ✓       ✓       ✓         • DN 4", PN 10       Q50       ✓       ✓       ✓         Sanitary process connection to NEUMO Bio-Connect S flange connection       Q72       ✓       ✓         Certified to 3A and EHEDG       Q72       ✓       ✓       ✓         • DN 50, PN 25       N33       ✓       ✓       ✓         • DN 65, PN 25       N35       ✓       ✓       ✓         • DN 80, PN 25       N36       ✓       ✓       ✓       ✓         • DN 80, PN 25       N36       ✓       ✓       ✓       ✓         • DN 80, PN 25       N36       ✓       ✓       ✓       ✓       ✓         • DN 80, PN 16       N43       ✓       ✓       ✓       ✓       ✓       ✓         • DN 80, PN 16       N45       ✓       ✓       ✓       ✓       ✓       ✓       ✓       ✓       ✓       ✓       ✓       ✓       ✓       ✓       ✓					
• DN 2½", PN 16       Q48       ✓       ✓       ✓         • DN 3", PN 10       Q49       ✓       ✓       ✓         • DN 4", PN 10       Q50       ✓       ✓       ✓         Sanitary process connection to NEUMO Bio-Connect S flange connection Certified to 3A and EHEDG       Q72       ✓       ✓         Aseptic threaded socket to DIN 11864-1 Form A Certified to 3A and EHEDG       Q72       ✓       ✓         • DN 50, PN 25       N33       ✓       ✓       ✓         • DN 80, PN 25       N35       ✓       ✓       ✓         • DN 100, PN 25       N36       ✓       ✓       ✓         • DN 50, PN 16       N43       ✓       ✓       ✓         • DN 50, PN 16       N43       ✓       ✓       ✓         • DN 50, PN 16       N44       ✓       ✓       ✓         • DN 50, PN 16       N44       ✓       ✓       ✓         • DN 100, PN 16       N45       ✓       ✓       ✓         • DN 100, PN 16       N44       ✓       ✓       ✓         • DN 50, PN 16       N45       ✓       ✓       ✓         • DN 50, PN 16       N45       ✓       ✓       ✓         • DN			1		1
• DN 3°, PN 10       Q49       ✓       ✓       ✓         • DN 4°, PN 10       Q50       ✓       ✓       ✓         Sanitary process connection to NEUMO Bio-Connect S flange connection Certified to 3A and EHEDG       Q72       ✓       ✓       ✓         Aseptic threaded socket to DIN 11864-1 Form A Certified to 3A and EHEDG       Q72       ✓       ✓       ✓         Aseptic threaded socket to DIN 11864-1 Form A Certified to 3A and EHEDG       N33       ✓       ✓       ✓         • DN 50, PN 25       N33       ✓       ✓       ✓       ✓         • DN 80, PN 25       N36       ✓       ✓       ✓         • DN 100, PN 25       N36       ✓       ✓       ✓         • DN 100, PN 16       N43       ✓       ✓       ✓         • DN 80, PN 16       N44       ✓       ✓       ✓         • DN 80, PN 16       N45       ✓       ✓       ✓         • DN 100, PN 16       N44       ✓       ✓       ✓         • DN 50, PN 16       N45       ✓       ✓       ✓         • DN 50, PN 16       N44       ✓       ✓       ✓         • DN 50, PN 16       N45       ✓       ✓       ✓         • DN 65, PN 16 </td <td>• DN 100, PN 10</td> <td>Q42</td> <td></td> <td>✓</td> <td></td>	• DN 100, PN 10	Q42		✓	
• DN 4*, PN 10Q50✓✓✓Sanitary process connection to NEUMO Bio-Connect S flange connection Certified to 3A and EHEDGQ72✓✓✓• DN 2*, PN 16Q72✓✓✓✓Aseptic threaded socket to DIN 11864-1 Form A Certified to 3A and EHEDGN33✓✓✓• DN 50, PN 25N33✓✓✓✓• DN 80, PN 25N35✓✓✓✓• DN 80, PN 25N36✓✓✓✓• DN 100, PN 25N36✓✓✓✓• DN 50, PN 16N43✓✓✓✓• DN 65, PN 16N44✓✓✓✓• DN 80, PN 16N44✓✓✓✓• DN 80, PN 16N45✓✓✓✓• DN 50, PN 16N45✓✓✓✓• DN 80, PN 16N45✓✓✓✓• DN 50, PN 16N43✓✓✓✓• DN 50, PN 16N43✓✓✓✓• DN 65, PN 16N43✓✓✓✓• DN 80, PN 16N44✓✓✓✓• DN 80, PN 16N45✓✓✓✓• DN 100, PN 16N46✓✓✓✓• DN 80, PN 16N46✓✓✓✓• DN 80, PN 16N46✓✓✓✓• DN 50, PN 25N53✓✓✓	,				
Sanitary process connection to NEUMO Bio-Connect S flange connection Certified to 3A and EHEDGQ72✓✓Aseptic threaded socket to DIN 11864-1 Form A Certified to 3A and EHEDGQ72✓✓✓Aseptic threaded socket to DIN 11864-1 Form A Certified to 3A and EHEDGN33✓✓✓DN 50, PN 25N33✓✓✓✓DN 80, PN 25N35✓✓✓✓DN 100, PN 25N36✓✓✓✓Aseptic flange with notch to DIN 11864-2 Form A✓✓✓✓Certified to 3A and EHEDGN43✓✓✓✓DN 80, PN 16N44✓✓✓✓✓DN 80, PN 16N44✓✓✓✓✓DN 100, PN 16N44✓✓✓✓✓DN 80, PN 16N44✓✓✓✓✓DN 65, PN 16N43 +✓✓✓✓DN 65, PN 16N44 +✓✓✓✓DN 80, PN 16N45 +✓✓✓✓DN 100, PN 16N45 +✓✓✓✓Aseptic clamp with groove to DIN 11864-3 FormA✓✓✓✓Orn 50, PN 25N53✓✓✓✓DN 100, PN 16N45 +✓✓✓✓DN 100, PN 16N45 +✓✓✓✓DN 50, PN 25N53✓✓✓✓DN 65, P	,				
Bio-Connect S flange connection Certified to 3A and EHEDG         Q72         ✓         ✓           • DN 2", PN 16         Q72         ✓         ✓         ✓           Aseptic threaded socket to DIN 11864-1 Form A Certified to 3A and EHEDG         N33         ✓         ✓         ✓           • DN 50, PN 25         N34         ✓         ✓         ✓         ✓         ✓           • DN 65, PN 25         N34         ✓         ✓         ✓         ✓         ✓           • DN 80, PN 25         N35         ✓         ✓         ✓         ✓         ✓           • DN 100, PN 25         N36         ✓         ✓         ✓         ✓         ✓           • DN 50, PN 16         N43         ✓         ✓         ✓         ✓         ✓           • DN 50, PN 16         N44         ✓         ✓         ✓         ✓         ✓           • DN 80, PN 16         N45         ✓         ✓         ✓         ✓         ✓           • DN 100, PN 16         N45         ✓         ✓         ✓         ✓         ✓           • DN 100, PN 16         N45         ✓         ✓         ✓         ✓         ✓           • DN 65, PN 16         N45	,	Q50	~	~	~
Certified to 3A and EHEDG       Q72       ✓       ✓         Aseptic threaded socket to DIN 11864-1 Form A Certified to 3A and EHEDG       N33       ✓       ✓         DN 50, PN 25       N33       ✓       ✓       ✓         DN 65, PN 25       N34       ✓       ✓       ✓         DN 80, PN 25       N35       ✓       ✓       ✓         DN 100, PN 25       N36       ✓       ✓       ✓         DN 100, PN 25       N36       ✓       ✓       ✓         Aseptic flange with notch to DIN 11864-2 Form A       ✓       ✓       ✓         Certified to 3A and EHEDG       N43       ✓       ✓       ✓         DN 50, PN 16       N44       ✓       ✓       ✓         DN 80, PN 16       N43       ✓       ✓       ✓         DN 100, PN 16       N45       ✓       ✓       ✓         Aseptic flange with groove to DIN 11864-2 Form A       ✓       ✓       ✓       ✓         ODN 50, PN 16       N45       ✓       ✓       ✓       ✓         DN 65, PN 16       N44       ✓       ✓       ✓       ✓         DN 80, PN 16       N45       ✓       ✓       ✓       ✓					
• DN 2", PN 16       Q72       ✓       ✓       ✓         Aseptic threaded socket to DIN 11864-1 Form A Certified to 3A and EHEDG       N33       ✓       ✓       ✓         • DN 50, PN 25       N33       ✓       ✓       ✓       ✓         • DN 80, PN 25       N34       ✓       ✓       ✓       ✓         • DN 100, PN 25       N35       ✓       ✓       ✓       ✓         • DN 100, PN 25       N36       ✓       ✓       ✓       ✓         Aseptic flange with notch to DIN 11864-2 Form A       ✓ <t< td=""><td></td><td></td><td></td><td></td><td></td></t<>					
Certified to 3A and EHEDG       N33       V       V       V         • DN 50, PN 25       N34       V       V       V         • DN 80, PN 25       N35       V       V       V         • DN 100, PN 25       N36       V       V       V         • DN 100, PN 25       N36       V       V       V         • DN 100, PN 25       N36       V       V       V         • DN 100, PN 25       N36       V       V       V         • DN 100, PN 25       N36       V       V       V         • DN 50, PN 16       N43       V       V       V         • DN 50, PN 16       N43       V       V       V         • DN 100, PN 16       N45       V       V       V         • DN 100, PN 16       N45       V       V       V         • DN 50, PN 16       N43       V       V       V         • DN 50, PN 16       N44       V       V       V         • DN 50, PN 16       N44+       V       V       V         • DN 80, PN 16       N45+       V       V       V         • DN 100, PN 16       N45+       V       V       V		Q72	✓	1	1
Certified to 3A and EHEDG       N33       V       V       V         • DN 50, PN 25       N34       V       V       V         • DN 80, PN 25       N35       V       V       V         • DN 100, PN 25       N36       V       V       V         • DN 100, PN 25       N36       V       V       V         • DN 100, PN 25       N36       V       V       V         • DN 100, PN 25       N36       V       V       V         • DN 100, PN 25       N36       V       V       V         • DN 50, PN 16       N43       V       V       V         • DN 50, PN 16       N43       V       V       V         • DN 100, PN 16       N45       V       V       V         • DN 100, PN 16       N45       V       V       V         • DN 50, PN 16       N43       V       V       V         • DN 50, PN 16       N44       V       V       V         • DN 50, PN 16       N44+       V       V       V         • DN 80, PN 16       N45+       V       V       V         • DN 100, PN 16       N45+       V       V       V	Aseptic threaded socket to DIN 11864-1 Form A				
• DN 65, PN 25       N34       ·       ·       ·         • DN 80, PN 25       N35       ·       ·       ·         • DN 100, PN 25       N36       ·       ·       ·         Aseptic flange with notch to DIN 11864-2	Certified to 3A and EHEDG				
DN 80, PN 25       N35       ✓       ✓       ✓         DN 100, PN 25       N36       ✓       ✓       ✓         Aseptic flange with notch to DIN 11864-2       ✓       ✓       ✓         Form A       ✓       ✓       ✓       ✓         Certified to 3A and EHEDG       N43       ✓       ✓       ✓         • DN 50, PN 16       N43       ✓       ✓       ✓         • DN 65, PN 16       N44       ✓       ✓       ✓         • DN 80, PN 16       N45       ✓       ✓       ✓         • DN 100, PN 16       N45       ✓       ✓       ✓         • DN 100, PN 16       N46       ✓       ✓       ✓         • DN 50, PN 16       N43 +       ✓       ✓       ✓         • DN 65, PN 16       N43 +       ✓       ✓       ✓         • DN 65, PN 16       N44 +       ✓       ✓       ✓         • DN 80, PN 16       N45 +       ✓       ✓       ✓         • DN 100, PN 16       N46 +       ✓       ✓       ✓         • DN 100, PN 16       N46 +       ✓       ✓       ✓         • DN 50, PN 25       N53       ✓       ✓       ✓	·				~
• DN 100, PN 25       N36       ✓       ✓       ✓         Aseptic flange with notch to DIN 11864-2       -       -       -       -         Certified to 3A and EHEDG       N43       ✓       ✓       ✓         • DN 50, PN 16       N43       ✓       ✓       ✓         • DN 65, PN 16       N44       ✓       ✓       ✓         • DN 80, PN 16       N45       ✓       ✓       ✓         • DN 100, PN 16       N45       ✓       ✓       ✓         • DN 100, PN 16       N46       ✓       ✓       ✓         • DN 100, PN 16       N46       ✓       ✓       ✓         • DN 50, PN 16       N43 +       ✓       ✓       ✓         • DN 50, PN 16       N43 +       ✓       ✓       ✓         • DN 65, PN 16       N43 +       ✓       ✓       ✓         • DN 80, PN 16       N44 +       ✓       ✓       ✓         • DN 80, PN 16       N46 +       ✓       ✓       ✓         • DN 100, PN 16       N46 +       ✓       ✓       ✓         • DN 100, PN 16       N46 +       ✓       ✓       ✓         • DN 50, PN 25       N53       ✓					
Aseptic flange with notch to DIN 11864-2 Form A       N43       ✓       ✓       ✓         Certified to 3A and EHEDG       N43       ✓       ✓       ✓         DN 50, PN 16       N44       ✓       ✓       ✓         DN 65, PN 16       N44       ✓       ✓       ✓         DN 80, PN 16       N45       ✓       ✓       ✓         DN 100, PN 16       N46       ✓       ✓       ✓         Aseptic flange with groove to DIN 11864-2       ✓       ✓       ✓       ✓         Certified to 3A and EHEDG       ✓       ✓       ✓       ✓       ✓         • DN 50, PN 16       N43 +       ✓       ✓       ✓       ✓         • DN 65, PN 16       N43 +       ✓       ✓       ✓       ✓         • DN 80, PN 16       N44 +       ✓       ✓       ✓       ✓         • DN 80, PN 16       N45 +       ✓       ✓       ✓       ✓         • DN 100, PN 16       N45 +       ✓       ✓       ✓       ✓         • DN 100, PN 16       N46 +       ✓       ✓       ✓       ✓         • DN 100, PN 16       N46 +       ✓       ✓       ✓       ✓         • DN 5	,				
Form A       Image: Section of the sectin of the section of the section of the section	,	N36	•	•	•
Certified to 3A and EHEDG       N43       V       V       V         DN 50, PN 16       N44       V       V       V         DN 80, PN 16       N45       V       V       V         DN 100, PN 16       N46       V       V       V         DN 100, PN 16       N46       V       V       V         Asseptic flange with groove to DIN 11864-2       V       V       V       V         Certified to 3A and EHEDG       N43 +       V       V       V         ODN 50, PN 16       N43 +       V       V       V         ODN 65, PN 16       N43 +       V       V       V         ODN 80, PN 16       N44 +       V       V       V         ODN 80, PN 16       N45 +       V       V       V         ODN 100, PN 16       N46 +       V       V       V         P11       N45 +       V       V       V         ODN 100, PN 16       N46 +       V       V       V         ODN 50, PN 25       N53 +       V       V       V         ODN 50, PN 25       N54 +       V       V       V         ODN 50, PN 25       N54 +       V <td< td=""><td></td><td></td><td></td><td></td><td></td></td<>					
• DN 65, PN 16       N44       ✓       ✓       ✓         • DN 80, PN 16       N45       ✓       ✓       ✓         • DN 100, PN 16       N46       ✓       ✓       ✓         Aseptic flange with groove to DIN 11864-2 Form A       ✓       ✓       ✓       ✓         Certified to 3A and EHEDG       N43 + P11       ✓       ✓       ✓       ✓         • DN 50, PN 16       N43 + P11       ✓       ✓       ✓       ✓         • DN 65, PN 16       N43 + P11       ✓       ✓       ✓       ✓         • DN 80, PN 16       N44 + P11       ✓       ✓       ✓       ✓         • DN 100, PN 16       N46 + P11       ✓       ✓       ✓       ✓         • DN 100, PN 16       N46 + P11       ✓       ✓       ✓       ✓         • DN 100, PN 16       N46 + P11       ✓       ✓       ✓       ✓         • DN 100, PN 16       N46 + P11       ✓       ✓       ✓       ✓         • DN 50, PN 25       N53       ✓       ✓       ✓         • DN 65, PN 25       N54       ✓       ✓       ✓         • DN 80, PN 16       N55       ✓       ✓       ✓ <td></td> <td></td> <td></td> <td></td> <td></td>					
• DN 80, PN 16       N45       ✓       ✓       ✓       ✓         • DN 100, PN 16       N46       ✓       ✓       ✓       ✓         Aseptic flange with groove to DIN 11864-2       -       -       ✓       ✓       ✓         Certified to 3A and EHEDG       -       -       -       ✓       ✓       ✓         • DN 50, PN 16       N43 +       ✓       ✓       ✓       ✓       ✓         • DN 65, PN 16       N44 +       ✓       ✓       ✓       ✓       ✓         • DN 80, PN 16       N45 +       ✓       ✓       ✓       ✓         • DN 80, PN 16       N45 +       ✓       ✓       ✓       ✓         • DN 100, PN 16       N46 +       ✓       ✓       ✓       ✓         • DN 100, PN 16       N46 +       ✓       ✓       ✓       ✓         • DN 100, PN 16       N46 +       ✓       ✓       ✓       ✓         • DN 100, PN 16       N55       ✓       ✓       ✓       ✓         • DN 50, PN 25       N53       ✓       ✓       ✓       ✓         • DN 65, PN 25       N54       ✓       ✓       ✓       ✓         • DN 80	• DN 50, PN 16	N43	1	✓	✓
• DN 100, PN 16       N46       ✓       ✓       ✓         Aseptic flange with groove to DIN 11864-2       -       -       -       -         Form A       Certified to 3A and EHEDG       -       -       -       -         • DN 50, PN 16       N43 +       ✓       ✓       ✓       ✓         • DN 65, PN 16       N44 +       ✓       ✓       ✓       ✓         • DN 80, PN 16       N45 +       ✓       ✓       ✓       ✓         • DN 100, PN 16       N45 +       ✓       ✓       ✓       ✓         • DN 100, PN 16       N46 +       ✓       ✓       ✓       ✓         • DN 100, PN 16       N46 +       ✓       ✓       ✓       ✓         • DN 100, PN 16       N46 +       ✓       ✓       ✓       ✓         • DN 100, PN 16       N55       ✓       ✓       ✓       ✓         • DN 50, PN 25       N53       ✓       ✓       ✓       ✓         • DN 65, PN 25       N54       ✓       ✓       ✓       ✓         • DN 80, PN 16       N55       ✓       ✓       ✓       ✓	• DN 65, PN 16	N44			
Aseptic flange with groove to DIN 11864-2       Image: Constraint of the sector of the s	,				
Form A       Image: Certified to 3A and EHEDG       Image: Certified to 3A and EHEDG         • DN 50, PN 16       N43 + P11       *       *       *       *         • DN 65, PN 16       N44 + P11       *       *       *       *         • DN 80, PN 16       N45 + V       *       *       *       *         • DN 80, PN 16       N45 + V       *       *       *         • DN 100, PN 16       N46 + P11       *       *       *         • DN 100, PN 16       N46 + P11       *       *       *         • DN 100, PN 16       N46 + P11       *       *       *         • DN 100, PN 16       N46 + P11       *       *       *         • DN 100, PN 16       N46 + V       *       *       *         • DN 100, PN 16       N53       *       *       *         • DN 50, PN 25       N53       *       *       *         • DN 50, PN 25       N54       *       *       *         • DN 65, PN 25       N54       *       *       *         • DN 80, PN 16       N55       *       *       *	,	N46	~	~	~
Certified to 3A and EHEDG       N43 + P11       V       V       V         • DN 50, PN 16       N43 + P11       V       V       V         • DN 65, PN 16       N44 + P11       V       V       V         • DN 80, PN 16       N45 + P11       V       V       V         • DN 100, PN 16       N46 + P11       V       V       V         • DN 100, PN 16       N46 + P11       V       V       V         • DN 100, PN 16       N46 + P11       V       V       V         • DN 100, PN 16       N55       V       V       V         • DN 100, PN 16       N53       V       V       V         • DN 100, PN 16       N53       V       V       V					
• DN 50, PN 16       N43 + P11       ·       ·       ·       ·         • DN 65, PN 16       N44 + P11       ·       ·       ·       ·         • DN 80, PN 16       N45 + P11       ·       ·       ·       ·         • DN 100, PN 16       N46 + P11       ·       ·       ·       ·         • DN 100, PN 16       N46 + P11       ·       ·       ·       ·         • DN 100, PN 16       N46 + P11       ·       ·       ·       ·         • DN 100, PN 16       N46 + P11       ·       ·       ·       ·         • DN 100, PN 16       N53       ·       ·       ·       ·         • DN 100, PN 16       N53       ·       ·       ·       ·         • DN 50, PN 25       N53       ·       ·       ·       ·         • DN 65, PN 25       N54       ·       ·       ·       ·         • DN 80, PN 16       N55       ·       ·       ·       ·					
• DN 65, PN 16       P11       v       v       v         • DN 80, PN 16       N45 +       v       v       v         • DN 100, PN 16       N46 +       v       v       v         Aseptic clamp with groove to DIN 11864-3       v       v       v       v         Certified to 3A and EHEDG       v       v       v       v         • DN 50, PN 25       N53       v       v       v         • DN 65, PN 25       N54       v       v       v         • DN 80, PN 16       N55       v       v       v		N43 +	1	1	1
PI1       P11       P11         • DN 80, PN 16       N45 + Y       Y       Y         • DN 100, PN 16       N46 + Y       Y       Y         Aseptic clamp with groove to DIN 11864-3 FormA       Y       Y       Y         Certified to 3A and EHEDG       N53       Y       Y         • DN 50, PN 25       N53       Y       Y         • DN 65, PN 25       N54       Y       Y         • DN 80, PN 16       N55       Y       Y		P11			
• DN 80, PN 16       N45 + P11       ✓       ✓       ✓         • DN 100, PN 16       N46 + P11       ✓       ✓       ✓       ✓         Aseptic clamp with groove to DIN 11864-3 FormA       Certified to 3A and EHEDG       ✓       ✓       ✓       ✓         DN 50, PN 25       N53       ✓       ✓       ✓       ✓         • DN 65, PN 25       N54       ✓       ✓       ✓         • DN 80, PN 16       N55       ✓       ✓       ✓	• DN 65, PN 16		1	1	1
• DN 100, PN 16       P11 N46 + P11       ✓       ✓       ✓       ✓         Aseptic clamp with groove to DIN 11864-3 FormA       Certified to 3A and EHEDG       ✓       ✓       ✓         Option 50, PN 25       N53       ✓       ✓       ✓       ✓         • DN 65, PN 25       N54       ✓       ✓       ✓         • DN 80, PN 16       N55       ✓       ✓       ✓	• DN 80 PN 16		1	1	1
P11         P11           Aseptic clamp with groove to DIN 11864-3 FormA         P11           Certified to 3A and EHEDG			•	•	•
Aseptic clamp with groove to DIN 11864-3 FormA Certified to 3A and EHEDG • DN 50, PN 25 • DN 65, PN 25 • DN 80, PN 16 • DN 80, PN 16	• DN 100, PN 16		✓	1	1
FormA         Image: Certified to 3A and EHEDG           • DN 50, PN 25         N53         ✓         ✓           • DN 65, PN 25         N54         ✓         ✓           • DN 80, PN 16         N55         ✓         ✓         ✓		P11			
Certified to 3A and EHEDG       N53       ✓       ✓         • DN 50, PN 25       N53       ✓       ✓       ✓         • DN 65, PN 25       N54       ✓       ✓       ✓         • DN 80, PN 16       N55       ✓       ✓       ✓					
• DN 50, PN 25       N53       ✓       ✓         • DN 65, PN 25       N54       ✓       ✓         • DN 80, PN 16       N55       ✓       ✓					
• DN 65, PN 25 • DN 80, PN 16		N53	1	1	1
• DN 80, PN 16 N55 🖌 🖌 🖌	,			1	1
• DN 100, PN 16 🖌 🖌 🖌	,		1		1
	• DN 100, PN 16	N56	✓	✓	1

Selection and Ordering data	Order code				
Additional data		HART	PA	FF	
Please add " <b>-Z</b> " to Article No. and specify Order code(s) and plain text.					
Measuring range to be set	Y01	✓	<b>√</b> 8)		
Specify in plain text (max. 5 characters): Y01: up to mbar, bar, kPa, MPa, psi					
Stainless steel tag plate and entry in device variable (measuring point descrip- tion) Max. 16 characters, specify in plain text: Y15:	Y15	•	1	~	
Measuring point text (entry in device vari- able)	Y16	~	~	~	
Max. 27 characters, specify in plain text: Y16:					
Entry of HART TAG	Y17	✓			
Max. 8 characters, specify in plain text: Y17:					
Setting of the display in pressure units Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi, Note: The following pressure units can be selected:	Y21	*	1	*	
bar, mbar, mm $H_2O^{*}$ ), in $H_2O^{*}$ ), ft $H_2O^{*}$ , mmHG, inHG, psi, Pa, kPa, MPa, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , Torr, ATM or % *) ref. temperature 20 °C					
Setting of the display in non- pressure units <sup>9)</sup>	Y22 +	1			
pressure units" Specify in plain text: Y22: up to I, m <sup>3</sup> , m, USg, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	Y01				
Preset bus address (possible between 1 126)	Y25		1	~	

Preset bus address (possible between 1 ... 126) Specify in plain text: Y25: .....

Factory mounting of valve manifolds, see accessories.

Only Y01, Y15, Y16, Y17, Y21, Y22 and Y25 can be factory preset

✓ = available

#### Ordering example

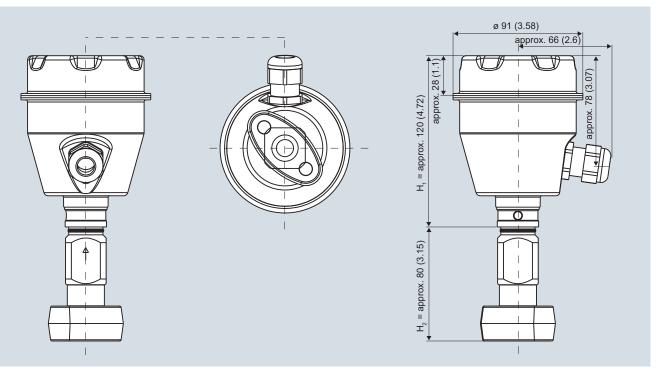
Item line:	7MF8023-1DB24-1AB7-Z
B line:	A02 + Y01 + Y21
C line:	Y01: 1 10 bar (14.5 145 psi)
C line:	Y21: bar (psi)

- <sup>1)</sup> When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the <u>total</u> combination is certified here.
- <sup>2)</sup> If the acceptance test certificate 3.1 is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.
- <sup>3)</sup> Special seal in Viton included in the scope of delivery
- <sup>4)</sup> Cannot be combined with Order codes P00 and P10. Can only be ordered with silicone oil measuring cell filling.
- <sup>5)</sup> The weldable socket can be ordered under accessories.
- <sup>6)</sup> 3A certification only if used in conjunction with 3A-compliant sealing rings.
- <sup>7)</sup> Certified to 3A and EHEDG. The maximum permissible temperatures of the medium depend on the respective cell fillings (see medium conditions).
- <sup>8)</sup> Measuring accuracies for PROFIBUS PA transmitters with Option Y01 are calculated in the same way as for HART devices.
- <sup>9)</sup> Preset values can only be changed over SIMATIC PDM.

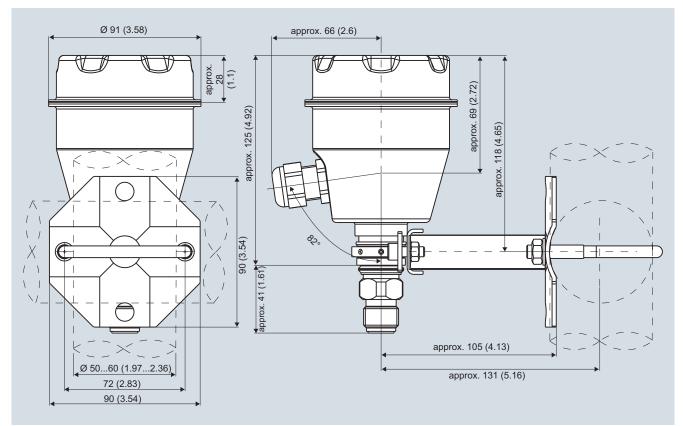
Transmitters for food, pharmaceuticals and biotechnology

# SITRANS P300 for gauge and absolute pressure

#### Dimensional drawings



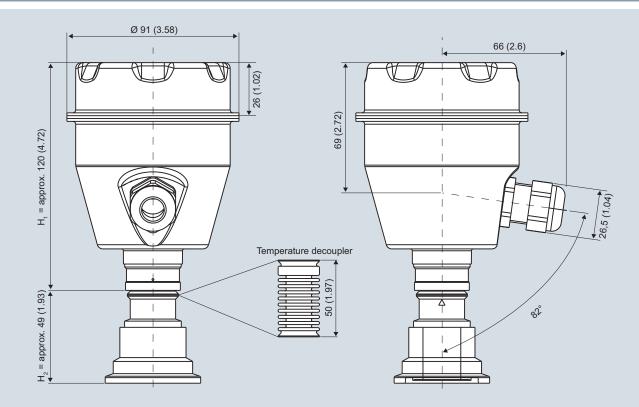
SITRANS P300, with oval flange, dimensions in mm (inch)



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

Transmitters for food, pharmaceuticals and biotechnology

# SITRANS P300 for gauge and absolute pressure



SITRANS P300, front-flush, dimensions in mm (inch) The diagram shows a SITRANS P300 with an example of a flange. In this drawing the height is subdivided into H<sub>1</sub> and H<sub>2</sub>. H<sub>1</sub> = Height of the SITRANS P300 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.

Transmitters for food, pharmaceuticals and biotechnology

#### SITRANS P300 for gauge and absolute pressure

#### Flanges as per EN and ASME

#### Flange to EN

EN 1092-1					
t <u>≢</u>	Order code	DN	PN	ØD	H <sub>2</sub>
	M11	25	40	115 mm (4.5")	Approx.
	M21	25	100	140 mm (5.5")	52 mm (2")
, , , , , , , , , , , , , , , , , , ,	M13	40	40	150 mm (5.9")	
	M23	40	100	170 mm (6.7")	
	M04	50	16	165 mm (6.5")	
	M14	50	40	165 mm (6.5")	
	M06	80	16	200 mm (7.9")	
	M16	80	40	200 mm (7.9")	

# Flanges to ASME

ASME B16.5					
<u>↑</u>	Order code	DN	PN	ØD	H <sub>2</sub>
	M40	1"	150	110 mm (4.3")	Approx.
	M41	11⁄2"	150	130 mm (5.1")	52 mm (2")
	M42	2"	150	150 mm (5.9")	
	M43	3"	150	190 mm (7.5")	
	M44	4"	150	230 mm (9.1")	
	M45	1"	300	125 mm (4.9")	
	M46	1½"	300	155 mm (6.1")	
	M47	2"	300	165 mm (6.5")	
	M48	3"	300	210 mm (8.1")	
	M49	4"	300	255 mm (10.0")	

#### NuG and pharmaceutical connections

Connections to DIN

# DIN 11851 (milk pipe union with slotted union nut) Image: state stat

#### Tri-Clamp nach DIN 32676

t Ħ	Order code	DN	PN	ØD	H <sub>2</sub>
	N14	50	16	64 mm (2.5")	Approx.
	N15	65	10	91 mm (3.6")	52 mm (2")

# Other connections

Varivent connection					
+	Order code	DN	PN	ØD	H <sub>2</sub>
	N28	40 125	40	84 mm (3.3")	Approx. 52 mm (2")

#### Sanitary process connection to DRD

Order code	DN	PN	ØD	H <sub>2</sub>
M32	50	40	105 mm (4.1")	Approx. 52 mm (2")

#### Sanitary process screw connection to NEUMO Bio-Connect

	Order code	DN	PN	ØD	H <sub>2</sub>
	Q05	50	16	82 mm (3.2")	Approx.
	Q06	65	16	105 mm (4.1")	52 mm (2")
	Q07	80	16	115 mm (4.5")	
إصليك	Q08	100	16	145 mm (5.7")	
D	Q13	2"	16	82 mm (3.2")	
	Q14	21⁄2"	16	105 mm (4.1")	
	Q15	3"	16	105 mm (4.1")	
	Q16	4"	16	145 mm (5.7")	

# Sanitary process connection to NEUMO Bio-Connect flange connection

	Order code	DN	PN	ØD	H <sub>2</sub>
± 1	Q23	50	16	110 mm (4.3")	Approx.
	Q24	65	16	140 mm (5.5")	52 mm (2")
D	Q25	80	16	150 mm (5.9")	
	Q26	100	16	175 mm (6.9")	
	Q31	2"	16	100 mm (3.9")	
	Q32	21⁄2"	16	110 mm (4.3")	
	Q33	3"	16	140 mm (5.5")	
	Q34	4"	16	175 mm (6.9")	

# Sanitary process connection to NEUMO Bio-Connect clamp connection

	Order code	DN	PN	ØD	H <sub>2</sub>
لسلسل	Q39	50	16	77.4 mm (3.0")	Approx.
	Q40	65	10	90.9 mm (3.6")	52 mm (2")
	Q41	80	10	106 mm (4.2")	
	Q42	100	10	119 mm (4.7")	
D	Q47	2"	16	77.4 mm (3.0")	
	Q48	21⁄2"	16	90.9 mm (3.6")	
	Q49	3"	10	106 mm (4.2")	
	Q50	4"	10	119 mm (4.7")	

# Sanitary process connection to NEUMO Bio-Connect S flange connection

Order code	DN	PN	ØD	H <sub>2</sub>
Q72	2"	16	125 mm (4.9")	Approx. 52 mm (2")

## Threaded connection G¾", G1" and G2" acc. to DIN 3852

	Order code	DN	PN	ØD	H <sub>2</sub>
	R01	3⁄4"	60	37 mm (1.5")	Approx. 45 mm (1.8")
D	R02	1"	60	48 mm (1.9")	Approx. 47 mm (1.9")
	R04	2"	60	78 mm (3.1")	Approx. 52 mm (2")



Transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressure

nk connection TG	52/50 ai	nd TC	352/15	50	
	Order code	DN	PN	ØD	H <sub>2</sub>
	R10 R11	25 25	40 40	63 mm (2.5") 63 mm (2.5")	Approx. 63 mm (2.5") Approx. 170 mm
MC as a kat with wei					(6.7")
MS socket with unio	Order	DN	PN	ØD	H <sub>2</sub>
	code	0."	0.5		
	M67 M68	2" 2½"	25 25	84 mm (3.3") 100 mm (3.9")	Approx. 52 mm (2")
	M69	3"	25	114 mm (4.5")	
AS threaded socket				~	
(	Order code	DN	PN	ØD	H <sub>2</sub>
	M73 M74	2" 2½"	25 25	70 x 1/6 mm 85 x 1/6 mm	Approx. 52 mm (2")
	M75	3"	25	98 x 1/6 mm	
F socket with union	n nut				
	Order code	DN	PN	ØD	H <sub>2</sub>
r (	M82 M83	2" 2½"	25 25	77 mm (3") 91 mm (3.6")	Approx. 52 mm (2")
	M84	3"	25	106 mm (4.2")	02 (2 )
OF threaded socket					
+ Time	Order code	DN	PN	ØD	H <sub>2</sub>
	Code M92	2"	25	64 mm (2.5")	Approx.
	M93 M94	2½" 3"	25 25	77.5 mm (3.1")	52 mm (2")
	M94	3"	25	91 mm (3.6")	

\* D \*

# **Pressure Measurement**

Transmitters for food, pharmaceuticals and biotechnology

# SITRANS P300 Accessories/Spare parts

Selection and Ordering data	Article No.
Spare parts / Accessories	
Mounting bracket and fastening parts kit made of stainless steel	7MF8997-1AA
Lid without window gasket not included	7MF8997-1BA
Lid with glass window gasket not included	7MF8997-1BD
NBR enclosure sealing	7MF8997-1BG
Measuring point label unlabeled	7MF8997-1CA
Cable gland • metal • plastic (blue)	7MF8997-1EA 7MF8997-1EB
<ul> <li>Weldable sockets for PMC connection</li> <li>PMC Style Standard: Thread 1½"</li> <li>PMC Style Minibolt: front-flush 1"</li> </ul>	7MF4997-2HA 7MF4997-2HB
Gaskets for PMC connection         (packing unit = 5 units)         • PTFE seal for PMC Style Standard: Thread 1½"         • Gasket made of Viton for PMC Style Minibolt:	7MF4997-2HC 7MF4997-2HD
front-flush 1" Weldable socket for TG 52/50 and TG 52/150 connection • TG 52/50 connection • TG5 2/150 connection	7MF4997-2HE 7MF4997-2HF
Seals for TG 52/50 and TG 52/150 made of silicone	7MF4997-2HG
Seals for flange connection with front-flush diaphragm Material FPM (Viton), 10 units • DN 25, PN 40 (M11) • DN 25, PN 100 (M21) • 1", class 150 (M40) • 1", class 300 (M45)	7MF4997-2HH 7MF4997-2HJ 7MF4997-2HK 7MF4997-2HL

Selection and Ordering data	Article No.
Operating Instructions <sup>1)</sup>	
<ul> <li>for SITRANS P300 series with HART</li> <li>German</li> <li>English</li> <li>French</li> <li>Spanish</li> <li>Italian</li> <li>Leporello German/English</li> <li>for SITRANS P300 series with PROFIBUS PA</li> </ul>	A5E00359580 A5E00359579 A5E00359578 A5E00359576 A5E00359577 A5E00359581
<ul> <li>German</li> <li>English</li> <li>French</li> <li>Spanish</li> <li>Italian</li> <li>Leporello German/English</li> </ul>	A5E00414587 A5E00414588 A5E00414589 A5E00414590 A5E00414591 A5E00414592
<ul> <li>English, german, spanish, french, italian, dutch</li> </ul>	A5E03434626
<ul> <li>English, estonian, latvian, lithuanian, polish, romanian</li> </ul>	A5E03434631
<ul> <li>English, bulgarian, czech, finnish, slovakian, slovenian</li> </ul>	A5E03434645
<ul> <li>English, danish, greek, portuguese, swe- dish, hungarian</li> </ul>	A5E03434656
• Korean	A5E03693760
The compact operating instructions are avail- able in 21 EU languages on the product CD supplied with each transmitter. They can also be downloaded from the SITRANS P web page.	
Brief instructions (Leporello)	
<ul> <li>for SITRANS P300 with HART</li> <li>German/English</li> </ul>	A5E00359581
<ul> <li>for SITRANS P300 with PROFIBUS PA</li> <li>German/English</li> </ul>	A5E00414592
for SITRANS P300 with FOUNDATION Field-	AJE00414332
bus	AFE01170700
- German/English	A5E01176733
CD with SITRANS P documentation	4550000045
<ul> <li>German, English, French, Spanish, Italian including compact operating instructions in 21 EU languages</li> </ul>	A5E00090345
Certificates (order only via SAP) instead of Internet download	
<ul> <li>hard copy (to order)</li> </ul>	A5E03252406
• on CD (to order)	A5E03252407
HART modem	
with USB interface	7MF4997-1DB

Available ex stock

Power supply units see Chap. 7 "Supplementary Components".

 You can download these operating instructions free-of-charge from our Internet site at www.siemens.com/sitransp.

Transmitters for food, pharmaceuticals and biotechnology

#### SITRANS P300 - Factory-mounting of valve manifolds on transmitters

# Overview

The SITRANS P300 transmitter for gauge and absolute pressure can be delivered factory-fitted with the following valve manifolds:

• 7MF9011-4EA and 7MF9011-4FA valve manifolds for gauge pressure and absolute pressure transmitters

# Design

The 7MF9011-4EA valve manifolds are sealed with gaskets made of PTFE between transmitter and the valve manifold as standard. Soft iron, stainless steel and copper gaskets 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.

Once installed, the complete unit is checked under pressure for leaks (compressed air 6 bar (87 psi))and is certified leak-proof with a test report to EN 10204 - 2.2.

All valve manifolds should preferably be secured with the respective 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 acceptance test certificate 3.1 to EN 10204 when choosing the option "Factory mounting of valve manifolds", a separate certificate is provided for the transmitters and the valve manifolds respectively.

# Selection and Ordering data

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



18	Add <b>-Z</b> to the Article No. of the transmitter and add Order codes	Order code
1	SITRANS P300 7MF8021	Т03
	With process connection female thread ½-14 NPT in-sealed with PTFE sealing tape	
	Delivery incl. high-pressure test certified by test report to EN 10204-2.2	
	Further designs:	
	Delivery includes mounting brackets and mounting clips made of stainless steel (instead of the mounting bracket supplied with the transmitter)	A02
	Supplied acceptance test certificate to EN 10204- 3.1 for transmitters and mounted valve manifold	C12

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

Add <b>-Z</b> to the Article No. of the transmitter and add Order codes	Order code
SITRANS P300 7MF8020	T02
with process connection collar G <sup>1</sup> / <sub>2</sub> A to EN 837-1 with gasket made of PTFE between valve manifold and transmitter	
Alternative sealing material:	
Soft iron	A70
Stainless steel, Mat. No. 14571	A71
• copper	A72
Delivery incl. high-pressure test certified by test report to EN 10204-2.2	
Further designs:	
Delivery includes mounting brackets and mounting clips made of stainless steel (instead of the mounting bracket supplied with the transmitter)	A02
Supplied acceptance test certificate to EN 10204- 3.1 for transmitters and mounted valve manifold	C12

Transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 - Factory-mounting of valve manifolds on transmitters

## Dimensional drawings

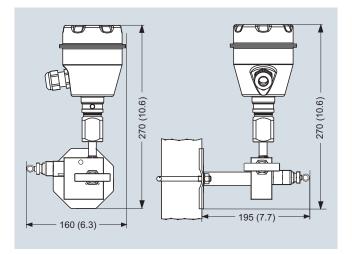
Valve manifolds mounted on SITRANS P300



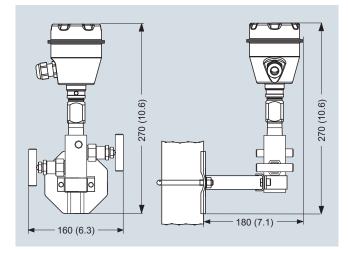
7MF9011-4EA valve manifold with mounted gauge pressure and absolute pressure transmitters



7MF9011-4FA 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)



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

Transmitters for gauge pressure for the paper industry

## SITRANS P DS III and P300 with PMC connection - Technical description

#### Overview



The SITRANS P300 and DS III pressure transmitters have been fitted with special process connections for the paper industry. With the two process connection threads  $1\frac{1}{2}$ " and 1" flush at the front, the SITRANS P300 and DS III transmitters can be used for all processes in the paper industry.

SITRANS P300 and SITRANS PDS III series pressure transmitters are digital pressure transmitters featuring extensive userfriendliness and high accuracy. The parameterization is performed using control keys via HART, PROFIBUS-PA or FOUNDATION Fieldbus interface.

Extensive functionality enables the pressure transmitter to be precisely adapted to the plant's requirements. Operation is very simple in spite of the numerous setting options.

Transmitters with type of protection "Intrinsic safety" and "Explosion-proof" may be installed within potentially explosive atmospheres (zone 1) or in zone 0. The transmitters 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
- Mass level
- Volume level

## Benefits

- High quality and service lifeHigh reliability even under extreme chemical and mechanical
- loads, e.g. abrasion.
- For aggressive and non-aggressive gases, vapors and liquids
- Extensive diagnosis and simulation functions
- Minimum conformity error
- Small long-term drift
- · Wetted parts made of Hastelloy
- Infinitely adjustable span from 0.03 bar to 16 bar (0.43 psi to 232 psi) for DS III with HART interface
- Nominal measuring range from 1 bar to 16 bar (14.5 psi to 232 psi) for DS III with PROFIBUS PA and FOUNDATION Fieldbus interface
- Infinitely adjustable span from 0.03 bar to 16 bar (0.43 psi to 232 psi) for SITRANS P300 with HART interface
- Nominal measuring range from 1 bar to 16 bar (14.5 psi to 232 psi) for SITRANS P300 with PROFIBUS PA interface
- High measuring accuracy
- Parameterization over control keys and HART Communication, or over PROFIBUS PA or FOUNDATION Fieldbus interface (DS III only).

#### Application

The pressure transmitters of the DS III series, can be used in industrial areas with extreme chemical and mechanical loads. Electromagnetic compatibility in the range 10 kHz to 1 GHz makes the DS III pressure transmitters suitable for locations with high electromagnetic emissions.

Pressure transmitters with type of protection "Intrinsic safety" and "Explosion-proof" may be installed within potentially explosive atmospheres (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 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 control keys or programmed externally over HART or over PROFIBUS-PA or FOUNDATION Fieldbus interface (only DS III).

#### SITRANS P, DS III series

Measured variable: Gauge pressure of aggressive and non-aggressive gases, vapors and liquids.

#### Span (infinitely adjustable)

For DS III with HART: 0.03 ... 16 bar (0.433 ... 232 psi)

#### Nominal measuring range

For DS III with PROFIBUS PA or FOUNDATION Fieldbus: 1 ... 16 bar (14.5 ... 232 psi)

#### SITRANS P300

Span (infinitely adjustable)

For DS III with HART: 0.03 ... 16 bar (0.433 ... 232 psi)

#### Nominal measuring range

For DS III with PROFIBUS PA or FOUNDATION Fieldbus: 1 ... 16 bar (14.5 ... 232 psi)

Transmitters for gauge pressure for the paper industry

## SITRANS P DS III and P300 with PMC connection - Technical description

#### Design

SITRANS P DS III



#### Device front view, SITRANS P DS III

The transmitter consists of various components depending on the order. The possible versions are listed in the ordering information. The components described below are the same for all transmitters.

The rating plate (7, Figure "Device front view) with the Article No. is located on the side of the housing. The specified number together with the ordering information provide details on the optional design details and on the possible measuring range (physical properties of built-in sensor element).

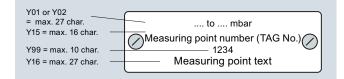
The approval label is located on the opposite side.

The housing is made of die-cast aluminium or stainless steel precision casting. A round cover is screwed on at the front and rear of the housing. The front cover (2) can be fitted with a viewing pane so that the measured values can be read directly on the display. The inlet (8) for the electrical connection is located either on the left or right side. The unused opening on the opposite side is sealed by a blanking plug. The protective earth connection is located on the rear of the housing.

The electrical connections for the power supply and screen are accessible by unscrewing the rear cover. The bottom part of the housing contains the measuring cell with process connection (5). The measuring cell is prevented from rotating by a locking screw (4). As the result of this modular design, the measuring cell and the electronics can be replaced separately from each other. The set parameter data are retained.

At the top of the housing is a plastic cover (1), which hides the input keys.

#### Example for an attached measuring point label



#### SITRANS P300

The device comprises:

- Electronics
- Housing
- Measuring cell



Perspective view of the SITRANS P300

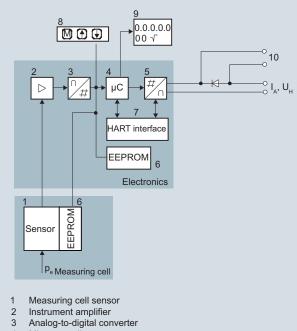
The housing has a screw-on lid (5) and, depending on the version, is with or without an inspection window. The electrical terminal housing, the buttons for operation of the device are located under this lid and, depending on the version, the display. The connections for the auxiliary power UH and the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

Transmitters for gauge pressure for the paper industry

## SITRANS P DS III and P300 with PMC connection - Technical description

## Function

Operation of electronics with HART communication



- 4 Microcontroller
- 5 Digital-to-analog converter
- 6 One non-volatile memory each in the measuring cell and
- electronics
- 7 HART interface8 Three input keys (loc
- 8 Three input keys (local operation)
- 9 Digital display
- 10 Diode circuit and connection for external ammeter
- I<sub>A</sub> Output current
- $\hat{U}_{H}$  Power supply
- P<sub>e</sub> Input variable

#### 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 digitized in the analog-to-digital converter (3). The digital information is evaluated in a microcontroller, its linearity and temperature response corrected, 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.

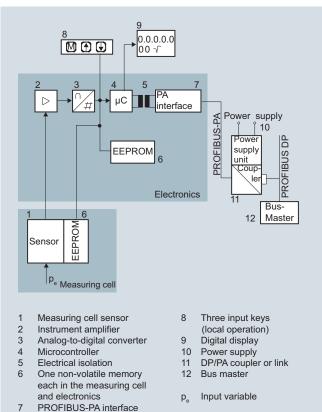
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced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

Using the 3 input keys (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 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 spans  $\leq$  63 bar (914 psi) measure the input pressure compared to atmosphere, the transmitters with spans 160 bar (2320 psi) measure compared to vacuum.

#### 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 digitized in the analog-to-digital converter (3). The digital information is evaluated in the microcontroller, its linearity and temperature response corrected, and provided on the PROFIBUS PA through 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). The first memory is linked with the measuring cell, the second with the electronics. This modular design means that the electronics and the measuring cell can be replaced separately from one another.

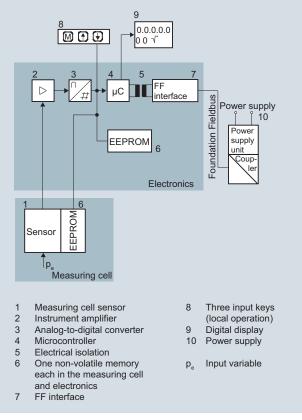
Using the three input buttons (8) you can parameterize the pressure transmitter directly at the measuring point. The input buttons can also be used to control the view of the results, the error messages and the operating modes on the display (9).

The results with status values and diagnostic values 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.

Transmitters for gauge pressure for the paper industry

#### SITRANS P DS III and P300 with PMC connection - Technical description

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 digitized in the analog-to-digital converter (3). The digital information is evaluated in the microcontroller, its linearity and temperature response corrected, and provided on the FOUNDATION Fieldbus through an electrically isolated FOUNDATION Fieldbus interface (7).

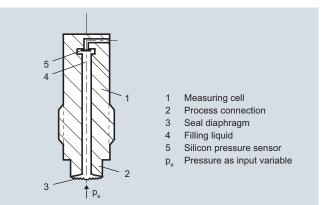
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced 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 results, the error messages and the operating modes on the display (9).

The results with status values and diagnostic values are transferred by cyclic data transmission on the

FOUNDÁTIÓN Fieldbus. Parameterization 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 cell



Measuring cell for gauge pressure with front-flush diaphragm

Measuring cell for gauge pressure, with front-flush diaphragm for paper industry, function diagram  $% \left( {{\left[ {{{\rm{T}}_{\rm{T}}} \right]}_{\rm{T}}} \right)$ 

The pressure  $p_e$  is applied through the process connection (2, Figure "Measuring cell for gauge pressure, with front-flush 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 absolute pressure.

#### Parameterization

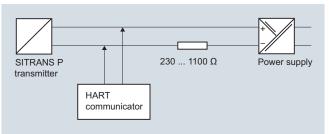
Depending on the version, there are a range of options for parameterizing the pressure transmitter and for setting or scanning the parameters.

Parameterization using the input buttons (local operation)

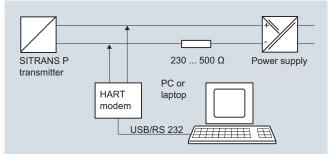
With the input buttons you can easily set the most important parameters without any additional equipment.

#### 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.



HART communication between a PC communicator and a pressure transmitter

## Transmitters for gauge pressure for the paper industry

## SITRANS P DS III and P300 with PMC connection - Technical description made through Parameterization through PROFIBUS PA interface

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 the Frequency Shift Keying (FSK) method.

#### Adjustable parameter DS III with HART and P300 with HART

Parameters	Input keys	HART communication
Start of scale	х	Х
Full-scale value	х	х
Electrical damping	х	х
Start-of-scale value without applica- tion of a pressure ("Blind setting")	х	Х
Full-scale value without application of a pressure ("Blind setting")	х	Х
Zero adjustment	х	х
current transmitter	х	х
Fault current	х	х
Disabling of buttons, write protection	х	x <sup>1)</sup>
Type of dimension and actual dimension	х	Х
Characteristic (linear)	х	х
Input of characteristic		х
Freely-programmable LCD		x
Diagnostic functions		х

<sup>1)</sup> Cancel apart from write protection

Diagnostic functions for DS III with HART and P300 with HART

- Zero correction display
- Event counter
- Limit transmitter
- Saturation alarm
- Slave pointer
- Simulation functions
- Maintenance timer

Available physical units of display for DS III with HART and P300 with HART

Physical variable	Physical dimensions
Pressure (setting can also be made 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
Miscellaneous	%, mA

Fully digital communication through PROFIBUS PA, profile 3.0, is particularly user-friendly. The PROFIBUS connects the DS III PA to a process control system, e.g. SIMATIC PSC 7. Communication is possible even in a potentially explosive environment.

For parameterization through 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 DS III with FOUNDATION Fieldbus is connected to a process control system. Communication is possible even in a potentially explosive environment.

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

Adjustable parameters for DS III with PROFIBUS PA and FOUNDATION Fieldbus, and P300 with PROFIBUS PA and FOUNDATION Fieldbus

Adjustable parameters	Input keys	PROFIBUS PA and FOUNDA- TION Fieldbus interface
Electrical damping	х	х
Zero adjustment (correction of posi- tion)	х	Х
Buttons and/or function disabling	х	х
Source of measured-value display	х	х
Physical dimension of display	х	х
Position of decimal point	х	х
Bus address	х	х
Adjustment of characteristic	х	х
Input of characteristic		х
Freely-programmable LCD		х
Diagnostic functions		х

Diagnostic functions for DS III with PROFIBUS PA and FOUNDATION Fieldbus, and P300 with PROFIBUS PA and FOUNDATION Fieldbus

- Event counter
- · Slave pointer
- Maintenance timer
- Simulation functions
- Display of zero correction
- Limit transmitter
- Saturation alarm

Physical dimensions available for the display

Physical variable	Physical dimensions
Pressure (setting can also be made in the factory)	$\begin{array}{l} MPa, hPa, kPa, Pa, bar, mbar, torr, atm, psi, g/cm^2, kg/cm^2, mmH_2O, mmH_2O (4 \ ^C), inH_2O (inH_2O (4 \ ^C), inH_2O (inH_2O ($
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
Miscellaneous	%

Transmitters for gauge pressure for the paper industry

## SITRANS P DS III with PMC connection

## Technical specifications

SITRANS P, DS III series for gauge pressure w	vith PMC connection for	or the paper industry			
	HART		PROFIBUS PA and F	OUNDATION Fieldbus	
Input					
Measured variable		Gauge	pressure		
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span (min max.)	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure	
	0.01 1 bar (0.15 14.5 psi)	6 bar (87 psi)	1 bar (14.5 psi)	6 bar (87 psi)	
	0.04 4 bar (0.58 58 psi)	10 bar (145 psi)	4 bar (58 psi)	10 bar (145 psi)	
	0.16 16 bar (2.32 232 psi)	32 bar (464 psi)	16 bar (232 psi)	32 bar (464 psi)	
ower measuring limit					
Measuring cell with silicone oil filling		100 mbar	a(1.45 psia)		
Jpper measuring limit		100% of	max. span		
Output					
Dutput signal	4 20 mA		Digital PROFIBUS PA FOUNDATION Fieldbu		
Lower limit (infinitely adjustable)	3.55 mA, factory prese		-		
<ul> <li>Upper limit (infinitely adjustable)</li> </ul>	23 mA, factory preset set to 22.0 mA	to 20.5 mA or optionally	-		
Load					
Without HART communication	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.02$ $U_{\rm H}$ : Power supply in V		-		
With HART communication	$R_{\rm B} = 230 \dots 500 \Omega ({\rm SII} R_{\rm B} = 230 \dots 1100 \Omega ({\rm Hz})$		-		
Physical bus	-		IEC 61158-2		
Protection against polarity reversal	Protected against sho	rt-circuit and polarity reve supply	ersal. Each connection a voltage.	gainst the other with ma	
Electrical damping $T_{63}$ (step width 0.1 s)		Set to 2 s	(0 100 s)		
Measuring accuracy		Acc. to II	EC 60770-1		
Reference conditions All error data refer always refer to the set span)	Increasing cha	racteristic, start-of-scale silicone oil filling, room	value 0 bar, stainless ste temperature 25 °C (77 °		
	Span ratio r = r	max. span/set span	Nominal measuring range ratio r = nomin measuring range/set measuring range		
Error in measurement at limit setting incl. hysteresis and reproducibility					
Linear characteristic					
- r ≤ 10	$\leq (0.0029 \cdot r + 0.071)^{\circ}$		$\leq (0.0029 \cdot r + 0.071)$		
- 10 < r ≤ 30	$\leq (0.0045 \cdot r + 0.071)^{\circ}$	%	$\leq (0.0045 \cdot r + 0.071)$	%	
- 30 < r ≤ 100	$\leq$ (0.005 · r + 0.05) %		$\leq$ (0.005 · r + 0.05) %		
_ong-term stability (temperature change $\pm$ 30 °C $\pm$ 54 °F))					
I- to 4-bar measuring cell	$\leq$ (0.25 $\cdot$ r) % per 5 yea	ars	≤ (0.25 · r) % per 5 ye	ars	
6-bar measuring cell	$\leq$ (0.125 $\cdot$ r) % per 5 ye	ears	≤ (0.125 · r) % per 5 y	ears	
nfluence of ambient temperature					
at -10 +60 °C (14 140 °F)	$\leq (0.08 \cdot r + 0.1) \%^{1)}$		$\leq (0.08 \cdot r + 0.1) \%^{(1)}$		
at -4010 °C and +60 +85 °C (-40 +14 °F and 140 185 °F)	≤ (0.1 · r + 0.15) %/10	K	≤ (0.1 · r + 0.15) %/10	К	
nfluence of the medium temperature (only with ront-flush diaphragm)					
• Temperature difference between medium temperature and ambient temperature		3 mbar/10 K (	(1.2 inH <sub>2</sub> O/10 K)		
nfluence of mounting position		$\leq$ 0.1 mbar (0.04 inH <sub>2</sub>	20 g) per 10° inclination		
Measured Value Resolution	-		$3 \cdot 10^{-5}$ of nominal measuring range		

Transmitters for gauge pressure for the paper industry

SITRANS P, DS III series for gauge pressure with PMC connection for the paper industry			
	HART	PROFIBUS PA and FOUNDATION Fieldbus	
Rated conditions			
Degree of protection to IEC 60529	IP66 (optional IF	266/IP68), NEMA 4X	
Temperature of medium	-40 +100 °C	C (-40 +212 °F)	
Ambient conditions			
Ambient temperature	-20 +85 °C	C (-4 +185 °F)	
<ul> <li>Transmitter (with 4-wire connection, observe temperature values of supplementary 4-wire electronics)</li> </ul>	-40 +85 °C (-40 +185 °F)		
Storage temperature	-50 +85 °C	С (-58 +185 °F)	
Climatic class			
- Condensation		nidity 0 100 % , suitable for use in the tropics	
Electromagnetic Compatibility			
- Emitted interference and interference immu- nity	Acc. to IEC 6132	6 and NAMUR NE 21	
Design			
Weight (without options)	≈ 1.5 kg (≈ 3.3 lb)		
Enclosure material	Low-copper die-cast aluminum, GD-AlSi12 or	stainless steel precision casting, mat. no. 1.4408	
Wetted parts materials			
Gasket (standard)	PTFE	flat gasket	
<ul> <li>O-ring (minibolt)</li> </ul>	FPM (Viton) or op	tionally: FFPM or NBR	
Measuring cell filling	Silicone oil or	inert filling liquid	
Process connection (standard)	Flush-mounted, 11/21	', PMC Standard design	
Process connection (minibolt)	Flush-mounted,	1", minibolt design	
Power supply $oldsymbol{U}_{ee}$		Supplied through bus	
Terminal voltage on transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically-safe mode		
Separate 24 V power supply necessary	-	No	
Bus voltage			
• Not Ex	-	9 32 V	
<ul> <li>With intrinsically-safe operation</li> </ul>	-	9 24 V	
Current consumption			
Basic current (max.)	-	12.5 mA	
• Start-up current $\leq$ basic current	-	Yes	
Max. current in event of fault	-	15.5 mA	
Fault disconnection electronics (FDE) available	-	Yes	
Certificates and approvals			
Classification according to PED 97/23/EC		group 1; complies with requirements of article 3,	

For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)

<sup>1)</sup> Conversion of temperature error per 28 °C. Valid for temperature range -3 ... +53 °C < (0.064 . r + 0.08) %/28 °C (50 °F).

Transmitters for gauge pressure for the paper industry

230 ... 1100 Ω

SIMATIC PDM

HART Version 5.x

Protocol

HART communication

Software for computer

## FOUNDATION Fieldbus

## communication

#### Function blocks

- Analog input
- Adaptation to customer-specific process variables
- Electrical damping, adjustable
- Simulation function
- Failure mode
- Limit monitoring
- Square-rooted characteristic for flow measurement
- PID

Physical block

Transducer blocks

- Pressure transducer block
  - Can be calibrated by applying two pressures
  - Monitoring of sensor limits
  - Simulation function: Measured pressure value, sensor temperature and electronics temperature

3 function blocks analog input, 1 function block PID

Yes, linearly rising or falling characteristic

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

1 transducer block Pressure with calibration, 1 transducer block LCD

#### Yes

Yes

Constant value or over parameterizable ramp function

**PROFIBUS PA communication** Simultaneous communication with 4 master class 2 (max.) 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) 0, 1, or 2 (register operating Input byte mode and reset function for metering) Internal preprocessing Device profile PROFIBUS PA Profile for Process Control Devices Version 3.0, class B Function blocks 2 Analog input Adaptation to customer-specif-Yes, linearly rising or falling ic process variables characteristic - Electrical damping, adjustable 0...100 s - Simulation function Input /Output - Failure mode parameterizable (last good value, substitute value, incorrect value) - 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 - Failure mode parameterizable (summation with last good value, continuous summation, summation with incorrect value) One upper and lower warning - Limit monitoring limit and one alarm limit respectively Physical block 1 Transducer blocks 2 Pressure transducer block Can be calibrated by applying Yes two pressures - Monitoring of sensor limits Yes - Specification of a container Max. 30 nodes characteristic with - Square-rooted characteristic Yes for flow measurement - Gradual volume suppression Parameterizable and implementation point of square-root extraction - Simulation function for mea-Constant value or over paramesured pressure value and senterizable ramp function sor temperature

1/80

Transmitters for gauge pressure for the paper industry

	ig data		Ar		10	1 4 4	<i>J</i> .		
	transmitters for gauge	7	7	MF	4	1	3 3	3 -	
pressure, with PMC co series DS III with HAR				i,			-	Ē.	
ration in the PIA Life	No. for the online configu- Cycle Portal.								
Measuring cell filling	Measuring cell- cleaning								
Silicone oil	normal		1						
Inert liquid	grease-free to cleanliness level 2		3						
Measuring span (min.	max.)								
0.01 1 bar <sup>1)</sup>	(0.15 14.5 psi) <sup>1)</sup>			B					
0.04 4 bar	(0.58 58 psi)			C					
0.1.6 16 bar	(2.32 232 psi)	_		D					
Wetted parts materials Seal diaphragm	<b>s</b> Connection shank								
Hastelloy	Stainless steel	-		B	3				
Process connection		-							
PMC Style Standard:	Thread 11/2"				2				
	ont-flush 1" (not with mini-				3				
mum span: 500 mbar	(7.25 psi) - version "B")								
Non-wetted parts mat									
Housing made of die-						0 3			
<ul> <li>Housing stainless ste</li> </ul>						5			
Manalan.		_							
Version		_						1	
<ul> <li>Standard versions</li> </ul>							1	-	
<ul> <li>Standard versions</li> <li>International version, documentation in 5 la</li> </ul>	English label inscriptions, inguages on CD							1 2	
<ul><li>Standard versions</li><li>International version,</li></ul>	English label inscriptions, inguages on CD							-	
<ul> <li>Standard versions</li> <li>International version, documentation in 5 la (no Order code selection)</li> <li>Explosion protection</li> </ul>	English label inscriptions, inguages on CD							2	
<ul> <li>Standard versions</li> <li>International version, documentation in 5 la (no Order code selection)</li> <li>Explosion protection</li> <li>None</li> </ul>	English label inscriptions, inguages on CD table)							-	
<ul> <li>Standard versions</li> <li>International version, documentation in 5 la (no Order code select</li> <li>Explosion protection</li> <li>None</li> <li>With ATEX, Type of pr</li> </ul>	English label inscriptions, inguages on CD table)							2	
<ul> <li>Standard versions</li> <li>International version, documentation in 5 la (no Order code selection)</li> <li>Explosion protection</li> <li>None</li> <li>With ATEX, Type of pr - "Intrinsic safety (Ex</li> </ul>	English label inscriptions, inguages on CD table) rotection: ia)"							2	
<ul> <li>Standard versions</li> <li>International version, documentation in 5 la (no Order code select</li> <li>Explosion protection</li> <li>None</li> <li>With ATEX, Type of pr</li> </ul>	English label inscriptions, inguages on CD table) rotection: ia)"							2 A B	
<ul> <li>Standard versions</li> <li>International version, documentation in 5 la (no Order code select</li> <li>Explosion protection</li> <li>None</li> <li>With ATEX, Type of pr - "Intrinsic safety (Ex - "Explosion-proof (Ex - "Ex nA/ic (Zone 2)"<sup>5</sup></li> <li>FM + CSA intrinsic sa</li> </ul>	English label inscriptions, inguages on CD table) rotection: ia)" < d)" <sup>2)</sup> 3)							2 A B D	
<ul> <li>Standard versions</li> <li>International version, documentation in 5 la (no Order code select</li> <li>Explosion protection</li> <li>None</li> <li>With ATEX, Type of pr - "Intrinsic safety (Ex - "Explosion-proof (Es - "Ex nA/ic (Zone 2)"<sup>C</sup></li> <li>FM + CSA intrinsic sa</li> <li>FM + CSA (is + ep) +</li> </ul>	English label inscriptions, inguages on CD table) rotection: ia)" < d)" <sup>2)</sup> <sup>3)</sup> ife (is) • Ex ia + Ex d (ATEX) <sup>4)</sup>							A B D E	
<ul> <li>Standard versions</li> <li>International version, documentation in 5 la (no Order code select</li> <li>Explosion protection</li> <li>None</li> <li>With ATEX, Type of pr - "Intrinsic safety (Ex - "Explosion-proof (Ex - "E</li></ul>	English label inscriptions, inguages on CD table) rotection: ia)" < d)" <sup>2)</sup> <sup>3)</sup> afe (is) • Ex ia + Ex d (ATEX) <sup>4)</sup> • of protection:							A B D E F	
<ul> <li>Standard versions</li> <li>International version, documentation in 5 la (no Order code select</li> <li>Explosion protection</li> <li>None</li> <li>With ATEX, Type of pr - "Intrinsic safety (Ex - "Explosion-proof (Eb - "Ex nA/ic (Zone 2)"52</li> <li>FM + CSA intrinsic safety + CSA (is + ep) +</li> <li>With FM + CSA, Type - "Intrinsic Safe und E</li> </ul>	English label inscriptions, inguages on CD table) rotection: ia)" < d)" <sup>2)</sup> > > the (is) $\cdot$ Ex ia + Ex d (ATEX) <sup>4)</sup> $\cdot$ of protection: Explosion Proof (is + xp)" <sup>3)</sup>							A B D E F S	с
<ul> <li>Standard versions</li> <li>International version, documentation in 5 la (no Order code select</li> <li>Explosion protection</li> <li>None</li> <li>With ATEX, Type of pr - "Intrinsic safety (Ex - "Explosion-proof (E) - "Ex nA/ic (Zone 2)"<sup>5</sup></li> <li>FM + CSA intrinsic sa</li> <li>FM + CSA (is + ep) +</li> <li>With FM + CSA, Type - "Intrinsic Safe und E</li> <li>Electrical connection</li> </ul>	English label inscriptions, inguages on CD table) rotection: ia)" < d)" <sup>2)</sup> <sup>3)</sup> ife (is) Ex ia + Ex d (ATEX) <sup>4)</sup> of protection: Explosion Proof (is + xp)" <sup>3)</sup> / cable entry							A B D E F S	с
<ul> <li>Standard versions</li> <li>International version, documentation in 5 la (no Order code select</li> <li>Explosion protection</li> <li>None</li> <li>With ATEX, Type of pr - "Intrinsic safety (Ex - "Explosion-proof (E) - "Ex nA/ic (Zone 2)"<sup>5</sup></li> <li>FM + CSA intrinsic safeth + CSA intrinsic safeth + CSA (is + ep) +</li> <li>With FM + CSA, Type - "Intrinsic Safe und E</li> <li>Electrical connection</li> <li>Female thread M20 x</li> </ul>	English label inscriptions, inguages on CD table) rotection: ia)" < d)" <sup>2)</sup> <sup>3)</sup> afe (is) Ex ia + Ex d (ATEX) <sup>4)</sup> of protection: Explosion Proof (is + xp)" <sup>3)</sup> / cable entry 1.5							A B D E F S	с
<ul> <li>Standard versions</li> <li>International version, documentation in 5 la (no Order code select</li> <li>Explosion protection</li> <li>None</li> <li>With ATEX, Type of pr - "Intrinsic safety (Ex - "Explosion-proof (Es - "Ex nA/ic (Zone 2)"<sup>2</sup></li> <li>FM + CSA intrinsic safet (Is + ep) +</li> <li>With FM + CSA (Is + ep) +</li> <li>With FM + CSA, Type - "Intrinsic Safe und E</li> <li>Electrical connection</li> <li>Female thread M20 x</li> <li>Female thread 1/2-14 ft</li> </ul>	English label inscriptions, inguages on CD table) rotection: ia)" < d)" <sup>2)</sup> 3) ife (is) Ex ia + Ex d (ATEX) <sup>4)</sup> of protection: Explosion Proof (is + xp)" <sup>3)</sup> / cable entry 1.5							A B D E F S	C B C
<ul> <li>Standard versions</li> <li>International version, documentation in 5 la (no Order code select</li> <li>Explosion protection</li> <li>None</li> <li>With ATEX, Type of pr - "Intrinsic safety (Ex - "Explosion-proof (Eb - "Ex nA/ic (Zone 2)"52</li> <li>FM + CSA intrinsic safety (Is + ep) +</li> <li>With FM + CSA, Type - "Intrinsic Safe und E</li> <li>Electrical connection</li> <li>Female thread 1/2-14 I</li> <li>M12 connectors (stain</li> </ul>	English label inscriptions, inguages on CD table) rotection: ia)" < d)" <sup>2)</sup> 3) ife (is) Ex ia + Ex d (ATEX) <sup>4)</sup> of protection: Explosion Proof (is + xp)" <sup>3)</sup> / cable entry 1.5							A B D E F S	с
<ul> <li>Standard versions</li> <li>International version, documentation in 5 la (no Order code select</li> <li>Explosion protection</li> <li>None</li> <li>With ATEX, Type of pr - "Intrinsic safety (Ex - "Explosion-proof (Es - "Ex nA/ic (Zone 2)"<sup>2</sup></li> <li>FM + CSA intrinsic safet (Is + ep) +</li> <li>With FM + CSA (Is + ep) +</li> <li>With FM + CSA, Type - "Intrinsic Safe und E</li> <li>Electrical connection</li> <li>Female thread M20 x</li> <li>Female thread 1/2-14 ft</li> </ul>	English label inscriptions, inguages on CD table) rotection: ia)" < d)" <sup>2)</sup> 3) ife (is) Ex ia + Ex d (ATEX) <sup>4)</sup> of protection: Explosion Proof (is + xp)" <sup>3)</sup> / cable entry 1.5							A B D E F S	C B C
<ul> <li>Standard versions</li> <li>International version, documentation in 5 la (no Order code select</li> <li>Explosion protection</li> <li>None</li> <li>With ATEX, Type of pr - "Intrinsic safety (Ex - "Explosion-proof (E) - "Ex nA/ic (Zone 2)"<sup>C</sup></li> <li>FM + CSA intrinsic safe FM + CSA (is + ep) +</li> <li>With FM + CSA, Type - "Intrinsic Safe und E</li> <li>Electrical connection</li> <li>Female thread M20 x</li> <li>Female thread ½-14 t</li> <li>M12 connectors (staii</li> <li>Display</li> </ul>	English label inscriptions, inguages on CD table) rotection: ia)" < d)" <sup>2</sup> ) <sup>3</sup> afe (is) • Ex ia + Ex d (ATEX) <sup>4</sup> ) • of protection: Explosion Proof (is + xp)" <sup>3</sup> ) <b>/ cable entry</b> 1.5 NPT nless steel) <sup>5) 6</sup> )							A B D E F S	C B C F
<ul> <li>Standard versions</li> <li>International version, documentation in 5 la (no Order code select</li> <li>Explosion protection</li> <li>None</li> <li>With ATEX, Type of pr - "Intrinsic safety (Ex - "Explosion-proof (Ex - "Explosion-proof (Ex - "Explosion-proof (Zone 2)"<sup>C</sup></li> <li>FM + CSA intrinsic safety + CSA intrinsic safety + CSA (is + ep) +</li> <li>With FM + CSA, Type</li> <li>"Intrinsic Safe und E</li> <li>Electrical connection</li> <li>Female thread M20 x</li> <li>Female thread M20 x</li> <li>Female thread ½-14 It</li> <li>M12 connectors (stail</li> <li>Display</li> <li>Without display</li> <li>Without display</li> <li>Without visible displas setting: mA)</li> </ul>	English label inscriptions, inguages on CD table) rotection: ia)" < d)" <sup>2</sup> ) <sup>3</sup> ) ife (is) Ex ia + Ex d (ATEX) <sup>4</sup> ) of protection: Explosion Proof (is + xp)" <sup>3</sup> ) <b>/ cable entry</b> 1.5 NPT nless steel) <sup>5) 6</sup> ) y (display concealed,							A B D E F S	C B C F
<ul> <li>Standard versions</li> <li>International version, documentation in 5 la (no Order code select</li> <li>Explosion protection</li> <li>None</li> <li>With ATEX, Type of pr - "Intrinsic safety (Ex - "Explosion-proof (Ex - "Explosion-proof (Ex - "Ex nA/ic (Zone 2)"<sup>C</sup></li> <li>FM + CSA intrinsic safety + CSA (is + ep) +</li> <li>With FM + CSA (is + ep) +</li> <li>Without Safe und E</li> <li>Electrical connection</li> <li>Female thread M20 x</li> <li>Female thread M20 x</li> <li>Female thread M20 x</li> <li>Without display</li> <li>Without display</li> <li>Without display</li> <li>Without visible display (s</li> </ul>	English label inscriptions, inguages on CD table) rotection: ia)" < d)" <sup>2</sup> ) <sup>3</sup> ) ife (is) Ex ia + Ex d (ATEX) <sup>4</sup> ) of protection: Explosion Proof (is + xp)" <sup>3</sup> ) <b>/ cable entry</b> 1.5 NPT nless steel) <sup>5) 6</sup> ) y (display concealed,	•						A B D E F S	C B C F

## SITRANS P DS III with PMC connection

Selection and Ordering	g data	Artic	le l	NO.			
SITRANS P pressure to pressure, with PMC co							
DS III with PROFIBUS	PA (PA) 🧷	7 M F	4	13	4 -		
DS III with FOUNDATIC	N Fieldbus (FF) 🧷	7 M F	4	13	5 -		
Click on the Article No. for the online configu- ration in the PIA Life Cycle Portal.							
Measuring cell filling	Measuring cell clean-						
Silicone oil	<b>ing</b> normal	1					
Inert liquid	grease-free to	3					
	cleanliness level 2	-					
Nominal measuring ra							
1 bar <sup>1)</sup>	(14.5 psi) <sup>1)</sup>	В					
4 bar	(58 psi)	C					
16 bar	(232 psi)	D					
Wetted parts materials							
Seal diaphragm	Connection shank						
Hastelloy	Stainless steel	E	3				
Process connection <sup>2)</sup>							
<ul> <li>PMC Style Standard: 1</li> </ul>			2				
PMC Style Minibolt: fro			3				
1-bar-measuring cell (	psi), not available with Option B))						
Non-wetted parts mate							
Housing made of die-o			(	0			
Housing stainless stee				3			
Version <ul> <li>Standard versions</li> </ul>					1		
	English label inscriptions,				2		
documentation in 5 lar	nguages on CD						
(no Order code select	able)						
Explosion protection							
None     Mith ATEX Turns of pre-	te etien.				Α		
<ul> <li>With ATEX, Type of pro- "Intrinsic safety (Ex is</li> </ul>					в		
- "Explosion-proof (Ex					D		
- "Ex nA/ic (Zone 2)" <sup>4)</sup>					E		
• FM + CSA intrinsic saf					F		
• With FM + CSA, Type							
- "Intrinsic Safe und Ex	xplosion Proof (is + xp)" <sup>3)</sup>				NC	:	
Electrical connection /	cable entry						
• Female thread M20 x	1.5				В		
<ul> <li>Female thread ½-14 N</li> </ul>					C		
M12 connectors (stain	less steel) <sup>5) 6)</sup>				F		
Display							
Without display     Without visible display	(display concealed					0 1	
<ul> <li>Without visible display setting: bar)</li> </ul>	(display concealed,					1	
With visible display (set	etting: bar)					6	
• With customer-specific	display (setting as spec-					7	
ified, Order code "Y21	" required)						
Available ex stock							
<ul> <li>Brief instructions (Lep)</li> </ul>							

Brief instructions (Leporello)
 CD-ROM with detailed documentation
 sealing ring

Available ex stock

- 1) Only with "PMC Style Standard" process connection
- <sup>2)</sup> Without cable gland, with blanking plug

Included in delivery of the device:

<sup>3)</sup> Configurations with M12 connectors are only available in Ex ic.

Power supply units see Chap. 7 "Supplementary Components".

- <sup>4)</sup> Only in connection with IP65.
- $^{5)}\,$  Only in connection with Ex approval A, B, E or F.
- 6) M12 delivered without cable socket

- CD-ROM with detailed documentation sealing ring
- 1) Only with "PMC Style Standard" process connection
- <sup>2)</sup> Sealing is included in delivery.
- <sup>3)</sup> Without cable gland, with blanking plug
- <sup>4)</sup> Configurations with M12 connectors are only available in Ex ic.
- $^{5)}\,$  Only in connection with Ex approval A, B, E or F.
- 6) M12 delivered without cable socket

Transmitters for gauge pressure for the paper industry

Only stilling and Ondersing data	Qualar				
Selection and Ordering data	Order	code HART	DA		
Further designs		TARI	PA	FF	
Add "-Z" to Article No. and specify Order code.					
Plug					
• Angled	A32	√			
• Han 8D (metal, gray)	A33	~			
M12 cable sockets (metal (CuZn))	A50	✓	~	1	
Rating plate inscription (instead of German)					
• English	B11	1	✓	~	
• French	B12	✓	✓	~	
• Spanish	B13	✓	✓	✓	
• Italian	B14	✓	✓	~	
• Cyrillic (russian)	B16	1	1	1	
English rating plate	B21	✓	✓	✓	
Pressure units in inH <sub>2</sub> 0 and/or psi					
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11	~	1	~	
Inspection certificate	C12	1	~	1	
Acc. to EN 10204-3.1	012	•	•		
Fostowy soutificato	C14				
Factory certificate Acc. to EN 10204-2.2	014	•	•	¥	
"Functional safety (SIL2)" certificate acc.	C20	~			
to IEC 61508					
"Functional safety (SIL2/3)" certificate acc. to IEC 61508	C23	1			
Device passport Russia (For price request please contact the technical	C99	~	~	1	
<pre>support www.siemens.com/automation/support-request)</pre>					
Output signal can be set to upper limit of 22.0mA	D05	1	~	~	
Degree of protection IP66/IP68	D12	✓	✓	~	
(only for M20 x 1.5 and ½-14 NPT)	E11				
Export approval Korea	E55 <sup>1)</sup>				
Explosion-proof "Intrinsic safety" to NEPSI (China)	E55.7	v	•	•	
(only for transmitter 7MF4B)					
Explosion protection "Explosion-proof" to NEPSI (China)	E56 <sup>1)</sup>	~	~	~	
(only for transmitter 7MF4	F = = 1)	,	,	,	
Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)	E57 <sup>1)</sup>	~	~	~	
Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China)	E58 <sup>1)</sup>	~	1	1	
(only for transmitter 7MF4R)					
Mounting					
Weldable sockets for standard 11/2"     threaded connection	P01	~	~	~	
• Weldable socket for minibolt connection 1" (incl. screw 5/16-18 UNC-2B and washer)	P02	1	~	~	
, ,					

Option does not include ATEX approval, but instead includes only the country-specific approval.

Selection and	Ordering data	Order	code		
Additional data	a		HART	PA	FF
Please add " <b>-Z</b> " Order code(s) a	to Article No. and specify and plain text.				
Measuring ran	ge to be set	Y01	✓	<b>√</b> 1)	
	text (max. 5 characters): mbar, bar, kPa, MPa, psi				
device variable	tag plate and entry in e (measuring point descrip-	Y15	~	~	~
tion) Max. 16 charac Y15:	ters, specify in plain text:				
Measuring poi able)	nt text (entry in device vari-	Y16	~	~	~
Max. 27 charac Y16:	ters, specify in plain text:				
•	address (TAG) ers, specify in plain text:	Y17	1		
	sure indication in pressure	Y21			
units	sure mulcation in pressure	121	•	•	•
Specify in plain Y21: mbar, bar, Note:	text (standard setting: bar): kPa, MPa, psi,				
bar mbar mm l					
Setting of pres	sure indication in non-	Y22 +	✓		
pressure units Specify in plain Y22: up to . (specification or	2)	Y01			
Preset bus add possible betwee Max. 8 character Y25:		Y25		~	~
Only "Y01" and	"Y21" can be factory preset				
✓ = available					
ordering exam	ple				
Item line: B line: C line: C line:	7MF4133-1DB20-1AB7-Z C11 + Y01 + Y21 Y01: 1 10 bar (14.5 145 Y21: bar (psi)	psi)			

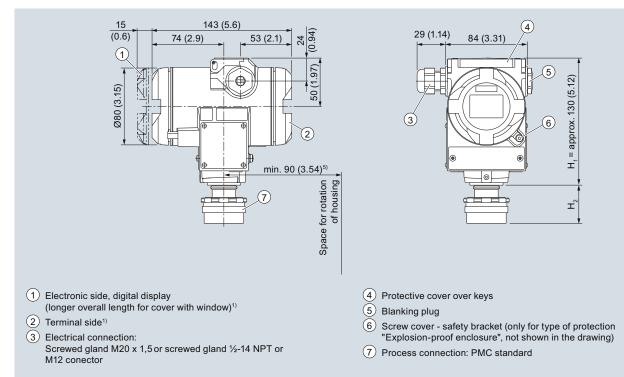
 Measuring accuracies for PROFIBUS PA transmitters with Option Y01 are calculated in the same way as for HART devices.

<sup>2)</sup> Preset values can only be changed over SIMATIC PDM.

Transmitters for gauge pressure for the paper industry

## SITRANS P DS III with PMC connection

## Dimensional drawings



SITRANS P DS III pressure transmitters for gauge pressure, with PMC connection, dimensions in mm (inch)

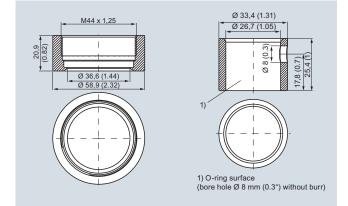
The diagram shows a SITRANS P DS III with an example of a flange. In this drawing the height is subdivided into  $H_1$  and  $H_2$ .

Allow approx. 20 mm (0.79 inch) thread length to permit unscrewing
 92 mm (3.6 inch) for minimum distance to permit rotation with indicator

 $\rm H_{1}$  = Height of the SITRANS P DS III 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 (left) and PMC Style Minibolt (right) weldable sockets, dimensions in mm (inch)

Material: Stainless steel, Mat. No. 1.4404/316L

# DN PN ØD H2 I I I 40.9 mm (1.6") approx. 36.8 mm (1.4")

#### PMC Style minibolt



Transmitters for gauge pressure for the paper industry

## SITRANS P300 with PMC connection

## Technical specifications

SITRANS P300 for gauge pressure with PMC	connection for the pape	er industry				
Simally root for gauge pressure will PMC	HART	a muusu y	PROFIBUS PA and FO	OUNDATION Fieldbus		
Input						
Measured variable		Gauge press	ure (front-flush)			
Spans (infinitely adjustable) or nominal measuring range and	Span (min max.)	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure		
max. pemissible test pressure	0.01 1 bar (0.15 14.5 psi)	6 bar (87 psi)	1 bar (14.5 psi)	6 bar (87 psi)		
	0.04 4 bar	10 bar	4 bar	10 bar		
	(0.58 58 psi)	(145 psi) 32 bar	(58 psi)	(145 psi)		
	0.16 16 bar (2.3 232 psi)	32 bar (464 psi)	16 bar (232 psi)	32 bar (464 psi)		
	Depending on the proce may differ from these va			ess connection, the nomi- ay differ from these values		
Lower measuring limit						
<ul> <li>Measuring cell with silicone oil</li> </ul>		100 mbar a	a (1.45 psia)			
Upper measuring limit						
Measuring cell with silicone oil	100 % of max. span		100 % of the max. non	ninal measuring range		
Output						
Output signal	4 20 mA		Digital PROFIBUS PA	signal		
Physical bus	-		IEC 61158-2			
Protection against polarity reversal	Protected against sh	nort-circuit and polarity re max. supp	versal. Each connection oly voltage.	n against the other with		
Electrical damping (step width 0.1 s)		Set to 2 s	(0 100 s)			
Measuring accuracy			EC 60770-1			
Reference conditions (All error data always refer to the set span)	RIncreasing cha measu	racteristic, start-of-scale uring cell with silicone oil,	value 0 bar, stainless ste room temperature 25 °	eel seal diaphragm, C (77 °F)		
	Span ratio r = m	ax. span/set span		range ratio r = nominal /set measuring range		
Error in measurement at limit setting incl. hyster- esis and reproducibility			0 0	0 0		
Linear characteristic						
• r + 10	≤ (0.0029 · r + 0.071) %		$< (0.0029 \cdot r \pm 0.071)$	2/2		
• 10 < r < 30	$\leq (0.0025 \cdot r + 0.071) \%$ $\leq (0.0045 \cdot r + 0.071) \%$		≤ (0.0029 · r + 0.071) % ≤ (0.0045 · r + 0.071) %			
• 30 < r ≤ 100	$\leq (0.005 \cdot r + 0.05) \%$	,	$\leq (0.0045 \cdot r + 0.071) \%$ $\leq (0.005 \cdot r + 0.05) \%$			
Step response time T <sub>63</sub>		appr	ox. 2 s			
Long-term stability at $\pm$ 30 °C ( $\pm$ 54 °F)	≤ (0.25 · r) %/5 years	-1-1-	≤ (0.25 · r) %/5 years			
Influence of ambient temperature	(		(			
• at -10 +60 °C (14 140 °F)	$\leq (0.1 \cdot r + 0.2) \%^{1)}$		$\leq (0.1 \cdot r + 0.2) \%^{1}$			
• at -4010 °C and 60 85 °C (-40 14 °F and 140 185 °F)	$\leq (0.1 \cdot r + 0.15) \%/10 k$	K	$\leq (0.1 \cdot r + 0.15) \%/10$	К		
Influence of the medium temperature (only with front-flush diaphragm)						
Temperature difference between medium tem- perature and ambient temperature		3 mbar/10 K (	1.2 inH <sub>2</sub> O/10 K)			
Rated conditions						
Installation conditions						
Ambient temperature	Observe	the temperature class in	areas subject to explos	ion hazard.		
Measuring cell with silicone oil			(-40 +185 °F)			
• Display readable		-30 +85 °C	(-22 +185 °F)			
Storage temperature		-50 +85 °C	(-58 +185 °F)			
Climatic class						
Condensation	Relative humidity	0 100 %. Condensatio	n permissible, suitable	for use in the tropics		
Degree of protection acc. to EN 60529		A 4X, enclosure cleaning				
Electromagnetic Compatibility						
• Emitted interference and interference immunity		Acc. to IEC 61326	and NAMUR NE 21			
,						

SITRANS P300 with PMC connection

Transmitters for gauge pressure for the paper industry

SITRANS P300 for gauge pressure with PMC			
	HART	PROFIBUS PA and FOUNDATION Fieldbus	
Medium conditions			
Temperature of medium			
Measuring cell with silicone oil	-40 +100 °C	(-40 +212 °F)	
Design			
Weight (without options)	Approx. 1 kg (2.2 lb)		
Enclosure material	Stainless steel, m	nat. no. 1.4301/304	
Material of parts in contact with the medium			
Seal diaphragm	Hastelloy C276	i, mat. no. 2.4819	
Measuring cell filling	Silico	one oil	
Surface quality touched-by-media	Ra-values $\leq$ 0.8 µm (32 µ inch	)/welds Ra ≤ 1.6 $\mu$ m (64 $\mu$ inch)	
Power supply U <sub>H</sub>			
Terminal voltage on transmitter	10.5 42 V DC for intrinsically safe operation: 10.5 30 V DC	Supplied through bus	
Separate power supply	-	Not necessary	
Bus voltage			
• Without Ex	-	9 32 V	
<ul> <li>With intrinsically-safe operation</li> </ul>	-	9 24 V	
Current consumption			
Max. basic current	-	12.5 mA	
• Start-up current $\leq$ basic current	-	Yes	
<ul> <li>Max. fault current in the event of a fault</li> </ul>	-	15.5 mA	
Fault disconnection electronics (FDE)	-	Available	
Certificates and approvals			
Classification according to PED 97/23/EC		group 1; complies with requirements of Article 3, engineering practice)	
Explosion protection			
Intrinsic safety "i"	PTB 05 A	ATEX 2048	
Marking	Ex II 1/2 G Ex ia/i	b IIB/IIC T4, T5, T6	
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:	To certified intrinsically-safe circuits with peak values:	
	$U_i = 30$ V, I <sub>i</sub> = 100 mA, P <sub>i</sub> = 750 mW, R <sub>i</sub> = 300 Ω		
		Linear barrier: $U_i = 24 \text{ V}, I_i = 250 \text{ mA}, P_i = 1.2 \text{ W}$	
Effective inner capacitance:	$C_i = 6 \text{ nF}$	C <sub>i</sub> = 1.1 nF	
Effective internal inductance:	$L_i = 0.4 \text{ mH}$	$L_i \le 7 \mu H$	
Explosion protection to FM for USA $\underline{and}$ Canada (cFM <sub>US</sub> )			
<ul> <li>Identification (DIP) or (IS); (NI)</li> </ul>	Certificate of Co	mpliance 3025099	
		GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4 T6; T6; CL II, DIV 2, GP FG; CL III	
Identification (DIP) or (IS)	CL I, DIV 1, GP ABCD T4 T6; CL II, DIV 1	npliance 3025099C , GP EFG; CL III; Ex ia IIC 4 T6; CL I, DIV 2,	
	GF ADUD 14 16; UL	L II, DIV 2, GP FG; CL III	

<sup>1)</sup> Conversion of temperature error per 28 °C. Valid for temperature range -3 ... +53 °C < (0.08 . r + 0.16) % / 28 °C (50 °F).

Transmitters for gauge pressure for the paper industry

## SITRANS P300 with PMC connection

HART communication		FOUNDATION Fieldbus	
HART	230 1100 Ω	communication	
Protocol	HART Version 5.x	Function blocks	3 function blocks analog input, 1 function block PID
Software for computer	SIMATIC PDM	<ul> <li>Analog input</li> </ul>	
PROFIBUS PA communication		- Adaptation to customer-	Yes, linearly rising or falling
Simultaneous communication with master class 2 (max.)	4	specific process variables - Electrical damping, adjustable	characteristic 0 100 s
The address can be set using	Configuration tool	- Simulation function	Output/input (can be locked
	Local operation		within the device with a bridge)
Cyclic data usage	(standard setting Address 126)	- Failure mode	parameterizable (last good value, substitute value, incorrect value)
Output byte	One measured value: 5 bytes	Limit monitoring	7
	Two measured values: 10 bytes	- Limit monitoring	Yes, one upper and lower warn- ing limit and one alarm limit
Input byte	Register operating mode:		respectively
	1 bytes Reset function due to metering.	<ul> <li>Square-rooted characteristic for flow measurement</li> </ul>	Yes
	1 bytes	• PID	Standard FOUNDATION Field-
Device profile	PROFIBUS PA Profile for Pro- cess Control Devices		bus function block
	Version 3.0, class B	<ul> <li>Physical block</li> <li>Transducer blocks</li> </ul>	1 resource block 1 transducer block Pressure with
Function blocks	2	Iransducer blocks	calibration, 1 transducer block
<ul> <li>Analog input</li> </ul>			LCD
<ul> <li>Adaptation to customer-specif- ic process variables</li> </ul>	Linearly rising or falling charac- teristic	<ul> <li>Pressure transducer block</li> <li>Can be calibrated by applying</li> </ul>	Yes
- Electrical damping	0 100 s adjustable	two pressures	
- Simulation function	Input /Output	- Monitoring of sensor limits	Yes
- Limit monitoring	One upper and lower warning limit and one alarm limit respec- tively	<ul> <li>Simulation function: Measured pressure value, sensor temper- ature and electronics tempera-</li> </ul>	Constant value or over parame- terizable ramp function
<ul> <li>Register (totalizer)</li> </ul>	Can be reset and preset	ture	
	Optional direction of counting		
	Simulation function of the regis- ter output		
- Limit monitoring	One upper and lower warning limit and one alarm limit respec- tively		
<ul> <li>Physical block</li> </ul>	1		
Transducer blocks	2		
<ul> <li>Pressure transducer block</li> </ul>			
- Monitoring of sensor limits	Yes		
<ul> <li>Specification of a container characteristic with</li> </ul>	Max. 31 nodes		
- Characteristic curve	Linear		
- Simulation function	Available		
<ul> <li>Transducer block "Electronic temperature"</li> </ul>			
Simulation function	Available		

Transmitters for gauge pressure for the paper industry

Selection and Ordering	j data	1	٩rti	cle	Ν	0.		
	mber measuring housing, n English							
with 4 20 mA / HART 7			7 M F 8 1 2 3 -					
with PROFIBUS PA		7	7 M F 8 1 2 4 -					
with FOUNDATION Fiel	dbus (FF)	7	7MF8125-					
Click on the Article N tion in the PIA Life Cy	o. for the online configura- cle Portal.		ľ	1		•		ľ
Measuring cell filling Silicone oil Inert liquid	Measuring cell cleaning normal Cleanliness level 2 to DIN 25410		1 3					
Maaauring anan	DIN 23410	_						
<b>Measuring span</b> 1 bar <sup>1)</sup> 4 bar 16 bar	(14.5 psi) (58 psi) (232 psi)		B C D					
Wetted parts materials								
Seal diaphragm	Measuring cell							
Hastelloy	Stainless steel	-		в				
500 mbar (7.25 psi), n 1-bar-measuring cell ( Non-wetted parts mate • Stainless steel, deep-o polished	Option B))	-			4			
• Standard versions						1		
Explosion protection								
<ul> <li>None</li> <li>With ATEX, Type of pro- "Intrinsic safety (Ex ia</li> <li>Zone 20/21/22<sup>2</sup>)</li> <li>Ex nA/nL (Zone 2)<sup>3</sup>)</li> <li>With FM + CSA, Type of - "Intrinsic Safe (is)" (p</li> </ul>	a)" of protection:						A B C E M	
Electrical connection/c	able entry							
<ul> <li>Screwed gland M20 x</li> <li>Screwed gland M20 x</li> <li>Screwed gland M20 x</li> <li>M12 connectors (without a series of the seri</li></ul>	1.5 (metal) 1.5 (stainless steel)							A B C F G
<ul> <li>M12 connectors (stain socket)</li> </ul>	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,							

## SITRANS P300 with PMC connection

Selection and Ordering data	Article No.	
SITRANS P300 pressure transmitters with PMC connection, single-chamber measuring housing, rating plate inscription in English		
with 4 20 mA / HART	7 M F 8 1 2 3 -	
with PROFIBUS PA	7 M F 8 1 2 4 -	
with FOUNDATION Fieldbus (FF)	7 M F 8 1 2 5 -	
<ul> <li>Display</li> <li>Without display, with keys, closed lid</li> <li>With display and keys, closed lid <sup>6)</sup></li> </ul>		1 2
<ul> <li>With display and keys, lid with Makrolon pane (setting on HART devices: mA, with PROFIBUS PA and FOUNDATION Fieldbus equipment: pressure units)<sup>6)</sup></li> </ul>		4
<ul> <li>With display and keys (setting acc. to specifica- tions, Order code "Y21" or "Y22" required), lid with Makrolon pane<sup>6)</sup></li> </ul>		5
• With display and keys, lid with glass pane (setting on HART devices: mA, with PROFIBUS PA and FOUNDATION Fieldbus equipment: pressure unit) <sup>6)</sup>		6
<ul> <li>With display (setting acc. to specifications, Order code "Y21" or "Y22" required), lid with glass panel<sup>6)</sup></li> </ul>		7
Power supply units see Chap. 7 "Supplementary Com	ponents".	
Included in delivery of the device:		

Brief instructions (Leporello)
 CD-ROM with detailed documentation
 sealing ring

1) Only with "Standard" process connection"

 $^{2)}\,$  Not in conjunction with electrical connection option A.

 $^{3)}$  Only available together with electrical connection options B, C or G.

<sup>4)</sup> Only together with HART electronics.

<sup>5)</sup> Without cable gland.

<sup>6)</sup> Display cannot be turned.

√

✓

P02

✓

## **Pressure Measurement**

Transmitters for gauge pressure for the paper industry

Weldable socket for minibolt connection 1" (incl. screw 5/16-18 UNC-2B and washer)

Selection and Ordering data	Order	code		
Further designs		HART		
Add "-Z" to Article No. and specify Order code.				
Cable socket for M12 plug <ul> <li>Stainless steel</li> </ul>	A51		~	
Rating plate inscription (instead of English)				
German     French	B10 B12	√ √	√ √	
<ul><li>Spanish</li><li>Italian</li></ul>	B13 B14	√ √	✓ ✓	
English rating plate Pressure units in inH <sub>2</sub> 0 and/or psi	B21	1	~	
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11	~	1	
Inspection certificate Acc. to EN 10204-3.1	C12	~	~	
Factory certificate Acc. to EN 10204-2.2	C14	1	~	
Set output signal to upper limit of 22.0mA	D05	1	✓	
Degree of protection IP65/IP68 (only for M20x1.5 and ½-14 NPT)	D12	1	~	
Mounting • Weldable sockets for standard 1½" threaded connection	P01	1	✓	

Selection and Ordering data	Order	oodo		
Selection and Ordering data	Order			
Additional data		HART	PA	FF
Please add "-Z" to Article No. and specify Order code(s) and plain text.				
Measuring range to be set Specify in plain text (max. 5 characters): Y01: up to mbar, bar, kPa, MPa, psi	Y01	~	<b>√</b> 1)	
Stainless steel tag plate and entry in device variable (measuring point descrip- tion) Max. 16 characters, specify in plain text: Y15:	Y15	1	*	1
Measuring point text (entry in device variable)	Y16	~	~	~
Max. 27 char., specify in plain text: Y16:				
Entry of HART address (TAG)	Y17	~		
Max. 8 char., specify in plain text: Y17:				
Setting of pressure indication in pressure units	Y21	~	~	~
Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi, Note: The following pressure units can be selected:				
bar, mbar, mm H <sub>2</sub> O <sup>*)</sup> , inH <sub>2</sub> O <sup>*)</sup> , ftH <sub>2</sub> O <sup>*)</sup> , mmHG, inHG, psi, Pa, kPa, MPa, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , Torr, ATM or % *) ref. temperature 20 °C				
Setting of pressure indication in non-pressure units <sup>2)</sup>	Y22 + Y01	~		
Specify in plain text: Y22: up to I, m <sup>3</sup> , m, USg, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 char- acters)				
Preset bus address possible between 1 and 126 Specify in plain text: Y25:	Y25		1	~

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

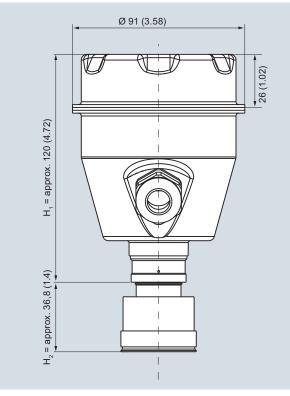
✓ = available

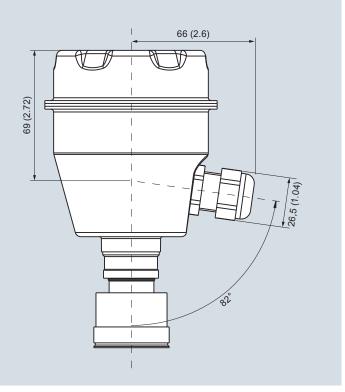
- $^{1)}$  Measuring accuracies for PROFIBUS PA transmitters with Option Y01 are calculated in the same way as for HART devices.
- <sup>2)</sup> Preset values can only be changed over SIMATIC PDM.

Transmitters for gauge pressure for the paper industry

## SITRANS P300 with PMC connection

## Dimensional drawings





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

The diagram shows a SITRANS P300 with an example of a 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 DN PN ØD H<sub>2</sub> 40.4 mm (1.6") Approx. 36.8 mm (1.4")

PMC Style Mini bolt				
	DN	PN	ØD	H <sub>2</sub>
			26.3 mm (1.0")	Approx. 33.1 mm (1.3")

PMC Style Standard (left) and PMC Style Minibolt (right) weldable sockets, dimensions in mm (inch)

1) O-ring surface

(bore hole Ø 8 mm (0.3") without burr)

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

Transmitters for general requirements

## SITRANS P DS III - Technical description

## Overview



SITRANS P DS III pressure transmitters are digital pressure transmitters featuring extensive user-friendliness and high accuracy. The parameterization is performed using control keys or via HART, PROFIBUS-PA or FOUNDATION Fieldbus interface.

Extensive functionality enables the pressure transmitter to be precisely adapted to the plant's requirements. Operation is very simple in spite of the numerous setting options.

Transmitters with type of protection "Intrinsic safety" and "Explosion-proof" may be installed within potentially explosive atmospheres (zone 1) or in zone 0. The transmitters are provided with an EC type examination certificate and comply with the corresponding harmonized European standards (ATEX).

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

Various versions of the DS III pressure transmitters are available for measuring:

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

## Benefits

- High quality and service life
- High reliability even under extreme chemical and mechanical loads
- For aggressive and non-aggressive gases, vapors and liquids
- Extensive diagnosis and simulation functions
- Separate replacement of measuring cell and electronics without recalibration
- Minimum conformity error
- · Good long-term stability
- Wetted parts made of high-grade materials (e.g. stainless steel, Hastelloy, gold, Monel, tantalum)

- Infinitely adjustable span from 0.01 bar to 700 bar (0.15 psi to 10153 psi) for DS III with HART interface
- Nominal measuring range from 1 bar to 700 bar (14.5 psi to 10153 psi) for DS III with PROFIBUS PA and FOUNDATION Fieldbus interface
- High measuring accuracy
- Parameterization over control keys and HART or PROFIBUS PA, or FOUNDATION Fieldbus interface.

#### Application

The pressure transmitters of the DS III series, can be used in industrial areas with extreme chemical and mechanical loads. Electromagnetic compatibility in the range 10 kHz to 1 GHz makes the DS III pressure transmitters suitable for locations with high electromagnetic emissions.

Pressure transmitters with type of protection "Intrinsic safety" and "Explosion-proof" may be installed within potentially explosive atmospheres (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 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 programmed locally using the 3 control buttons or externally via HART or PROFIBUS PA or FOUNDATION Fieldbus interface.

Transmitters for general requirements

## SITRANS P DS III - Technical description

Measured variable: Gauge pressure of aggressive and non-aggressive gases, vapors and liquids.

Span (infinitely adjustable)

for DS III with HART: 0.01 bar to 700 bar (0.15 psi to 10153 psi)

Nominal measuring range for DS III with PROFIBUS PA and FOUNDATION Fieldbus: 1 bar to 700 bar (14.5 psi to 10153 psi)

#### Pressure transmitters for absolute pressure

Measured variable: Absolute pressure of aggressive and nonaggressive gases, vapors and liquids.

<u>Span (infinitely adjustable)</u> for DS III with HART: 8.3 mbar a ... 100 bar a (0.12 ... 1450 psia) Nominal measuring range

for DS III with PROFIBUS PA and FOUNDATION Fieldbus: 250 mbar a ... 100 bar a (3.6 ... 1450 psia)

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 pressure
- Flow  $q \sim \sqrt{\Delta p}$  (together with a primary differential pressure device (see Chapter "Flow Meters"))

#### Span (infinitely adjustable)

for DS III with HART: 1 mbar ... 30 bar (0.0145 ... 435 psi)

Nominal measuring range

for DS III with PROFIBUS PA and FOUNDATION Fieldbus: 20 mbar ... 30 bar (0.29 ... 435 psi)

#### Pressure transmitters for level

Measured variable: Level of aggressive and non-aggressive liquids in open and closed vessels.

Span (infinitely adjustable) for DS III with HART: 25 mbar ... 5 bar (0.363 ... 72.5 psi)

Nominal measuring range for DS III with PROFIBUS PA and FOUNDATION Fieldbus: 250 mbar ... 5 bar (3.63 ... 72.5 psi)

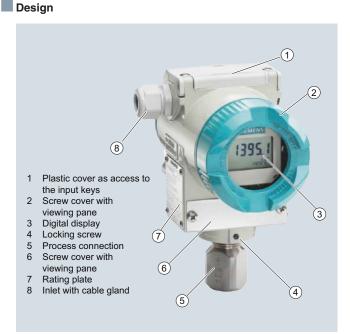
Nominal diameter of the mounting flange

- DN 80 or DN 100
- 3 inch or 4 inch

In the case of level measurements in open containers, the lowpressure connection of the measuring cell remains open (measurement "compared to atmospheric").

In the case of measurements in closed containers, the lowerpressure connection has to be connected to the container in order to compensate the static pressure.

The wetted parts are made from a variety of materials, depending on the degree of corrosion resistance required.



#### Front view

The transmitter consists of various components depending on the order. The possible versions are listed in the ordering information. The components described below are the same for all transmitters

The rating plate (7, Figure "Front view") with the Article No. is located on the side of the housing. The specified number together with the ordering information provide details on the optional design details and on the possible measuring range (physical properties of built-in sensor element).

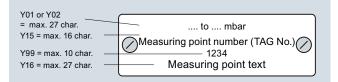
The approval label is located on the opposite side.

The housing is made of die-cast aluminium or stainless steel precision casting. A round cover (6) is screwed on at the front and rear of the housing. The front cover can be fitted with a viewing pane so that the measured values can be read directly on the display. The inlet (8) for the electrical connection is located either on the left or right side. The unused opening on the opposite side is sealed by a blanking plug. The protective earth connection is located on the rear of the housing.

The electrical connections for the power supply and screen are accessible by unscrewing the rear cover. The bottom part of the housing contains the measuring cell with process connection (5). The measuring cell is prevented from rotating by a locking screw (4). As the result of this modular design, the measuring cell and the electronics can be replaced separately from each other. The set parameter data are retained.

At the top of the housing is a plastic cover (1), which hides the input keys.

#### Example for an attached measuring point label

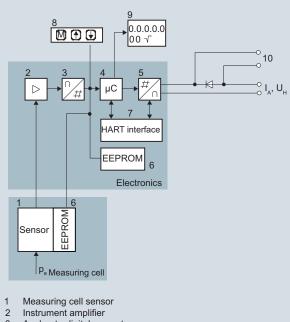


Transmitters for general requirements

## SITRANS P DS III - Technical description

#### Function

#### Operation of electronics with HART communication



- 3 Analog-to-digital converter
- 4 Microcontroller
- 5 Digital-to-analog converter
- 6 One non-volatile memory each in the measuring cell and electronics
- 7 HART interface
- 8 Three input keys (local operation)
- 9 Digital display
- 10 Diode circuit and connection for external ammeter
- A Output current
- $\hat{U}_{H}$  Power supply
- P<sub>e</sub> Input variable

#### Function diagram of electronics

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

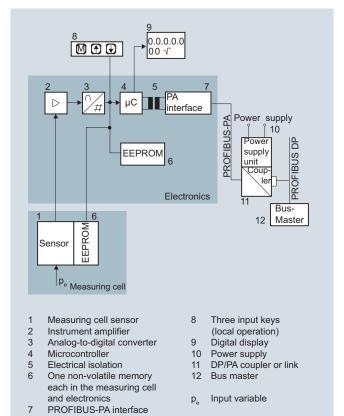
## The diode circuit (10) protects against incorrect polarity.

The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The 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 keys (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 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 spans  $\leq$  63 bar measure the input pressure compared to atmosphere, transmitters with spans  $\geq$  160 bar compared to vacuum.



#### **Operation of electronics with PROFIBUS PA communication**

#### Function diagram of electronics

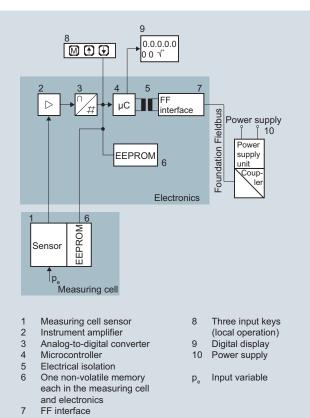
The bridge output voltage created by the sensor (1, Figure "Function diagram of the electronics") is amplified by the measuring amplifier (2) and digitized in the analog-to-digital converter (3). The digital information is evaluated in the microcontroller, its linearity and temperature response corrected, and provided on the PROFIBUS PA through 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). The 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 results, the error messages and the operating modes on the display (9).

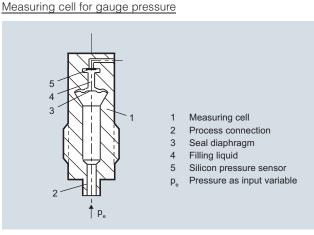
The results with status values and diagnostic values are transferred by cyclic data transmission on the PROFIBUS PA. Parameterization data and error messages are transferred by acyclic data transmission. Special software such as SIMATIC PDM is required for this.

Transmitters for general requirements SITRANS P DS III - Technical description



#### Operation of electronics with FOUNDATION Fieldbus communication

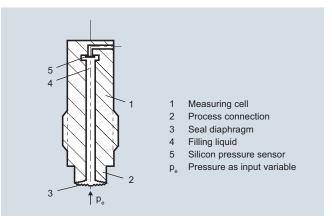
# Mode of operation of the measuring cells



Measuring cell for gauge pressure, function diagram

The pressure  $p_e$  is applied through the process connection (2, Figure "Measuring cell for gauge pressure, 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 absolute pressure.

Measuring cell for gauge pressure with front-flush diaphragm



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

The pressure  $_{\rm p}$ e is applied through the process connection (2, Figure "Measuring cell for gauge pressure, with front-flush 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 absolute pressure.

#### 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 digitized in the analog-to-digital converter (3). The digital information is evaluated in the microcontroller, its linearity and temperature response corrected, and provided on the FOUNDATION Fieldbus through 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). The 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.

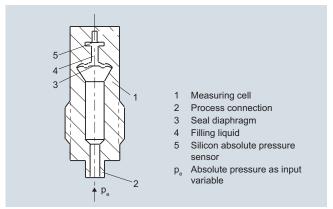
Using the three input buttons (8) you can parameterize the pressure transmitter directly at the measuring point. The input buttons can also be used to control the view of the results, the error messages and the operating modes on the display (9).

The results with status values and diagnostic values are transferred by cyclic data transmission on the FOUNDATION Fieldbus. Parameterization data and error messages are transferred by acyclic data transmission. Special software such as National Instruments Configurator is required for this.

Transmitters for general requirements

## SITRANS P DS III - Technical description

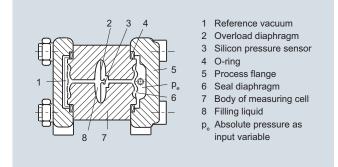
Measuring cell for absolute pressure from gauge pressure series



Measuring cell for absolute pressure from the pressure series, function diagram

The absolute pressure  $_{p}e$  is transmitted through the seal diaphragm (3, Figure "Measuring cell for absolute pressure from pressure series, gauge pressure, function diagram") and the filling liquid (4) to the silicon absolute 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 absolute pressure.

Measuring cell for absolute pressure from differential pressure series

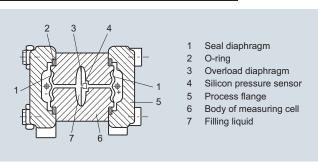


Measuring cell for absolute pressure from differential pressure series, function diagram

The input pressure  $p_e$  is transmitted through the seal diaphragm (6, Figure "Measuring cell for absolute pressure from differential pressure series, function diagram") and the filling liquid (8) to the silicon pressure sensor (3).

The difference in pressure between the input pressure  $p_e$  and the reference vacuum (1) on the low-pressure side of the measuring cell flexes the measuring diaphragm. 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 absolute pressure.

An overload diaphragm is installed to provide protection from overloads. If the measuring limits are exceeded, the overload diaphragm (2) is flexed until the seal diaphragm rests on the body of the measuring cell (7), thus protecting the silicon pressure sensor from overloads.



Measuring cell for differential pressure and flow

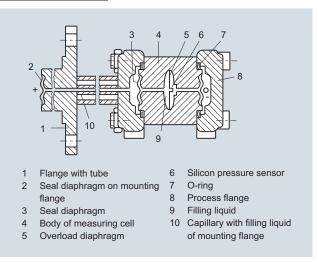
Measuring cell for differential pressure and flow, function diagram

The differential pressure is transmitted through the seal diaphragms (1, Figure "Measuring cell for differential pressure and flow, function diagram") and the filling liquid (7) to the silicon pressure sensor (4).

The measuring diaphragm is flexed by the applied differential pressure. 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 absolute pressure.

An overload diaphragm is installed to provide protection from overloads. If the measuring limits are exceeded, the overload diaphragm (3) is flexed until the seal diaphragm rests on the body of the measuring cell (6), thus protecting the silicon pressure sensor from overloads.

#### Measuring cell for level



#### Measuring cell for level, function diagram

The input pressure (hydrostatic pressure) acts hydraulically on the measuring cell through the seal diaphragm on the mounting flange (2, Figure "Measuring cell for level, function diagram"). This differential pressure is subsequently transmitted further through the measuring cell (3) and the filling liquid (9) to the silicon pressure sensor (6) 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 differential pressure.

An overload diaphragm is installed to provide protection from overloads. If the measuring limits are exceeded, the overload diaphragm (5) is flexed until the seal diaphragm rests on the body of the measuring cell (4), thus protecting the silicon pressure sensor from overloads.

Transmitters for general requirements

# SITRANS P DS III - Technical description

## Parameterization DS III

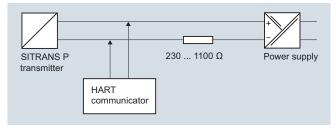
Depending on the version, there are a range of options for parameterizing the pressure transmitter and for setting or scanning the parameters.

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

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

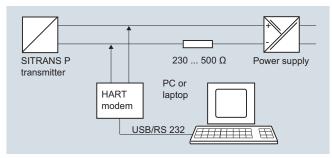
#### Parameterization using HART

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 connec-

tion 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 the Frequency Shift Keying (FSK) method.

#### Adjustable parameters, DS III with HART

Parameters	Input keys (DS III HART)	HART communication
Start of scale	х	х
Full-scale value	х	х
Electrical damping	х	Х
Start-of-scale value without applica- tion of a pressure ("Blind setting")	Х	Х
Full-scale value without application of a pressure ("Blind setting")	Х	Х
Zero adjustment	х	х
current transmitter	х	х
Fault current	х	х
Disabling of buttons, write protec- tion	Х	x <sup>1)</sup>
Type of dimension and actual dimension	Х	Х
Characteristic (linear / square- rooted)	x <sup>2)</sup>	x <sup>2)</sup>
Input of characteristic		х
Freely-programmable LCD		х
Diagnostic functions		х
<ol> <li>Cancel apart from write protection</li> <li>Only differential pressure</li> </ol>		

Diagnostic functions for DS III with HART

- Zero correction display
- Event counter
- Limit transmitter
- Saturation alarm
- Slave pointer
- Simulation functionsMaintenance timer

## Available physical units of display for DS III with HART

Table style: Technical specifications 2

Physical variable	Physical dimensions
Pressure (setting can also be made 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
volume flow	$\rm m^3/d,m^3/h,m^3/s,l/min,l/s,ft^3/d,ft^3/min,ft^3/s,US$ gallon/min, US gallon/s
Mass flow	t/d, t/h, t/min, kg/d, kg/h, kg/min, kg/s, g/d, g/h, g/min, g/s, lb/d, lb/h, lb/min, lb/s, LTon/d, LTon/h, STon/d, STon/h, STon/min
Temperature	K, °C, °F, °R
Miscellaneous	%, mA

Parameterization through PROFIBUS PA interface

Fully digital communication through PROFIBUS PA, profile 3.0, is particularly user-friendly. Through the PROFIBUS the DS III with PROFIBUS PA is connected to a process control system, e. g. SIMATIC PSC 7. Communication is possible even in a potentially explosive environment.

For parameterization through 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 DS III with FOUNDATION Fieldbus is connected to a process control system. Communication is possible even in a potentially explosive environment.

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

# Adjustable parameters for DS III with PROFIBUS PA and FOUNDATION Fieldbus

Parameters	Input keys	PROFIBUS PA and FOUNDATION Field- bus interface
Electrical damping	х	Х
Zero adjustment (correction of posi- tion)	x	Х
Buttons and/or function disabling	х	х
Source of measured-value display	х	х
Physical dimension of display	х	х
Position of decimal point	х	х
Bus address	х	х
Adjustment of characteristic	х	х
Input of characteristic		х
Freely-programmable LCD		х
Diagnostics functions		х

Transmitters for general requirements

## SITRANS P DS III - Technical description

# Diagnostic functions for DS III with PROFIBUS PA and FOUNDATION Fieldbus

- Event counter
- Slave pointer
- Maintenance timer
- Simulation functions
- Display of zero correction
- Limit transmitter
- Saturation alarm

## Physical dimensions available for the display

Physical variable	Physical dimensions
Pressure (setting can also be made 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, mmH <sub>2</sub> O (4 °C), inH <sub>2</sub> O, inH <sub>2</sub> O (4 °C), ftH <sub>2</sub> O (20 °C), mmHg, inHg
Level (height data)	m, cm, mm, ft, in, yd
Volume	m <sup>3</sup> , dm <sup>3</sup> , hl, yd <sup>3</sup> , ft <sup>3</sup> , in <sup>3</sup> , US gallon, lmp. gallon, bushel, barrel, barrel liquid
volume flow	m³/s, m³/min, m³/h, m³/d, l/s, l/min, l/h, l/ d, Ml/d, ft³/s, ft³/min, ft³/h, ft³/d, US gal- lon/s, US gallon/min, US gallon/h, US gal- lon/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
Total mass flow	t, kg, g, lb, oz, LTon, STon
Temperature	K, °C, °F, °R
Miscellaneous	%

Transmitters for general requirements

# SITRANS P DS III for gauge pressure

SITRANS P, DS III series for gauge pressure				
	HART		PROFIBUS PA and F	OUNDATION Fieldbus
Input		0		
Measured variable Spans (infinitely adjustable) or	Span (min may)	Gau Max. perm. test	ge pressure	Max. perm. test
nominal measuring range and max. permissible test pressure	Span (min max.)	pressure	Nominal measuring range	pressure
	0.01 1 bar (0.15 14.5 psi)	6 bar (87 psi)	1 bar (14.5 psi)	6 bar (87 psi)
	0.04 4 bar (0.58 58 psi)	10 bar (145 psi)	4 bar (58 psi)	10 bar (145 psi)
	0.16 16 bar (2.32 232 psi)	32 bar (464 psi)	16 bar (232 psi)	32 bar (464 psi)
	0.6 63 bar (9.14 914 psi)	100 bar (1450 psi)	63 bar (914 psi)	100 bar (1450 psi)
	1.6 160 bar (23.2 2320 psi)	250 bar (3626 psi)	160 bar (2320 psi)	250 bar (3626 psi)
	4.0 400 bar (58 5802 psi)	600 bar (8700 psi)	400 bar (5802 psi)	600 bar (8700 psi)
	7.0 700 bar (102 10153 psi)	800 bar (11603 psi)	700 bar (10153 psi)	800 bar (11603 psi)
Lower measuring limit Measuring cell with silicone oil filling	(		ar a (0.44 psia)	(
Measuring cell with inert filling liquid	30 mbar a (0.44 psia)			
Upper measuring limit	100 % of max. s	pan (for oxygen version	and inert filling liquid; ma	x. 120 bar (1740 psi))
Output	4 20 mA			
Output signal	4 20 MA		bus signal	and FOUNDATION Fie
<ul> <li>Lower limit (infinitely adjustable)</li> </ul>	3.55 mA, factory pres	et to 3.84 mA	-	
Upper limit (infinitely adjustable)	23 mA, factory preset set to 22.0 mA	to 20.5 mA or optionally	y -	
Load				
Without HART	$ \begin{array}{ll} R_{\rm B} \leq (U_{\rm H} - 10.5 \ {\rm V})/0.023 \ {\rm A \ in \ } \Omega, \\ U_{\rm H}: \ {\rm Power \ supply \ in \ V} \end{array} \ - \\ \end{array} $			
With HART	$R_{\rm B} = 230 \dots 500 \Omega$ (SIMATIC PDM) or - $R_{\rm B} = 230 \dots 1100 \Omega$ (HART Communicator)			
Physical bus	-		IEC 61158-2	
Protection against polarity reversal	Protected against short-circuit and polarity reversal. Each connection against the other wi supply voltage.			against the other with m
Electrical damping (step width 0.1 s)		Set to 2	2 s (0 100 s)	
Measuring accuracy			b IEC 60770-1	
Reference conditions (All error data refer always refer to the set span)	Increasing cha	aracteristic, start-of-sca silicone oil filling, roo	le value 0 bar, stainless ste m temperature 25 °C (77 °	eel seal diaphragm, ?F)
	Span ratio r =	max. span/set span		g range ratio r = nomina e/set measuring range
Error in measurement at limit setting incl. hyster- esis and reproducibility				
Linear characteristic				
- r ≤ 10	$\leq (0.0029 \cdot r + 0.071)$	%	$\leq (0.0029 \cdot r + 0.071)$	%
- 10 < r ≤ 30	$\leq (0.0045 \cdot r + 0.071)$	%	$\leq (0.0045 \cdot r + 0.071)$	%
- 30 < r ≤ 100	$\leq$ (0.005 · r + 0.05) %		$\leq (0.005 \cdot r + 0.05) \%$	
Long-term stability (temp.erature change $\pm$ 30 °C ( $\pm$ 54 °F))				
• 1 4-bar measuring cell	$\leq$ (0.25 $\cdot$ r) % per 5 ye	ars	$\leq$ (0.25 $\cdot$ r) % per 5 ye	ars
• 16 700-bar measuring cell	$\leq$ (0.125 $\cdot$ r) % per 5 y	rears	$\leq$ (0.125 $\cdot$ r) % per 5 y	ears
Influence of ambient temperature				
• at -10 +60 °C (14 140 °F)	$\leq (0.08 \cdot r + 0.1) \%^{1)}$ (at 700 bar: $\leq (0.1 \cdot r + 0.1)$	+ 0.2) % <sup>2)</sup>	$\leq$ (0.08 · r + 0.1) % <sup>1)</sup> (at 700 bar: $\leq$ (0.1 · r -	+ 0.2) % <sup>2)</sup>
• at -4010 °C and +60 +85 °C (-40 +14 °F and 140 185 °F)	≤ (0.1 · r + 0.15) %/10	К	≤ (0.1 · r + 0.15) %/10	К
Measured Value Resolution			3 · 10 <sup>-5</sup> of nominal me	asuring range

Transmitters for general requirements

# SITRANS P DS III for gauge pressure

SITRANS P, DS III series for gauge pressure				
	HART	PROFIBUS PA and FOUNDATION Fieldbus		
Rated conditions				
Degree of protection (to EN 60529)	IP66 (optional IP6	66/IP68), NEMA 4X		
Temperature of medium				
<ul> <li>Measuring cell with silicone oil filling</li> </ul>	-40 +100 °C	(-40 +212 °F)		
<ul> <li>Measuring cell with inert filling liquid</li> </ul>	-20 +100 °C	C (-4 +212 °F)		
In conjunction with dust explosion protection	-20 +60 °C	(-4 +140 °F)		
Ambient conditions				
Ambient temperature				
<ul> <li>Transmitter (with 4-wire connection, observe temperature values of supplementary 4-wire electronics)</li> </ul>	-40 +85 °C (-40 +185 °F)			
- Display readable	-30 +85 °C	(-22 +185 °F)		
Storage temperature	-50 +85 °C	(-58 +185 °F)		
Climatic class				
- Condensation	Relative humidity 0 100 % Condensation permissible, suitable for use in the tropics			
<ul> <li>Electromagnetic Compatibility</li> </ul>				
- Emitted interference and interference immunity	Acc. to IEC 61326 and NAMUR NE 21			
Design				
Weight (without options)	Die-cast aluminum: $\approx 2.0 \text{ kg}$ ( $\approx 4.4 \text{ lb}$ ) Stainless steel precision casting: $\approx 4.6 \text{ kg}$ ( $\approx 10.1 \text{ lb}$ )			
Enclosure material	Low-copper die-cast aluminum, GD-AISi 12 or stainless steel precision casting, mat. no. 1.4408			
Wetted parts materials				
<ul> <li>Connection shank</li> </ul>	Stainless steel, mat. no. 1.4404/31	6L or Hastelloy C4, mat. no. 2.4610		
• Oval flange	Stainless steel, m	at. no. 1.4404/316L		
<ul> <li>Seal diaphragm</li> </ul>	Stainless steel, mat. no. 1.4404/316	SL or Hastelloy C276, mat. no. 2.4819		
Measuring cell filling		inert filling liquid pressure 100 bar (1450 psi) at 60 °C (140 °F))		
Process connection		1, female thread ½ -14 NPT or oval flange nounting thread M10 or <sup>7</sup> / <sub>16</sub> -20 UNF to EN 61518		
Material of mounting bracket				
Steel	Sheet-steel, Mat. No.	1.0330, chrome-plated		
Stainless steel	Sheet stainless steel, r	nat. no. 1.4301 (SS 304)		
Power supply $\textit{U}_{ert}$		Supplied through bus		
Terminal voltage on transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically-safe mode			
Separate 24 V power supply necessary	-	No		
Bus voltage				
• Not Ex	-	9 32 V		
<ul> <li>With intrinsically-safe operation</li> </ul>	-	9 24 V		
Current consumption				
Basic current (max.)	-	12.5 mA		
• Start-up current $\leq$ basic current	-	Yes		
<ul> <li>Max. current in event of fault</li> </ul>	-	15.5 mA		
Fault disconnection electronics (FDE) available	-	Yes		

Transmitters for general requirements

## SITRANS P DS III for gauge pressure

SITRANS P, DS III series for gauge pressure					
	HART	PROFIBUS PA and FOUNDATION Fieldbus			
Certificates and approvals					
Classification according to PED 97/23/EC		I group 1; complies with requirements of article 3, d engineering practice)			
Explosion protection					
<ul> <li>Intrinsic safety "i"</li> </ul>	PTB 13.	ATEX 2007 X			
- Marking	Ex II 1/2 G Ex ia/ib IIC T4/T5/T6 Ga/Gb				
- Permissible ambient temperature	-40 +70 °C (-40 +1	85 °F) temperature class T4; 58 °F) temperature class T5; 140 °F) temperature class T6			
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}, I_i = 100 \text{ mA},$ $P_i = 750 \text{ mW}; R_i = 300 \Omega$	FISCO supply unit: $U_0 = 17.5$ V, $I_0 = 380$ mA, $P_0 = 5.32$ W Linear barrier: $U_0 = 24$ V, $I_0 = 174$ mA, $P_0 = 1$ W			
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{\rm i} = 7 \ \mu {\rm H}, \ C_{\rm i} = 1.1 \ {\rm nF}$			
• Explosion-proof "d"	PTB 99	ATEX 1160			
- Marking	Ex II 1/2 G E	Ex d IIC T4/T6 Gb			
- Permissible ambient temperature	-40 +85 °C (-40 +1 -40 +60 °C (-40 +1	85 °F) temperature class T4; I40 °F) temperature class T6			
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC	To circuits with values: $U_{\rm H}$ = 9 32 V DC			
<ul> <li>Dust explosion protection for zone 20</li> </ul>	PTB 01	ATEX 2055			
- Marking	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C				
- Permissible ambient temperature	-40 +85 °C	C (-40 +185 °F)			
- Max. surface temperature	120 °	C (248 °F)			
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}, I_i = 100 \text{ mA},$ $P_i = 750 \text{ mW}, R_i = 300 \Omega$	FISCO supply unit: $U_0 = 17.5$ V, $I_0 = 380$ mA, $P_0 = 5.32$ W Linear barrier: $U_0 = 24$ V, $I_0 = 250$ mA, $P_0 = 1$ W			
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{\rm i} = 7 \ \mu {\rm H}, \ C_{\rm i} = 1.1 \ {\rm nF}$			
Dust explosion protection for zone 21/22	PTB 01	ATEX 2055			
- Marking	Ex II 2 D	IP65 T 120 °C			
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC; $P_{\rm max}$ = 1.2 W	To circuits with values: $U_{\rm H}$ = 9 32 V DC; $P_{\rm max}$ = 1 W			
<ul> <li>Type of protection "n" (zone 2)</li> </ul>	PTB 13.	ATEX 2007 X			
- Marking		: nA II T4/T5/T6 Gc ic IIC T4/T5/T6 Gc			
- Connection (Ex nA)	$U_{\rm m} = 45 \text{ V}$	$U_{\rm m}$ = 32 V			
- Connections (Ex ic)	To circuits with values: $U_{\rm i} = 45 \text{ V}$	FISCO supply unit ic: $U_0 = 17.5 \text{ V}, I_0 = 570 \text{ mA}$ Linear barrier: $U_0 = 32 \text{ V}, I_0 = 132 \text{ mA}, P_0 = 1 \text{ W}$			
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4  {\rm mH},  C_{\rm i} = 6  {\rm nF}$	$L_{\rm i} = 7 \mu\text{H},  C_{\rm i} = 1.1 \text{nF}$			
• Explosion protection acc. to FM		ompliance 3008490			
- Identification (XP/DIP) or (IS); (NI)	CL I, DIV 1, GP ABCD T4T6; CL II, DIV 1, G	P EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4T6; CL I, 5; CL II, DIV 2, GP FG; CL III			
Explosion protection to CSA	Certificate of C	ompliance 1153651			
- Identification (XP/DIP) or (IS)		EFG; CL III; Ex ia IIC T4T6; CL I, DIV 2, GP ABCD DIV 2, GP FG; CL III			
1) Conversion of temperature error per 28 °C. Valid	for temperature range -3 +53 °C < (0.064 . r + 0.0	08) % / 28 °C (50 °F).			

1) Conversion of temperature error per 28 °C. Valid for temperature range -3 ... +53 °C < (0.064 . r + 0.08) % / 28 °C (50 °F).

 $^{2)}$  Conversion of temperature error per 28 °C. Valid for temperature range -3 ... +53 °C < (0.08 . r + 0.16) % / 28 °C (50 °F).

Transmitters for general requirements

## SITRANS P DS III for gauge pressure

HART communication		FOUNDATION
HART	230 1100 Ω	communicatio
Protocol	HART Version 5.x	Function block
Software for computer	SIMATIC PDM	<ul> <li>Analog input</li> </ul>
PROFIBUS PA communication		- Adaptation
Simultaneous communication with master class 2 (max.)	4	ic process - Electrical d
The address can be set using	Configuration tool or local opera- tion (standard setting address 126)	- Simulation
Cyclic data usage	,	- Failure mod
Output byte	5 (one measured value) or 10 (two measured values)	- Limit monite
Input byte	0, 1, or 2 (register operating mode and reset function for	
Internal preprocessing	metering)	<ul> <li>Square-roo for flow means</li> </ul>
Device profile	PROFIBUS PA Profile for Pro- cess Control Devices Version 3.0, class B	• PID
Function blocks	2	Physical bloc
Analog input		Transducer blo
- Adaptation to customer-specif- ic process variables	Yes, linearly rising or falling characteristic	Pressure tran
- Electrical damping, adjustable	0 100 s	- Can be cal
- Simulation function	Input /Output	two pressu
- Failure mode	parameterizable (last good value, substitute value, incorrect value)	<ul> <li>Monitoring</li> <li>Simulation</li> <li>pressure value</li> </ul>
- Limit monitoring	Yes, one upper and lower warn- ing limit and one alarm limit respectively	ature and e ture
• 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 respec- tively	
Physical block	1	
Transducer blocks	2	
<ul> <li>Pressure transducer block</li> </ul>		
<ul> <li>Can be calibrated by applying two pressures</li> </ul>	Yes	

Yes

Yes

Max. 30 nodes

Parameterizable

Constant value or over parameterizable ramp function

- two pressures - Monitoring of sensor limits
- Specification of a container characteristic with
- Square-rooted characteristic for flow measurement
- Gradual volume suppression and implementation point of square-root extraction
- Simulation function for mea-sured pressure value and sen-sor temperature

#### N Fieldbus ion ks

- Jt
- n to customer-specifvariables
- damping, adjustable
- function
- ode
- itoring
- oted characteristic easurement
- ock
- locks
- ansducer block
- alibrated by applying ures
- g of sensor limits
- function: Measured value, sensor temperelectronics tempera-

3 function blocks analog input, 1 function block PID

Yes, linearly rising or falling characteristic

- 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

1 transducer block Pressure with calibration, 1 transducer block LCD

#### Yes

Yes

Constant value or over parameterizable ramp function

Transmitters for general requirements

## SITRANS P DS III for gauge pressure

Selection and Orderin	÷	Article No. 7 MF 4 0 3 3 -						_	Selection and Orderin		
Pressure transmitter f SITRANS P DS III with		1		MF4					Pressure transmitter SITRANS P DS III wit		
↗ Click on the Article N	lo. for the online configu	1-							Display		
ration in the PIA Life	Cycle Portal.								<ul> <li>Without display</li> </ul>		
Measuring cell filling	Measuring cell clean ing	-							<ul> <li>Without visible display concealed,</li> </ul>		
Silicone oil	normal		1						With visible display (		
Inert liquid <sup>1)</sup>	grease-free to cleanliness level 2		3						<ul> <li>with customer-specir specified, Order cod</li> </ul>		
Measuring span (min.	max.)								<ul> <li>Available ex stock</li> </ul>		
0.01 1 bar	(0.15 14.5 psi)			В					<ul> <li>We can offer shorte</li> </ul>		
0.04 4 bar 0.16 16 bar	(0.58 58 psi)			C D					the Quick Ship Syn		
0.63 63 bar	(2.32 232 psi) (9.14 914 psi)			E					Power supply units se		
1.6 160 bar	(23.2 2320 psi)			F					Included in delivery of		
4.0 400 bar	(58.0 5802 psi)			G					Brief instructions (Le		
7.0 700 bar	(102.010153 psi)			J					<ul> <li>CD-ROM with detaile</li> </ul>		
Wetted parts materials	6		-						1) For oxygen application		
Seal diaphragm	Process connection								<sup>2)</sup> When the manufactu		
Stainless steel	Stainless steel	<b>•</b>		A					ordered for transmitte		
Hastelloy	Stainless steel			в					is recommended only phragm seals. The m		
Hastelloy	Hastelloy			С					here.		
Version as diaphragm s	seal <sup>2) 3) 4) 5)</sup>			Y					3) If the acceptance test mounted disphrage		
Process connection									mounted diaphragm respective remote se		
Connection shank G <sup>1</sup> /				0					<sup>4)</sup> The diaphragm seal		
Female thread 1/2-14 N		•		1					must be included wit		
<ul> <li>Stainless steel oval fla nection (Oval flange f</li> </ul>									7MF403Y and <sup>5)</sup> The standard measu		
	<sub>6</sub> -20 UNF to IEC 61518			2					is silicone oil.		
- Mounting thread M1				3					<sup>6)</sup> Not in conjunction wi		
- Mounting thread M1				4					"Han7D plug".		
Male thread M20 x 1.8				5					<li>7) Without cable gland,</li>		
<ul> <li>Male thread ½ -14 NF</li> </ul>	Ϋ́Τ			6					<sup>8)</sup> With enclosed cable		
Non-wetted parts mate	erials								<sup>9)</sup> Configurations with H		
Housing made of die-					0				<sup>10)</sup> Only in connection w		
Housing stainless step	el precision casting <sup>6)</sup>				3				<sup>11)</sup> Only in connection w		
Version									<sup>12)</sup> M12 delivered withou		
Standard versions	English John Linnerin					1					
<ul> <li>International version, tions_documentation</li> </ul>	English label inscrip- in 5 languages on CD					2					
(no Order code selec											
Explosion protection											
None	- + +'	•				Α					
<ul> <li>With ATEX, Type of pr</li> </ul>						Р					
<ul> <li>"Intrinsic safety (Ex i</li> <li>"Explosion-proof (Ex</li> </ul>						B					
	flameproof enclosure"					P					
(Ex ia + Ex d) <sup>"8)</sup>		_				1					
- "Ex nA/ic (Zone 2)" <sup>9</sup>	)	٠				Е					
- "Intrinsic safety, exp	losion-proof enclosure					R					
and dust explosion p Zone 1D/2D)" <sup>8)10)</sup>	protection (Ex ia + Ex d +	F									
<ul> <li>FM + CSA intrinsic sa</li> </ul>	fe (is)					F					
• FM + CSA (is + ep) +						S					
• With FM + CSA, Type											
	xplosion Proof (is + xp)"	7)				N	C				
Electrical connection											
Screwed gland Pg 13	.5 (adapter) <sup>11)</sup>						4				
<ul> <li>Screwed gland M20 ×</li> </ul>	(1.5						в				
Screwed gland <sup>1</sup> / <sub>2</sub> -14		٠					C				
<ul> <li>Han 7D plug (plastic l connector<sup>11)</sup></li> </ul>	housing) incl. mating						D				
<ul> <li>M12 connectors (stair</li> </ul>							F				
- wirz connectors (stalf	11000 SIEEI) / -/						ľ				

ng data Article No. for gauge pressure, h HART 7MF4033-٠ 0 1 av setting: mA) 6 setting: mA) 7 • fic display (setting as de "Y21" or "Y22" required)

er delivery times for configurations designated with nbol . For details see page 9/5 in the appendix.

e Chap. 7 "Supplementary Components".

the device:

- porello)
- ed documentation
- on, add Order code E10. re's certificate (calibration certificate) has to be res with diaphragm seals according to IEC 60770-2, it y to order this certificate exclusively with the dia-leasuring accuracy of the <u>total</u> combination is certified
- st certificate 3.1.is ordered for the transmitter with seals this certificate must also be ordered with the als.
- is to be specified with a separate order number and h the transmitter order number, for example 7MF4900-1...-.B
- ring cell filling of configurations with remote seals (Y)
- th Electrical connection "Screwed gland Pg 13.5" and
- with blanking plug
- gland Ex ia and blanking plug
- AN and M12 connectors are only available in Ex ic.
- ith IP65.
- ith Ex approval A, B or E.
- It cable socket

## **Pressure Measurement**

Transmitters for general requirements

1

Iransmitters for general requirements							
SITRANS P DS III	for gauge pressure						
Selection and Orderi	ng data	Article N	lo.		Selection and Ordering data	Article No.	
Pressure transmitter	for gauge pressure				Pressure transmitter for gauge pressure		
SITRANS P DS III with	PROFIBUS PA (PA)	7 MF 4 0	34 -		SITRANS P DS III with PROFIBUS PA (PA)	7 M F 4 0 3 4 -	
SITRANS P DS III with	FOUNDATION Fieldbus (FF)	7 MF 4 0	35-		SITRANS P DS III with FOUNDATION Fieldbus (FF)	7 M F 4 0 3 5 -	
Click on the Article ration in the PIA Life	No. for the online configu-						
Measuring cell filling					Display	0	
Medouring cen ming	ing				<ul> <li>Without display</li> <li>Without visible display (display concealed,</li> </ul>	1	
Silicone oil	normal	1			setting: bar)		
Inert liquid <sup>1)</sup>	grease-free to	3			<ul> <li>With visible display (setting: bar)</li> </ul>	6	
<del></del>	cleanliness level 2				<ul> <li>with customer-specific display (setting as spec- ified, Order code "Y21" required)</li> </ul>	7	
Nominal measuring I 1 bar	(14.5 psi)	в					
4 bar	(14.5 psi) (58 psi)	C			<ul><li>Included in delivery of the device:</li><li>Brief instructions (Leporello)</li></ul>		
16 bar	(232 psi)	D			CD-ROM with detailed documentation		
63 bar	(914 psi)	E			<sup>1)</sup> For oxygen application, add Order code E10.		
160 bar	(2320 psi)	F			<sup>2)</sup> When the manufacture's certificate (calibration certif	icata) has to ha	
400 bar	(5802 psi)	G			ordered for transmitters with diaphragm seals accord	ding to IEC 60770-2, it	
700 bar	(10153 psi)	J			is recommended only to order this certificate exclusi phragm seals. The measuring accuracy of the total c		
Wetted parts materia					here.	ompination is certified	
Seal diaphragm	Process connection				<sup>3)</sup> If the acceptance test certificate 3.1 is ordered for th		
Stainless steel	Stainless steel	A			mounted diaphragm seals this certificate must also respective remote seals.	be ordered with the	
Hastelloy	Stainless steel	В			<ul> <li><sup>4)</sup> The diaphragm seal is to be specified with a separa</li> </ul>	te order number and	
Hastelloy Version as diaphragm	Hastelloy	C			must be included with the transmitter order number,	for example	
	i seal i i i i i	- 1			7MF403Y and 7MF4900-1B		
<ul> <li>Process connection</li> <li>Connection shank G</li> </ul>	1/4B to EN 837-1	0			<sup>5)</sup> The standard measuring cell filling of configurations is silicone oil.	with remote seals (Y)	
Female thread 1/2-14		1			6) M10 fastening thread: Max. span 160 bar (2320 psi)		
<ul> <li>Stainless steel oval f</li> </ul>	lange with process connec-				7/16-20 UNF and M12 fastening thread: Max. span 2	400 bar (5802 psi)	
	s no female thread) <sup>6)</sup>				7) Without cable gland, with blanking plug.		
	/ <sub>16</sub> -20 UNF to IEC 61518	2			<sup>8)</sup> With enclosed cable gland Ex ia and blanking plug.		
<ul> <li>Mounting thread N</li> <li>Mounting thread N</li> </ul>		3 4			<sup>9)</sup> Configurations with HAN and M12 connectors are or	nly available in Ex ic.	
Male thread M20 x 1		5			<sup>10)</sup> Only in connection with IP65.		
Male thread 1/2 -14 N		6			<sup>11)</sup> M12 delivered without cable socket. <sup>12)</sup> Only in connection with Ex approval A, B, E or F.		
Non-wetted parts ma	aterials						
<ul> <li>Housing made of die</li> </ul>		0					
<ul> <li>Housing stainless st</li> </ul>	eel precision casting	3					
Version							
<ul> <li>Standard versions</li> </ul>			1				
<ul> <li>International version documentation in 5 l</li> </ul>	, English label inscriptions,		2				
(no Order code sele							
Explosion protection	1	-					
• None			A				
• With ATEX, Type of p	protection:						
- "Intrinsic safety (Ex	k ia)"		в				
- "Explosion-proof (E			D				
- "Intrinsic safety and	d flameproof enclosure"		Р				
(Ex ia + Ex d)" <sup>8)</sup> - "Ex nA/ic (Zone 2)"	9)		Е				
	plosion-proof enclosure and		R				
dust explosion pro	tection (Ex ia + Ex d + (not for DS III FF)						
• FM + CSA intrinsic s			F				
	+ Ex ia + Ex d (ATEX) <sup>10)</sup>		S				
• With FM + CSA, Typ - "Intrinsic Safe und	e of protection: Explosion Proof (is + xp)" <sup>7)</sup>		NC				
Electrical connection							
<ul> <li>Screwed gland M20</li> </ul>	x 1.5		В				
Screwed gland 1/2-14			C				
M12 connectors (sta	ainless steel) <sup>11/12)</sup>		F				

## **Pressure Measurement**

Transmitters for general requirements

## SITRANS P DS III for gauge pressure

Selection and Ordering data		Ordor	oodo		
Selection and Ordering data		Order		DA	
Further designs Add "-Z" to Article No. and specify Order code.			HART	PA	FF
Pressure transmitter with mounting bracket (1x fixing angle, 2 x nut, 2 x U- washer or 1 x bracket, 2 x nut, 2 x U- washer) made of:					
,	٠	A01	~	4	✓
	٠	A02	~	~	~
Plug • Han 7D (metal)		A30	~		
Han 8D (instead of Han 7D)		A31	1		
<ul><li>Angled</li><li>Han 8D (metal)</li></ul>		A32 A33	√ √		
Cable sockets for M12 connectors (metal (CuZn))		A50	~	~	~
Rating plate inscription (instead of German)					
	٠	B11	~	✓	✓
	•	B12	1	1	1
opanion		B13 B14	√ √	✓ ✓	√ √
	•	B16	1	1	1
<b>English rating plate</b> Pressure units in inH <sub>2</sub> 0 and/or psi	•	B21	1	~	~
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2 <sup>1)</sup>	٠	C11	1	1	1
, , , , , , , , , , , , , , , , , , , ,	٠	C12	~	~	~
	٠	C14	~	~	~
Functional safety (SIL2) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	•	C20	~		
Functional safety (PROFIsafe) Certificate and PROFIsafe protocol		C21 <sup>3)</sup>		~	
Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	•	C23	1		
Device passport Russia (For price request please contact the tech- nical support www.siemens.com/automation/support-		C99	~	~	1
request) Setting of upper limit of output signal to		D05	√		
22.0 mA Manufacturer's declaration acc. to NACE		D07	~	~	✓
(MR 0103-2012 and MR 0175-2009) Degree of protection IP66/IP68 (only for M20x1.5 and ½-14 NPT)		D12	~	~	✓
Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flange		D37	~	~	~
Capri cable gland 4F CrNi and clamping device (848699 + 810634) included		D59	~	~	1
Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety" (transmitter 7MF4B Ex ia)" and IP65)		E01	~	~	~
Oxygen application (In the case of oxygen measurement and inert liquid max. 100 bar (1450 psi) at 60°C (140 °F))		E10	1	~	~
Export approval Korea		E11	✓	1	✓
<b>CRN approval Canada</b> (Canadian Registration Number)		E22	1	~	1

Selection and Ordering data	Order	code		
<i>Further designs</i> Add "- <b>Z</b> " to Article No. and specify Order code.		HART	PA	FF
Dual seal	E24	✓	✓	✓
Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil) (only for transmitter 7MF4B)	E25 <sup>4)</sup>	~	1	1
"Flameproof" explosion protection according to INMETRO (Brazil) (only for transmitter 7MF4D)	E26 <sup>4)</sup>	1	1	~
Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil) (only for transmitter 7MF4P)	E28 <sup>4)</sup>	1	1	
Ex Approval IEC Ex (Ex ia) (only for transmitter 7MF4B)	E45 <sup>4)</sup>	~	~	1
Ex Approval IEC Ex (Ex d) (only for transmitter 7MF4D)	E46 <sup>4)</sup>	~	1	1
Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)	E55 <sup>4)</sup>	~	~	*
Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)	E56 <sup>4)</sup>	~	~	~
<b>Ex protection "Zone 2" to NEPSI (China)</b> (only for transmitter 7MF4E)	E57 <sup>4)</sup>	4	*	~
Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China) (only for transmitter 7MF4R)	E58 <sup>4)</sup>	~	~	1
"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (only for transmitter	E70 <sup>4)</sup>	~	1	~
7MF4[B, D]Z + E11)				
Two coats of lacquer on casing and cover (PU on epoxy)	G10	~	1	1
Transient protector 6 kV (lightning pro- tection)	J01	1	~	1
Oval flange NAM (ASTAVA)	J06	1	1	1

 We can offer shorter delivery times for configurations designated with the Quick Ship Symbol 

 For details see page 9/5 in the appendix.

<sup>1)</sup> When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the <u>total</u> combination is certified here.

<sup>2)</sup> If the acceptance test certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.

<sup>3)</sup> Profisafe transmitters can only be operated with the S7 F Systems V6.1 configuration software in combination with S7-400H

<sup>4)</sup> Option does not include ATEX approval, but instead includes only the country-specific approval. HART PA FF

**√**1)

~

## **Pressure Measurement**

Transmitters for general requirements

## SITRANS P DS III for gauge pressure

Selection and Ordering data Order code Additional data Please add "-Z" to Article No. and specify Order code(s) and plain text. Measuring range to be set Y01 Specify in plain text (max. 5 characters): Y01: ... up to ... mbar, bar, kPa, MPa, psi

ronn ap to in moai, bai, ia a	, a, po:				
Stainless steel tag plate and device variable (measuring p description)		Y15	1	~	`
Max. 16 characters, specify in Y15:	plain text:				
Measuring point text (entry in variable)		Y16	~	~	١
Max. 27 characters, specify in Y16:	plain text:				
Entry of HART address (TAG	) 🔷	Y17	1		
Max. 8 characters, specify in p Y17:	lain text:				
Setting of pressure indicatio sure units	n in pres- 🔹 🔷	Y21	1	~	١
Specify in plain text (standard Y21: mbar, bar, kPa, MPa, psi,					
Note: The following pressure units ca selected:	an be				
bar, mbar, mm $H_2O^{*}$ ), in $H_2O^{*}$ ), mmHG, inHG, psi, Pa, kPa, MF kg/cm <sup>2</sup> , Torr, ATM or % *) ref. temperature 20 °C	ftH <sub>2</sub> O <sup>*)</sup> , <sup>v</sup> a, g/cm <sup>2</sup> ,				
Setting of pressure indicatio	n in 🔹	Y22 +	✓		
non-pressure units <sup>2)</sup> Specify in plain text: Y22: up to l/min, m <sup>3</sup> /h, r (specification of measuring rar sure units "Y01" is essential, u 5 characters)	nge in pres-	Y01			
Preset bus address		Y25		~	,
possible between 1 and 126 Specify in plain text:					
Y25:					
Damping adjustment in seco (0 100 s)	nds	Y30	1	~	1

We can offer shorter delivery times for configurations designated with the Quick Ship Symbol 

 For details see page 9/5 in the appendix.

Only Y01, Y15, Y16, Y17, Y21, Y22, Y25 and D05 can be factory preset

#### ✓ = available

Ordering example							
Item line:	7MF4033-1EA00-1AA7-Z						
B line:	A01 + Y01 + Y21						
C line:	Y01: 10 20 bar (145 290						

C line: Y21: bar (psi)

Measuring accuracies for PROFIBUS PA transmitters with Option Y01 are calculated in the same way as for HART devices.

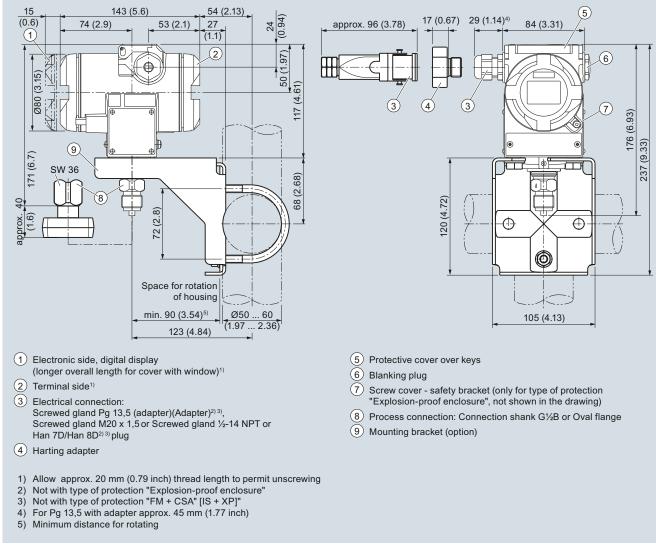
psi)

<sup>2)</sup> Preset values can only be changed over SIMATIC PDM.

Transmitters for general requirements

## SITRANS P DS III for gauge pressure

## Dimensional drawings



SITRANS P DS III pressure transmitters for gauge pressure, dimensions in mm (inch)

Transmitters for general requirements

## SITRANS P DS III for gauge/absolute pressure, with front-flush diaphragm

Technical specifications						
SITRANS P DS III series for gauge and absolu	ite pressure, with front-	ilush diaphragm				
	HART		PROFIBUS PA and FO	JNDATION Fieldbus		
Input of gauge pressure, with front-flush diaphragm						
Measured variable		Gauge press	sure, front-flush			
Spans (infinitely adjustable) or nominal measur- ing range and max. permissible test pressure	Span (min max.)	Max. perm. test pres- sure	Nominal measuring range	Max. perm. test pres- sure		
	0.01 1 bar (0.15 14.5 psi)	6 bar (87 psi)	1 bar (14.5 psi)	6 bar (87 psi)		
	0.04 4 bar (0.58 58 psi)	10 bar (145 psi)	4 bar (58 psi)	10 bar (145 psi)		
	0.16 16 bar (2.32 232 psi)	32 bar (464 psi)	16 bar (232 psi)	32 bar (464 psi)		
	0.6 63 bar (9.14 914 psi)	100 bar (1450 psi)	63 bar (914 psi)	100 bar (1450 psi)		
Lower measuring limit		100 mbar	a (1.45 psia)			
Upper measuring limit	100 % of max. span		100 % of the max. nomin	nal measuring range		
Input of absolute pressure, with front-flush diaphragm						
Measured variable		Absolute pres	ssure, front-flush			
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span (min max.)	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure		
	43 1300 mbar a (0.62 18.85 psia)	10 bar a (145 psia)	1300 mbar a (18.85 psia)	10 bar a (145 psia)		
	0.16 5 bar a (2.32 72.5 psia)	30 bar a (435 psia)	5 bar a (72.5 psia)	30 bar a (435 psia)		
	1 30 bar a (14.5 435 psia)	100 bar a (1450 psia)	30 bar a (435 psia)	100 bar a (1450 psia)		
Lower measuring limit	100.0/ /	0 bar a	a (0 psia)			
Upper measuring limit	100 % of max. span		100 % of the max. nomin	nal measuring range		
Output Output signal	4 20 mA		Digital PROFIBUS PA ar bus signal	nd FOUNDATION Field-		
Lower limit (infinitely adjustable)	3.55 mA, factory preset	to 3.84 mA	-			
Upper limit (infinitely adjustable)	23 mA, factory preset to set to 22.0 mA	20.5 mA or optionally	-			
Load						
Without HART	$R_{\rm B} \leq (U_{\rm H} - 10.5 \text{ V})/0.023$ $U_{\rm H}$ : Power supply in V	3 A in Ω,	-			
• With HART	$R_{\rm B}$ = 230 500 $\Omega$ (SIM $R_{\rm B}$ = 230 1100 $\Omega$ (HA		-			
Physical bus	-		IEC 61158-2			
Protection against polarity reversal	Protected against short		ersal. Each connection aga / voltage.	ainst the other with max.		
Electrical damping (step width 0.1 s)		Set to 2 s	(0 100 s)			
Measuring accuracy			EC 60770-1			
Reference conditions (All error data refer always refer to the set span)	Increasing chara		value 0 bar, stainless steel temperature 25 °C (77 °F)			
	Span ratio r = ma	ax. span/set span		ange ratio r = nominal et measuring range		
Error in measurement at limit setting incl. hysteresis and reproducibility						
	Gauge pressure, front-flush	Absolute pressure, front-flush	Gauge pressure, front-flush	Absolute pressure, front-flush		
Linear characteristic						
- r ≤ 10	$\leq (0.0029 \cdot r + 0.071) \%$		$\leq (0.0029 \cdot r + 0.071) \%$			
- 10 < r ≤ 30	$\leq$ (0.0045 · r + 0.071) %	≤ 0.4 %	$\leq$ (0.0045 · r + 0.071) %	≤ 0.4 %		
- 30 < r ≤ 100	$\leq$ (0.005 · r + 0.05) %	-	$\leq (0.005 \cdot r + 0.05) \%$	-		
Long-term stability (temperature change $\pm$ 30 °C ( $\pm$ 54 °F))	$\leq$ (0.25 · r) % per 5 years		$\leq$ (0.25 · r) % per 5 years			

years

Long-term stability (temperature change  $\pm$  30 °C (± 54 °F))

years

## Transmitters for general requirements

SITRANS P DS III for gauge/absolute pressure, with front-flush diaphragm

SITRANS P DS III series for gauge and absolu	te pressure, with front-f	ilush diaphragm		
	HART PROFIBUS PA and FOUNDATION Field		UNDATION Fieldbus	
	Gauge pressure, front-flush	Absolute pressure, front-flush	Gauge pressure, front-flush	Absolute pressure, front-flush
Influence of ambient temperature				
• at -10 +60 °C (14 140 °F)	$\leq (0.1 \cdot r + 0.2) \%^{1)}$	≤ (0.2 · r + 0.3) %	$\leq (0.1 \cdot r + 0.2) \%^{1)}$	$\leq$ (0.2 · r + 0.3) %
• at -4010 °C and 60 85 °C (-40 +14 °F and 140 185 °F)	≤ (0.1 · r + 0.15) %/10 K	≤ (0.2 · r + 0.3) %/10 K	≤ (0.1 · r + 0.15) %/10 K	≤ (0.2 · r + 0.3) %/10 I
nfluence of mounting position	0.1 mbar (0.04 inH <sub>2</sub> O) per 10° inclination			
Measured Value Resolution	- 3 · 10 <sup>-5</sup> of nominal measuring range			
nfluence of the medium temperature				
Temperature difference between medium temperature and ambient temperature	3 mbar/10 K (0.04 psi/10 K)			
Rated conditions				
nstallation conditions				
Ambient temperature	Observe the temperature class in areas subject to explosion hazard.			
Measuring cell with silicone oil	-40 +85 °C (-40 +185 °F)			
<ul> <li>Measuring cell with Neobee oil (with front-flush diaphragm)</li> </ul>	-10 +85 °C (14 +185 °F)			
Measuring cell with inert liquid (not with front- flush diaphragm)	-20 +85 °C (-4 +185 °F)			
• Transmitter (with 4-wire connection, observe temperature values of supplementary 4-wire electronics)		-40 +85 °C	(-40 +185 °F)	
Display readable		-30 +85 °C	(-22 +185 °F)	
Storage temperature	-50 +85 °C (-58 +185 °F) (in the case of Neobee: -20 +85 °C (-4 +185/°F)) (for high temperature oil: -10 + 85 °C (14 185 °F))			
Climatic class				
- Condensation	Co		idity 0 100 % suitable for use in the tro	pics
Degree of protection (to IEC 60529)	IP66 (optional IP66/IP68), NEMA 4X			
Electromagnetic Compatibility				
- Emitted interference and interference immunity	Acc. to IEC 61326 and NAMUR NE 21			
Medium conditions	The max. medium temperature of the front-flush process connections is to be taken into account in accordance with the relevant connection standards (e. g. DIN 32676, DIN 11851 etc.).			
Femperature of medium				
Measuring cell with silicone oil		-40 +100 °C	(-40 +212 °F)	
Measuring cell with silicone oil (with front-flush diaphragm)	-40 +150 °C (-40 +302 °F)			
Measuring cell with Neobee oil (with front-flush diaphragm)	-10 +150 °C (14 302 °F)			
<ul> <li>Measuring cell with silicone oil, with tempera- ture decoupler (only for gauge pressure ver- sion with front-flush diaphragm)</li> </ul>	-40 +200 °C (-40 +392 °F)			
Measuring cell with Neobee oil, with tempera- ture decoupler (only for gauge pressure version with flush-mounted diaphragm)		-10 +200 °	C (14 392 °F)	
<ul> <li>Measuring cell with inert filling liquid</li> </ul>	-20 +100 °C (-4 +212 °F)			
<ul> <li>Measuring cell with high-temperature oil (only for gauge pressure version with front-flush dia- phragm)</li> </ul>	-10 +250 °C (14 482 °F)			
Design				
Veight (without options)		≈ 1.5 kg	ı (≈ 3.3 lb)	
Enclosure material	Low-copper die-cast aluminum, GD-AlSi12 or stainless steel precision casting, mat. no. 1.4408			
Vetted parts materials	Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819			
leasuring cell filling	Silicone oil or inert filling liquid			
Process connection		<ul> <li>Flanges as p</li> </ul>	per EN and ASME	
			armaceutical flanges	
Surface quality touched-by-media	R <sub>a</sub> -va (Process connections a	lues ≤ 0.8 µm (32 µ-inch acc. to 3A; $R_a$ -values ≤ 0	)/welds R <sub>a)</sub> ≤ 1.6 µm (64 ∣ ).8 µm (32 µ-inch)/welds I	µ-inch) R <sub>a</sub> ) ≤ 0.8 µm (32 µ-inch

Transmitters for general requirements

## SITRANS P DS III for gauge/absolute pressure, with front-flush diaphragm

SITRANS P DS III series for gauge and absolute pressure, with front-flush diaphragm						
	HART	PROFIBUS PA and FOUNDATION Fieldbus				
Power supply $U_{H}$		Supplied through bus				
Terminal voltage on transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically-safe mode	-				
Separate 24 V power supply necessary Bus voltage		No				
• Not Ex	-	9 32 V				
With intrinsically-safe operation		9 24 V				
Current consumption						
Basic current (max.)	-	12.5 mA				
<ul> <li>Start-up current ≤ basic current</li> </ul>	-	Yes				
<ul> <li>Max. current in event of fault</li> </ul>	-	15.5 mA				
Fault disconnection electronics (FDE) available	-	Yes				
Certificates and approvals						
Classification according to PED 97/23/EC	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)					
Explosion protection						
<ul> <li>Intrinsic safety "i"</li> </ul>	PTB 13 ATEX 2007 X					
- Marking	Ex II 1/2 G Ex ia/ib IIC T4/T5/T6 Ga/Gb					
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperature class T4; -40 +70 °C (-40 +158 °F) temperature class T5; -40 +60 °C (-40 +140 °F) temperature class T6					
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}, I_i = 100 \text{ mA},$ $P_i = 750 \text{ mW}; R_i = 300 \Omega$	FISCO supply unit: $U_0 = 17.5 \text{ V}$ , $I_0 = 380 \text{ mA}$ , $P_0 = 5.32 \text{ W}$ Linear barrier: $U_0 = 24 \text{ V}$ , $I_0 = 250 \text{ mA}$ , $P_0 = 1.2 \text{ W}$				
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4  {\rm mH},  C_{\rm i} = 6  {\rm nF}$	$L_{\rm i} = 7 \mu\text{H},  C_{\rm i} = 1.1 \text{nF}$				
• Explosion-proof "d"	PTB 99 ATEX 1160					
- Marking	Ex II 1/2 G Ex d IIC T4/T6 Gb					
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperature class T4; -40 +60 °C (-40 +140 °F) temperature class T6					
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC	To circuits with values: $U_{\rm H}$ = 9 32 V DC				
Dust explosion protection for zone 20	PTB 01 ATEX 2055					
- Marking	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C					
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F)					
- Max. surface temperature	120 °C (248 °F)					
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}, I_i = 100 \text{ mA},$	FISCO supply unit: $U_0 = 17.5 \text{ V}, I_0 = 380 \text{ mA}, P_0 = 5.32 \text{ W}$ Linear barrier:				
	$P_{\rm i}=750$ mW, $R_{\rm i}=300~\Omega$	$U_0 = 24 \text{ V}, I_0 = 250 \text{ mA}, P_0 = 1 \text{ W}$				
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{\rm i} = 7 \ \mu {\rm H}, \ C_{\rm i} = 1.1 \ {\rm nF}$				
<ul> <li>Dust explosion protection for zone 21/22</li> </ul>	PTB 01 ATEX 2055					
- Marking	Ex II 2 D IP65 T 120 °C					
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC; $P_{\rm max}$ = 1.2 W	To circuits with values: $U_{\rm H}$ = 9 32 V DC; $P_{\rm max}$ = 1 W				
<ul> <li>Type of protection "n" (zone 2)</li> </ul>	PTB 13 ATEX 2007 X					
- Marking	Ex II 2/3 G Ex nA II T4/T5/T6 Gc Ex II 2/3 G Ex ic IIC T4/T5/T6 Gc					
- Connection (Ex nA)	$U_{\rm m}$ = 45 V	U <sub>m</sub> = 32 V				
- Connections (Ex ic)	To circuits with values: $U_{\rm i}$ = 45 V	FISCO supply unit ic: $U_0 = 17.5 \text{ V}, I_0 = 570 \text{ mA}$ Linear barrier: $U_0 = 32 \text{ V}, I_0 = 132 \text{ mA}, P_0 = 1 \text{ W}$				
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4  {\rm mH},  C_{\rm i} = 6  {\rm nF}$	$L_{\rm i} = 7 \mu\text{H}, C_{\rm i} = 1.1 \text{nF}$				

Transmitters for general requirements

SITRANS P DS III for gauge/absolute pressure, with front-flush diaphragm

	HART	PROFIBUS PA and FOUNDATION Fieldbus
Certificates and approvals (continued)		
<ul> <li>Explosion protection acc. to FM</li> </ul>	(	Certificate of Compliance 3008490
- Identification (XP/DIP) or (IS); (NI)	CL I, DIV 1, GP ABCD T4T CL I, DIV 2,	6; CL II, DIV 1, GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4T6; GP ABCD T4T6; CL II, DIV 2, GP FG; CL III
<ul> <li>Explosion protection to CSA</li> </ul>	(	Certificate of Compliance 1153651
- Identification (XP/DIP) or (IS)		:L II, DIV 1, GP EFG; CL III; Ex ia IIC T4T6; CL I, DIV 2, GP ABCE T4T6; CL II, DIV 2, GP FG; CL III

<sup>1)</sup> Conversion of temperature error per 28 °C. Valid for temperature range -3 ... +53 °C < (0.064 . r + 0.08) % / 28 °C (50 °F). Hygiene version

In the case of SITRANS P DSIII with 7MF413x front-flush diaphragm, selected connections comply with the requirements of EHEDG.

Transmitters for general requirements

#### SITRANS P DS III for gauge/absolute pressure, with front-flush diaphragm

HART communication		FOUNDATION Fieldbus communication	
HART	230 1100 Ω	Function blocks	3 function blocks analog input,
Protocol	HART Version 5.x		1 function block PID
Software for computer	SIMATIC PDM	<ul> <li>Analog input</li> </ul>	
PROFIBUS PA communication		- Adaptation to customer-specif-	Yes, linearly rising or falling
Simultaneous communication with master class 2 (max.)	4	ic process variables	characteristic
The address can be set using	Configuration tool or local	- Electrical damping, adjustable	0 100 s
The address can be set using	operation (standard setting address 126)	- Simulation function	Output/input (can be locked within the device with a bridge)
Cyclic data usage	5 (	- Failure mode	parameterizable (last good value, substitute value, incorrect value)
Output byte	5 (one measured value) or 10 (two measured values)	- Limit monitoring	Yes, one upper and lower warn-
Input byte	0, 1, or 2 (register operating mode and reset function for metering)		ing limit and one alarm limit respectively
Internal preprocessing		<ul> <li>Square-rooted characteristic for flow measurement</li> </ul>	Yes
Device profile	PROFIBUS PA Profile for Pro- cess Control Devices Version	• PID	Standard FOUNDATION Fieldbus function block
	3.0, class B	<ul> <li>Physical block</li> </ul>	1 resource block
<ul><li>Function blocks</li><li>Analog input</li></ul>	2	Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block
- Adaptation to customer-specif-	Yes, linearly rising or falling		LCD
ic process variables - Electrical damping, adjustable	characteristic 0 100 s	<ul> <li>Pressure transducer block</li> <li>Can be calibrated by applying</li> </ul>	Yes
- Simulation function		two pressures	100
- Simulation function - Failure mode	Input /Output	- Monitoring of sensor limits	Yes
- Fallure mode	parameterizable (last good value, substitute value, incorrect value)	<ul> <li>Simulation function: Measured pressure value, sensor temper-</li> </ul>	Constant value or over parame- terizable ramp function
- Limit monitoring	Yes, one upper and lower warn- ing limit and one alarm limit respectively	ature and electronics tempera- ture	
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 respec- tively		
<ul> <li>Physical block</li> </ul>	1		
Transducer blocks	2		
Pressure transducer block			
<ul> <li>Can be calibrated by applying two pressures</li> </ul>	Yes		
- Monitoring of sensor limits	Yes		
<ul> <li>Specification of a container characteristic with</li> </ul>	Max. 30 nodes		
<ul> <li>Square-rooted characteristic for flow measurement</li> </ul>	Yes		
<ul> <li>Gradual volume suppression and implementation point of square-root extraction</li> </ul>	Parameterizable		
<ul> <li>Simulation function for mea- sured pressure value and sen- sor temperature</li> </ul>	Constant value or over parame- terizable ramp function		

Transmitters for general requirements

		Iransmitters for general requirements				
	SITRANS P DS III for gauge/absolute pressure, with front-flush diaphragm					
Selection and Ordering data	Article No.	<ul> <li><sup>1)</sup> Not with temperature decounter P00 and P10 not for process connections R02</li> </ul>				
Pressure transmitter for gauge and absolute pressure, front-flush diaphragm, SITRANS P DS III HART		<ol> <li>Not with temperature decoupler P00 and P10, not for process connection: R04, R10 and R11, and can only be ordered in conjunction with silicone c</li> <li>Only available for flanges with options M., N. and Q</li> <li>Without cable gland, with blanking plug</li> </ol>				
Click on the Article No. for the online configu- ration in the PIA Life Cycle Portal.		<ol> <li><sup>4)</sup> Configurations with HAN and M12 connectors are only available in Ex ic.</li> <li><sup>5)</sup> Only in connection with IP65.</li> </ol>				
Measuring cell filling         Measuring cell cleaning           Silicone oil         normal           Inert liquid         grease-free to cleanliness level 2           FDA compliant fill fluid         parmal	1 3	<ul> <li><sup>6)</sup> Only in connection with Ex approval A, B or E.</li> <li><sup>7)</sup> Only in connection with Ex approval A, B, E or F.</li> <li><sup>8)</sup> M12 delivered without cable socket</li> </ul>				
Neobee oil normal	4					
Measuring span (min max.) $0.01 \dots 1$ bar $(0.15 \dots 14.5 \text{ psi})$ $0.04 \dots 4$ bar $(0.58 \dots 58 \text{ psi})$ $0.16 \dots 16$ bar $(2.32 \dots 232 \text{ psi})$ $0.63 \dots 63$ bar $(9.14 \dots 914 \text{ psi})$ $43 \dots 1300 \text{ mbar a}^{1}$ $(0.62 \dots 18.85 \text{ psia})^{1}$ $0.16 \dots 5$ bar a^{1} $(0.7 \dots 72.5 \text{ psia})^{1}$	B C D E S T					
Wetted parts materials Seal diaphragm Connection shank						
Stainless steel         Stainless steel           Hastelloy <sup>2)</sup> Stainless steel	A					
Process connection						
Flange version with Order code M., N., R. or Q.	7					
<ul> <li>Non-wetted parts materials</li> <li>Housing made of die-cast aluminium</li> <li>Housing stainless steel precision casting</li> <li>Version</li> <li>Standard versions</li> <li>International version, English label inscriptions, documentation in 5 languages on CD (no Order code selectable)</li> </ul>	0 3 1 2					
<ul> <li>Explosion protection</li> <li>None</li> <li>With ATEX, Type of protection: <ul> <li>"Intrinsic safety (Ex ia)"</li> <li>"Explosion-proof (Ex d)"<sup>3)</sup></li> <li>"Ex nA/ic (Zone 2)"<sup>4)</sup></li> </ul> </li> <li>FM + CSA intrinsic safe (is)</li> <li>FM + CSA (is + ep) + Ex ia + Ex d (ATEX)<sup>5)</sup></li> <li>With FM + CSA, Type of protection: <ul> <li>"Intrinsic Safe und Explosion Proof (is + xp)"<sup>3)</sup></li> </ul> </li> </ul>	A B D E F S NC					
<ul> <li>Electrical connection/cable entry</li> <li>Inner thread M20 x 1.5</li> <li>Female thread ½-14 NPT</li> <li>Han 7D plug (plastic housing) incl. mating connector<sup>6)</sup></li> <li>M12 connectors (stainless steel)<sup>7) 8)</sup></li> </ul>	BCCDF					
Display	-					
<ul><li>Without display</li><li>Without visible display (display concealed, setting: mA)</li></ul>	0 1					
• With visible display (setting: mA)	6					
<ul> <li>With customer-specific display</li> </ul>	1					

 With customer-specific display (setting as specified, Order code "Y21" or "Y22" required)

Power supply units see Chap. 7 "Supplementary Components".

Included in delivery of the device: • Brief instructions (Leporello) • CD-ROM with detailed documentation

#### **Pressure Measurement**

Transmitters for general requirements

#### SITRANS P DS III for gauge/absolute pressure, with front-flush diaphragm

Selection and Orderin	g data	Article No.	Selection and Ordering data	Article No.
Pressure transmitter I pressure, front-flush	P for gauge and absolute diaphragm:		Pressure transmitter P for gauge and absolute pressure, front-flush diaphragm:	
SITRANS P DS III with F	PROFIBUS PA (PA) 7	7 M F 4 1 3 4 -	SITRANS P DS III with PROFIBUS PA (PA)	7 M F 4 1 3 4 -
SITRANS P DS III with F	FOUNDATION Fieldbus (FF)	17MF4135-	SITRANS P DS III with FOUNDATION Fieldbus (FF)	7 M F 4 1 3 5 -
	No. for the online configu-			
Measuring cell filling	Measuring cell clean- ing		<b>Display</b> <ul> <li>Without display</li> <li>Without visible display</li> </ul>	0 1
Silicone oil Inert liquid	normal grease-free to cleanliness level 2	1 3	<ul><li>(display concealed, setting: bar)</li><li>With visible display (setting: bar)</li><li>With customer-specific display (setting</li></ul>	6 7
<ul><li>FDA compliant fill fluid</li><li>Neobee oil</li></ul>	normal	4	as specified, Order code "Y21" required)	
Nominal measuring ra	•	-	Included in delivery of the device: • Brief instructions (Leporello) • CD-ROM with detailed documentation	
1 bar 4 bar 16 bar	(14.5 psi) (58 psi) (232 psi) (014 psi)	B C D E	<sup>1)</sup> Not with temperature decoupler P00 and P10, not for R01, R02, R04, R10 and R11, and can only be order	process connections ed in conjunction with
63 bar 1300 mbar a <sup>1)</sup> 5 bar a <sup>1)</sup>	(914 psi) (18.85 psia) <sup>1)</sup> (72.5 psia) <sup>1)</sup>	S T	<ul> <li>silicone oil.</li> <li>Only available for flanges with options M, N and G</li> <li>Without cable gland, with blanking plug</li> </ul>	l
30 bar a <sup>1)</sup>	(435 psia) <sup>1)</sup>	Ů	<ol> <li>Without cable gland, with blanking plug</li> <li>Configurations with HAN and M12 connectors are or</li> </ol>	ılv available in Ex ic.
Wetted parts material Seal diaphragm	s Connection shank		<ol> <li><sup>5)</sup> Only in connection with IP65.</li> <li><sup>6)</sup> Only in connection with Ex approval A, B, E or F.</li> </ol>	,
Stainless steel Hastelloy <sup>2)</sup>	Stainless steel Stainless steel	AB	7) M12 delivered without cable socket	
• Flange version with C Q	order code M, N, R or	7		
Non-wetted parts mat • Housing made of die • Housing stainless ste	-cast aluminium	03		
Version • Standard versions • International version, documentation in 5 la (no Order code select		1 2		
Explosion protection • None • With ATEX, Type of pr - "Intrinsic safety (Ex - "Explosion-proof (E) - "Ex nA/ic (Zone 2)" • FM + CSA intrinsic sa • FM + CSA (is + ep) + • With FM + CSA, Type - "Intrinsic Safe und E (Available soon)	ia)" < d)* <sup>3)</sup> ₄) tfe (is) ∙ Ex ia + Ex d (ATEX) <sup>5)</sup>	A B D E F S NC		
Electrical connection/ • Screwed gland M20 s • Screwed gland ½-14 • M12 connectors (stail	< 1.5 NPT	B C F		

Transmitters for general requirements

SITRANS P DS III for gauge/absolute pressure, with front-flush diaphragm

Selection and Ordering data	Order code				Selection and Ordering data	Order code		
Further designs Add "-Z" to Article No. and specify Order code.		HART	PA	FF	Further designs Add "-Z" to Article No. and specify Order code.		HART	PA
Plug					Explosion-proof "Intrinsic safety" to NEPS	E55 <sup>2)</sup>	1	1
Han 7D (metal)	A30	1			(China)			
Han 8D (instead of Han 7D)	A31	1			(only for transmitter 7MF4B)			
Angled	A32	~			Explosion protection "Explosion-proof" to	E56 <sup>2)</sup>	1	1
• Han 8D (metal)	A33	1			NEPSI (China)			
Cable sockets for M12 connectors	A50	1	✓	1	(only for transmitter 7MF4D)			
(metal (CuZn))					Ex protection "Zone 2" to NEPSI (China)	E57 <sup>2)</sup>	~	~
Rating plate inscription (instead of German	)				(only for transmitter 7MF4E)			
• English	B11	1	1	1	Ex protection "Ex ia", "Ex d" and "Zone 2"	E58 <sup>2)</sup>	1	✓
• French	B12	1	1	1	to NEPSI (China)			
• Spanish	B13	4	√ √	√ √	(only for transmitter 7MF4R)			
• Italian • Cyrillic (russian)	B14 B16	¥.	✓ ✓	¥	"Intrinsic safety" and "Explosion-proof"	E70 <sup>2)</sup>	~	~
					explosion protection acc. to Kosha (Korea) (only for transmitter			
English rating plate	B21	1	~	~	7MF4[B, D]Z + E11)			
Pressure units in inH <sub>2</sub> 0 and/or psi					Two coats of lacquer on casing and cover	G10	1	1
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11	~	~	~	(PU on epoxy)	and		
• •	010	,	,	,	Transient protector 6 kV (lightning protec-	J01	✓	1
Inspection certificate Acc. to EN 10204-3.1	C12	1	•	~	tion)			
					Flanges to EN 1092-1, Form B1			
Factory certificate	C14	1	~	~	• DN 25, PN 40 <sup>3)</sup>	M11	1	1
Acc. to EN 10204-2.2					• DN 25, PN 100 <sup>3)</sup>	M21	✓	√
Functional safety (SIL2) Devices suitable for use according to	C20	~			• DN 40, PN 40	M13	1	~
IEC 61508 and IEC 61511. Includes SIL con-					• DN 40, PN 100	M23	×.	✓.
formity declaration					• DN 50, PN 16	M04	1	1
Functional safety (PROFIsafe)	C21 <sup>1)</sup>		✓		• DN 50, PN 40	M14	√ √	√ √
Certificate and PROFIsafe protocol					<ul> <li>DN 80, PN 16</li> <li>DN 80, PN 40</li> </ul>	M06 M16	<b>√</b>	<b>√</b>
Functional safety (SIL2/3)	C23	~				MITO	•	•
Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL con-					Flanges to ASME B16.5 • Stainless steel flange 1" class 150 <sup>3)</sup>	M40	~	1
formity declaration					Stainless steel flange 11/2" class 150	M40 M41	¥	¥
Device passport Russia	C99	1	~	1	Stainless steel flange 2" class 150	M42	1	1
(For price request please contact the technical					Stainless steel flange 3" class 150	M43	1	1
support					Stainless steel flange 4" class 150	M44	~	1
www.siemens.com/automation/support-request.)					<ul> <li>Stainless steel flange 1" class 300<sup>3)</sup></li> </ul>	M45	✓	✓
Setting of upper limit of output signal to 22.0 mA	D05	~			<ul> <li>Stainless steel flange 1<sup>1</sup>/<sub>2</sub>" class 300</li> </ul>	M46	✓	1
	D12	1	1	~	<ul> <li>Stainless steel flange 2" class 300</li> </ul>	M47	×	✓
Degree of protection IP66/IP68 (only for M20x1.5 and ½-14 NPT)	DIZ	Ť	•	•	Stainless steel flange 3" class 300	M48	×.	√.
	D59	1	1	1	Stainless steel flange 4" class 300	M49	1	1
Capri cable gland 4F CrNi and clamping device (848699 + 810634) included	035	•	•	•	Threaded connector to DIN 3852-2,			
Oxygen application	E10	1	~	1	form A, thread to ISO 228 <sup>4</sup> ) • G <sup>3</sup> /4"-A, front-flush	R01	~	~
(In the case of oxygen measurement and inert	210	Ť	•	·	• G 1"-A, front-flush	R02	1	1
liquid max. 100 bar (1450 psi) at $60^{\circ}$ C (140 °F))					• G 2"-A, front-flush	R04	1	
Export approval Korea	E11	~	~	1	Tank connection <sup>5)</sup>			
CRN approval Canada	E22	1	1	1	Sealing is included in delivery			
(Canadian Registration Number)		,	·		• TG 52/50, PN 40	R10	1	1
Dual seal	E24	1	~	1	• TG 52/150, PN 40	R11	1	✓
Explosion-proof "Intrinsic safety" (Ex ia) to		1		1	Sanitary process connection according			
INMETRO (Brazil)	E23 /	•	•		DIN 11851 (Dairy connection with slotted			
(only for transmitter 7MF4B)					union nut)			
'Flameproof" explosion protection accord	F26 <sup>2)</sup>	1	~	1	• DN 50, PN 25	N04	1	1
ing to INMETRO (Brazil)					• DN 80, PN 25	N06	*	•
only for transmitter 7MF4D)					Tri-Clamp connection according			
Explosion-proof "Intrinsic safety" (Ex ia +	E28 <sup>2)</sup>	~	~		DIN 32676/ISO 2852 • DN 50/2", PN 16	N14	1	1
Ex d) to INMETRO (Brazil)					• DN 50/2 , PN 16 • DN 65/3", PN 10	N14	1	1
(only for transmitter 7MF4P)						1113		
Ex Approval IEC Ex (Ex ia)	E45 <sup>2)</sup>	✓	~	1	Varivent connection Certified to EHEDG			
(only for transmitter 7MF4B)					• Type N = 68 for Varivent housing	N28	1	1
Ex Approval IEC Ex (Ex d)	E46 <sup>2)</sup>	1	1	1	DN 40 125 und 1½" 6", PN 40			
(only for transmitter 7MF4D)								

### **Pressure Measurement**

Transmitters for general requirements

### SITRANS P DS III for gauge/absolute pressure, with front-flush diaphragm

Selection and Ordering data	Order	code							
<i>Further designs</i> Add "-Z" to Article No. and specify Order code.		HART	PA	FF					
<b>Temperature decoupler up to 200 °C<sup>6)</sup></b> for version with front-flush diaphragm	P00	1	✓	1					
Temperature decoupler up to 250 °C Measuring cell filling: High-temperature oil, only in conjunction with measuring cell filling silicone oil	P10	1	~	~					
Sanitary process connection to DRD • DN 50, PN 40	M32	~	~	~					
SMS socket with union nut									
• 2"	M67	1	1	1					
• 2½" • 3"	M68 M69	4	4	4					
-	1009	•	•	¥					
SMS threaded socket • 2"	M73	~	1						
• Z • 2½"	M73	¥.	×	×					
• 3"	M75	1	1	1					
IDF socket with union nut ISO 2853									
• 2"	M82	✓	✓	~					
• 21/2"	M83	✓	✓	1					
• 3"	M84	✓	1	✓					
IDF threaded socket ISO 2853									
• 2"	M92	✓	✓	✓					
• 21/2"	M93	×.	✓	✓					
• 3"	M94	✓	✓	~					
Sanitary process connection to									
NEUMO Bio-Connect screw connection Certified to EHEDG									
• DN 50, PN 16	Q05	1	✓	✓					
• DN 65, PN 16	Q06	✓	✓	✓					
• DN 80, PN 16	Q07	✓	✓	✓					
• DN 100, PN 16	Q08	1	1	1					
• DN 2", PN 16	Q13	√ √	√ √	√ √					
• DN 2½", PN 16 • DN 3", PN 16	Q14 Q15	<b>√</b>	<b>√</b>	¥					
• DN 4", PN 16	Q16	~	1	1					
Sanitary process connection to NEUMO									
Bio-Connect flange connection									
Certified to EHEDG		,	,	,					
• DN 50, PN 16	Q23	√ √	√ √	1					
• DN 65, PN 16 • DN 80, PN 16	Q24 Q25	×	×	×					
• DN 100, PN 16	Q26	1	1	1					
• DN 2", PN 16	Q31	~	1	1					
• DN 21/2", PN 16	Q32	✓	✓	1					
• DN 3", PN 16	Q33	✓	✓	1					
• DN 4", PN 16	Q34	1	~	~					
Sanitary process connection to NEUMO Bio-Connect clamp connection									
Certified to EHEDG • DN 50, PN 16	Q39	~	~	1					
• DN 65, PN 10	Q40	~	¥.	¥.					
• DN 80, PN 10	Q41	1	~	1					
• DN 100, PN 10	Q42	1	1	1					
• DN 21/2", PN 16	Q48	✓	✓	√ √					
• DN 3", PN 10	Q49	✓	1	1					
• DN 4", PN 10	Q50	~	~	1					
Sanitary process connection to									
<b>NEUMO Bio-Connect S flange connection</b> Certified to EHEDG									
• DN 2", PN 16	Q72	~	1	1					

Selection and Ordering data	Order	code		
<i>Further designs</i> Add "-Z" to Article No. and specify Order code.	Gradi	HART	PA	FF
Aseptic threaded socket to DIN 11864-1 Form A approved according to EHEDG • DN 50, PN 25 • DN 65, PN 25	N33 N34	*	* * *	٠ ٠
• DN 80, PN 25 • DN 100, PN 25	N35 N36	* *	√ √	✓ ✓ ✓
Aseptic flange with notch to DIN 11864-2 Form A approved according to EHEDG				
<ul> <li>DN 50, PN 16</li> <li>DN 65, PN 16</li> <li>DN 80, PN 16</li> <li>DN 100, PN 16</li> </ul>	N43 N44 N45 N46	* * * *	* * * * *	* * * * *
Aseptic flange with groove to DIN 11864-2 Form A approved according to EHEDG				
• DN 50, PN 16	N43 + P11		✓	1
• DN 65, PN 16	N44 + P11		<b>√</b>	<b>√</b>
• DN 80, PN 16	N45 + P11		✓ ✓	۰ ۲
• DN 100, PN 16	N46 + P11	¥	¥	v
Aseptic clamp with groove to DIN 11864-3 FormA approved according to EHEDG				
<ul> <li>DN 50, PN 25</li> <li>DN 65, PN 25</li> <li>DN 80, PN 16</li> <li>DN 100, PN 16</li> </ul>	N53 N54 N55 N56	* * * *	* * *	* * *

<sup>1)</sup> Profisafe transmitters can only be operated with the S7 F Systems V6.1 configuration software in combination with S7-400H.

<sup>2)</sup> Option does not include ATEX approval, but instead includes only the country-specific approval.

<sup>3)</sup> Special seal in Viton included in the scope of delivery

<sup>4)</sup> Lower measuring limit -100 mbar (1.45 psi).

 $^{\rm 5)}$  The weldable socket can be ordered under accessories.

 <sup>6)</sup> Certified to 3A and EHEDG. The maximum permissible temperatures of the medium depend on the respective cell fillings (see medium conditions).

Transmitters for general requirements

SITRANS P DS III for gauge/absolute pressure, with front-flush diaphragm

Selection and Ordering data	Order	code		
Additional data		HART	PA	FF
Please add "-Z" to Article No. and specify Order code(s) and plain text.				
<b>Measuring range to be set</b> Specify in plain text (max. 5 characters): Y01: up to mbar, bar, kPa, MPa, psi	Y01	1	√1)	
Stainless steel tag plate and entry in device variable (measuring point descrip- tion) Max. 16 characters, specify in plain text:	Y15	~	~	~
Y15: Measuring point text (entry in device vari- able) Max. 27 characters, specify in plain text: Y16:	¥16	~	~	~
Entry of HART address (TAG)	Y17	~		
Max. 8 characters, specify in plain text: Y17:				
Setting of pressure indicator in pressure units	Y21	~	~	1
Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi, Note: The following pressure units can be selected: bar, mbar, mm $H_2O^*$ ), in $H_2O^*$ ), ft $H_2O^*$ ), mmHG, inHG, psi, Pa, kPa, MPa, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , Torr, ATM or %				
Setting of pressure indication in non-pressure units <sup>2)</sup>	Y22 + Y01	~		
Specify in plain text: Y22: up to I/min, m <sup>3</sup> /h, m, USgpm, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)				
<b>Preset bus address</b> possible between 1 and 126 Specify in plain text: Y25:	Y25		~	1
Damping adjustment in seconds (0 100 s)	Y30	~	1	1

Only Y01, Y15, Y16, Y17, Y21, Y22, Y25 and D05 can be factory preset  $\checkmark$  = available

### ordering example

Item line: 7MF4133-1DB20-1AB7-Z

 B line:
 A22 + Y01 + Y21

 C line:
 Y01: 1 ... 10 bar (14.5 ... 145 psi)

 C line:
 Y21: bar (psi)

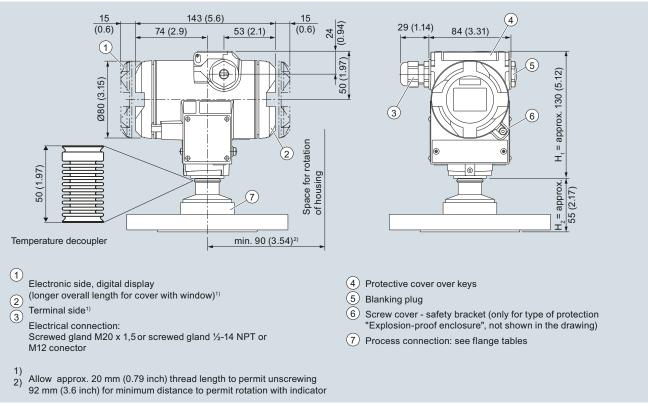
 $^{1)}\,$  Measuring accuracies for PROFIBUS PA transmitters with Option Y01 are calculated in the same way as for HART devices.

 $^{\rm 2)}\,$  Preset values can only be changed over SIMATIC PDM.

Transmitters for general requirements

SITRANS P DS III for gauge/absolute pressure, with front-flush diaphragm

#### Dimensional drawings



SITRANS P pressure transmitters, DS III series for gauge pressure, with front-flush diaphragm, dimensions in mm (inch)

The diagram shows a SITRANS P DS III with an example of a flange. In this drawing the height is subdivided into H<sub>1</sub> and H<sub>2</sub>.

 $H_1$  = 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  $\mathrm{H}_{2}$  is indicated in the dimensions of the flanges.

Transmitters for general requirements

SITRANS P DS III for gauge/absolute pressure, with front-flush diaphragm

#### Flanges as per EN and ASME

#### Flange to EN

EN 1092-1									
	Order code	DN	PN	ØD	H <sub>2</sub>				
-	M11	25	40	115 mm (4.5")	Approx.				
	M21	25	100	140 mm (5.5")	52 mm (2")				
U	M13	40	40	150 mm (5.9")					
	M23	40	100	170 mm (6.7")					
	M04	50	16	165 mm (6.5")					
	M14	50	40	165 mm (6.5")					
	M06	80	16	200 mm (7.9")					
	M16	80	40	200 mm (7.9")					

#### Flanges to ASME

ASME B16.5					
r ⊞	Order code	DN	PN	ØD	H <sub>2</sub>
I"	M40	1"	150	110 mm (4.3")	Approx.
	M41	11⁄2"	150	130 mm (5.1")	52 mm (2")
	M42	2"	150	150 mm (5.9")	
	M43	3"	150	190 mm (7.5")	
	M44	4"	150	230 mm (9.1")	
	M45	1"	300	125 mm (4.9")	
	M46	11⁄2"	300	155 mm (6.1")	
	M47	2"	300	165 mm (6.5")	
	M48	3"	300	210 mm (8.1")	
	M49	4"	300	255 mm (10.0")	

#### NuG and pharmaceutical connections

Connections to DIN

DIN 11851 (milk pipe union with slotted union nut)									
	Order code	DN	PN	ØD	H <sub>2</sub>				
	N04	50	25	92 mm (3.6")	Approx. 52 mm (2")				
	N06	80	25	127 mm (5.0")	52 mm (2")				

#### Tri-Clamp nach DIN 32676

Order code	DN	PN	ØD	H <sub>2</sub>
N14	50	16	64 mm (2.5")	Approx.
N15	65	10	91 mm (3.6")	52 mm (2")

#### Other connections

Varivent connection					
	Order code	DN	PN	ØD	H <sub>2</sub>
	N28	40 125	40	84 mm (3.3")	Approx. 52 mm (2")

#### Sanitary process connection to DRD

Order code	DN	PN	ØD	H <sub>2</sub>
M32	50	40	105 mm (4.1")	Approx. 52 mm (2")

Sanitary process screw connection to NEUMO Bio-Connect									
	Order code	DN	PN	ØD	H <sub>2</sub>				
	Q05	50	16	82 mm (3.2")	Approx.				
	Q06	65	16	105 mm (4.1")	52 mm (2")				
	Q07	80	16	115 mm (4.5")					
إصطفاعهم	Q08	100	16	145 mm (5.7")					
D	Q13	2"	16	82 mm (3.2")					
	Q14	21⁄2"	16	105 mm (4.1")					
	Q15	3"	16	105 mm (4.1")					
	Q16	4"	16	145 mm (5.7")					

# Sanitary process connection to NEUMO Bio-Connect flange connection

	Order code	DN	PN	ØD	H <sub>2</sub>
<b>I</b>	Q23	50	16	110 mm (4.3")	Approx.
	Q24	65	16	140 mm (5.5")	52 mm (2")
l <b>₄</b>	Q25	80	16	150 mm (5.9")	
	Q26	100	16	175 mm (6.9")	
	Q31	2"	16	100 mm (3.9")	
	Q32	21⁄2"	16	110 mm (4.3")	
	Q33	3"	16	140 mm (5.5")	
	Q34	4"	16	175 mm (6.9")	

# Sanitary process connection to NEUMO Bio-Connect clamp connection

	Order code	DN	PN	ØD	H <sub>2</sub>
لسلسلم ا	Q39	50	16	77.4 mm (3.0")	Approx.
	Q40	65	10	90.9 mm (3.6")	52 mm (2")
	Q41	80	10	106 mm (4.2")	
	Q42	100	10	119 mm (4.7")	
D	Q47	2"	16	77.4 mm (3.0")	
	Q48	21⁄2"	16	90.9 mm (3.6")	
	Q49	3"	10	106 mm (4.2")	
	Q50	4"	10	119 mm (4.7")	

# Sanitary process connection to NEUMO Bio-Connect S flange connection

Order code	DN	PN	ØD	H <sub>2</sub>
Q72	2"	16	125 mm (4.9")	Approx. 52 mm (2")

#### Threaded connection G¾", G1" and G2" acc. to DIN 3852

Т

	Order code	DN	PN	ØD	H <sub>2</sub>
	R01	3⁄4"	60	37 mm (1.5")	Approx. 45 mm (1.8")
D	R02	1"	60	48 mm (1.9")	Approx. 47 mm (1.9")
	R04	2"	60	78 mm (3.1")	Approx. 52 mm (2")

ŕ

#### **Pressure Measurement**

Transmitters for general requirements

### SITRANS P DS III for gauge/absolute pressure, with front-flush diaphragm

-											
Tank connection TG 52/50 and TG52/150											
	Order code	DN	PN	ØD	H <sub>2</sub>						
	R10	25	40	63 mm (2.5")	Approx. 63 mm (2.5")						
	R11	25	40	63 mm (2.5")	Approx. 170 mm (6.7")						

#### SMS socket with union nut

	Order code	DN	PN	ØD	H <sub>2</sub>
I I I I I I I I I I I I I I I I I I I	M67	2"	25	84 mm (3.3")	Approx.
	M68	21⁄2"	25	100 mm (3.9")	52 mm (2")
	M69	3"	25	114 mm (4.5")	
<					

#### Order DN PN ØD N33 .....l. 25 78 x 1/6" Approx. 52 mm (2") 50 N34 65 25 95 x 1/6" т N35 80 25 110 x ¼" CV/ N36 100 25 130 x <sup>1</sup>/<sub>4</sub>"

 $H_2$ 

Aseptic threaded socket to DIN 11864-1 Form A

#### Aseptic flange with notch to DIN 11864-2 Form A Order DN PN ØD $H_2$ code Approx. 52 mm (2") ŕ N43 50 16 94 N44 65 113 16 1 N45 80 16 133 **N46** 100 16 159

#### SMS threaded socket

	Order code	DN	PN	ØD	H <sub>2</sub>
I I I I I I I I I I I I I I I I I I I				70 x 1/6 mm	Approx. 52 mm (2")
				85 x 1/6 mm 98 x 1/6 mm	52 11111 (2-)
	11170	0	20	56 X 1/6 mm	

#### IDF socket with union nut

Order code	DN	PN	ØD	H <sub>2</sub>
	21⁄2"	25	77 mm (3") 91 mm (3.6") 106 mm (4.2")	Approx. 52 mm (2")

#### **IDF** threaded socket

	Order code	DN	PN	ØD	H <sub>2</sub>
	M92 M93 M94	21⁄2"	25	64 mm (2.5") 77.5 mm (3.1") 91 mm (3.6")	Approx. 52 mm (2")
← D					

#### Aseptic flange with groove to DIN 11864-2 Form A

Order code	DN	PN	ØD	H <sub>2</sub>
N43 + P11	50	16	94	Approx. 52 mm (2")
N44 + P11	65	16	113	
N45 + P11	80	16	133	
N46 + P11	100	16	159	

#### Aseptic clamp with groove to DIN 11864-3 Form A

Approx.
52 mm (2")

Transmitters for general requirements

### SITRANS P DS III for absolute pressure (from gauge pressure series)

## Technical specifications

SITRANS P DS III series for absolute pressure		sure series)					
	HART		PROFIBUS PA and FOUNDATION Fieldbus				
Input							
Measured variable		Absolut	te pressure				
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span (min max.)	Max. perm. test pres- sure	Nominal measuring range	Max. perm. test pres- sure			
	8.3 250 mbar a (0.12 3.62 psia)	6 bar a (87 psia)	250 mbar a (3.6 psia)	6 bar a (87 psia)			
	43 1300 mbar a (0.62 18.85 psi a)	10 bar a (145 psia)	1300 mbar a (18.9 psi a)	10 bar a (145 psia)			
	160 5000 mbar a (2.32 72.5 psia)	30 bar a (435 psia)	5 bar a (72.5 psia)	30 bar a (435 psia)			
			30 bar a (435 psia)	100 bar a (1450 psia)			
Lower measuring limit							
<ul> <li>Measuring cell with silicone oil filling</li> </ul>		0 mbar	a (0 psia)				
Upper measuring limit		100 % of	max. span				
Output							
Output signal	4 20 mA		Digital PROFIBUS PA and FOUNDATION Fieldbus signal				
<ul> <li>Lower limit (infinitely adjustable)</li> </ul>	3.55 mA, factory prese	t to 3.84 mA	-				
Upper limit (infinitely adjustable)	23 mA, factory preset t set to 22.0 mA	o 20.5 mA or optionally	-				
Load							
Without HART	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.02$ $U_{\rm H}$ : Power supply in V		-				
With HART	$\begin{array}{l} R_{\rm B} = 230 \ \ 500 \ \Omega \ {\rm (SIN} \\ R_{\rm B} = 230 \ \ 1100 \ \Omega \ {\rm (H} \end{array}$	IATIC PDM) or ART Communicator)	-				
Physical bus	-		IEC 61158-2				
Protection against polarity reversal		Protected against short- h connection against the					
Electrical damping (step width 0.1 s)		Set to 2 s	(0 100 s)				
Measuring accuracy		Acc. to II	EC 60770-1				
Reference conditions (All error data refer always refer to the set span)	Increasing char	acteristic, start-of-scale silicone oil filling, room	value 0 bar, stainless ste temperature 25 °C (77 °				
	Span ratio r = m	nax. span/set span	Nominal measuring range ratio r = nominal measuring range/set measuring range				
Error in measurement at limit setting incl. hysteresis and reproducibility							
Linear characteristic							
- r ≤ 10	≤ 0.1 %		≤ 0.1 %				
- 10 < r ≤ 30	≤ 0.2 %		≤ 0.2 %				
Long-term stability (temperature change ± 30 °C (± 54 °F))	≤ (0.1 · r) %/year		≤ (0.1 · r) %/year				
Influence of ambient temperature							
• at -10 +60 °C (14 140 °F)	$\leq (0.1 \cdot r + 0.2) \%^{1)}$		$\leq (0.1 \cdot r + 0.2) \%^{1)}$				
• at -4010 °C and 60 85 °C (-40 +14 °F and 140 185 °F)	$\leq (0.1 \cdot r + 0.15) \%/10$	K	≤ (0.1 · r + 0.15) %/10 K				
Measured Value Resolution	-		3 · 10 <sup>-5</sup> of nominal measuring range				

Transmitters for general requirements

SITRANS P DS III for absolute pressur	e (from gauge pressure series)
SITRANS P DS III series for absolute pressure	e (from the gauge pressure series)
	HART PROFIBUS PA and FOUNDATION Fieldbus
Rated conditions	
Degree of protection (to IEC 60529)	IP66 (optional IP66/IP68), NEMA 4X
Temperature of medium	
Measuring cell with silicone oil filling	-40 +100 °C (-40 +212 °F) -20 +100 °C (-4 +212 °F) with 30 bar a measuring cell
<ul> <li>Measuring cell with inert filling liquid</li> </ul>	-20 +100 °C (-4 +212 °F)
In conjunction with dust explosion protection	-20 +60 °C (-4 +140 °F)
Ambient conditions	
Ambient temperature	
<ul> <li>Transmitter (with 4-wire connection, observe temperature values of supplementary 4-wire electronics)</li> </ul>	-40 +85 °C (-40 +185 °F)
- Display readable	-30 +85 °C (-22 +185 °F)
Storage temperature	-50 +85 °C (-58 +185 °F)
Climatic class	
- Condensation	Relative humidity 0 100 % Condensation permissible, suitable for use in the tropics
Electromagnetic Compatibility	
- Emitted interference and interference immu- nity	Acc. to IEC 61326 and NAMUR NE 21
Design	
Weight (without options)	≈ 1.5 kg (≈ 3.3 lb)
Enclosure material	Low-copper die-cast aluminum, GD-AlSi 12 or stainless steel precision casting, mat. no. 1.4408
Wetted parts materials	
Connection shank	Stainless steel, mat. no. 1.4404/316L or Hastelloy C4, mat. no. 2.4610
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	Silicone oil or inert filling liquid (maximum value with oxygen measurement pressure 100 bar (1450 psi) at 60 °C (140 °F))
Process connection	Connection shank G½B to EN 837-1, female thread ½ -14 NPT or oval flange (PN 160 (MAWP 2320 psia)) to DIN 19213 with mounting thread M10 or $^{7}$ / <sub>16</sub> -20 UNF to IEC 6151
Material of mounting bracket	
• Steel	Sheet-steel, Mat. No. 1.0330, chrome-plated
Stainless steel	Sheet stainless steel, mat. no. 1.4301 (SS 304)
Power supply $U_{ m H}$	Supplied through bus
Terminal voltage on transmitter	10.5 45 V DC - 10.5 30 V DC in intrinsically-safe mode
Separate 24 V power supply necessary	- No
Bus voltage	
• Not Ex	- 9 32 V
With intrinsically-safe operation	- 9 24 V
Current consumption	
Basic current (max.)	- 12.5 mA
<ul> <li>Start-up current ≤ basic current</li> </ul>	- Yes
Max. current in event of fault	- 15.5 mA
Fault disconnection electronics (FDE) available	- Yes

Transmitters for general requirements

SITRANS P DS III for absolute pressure (from gauge pressure series)

SITRANS P DS III series for absolute pressure					
	HART	PROFIBUS PA and FOUNDATION Fieldbus			
Certificates and approvals					
Classification according to PED 97/23/EC		group 1; complies with requirements of article 3, engineering practice)			
Explosion protection					
<ul> <li>Intrinsic safety "i"</li> </ul>	PTB 13 A	TEX 2007 X			
- Marking	Ex II 1/2 G Ex ia/ib	IIC T4/T5/T6 Ga/Gb			
- Permissible ambient temperature	-40 +70 °C (-40 +15	5 °F) temperature class T4; 8 °F) temperature class T5; 40 °F) temperature class T6			
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}, I_i = 100 \text{ mA},$ $P_i = 750 \text{ mW}; R_i = 300 \Omega$	FISCO supply unit: $U_0 = 17.5$ V, $I_0 = 380$ mA, $P_0 = 5.32$ W Linear barrier: $U_0 = 24$ V, $I_0 = 250$ mA, $P_0 = 1.2$ W			
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4  {\rm mH},  C_{\rm i} = 6  {\rm nF}$	$L_{\rm i} = 7 \ \mu {\rm H}, \ C_{\rm i} = 1.1 \ {\rm nF}$			
<ul> <li>Explosion-proof "d"</li> </ul>	PTB 99 /	ATEX 1160			
- Marking	Ex II 1/2 G Ex	d IIC T4/T6 Gb			
- Permissible ambient temperature	-40 +85 °C (-40 +18 -40 +60 °C (-40 +14	15 °F) temperature class T4; 10 °F) temperature class T6			
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC	To circuits with values: $U_{\rm H}$ = 9 32 V DC			
Dust explosion protection for zone 20	PTB 01 /	ATEX 2055			
- Marking	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C				
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F)				
- Max. surface temperature	120 °C (248 °F)				
- Connection	To certified intrinsically-safe circuits with peak values: $U_{\rm i}$ = 30 V, $I_{\rm i}$ = 100 mA, $P_{\rm i}$ = 750 mW, $R_{\rm i}$ = 300 $\Omega$	FISCO supply unit: $U_0 = 17.5 \text{ V}, I_0 = 380 \text{ mA}, P_0 = 5.32 \text{ W}$ Linear barrier: $U_0 = 24 \text{ V}, I_0 = 250 \text{ mA}, P_0 = 1.2 \text{ W}$			
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4  {\rm mH},  C_{\rm i} = 6  {\rm nF}$	$L_{i} = 7 \mu\text{H}, C_{i} = 1.1 \text{nF}$			
• Dust explosion protection for zone 21/22		ATEX 2055			
- Marking	Ex II 2 D IF	P65 T 120 °C			
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC; $P_{\rm max}$ = 1.2 W	To circuits with values: $U_{\rm H}$ = 9 32 V DC; $P_{\rm max}$ = 1 W			
• Type of protection "n" (zone 2)	PTB 13 A	TEX 2007 X			
- Marking		nA II T4/T5/T6 Gc c IIC T4/T5/T6 Gc			
- Connection (Ex nA)	$U_{\rm m} = 45 \text{ V}$	$U_{\rm m} = 32 \text{ V}$			
- Connection (Ex ic)	To circuits with values: $U_{\rm i} = 45 \text{ V}$	FISCO supply unit ic: $U_0 = 17.5$ V, $I_0 = 570$ mA Linear barrier: $U_0 = 32$ V, $I_0 = 132$ mA, $P_0 = 1$ W			
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4  {\rm mH},  C_{\rm i} = 6  {\rm nF}$	$L_{\rm i} = 7 \mu {\rm H},  C_{\rm i} = 1.1 {\rm nF}$			
<ul> <li>Explosion protection acc. to FM</li> </ul>	Certificate of Co	mpliance 3008490			
- Identification (XP/DIP) or (IS); (NI)	CL I, DIV 1, GP ABCD T4T6; CL II, DIV 1, CL I, DIV 2, GP ABCD T4	GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4T6; T6; CL II, DIV 2, GP FG; CL III			
	Certificate of Compliance 1153651				
<ul> <li>Explosion protection to CSA</li> </ul>	Certificate of Co				

<sup>1)</sup> Conversion of temperature error per 28 °C. Valid for temperature range -3 ... +53 °C < (0.08. r + 0.16) % / 28 °C (50 °F).

3 function blocks analog input, 1 function block PID

Yes, linearly rising or falling

Output/input (can be locked within the device with a bridge) parameterizable (last good value, substitute value, incorrect

Yes, one upper and lower warning limit and one alarm limit

1 transducer block Pressure with calibration, 1 transducer block

Constant value or over parameterizable ramp function

Standard FOUNDATION Fieldbus function block 1 resource block

characteristic 0 ... 100 s

value)

LCD

Yes

Yes

respectively Yes

#### **Pressure Measurement**

Transmitters for general requirements

SITRANS P DS III for absolut	e pressure (from gauge pres	ssure series)
HART communication		FOUNDATION Fieldbus
HART	230 1100 Ω	
Protocol	HART Version 5.x	Function blocks
Software for computer	SIMATIC PDM	<ul> <li>Analog input</li> </ul>
PROFIBUS PA communication		- Adaptation to customer-specif-
Simultaneous communication with	4	ic process variables
master class 2 (max.)		- Electrical damping, adjustable
The address can be set using	Configuration tool or local opera- tion (standard setting address 126)	- Simulation function
Cyclic data usage	)	- Failure mode
Output byte	5 (one measured value) or 10 (two measured values)	- Limit monitoring
Input byte	0, 1, or 2 (register operating mode and reset function for metering)	- Square-rooted characteristic
Internal preprocessing	0,	for flow measurement
Device profile	PROFIBUS PA Profile for Pro- cess Control Devices Version 3.0, class B	• PID
Function blocks	2	<ul> <li>Physical block</li> </ul>
	Ζ	Transducer blocks
Analog input		
<ul> <li>Adaptation to customer-specif- ic process variables</li> </ul>	Yes, linearly rising or falling characteristic	Pressure transducer block
- Electrical damping, adjustable	0 to 100 s	- Can be calibrated by applying
- Simulation function	Input /Output	two pressures
- Failure mode	parameterizable (last good value, substitute value, incorrect value)	<ul> <li>Monitoring of sensor limits</li> <li>Simulation function: Measured pressure value, sensor temper- ature and electronics tempera-</li> </ul>
- Limit monitoring	Yes, one upper and lower warn- ing limit and one alarm limit respectively	ture

Can be reset, preset, optional direction of counting, simulation function of register output

parameterizable (summation with last good value, continuous summation, summation with

One upper and lower warning limit and one alarm limit respec-

incorrect value)

tively

1

2

Yes

Yes

Yes

Max. 30 nodes

Parameterizable

Constant value or over parameterizable ramp function

#### 1/122 Siemens FI 01 · 2015

• Register (totalizer)

- Failure mode

- Limit monitoring

Physical block

Transducer blocks

two pressures

Pressure transducer blockCan be calibrated by applying

- Monitoring of sensor limits

- Specification of a container

characteristic withSquare-rooted characteristic

for flow measurementGradual volume suppression and implementation point of

square-root extraction

sor temperature

- Simulation function for measured pressure value and sen-

Transmitters for general requirements

Selection and Ordering	g data		Article No.	Selection and Ordering data Article No.
Pressure transmitters for	or absolute pressure	7	7 M F 4 2 3 3 -	Pressure transmitters for absolute pressure 7 M F 4 2 3 3 -
from gauge pressure se	eries			from gauge pressure series
SITRANS P DS III with H				SITRANS P DS III with HART
	lo. for the online configu			Display
ration in the PIA Life	,			Without display
Measuring cell filling	Measuring cell			<ul> <li>Without visible display (display concealed, setting: mA)</li> </ul>
Silicone oil	<b>cleaning</b> normal		1	With visible display (setting: mA)
Inert liquid <sup>1)</sup>	grease-free to	-	3	with customer-specific display (setting as
mortingula	cleanliness level 2		U U	specified, Order code "Y21" or "Y22" required)
Measuring span (min.	max.)			<ul> <li>We can offer shorter delivery times for configurations designated w</li> </ul>
8.3 250 mbar a	(0.12 3.62 psia)	•	D	the Quick Ship Symbol . For details see page 9/5 in the appendix
43 1300 mbar a	(0.62 18.85 psia)	•	F	Power supply units see Chap. 7 "Supplementary Components".
0.16 5 bar a	(2.32 72.5 psia)	•	G	Included in delivery of the device:
1 30 bar a	(14.5 435 psia)	•	н	Brief instructions (Leporello)
Wetted parts materials	5			<ul> <li>CD-ROM with detailed documentation</li> </ul>
Seal diaphragm	Process connection			<sup>1)</sup> For oxygen application, add Order code E10.
Stainless steel	Stainless steel	-	A	<sup>2)</sup> Version 7MF4233-1DY only up to max. span 200 mbar a (80 inH <sub>2</sub> O a).
Hastelloy	Stainless steel	-	В	<sup>3)</sup> When the manufacture's certificate (calibration certificate) has to be
Hastellov	Hastellov		c	ordered for transmitters with diaphragm seals according to IEC 60770-
Version for diaphragm s	eal <sup>2) 3) 4) 5) 6)</sup>		Y	is recommended only to order this certificate exclusively with the dia- phragm seals. The measuring accuracy of the total combination is certi
Process connection				here. If the acceptance test certificate 3.1. is ordered for the transmitter v
<ul> <li>Connection shank G<sup>1</sup>/<sub>2</sub></li> </ul>	2B to EN 837-1	•	0	mounted diaphragm seals this certificate must also be ordered with the
<ul> <li>Female thread ½-14 N</li> </ul>	IPT	•	1	respective remote seals.
<ul> <li>Stainless steel oval fla</li> </ul>	nge with process con-			4) If the acceptance test certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the
nection (Oval flange h				respective remote seals.
- Mounting thread 7/16			2	<sup>5)</sup> The diaphragm seal is to be specified with a separate order number ar
<ul> <li>Mounting thread M1</li> </ul>			3	must be included wiht the tranmitter order number, for example
- Mounting thread M1			4	7MF423Y and 7MF4900-1B
Male thread M20 x 1.5			5	<sup>6)</sup> The standard measuring cell filling for configurations with remote seals is silicone oil.
Male thread ½ -14 NP			6	<ol> <li><sup>7)</sup> Not in conjunction with Electrical connection "Screwed gland Pg 13.5" a</li> </ol>
Non-wetted parts mate				"Han7D plug".
<ul> <li>Housing made of die-</li> <li>Housing stainless stee</li> </ul>			0	<sup>8)</sup> Without cable gland, with blanking plug.
	er precision casting.		3	<sup>9)</sup> With enclosed cable gland Ex ia and blanking plug.
Version				<sup>10)</sup> Configurations with HAN and M12 connectors are only available in Ex i
Standard versions	-		1	<sup>11)</sup> Only in connection with IP65.
<ul> <li>International version, E tions, documentation i</li> </ul>		٠	2	<sup>12)</sup> Only in connection with Ex apporval A, B or E.
(no Order code select				<sup>13)</sup> Only in connection with Ex apporval A, B, E or F.
Explosion protection				<sup>14)</sup> M12 delivered without cable socket
None		•	A	
<ul> <li>With ATEX, Type of pro</li> </ul>	otection:			
- "Intrinsic safety (Ex i		•	В	
- "Explosion-proof (Ex	d)" <sup>8)</sup>	•	D	
- "Intrinsic safety and		•	P	
$(Ex ia + Ex d)^{(9)}$	))			
- "Ex nA/ic (Zone 2)" <sup>10</sup>			E	
<ul> <li>"Intrinsic safety, expl and dust explosion r</li> </ul>	osion-proot enclosure	٠	R	
Zone 1D/2D) <sup>"9)11)</sup>	protection (Ex ia+ Ex d +			
<ul> <li>FM + CSA intrinsic saf</li> </ul>	fe (is)		F	
• FM + CSA (is + ep) +	$Ex ia + Ex d (ATEX)^{11}$		S	
• With FM + CSA, Type	of protection:			
- "Intrinsic Safe und Ex	kplosion Proof (is + xp)" <sup>8</sup>	)	N	
Electrical connection/o	cable entry			
<ul> <li>Screwed gland Pg 13.</li> </ul>				
	1.5	•		
<ul> <li>Screwed gland M20x1</li> </ul>				
<ul> <li>Screwed gland M20x1</li> <li>Screwed gland ½-14 N</li> </ul>	NPT	٠		
<ul> <li>Screwed gland M20x1</li> </ul>	NPT			

SITRANS P DS III for absolute pressure (from gauge pressure series)

Transmitters for general requirements

SITRANS P DS III for absolute pressure (from gauge pressure series)							
Selection and Ordering	•	Article No.			Selection and Ordering data	Article No.	
Pressure transmitters from gauge pressure s					Pressure transmitters for absolute pressure from gauge pressure series		
SITRANS P DS III with P	PROFIBUS PA (PA) 7	7 M F 4 2 3 4	4 -		SITRANS P DS III with PROFIBUS PA (PA)	7 M F 4 2 3 4 -	
SITRANS P DS III with F	OUNDATION Fieldbus (FF)	7 M F 4 2 3 5	5 -		SITRANS P DS III with FOUNDATION Fieldbus (FF)	7 M F 4 2 3 5 -	
Click on the Article N ration in the PIA Life	No. for the online configu- Cycle Portal.				Display		
Measuring cell filling Silicone oil Inert liquid <sup>1)</sup> Nominal measuring ra	•	1 3			<ul> <li>Without display</li> <li>Without visible display (display concealed, setting: bar)</li> <li>With visible display (setting: bar)</li> <li>with customer-specific display (setting as specified, Order code "Y21" or "Y22" required)</li> </ul>	0 1 6 7	
250 mbar a 1300 mbar a 5 bar a 30 bar a Wetted parts materials Seal diaphragm	(3.62 psia) (18.85 psia) (72.5 psia) (435 psia) <b>s</b> Process connection	D F G H			<ul> <li>Included in delivery of the device:</li> <li>Brief instructions (Leporello)</li> <li>CD-ROM with detailed documentation</li> <li><sup>1)</sup> For oxygen application, add Order code E10.</li> </ul>	har a (2 9 psia)	
Stainless steel Hastelloy Version as diaphragm s	Stainless steel Stainless steel Hastellov	A B C Y		<ul> <li><sup>2)</sup> Version 7MF4233-1DY only up to max. span 200 mbar a (2.9 psia).</li> <li><sup>3)</sup> When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770 is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the <u>total</u> combination is cert here.</li> </ul>			
tion (Oval flange has r	NPT ange with process connec- no female thread) 6 <sup>-20</sup> UNF to IEC 61518 0 to DIN 19213 2 to DIN 19213	0 1 2 3 4 5 6			<ul> <li>mounted diaphragm seals this certificate must also la respective remote seals.</li> <li><sup>5)</sup> The diaphragm seal is to be specified with a separa must be included with the tranmitter order number, for 7MF423,Y, and 7MF4900-1B</li> <li><sup>6)</sup> The standard measuring cell filling for configurations is silicone oil.</li> <li><sup>7)</sup> Without cable gland, with blanking plug.</li> <li><sup>8)</sup> With enclosed cable gland Ex ia and blanking plug.</li> <li><sup>9)</sup> Configurations with HAN and M12 connectors are or</li> </ul>	te order number and or example : with remote seals (Y)	
Non-wetted parts mate • Housing made of die- • Housing stainless stee	cast aluminium	0 3			<ul> <li><sup>10)</sup>Only in connection with IP65.</li> <li><sup>11)</sup>Only in connection with Ex approval A, B, E or F.</li> <li><sup>12)</sup>M12 delivered without cable socket.</li> </ul>		
Version <ul> <li>Standard versions</li> <li>International version, I documentation in 5 la (no Order code select)</li> </ul>	English label inscriptions, nguages on CD table)						
dust explosion prote Zone 1D/2D)* <sup>8)</sup> 10) (r • FM + CSA intrinsic sa • FM + CSA (is + ep) + • With FM + CSA, Type	(a)" (a)"7) flameproof enclosure" (b) osion-proof enclosure and ection (Ex ia + Ex d + not for DS III FF) fe (is) Ex ia + Ex d (ATEX) <sup>10)</sup>		A B D P E R F S NC				
Electrical connection/							

B C F

Screwed gland M20 x 1.5
 Screwed gland ½-14 NPT
 M12 connectors (stainless steel) <sup>11)</sup> <sup>12)</sup>

1

Transmitters for general requirements

SITRANS P DS III for absolute pressure (from gauge pressure series)

Selection and Ordering data		Order	code			
Further designs			HART	PA	FF	_
Add "-Z" to Article No. and specify Order code.						
Pressure transmitter with mounting bracket (1x fixing angle, 2 x nut, 2 x U- washer or 1 x bracket, 2 x nut, 2 x U- washer) made of:						
<ul><li>Steel</li><li>Stainless steel</li></ul>	•	A01 A02	√ √	√ √	√ √	
Plug • Han 7D (metal) • Han 8D (instead of Han 7D) • Angled		A30 A31 A32	* * * *			
Han 8D (metal) Cable sockets for M12 connectors (metal (CuZn))		A33 A50	✓ ✓	~	✓	
Rating plate inscription (instead of Ger-						
man) • English • French • Spanish	* * *		* * *	× × ×	* * *	
<ul><li>Italian</li><li>Cyrillic (russian)</li></ul>	•			√ √	√ √	
<b>English rating plate</b> Pressure units in inH <sub>2</sub> 0 and/or psi		B21	1	~	~	
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2 <sup>1</sup>	•	C11	~	~	1	
Inspection certificate <sup>2)</sup> Acc. to EN 10204-3.1		C12	~	~	~	
Factory certificate Acc. to EN 10204-2.2	٠	C14	~	~	✓	
Functional safety (SIL2) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL confor- mity declaration	•	C20	*			
Functional safety (PROFIsafe) Certificate and PROFIsafe protocol		C21 <sup>3)</sup>		~		
Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL confor- mity declaration	٠	C23	~			
Device passport Russia (For price request please contact the technical support www.siemens.com/automation/support-		C99	✓	~	1	
Setting of upper limit of output signal to		D05	✓			
22.0 mA Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009)		D07	~	~	~	
Degree of protection IP66/IP68 (only for M20 x 1.5 and ½-14 NPT)		D12	~	~	~	
Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flange		D37	~	~	~	
Capri cable gland 4F CrNi and clamping device (848699 + 810634) included		D59	1	1	1	

Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "-Z" to Article No. and specify Order code.				
Use in or on zone 1D/2D	E01	1	✓	✓
(only together with type of protection "Intrinsic safety" (transmitter 7MF4B Ex ia)" and IP65)				
<b>Oxygen application</b> (In the case of oxygen measurement and inert liquid max. 100 bar (1450 psi) at 60°C (140 °F))	E10	*	1	*
Export approval Korea	E11	✓	✓	✓
<b>CRN approval Canada</b> (Canadian Registration Number)	E22	~	~	~
Dual seal	E24	✓	✓	✓
Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil)	E25 <sup>4)</sup>	1	✓	~
(only for transmitter 7MF4B)				
"Flameproof" explosion protection according to INMETRO (Brazil)	E26 <sup>4)</sup>	~	~	~
(only for transmitter 7MF4D)				
Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil) (only for transmitter 7MF4P)	E28 <sup>4)</sup>	1	1	
Ex Approval IEC Ex (Ex ia)	E45 <sup>4)</sup>	1	1	~
(only for transmitter 7MF4B)	2.10			
Ex Approval IEC Ex (Ex d) (only for transmitter 7MF4D)	E46 <sup>4)</sup>	~	~	~
Explosion-proof "Intrinsic safety" to NEPSI (China)	E55 <sup>4)</sup>	~	✓	~
(only for transmitter 7MF4B)				
Explosion protection "Explosion-proof" to NEPSI (China)	E56 <sup>4)</sup>	1	✓	~
(only for transmitter 7MF4D)				
Explosion-proof "Zone 2" to NEPSI (China)	E57 <sup>4)</sup>	1	1	~
(only for transmitter 7MF4E)				
Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China)	E58 <sup>4)</sup>	1	✓	~
(only for transmitter 7MF4R)				
"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea)	E70 <sup>4)</sup>	1	~	~
(only for transmitter 7MF4[B, D]Z + E11)				
Two coats of lacquer on casing and cover (PU on epoxy)	G10	1	1	~
Transient protector 6 kV (lightning pro- tection)	J01	1	1	~
Oval flange NAM (ASTAVA)	J06	1	1	1

 We can offer shorter delivery times for configurations designated with the Quick Ship Symbol 

 For details see page 9/5 in the appendix.

<sup>1)</sup> When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the <u>total</u> combination is certified here.

<sup>2)</sup> If the acceptance test certificate 3.1 is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.

3) Profisafe transmitters can only be operated with the S7 F Systems V6.1 configuration software in combination with S7-400H

<sup>4)</sup> Option does not include ATEX approval, but instead includes only the country-specific approval.

Transmitters for general requirements

#### SITRANS P DS III for absolute pressure (from gauge pressure series)

Selection and Ordering data	Order			
Additional data		HART	PA	FF
Please add "-2" to Article No. and specify Order code(s) and plain text.				
Measuring range to be set	Y01	✓	<b>√</b> 1)	
Specify in plain text (max. 5 characters): Y01: up to mbar, bar, kPa, MPa, psi				
Stainless steel tag plate and entry in device variable (measuring point description)	Y15	~	~	1
Max. 16 characters, specify in plain text: Y15:				
Measuring point text (entry in device	Y16	✓	~	~
Max. 27 characters, specify in plain text: Y16:				
Entry of HART address (TAG)	Y17	1		
Max. 8 characters, specify in plain text: Y17:				
Setting of pressure indication in pres-	Y21	~	~	~
Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi,				
Note: The following pressure units can be selected:				
bar, mbar, mm H <sub>2</sub> O <sup>*)</sup> , inH <sub>2</sub> O <sup>*)</sup> , ftH <sub>2</sub> O <sup>*)</sup> , mmHG, inHG, psi, Pa, kPa, MPa, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , Torr, ATM or % *) ref. temperature 20 °C				
Setting of pressure indication in non-pressure units <sup>2</sup> ) Specify in plain text: Y22: up to l/min, m <sup>3</sup> /h, m, USgpm, (specification of measuring range in pres- sure units "Y01" is essential, unit with max. 5 characters)	Y22 + Y01	•		
Preset bus address	Y25		~	1
possible between 1 and 126 Specify in plain text: Y25:				
Damping adjustment in seconds (0 100 s)	Y30	~	~	~

 We can offer shorter delivery times for configurations designated with the Quick Ship Symbol 

 For details see page 9/5 in the appendix.

Factory mounting of valve manifolds, see accessories.

Only Y01, Y15, Y16, Y17, Y21, Y22, Y25 and D05 can be factory preset  $\checkmark$  = available

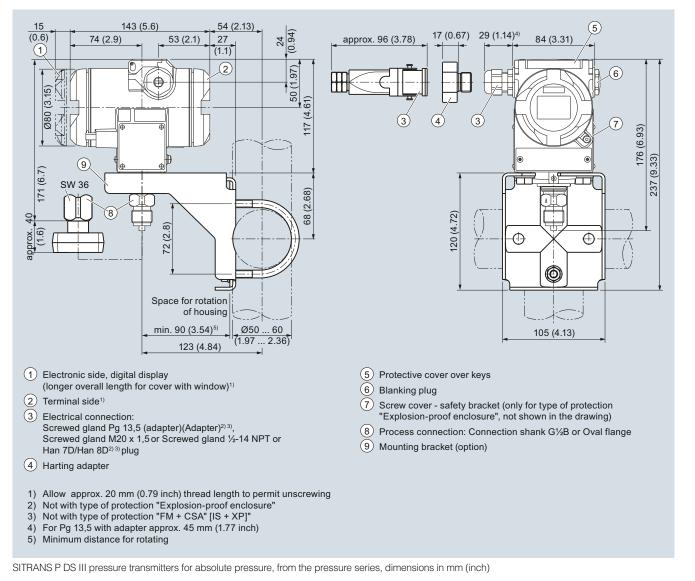
<sup>1)</sup> Measuring accuracies for PROFIBUS PA transmitters with Option Y01 are calculated in the same way as for HART devices.

 $^{\rm 2)}\,$  Preset values can only be changed over SIMATIC PDM.

Transmitters for general requirements

SITRANS P DS III for absolute pressure (from gauge pressure series)

#### Dimensional drawings



Transmitters for general requirements

#### SITRANS P DS III for absolute pressure (from differential pressure series)

## Technical specifications

SITRANS P, DS III for absolute pressure (from	the differential pressur	e series)				
	HART PROFIBUS PA and FOUNDATION Fieldb					
Input						
Measured variable		Absolute	pressure			
Spans (infinitely adjustable) or nominal measuring range and max. permissible operating pressure	Span (min max.) Maximum operating pressure		Nominal measuring range	Maximum operating pressure		
	8.3 250 mbar a (0.12 3.62 psia)	32 bar a (464 psia)	250 mbar a (3.62 psia)	32 bar a (464 psia)		
	43 1300 mbar a (0.62 18.85 psia)	32 bar a (464 psia)	1300 bar a (18.85 psia)	32 bar a (464 psia)		
	160 5000 mbar a (2.32 72.52 psia)	32 bar a (464 psia)	5 bar a (72.5 psia)	32 bar a (464 psia)		
	1 30 bar a (14.5 435 psia)	160 bar a (2320 psia)	30 bar a (435 psia)	160 bar a (2320 psia)		
	5.3 100 bar a (76.9 1450 psia)	160 bar a (2320 psia) (for connection thread M10 and 7/16-20 UNF in the process flanges)	100 bar a (1450 psia)	160 bar a (2320 psia) (for connection thread M10 and 7/16-20 UNF in the process flanges)		
Lower measuring limit						
<ul> <li>Measuring cell with silicone oil filling</li> </ul>		0 mbar a	a (0 psia)			
Upper measuring limit	100 % of max. span					
Output						
Output signal	4 20 mA		Digital PROFIBUS PA and FOUNDATION Fieldbus signal			
<ul> <li>Lower limit (infinitely adjustable)</li> </ul>	3.55 mA, factory preset	to 3.84 mA	-			
Upper limit (infinitely adjustable)	23 mA, factory preset to set to 22.0 mA	20.5 mA or optionally	-			
Load						
Without HART	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.023$ $U_{\rm H}$ : Power supply in V		-			
• With HART	$R_{\rm B} = 230 \dots 500 \ \Omega \ (\text{SIM})$ $R_{\rm B} = 230 \dots 1100 \ \Omega \ (\text{HA})$					
Physical bus	-		IEC 61158-2			
Protection against polarity reversal	Protected against short	t-circuit and polarity rever supply	rsal. Each connection ag voltage.	ainst the other with max.		
Electrical damping (step width 0.1 s)		Set to 2 s	(0 100 s)			
Measuring accuracy		Acc. to IE	C 60770-1			
Reference conditions (All error data refer always refer to the set span)	Increasing chara	acteristic, start-of-scale v silicone oil filling, room t	alue 0 bar, stainless stee emperature 25 °C (77 °F			
	Span ratio r = m	ax. span/set span		ange ratio r = nominal set measuring range		
Error in measurement at limit setting incl. hysteresis and reproducibility						
Linear characteristic						
- r ≤ 10	≤ 0.1 %		≤ 0.1 %			
- 10 < r ≤ 30	≤ 0.2 %		≤ 0.2 %			
Long-term stability (temperature change $\pm$ 30 °C ( $\pm$ 54 °F))	$\leq$ (0.1 $\cdot$ r) %/year		≤ (0.1 · r) %/year			
Influence of ambient temperature						
• at -10 +60 °C (14 140 °F)	$\leq (0.1 \cdot r + 0.2) \%^{1)}$		$\leq (0.1 \cdot r + 0.2) \%^{1)}$			
• at -4010 °C and 60 85 °C (-40 +14 °F and 140 185 °F)	≤ (0.1 · r + 0.15) %/10 k		≤ (0.1 · r + 0.15) %/10 k			
Measured Value Resolution	-		$3 \cdot 10^{-5}$ of nominal measurements	suring range		

Transmitters for general requirements

## SITRANS P DS III for absolute pressure (from differential pressure series)

SITRANS P, DS III for absolute pressure (from	the differential pressure series)	
	HART	PROFIBUS PA and FOUNDATION Fieldbus
Rated conditions		
Degree of protection (to IEC 60529)	IP66 (optional IP6	66/IP68), NEMA 4X
Temperature of medium		
<ul> <li>Measuring cell with silicone oil filling</li> </ul>	-40 +100 °C	(-40 +212 °F)
<ul> <li>Measuring cell with inert filling liquid</li> </ul>	-20 +100 °C	C (-4 +212 °F)
<ul> <li>In conjunction with dust explosion protection</li> </ul>	-20 +60 °C	(-4 +140 °F)
Ambient conditions		
Ambient temperature		
<ul> <li>Transmitter (with 4-wire connection, observe temperature values of supplementary 4-wire electronics)</li> </ul>		(-40 +185 °F)
- Display readable	-30 +85 °C	(-22 +185 °F)
Storage temperature	-50 +85 °C	(-58 +185 °F)
Climatic class		
- Condensation		dity 0 100 % suitable for use in the tropics
<ul> <li>Electromagnetic Compatibility</li> </ul>		
- Emitted interference and interference immu- nity	Acc. to IEC 61326 and NAMUR NE 21	
Design		
Weight (without options)	≈ 4.5 kg (≈ 9.9 (lb)	
Enclosure material	Low-copper die-cast aluminum, GD-AlSi12 or stainless steel precision casting, mat. no. 1.4	
Wetted parts materials		
Seal diaphragm	Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819, Monel, mat. no. 2.4 tantalum or gold	
<ul> <li>Process flanges and sealing screw</li> </ul>	Stainless steel, mat. no. 1.4408, Hastelloy C	24, mat. no. 2.4610 or Monel, mat. no. 2.4360
• O-Ring	FPM (Viton) or optionally:	PTFE, FEP, FEPM and NBR
Measuring cell filling	(maximum value with oxigen measurement	inert filling liquid oressure 100 bar (1450 psi) at 60 °C (140 °F))
Process connection		nting thread M10 to DIN 19213 or <sup>7</sup> / <sub>16</sub> -20 UNF 061518
Material of mounting bracket		
• Steel	Sheet-steel, Mat. No.	1.0330, chrome-plated
Stainless steel	Sheet stainless steel, r	nat. no. 1.4301 (SS 304)
Power supply $\textit{U}_{ert}$		Supplied through bus
Terminal voltage on transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically-safe mode	
Separate 24 V power supply necessary	-	No
Bus voltage		
• Not Ex	-	9 32 V
With intrinsically-safe operation	-	9 24 V
Current consumption		
Basic current (max.)	-	12.5 mA
• Start-up current $\leq$ basic current	-	Yes
Max. current in event of fault	-	15.5 mA
Fault disconnection electronics (FDE) available	-	Yes

Transmitters for general requirements

SITRANS P DS III for absolute pressur	e (from differential pressure series)			
SITRANS P, DS III for absolute pressure (from	the differential pressure series)			
	HART	PROFIBUS PA and FOUNDATION Fieldbus		
Certificates and approvals				
Classification according to PED 97/23/EC	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)			
Explosion protection				
Intrinsic safety "i"	PTB 13 A	TEX 2007 X		
- Marking	Ex II 1/2 G Ex ia/ib	IIC T4/T5/T6 Ga/Gb		
- Permissible ambient temperature	-40 +70 °C (-40 +15	5 °F) temperature class T4; 8 °F) temperature class T5; 40 °F) temperature class T6		
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}, I_i = 100 \text{ mA},$ $P_i = 750 \text{ mW}; R_i = 300 \Omega$	FISCO supply unit: $U_{o} = 17.5$ V, $I_{o} = 380$ mA, $P_{o} = 5.32$ W Linear barrier: $U_{o} = 24$ V, $I_{o} = 250$ mA, $P_{o} = 1.2$ W		
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4  {\rm mH},  C_{\rm i} = 6  {\rm nF}$	$L_{\rm i} = 7 \ \mu {\rm H}, \ C_{\rm i} = 1.1 \ {\rm nF}$		
• Explosion-proof "d"	PTB 99 /	ATEX 1160		
- Marking	Ex II 1/2 G Ex	d IIC T4/T6 Gb		
- Permissible ambient temperature	-40 +85 °C (-40 +18 -40 +60 °C (-40 +14	5 °F) temperature class T4; 10 °F) temperature class T6		
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC To circuits with values: $U_{\rm H}$ = 9 32 V DC			
Dust explosion protection for zone 20	PTB 01 ATEX 2055			
- Marking		265 T 120 ℃ IP65 T 120 ℃		
- Permissible ambient temperature	-40 +85 °C	(-40 +185 °F)		
- Max. surface temperature	120 °C	с (248 °F)		
- Connection	To certified intrinsically-safe circuits with peak values: $U_{\rm i}$ = 30 V, $l_{\rm i}$ = 100 mA, $P_{\rm i}$ = 750 mW, $R_{\rm i}$ = 300 $\Omega$	FISCO supply unit: $U_{o} = 17.5$ V, $I_{o} = 380$ mA, $P_{o} = 5.32$ W Linear barrier: $U_{o} = 24$ V, $I_{o} = 250$ mA, $P_{o} = 1.2$ W		
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4  {\rm mH},  C_{\rm i} = 6  {\rm nF}$	$L_{\rm i} = 7 \ \mu {\rm H}, \ C_{\rm i} = 1.1 \ {\rm nF}$		
Dust explosion protection for zone 21/22	PTB 01 /	ATEX 2055		
- Marking	Ex II 2 D IF	P65 T 120 °C		
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC; $P_{\rm max}$ = 1.2 W	To circuits with values: $U_{\rm H}$ = 9 32 V DC; $P_{\rm max}$ = 1 W		
<ul> <li>Type of protection "n" (zone 2)</li> </ul>	PTB 13 A	TEX 2007 X		
- Marking		nA II T4/T5/T6 Gc c IIC T4/T5/T6 Gc		
- Connection (Ex nA)	$U_{\rm m} = 45 \text{ V}$	$U_{\rm m} = 32 \text{ V}$		
- Connection (Ex ic)	To circuits with values: <i>U</i> <sub>i</sub> = 45 V	FISCO supply unit ic: $U_{\rm o}$ = 17.5 V, $I_{\rm o}$ = 570 mA Linear barrier:		
		$U_{\rm o} = 32$ V, $I_{\rm o} = 132$ mA, $P_{\rm o} = 1$ W		
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH},  C_{\rm i} = 6 {\rm nF}$	$L_{i} = 7 \mu\text{H},  C_{i} = 1.1 \text{nF}$		
• Explosion protection acc. to FM		mpliance 3008490		
- Identification (XP/DIP) or (IS); (NI)	CL I, DIV 2, GP ABCD T4	GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4T6; T6; CL II, DIV 2, GP FG; CL III		
Explosion protection to CSA		mpliance 1153651		
- Identification (XP/DIP) or (IS)		FG; CL III; Ex ia IIC T4T6; CL I, DIV 2, GP ABCD IV 2, GP FG; CL III		

<sup>1)</sup> Conversion of temperature error per 28 °C. Valid for temperature range -3 ... +53 °C < (0.08. r + 0.16) % / 28 °C (50 °F).

Transmitters for general requirements

	SITRANS P D	S III for absolute pressure (from	differential pressure series)
HART communication		FOUNDATION Fieldbus communication	
HART	230 1100 Ω	Function blocks	3 function blocks analog input,
Protocol	HART Version 5.x		1 function block PID
Software for computer	SIMATIC PDM	<ul> <li>Analog input</li> </ul>	
<b>PROFIBUS PA communication</b> Simultaneous communication with	4	<ul> <li>Adaptation to customer-specif- ic process variables</li> </ul>	Yes, linearly rising or falling characteristic
master class 2 (max.)		- Electrical damping, adjustable	0 to 100 s
The address can be set using	Configuration tool or local opera- tion (standard setting address 126)	- Simulation function	Output/input (can be locked within the device with a bridge)
Cyclic data usage		- Failure mode	parameterizable (last good value, substitute value, incorrect
Output byte	5 (one measured value) or 10 (two measured values)		value)
Input byte	0, 1, or 2 (register operating mode and reset function for metering)	- Limit monitoring	Yes, one upper and lower warn- ing limit and one alarm limit respectively
Internal preprocessing	metering)	<ul> <li>Square-rooted characteristic for flow measurement</li> </ul>	Yes
Device profile	PROFIBUS PA Profile for Pro- cess Control Devices Version	• PID	Standard FOUNDATION Field- bus function block
	3.0, class B	Physical block	1 resource block
Function blocks	2	Transducer blocks	1 transducer block Pressure with
<ul> <li>Analog input</li> </ul>			calibration, 1 transducer block LCD
<ul> <li>Adaptation to customer-specif- ic process variables</li> </ul>	Yes, linearly rising or falling characteristic	Pressure transducer block	
- Electrical damping, adjustable	0 100 s	<ul> <li>Can be calibrated by applying two pressures</li> </ul>	Yes
- Simulation function	Input /Output	- Monitoring of sensor limits	Yes
- Failure mode	parameterizable (last good value, substitute value, incorrect value)	<ul> <li>Simulation function: Measured pressure value, sensor temper-</li> </ul>	Constant value or over parame- terizable ramp function
- Limit monitoring	Yes, one upper and lower warn- ing limit and one alarm limit respectively	ature and electronics tempera- ture	
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 respec- tively		
<ul> <li>Physical block</li> </ul>	1		
Transducer blocks	2		
Pressure transducer block			
<ul> <li>Can be calibrated by applying two pressures</li> </ul>	Yes		
- Monitoring of sensor limits	Yes		
<ul> <li>Specification of a container characteristic with</li> </ul>	Max. 30 nodes		
<ul> <li>Square-rooted characteristic for flow measurement</li> </ul>	Yes		
<ul> <li>Gradual volume suppression and implementation point of square-root extraction</li> </ul>	Parameterizable		
- Simulation function for mea- sured pressure value and sen- sor temperature	Constant value or over parame- terizable ramp function		

Transmitters for general requirements

#### SITRANS P DS III for absolute pressure (from differential pressure series)

SITRANS P DS III	for absolute pressure	(from di	fferentia	pressure series)	
Selection and Orderi	ng data	Article N	lo.	Selection and Ordering data	Article No.
		7 M F 4 3	33-	Pressure transmitters for absolute pressure	7 M F 4 3 3 3 -
from differential pres SITRANS P DS III wit				from differential pressure series, SITRANS P DS III with HART	
↗ Click on the Article	No. for the online configu-			Display	
ration in the PIA Life	e Cycle Portal.			Without display	
Measuring cell filling				<ul> <li>Without visible display (display concealed, setting: mA)</li> </ul>	
Silicone oil	<b>ing</b> normal	1		With visible display (setting: mA)	
Inert liquid <sup>1)</sup>	grease-free to	3		<ul> <li>with customer-specific display</li> </ul>	
,	cleanliness level 2			(setting as specified, Order code "Y21" or "Y22" required)	
Measuring span (min	,			Power supply units see Chap. 7 "Supplementary (	Componente"
3.3 250 mbar a	(0.12 3.62 psia)	D			Joinponents .
13 1300 mbar a ).16 5 bar a	(0.62 18.85 psia) (2.32 72.5 psia)	FG		<ul><li>Included in delivery of the device:</li><li>Brief instructions (Leporello)</li></ul>	
I 30 bar a	(14.5 435 psia)	Н		<ul> <li>CD-ROM with detailed documentation</li> </ul>	
5.3 100 bar a	(76.9 1450 psia)	KE		<ul> <li>Sealing plug(s) or sealing screw(s) for the proce</li> </ul>	ess flanges(s)
Netted parts materia	ls			<sup>1)</sup> For oxygen applications, add Order code E10.	
Seal diaphragm	Parts of measuring cell			<sup>2)</sup> Version 7MF4333-1DY only up to max. span 200	mbar a (2.9 psia).
Stainless steel	Stainless steel	A		<sup>3)</sup> When the manufacture's certificate (calibration cer	tificate) has to be
Hastelloy	Stainless steel	B		ordered for transmitters with diaphragm seals according to order this certificate exclu	
lastelloy	Hastelloy	С		phragm seals. The measuring accuracy of the total	
antalum	Tantalum	E		<sup>4)</sup> If the acceptance test certificate 3.1 is ordered for	the tree with the
Nonel	Monel	н		4) If the acceptance test certificate 3.1.is ordered for mounted diaphragm seals this certificate must also	
Gold /ersion for diaphragm	Gold 1 Seal <sup>2) 3) 4) 5) 6)</sup>	L		respective remote seals.	
Process connection				<sup>5)</sup> The diaphragm seal is to be specified with a separ must be included wiht the tranmitter order number.	
	IPT with flange connection			7MF433Y und 7MF4900-1B	
	site process connection			<sup>6)</sup> The standard measuring cell filling for configuration	ns with remote seals
- Mounting thread 7/	16-20 UNF to EN 61518	2		is silicone oil.	
- Mounting thread M		0		<sup>7)</sup> Not for span "5.3 100 bar a (76.9 1450 psia)". valve in the process flange (see dimensional draw	Position of the top v ina).
(only for replaceme Vent on side of proce				<sup>8)</sup> Not in conjunction with Electrical connection "Screw	0,
	/ <sub>16</sub> -20 UNF to EN 61518	6		"Han7D plug".	
- Mounting thread M		4		<sup>9)</sup> Without cable gland, with blanking plug	
(only for replaceme	ent requirement)			<sup>10)</sup> With enclosed cable gland Ex ia and blanking plug	
Non-wetted parts ma				<sup>11)</sup> Configurations with HAN and M12 connectors are <sup>12)</sup> Only in connection with IP65.	only available in Ex i
process flange screws	s Electronics housing			<sup>13)</sup> Only in connection with Ex approval A, B or E.	
Stainless steel	Die-cast aluminum	2		<sup>14)</sup> Only in connection with Ex approval A, B, E or F.	
Stainless steel	Stainless steel precision casting <sup>8)</sup>	3		<sup>15)</sup> M12 delivered without cable socket.	
/ersion		_			
Standard versions			1		
	, English label inscriptions,		2		
documentation in 5 l (no Order code sele					
	,				
Explosion protection	I		Α		
With ATEX, Type of p	protection:				
- "Intrinsic safety (Ex	(ia)"		в		
- "Explosion-proof (E	Ex d)" <sup>9)</sup>		D		
- "Intrinsic safety and	d flameproof enclosure"		Р		
- "Ex nA/ic (Zone 2)"	11)		Е		
- "Intrinsic safety, exp	olosion-proof enclosure and		R		
dust explosion pro	tection (Ex ia+ Ex d +				
Zone 1D/2D)"10/12)			_		
FM + CSA intrinsic s	ate (is) + Ex ia + Ex d (ATEX) <sup>12)</sup>		F		
With FM + CSA, Type			3		
	Explosion Proof (is + xp)" <sup>9)</sup>		NC		
lectrical connection					
Screwed gland Pg 1			A		
Screwed gland M20			B		
Screwed gland 1/2-14			С		
<ul> <li>Han 7D plug (plastic connector<sup>13)</sup></li> </ul>	c housing) incl. mating		D		
<ul> <li>M12 connectors (state)</li> </ul>	ninless steel) <sup>14) 15)</sup>		F		

F

• M12 connectors (stainless steel) <sup>14) 15)</sup>

Transmitters for general requirements

		SITF	ANS P I	DS II	I for absolute pressure (from differential	pressure series)
Selection and Orderin	g data	Article N	lo.		Selection and Ordering data	Article No.
Pressure transmitter f from differential press					Pressure transmitter for absolute pressure from differential pressure series	
SITRANS P DS III with P		7 M F 4 3	34-		SITRANS P DS III with PROFIBUS PA (PA)	7 M F 4 3 3 4 -
	FOUNDATION Fieldbus (FF)				SITRANS P DS III with FOUNDATION Fieldbus (FF)	7 M F 4 3 3 5 -
	No. for the online configu-		-			
ration in the PIA Life	,				Display	
Measuring cell filling	Measuring cell clean- ing				Without display	0
Silicone oil Inert liquid <sup>1)</sup>	normal grease-free to cleanliness level 2	1 3			<ul> <li>Without visible display (display concealed, setting: bar)</li> <li>With visible display (setting: bar)</li> <li>With customer-specific display (setting as</li> </ul>	1 6 7
Nominal measuring ra	•	D			specified, Order code "Y21" required)	
250 mbar a 1300 mbar a 5 bar a 30 bar a 100 bar a	(3.62 psia) (18.85 psia) (72.5 psia) (435 psia) (1450 psia)	F G H KE			Included in delivery of the device: • Brief instructions (Leporello) • CD-ROM with detailed documentation • Sealing plug(s) or sealing screw(s) for the proces <sup>1)</sup> For oxygen application, add Order code E10.	
Wetted parts materials					<sup>2)</sup> Version 7MF4334-1DY only up to max. span 200 m	
Seal diaphragm Stainless steel Hastelloy Hastelloy Tantalum Monel Gold Version as diaphragm s	Parts of measuring cell Stainless steel Stainless steel Hastelloy Tantalum Monel Gold Seal <sup>(2)</sup> <sup>(3)</sup> <sup>(4)</sup> <sup>(5)</sup> <sup>(6)</sup>	A B C H L Y			<ul> <li><sup>3)</sup> When the manufacture's certificate (calibration certificate ordered for transmitters with diaphragm seals accord is recommended only to order this certificate exclusion phragm seals. The measuring accuracy of the total chere.</li> <li><sup>4)</sup> If the acceptance test certificate 3.1. is ordered for the mounted diaphragm seals this certificate must also be respective remote seals.</li> <li><sup>5)</sup> The diaphragm seal is to be specified with a separar</li> </ul>	ding to IEC 60770-2, it vely with the dia- ombination is certified he transmitter with be ordered with the te order number and
Process connection	seal / / / /				must be included wiht the tranmitter order number, for 7MF433Y und 7MF4900-1B	or example
Female thread 1/4-18 NF • Sealing screw opposit	<sub>6</sub> -20 UNF to IEC 61518 10 to DIN 19213	2 0			<ul> <li><sup>6)</sup> The standard measuring cell filling for configurations is silicone oil.</li> <li><sup>7)</sup> Not for nominal measuring range 100 bar a (1450 ps vent valve in the process flange (see dimensional dr <sup>8)</sup> Without cable gland, with blanking plug</li> </ul>	ia). Position of the top
	<sub>6</sub> -20 UNF to IEC 61518	6			<sup>9)</sup> With enclosed cable gland Ex ia and blanking plug <sup>10)</sup> Configurations with HAN and M12 connectors are or <sup>11)</sup> Only in connection with IP65.	nly available in Ex ic.
<ul> <li>Mounting thread M1 (only for replacement</li> </ul>	nt requirement)	4			<ul> <li><sup>12)</sup>Only in connection with the approval A, B, E or F.</li> <li><sup>13)</sup>M12 delivered without cable socket</li> </ul>	
Non-wetted parts mate process flange screws						
Stainless steel Stainless steel	Die-cast aluminum Stainless steel precision casting	2				
Version • Standard versions • International version, documentation in 5 la (no Order code select	English label inscriptions, nguages on CD		1 2			
<ul><li>Explosion protection</li><li>None</li></ul>		-	A			
(Ex ia + Ex d)" <sup>9)</sup> - "Ex nA/ic (Zone 2)" <sup>1(</sup> - "Intrinsic safety, expl	ia)" < d)" <sup>8)</sup> flameproof enclosure"		B D P E R			
<ul> <li>FM + CSA intrinsic sa</li> <li>FM + CSA (is + ep) +</li> <li>With FM + CSA, Type</li> </ul>	lfe (is) Ex ia + Ex d (ATEX) <sup>11)</sup>		F S N C			
Electrical connection/ • Screwed gland M20 x • Screwed gland ½-14 • M12 connectors (stair	< 1.5 NPT		B C F			

Transmitters for general requirements

#### SITRANS

SITRANS P DS III for absolute pressure (from differential pressure series)									
Selection and Ordering data	Order	code			Selection and Ordering data	Order	code		
<i>Further designs</i> Add "-Z" to Article No. and specify Order code.		HART	PA	FF	<i>Further designs</i> Add "-Z" to Article No. and specify Order code.		HART	PA	FF
Pressure transmitter with mounting bracket (1x fixing angle, 2 x nut, 2 x U- washer or 1 x bracket, 2 x nut, 2 x U- washer) made of:					Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety" (transmitter 7MF4B Ex ia)" and IP65)	E01	~	•	~
Steel     Stainless steel O-rings for process flanges	A01 A02	√ √	√ √	4	Oxygen application (In the case of oxygen measurement and inert liquid max. 100 bar (1450 psi) at 60°C (140 °F))	E10	~	1	~
(instead of FPM (Viton))		,	,	,	Export approval Korea	E11	1	~	~
<ul><li>PTFE (Teflon)</li><li>FEP (with silicone core, approved for food)</li></ul>	A20 A21	√ √	√ √	✓ ✓	<b>CRN approval Canada</b> (Canadian Registration Number)	E22	1	~	~
<ul> <li>FFPM (Kalrez, compound 4079), for measured medium temperatures</li> </ul>	A22	~	~	~	Dual seal	E24	~	~	~
-15 100 °C (5 212 °F)) • NBR (Buna N)	A23	~	~	~	Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil)	E25 <sup>4)</sup>	*	~	1
<ul> <li>Plug</li> <li>Han 7D (metal)</li> <li>Han 8D (instead of Han 7D)</li> <li>Angled</li> </ul>	A30 A31 A32	* * *			<ul> <li>(only for transmitter 7MF4B)</li> <li>"Flameproof" explosion protection according to INMETRO (Brazil)</li> <li>(only for transmitter 7MF4D)</li> </ul>	E26 <sup>4)</sup>	~	~	~
Han 8D (metal)     Sealing screw     ¼-18 NPT, with valve in mat. of process flanges	A33 A40	√ √	~	~	Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil) (only for transmitter 7MF4P)	E28 <sup>4)</sup>	~	1	
Cable sockets for M12 connectors (metal (CuZn))	A50	~	~	*	<b>Ex Approval IEC Ex (Ex ia)</b> (only for transmitter 7MF4B)	E45 <sup>4)</sup>	~	1	~
Rating plate inscription (instead of German)					Ex Approval IEC Ex (Ex d) (only for transmitter 7MF4D)	E46 <sup>4)</sup>	*	~	*
• English • French	B11 B12	√ √	√ √	√ √	Explosion-proof "Intrinsic safety" to NEPSI (China)	E55 <sup>4)</sup>	~	✓	~
• Spanish • Italian	B13 B14	√ √	✓ ✓	√ √	(only for transmitter 7MF4B)				
• Cyrillic (russian)	B16	1	1	×.	Explosion protection "Explosion-proof" to NEPSI (China)	E56 <sup>4)</sup>	~	~	~
English rating plate Pressure units in inH <sub>2</sub> 0 and/or psi	B21	~	~	~	(only for transmitter 7MF4D) Explosion-proof "Zone 2" to NEPSI (China)	E57 <sup>4)</sup>	~	✓	~
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2 <sup>1)</sup>	C11	1	1	*	(only for transmitter 7MF4E) Ex protection "Ex ia", "Ex d" and "Zone 2"	E58 <sup>4)</sup>	1	1	4
Inspection certificate <sup>2)</sup> Acc. to EN 10204-3.1	C12	*	~	1	to NEPSI (China) (only for transmitter 7MF4R)	230 /	·	·	·
Factory certificate Acc. to EN 10204-2.2	C14	~	~	1	"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (only for transmitter	E70 <sup>4)</sup>	~	~	1
<b>Functional safety (SIL2)</b> Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL confor-	C20	~			7MF4[B, D]Z + E11) <b>Two coats of lacquer on casing and cover</b>	G10	1	✓	✓
mity declaration Functional safety (PROFIsafe)	C21 <sup>3)</sup>		~		(PU on epoxy)	1101	1		1
Certificate and PROFIsafe protocol					Interchanging of process connection side Vent on side for gas measurements	H01 H02	<b>↓</b>	√ √	✓ ✓
Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL confor- mity declaration	C23	~			Stainless steel process flanges for vertical differential pressure lines		*	1	~
Device passport Russia (For price request please contact the technical support	C99	~	√	~	(not together with K01, K02 and K04) <sup>5)</sup> Transient protector 6 kV (lightning protec- tion)	J01	4	✓	~
www.siemens.com/automation/support-request)					Chambered graphite gasket for process	J02	~	~	1
Setting of upper limit of output signal to 22.0 mA	D05	~			flange Chambered PTFE graphite gasket	J03	~	~	1
Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009)	D07	~	~	~	EPDM O-rings for process flange with approval (WRC/WRAS)	J05	~	~	~
(only together with seal diaphragm made of Hastelloy and stainless steel) Degree of protection IP66/IP68	D12	~	~	~	Vent valve or blanking plug of process flange welded-in (orientation: on right when viewing the display) <sup>6)</sup>	J08	*	~	~
(only for M20 x 1.5 and ½-14 NPT)					Vent valve or blanking plug of process	J09	~	~	~
Supplied with oval flange (1 item), PTFE packing and screws in thread of process flange	D37	v	V	~	flange welded-in (orientation: on left when viewing the display) <sup>6)</sup>				
Capri cable gland 4F CrNi and clamping device (848699 + 810634) included	D59	1	1	*					

1/134

Transmitters for general requirements

#### SITRANS P DS III for absolute pressure (from differential pressure series)

Selection and Ordering data	Order	code		
<i>Further designs</i> Add "- <b>Z</b> " to Article No. and specify Order code.		HART	PA	FF
Process flange				
Hastelloy	K01	✓	✓	✓
• Monel	K02	✓	* *	✓
• Stainless steel with PVDF insert max. PN 10 (MAWP 145 psi), max. temperature of medium 90 °C (194 °F) For ½-14 NPT inner process connection on the side in the middle of the process flange, vent valve not possible	K04	*	•	•

<sup>1)</sup> When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.

- <sup>2)</sup> If the acceptance test certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.
- <sup>3)</sup> Profisafe transmitters can only be operated with the S7 F Systems V6.1 configuration software in combination with S7-400H
- <sup>4)</sup> Option does not include ATEX approval, but instead includes only the country-specific approval.
- <sup>5)</sup> Not suitable for connection of remote seals.

<sup>6)</sup> Blanking plug is standard configuration. Order option A40 if a vent valve is required instead of a blanking plug.

· ``				
Selection and Ordering data	Order	code		
Additional data		HART	PA	FF
Please add "-Z" to Article No. and specify Order code(s) and plain text.				
Measuring range to be set Specify in plain text (max. 5 characters): Y01: up to mbar, bar, kPa, MPa, psi	Y01	1	<b>√</b> 1)	
Stainless steel tag plate and entry in device variable (measuring point descrip- tion) Max. 16 characters, specify in plain text:	Y15	~	~	~
Y15: Measuring point text (entry in device variable)	Y16	~	1	~
Max. 27 characters, specify in plain text: Y16:				
Entry of HART address (TAG) Max. 8 characters, specify in plain text: Y17:	Y17	1		
Setting of pressure indication in pressure units	Y21	✓	~	~
Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi, Note: The following pressure units can be selected: bar, mbar, mm $H_2O^*$ ), in $H_2O^*$ ), ft $H_2O^*$ ), mmHG, inHG, psi, Pa, kPa, MPa, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , Torr, ATM or %				
*) ref. temperature 20 °C				
Setting of pressure indication in non-pressure units <sup>2</sup> ) Specify in plain text: Y22: up to l/min, m <sup>3</sup> /h, m, USgpm, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 char- acters)	Y22 + Y01	v		
Preset bus address possible between 1 and 126 Specify in plain text: Y25:	Y25		~	~
Damping adjustment in seconds (0 100 s)	Y30	~	~	1
Factory mounting of valve manifolds, see acc	essorie	S.		

Only Y01, Y15, Y16, Y17, Y21, Y22, Y25 and D05 can be factory preset

✓ = available

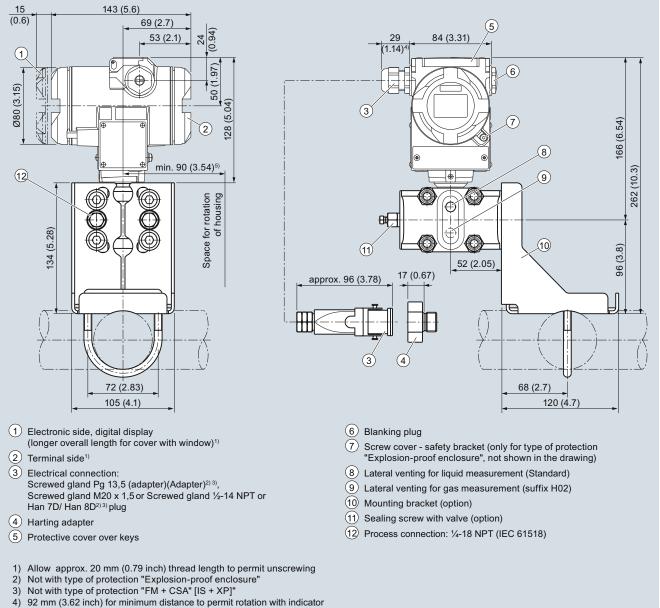
 Measuring accuracies for PROFIBUS PA transmitters with Option Y01 are calculated in the same way as for HART devices.

<sup>2)</sup> Preset values can only be changed over SIMATIC PDM.

Transmitters for general requirements

#### SITRANS P DS III for absolute pressure (from differential pressure series)

#### Dimensional drawings



- 5) For Pg 13,5 with adapter approx. 45 mm (1.77 inch)

SITRANS P DS III pressure transmitters for absolute pressure, from the differential pressure series, dimensions in mm (inch)

Transmitters for general requirements

## SITRANS P DS III for differential pressure and flow

# 1

SITRANS P, DS III for differential pressure	and flow			
	HART		PROFIBUS PA and FOUNDATIC	N Fieldbus
Input	-		1.0	
Measured variable			essure and flow	Maxim
Spans (infinitely adjustable) or nominal measuring range and max. permissible operating pressure	Span (min max.)	Maximum operating pressure	Nominal measuring range	Maximu operatir pressur
	1 20 mbar (0.4 8 inH <sub>2</sub> O)	32 bar (464 psi)	20 mbar (8 inH <sub>2</sub> O)	32 bar (464 ps
	1 60 mbar (0.4 24 inH <sub>2</sub> O)	160 bar	60 mbar (24 inH <sub>2</sub> O)	160 ba
	2.5 250 mbar (1 100 inH <sub>2</sub> O)	(2320 psi)	250 mbar (100 inH <sub>2</sub> O)	(2320 p
	6 600 mbar (2.4 240 inH <sub>2</sub> O)		600 mbar (240 inH <sub>2</sub> O)	
	16 1600 mbar (6.4 642 inH <sub>2</sub> O)		1600 mbar (642 inH <sub>2</sub> O)	
	50 5000 mbar (20 2000 inH <sub>2</sub> O)		5 bar (2000 inH <sub>2</sub> O)	
	0.3 30 bar (4.35 435 psi)		30 bar (435 psi)	
	2.5 250 mbar (1 100 inH <sub>2</sub> O)	420 bar	250 mbar (100 inH <sub>2</sub> O)	420 ba
	6 600 mbar (2.4 240 inH <sub>2</sub> O)	(6091 psi)	600 mbar (240 inH <sub>2</sub> O)	(6091 p
	16 1600 mbar (6.4 642 inH <sub>2</sub> O)		1600 mbar (642 inH <sub>2</sub> O)	
	50 5000 mbar (20 2000 inH <sub>2</sub> O)		5 bar (2000 inH <sub>2</sub> O)	
	0.3 30 bar (4.35 435 psi)		30 bar (435 psi)	
Lower measuring limit		1		
<ul> <li>Measuring cell with silicone oil filling</li> </ul>	-100 % of max. span or 30 mba	r a (0.44 psia	a) (-33 % with 30 bar (435 psi) mea	suring cell)
Upper measuring limit	100 % of max. span (for oxyge	en version an	d inert filling liquid; max. 120 bar (	1740 psi))
Output				
Output signal	4 20 mA		Digital PROFIBUS PA and FOUNDATION Fieldbus signal	
<ul> <li>Lower limit (infinitely adjustable)</li> </ul>	3.55 mA, factory preset to 3.84 mA		-	
Upper limit (infinitely adjustable)	23 mA, factory preset to 20.5 mA or c to 22.0 mA	ptionally set	-	
Load				
Without HART	$R_{\rm B} \leq (U_{\rm H}$ - 10.5 V)/0.023 A in $\Omega$ , $U_{\rm H}$ : Power supply in V		-	
• With HART	$R_{\rm B}$ = 230 500 $\Omega$ (SIMATIC PDM) of $R_{\rm B}$ = 230 1100 $\Omega$ (HART Commun		-	
Physical bus	-		IEC 61158-2	
Protection against polarity reversal	Protected against short-circuit and	polarity reve supply		other with ma
Electrical damping (step width 0.1 s)		Set to 2 s	(0 100 s)	
Measuring accuracy			EC 60770-1	
Reference conditions (All error data refer always refer to the set		art-of-scale v	alue 0 bar, stainless steel seal dia emperature 25 °C (77 °F)	ohragm,
span)	Span ratio r = max. span/set	0	Nominal measuring range rat measuring range/set measuring range range/set measuring range/set measuring range/set measuring range rang	
Error in measurement at limit setting incl. hysteresis and reproducibility			modeling range/out model	
Linear characteristic				
- r ≤ 10	≤ (0.0029 · r + 0.071) %		≤ (0.0029 · r + 0.071) %	
- 10 < r ≤ 30	≤ (0.0045 · r + 0.071) %		≤ (0.0045 · r + 0.071) %	
- 30 < r ≤ 100	≤ (0.005 · r + 0.05) %		≤ (0.005 · r + 0.05) %	
• Square-rooted characteristic (flow > 50 %)				
- $r \le 10$	≤ 0.1 %		≤ 0.1 %	
- 10 < r ≤ 30	≤ 0.2 %		≤ 0.2 %	
• Square-rooted characteristic (flow > 25 50 %)				
	≤ 0.2 %		≤ 0.2 %	
- r ≤ 10	< 0.2%			

Transmitters for general requirements

SITRANS P DS III for differential pressure and flow

SITRANS P, DS III for differential pressure and flow					
	HART	PROFIBUS PA and FOUNDATION Fieldbus			
Long-term stability (temperature change ± 30 °C (± 54 °F))					
<ul> <li>250, 600, 1600 and 5000 mbar (0.29, 0.87, 2.32 and 7.25 psi)-measuring cell</li> </ul>	$\leq$ (0.125 $\cdot$ r) per 5 years	$\leq$ (0.125 $\cdot$ r) per 5 years			
<ul> <li>20 mbar (8 inH<sub>2</sub>O)-measuring cell</li> </ul>	$\leq$ (0.2 · r) per year	$\leq$ (0.2 $\cdot$ r) per year			
<ul> <li>60 mbar (24 inH<sub>2</sub>O)-measuring cell</li> </ul>	≤ (0.25 · r) % per 5 years	$\leq$ (0.25 · r) % per 5 years			
<ul> <li>30 bar (435 psi)-measuring cell</li> </ul>	≤ (0.25 · r) % per 5 years	≤ (0.25 · r) % per 5 years			
Influence of ambient temperature (Twice the value with 20 mbar (8 inH <sub>2</sub> O)- measuring cell					
• at -10 +60 °C (14 140 °F)	$\leq (0.08 \cdot r + 0.1) \%^{1)}$	$\leq (0.08 \cdot r + 0.1) \%^{1}$			
• at -4010 °C and 60 85 °C (-40 +14 °F and 140 185 °F)	≤ (0.1 · r + 0.15) %/10 K	≤ (0.1 · r + 0.15) %/10 K			
Influence of static pressure					
<ul> <li>on the zero point (PKN)</li> </ul>	≤ (0.15 · r) % per 70 bar (1015 psi)	$\leq$ (0.15 $\cdot$ r) % per 70 bar (1015 psi)			
- 20 mbar (0.29 psi)-measuring cell	≤ (0.15 · r) % per 32 bar (464 psi)	$\leq$ (0.15 $\cdot$ r) % per 32 bar (464 psi)			
<ul> <li>on the span (PKS)</li> </ul>	≤ 0.14 % per 70 bar (1015 psi)	≤ 0.14 % per 70 bar (1015 psi)			
- 20 mbar (0.29 psi)-measuring cell	≤ 0.2 % per 32 bar (464 psi)	≤ 0.2 % per 32 bar (464 psi)			
Measured Value Resolution	-	$3 \cdot 10^{-5}$ of nominal measuring range			
Rated conditions					
Degree of protection (to EN 60529)	IP66 (optional IP6	66/IP68), NEMA 4X			
Temperature of medium					
<ul> <li>Measuring cell with silicone oil filling</li> </ul>	-40 +100 °C (-40 +212 °F) -20 +100	°C (-4 +212 °F) with 30 bar measuring cell			
<ul> <li>Measuring cell with inert filling liquid</li> </ul>		C (-4 +212 °F)			
<ul> <li>In conjunction with dust explosion protec- tion</li> </ul>	-20 +60 °C	(-4 +140 °F)			
Ambient conditions					
Ambient temperature					
<ul> <li>Transmitter (with 4-wire connection, observe tempera- ture values of supplementary 4-wire elec- tronics)</li> </ul>		(-40 +185 °F)			
- Display readable	-30 +85 °C	(-22 +185 °F)			
Storage temperature	-50 +85 °C	(-58 +185 °F)			
Climatic class					
- Condensation		dity 0 100 %			
	Condensation permissible,	suitable for use in the tropics			
Electromagnetic Compatibility					
- Emitted interference and interference immunity	Acc. to IEC 61326	and NAMUR NE 21			
Design					
Weight (without options)	Die-cast aluminun Stainless steel precision o	n: ≈ 4.5 kg (≈ 9.9 lb) casting: ≈ 7.1 kg (≈ 15.6 lb)			
Enclosure material	Low-copper die-cast aluminum, GD-AlSi12 or s	stainless steel precision casting, mat. no. 1.4408			
Wetted parts materials					
Seal diaphragm	talum	C276, mat. no. 2.4819, Monel, mat. no. 2.4360, tan- or gold			
Measuring cell filling	(maximum value with oxygen measurement	inert filling liquid pressure 100 bar (1450 psi) at 60 °C (140 °F))			
Process connection		tion with mounting thread M10 to DIN 19213 or to IEC 61518			
Material of mounting bracket					
Steel		1.0330, chrome-plated			
Stainless steel	Sheet stainless steel, r	nat. no. 1.4301 (SS 304)			

Transmitters for general requirements

## SITRANS P DS III for differential pressure and flow

SITRANS P, DS III for differential pressure a	and flow			
	HART	PROFIBUS PA and FOUNDATION Fieldbus		
Power supply $U_{ m H}$		Supplied through bus		
Terminal voltage on transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically-safe mode	-		
Separate 24 V power supply necessary	-	No		
Bus voltage				
• Not Ex	-	9 32 V		
With intrinsically-safe operation	-	9 24 V		
Current consumption				
Basic current (max.)	-	12.5 mA		
<ul> <li>Start-up current ≤ basic current</li> </ul>	-	Yes		
Max. current in event of fault	-	15.5 mA		
Fault disconnection electronics (FDE) available		Yes		
Certificates and approvals				
Classification according to PED 97/23/EC				
PN 32/160 (MAWP 464/2320 psi)	For gases of fluid group 1 and liquids of fluid g paragraph 3 (sound	group 1; complies with requirements of article 3, engineering practice)		
PN 420 (MAWP 6092 psi)	For gases of fluid group 1 and liquids of fluid group 1; complies with basic safety requirements c Article 3, paragraph 1 (appendix 1); assigned to category III, conformity evaluation module H by th TÜV Nord.			
Explosion protection				
Intrinsic safety "i"	PTB 13 ATEX 2007 X			
- Marking	Ex II 1/2 G Ex ia/ib	IIC T4/T5/T6 Ga/Gb		
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperature class T4; -40 +70 °C (-40 +158 °F) temperature class T5; -40 +60 °C (-40 +140 °F) temperature class T6			
- Connection	To certified intrinsically-safe circuits with peak val-	FISCO supply unit:		
	ues: $U_{\rm i}$ = 30 V, $I_{\rm i}$ = 100 mA, $P_{\rm i}$ = 750 mW; $R_{\rm i}$ = 300 $\Omega$	$U_{o} = 17.5 \text{ V}, I_{o} = 380 \text{ mA}, P_{o} = 5.32 \text{ W}$ Linear barrier: $U_{o} = 24 \text{ V}, I_{o} = 250 \text{ mA}, P_{o} = 1.2 \text{ W}$		
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4  {\rm mH},  C_{\rm i} = 6  {\rm nF}$	$L_{\rm i} = 7 \ \mu {\rm H}, \ C_{\rm i} = 1.1 \ {\rm nF}$		
• Explosion-proof "d"	PTB 99 A	TEX 1160		
- Marking	Ex II 1/2 G Ex	d IIC T4/T6 Gb		
- Permissible ambient temperature		5 °F) temperature class T4; 0 °F) temperature class T6		
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC	To circuits with values: $U_{\rm H}$ = 9 32 V DC		
Dust explosion protection for zone 20	PTB 01 A	TEX 2055		
- Marking		65 T 120 °C P65 T 120 °C		
- Permissible ambient temperature	-40 +85 °C	(-40 +185 °F)		
- Max. surface temperature	120 °C (248 °F)			
- Connection	To certified intrinsically-safe circuits with peak values:	FISCO supply unit: $U_0 = 17.5 \text{ V}, I_0 = 380 \text{ mA}, P_0 = 5.32 \text{ W}$		
	$U_{\rm i}$ = 30 V, $I_{\rm i}$ = 100 mA, $P_{\rm i}$ = 750 mW, $R_{\rm i}$ = 300 $\Omega$	Linear barrier: $U_0 = 24 \text{ V}, I_0 = 250 \text{ mA}, P_0 = 1 \text{ W}$		
- Effective internal inductance/capacitance	$L_{\rm i}$ = 0.4 mH, $C_{\rm i}$ = 6 nF	$L_{\rm i} = 7 \ \mu {\rm H}, \ C_{\rm i} = 1.1 \ {\rm nF}$		
Dust explosion protection for zone 21/22	PTB 01 A	TEX 2055		
- Marking	Ex II 2 D IP	65 T 120 °C		
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC; $P_{\rm max}$ = 1.2 W	To circuits with values: $U_{\rm H}$ = 9 32 V DC; $P_{\rm max}$ = 1 W		

Transmitters for general requirements

ind flow				
HART	PROFIBUS PA and FOUNDATION Fieldbus			
PTB 13 ATEX 2007 X				
Ex II 2/3 G Ex nA IIC T4/T5/T6 Gc Ex II 2/3 G Ex ic IIC T4/T5/T6 Gc				
$U_{\rm m} = 45 \text{ V}$	$U_{\rm m}$ = 32 V			
To circuits with values: $U_{\rm i}$ = 45 V	FISCO supply unit ic: $U_0 = 17.5 \text{ V}$ , $I_0 = 570 \text{ mA}$ Linear barrier: $U_0 = 32 \text{ V}$ , $I_0 = 132 \text{ mA}$ , $P_0 = 1 \text{ W}$			
$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{\rm i} = 7 \ \mu {\rm H}, \ C_{\rm i} = 1.1 \ {\rm nF}$			
Certificate of	Compliance 3008490			
	1, GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4T6; 4T6; CL II, DIV 2, GP FG; CL III			
Certificate of Compliance 1153651				
	P EFG; CL III; Ex ia IIC T4T6; CL I, DIV 2, GP ABCD , DIV 2, GP FG; CL III			
	HART PTB 1: Ex II 2/3 G E Ex II 2/3 G E $U_m = 45 V$ To circuits with values: $U_i = 45 V$ $L_i = 0.4 \text{ mH}, C_i = 6 \text{ nF}$ Certificate of CL I, DIV 1, GP ABCD T4T6; CL II, DIV CL I, DIV 2, GP ABCD T4 Certificate of CL I, DIV 1, GP ABCD T4T6; CL II, DIV 1, G			

<sup>1)</sup> Conversion of temperature error per 28 °C. Valid for temperature range -3 ... +53 °C < (0.064 . r + 0.08) % / 28 °C (50 °F).

Transmitters for general requirements

		SITRANS P DS III for d	ifferential pressure and flow				
HART communication		FOUNDATION Fieldbus					
HART	230 1100 Ω	communication					
Protocol	HART Version 5.x	Function blocks	3 function blocks analog input, 1 function block PID				
Software for PC	SIMATIC PDM	Analog input					
PROFIBUS PA communication		- Adaptation to customer-	Yes, linearly rising or falling				
Simultaneous communication with master class 2 (max.)	4	specific process variables - Electrical damping, adjustable	characteristic 0 100 s				
The address can be set using	Configuration tool or local opera- tion (standard setting	- Simulation function	Output/input (can be locked within the device with a bridge)				
Cyclic data usage	address 126)	- Failure mode	parameterizable (last good value, substitute value, incorrect				
Output byte	5 (one measured value) or 10 (two measured values)	- Limit monitoring	value) Yes, one upper and lower warn-				
Input byte	0, 1, or 2 (register operating mode and reset function for metering)	-	ing limit and one alarm limit respectively Yes				
Internal preprocessing		<ul> <li>Square-rooted characteristic for flow measurement</li> </ul>	res				
Device profile	PROFIBUS PA Profile for Pro- cess Control Devices Version	• PID	Standard FOUNDATION Field- bus function block				
	3.0, class B	Physical block	1 resource block				
Function blocks	2	Transducer blocks	1 transducer block Pressure with				
<ul> <li>Analog input</li> </ul>			calibration, 1 transducer block				
<ul> <li>Adaptation to customer-specif- ic process variables</li> </ul>	Yes, linearly rising or falling characteristic	Pressure transducer block					
- Electrical damping, adjustable	0 100 s	<ul> <li>Can be calibrated by applying two pressures</li> </ul>	Yes				
- Simulation function	Input /Output	- Monitoring of sensor limits	Yes				
- Failure mode	parameterizable (last good value, substitute value, incorrect value)	<ul> <li>Simulation function: Measured pressure value, sensor temper-</li> </ul>	Constant value or over parame- terizable ramp function				
- Limit monitoring	Yes, one upper and lower warn- ing limit and one alarm limit respectively	ature and electronics tempera- ture					
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 respec- tively						
<ul> <li>Physical block</li> </ul>	1						
Transducer blocks	2						
<ul> <li>Pressure transducer block</li> </ul>							
<ul> <li>Can be calibrated by applying two pressures</li> </ul>	Yes						
- Monitoring of sensor limits	Yes						
<ul> <li>Specification of a container characteristic with</li> </ul>	Max. 30 nodes						
<ul> <li>Square-rooted characteristic for flow measurement</li> </ul>	Yes						
<ul> <li>Gradual volume suppression and implementation point of square-root extraction</li> </ul>	Parameterizable						
<ul> <li>Simulation function for mea- sured pressure value and sen- sor temperature</li> </ul>	Constant value or over parame- terizable ramp function						

Transmitters for general requirements

### SITRANS P DS III for differential pressure and flow

Selection and Orde	ring data		Article	e No.	_	_	Selection and Ordering data	Article No.
SITRANS P DS III with HART pressure trans-				7 M F 4 4 3 3 -			SITRANS P DS III with HART pressure trans-	7 M F 4 4 3 3 -
mitters for different PN 32/160 (MAWP 4	tial pressure and flow, 164/2320 psi)						mitters for differential pressure and flow, PN 32/160 (MAWP 464/2320 psi)	
	e No. for the online configu	1-					Electrical connection/cable entry	
ration in the PIA L							<ul> <li>Screwed gland Pg 13.5<sup>13)</sup></li> <li>Screwed gland M20 x 1.5</li> </ul>	A B
Measuring cell fillir	ng Measuring cell clean- ing						Screwed gland M20 x 1.5     Screwed gland ½-14 NPT	C
Silicone oil	normal		1				Han 7D plug (plastic housing) incl. mating connector <sup>13)14)</sup>	D
Inert liquid <sup>1)</sup>	grease-free to cleanliness level 2		3				<ul> <li>Connector<sup>13)14)</sup></li> <li>M12 connectors (stainless steel)<sup>15)16)</sup></li> </ul>	F
Measuring span (m							Display	_
PN 32 (MAWP 464 p	,						Without display	0
1 20 mbar <sup>2)</sup>	(0.4015 8.03 inH <sub>2</sub> O)		В				without visible display	• 1
PN 160 (MAWP 2320	) psi)						<ul><li>(display concealed, setting: mA)</li><li>With visible display (setting: mA)</li></ul>	6
1 60 mbar	(0.4015 24.09 inH <sub>2</sub> O)		С				with customer-specific display	7
2.5 250 mbar	(1.004 100.4 inH <sub>2</sub> O)		D				(setting as specified, Order code "Y21" or "Y22"	
6 600 mbar 16 1600 mbar	(2.409 240.9 inH <sub>2</sub> O) (6.424 642.4 inH <sub>2</sub> O)		E				required)	
50 5000 mbar	(20.08 2008 inH <sub>2</sub> O)		G				Available ex stock	
0.3 30 bar	(4.35 435 psi)		Н				<ul> <li>We can offer shorter delivery times for configuent the Quick Ship Symbol . For details see pagent</li> </ul>	
Wetted parts mater							Power supply units see Chap. 7 "Supplementary	••
(stainless steel proc Seal diaphragm	ess flanges) Parts of measuring cell						Included in delivery of the device:	
		-					<ul> <li>Brief instructions (Leporello)</li> </ul>	
Stainless steel Hastelloy	Stainless steel Stainless steel		AB				<ul> <li>CD-ROM with detailed documentation</li> <li>Sealing plug(s) or sealing screw(s) for the proc</li> </ul>	ess flanges(s)
Hastelloy	Hastelloy		C					555 hanges(5)
Tantalum <sup>3)</sup>	Tantalum		Ē				<sup>1)</sup> For oxygen application, add Order code E10.	
Monel <sup>3)</sup>	Monel		Н				<sup>2)</sup> Not suitable for connection of remote seal. Positic the process flange (see dimensional drawing).	n of the top vent valve in
Gold <sup>3)</sup>	Gold		L				<sup>3)</sup> Not in conjunction with max. span 20 and 60 mba	(8.02 upd 24.00 ipH (0))
Version for diaphrag	m seal <sup>4) 5) 6) 7)</sup>		Y				<ul> <li><sup>4)</sup> When the manufacture's certificate (calibration ce</li> </ul>	
Process connection							ordered for transmitters with diaphragm seals acc	ording to IEC 60770-2, it
	NPT with flange connection	٦					is recommended only to order this certificate excl phragm seals. The measuring accuracy of the tota	
<ul> <li>Sealing screw opp</li> </ul>	osite process connection						here.	
- Mounting thread	<sup>7</sup> / <sub>16</sub> -20 UNF to IEC 61518		2				<sup>5)</sup> If the acceptance test certificate 3.1.is ordered fo	the transmitter with
	ment requirement)	-	,	,			mounted diaphragm seals this certificate must als respective remote seals.	o be ordered with the
Vent on side of pro	cess flange 2)						<ul> <li><sup>6)</sup> The diaphragm seal is to be specified with a separation</li> </ul>	rate order number and
	7/16-20 UNF to IEC 61518		6	6			must be included wiht the tranmitter order numbe	
- Mounting thread			4	1			7MF443Y und 7MF4900-1B	
	nent requirement)						<sup>7)</sup> The standard measuring cell filling for configuration is silicone oil.	ins with remote seals (Y)
Non-wetted parts n process flange screw	ws Electronics housing						<li><sup>8)</sup> Not in conjunction with Electrical connection "Screen "Han7D plug".</li>	wed gland Pg 13.5" and
Stainless steel	Die-cast aluminum	►●		2			<ol> <li><sup>9)</sup> Without cable gland, with blanking plug</li> </ol>	
Stainless steel	Stainless steel precisior	וו		3			<sup>10)</sup> With enclosed cable gland Ex ia and blanking plu	g
	casting <sup>8)</sup>						<sup>11)</sup> Configurations with HAN and M12 connectors are	
Version							<sup>12)</sup> Only in connection with IP65.	
Standard versions	on, English label inscrip-			1			<sup>13)</sup> Only in connection with Ex approval A, B or E.	
	on in 5 languages on CD			4			<sup>14)</sup> Permissible only for crimp-contact of conductor c	ross-section 1 mm <sup>2</sup>
(no Order code se							<sup>15)</sup> Only in connection with Ex approval A, B, E or F.	
Explosion protection	on						<sup>16)</sup> M12 delivered without cable socket.	
• None		•			Α			
With ATEX, Type of	•							
- "Intrinsic safety (I					В			
- "Explosion-proof					D P			
(Ex ia + Ex d)" <sup>10)</sup>	nd flameproof enclosure"	-			۲			
- "Ex nA/ic (Zone 2	2)"11)	•			Е			
- "Intrinsic safety, e	explosion-proof enclosure				R			
and dust explosion	on protection (Ex ia+ Ex d -	-						
<ul> <li>FM + CSA intrinsic</li> </ul>					F			
	) + Ex ia + Ex d (ATEX) <sup>12)</sup>				F S			
• With FM + CSA, Ty					Ŭ			
	d Explosion Proof (is + xp)" <sup>9</sup>	) 🍙			NC			

Transmitters for general requirements

SITRANS P DS III for differential pressure and flow

Selection and Ordering	g data	Arti	cle No	D.	-1	Selection	and Ordering dat	а	Article No.
Pressure transmitters and flow PN 32/160 (M	for differential pressure						transmitters for d PN 32/160 (MAWP	ifferential pressure	
SITRANS P DS III with PI	1 )	7 M	F443	34 -			P DS III with PROFI	1 /	7 M F 4 4 3 4 -
	OUNDATION Fieldbus (FF)							DATION Fieldbus (FF)	7 M F 4 4 3 5 -
	o. for the online configu-	/ m		-		onnanon			-
ration in the PIA Life (						Electrical	connection/cable	entrv	
Measuring cell filling	Measuring cell					<ul> <li>Screwed</li> </ul>	gland M20 x 1.5		В
Silicone oil	<b>cleaning</b> normal	1					gland ½-14 NPT nectors (stainless	(12) (12) (13)	C
Inert liquid <sup>1)</sup>	grease-free to	3					nectors (stainless	steer)	. <b>-</b>
	cleanliness level 2					<ul><li>Display</li><li>Without c</li></ul>	display		0
Nominal measuring rat PN 32 (MAWP 464 psi)	nge					<ul> <li>Without v</li> </ul>	visible display		1
20 mbar <sup>2)</sup>	(8.03 inH <sub>2</sub> O)	в					concealed, setting ole display (setting		6
PN 160 (MAWP 2320 ps	i)						tomer-specific dis		7
60 mbar	(24.09 inH <sub>2</sub> O)	С				(setting a	as specified, Order	code "Y21" required)	
250 mbar	(100.4 inH <sub>2</sub> O) (240.9 inH <sub>2</sub> O)	D				Included in	n delivery of the de ructions (Leporello	evice:	
600 mbar 1600 mbar	(240.9 InH <sub>2</sub> O) (642.4 inH <sub>2</sub> O)	E				<ul> <li>CD-ROM</li> </ul>	I with detailed doc	umentation	
5 bar	(2008 inH <sub>2</sub> O)	G				<ul> <li>Sealing p</li> </ul>	olug(s) or sealing s	screw(s) for the proces	s flanges(s)
30 bar	(435 psi)	Н				<sup>1)</sup> For oxyg	en application, add	Order code E10.	
Wetted parts materials						<sup>2)</sup> Not suita	ble for connection	of remote seal. Position c	of the top vent valve ir
(stainless steel process	0 /						ess flange (see dim	ensional drawing). span 20 and 60 mbar (8	
Seal diaphragm	Parts of measuring cell							tificate (calibration certif	
Stainless steel Hastelloy	Stainless steel Stainless steel		A B			ordered	for transmitters with	diaphragm seals accord	ding to IEC 60770-2, i
Hastelloy	Hastelloy		C					er this certificate exclusi of accuracy of the total c	
Tantalum <sup>3)</sup>	Tantalum		E			here.		· · <u> </u>	
Monel <sup>3)</sup>	Monel		н			<sup>5)</sup> If the acc	ceptance test certifi	cate 3.1.is ordered for th	e transmitter with
Gold <sup>3)</sup> Version as diaphragm se	Gold		L Y				ve remote seals.	iis certificate must also t	
Process connection						6) The diap	hragm seal is to be	specified with a separat anmitter order number, fo	te order number and
	-20 UNF to IEC 61518 0 to DIN 19213 t requirement) cess flanges <sup>2)</sup>		2 0			7MF443. <sup>7)</sup> The stan is silicon <sup>8)</sup> Without of <sup>9)</sup> With enc <sup>10)</sup> Configur	Y und 7MF49 dard measuring cel e oil. cable gland, with bl losed cable gland f	900-1B Il filling for configurations anking plug. Ex ia and blanking plug. d M12 connectors are or	with remote seals (Y)
<ul> <li>Mounting thread V<sub>16</sub></li> <li>Mounting thread M10 (only for replacement</li> </ul>	) to DIN 19213		6 4			<sup>12)</sup> Only in c		approval A, B, E or F.	
Non-wetted parts mate process flange screws	rials Electronics housing								
Stainless steel Stainless steel	Die-cast aluminum Stainless steel precision casting		2 3						
<ul> <li>Version</li> <li>Standard versions</li> <li>International version, E documentation in 5 lar (no Order code selectador)</li> </ul>				1 2					
Explosion protection									
None     Mith ATEX Type of pre-	testion			Α					
<ul> <li>With ATEX, Type of pro - "Intrinsic safety (Ex ia)</li> </ul>				в					
- "Explosion-proof (Ex	d)" <sup>8)</sup>			D					
<ul> <li>"Intrinsic safety and f (Ex ia + Ex d)"<sup>9)</sup></li> </ul>	flameproof enclosure"			Р					
- "Ex nA/ic (Zone 2)" 10	<sup>D)</sup> Dision-proof enclosure and Ction (Ex ia + Ex d + Dit for DS III FF)			E R F					
• FM + CSA Intrinsic sai • FM + CSA (is + ep) +				S					
• With FM + CSA, Type	of protection:								
	xplosion Proof (is + xp)" <sup>8)</sup>			NC					

Add "-Z" to Article No. and specify Order

Pressure transmitter with mounting bracket (1x fixing angle, 2 x nut, 2 x U-washer or 1 x bracket, 2 x nut, 2 x U-

• FEP (with silicone core, approved for food) • FFPM (Kalrez, compound 4079), for measured medium temperatures -15 ... 100 °C (5 ... 212 °F)

Selection and Ordering data

O-rings for process flanges (instead of FPM (Viton)) • PTFE (Teflon)

• Han 8D (instead of Han 7D)

1/4-18 NPT, with valve in mat. of process

Cable sockets for M12 connectors

Further designs

washer) made of:

• Stainless steel

• NBR (Buna N)

Han 7D (metal)

plug

 Angled • Han 8D (metal) Sealing screws (2 units)

flanges

• English

• French

Spanish

• Cyrillic (russian)

English rating plate

Pressure units in inH2O and/or psi

Quality inspection certificate (Five-step factory calibration) to IEC 60770-2<sup>1)</sup>

Inspection certificate<sup>2)</sup> to EN 10204-3.1

Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL

Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL

(For price request please contact the tech-nical support www.siemens.com/automation/support-

Factory certificate to EN 10204-2.2

Functional safety (PROFIsafe) Certificate and PROFIsafe protocol

Functional safety (SIL2)

Functional safety (SIL2/3)

conformity declaration

conformity declaration **Device passport Russia** 

request)

Italian

(metal (CuZn)) **Rating plate inscription** (instead of German)

code.

Steel

Transmitters for general requirements

#### SITRANS P DS III for differential pressure and flow

Order code					Selection and Ordering data	Order	code	_	
		HART	PA	FF	Further designs Add "-Z" to Article No. and specify Order code.		HART	PA	FF
					Setting of upper limit of output signal to 22.0 mA	D05	~		
•	A01	~	1	~	Manufacturer's declaration acc. to NACE (MR 0103-2012 and MR 0175-2009)	D07	~	~	~
	A01 A02	* *	~	~	(only together with seal diaphragm made of Hastelloy and stainless steel)				
*	A20	~	✓		Degree of protection IP66/IP68 (only for M20 x 1.5 and ½-14 NPT)	D12	1	~	~
<b>*</b> (k	A20 A21 A22	* * *	* * *	√ √ √	Process flange screws made of Monel (max. nominal pressure PN20)	D34	~	1	~
	A22	~	~	~	Supplied with oval flange set (2 items), PTFE packings and screws in thread of process flanges	D37	1	1	1
	A30	~			Capri cable gland 4F CrNi and clamping device (848699 + 810634) included	D59	~	1	~
	A31	1			Use in or on zone 1D/2D	E01	✓	✓	✓
	A32 A33	√ √			(only together with type of protection "Intrinsic safety" (transmitter 7MF4B Ex ia)"and IP65)				
•	A40	~	1	1	Overfilling safety device for flammable and non-flammable liquids	E08	~		
	A50	~	~	~	(max. PN 32 (MAWP 464 psi), basic device with type of protection "Intrinsic safety (Ex ia)", to WHG and VbF, not together with measuring cell filling "inert liquid")				
					Oxygen application	E10	~	~	~
٠	B11	1	✓	×.	(In the case of oxygen measurement and				
	B12	√ √	√ √	1	inert liquid max. 100 bar (1450 psi) at 60°C (140 °F))				
•	B13 B14	√ √	√ √	√ √	Export approval Korea	E11	~	✓	1
•	B16 B21		√ √	√ √	<b>CRN approval Canada</b> (Canadian Registration Number)	E22	1	1	1
					Dual seal	E24	1	✓	✓
٠	C11	~	1	1	Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil)	E25 <sup>4)</sup>	1	~	~
•	C12	1	~	~	(only for transmitter 7MF4B)	<b>Faa</b> <sup>4</sup> )	,	,	,
•	C14 C20	√ √	~	~	"Flameproof" explosion protection according to INMETRO (Brazil) (only for transmitter 7MF4D)	E26 <sup>4)</sup>	V	~	~
	C21 <sup>3)</sup>		√		Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil) (only for transmitter 7MF4P)	E28 <sup>4)</sup>	*	1	
•	C23	~	Ĵ		<b>Ex Approval IEC Ex (Ex ia)</b> (only for transmitter 7MF4	E45 <sup>4)</sup>	~	~	~
					<b>Ex Approval IEC Ex (Ex d)</b> (only for transmitter 7MF4D)	E46 <sup>4)</sup>	~	~	~
-	C99	1	~	~	Explosion-proof "Intrinsic safety" to NEPSI (China)	E55 <sup>4)</sup>	~	~	~
					(only for transmitter 7MF4B) Explosion protection "Explosion-proof"	E56 <sup>4)</sup>	~	~	~
					to NEPSI (China) (only for transmitter 7MF4D)				
					Explosion-proof "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)	E57 <sup>4)</sup>	1	1	1
					<b>Ex protection "Ex ia", "Ex d" and "Zone</b> <b>2" to NEPSI (China)</b> (only for transmitter 7MF4R)	E58 <sup>4)</sup>	~	1	1
					"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea)	E70 <sup>4)</sup>	1	~	1
					(only for transmitter 7MF4[B, D]Z + E11)				

### **Pressure Measurement**

Transmitters for general requirements

SITRANS P DS III for differential pressure and flow

Selection and Ordering data	Order	code		
<i>Further designs</i> Add <b>*-Z</b> <sup>*</sup> to Article No. and specify Order code.		HART	PA	FF
Two coats of lacquer on casing and cover (PU on epoxy)	G10	1	1	1
Interchanging of process connection side	H01	1	1	1
Vent on side for gas measurements	H02	✓	✓	1
Stainless steel process flanges for verti- cal differential pressure lines (not together with K01, K02 and K04) <sup>5)</sup>	H03	*	1	1
Transient protector 6 kV (lightning pro- tection)	J01	1	1	1
Chambered graphite gasket for process flange	J02	~	1	~
Chambered PTFE graphite gasket	J03	✓	✓	1
EPDM O-rings for process flange with approval (WRC/WRAS)	J05	1	1	~
Vent valve or blanking plug of process flange welded-in (orientation: on right when viewing the display) <sup>6)</sup>	J08	~	~	~
Vent valve or blanking plug of process flange welded-in (orientation: on left when viewing the display) <sup>6)</sup>	J09	~	~	~
Process flange				
<ul> <li>Hastelloy</li> <li>Monel</li> <li>Stainless steel with PVDF insert max. PN 10 (MAWP 145 psi), max. temperature of medium 90 °C (194 °F)</li> <li>For ½-14 NPT inner process connection on the side in the middle of the process flange, vent valve not possible</li> </ul>	K01 K02 K04	* * *	$\sim$	* * *

We can offer shorter delivery times for configurations designated with the Quick Ship Symbol •. For details see page 9/5 in the appendix. ٠

Factory mounting of valve manifolds, see accessories.

Supplementary electronics for 4-wire connection, see accessories.

#### ✓ = available

- <sup>1)</sup> When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the <u>total</u> combination is certified here.
- 2) If the acceptance test certificate 3.1 is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.
- $^{3)}$  Profisafe transmitters can only be operated with the S7 F Systems V6.1 configuration software in combination with S7-400H
- 4) Option does not include ATEX approval, but instead includes only the countryspecific approval.
- <sup>5)</sup> Not suitable for connection of remote seal.
- <sup>6)</sup> Blanking plug is standard configuration. Order option A40 if a vent valve is required instead of a blanking plug.

Selection and Ordering data Order code						
Selection and Ordering data	Juer		DA			
Additional data Please add "-Z" to Article No. and specify Order code(s) and plain text.		HART	PA	FF		
Measuring range to be set						
Specify in plain text:						
<ul> <li>in the case of linear characteristic curve (max. 5 characters): Y01: up to mbar, bar, kPa, MPa, psi</li> </ul>	Y01	1	<b>√</b> 1)			
<ul> <li>in the case of square rooted characteristic (max. 5 characters):</li> <li>Y02: up to mbar, bar, kPa, MPa, psi</li> </ul>	Y02	1				
Stainless steel tag plate and entry in device variable (measuring point description)	Y15	~	~	~		
Max. 16 characters, specify in plain text: Y15:						
Measuring point text (entry in device  arriable)	Y16	~	~	~		
Max. 27 char., specify in plain text: Y16:						
Entry of HART address (TAG)	Y17	1				
Max. 8 char., specify in plain text: Y17:						
Setting of pressure indicator in pressure units	Y21	~	✓	~		
Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi, Note: The following pressure units can be						
bar, mbar, mm H <sub>2</sub> O <sup>*)</sup> , inH <sub>2</sub> O <sup>*)</sup> , ftH <sub>2</sub> O <sup>*)</sup> , mmHG, inHG, psi, Pa, kPa, MPa, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , Torr, ATM or % *) ref. temperature 20 °C						
Setting of pressure indicator in non-	Y22 <sup>3)</sup>	1				
pressure units <sup>2)</sup>	+					
Specify in plain text: Y22: up to l/min, m <sup>3</sup> /h, m, USgpm, (specification of measuring range in pres- sure units "Y01" or "Y02" is essential, unit with max. 5 characters)	<b>Y01</b> or <b>Y02</b>					
Preset bus address	Y25		1	✓		
possible between 1 and 126 Specify in plain text: Y25:						
Damping adjustment in seconds (0 100 s)	Y30	~	1	1		

 We can offer shorter delivery times for configurations designated with the Quick Ship Symbol . For details see page 9/5 in the appendix.

Factory mounting of valve manifolds, see accessories.

Only Y01, Y15, Y16, Y17, Y21, Y22, Y25 und D05 can be factory preset

- $\checkmark$  = available
- 1) Measuring accuracies for PROFIBUS PA transmitters with Option Y01 are calculated in the same way as for HART devices. <sup>2)</sup> Preset values can only be changed over SIMATIC PDM.
- <sup>3)</sup> Not in conjunction with over-filling safety device for flammable and nonflammable liquids (Order code "E08")

Transmitters for general requirements

## SITRANS P DS III for differential pressure and flow

Selection and Ordering	y data	Article I	No.	Selection and Ordering data	Article No.
SITRANS P DS III with				SITRANS P DS III with HART pressure trans-	7 M F 4 5 3 3 -
mitters for differential p PN 420 (MAWP 6092 ps				mitters for differential pressure and flow, PN 420 (MAWP 6092 psi)	
	o. for the online configu-			Display	
ration in the PIA Life (	,			<ul> <li>Without display</li> <li>Without visible display</li> </ul>	0
Measuring cell filling	Measuring cell cleaning			(display concealed, setting: mA)	
Silicone oil	normal	1		With visible display (setting: mA)	6
Measuring span (min	max.)			<ul> <li>with customer-specific display (setting as specified, Order code "Y21" or "Y22"</li> </ul>	'
2.5 250 mbar	(1.004 100.4 inH <sub>2</sub> O)	D		required)	
6 600 mbar 16 1600 mbar	(2.409 240.9 inH <sub>2</sub> O) (6.424 642.4 inH <sub>2</sub> O)	E		Power supply units see Chap. 7 "Supplementary Co	1
50 5000 mbar	(20.08 2008 inH <sub>2</sub> O)	G		Scope of delivery: Pressure transmitter as ordered ( extra ordering item)	Instruction Manual
0.3 30 bar	(4.35 435 psi)	Н		<sup>1)</sup> Not in conjunction with max. span 600 mbar (240.9 i	
Wetted parts materials (stainless steel process				<sup>2)</sup> When the manufacture's certificate (calibration certif	
Seal diaphragm	Parts of measuring cell			ordered for transmitters with diaphragm seals accorr is recommended only to order this certificate exclus	ding to IEC 60770-2
Stainless steel	Stainless steel	А		phragm seals. The measuring accuracy of the total c	
Hastelloy	Stainless steel	В		<sup>3)</sup> If the acceptance test certificate 3.1.is ordered for th	e transmitter with
Gold <sup>1)</sup> Ausführung als Membra	Gold ndruckmittler <sup>2) 3) 4) 5)</sup>	L Y		mounted diaphragm seals this certificate must also	
Process connection				respective remote seals. <sup>4)</sup> The diaphragm seal is to be specified with a separa	te order number and
Female thread 1/4-18 NP	T with flange connection			must be included wiht the tranmitter order number, f 7MF453Y und 7MF4900-1B	or example
<ul> <li>Sealing screw opposite</li> <li>Mounting thread <sup>7</sup>/<sub>16</sub></li> </ul>		3		<sup>5)</sup> The standard measuring cell filling for configurations	s with remote seals (
- Mounting thread M12		3		is silicone oil.	
(only for replacement	,			<sup>6)</sup> Not in conjunction with Electrical connection "Screwe "Han7D plug".	ed gland Pg 13.5 a
	cess flanges, location of ocess flanges (see dimen-			7) Without cable gland, with blanking plug	
sional drawing) - Mounting thread <sup>7</sup> / <sub>16</sub>		7		<sup>8)</sup> With enclosed cable gland Ex ia and blanking plug <sup>9)</sup> Configurations with HAN and M12 connectors are or	alu available in Ev is
- Mounting thread M12		5		<sup>10)</sup> Only in connection with IP65.	
(only for replacement				<sup>11)</sup> Only in connection with Ex approval A, B or E.	
Non-wetted parts mate				<sup>12)</sup> Permissible only for crimp-contact of conductor cros	ss-section 1 mm <sup>2</sup>
process flange screws Stainless steel	Die-cast aluminum		,	<sup>13)</sup> Only in connection with Ex approval A, B, E or F. <sup>14)</sup> M12 delivered without cable socket.	
Stainless steel	Stainless steel precision casting <sup>6)</sup>		3	· Mitz delivered without cable socket.	
Version					
<ul> <li>Standard versions</li> <li>International version F</li> </ul>	English label inscriptions,		1		
documentation in 5 lar	nguages on CD				
(no Order code selecta Explosion protection	anie)	-			
None			Α		
• With ATEX, Type of pro					
<ul> <li>"Intrinsic safety (Ex ia - "Explosion-proof (Ex</li> </ul>			В		
1 1 1	,		D P		
- "Intrinsic safety and f (Ex ia + Ex d)" <sup>8)</sup>					
<ul> <li>"Ex nA/ic (Zone 2)"<sup>9)</sup></li> <li>"Intrinsic safety explosion</li> </ul>	osion-proof enclosure and		ER		
dust explosion protect	ction (Ex ia+ Ex d +		n		
Zone 1D/2D) <sup>*8)10)</sup> • FM + CSA intrinsic safe	e (is)		F		
• FM + CSA (is + ep) + I			s		
• With FM + CSA, Type of					
<ul> <li>"Intrinsic safety and e (is + xp)"<sup>7)</sup>, max PN</li> </ul>	explosion-proot 360		NC		
Electrical connection/c	able entry				
Screwed gland Pg 13.			A		
<ul> <li>Screwed gland M20x1</li> <li>Screwed gland ½-14 N</li> </ul>			B C		
<ul> <li>Han 7D plug (plastic h connector<sup>11)12)</sup></li> </ul>	iousing) incl. mating		D		
<ul> <li>connector<sup>11)12</sup></li> <li>M12 connectors (stain</li> </ul>			F		
• IVITZ CONNECTORS (STAIN	IESS SIEEI)		F		

Transmitters for general requirements

SITRANS P DS III for differential pressure and flow

Selection and Ordering data	Article No.		Selection and Ordering data	Article No.
Pressure transmitters for differential pressure and flow, PN 420 (MAWP 6092 psi)			Pressure transmitters for differential pressure and flow, PN 420 (MAWP 6092 psi)	
	7 M F 4 5 3	4 -	SITRANS P DS III with PROFIBUS PA (PA)	7 M F 4 5 3 4 -
SITRANS P DS III with FOUNDATION Fieldbus (FF)			SITRANS P DS III with FOUNDATION Fieldbus (FF)	7 M F 4 5 3 5 -
✓ Click on the Article No. for the online configu-	1			1
ration in the PIA Life Cycle Portal.			Diamlay	
Nominal measuring range			<ul><li>Display</li><li>Without (display hidden)</li></ul>	
250 mbar (100.4 inH <sub>2</sub> O)	D		Without visible display	
600 mbar (240.9 inH <sub>2</sub> O)	E		(display concealed, setting: bar)	
1600 mbar (642.4 inH <sub>2</sub> O)	F		• With visible display (setting: bar)	
5 bar (2008 inH <sub>2</sub> O)	G H		<ul> <li>With customer-specific display (setting as specified, Order code "Y21" required)</li> </ul>	
30 bar (435 psi)	•			
Wetted parts materials (stainless steel process flanges)			Included in delivery of the device: • Brief instructions (Leporello)	
Seal diaphragm Parts of measuring cell			CD-ROM with detailed documentation	
			<ul> <li>Sealing plug(s) or sealing screw(s) for the proces</li> </ul>	s flanges(s)
Stainless steel Stainless steel Hastelloy Stainless steel	A B		<sup>1)</sup> Not in conjunction with max. span 600 mbar (240.9 i	nH <sub>2</sub> O)
Gold <sup>1)</sup> Gold	L		<sup>2)</sup> When the manufacture's certificate (calibration certif	icate) has to be
Ausführung als Membrandruckmittler <sup>2) 3) 4) 5)</sup>	Ŷ		ordered for transmitters with diaphragm seals accorr is recommended only to order this certificate exclusion	ding to IEC 60770
Process connection			phragm seals. The measuring accuracy of the total c	
Female thread 1/4-18 NPT with flange connection				
Sealing screw opposite process connection			<sup>3)</sup> If the acceptance test certificate 3.1.is ordered for th mounted diaphragm seals this certificate must also	ie transmitter witl
<ul> <li>Mounting thread <sup>7</sup>/<sub>16</sub>-20 UNF to IEC 61518</li> </ul>	3		respective remote seals.	
- Mounting thread M12 to DIN 19213	1		<sup>4)</sup> The diaphragm seal is to be specified with a separa	
<ul><li>(only for replacement requirement)</li><li>Venting on side of process flanges, location of</li></ul>			must be included wiht the tranmitter order number, fr 7MF453Y und 7MF4900-1B	or example
<ul> <li>venting on side of process flanges, location of vent valve at top of process flanges (see dimen-</li> </ul>			<sup>5)</sup> The standard measuring cell filling for configurations	with remote eee
sional drawing).			is silicone oil.	s with remote sea
- Mounting thread <sup>7</sup> / <sub>16</sub> -20 UNF to IEC 61518	7		<sup>6)</sup> Without cable gland, with blanking plug.	
- Mounting thread M12 to DIN 19213	5		<sup>7)</sup> With enclosed cable gland Ex ia and blanking plug.	
(only for replacement requirement)			<sup>8)</sup> Configurations with HAN and M12 connectors are or	nly available in Ex
Non-wetted parts materials			<sup>9)</sup> Only in connection with IP65.	
Process flange screws Electronics housing			<sup>10)</sup> Only in connection with Ex approval A, B, E or F.	
Stainless steel Die-cast aluminum	2		<sup>11)</sup> M12 delivered without cable socket	
Stainless steel Stainless steel precision casting	3			
Version				
Standard versions		1		
<ul> <li>International version, English label inscriptions,</li> </ul>		2		
documentation in 5 languages on CD				
(no Order code selectable)				
Explosion protection				
None     With ATEX. Type of protection:		Α		
<ul> <li>With ATEX, Type of protection:</li> <li>"Intrinsic safety (Ex ia)"</li> </ul>		в		
- "Explosion-proof (Ex d)" <sup>6)</sup>		D		
- "Intrinsic safety and flameproof enclosure"		P		
$(Ex ia + Ex d)^{n/2}$				
- "Ex nA/ic (Zone 2)" <sup>8)</sup>		E		
- "Intrinsic safety, explosion-proof enclosure and		R		
dust explosion protection (Ex ia + Ex d + Zone 1D/2D) <sup>=7/9)</sup> (not for DS III FF)				
• FM + CSA intrinsic safe (is)		F		
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX) <sup>9)</sup>		S		
<ul> <li>With FM + CSA, Type of protection:</li> </ul>				
<ul> <li>"Intrinsic safety and explosion-proof (is + xp)"<sup>6)</sup>, max PN 360</li> </ul>		NC		
Electrical connection/cable entry				
Screwed gland M20 x 1.5		В		
• Screwed gland 1/2-14 NPT		С		
M12 connectors (stainless steel) <sup>10) 11)</sup>		F		

1/148

Transmitters for general requirements

### SITRANS P DS III for differential pressure and flow

Selection and Ordering data	Selection and Ordering data         Order code         Selection and Ordering data				Selection and Ordering data	Order	code		
Further designs		HART	PA	FF	Further designs		HART	PA	FF
Add "-Z" to Article No. and specify Order code.					Add "-Z" to Article No. and specify Order code.				
Pressure transmitter with mounting					Use in or on zone 1D/2D	E01	✓	✓	1
bracket (1x fixing angle, 2 x nut, 2 x U- washer or 1 x bracket, 2 x nut, 2 x U- washer) made of:					(only together with type of protection "Intrinsic safety" (transmitter 7MF4B Ex ia)"and IP65)				
• Steel	A01	1	✓	1			,	,	,
Stainless steel	A02	1	✓	1	Export approval Korea	E11	<b>√</b>	✓	✓
O-rings for process flanges					Dual seal	E24	~	~	~
(instead of FPM (Viton))					Explosion-proof "Intrinsic safety" (Ex ia) to	E25 <sup>3)</sup>	✓	✓	1
PTFE (Teflon)	A20	1	✓	~	INMETRO (Brazil) (only for transmitter 7MF4B)				
• FEP (with silicone core, approved for food)	A21	1	4	1	( )	<b>F</b> oc3)	~	,	,
<ul> <li>FFPM (Kalrez, compound 4079), for measured medium temperatures</li> <li>-15 100 °C (5 212 °F)</li> </ul>	A22	~	~	~	"Flameproof" explosion protection accord- ing to INMETRO (Brazil) (only for transmitter 7MF4D)	E26°	v	•	~
• NBR (Buna N)	A23	✓	✓	✓	Explosion-proof "Intrinsic safety" (Ex ia +	E28 <sup>3)</sup>	1	1	
Plug					Ex d) to INMETRO (Brazil)				
• Han 7D (metal)	A30	✓			(only for transmitter 7MF4P)				
Han 8D (instead of Han 7D)	A31	1			Ex Approval IEC Ex (Ex ia)	E45 <sup>3)</sup>	✓	✓	1
• Angled	A32	1			(only for transmitter 7MF4B)				
• Han 8D (metal)	A33	<b>V</b>			Ex Approval IEC Ex (Ex d)	E46 <sup>3)</sup>	1	1	1
Sealing screws (2 units)	A40	1	1	1	(only for transmitter 7MF4D)				
1/4-18 NPT, with valve in mat. of process flanges					Explosion-proof "Intrinsic safety"	E55 <sup>3)</sup>	1	1	1
Cable sockets for M12 connection	A50	~	~	~	to NEPSI (China) (only for transmitter 7MF4B)				
(metal (CuZn))						E56 <sup>3)</sup>			1
Rating plate inscription (instead of German)	B11	~	~	1	Ex prot. "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)	E30.,	¥	¥	¥
• English • French	B12	<b>√</b>	¥ ✓	¥	Explosion-proof "Zone 2" to NEPSI (China)	E573)	~	1	~
Spanish	B13	1	1	1	(only for transmitter 7MF4E)	LJ1 '	•	•	•
• Italian	B14	1	✓	1	Ex protection "Ex ia", "Ex d" and "Zone 2"	E58 <sup>3)</sup>	1	1	~
• Cyrillic (russian)	B16	1	✓	✓	to NEPSI (China)	E90 /	•	•	•
English rating plate	B21	1	1	~	(only for transmitter 7MF4R)				
Pressure units in inH <sub>2</sub> O and/or psi					"Intrinsic safety" and "Explosion-proof"	E70 <sup>3)</sup>	1	1	1
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11	1	1	1	explosion protection acc. to Kosha (Korea) (only for transmitter				
Inspection certificate	C12	1	✓	~	7MF4[B, D]Z + E11)				
Acc. to EN 10204-3.1					Two coats of lacquer on casing and cover (PU on epoxy)	G10	~	~	~
Factory certificate	C14	✓	~	1		H01	√	1	1
Acc. to EN 10204-2.2					Interchanging of process connection side			,	
Functional safety (SIL2) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL con-	C20	1			Stainless steel process flanges for vertical differential pressure lines		✓ ✓	× 	✓ ✓
Functional safety (PROFIsafe)	C21 <sup>1)</sup>		✓		Transient protector 6 kV (lightning protec- tion)		*	•	✓ ✓
Certificate and PROFIsafe protocol Functional safety (SIL2/3)	C23	~			Chambered graphite gasket for process flange	J02	✓ ✓	•	
Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL con-					EPDM O-rings for process flange with approval (WRC/WRAS) Vent valve or blanking plug of process	J05 J08	* _	* _	✓ ✓
formity declaration <b>Device passport Russia</b> (For price request please contact the technical support	C99	~	~	~	flange welded-in (orientation: on right when viewing the display) <sup>4)</sup>	000	Ť		
www.siemens.com/automation/support- request)					Vent valve or blanking plug of process flange welded-in (orientation: on left when viewing the display) <sup>4)</sup>	J09	~	1	1
Setting of upper limit of output signal to 22.0 mA	D05	~							
Manufacturer's declaration acc. to NACE	D07	1	1	1	<ol> <li>Profisafe transmitters can only be operated with figuration software in combination with S7-400</li> </ol>		F Syster	ms V6	1 coi
(MR 0103-2012 and MR 0175-2009)	507	·	•	•	<ol> <li><sup>2)</sup> Tested according to IEC 61010. Only for meas</li> </ol>	uring m			
(only together with seal diaphragm made of					of fluids 2 in accordance with PED permissible media suitable.	. Not for	use with	n dang	erou
Hastelloy and stainless steel)					3) Option does not include ATEX approval, but ins	stead inc	ludes o	nly the	cou
<b>Degree of protection IP66/IP68</b> (only for M20 x 1.5 and ½-14 NPT)	D12	~	~	~	<ul> <li>try-specific approval.</li> <li><sup>4)</sup> Blanking plug is standard configuration. Order</li> </ul>	ontion	10.10		- 1

4) Blanking plug is standard configuration. Order option A40 if a vent valve is required instead of a blanking plug.

D56

D59

Capri cable gland 4F CrNi and clamping device (848699 + 810634) included

Transmitters for general requirements

SITRANS P DS III for differential pressure and flow

Selection and Ordering data	Order	code		
Additional data		HART	PA	FF
Please add "-Z" to Article No. and specify Order code(s) and plain text.				
Measuring range to be set				
Specify in plain text: • in the case of linear characteristic curve (max. 5 characters):	Y01	~	<b>√</b> 1)	
<ul> <li>Y01: up to mbar, bar, kPa, MPa, psi</li> <li>in the case of square rooted characteristic (max. 5 characters):</li> </ul>	Y02	~		
Y02: up to mbar, bar, kPa, MPa, psi		,	,	
Stainless steel tag plate and entry in device variable (measuring point description)	Y15	~	•	~
Max. 16 characters, specify in plain text: Y15:				
Measuring point text (entry in device vari- able)	Y16	~	1	~
Max. 27 char., specify in plain text: Y16:				
Entry of HART address (TAG) Max. 8 char., specify in plain text: Y17:	Y17	~		
Setting of pressure indication in pressure units	Y21	1	1	~
Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi,				
Note: The following pressure units can be selected: bar, mbar, mm $H_2O^{(*)}$ , in $H_2O^{(*)}$ , ft $H_2O^{(*)}$ , mmHG, inHG, psi, Pa, kPa, MPa, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , Torr, ATM or % *) ref. temperature 20 °C				
Setting of pressure indication in	Y22 +	1		
non-pressure units <sup>2)</sup> Specify in plain text: Y22: up to //min, m <sup>3</sup> /h, m, USgpm, (specification of measuring range in pressure units "Y01" or "V02" is essential, unit with max. 5 characters)	Y01 or Y02			
Preset bus address	Y25		1	~
possible between 1 and 126 Specify in plain text: Y25:				
Damping adjustment in seconds	Y30	1	~	1

Factory mounting of valve manifolds, see accessories.

Only Y01, Y15, Y16, Y17, Y21, Y22, Y25 and D05 can be factory preset.

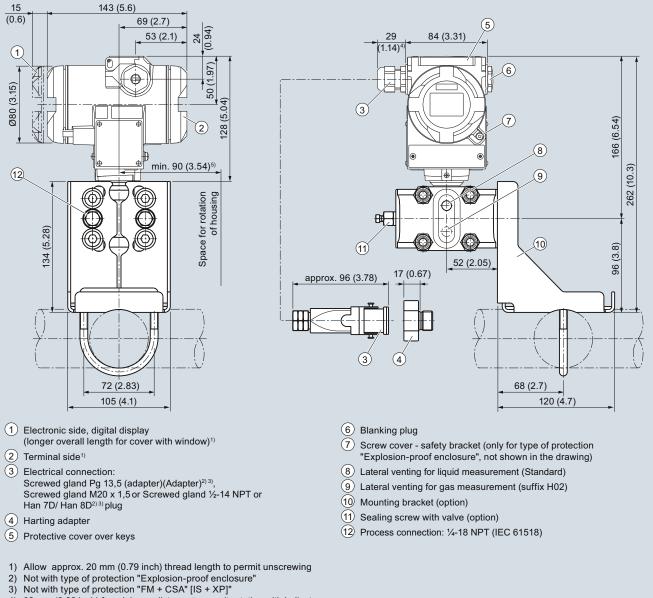
✓ = available

Measuring accuracies for PROFIBUS PA transmitters with Option Y01 are calculated in the same way as for HART devices.
 Preset values can only be changed over SIMATIC PDM.

Transmitters for general requirements

### SITRANS P DS III for differential pressure and flow

#### Dimensional drawings

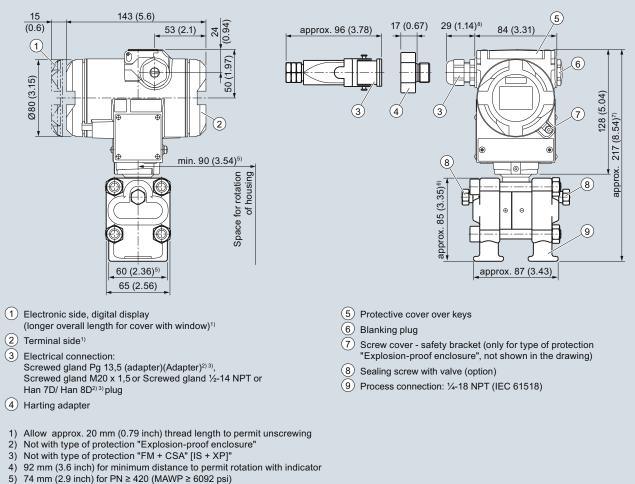


- 4) 92 mm (3.62 inch) for minimum distance to permit rotation with indicator
- 5) For Pg 13,5 with adapter approx. 45 mm (1.77 inch)

SITRANS P DS III pressure transmitters for differential pressure and flow, dimensions in mm (inch)

Transmitters for general requirements

#### SITRANS P DS III for differential pressure and flow



- 6) 91 mm (3.6 inch) for PN  $\ge$  420 (MAWP  $\ge$  6092 psi)
- 7) 219 mm (8.62 inch) for PN ≥ 420 (MAWP ≥ 6092 psi)
- 8) For Pg 13,5 with adapter approx. 45 mm (1.77 inch)

SITRANS P DS III pressure transmitters for differential pressure and flow, with process covers for vertical differential pressure lines, optional "H03", dimensional drawing, dimensions in mm (inch)



SITRANS P DS III pressure transmitters for differential pressure and flow, with process covers for vertical differential pressure lines

Transmitters for general requirements

# SITRANS P DS III for level

# Technical specifications

SITRANS P DS III for level	HADT					
	HART		PROFIBUS PA or FOU	NDATION Fleidbus		
Input Measured variable	Level					
Spans (infinitely adjustable) or nominal measuring range and max, permissible operating pressure	Span (min max.)	Maximum operating pressure	Nominal measuring range	Maximum operating		
	25 250 mbar (10 100 inH <sub>2</sub> O)	See "Mounting flange"	250 mbar (100 inH <sub>2</sub> O)	See "Mounting flange"		
	25 600 mbar (10 240 inH <sub>2</sub> O)	See "Mounting flange"	600 mbar (240 inH <sub>2</sub> O)	See "Mounting flange"		
	53 1600 mbar (21 642 inH <sub>2</sub> O)	See "Mounting flange"	1600 mbar (642 inH <sub>2</sub> O)	See "Mounting flange"		
	160 5000 mbar (64 2000 inH <sub>2</sub> O)	See "Mounting flange"	5 bar (2000 inH <sub>2</sub> O)	See "Mounting flange"		
Lower measuring limit		1				
Measuring cell with silicone oil filling			r 500 mbar a (7.25 psia) t remote seal: 30 mbar a (0	11 nsi a)		
Lippor modeuring limit			100 % of the max. nomi			
Upper measuring limit	100 % of max. span		100 % of the max. norm	nai measunny ranye		
Output	4 00 4			1		
Output signal	4 20 mA		Digital PROFIBUS PA and FOUNDATION Fieldbus			
<ul> <li>Lower limit (infinitely adjustable)</li> <li>Upper limit (infinitely adjustable)</li> </ul>	3.55 mA, factory preset 23 mA, factory preset to set to 22.0 mA		-			
Load						
Without HART	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.023$ $U_{\rm H}$ : Power supply in V	3 A in Ω,	-			
• With HART	$R_{\rm B} = 230 \dots 500 \ \Omega \ ({\rm SIM}) R_{\rm B} = 230 \dots 1100 \ \Omega \ ({\rm HA})$		-			
Physical bus	-		IEC 61158-2			
Protection against polarity reversal	Protected against short		rsal. Each connection ag voltage.	ainst the other with max.		
Electrical damping (step width 0.1 s)		Set to 2 s	(0 100 s)			
Measuring accuracy		Acc. to IE	C 60770-1			
Reference conditions (All error data refer always refer to the set span)	Increasing chara		alue 0 bar, stainless stee emperature 25 °C (77 °F			
	Span ratio r = ma	ax. span/set span)		minal measuring range ratio r = nominal measuring range/set measuring range		
Error in measurement at limit setting incl. hysteresis and reproducibility						
Linear characteristic						
- r ≤ 10	≤ 0.15 %		≤ 0.15 %			
- 10 < r ≤ 30	≤ 0.3 %		≤ 0.3 %			
- 30 < r ≤ 100	≤ (0.0075 · r + 0.075) %		≤ (0.0075 · r + 0.075) %			
Long-term stability (temperature change ± 30 °C (± 54 °F))	≤ (0.25 · r)% every 5 yea static pressure max. 70		$\leq$ (0.25 · r)% every 5 yes static pressure max. 70			
Influence of ambient temperature						
• at -10 +60 °C (14 140 °F)						
- 250 mbar- (100 in $H_2O$ )-measuring cell	$\leq (0.5 \cdot r + 0.2) \%^{(1)4)}$		$\leq (0.5 \cdot r + 0.2) \%^{(1)4)}$			
- 600 mbar- (240 inH <sub>2</sub> O)-measuring cell	$\leq (0.3 \cdot r + 0.2) \%^{2) 4}$		$\leq (0.3 \cdot r + 0.2) \%^{2)4}$			
<ul> <li>1600 and 5000 mbar- (642 and 2000 inH<sub>2</sub>O)- measuring cell</li> </ul>						
• at -4010 °C and 60 85 °C (-40 +14 °F and 140 185 °F)						
- 250 mbar- (100 inH <sub>2</sub> O)-measuring cell	$\leq$ (0.25 $\cdot$ r + 0.15) %/10 doubled values at 10 <		$\leq$ (0.25 $\cdot$ r + 0.15) %/10 doubled values at 10 <			
- 600 mbar- (240 inH <sub>2</sub> O)-measuring cell	$\leq$ (0.15 · r + 0.15) %/10 K $\leq$ (0.15 · r + 0.15) %/10 K doubled values at 10 < r $\leq$ 30					
- 1600 and 5000 mbar- (642 and 2000 inH $_2\mathrm{O})\text{-}$ measuring cell	≤ (0.12 · r + 0.15) %/10 double values at 10 < r		$\leq$ (0.12 · r + 0.15) %/10 double values at 10 < r			

Transmitters for general requirements

# SITRANS P DS III for level

SITRANS P DS III for level		
	HART	PROFIBUS PA or FOUNDATION Fieldbus
Influence of static pressure		
• on the zero point		
- 250 mbar- (100 inH <sub>2</sub> O)-measuring cell	$\leq$ (0.3 · r) % per nominal pressure	$\leq$ (0.3 · r) % per nominal pressure
	$\leq$ (0.15 · r) % per nominal pressure	$\leq$ (0.15 · r) % per nominal pressure
- 1600 and 5000 mbar- (642 and 2000 inH <sub>2</sub> O)-		$\leq$ (0.1 · r) % per nominal pressure
measuring cell		
• on the span	$\leq$ (0.1 $\cdot$ r) % per nominal pressure	$\leq$ (0.1 $\cdot$ r) % per nominal pressure
Measured Value Resolution	-	$3 \cdot 10^{-5}$ of nominal measuring range
Rated conditions		
Degree of protection to IEC 60529	IP66 (optional IP	266/IP68), NEMA 4X
Temperature of medium		f max. permissible operating temperature to max. of the respective flange connection!
<ul> <li>Measuring cell with silicone oil filling</li> </ul>	-40 +100 <sup>5)</sup> °C	C (-40 +212 <sup>5)</sup> °F)
- High-pressure side	p <sub>abs</sub> ≥ 1 bar: -40 + p <sub>abs</sub> < 1 bar: -40 +	⊦175 °C (-40 +347 °F) +80 °C (-40 +176 °F)
- Low-pressure side		C (-40 +212 °F) ijunction with dust explosion protection
Ambient conditions		
Ambient temperature		
<ul> <li>Transmitter</li> <li>(with 4-wire connection, observe temperature values of supplementary 4-wire electronics)</li> </ul>	-40 +85 °C	; (-40 +185 °F)
Display readable	-30 +85 °C	; (-22 +185 °F)
Storage temperature		c (-58 +185 °F)
Climatic class		
- Condensation	Relative humidity 0 100 % condensati	on permissible, suitable for use in the tropics
Electromagnetic Compatibility		
- Emitted interference and interference immu-	Acc. to IEC 61326	6 and NAMUR NE 21
nity		
Design		
Weight (without options)		
<ul> <li>To EN (pressure transmitter with mounting flange, without tube)</li> </ul>	≈ 11 13 kg (	≈ 24.2 28.7 (lb)
<ul> <li>To ASME (pressure transmitter with mounting flange, without tube)</li> </ul>	≈ 11 18 kg (	(≈ 24.2 39.7 lb)
Enclosure material	Low-copper die-cast aluminum, GD-AlSi12 or	stainless steel precision casting, mat. no. 1.4408
Wetted parts materials		
High-pressure side		
<ul> <li>Seal diaphragm of mounting flange</li> </ul>	Hastelloy C276, mat. no. 2.4819, Hastelloy	, mat. no. 2.4360, Hastelloy B2, mat. no. 2.4617, / C4, mat. no. 2.4610, tantalum, PTFE, ETCFE, plex, mat. no. 1.4462
Measuring cell filling		
Process connection	Sinc	
High-pressure side	Elango to I	EN and ASME
Low-pressure side	Female thread 1/4-18 NPT and flange connect	ction with mounting thread M10 to DIN 19213 or F to EN 61518
Power supply $U_{H}$	716 20 014	Supplied through bus
Terminal voltage on transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically-safe mode	-
Separate 24 V power supply necessary	-	No
Bus voltage		
Not Ex		9 32 V
With intrinsically-safe operation		9 32 V 9 24 V
		5 24 V
Current consumption		12.5 mA
<ul> <li>Basic current (max.)</li> </ul>		12.5 mA
• Start up ourrant < basis ourrant	-	Yes
• Start-up current ≤ basic current		15 5
<ul> <li>Start-up current ≤ basic current</li> <li>Max. current in event of fault</li> <li>Fault disconnection electronics (FDE) available</li> </ul>	-	15.5 mA Yes

Transmitters for general requirements

## SITRANS P DS III for level

SITRANS P DS III for level					
	HART	PROFIBUS PA or FOUNDATION Fieldbus			
Certificates and approvals					
Classification according to PED 97/23/EC	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)				
Explosion protection					
Intrinsic safety "i"		TEX 2007 X			
- Marking		IIC T4/T5/T6 Ga/Gb			
- Permissible ambient temperature	-40 +70 °C (-40 +15	5 °F) temperature class T4; 8 °F) temperature class T5; 0 °F) temperature class T6			
- Connection	To certified intrinsically-safe circuits with peak values: $U_{\rm i}$ = 30 V, $l_{\rm i}$ = 100 mA, $P_{\rm i}$ = 750 mW; $R_{\rm i}$ = 300 $\Omega$	FISCO supply unit: $U_0 = 17.5 \text{ V}$ , $I_0 = 380 \text{ mA}$ , $P_0 = 5.32 \text{ W}$ Linear barrier: $U_0 = 24 \text{ V}$ , $I_0 = 250 \text{ mA}$ , $P_0 = 1.2 \text{ W}$			
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4  {\rm mH},  C_{\rm i} = 6  {\rm nF}$	$L_{\rm i} = 7 \mu {\rm H},  C_{\rm i} = 1.1 {\rm nF}$			
• Explosion-proof "d"	PTB 99 /	ATEX 1160			
- Marking	Ex II 1/2 G Ex	d IIC T4/T6 Gb			
- Permissible ambient temperature		5 °F) temperature class T4; 0 °F) temperature class T6			
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC	To circuits with values: $U_{\rm H}$ = 9 32 V DC			
Dust explosion protection for zone 20	PTB 01 A	ATEX 2055			
- Marking	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C				
- Permissible ambient temperature	-40 +85 °C	(-40 +185 °F)			
- Max. surface temperature	120 °C	(248 °F)			
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}, I_i = 100 \text{ mA},$ $P_i = 750 \text{ mW}, R_i = 300 \Omega$	FISCO supply unit: $U_0 = 17.5 \text{ V}$ , $I_0 = 380 \text{ mA}$ , $P_0 = 5.32 \text{ W}$ Linear barrier:			
Effective internal inductors of a position of		$U_0 = 24 \text{ V}, I_0 = 250 \text{ mA}, P_0 = 1.2 \text{ W}$			
<ul> <li>Effective internal inductance/capacitance</li> <li>Dust explosion protection for zone 21/22</li> </ul>	$L_{\rm i} = 0.4 {\rm mH},  C_{\rm i} = 6 {\rm nF}$	$L_{\rm i}$ = 7 µH, $C_{\rm i}$ = 1.1 nF ATEX 2055			
- Marking		265 T 120 °C			
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC; $P_{\rm max}$ = 1.2 W	To circuits with values: $U_{\rm H}$ = 9 32 V DC; $P_{\rm max}$ = 1 W			
<ul> <li>Type of protection "n" (zone 2)</li> </ul>		TEX 2007 X			
- Marking		nA II T4/T5/T6 Gc C IIC T4/T5/T6 Gc			
- Connection (Ex nA)	<i>U</i> <sub>m</sub> = 45 V	U <sub>m</sub> = 32 V			
- Connection (Ex ic)	To circuits with values: $U_{\rm i} = 45 \text{ V}$	FISCO supply unit ic: $U_0 = 17.5 \text{ V}, I_0 = 570 \text{ mA}$			
		Linear barrier: $U_{o} = 32$ V, $I_{o} = 132$ mA, $P_{o} = 1$ W			
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4  {\rm mH},  C_{\rm i} = 6  {\rm nF}$	$L_{\rm i} = 7 \ \mu {\rm H}, \ C_{\rm i} = 1.1 \ {\rm nF}$			
• Explosion protection acc. to FM	Certificate of Co	mpliance 3008490			
- Identification (XP/DIP) or (IS); (NI)	CL I, DIV 1, GP ABCD T4T6; CL II, DIV 1, GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4T6; CL I, DIV 2, GP ABCD T4T6; CL II, DIV 2, GP FG; CL III				
<ul> <li>Explosion protection to CSA</li> </ul>	Certificate of Con	mpliance 1153651			
- Identification (XP/DIP) or (IS)		CL I, DIV 1, GP ABCD T4T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4T6; CL I, DIV 2, GP ABCD T4T6; CL II, DIV 2, GP FG; CL III			
<sup>1)</sup> Conversion of temperature error per 28 °C. Valid for temperature range -3 +53 °C < ( $0.4 \cdot r + 0.16$ ) % / 28 °C (50 °F). <sup>2)</sup> Conversion of temperature error per 28 °C. Valid for temperature range -3 +53 °C < ( $0.24 \cdot r + 0.16$ ) % / 28 °C (50 °F). <sup>3)</sup> Conversion of temperature error per 28 °C. Valid for temperature range -3 +53 °C < ( $0.2 \cdot r + 0.16$ ) % / 28 °C (50 °F).					

 $^{\rm 4)}\,$  0.32 instead of 0.16 at 10 < r < 30

 $^{5)}\,$  This value may be increased if the process connection is sufficiently insulated.

Transmitters for general requirements

			SITRANS P DS III for level
			SITHANS P DS III TOP level
HART communication		FOUNDATION Fieldbus communication	
HART	230 1100 Ω	Function blocks	3 function blocks analog input,
Protocol	HART Version 5.x		1 function block PID
Software for computer	SIMATIC PDM	<ul> <li>Analog input</li> </ul>	
PROFIBUS PA communication Simultaneous communication with	4	<ul> <li>Adaptation to customer-specif- ic process variables</li> </ul>	Yes, linearly rising or falling characteristic
master class 2 (max.)		- Electrical damping, adjustable	0 100 s
The address can be set using	Configuration tool or local operation (standard setting address 126)	- Simulation function	Output/input (can be locked within the device with a bridge)
Cyclic data usage	,	- Failure mode	parameterizable (last good value, substitute value, incorrect
Output byte	5 (one measured value) or 10 (two measured values)	- Limit monitoring	value) Yes, one upper and lower warn-
Input byte	0, 1, or 2 (register operating mode and reset function for metering)	C C	ing limit and one alarm limit respectively
Internal preprocessing	metering)	<ul> <li>Square-rooted characteristic for flow measurement</li> </ul>	Yes
Device profile	PROFIBUS PA Profile for Pro- cess Control Devices Version	• PID	Standard FOUNDATION Field- bus function block
	3.0, class B	<ul> <li>Physical block</li> </ul>	1 resource block
Function blocks <ul> <li>Analog input</li> </ul>	2	Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block LCD
<ul> <li>Adaptation to customer-specif- ic process variables</li> </ul>	Yes, linearly rising or falling characteristic	<ul> <li>Pressure transducer block</li> </ul>	
- Electrical damping, adjustable	0 100 s	<ul> <li>Can be calibrated by applying two pressures</li> </ul>	Yes
- Simulation function	Input/Output	- Monitoring of sensor limits	Yes
- Failure mode	parameterizable (last good value, substitute value, incorrect value)	<ul> <li>Simulation function: Measured pressure value, sensor temper- ature and electronics tempera-</li> </ul>	Constant value or over parame- terizable ramp function
- Limit monitoring	Yes, one upper and lower warn- ing limit and one alarm limit	ture Mounting flange	
Register (totalizer)	respectively Can be reset, preset, optional	Nominal diameter	Nominal pressure
	direction of counting, simulation function of register output	Acc. to EN 1092-1	
- Failure mode	parameterizable (summation	- DN 80	PN 40
	with last good value, continuous summation, summation with	- DN100	PN16, PN40
	incorrect value)	• To ASME B16.5 - 3 inch	
- Limit monitoring	One upper and lower warning limit and one alarm limit respec- tively	- 4 inch	class 150, class 300 class 150, class 300
<ul> <li>Physical block</li> </ul>	1		
Transducer blocks	2		
Pressure transducer block			
<ul> <li>Can be calibrated by applying two pressures</li> </ul>	Yes		
- Monitoring of sensor limits	Yes		
<ul> <li>Specification of a container characteristic with</li> </ul>	Max. 30 nodes		
<ul> <li>Square-rooted characteristic for flow measurement</li> </ul>	Yes		
<ul> <li>Gradual volume suppression and implementation point of square-root extraction</li> </ul>	Parameterizable		
- Simulation function for mea- sured pressure value and sen- sor temperature	Constant value or over parame- terizable ramp function		

Transmitters for general requirements

### SITRANS P DS III for level

Selection and Orderin		Article No.					
Pressure transmitter f	or level,	↗	7 M	F46	33-		
SITRANS P DS III with	HART			v	- 11		
Click on the Article N ration in the PIA Life	No. for the online configu- Cycle Portal.						
Measuring cell filling	Measuring cell cleaning	٦					
Silicone oil	normal		1				
Measuring span (min.	max )	-					
25 250 mbar	(10 100 inH <sub>2</sub> O)		D				
25 600 mbar	(10 240 inH <sub>2</sub> O)		E				
53 1600 mbar	(21 642 inH <sub>2</sub> O)		F				
0.16 5 bar	(64.3 2000 inH <sub>2</sub> O)		G				
Process connection o	. 27	-	ŭ				
	T with flange connection						
<ul> <li>Mounting thread <sup>7</sup>/<sub>16</sub>-</li> </ul>	8			2			
<ul> <li>Mounting thread M10</li> </ul>				0			
(only for replacement	t requirement)			v			
Non-wetted parts mat		_					
process flange screws	Electronics housing						
Stainless steel	Die-cast aluminum	-		2			
Stainless steel	Stainless steel precision			3			
Stairiess steer	casting <sup>1)</sup>			Ŭ			
Version							
<ul> <li>Standard versions</li> </ul>					1		
<ul> <li>International version,</li> </ul>	English label inscriptions,				2		
documentation in 5 la							
(no Order code selec	table)						
Explosion protection							
• None					Α		
• With ATEX, Type of pr							
- "Intrinsic safety (Ex					В		
- "Explosion-proof (Ex					D		
<ul> <li>Intrinsic safety and (Ex ia + Ex d)<sup>"3)</sup></li> </ul>	flameproof enclosure"				٢		
- "Ex nA/ic (Zone 2)" 4	1)				E		
	osion-proof enclosure and	1			R		
dust explosion prote	ection (Ex ia+ Ex d +						
<ul> <li>FM + CSA intrinsic sa</li> </ul>					F		
• FM + CSA (is + ep) +					s		
• With FM + CSA, Type							
	xplosion Proof (is + xp)"1)				N	C	
Electrical connection/	cable entry	_					
<ul> <li>Screwed gland Pg 13</li> </ul>						4	
<ul> <li>Screwed gland M20x</li> </ul>					1	в	
<ul> <li>Screwed gland ½-14</li> </ul>	NPT				(	C	
<ul> <li>Han 7D plug (plastic connector<sup>6)</sup></li> </ul>						D	
<ul> <li>M12 connectors (stair</li> </ul>	nless steel) <sup>() 8)</sup>				1	F	
Display							
<ul> <li>Without display</li> </ul>						0	
Without visible display	/					1	
(display concealed, s	÷ .						
<ul> <li>With visible display (s</li> <li>With quotemer appaid</li> </ul>	0 ,					6	
<ul> <li>With customer-specifi specified. Order code</li> </ul>	e "Y21" or "Y22" required)					7	
specified, Order COde							

#### Ordering information

er item: Pressure transmitter 7MF4633-... er item: Mounting flange 7MF4912-3...

#### g example

tem line 1:	7MF4633-1EY20-1AA1-Z
3 line:	Y01
C line:	Y01: 80 to 143 mbar (1.16 to 2.1 psi)
tem line 2:	7MF4912-3GE01

upply units see Chap. 7 "Supplementary Components".

- d in delivery of the device: nstructions (Leporello) OM with detailed documentation Ig plug(s) or sealing screw(s) for the process flanges(s)
- conjunction with electrical connection "Screwed gland Pg 13.5" and D plug".
- ut cable gland, with blanking plug.
- enclosed cable gland Ex ia and blanking plug.
- gurations with HAN and M12 connectors are only available in Ex ic.
- n connection with IP65.
- n connection with Ex approval A, B or E.
- delivered without cable socket
- n connection with Ex approval A, B, E or F.

Transmitters for general requirements

## SITRANS P DS III for level

Selection and Order	ing data	A	rtic	le	No	).			
	Pressure transmitters for level								
SITRANS P DS III with	7	MF	: 4	63	34	-			
SITRANS P DS III with	7	MF	: 4	63	35	-			
Click on the Article ration in the PIA Li		Y					1		
Nominal measuring									
250 mbar	(100 inH <sub>2</sub> O)		D						
600 mbar	(240 inH <sub>2</sub> O)		E						
1600 mbar 5 bar	(642 inH <sub>2</sub> O) (2000 inH <sub>2</sub> O)		F G						
			u						
Female thread 1/4-18				2 0					
Non-wetted parts mapping process flange screw									
Stainless steel Stainless steel				2 3					
Version									
<ul> <li>Standard versions</li> </ul>						1			
documentation in 5	<ul> <li>International version, English label inscriptions, documentation in 5 languages on CD (no Order code selectable)</li> </ul>								
Explosion protection	n								
None							Α		
<ul> <li>With ATEX, Type of</li> <li>"Intrinsic safety (E</li> </ul>							в		
- "Explosion-proof (							D		
							P		
(Ex ia + Ex d)" <sup>2)</sup>	d flameproof enclosure"								
- "Ex nA/ic (Zone 2)							E		
<ul> <li>"Intrinsic satety, ex dust explosion pre</li> </ul>	plosion-proof enclosure and						R		
Zone 1D/2D)" <sup>2)4)</sup> (	not for DS III FF)								
<ul> <li>FM + CSA intrinsic :</li> </ul>	safe (is)						F		
	+ Ex ia + Ex d (ATEX) <sup>4)</sup>						S		
With FM + CSA, Typ						NC			
	Explosion Proof (is + xp) <sup>"1)</sup>						NC	1	
Electrical connectio	-							,	
<ul> <li>Screwed gland M20</li> <li>Screwed gland <sup>1</sup>/<sub>2</sub>-1</li> </ul>						E			
M12 connectors (state)						F			
Display									
<ul> <li>Without display</li> </ul>							0		
Without visible display								1	
(display concealed, setting: bar)									
<ul> <li>With visible display (setting: bar)</li> <li>With customer-specific display (setting as</li> </ul>							6 7		
With customer-specific display (setting as specified, Order code "Y21" required)								1	

Ordering information

1st order item: Pressure transmitter 7MF4634-... 2nd order item: Mounting flange 7MF4912-...

#### ordering example

Item line 1:	7MF4634-1EY20-1AA1
Item line 2:	7MF4912-3GE01
Item line 2:	7MF4912-3GE01

- Included in delivery of the device:
  Brief instructions (Leporello)
  CD-ROM with detailed documentation
  Sealing plug(s) or sealing screw(s) for the process flanges(s)
- 1) Without cable gland, with blanking plug.
- <sup>2)</sup> With enclosed cable gland Ex ia and blanking plug.
- $^{\rm 3)}\,$  Configurations with HAN and M12 connectors are only available in Ex ic.
- <sup>4)</sup> Only in connection with IP65.
- <sup>5)</sup> M12 delivered without cable socket
- $^{6)}\,$  Only in connection with Ex approval A, B, E or F.

1

Transmitters for general requirements

## SITRANS P DS III for level

Selection and Ordering data	Order	code			Selection and Ordering data	Order	code		
Further designs		HART	PA	FF	Further designs		HART	PA	FF
Add "-Z" to Article No. and specify Order code.					Add "-Z" to Article No. and specify Order code.				
O-rings for process flanges on low-pressure side (instead of FPM (Viton)) • PTFE (Teflon)	A20	~	~	1	Use on zone 1D / 2D (only together with type of protection "Intrinsic safety" (transmitter 7MF4B Ex ia)"and IP65)	E01	1	1	1
<ul> <li>FEP (with silicone core, approved for food)</li> <li>FFPM (Kalrez, compound 4079), for measured medium temperatures -15 100 °C (5 212 °F)</li> </ul>	A21 A22	* *	✓ ✓	√ √	Overfilling safety device for flammable and non-flammable liquids (max. PN 32 (MAWP 464 psi), basic device with type of protection "Intrinsic safety (Ex ia)",	E08	1		
• NBR (Buna N) Plug	A23	~	~	~	to WHG and VbF, not together with measuring cell filling "inert liquid")				
• Han 7D (metal)	A30	✓			Export approval Korea	E11	✓	✓	1
<ul><li>Han 8D (instead of Han 7D)</li><li>Angled</li></ul>	A31 A32	√ √			<b>CRN approval Canada</b> (Canadian Registration Number)	E22	~	~	~
• Han 8D (metal)	A33	~			Dual seal	E24	~	✓	1
Sealing screw ¼-18 NPT, with valve in mat. of process flanges	A40	~	✓	~	Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil)	E25 <sup>2)</sup>	~	1	~
Cable sockets for M12 connectors (metal (CuZn))	A50	~	✓	~	(only for transmitter 7MF4B) "Flameproof" explosion protection accord-	F26 <sup>2)</sup>	1	1	1
Rating plate inscription (instead of German)					ing to INMETRO (Brazil) (only for transmitter 7MF4D)	220			
• English • French	B11 B12	√ √	√ √	√ √	Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil)	E28 <sup>2)</sup>	~	✓	
• Spanish	B13	1	✓.	1	(only for transmitter 7MF4P)				
<ul><li>Italian</li><li>Cyrillic (russian)</li></ul>	B14 B16	√ √	√ √	√ √	Ex Approval IEC Ex (Ex ia)	E45 <sup>2)</sup>	~	~	~
English rating plate	B21	1		1	(only for transmitter 7MF4B)	E46 <sup>2)</sup>			
Pressure units in inH <sub>2</sub> 0 and/or psi					Ex Approval IEC Ex (Ex d) (only for transmitter 7MF4D)	E40 /	•	•	•
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11	~	1	1	Explosion-proof "Intrinsic safety" to NEPSI (China)	E55 <sup>2)</sup>	~	~	~
Inspection certificate	C12	1	✓	~	(only for transmitter 7MF4B)				
Acc. to EN 10204-3.1 Factory certificate	C14	~	✓	~	Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)	E56 <sup>2)</sup>	~	1	~
Acc. to EN 10204-2.2	000	,			Ex protection "Zone 2" to NEPSI (China)	E57 <sup>2)</sup>	1	1	1
Functional safety (SIL2) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL confor-	C20	v			(only for transmitter 7MF4E)	E58 <sup>2)</sup>			
mity declaration Functional safety (PROFIsafe)	C21 <sup>1)</sup>		~		Ex protection "Ex ia", "Ex d" and "Zone 2" to NEPSI (China) (only for transmitter 7MF4R)	E30 /	·	•	•
Certificate and PROFIsafe protocol Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL confor- mity declaration	C23	~			"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (only for transmitter 7MF4[B, D]Z + E11)	E70 <sup>2)</sup>	~	1	~
<b>Device passport Russia</b> (For price request please contact the technical	C99	~	~	~	Two coats of lacquer on casing and cover (PU on epoxy)	G10	1	~	~
support www.siemens.com/automation/support-request)					Replacement of process connection side	H01	1	✓	~
Setting of upper limit of output signal to 22.0 mA	D05	~			Transient protector 6 kV (lightning protec- tion)	J01	~	1	~
Degree of protection IP66/IP68 (only for M20x1.5 and ½-14 NPT)	D12	~	1	~	Vent valve or blanking plug of process flange welded-in (orientation: on right when viewing the display) <sup>3)</sup>	J08	1	1	~
Supplied with oval flange (1 item), PTFE packing and screws in thread of process flange	D37	~	~	1	Vent valve or blanking plug of process flange welded-in (orientation: on left when viewing the display) <sup>3)</sup>	J09	~	1	*
Capri cable gland 4F CrNi and clamping device (848699 + 810634) included	D59	1	1	1	<ol> <li>Profisafe transmitters can only be operated wit figuration software in combination with S7-400</li> <li>Option beinhaltet keine ATEX-Zulassung, sond</li> </ol>	)H	,		

<sup>3)</sup> Blanking plug is standard configuration. Order option A40 if a vent valve is required instead of a blanking plug.

Transmitters for general requirements

SITRA	NS P	DS III	for	eve
			101	

Selection and Ordering data	Order code						
Additional data		HART	PA	FF			
Please add "-Z" to Article No. and specify Order code(s) and plain text.							
<b>Measuring range to be set</b> Specify in plain text (max. 5 characters): Y01: up to mbar, bar, kPa, MPa, psi	Y01	1	√1)				
Stainless steel tag plate and entry in device variable (measuring point description)	Y15	1	~	1			
Max. 16 characters, specify in plain text: Y15:							
Measuring point text (entry in device variable) Max. 27 characters, specify in plain text: Y16:	Y16	~	~	~			
Entry of HART address (TAG) Max. 8 characters, specify in plain text: Y17:	Y17	~					
Setting of pressure indicator in pressure units	Y21	~	~	~			
Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi, Note: The following pressure units can be selected:							
bar, mbar, mm $H_2O^{*}$ ), in $H_2O^{*}$ ), ft $H_2O^{*}$ ), mmHG, inHG, psi, Pa, kPa, MPa, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , Torr, ATM or % ") ref. temperature 20 °C							
Setting of pressure indicator in non-pressure units <sup>2)</sup> Specify in plain text: Y22: up to //min, m <sup>3</sup> /h, m, USgpm, (specification of measuring range in pressure units " <b>Y01</b> " is essential, unit with max. 5 characters)	Y22 <sup>3)</sup> + Y01	~					
Preset bus address possible between 1 and 126 Specify in plain text: Y25:	Y25		~	*			
Damping adjustment in seconds	Y30	~	~	~			

### (0 ... 100 s)

Only Y01, Y15, Y16, Y17, Y21, Y22, Y25 and D05 can be factory preset

✓ = available

Measuring accuracies for PROFIBUS PA transmitters with Option Y01 are calculated in the same way as for HART devices.
 Preset values can only be changed over SIMATIC PDM.
 Not in conjunction with over-filling safety device for flammable and non-flammable liquids (Order code "E08")

1

Transmitters for general requirements

Selection and Ordering data	Article No.	Ord. code	Selection and Ordering data	Order	code		
Mounting flange	↗ 7MF4912	2 -	Further designs		HART	PA	FF
Directly mounted on the SITRANS P pressure	3		Add "-Z" to Article No. and specify Order code				
transmitter (converter part) for level, for DS III series			Spark arrester For mounting on zone 0 (incl. documentation	<b>A01</b>	1	1	1
Click on the Article No. for the online configu- ration in the PIA Life Cycle Portal.			Remote seal nameplate	B20	✓	~	~
Nominal diameter         Nominal pressure           DN 50         PN 10/16/25/40	A		attached out of stainless steel, contains Arti- cle No. and order number of the remote seal supplier Oil- and grease-free cleaned version	C10	1		
PN 100	B		Oil- and grease-free cleaned and packed ver-		Ť	¥	•
DN 80         PN 10/16/25/40           DN 100         PN 10/16	G		sion, not for oxygen application, only in con- junction with halocarbon oil fill fluid, certified by certificate acc. to EN 10204-2.2	/			
PN 25/40 Connection to ASME B16.5	н		Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11	~	✓	~
Nominal diameter Nominal pressure			•	010	,	,	
2 inch class 150 class 300	L		Inspection certificate Acc. to EN 10204-3.1	C12	¥	v	•
class 400/600	N		2.2 Certificate of FDA approval of fill oil	C17	~	~	~
class 900/1500 3 inch class 150	P Q		Only in conjunction with filling liquid "Food oil" (FDA listed)"				
class 300 4 inch class 150	R T		"Functional safety (SIL2)" certificate to IEC 61508	C20	~	~	
class 300 Other version, add Order code and plain text:	U Z	J 1 Y	(only for conjunction with the Order code "C20" in the case of SITRANS P DS III transmitter)				
Nominal diameter:; Nominal press.: Wetted parts materials	_	011	"Functional safety (SIL2/3)" certificate to IEC 61508	C23	~	1	
Stainless steel 316L     Coated with PFA	A		(only for conjunction with the Order code "C23" in the case of SITRANS P DS III transmitter)				
<ul> <li>Coated with PTFE</li> <li>Coated with ECTFE<sup>1)</sup></li> </ul>	E 0 F		Certification acc. to NACE MR-0175 Includes acceptance test certificate 3.1 acc. to EN 10204 (only for wetted parts made of stain-		1	1	~
<ul> <li>Monel 400, mat. no. 2.4360</li> <li>Hastelloy C276, mat. no. 2.4819</li> <li>Hastelloy C4, mat. no. 2.4610</li> </ul>	G J U		less steel 1.4404/316L and Hastelloy C276) Certification acc. to NACE MR-0103	D08	~	~	~
<ul><li>Tantalum</li><li>Duplex 2205, mat. no. 1.4462</li></ul>	ĸ		Includes acceptance test certificate 3.1 acc. to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276)				
• Duplex 2205, mat. no. 1.4462, incl. main body • Stainless steel 316L, gold plated,	R S 0		<b>Oil- and grease-free cleaned version</b> Oil- and grease-free cleaned and packed ver-	E10	1	~	~
thickness approx. 25 μm <b>Tube length</b> • None  • 50 mm (1.97 inch)  • 100 mm (3.94 inch)	0 1 2		sion, <u>only for oxygen application</u> , only inert fill fluid may be used. Max. temperature: 60 °C (140 °F), max. pressure 50 bar (725 psi), only in connection with halocarbon oil, certified by certificate acc. to EN 10204-2.2				
• 150 mm (5.90 inch) • 200 mm (7.87 inch)	3		Epoxy painting Not possible with vacuum-proof design	E15	~	~	1
Other version: add Order code and plain text: material of parts in contact with medium:, tubus length: Filling liquid	Z 8	K 1 Y	Color: transparent, coverage: front and rear or the remote seal, capillary(ies) or connecting tube, process connection of the transmitter. With transmitters 7MF40 and 7MF42, only	f			
Silicone oil M5	1		possible with process connection G½B according to EN837-1.				
<ul> <li>Silicone oil M50</li> <li>High-temperature oil</li> <li>Halocarbon oil (for O<sub>2</sub>-measurement)</li> <li>Food oil (FDA-listed)</li> </ul>	2 3 4 7		Sealing surface B1 or ASME B16.5 RF 125 250 AA instead of sealing surface B2 or RFSF (only for wetted parts made of Hastelloy C276 (2.4819), tantalum and Duplex 2205 (1.4462)	J12	1	~	~
Other version, add Order code and plain text: filling liquid:	9	M1Y	and for nominal sizes 2", 3", DN 50 and DN 80) Sealing surface groove, EN 1092-1, form D		1	1	1
<sup>1)</sup> For vacuum on request			instead of sealing surface B1 (only for wetter parts made of stainless steel 316L)				·
			Sealing surface RJF (groove) ASME B16.5 instead of sealing surface ASME B16.5 RF 125 250 AA (only for wetted parts made of stainless steel 316L)	J24	1	1	1

Transmitters for general requirements

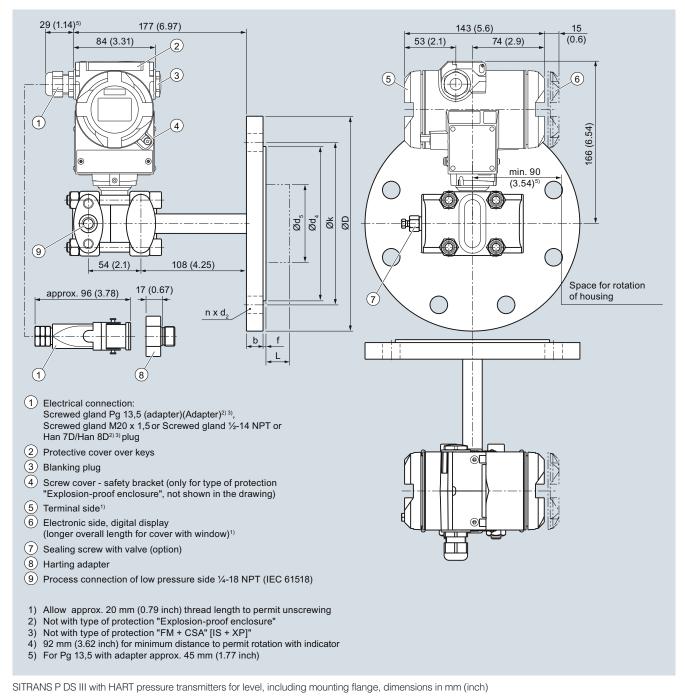
Selection and Ordering data	Order	code		
Further designs		HART	PA	FI
Add "-Z" to Article No. and specify Order code				
Elongated pipe, 150 mm instead of 100 mm,	R15	✓	1	- 1
max. medium temperature 250 °C, observe the maximum permissible media temperature of the filling liquid.				
Elongated pipe, 200 mm instead of 100 mm, max. medium temperature 300 °C, observe the maximum permissible media temperature of the filling liquid.	R20	1	~	~
Vacuum-proof design (for use in low-pressure range) Note: suffix "Y01" required with press. transm.	V04	1	1	~

✓ = available

Transmitters for general requirements

### SITRANS P DS III for level

#### Dimensional drawings



Transmitters for general requirements

										SITE	RANS P I	DS III for leve
Connectio	n to EN 1092	2-1										
Nominal diameter	Nominal pressure	b	D	d	d <sub>2</sub>	d <sub>4</sub>	$d_5$	d <sub>M</sub>	f	k	n	L
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
DN 50	PN 10/16/ 25/40	20	165	90	18	102	48.3	45 <sup>1)</sup>	2	125	8	0, 50, 100, 150 or 200
	PN 100	28	195	90	26	102	48.3	45 <sup>1)</sup>	2	145	8	
DN 80	PN 10/16/ 25/40	24	200	90	18	138	76	72 <sup>2)</sup>	2	160	8	
	PN 100	32	230	90	26	138	76	72 <sup>2)</sup>	2	180	8	
DN 100	PN 10/16	20	220	115	18	158	94	89	2	180	8	
	PN 25/40	24	235	115	22	162	94	89	2	190	8	

#### Connection 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>	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)
2 inch	150	0.77 (19.5)	5.91 (150)	0.79 (20)	3.62 (92)	1.9 (48.3)	1.77 <sup>1)</sup> (45)	0.08 (2)	4.74 (120.5)	4	0, 2, 3.94,
	300	0.89 (22.7)	6.5 (165)	0.79 (20)	3.62 (92)	1.9 (48.3)	1.77 <sup>1)</sup> (45)	0.08 (2)	5 (127)	8	5.94 or 7.87 (0, 50, 100,
	400/600	1.28 (32.4)	6.5 (165)	0.79 (20)	3.62 (92)	1.9 (48.3)	1.77 <sup>1)</sup> (45)	0.28 (7)	5 (127)	8	150 or 200)
	900/1500	1.78 (45.1)	8.46 (215)	1.02 (26)	5 (127)	1.9 (48.3)	1.77 <sup>1)</sup> (45)	0.28 (7)	6.5 (165)	8	
3 inch	150	0.96 (24.3)	7.48 (190)	0.79 (20)	5 (127)	3 (76)	2.83 <sup>2)</sup> (72)	0.08 (2)	6 (152.5)	4	_
	300	1.14 (29)	8.27 (210)	0.87 (22)	5 (127)	3 (76)	2.83 <sup>2)</sup> (72)	0.08 (2)	6.63 (168.5)	8	
	600	1.53 (38.8)	8.27 (210)	0.87 (22)	5 (127)	3 (76)	2.83 <sup>2)</sup> (72)	0.28 (7)	6.63 (168.5)	8	
4 inch	150	0.96 (24.3)	9.06 (230)	0.79 (20)	6.22 (158)	3.69 (94)	3.5 (89)	0.08 (2)	7.5 (190.5)	8	_
	300	1.27 (32.2)	10.04 (255)	0.87 (22)	6.22 (158)	3.69 (94)	3.5 (89)	0.08 (2)	7.87 (200)	8	
	400	1.65 (42)	10.04 (255)	1.02 (26)	6.22 (158)	3.69 (94)	3.5 (89)	0.28 (7)	7.87 (200)	8	

d: Internal diameter of gasket to DIN 2690  $d_M$ : Effective diaphragm diameter  $^{1)}$  59 mm = 2.32 inch with tube length L=0.

<sup>2)</sup> 89 mm =  $3\frac{1}{2}$  inch with tube length L=0.

Transmitters for general requirements

### SITRANS P DS III Supplementary electronics for 4-wire connection

#### Overview



Direct connection of the supplementary electronics to a SITRANS P DS III pressure transmitter with HART produces a transmitter for 4-wire connection.

The supplementary electronics cannot be attached to explosionprotected pressure transmitters. The supplementary electronics is fitted in a light metal housing which is mounted on the left side of the pressure transmitter.

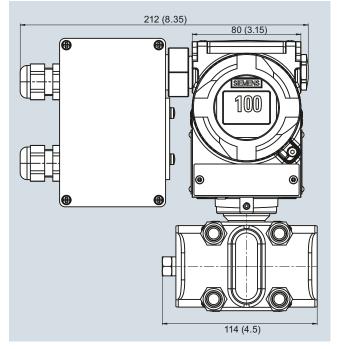
#### Note on ordering:

The supplementary electronics can only be ordered as an **optional accessory** for the corresponding pressure transmitter.

Technical specifications								
SITRANS P, supplementary electro	onics for 4-wire connection							
Output								
Output signal	0 20 mA or 4 20 mA							
Load	Max. 750 Ω							
Voltage measurement	Linear (square-rooting in transmitter if necessary)							
Electrical isolation	Between power supply and input/ output							
Measuring accuracy	acc. to IEC 60770-1							
Measurement deviation (in addition to transmitter)	$\leq$ 0.15 % of set span							
Influence of ambient temperature	≤0.1 % per 10 K							
Power supply effect	$\leq$ 0.1 % per 10 % change in voltage or frequency							
Load effect	≤0.1 % per 100 % change							
Rated conditions								
Ambient temperature								
• 24 V version	-20 +80 °C (-4 +176 °F)							
• 230 V version	-20 +60 °C (-4 +140 °F)							
Storage temperature	-50 +85 °C (-58 +185 °F							
Degree of protection	IP54 to IEC 60529							
Electromagnetic compatibility (EMC)	IEC 61236							
Condensation	Relative humidity 0 95 % condensation permissible							

Structural design	
Dimensions (W x H x D) in mm (inch)	80 x 120 x 60 (3.15 x 4.72 x 2.36)
Electrical connection	Screw terminals (Pg 13.5 cable inlet) or Han 7D / Han 8D plug
Power supply	
Supply voltage	230 V AC (-10 +6 %, 47 63 Hz, approx. 6 VA) or
	24 V AC/DC (24 V AC ± 10 %, 47 63 Hz, approx. 3 VA)
Permissible ripple (within the speci- fied limits)	Approx. 2.5 V <sub>pp</sub>

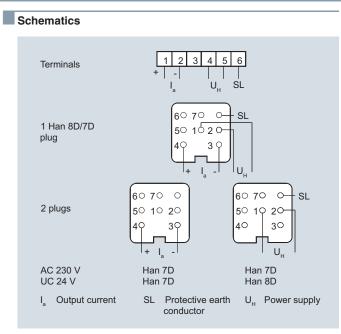
## Dimensional drawings



SITRANS P pressure transmitters with supplementary electronics for fourwire connection, dimension drawing, dimensions in mm

Transmitters for general requirements

SITRANS P DS III Supplementary electronics for 4-wire connection



Supplementary electronics for 4-wire connection, connection diagram

Selection and	Ordering data	Or	de	r code
connection Article No. of th	y electronics for 4-wire e transmitter . <b>B.</b> add "- <b>Z</b> " and Order code.	V		
Power supply	Electrical connection			
24 V AC/DC	Terminals; 2 Pg screwed glands, to left		1	
	2 Han 7D/Han 8D plugs	;	3	
	incl. mating connector, to left 1 Han 7D plug incl. mating	Į	5	
	connector, angled			
	Terminals; 1 Pg screwed gland, downwards	(	6	
	1 Han 8D plug incl. mating connector, downwards (observe arrangement of plug and differential pressure line)	9	9	
230 V AC	Terminals; 2 Pg screwed glands, to left	7	7	
	2 Han 7D plugs incl. mating connector, to left	1	В	
Output current	t			
0 20 mA			0	
4 20 mA			1	
Accessories				
Instruction Ma German/Englis		A5	5E0	0322799

Article No.
7 MF 4 9 9 2 0 - 0 DB 0

1 3

> D F G H

> > A B C

> > > 0 1

2 3 Order code

C12

## **Pressure Measurement**

Transmitters for general requirements

Selection and Ord	ering data	/	Article	e No.	Selection	and Order	ing data	
Replacement measuring cell for pressure for SITRANS P DS III				4990- 0-0DB0		for SITRAN	ring cell for absolute NS P DS III (from the	
Click on the Arti tion in the PIA Li	cle No. for the online configura- fe Cycle Portal.	•					e No. for the online configur Cycle Portal.	a-
Measuring cell fill Silicone oil Inert liquid	ing Measuring cell cleaning Normal grease-free to cleanliness level 2		1 3		Measuring Silicone oil Inert liquid		g Measuring cell cleaning Normal grease-free to cleanliness level 2	
Measured span (n 0.01 1 bar 0.04 4 bar 0.16 16 bar 0.63 63 bar	(0.15 14.5 psi) (0.6 58 psi) (2.32 232 psi) (9.14 914 psi)		B C D E		<b>Measured</b> 8.3 250 43 1300 0.16 5 b 1 30 bar	mbar a mbar a ar a	<ol> <li> max.)</li> <li>(0.12 3.62 psia)</li> <li>(0.62 18.85 psia)</li> <li>(2.32 72.5 psia)</li> <li>(14.5 435 psia)</li> </ol>	
1.6 160 bar 4.0 400 bar 7.0 700 bar Wetted parts mate Seal diaphragm	(23.2 2320 psi) (58.0 5802 psi) (102.0 10153 psi) erials Process connection	_	F G J		Wetted pa Seal diaph Stainless s Hastelloy Hastelloy	ragm	als Process connection Stainless steel Stainless steel Hastelloy	
Stainless steel Hastelloy Hastelloy	Stainless steel Stainless steel Hastelloy		A B C		Process c	on shank (	G1/2B to EN 837-1	
<ul> <li>Process connection</li> <li>Connection shanle</li> <li>Female thread 1/2-</li> <li>Oval flange made</li> </ul>	<ul> <li>G<sup>1</sup>/<sub>2</sub>B to EN 837-1</li> <li>14 NPT</li> <li>of stainless steel,</li> </ul>			0	max. spa - Mountir	n 160 bar ng thread <sup>7</sup>	f stainless steel, (2320 psi) / <sub>16</sub> -20 UNF to IEC 61518 /10 to DIN 19213	
	ar (2320 psi) d <sup>7</sup> / <sub>16</sub> -20 UNF to IEC 61518 d M10 to DIN 19213			2 3	<i>Further de</i> Please ado Order code	d " <b>-Z</b> " to Art	icle No. and specify	
Further designs Please add "-Z" to A Order code.	Article No. and specify	(	Order	code	Inspection to EN 1020		e	
Inspection certific to EN 10204-3.1	ate	(	C12					

1

Transmitters for general requirements

SITRANS P DS III Accessories/Spare Parts

	ng data	A	rti	icl	еΝ	ю.
Replacement measur	ing cell for absolute pres-	77	M	F	49	93
sure (from the differe	ntial pressure series) for					
	HART, DS III with PROFIBUS					- 0
PA and DS III with FOU	INDATION Fieldbus series					
Click on the Article tion in the PIA Life C	No. for the online configura- Cycle Portal.					
• •	Measuring cell cleaning					
Silicone oil	Normal	1				
Inert liquid	grease-free to cleanliness level 2	3				
Measured span (min.						
8.3 250 mbar a	(0.12 3.62 psia)		D			
43 1300 mbar a	(0.62 18.85 psia)		F			
0.16 5 bar a	(2.32 72.5 psia)		G			
1 30 bar a	(14.5 435 psia)		Н			
5.3 100 bar a	(76.9 1450 psia)		K	Е		
Wetted parts material	S					
Seal diaphragm	Parts of measuring cell					
Stainless steel	Stainless steel			A		
Hastelloy	Stainless steel			В		
Hastelloy	Hastelloy			c		
Tantalum	Tantalum			E		
Monel	Monel			H		
	Gold			H L		
Gold Process connection	uulu			Ľ		
<ul> <li>Vent on side of proce</li> <li>Mounting thread M</li> </ul>	<sub>16</sub> -20 UNF to IEC 61518 ess flange <sup>1)</sup> 10 to DIN 19213 <sub>16</sub> -20 UNF to IEC 61518				0 2 4 6	
Stainless steel proces					2	
Further designs		С	)rc	de	_	ode
Please add "-Z" to Artic	cle No. and specify	C	)rc	de	_	
Please add "-Z" to Artic Order code. O-rings for process fl	anges	C	)rc	de	_	
Please add "-Z" to Artic Order code. O-rings for process fl (instead of FPM (Viton)	anges				_	
Please add "-Z" to Artic Order code. O-rings for process fl (instead of FPM (Viton) • PTFE (Teflon)	anges )	A	2	0	_	
Please add "-Z" to Artic Order code. O-rings for process fl (instead of FPM (Viton) • PTFE (Teflon) • FEP (with silicone con	anges ) re, approved for food)	A	2	0	_	
Please add "-Z" to Artic Order code. O-rings for process fl (instead of FPM (Viton) • PTFE (Teflon) • FEP (with silicone coi • FFPM (Kalrez, compo	anges ) re, approved for food) ound 4079), for measured me-	A	2	0	_	
Please add "-Z" to Artic Order code. O-rings for process fl (instead of FPM (Viton) • PTFE (Teflon) • FEP (with silicone col • FFPM (Kalrez, compo- dium temperatures -1	anges ) re, approved for food)	A A A	2	0 1 2	_	
Please add "-Z" to Artic Order code. O-rings for process fl (instead of FPM (Viton) • PTFE (Teflon) • FEP (with silicone col • FFPM (Kalrez, compo- dium temperatures -1	anges ) re, approved for food) ound 4079), for measured me-	A A A	2	0 1 2	_	
Please add "-Z" to Artic Order code. O-rings for process fl (instead of FPM (Viton) • PTFE (Teflon) • FEP (with silicone con • FFPM (Kalrez, compo- dium temperatures -1 • NBR (Buna N) Inspection certificate	anges ) re, approved for food) ound 4079), for measured me- 5 100 °C (5 212 °F)	A A A	2	0 1 2 3	_	
Please add "-Z" to Artic Order code. O-rings for process fl (instead of FPM (Viton) • PTFE (Teflon) • FEP (with silicone con • FFPM (Kalrez, compo- dium temperatures -1 • NBR (Buna N) Inspection certificate to EN 10204-3.1	anges ) re, approved for food) pund 4079), for measured me- 5 100 °C (5 212 °F)	A A A C	2	0 1 2 3 2	_	
Please add "-Z" to Artic Order code. O-rings for process fl (instead of FPM (Viton) • PTFE (Teflon) • FEP (with silicone coi • FFPM (Kalrez, compo- dium temperatures -1 • NBR (Buna N) Inspection certificate to EN 10204-3.1 Process connection (	anges ) re, approved for food) pund 4079), for measured me- 5 100 °C (5 212 °F)	A A A C C	20 22 22 12	0 1 2 3 2	_	
Please add "-Z" to Artic Order code. O-rings for process fl (instead of FPM (Viton) • PTFE (Teflon) • FEP (with silicone cor of FFPM (Kalrez, compor dium temperatures -1 • NBR (Buna N) Inspection certificate to EN 10204-3.1 Process connection ( Remote seal flanges	anges ) re, approved for food) ound 4079), for measured me- 5 100 °C (5 212 °F)	A A A C C	2	0 1 2 3 2	_	
Please add "-Z" to Artic Order code. O-rings for process fl (instead of FPM (Viton) • PTFE (Teflon) • FEP (with silicone col • FFPM (Kalrez, compo- dium temperatures -1 • NBR (Buna N) Inspection certificate to EN 10204-3.1 Process connection C Remote seal flanges (not together with K01,	anges ) re, approved for food) bund 4079), for measured me- 5 100 °C (5 212 °F) G1⁄2B K02 and K04)	A A A C C D	20 22 22 12 12 11 10	0 1 2 3 2 6 0	_	
Please add "-Z" to Artic Order code. O-rings for process fl (instead of FPM (Viton) • PTFE (Teflon) • FEP (with silicone con • FFPM (Kalrez, compo- dium temperatures -1 • NBR (Buna N) Inspection certificate to EN 10204-3.1 Process connection (C Remote seal flanges (not together with K01, Vent on side for gas r	anges ) re, approved for food) bund 4079), for measured me- 5 100 °C (5 212 °F) G1⁄2B K02 and K04)	A A A C C D	20 22 22 12	0 1 2 3 2 6 0	_	
Please add "-Z" to Artic Order code. O-rings for process fl (instead of FPM (Viton) • PTFE (Teflon) • FEP (with silicone con • FFPM (Kalrez, compo- dium temperatures -1 • NBR (Buna N) Inspection certificate to EN 10204-3.1 Process connection (C Remote seal flanges (not together with K01, Vent on side for gas r Process flanges	anges ) re, approved for food) bund 4079), for measured me- 5 100 °C (5 212 °F) G1⁄2B K02 and K04)		20 22 22 12 12 11 10	0 1 2 3 2 6 0 2	_	
Please add "-Z" to Artic Order code. O-rings for process fl (instead of FPM (Viton) • PTFE (Teflon) • FEP (with silicone con • FFPM (Kalrez, compo- dium temperatures -1 • NBR (Buna N) Inspection certificate to EN 10204-3.1 Process connection (C Remote seal flanges (not together with K01, Vent on side for gas r Process flanges • without	anges ) re, approved for food) bund 4079), for measured me- 5 100 °C (5 212 °F) 31⁄2B K02 and K04) measurements		20 22 22 12 12 11 10	0 1 2 3 2 6 0 2	_	
Please add "-Z" to Artic Order code. O-rings for process fl (instead of FPM (Viton) • PTFE (Teflon) • FEP (with silicone con • FFPM (Kalrez, compo- dium temperatures -1 • NBR (Buna N) Inspection certificate to EN 10204-3.1 Process connection (C Remote seal flanges (not together with K01, Vent on side for gas r Process flanges • without	anges ) re, approved for food) bund 4079), for measured me- 5 100 °C (5 212 °F) 31⁄2B K02 and K04) measurements	A A A C C C C C C C C C C C C C C C C C	20 22 22 12 12 12 10 10 10 10	0 1 2 3 2 6 0 2	_	
Please add "-Z" to Artic Order code. O-rings for process fl (instead of FPM (Viton) • PTFE (Teflon) • FEP (with silicone con • FFPM (Kalrez, compo- dium temperatures -1 • NBR (Buna N) Inspection certificate to EN 10204-3.1 Process connection (C Remote seal flanges (not together with K01, Vent on side for gas r Process flanges • without	anges ) re, approved for food) bund 4079), for measured me- 5 100 °C (5 212 °F) 31⁄2B K02 and K04) measurements	A A A C C C C C C C C C C C C C C C C C	20 22 22 12 12 11 10	0 1 2 3 2 6 0 2	_	
Please add "-Z" to Artic Order code. O-rings for process fl (instead of FPM (Viton) • PTFE (Teflon) • FEP (with silicone con • FFPM (Kalrez, compo- dium temperatures -1 • NBR (Buna N) Inspection certificate to EN 10204-3.1 Process connection ( Remote seal flanges (not together with K01, Vent on side for gas r Process flanges • without • with process flange r	anges ) re, approved for food) bund 4079), for measured me- 5 100 °C (5 212 °F) 31⁄2B K02 and K04) measurements		20 22 22 12 12 12 10 10 10 10	0 1 2 3 2 6 0 2 1	_	
Please add "-Z" to Artic Order code. O-rings for process fl (instead of FPM (Viton) • PTFE (Teflon) • FEP (with silicone cor • FFPM (Kalrez, compor dium temperatures -1 • NBR (Buna N) Inspection certificate to EN 10204-3.1 Process connection C Remote seal flanges (not together with K01, Vent on side for gas r Process flanges • without • with process flange r - Hastelloy	anges ) re, approved for food) bund 4079), for measured me- 5 100 °C (5 212 °F) 3½B K02 and K04) measurements nade of			0 1 2 3 2 6 0 2 1 2	_	
Please add "-Z" to Artic Order code. O-rings for process fl (instead of FPM (Viton) • PTFE (Teflon) • FEP (with silicone cor of FFPM (Kalrez, compor- dium temperatures -1 • NBR (Buna N) Inspection certificate to EN 10204-3.1 Process connection C Remote seal flanges (not together with K01, Vent on side for gas r Process flanges • without • with process flange r - Hastelloy - Monel	anges ) re, approved for food) ound 4079), for measured me- 5 100 °C (5 212 °F) G1/2B K02 and K04) measurements nade of PVDF insert			0 1 2 3 2 6 0 2 1 2	_	
Please add "-Z" to Artic Order code. O-rings for process fl (instead of FPM (Viton) • PTFE (Teflon) • FEP (with silicone con • FFPM (Kalrez, compo- dium temperatures -1 • NBR (Buna N) Inspection certificate to EN 10204-3.1 Process connection (C Remote seal flanges (not together with K01, Vent on side for gas r Process flanges • without • with process flange r - Hastelloy - Monel • Stainless steel with max. PN 10 (MAWF max.temperature of	anges ) re, approved for food) pund 4079), for measured me- 5 100 °C (5 212 °F) G1/2B K02 and K04) measurements nade of PVDF insert ? 145 psi) f medium 90 °C (194 °F)			0 1 2 3 2 6 0 2 1 2	_	
Please add "-Z" to Artic Order code. O-rings for process fl (instead of FPM (Viton) • PTFE (Teflon) • FEP (with silicone cor • FFPM (Kalrez, compordium temperatures -1 • NBR (Buna N) Inspection certificate to EN 10204-3.1 Process connection C Remote seal flanges (not together with K01, Vent on side for gas r Process flanges • without • with process flange r - Hastelloy - Monel - Stainless steel with max. PN 10 (MAWF max.temperature of For ½-14 NPT inner	anges ) re, approved for food) bund 4079), for measured me- 5 100 °C (5 212 °F) 3½B K02 and K04) measurements nade of PVDF insert ? 145 psi) f medium 90 °C (194 °F) process connection on the			0 1 2 3 2 6 0 2 1 2	_	
Please add "-Z" to Artic Order code. O-rings for process fl (instead of FPM (Viton) • PTFE (Teflon) • FEP (with silicone cor • FFPM (Kalrez, compordium temperatures -1 • NBR (Buna N) Inspection certificate to EN 10204-3.1 Process connection C Remote seal flanges (not together with K01, Vent on side for gas r Process flanges • without • with process flange r - Hastelloy - Monel - Stainless steel with max. PN 10 (MAWF max.temperature of For ½-14 NPT inner	anges ) re, approved for food) pund 4079), for measured me- 5 100 °C (5 212 °F) G1/2B K02 and K04) measurements nade of PVDF insert ? 145 psi) f medium 90 °C (194 °F)			0 1 2 3 2 6 0 2 1 2	_	

<sup>1)</sup> Not for span 5.3 ... 100 bar (76.9 ... 1450 psi)

Selection and Order	ing data	Artic	e N	0.	
Replacement measu	7 M F	49	94 -		
	160 (MAWP 464/2320 psi) for HART, DS III with PROFIBUS			- 0 D C 0	
	UNDATION Fieldbus series				
Click on the Article tion in the PIA Life	No. for the online configura- Cycle Portal.				
Measuring cell filling	g Measuring cell cleaning				
Silicone oil	Normal	1			
Inert liquid	grease-free to cleanliness level 2	3			
Measured span (min					
PN 32 (MAWP 464 ps	7	_			
1 20 mbar <sup>1)</sup>	(0.4 8 inH <sub>2</sub> O)	В			
PN 160 (MAWP 2320					
1 60 mbar 2.5 250 mbar	(0.4 24 inH <sub>2</sub> O)	CD			
6 600 mbar	(1 100 inH <sub>2</sub> O) (2.4 240 inH <sub>2</sub> O)	E			
16 1600 mbar	(6.4 642 inH <sub>2</sub> O)	F			
50 5000 mbar	(20 2000 inH <sub>2</sub> O)	G			
0.3 30 bar	(4.35 435 psi)	H			
Wetted parts materia	als				
(stainless steel proces	ss flanges)				
Seal diaphragm	Parts of measuring cell				
Stainless steel	Stainless steel	A			
Hastelloy Hastelloy	Stainless steel Hastelloy	A B C E			
Tantalum <sup>2)</sup>	Tantalum	Ē			
Monel <sup>2)</sup>	Monel	H			
Gold <sup>2)</sup>	Gold	L			
Process connection	VPT with flange connection				
	site process connection				
- Mounting thread M	110 to DIN 19213		0		
	/ <sub>16</sub> -20 UNF to IEC 61518		2		
Vent on side of proc	ess flange				
<ul> <li>Mounting thread M</li> <li>Mounting thread <sup>7</sup></li> </ul>	/ <sub>16</sub> -20 UNF to IEC 61518		4 6		
Non-wetted parts ma					
Stainless steel proces	s flange screws		2		
Further designs Please add "-Z" to Artic	ele No. and specify Order code.	Order code			
O-rings for process	•				
<ul><li>(instead of FPM (Vitor</li><li>PTFE (Teflon)</li></ul>	1))	A20			
· /	ore, approved for food)	A20 A21			
<ul> <li>FFPM (Kalrez, comp</li> </ul>	ound 4079), for measured me-	A22			
	15 100 °Ć (5 212 °F)				
• NBR (Buna N)	-	A23			
to EN 10204-3.1	9	C12			
Remote seal flanges	i	D20			
(not together with K01					
Vent on side for gas	measurements	H02			
	ess flanges for vertical	H03			
differential pressure (not together with K01					
Process flanges	, NUZ ANU NU4)				
without		K00			
with process flange	made of				
- Hastelloy		K01			
- Monel		K02			
	n PVDF insert, max. PN 10	K04			
	nax. temperature of medium				
	1/2-14 NPT inner process con-				
flange, vent valve					
1)	pection of remote seal				

 Not suitable for connection of remote seal
 Only together with max. spans 250, 1600, 5000 and 30000 mbar (100 inH<sub>2</sub>O, 642 inH<sub>2</sub>O, 2000 inH<sub>2</sub>O und 435 psi).

Transmitters for general requirements

SITRANS P DS III A	Accessories/Spare Parts	S		
Selection and Ordering	u data	Article No.	_	
Replacement measurin	7MF4995-			
pressure and PN 420 (I SITRANS P DS III with H PA and DS III with FOUN	MAWP 6092 psi) for ART, DS III with PROFIBUS NDATION Fieldbus series	- 0 D	C	
Click on the Article N tion in the PIA Life Cy	o. for the online configura- vcle Portal.			
Measuring cell filling Silicone oil	Measuring cell cleaning Normal	1		
Measured span (min 2.5 250 mbar 6 600 mbar 16 1600 mbar 50 5000 mbar 0.3 30 bar	max.) (1 100 inH <sub>2</sub> O) (2.4 240 inH <sub>2</sub> O) (6.4 642 inH <sub>2</sub> O) (20 2000 inH <sub>2</sub> O) (4.35 435 psi)	D E F G H		
Wetted parts materials (stainless steel process				
Seal diaphragm	Parts of measuring cell			
Stainless steel Hastelloy Gold <sup>1)</sup>	Stainless steel Stainless steel Gold	A B L		
Process connection Female thread <sup>1</sup> / <sub>4</sub> -18 NP connection • Sealing screw opposit - Mounting thread M12	e process connection	1		
- Mounting thread <sup>7</sup> / <sub>16</sub>		3		
<ul> <li>Vent on side of process</li> <li>Mounting thread M12</li> <li>Mounting thread <sup>7</sup>/<sub>16</sub></li> </ul>	s flange 2 to DIN 19213	5 7		
Non-wetted parts mate     Stainless steel process	rials	2		
Further designs	5	Order code		
Please add "-Z" to Article code.	e No. and specify Order			
<ul> <li>O-rings for process fla (instead of FPM (Viton))</li> <li>PTFE (Teflon)</li> <li>FEP (with silicone core</li> <li>FFPM (Kalrez, compou dium temperatures -15</li> <li>NBR (Buna N)</li> </ul>	-	A20 A21 A22 A23		
Inspection certificate to EN 10204-3.1		C12		
Stainless steel process differential pressure lin		H03		
without process flange	es	К00		

 $^{\rm 1)}$  Not together with max. span 600 mbar (240.9 inH\_2O)

Transmitters for general requirements

# SITRANS P DS III Accessories/Spare Parts

		STITANS F DS III Acces	sones/opare r a
Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
Spare parts/Accessories		Mounting screws	
Mounting bracket and fastening parts for pressure transmitters		For measuring point label, grounding and con- nection terminals or for display (50 units)	7MF4997-1CD
SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus (7MF403C.) For absolute pressure transmitters SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION		Sealing screws (1 set = 2 units) for process flange • made of stainless steel • made of Hastelloy	7MF4997-1CG 7MF4997-1CH
Fieldbus (7MF423C.)  • made of steel • made of stainless steel Mounting bracket and fastening parts	7MF4997-1AB 7MF4997-1AH	Sealing screws with vent valve Complete (1 set = 2 units) • made of stainless steel • made of Hastelloy	7MF4997-1CP 7MF4997-1CQ
for pressure transmitters SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus (7MF403A., B., .D. andF.) For absolute pressure transmitters SITRANS P DS III with HART, DS III with		Application electronics • for SITRANS P DS III with HART • for SITRANS P DS III with PROFIBUS PA • for SITRANS P DS III with FOUNDATION Fieldbus	7MF4997-1DK 7MF4997-1DL 7MF4997-1DM
<ul> <li>PROFIBUS PA and DS III with FOUNDATION</li> <li>Fieldbus 7MF423A.,B.,D. andF.)</li> <li>made of steel</li> <li>made of stainless steel</li> </ul>	7MF4997-1AC 7MF4997-1AJ	Connection board • for SITRANS P DS III • for SITRANS P DS III PROFIBUS PA and FOUNDATION Fieldbus	7MF4997-1DN 7MF4997-1DP
Mounting and fastening brackets For differential pressure transmitters with flange thread M10 SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus (7MF433 and 7MF443) • made of steel	7MF4997-1AD	O-rings for process flanges made of: • FPM (Viton) • PTFE (Teflon) • FEP (with silicone core, approved for food) • FFPM (Kalrez, compound 4079) • NBR (Buna N)	7MF4997-2DA 7MF4997-2DB 7MF4997-2DC 7MF4997-2DD 7MF4997-2DE
<ul> <li>made of stainless steel</li> </ul>	7MF4997-1AK	Sealing ring for process connection	see "Fittings"
Mounting and fastening brackets For differential pressure transmitters with flange thread M12 SITRANS P DS III with HART, DS III with		<ul> <li>Weldable sockets for PMC connection</li> <li>PMC Style Standard: Thread 1½"</li> <li>PMC Style Minibolt: front-flush 1"</li> </ul>	7MF4997-2HA 7MF4997-2HB
PROFIBUS PA and DS III with FOUNDATION Fieldbus (7MF453) • made of steel • made of stainless steel Mounting and fastening brackets	7MF4997-1AE 7MF4997-1AL	Gaskets for PMC connection (packing unit = 5 units) • PTFE seal for PMC Style Standard: Thread 1½" • Gasket made of Viton for PMC Style Minibolt: front-flush 1"	7MF4997-2HC 7MF4997-2HD
For differential and absolute pressure transmit- ters with flange thread 7/16 -20 UNF SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus (7MF433, 7MF443 and 7MF453)		Weldable socket for TG52/50 and TG52/150 connection • TG52/50 connection • TG52/150 connection Seals for TG 52/50 and TG 52/150 made of	7MF4997-2HE 7MF4997-2HF 7MF4997-2HG
made of steel	7MF4997-1AF	silicone (FDA compliant)	7111 4007 2110
<ul> <li>made of stainless steel</li> <li>Cover</li> <li>made of die-cast aluminum, including gasket, for SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus</li> <li>without window</li> <li>with window</li> </ul>	7MF4997-1AM 7MF4997-1BB 7MF4997-1BE	Seals for flange connection with front-flush diaphragm Material FPM (Viton), 10 units • DN 25, PN 40 (M11) • DN 25, PN 100 (M21) • 1*, class 150 (M40) • 1*, class 300 (M45)	7MF4997-2HH 7MF4997-2HJ 7MF4997-2HK 7MF4997-2HL
	/WI 4557-1DL	Available ex stock	
Cover made of stainless steel, including gasket, for SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus • without window • with window Digital indicator Including mounting material for SITRANS P DS III with HART, DS III with PROFIBUS PA and	7MF4997-1BC 7MF4997-1BF 7MF4997-1BR		
DS III with FOUNDATION Fieldbus Measuring point label • without inscription (5 units) • Printed (1 unit) Data according to Y01 or Y02, Y15, Y16 and Y99 (see "Pressure transmitters")	7MF4997-1CA 7MF4997-1CB-Z Y:		

Transmitters for general requirements

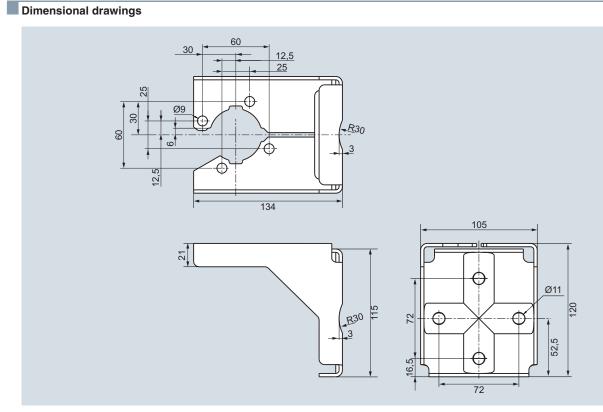
Selection and Ordering data	Article No.
Operating Instructions <sup>1)</sup>	
<ul> <li>for SITRANS DS III with HART</li> </ul>	
- German	A5E00047090
- English	A5E00047092
- French	A5E00053218
- Spanish	A5E00053219
- Italian	A5E00053220
<ul> <li>for SITRANS DS III with PROFIBUS PA</li> </ul>	
- German	A5E00053275
- English	A5E00053276
- French	A5E00053277
- Spanish	A5E00053278
<ul> <li>Italian</li> <li>for SITRANS DS III with FOUNDATION</li> </ul>	A5E00053279
Fieldbus	
- German	A5E00279629
- English	A5E00279627
Compact operating instructions	
<ul> <li>English, german, spanish, french, italian, dutch</li> </ul>	A5E03434626
<ul> <li>English, estonian, latvian, lithuanian, polish, romanian</li> </ul>	A5E03434631
<ul> <li>English, bulgarian, czech, finnish, slovakian, slovenian</li> </ul>	A5E03434645
<ul> <li>English, danish, greek, portuguese, swedish, hungarian</li> </ul>	A5E03434656
• Korean	A5E03693760
The compact operating instructions are avail-	
able in 21 EU languages on the product CD supplied with each transmitter. They can also	
be downloaded from the SITRANS P web	
page.	
Brief instruction (Leporello)	-
German, English	
for SITRANS DS III with HART	A5E00047093
- German, English	/
for SITRANS DS III with PROFIBUS PA	A5E00053274
<ul> <li>German, English</li> <li>for SITRANS DS III with FOUNDATION</li> </ul>	A5E00282355
Fieldbus	AJE00202333
- German, English	
CD with SITRANS P documentation	A5E00090345
German, English, French, Spanish, Italian	
incl. compact operating instructions in 21 EU	
languages	
Certificates (order only via SAP)	
instead of Internet download	
hard copy (to order)	A5E03252406
• on CD (to order)	A5E03252407
<b>Operating Instructions</b> for replacement of electronics, measuring cell	A5E00078060
and connection board (only available from the	
Internet) <sup>1)</sup>	
HART modem	
with USB interface	7MF4997-1DB
Supplementary electronics for 4-wire connection	See page 1/164
Available ex stock	
Power ownelly write and Chan 7 10 were law of the	Carrananta

Power supply units see Chap. 7 "Supplementary Components".

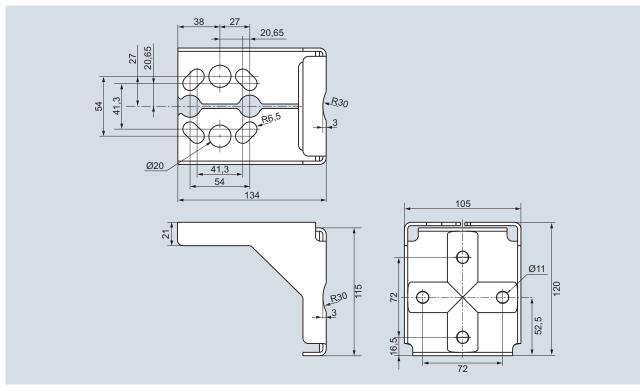
<sup>1)</sup> You can download these operating instructions free-of-charge from our Internet site at www.siemens.com/sitransp.

Transmitters for general requirements

## SITRANS P DS III Accessories/Spare Parts



Mounting bracket for SITRANS P DS III and SITRANS P280 gauge and absolute pressure-transmitters, dimensions in mm mounting bracket material: Sheet-steel Mat. No. 1.0330, chrome-plated, or stainless steel Mat. No. 1.4301 (304)



Mounting bracket for SITRANS P DS III differential pressure transmitter, dimensions in mm mounting bracket material: Sheet-steel Mat. No. 1.0330, chrome-plated, or stainless steel Mat. No. 1.4301 (304)

Transmitters for general requirements

## Overview

- SITRANS P transmitters
- DS III for relative and absolute pressure (both designs) and
- DS III for differential pressure

can be delivered factory-fitted with the following valve manifolds:

- 7MF9011-4EA and 7MF9011-4FA valve manifolds for gauge pressure and absolute pressure transmitters
- 7MF9411-5BA and 7MF9411-5CA valve manifolds for absolute pressure and differential pressure transmitters

### Design

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

#### Selection and Ordering data

## 7MF9411-5AA

### valve manifold for relative and absolute pressure transmitters

	-	
p-4	Add "- <b>Z</b> " to the Article No. of the transmitter and add order codes.	Order code
-	SITRANS P DSIII 7MF4032, 7MF4232, 7MF4033, 7MF4233, 7MF4034, 7MF4234	T05
	With process connection oval flange with PTFE gasket and <b>steel</b> mounting screws.	
	Delivery including high-presure test certified by factory certificate according to EN 10204-2.2	
	Additional versions:	
	Delivery includes mounting brackets and mounting clips made of stainless steel (instead of the mounting bracket supplied with the transmitter)	A02
	Supplied acceptance test certificate to EN 10204- 3.1 for transmitters and mounted valve manifold	C12
	With manufacturer declaration according to NACE, MR-0175	D07

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

The 7MF9411-5BA and 7MF9411-5CA valve manifolds are sealed with PTFE sealing rings between the transmitter and the valve manifold.

Once installed, the complete unit is checked under pressure for leaks (compressed air 6 bar (87 psi)) and is certified leak-proof with a test report to EN 10204 - 2.2.

All valve manifolds should preferably be secured with the respective 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 acceptance test certificate 3.1 to EN10204 when choosing the option "Factory mounting of valve manifolds", a separate certificate is provided for the transmitters and the valve manifolds respectively.

### 7MF9411-5AA

a B

#### valve manifold for relative and absolute pressure transmitters

200	Add "-Z" to the Article No. of the transmitter and add order codes.	Order code
	SITRANS P DSIII 7MF4032, 7MF4232, 7MF4033, 7MF4233, 7MF4034, 7MF4234	T06
	With process connection oval flange with PTFE gasket and <b>stainless steel</b> mounting screws.	
	Delivery including high-presure test certified by factory certificate according to EN 10204-2.2	
	Additional versions:	
	Delivery includes mounting brackets and mounting clips made of stainless steel (instead of the mounting bracket supplied with the transmitter)	A02
	Supplied acceptance test certificate to EN 10204- 3.1 for transmitters and mounted valve manifold	C12
	With manufacturer declaration according to NACE, MR-0175	D07

Transmitters for general requirements

## SITRANS P DS III - Factory-mounting of valve manifolds on transmitters

#### 7MF9011-4FA

1000	
	-

valve manifold o	n relative and absolute pressure transmit	ters
	Add <b>-Z</b> to the Article No. of the transmitter and add Order codes	Order code
AND C MAR	SITRANS P DSIII 7MF4031, 7MF4231	т03
	With process connection female thread ½-14 NPT in-sealed with PTFE sealing tape	
	Delivery incl. high-pressure test certified by test report to EN10204-2.2	
	Further designs:	
	Delivery includes mounting brackets and mounting clips made of stainless steel (instead of the mounting bracket supplied with the transmitter)	A02
	Supplied acceptance test certificate to EN 10204- 3.1 for transmitters and mounted valve manifold	C12
	With manufacturer declaration according	D07

#### 7MF9011-4EA

#### valve manifold on relative and absolute pressure transmitters

	Add <b>-Z</b> to the Article No. of the transmitter and add Order codes	Order code
/	SITRANS P DSIII 7MF4030, 7MF4230 with process connection collar G1/2 A to EN 837-1 with gasket made of PTFE between valve manifold and transmitter	T02
	Alternative sealing material: • Soft iron • Stainless steel, Mat. No. 14571 • copper Delivery incl. high-pressure test certified by test report to EN 10204-2.2	A70 A71 A72
	Further designs: Delivery includes mounting brackets and mounting clips made of stainless steel (instead of the mounting bracket supplied with the transmitter)	A02
	Supplied acceptance test certificate to EN 10204- 3.1 for transmitters and mounted valve manifold	C12
	With manufacturer declaration according to NACE, MR-0175	D07

#### 7MF9411-5BA valve manifold on absolute and differential pressure transmitters Add **7** to the Article Ne. of the transmitter. Order

Add -Z to the Article No. of the transmitter and add Order codes	Order code
SITRANS P DSIII 7MF433, 7MF443 and 7MF453 <sup>1)</sup>	
mounted with gaskets made of PTFE and screws made of	
<ul> <li>chromized steel</li> <li>made of stainless steel</li> <li>Delivery incl. high-pressure test certified by test report to EN 10204-2.2</li> </ul>	U01 U02
Further designs:	
Delivery includes mounting bracket and mounting clips made of • Steel • Stainless steel (instead of the mounting bracket supplied with the transmitter)	A01 A02
Supplied acceptance test certificate to EN 10204-3.1 for transmitters and mounted valve manifold	C12
With manufacturer declaration according to NACE, MR-0175	D07
	SITRANS P DSIII 7MF433, 7MF443 and 7MF453 <sup>1</sup> ) mounted with gaskets made of PTFE and screws made of • chromized steel • made of stainless steel Delivery incl. high-pressure test certified by test report to EN 10204-2.2 <b>Further designs:</b> Delivery includes mounting bracket and mounting clips made of • Steel • Stainless steel (instead of the mounting bracket supplied with the transmitter) Supplied acceptance test certificate to EN 10204-3.1 for transmitters and mounted valve manifold With manufacturer declaration according

#### 7MF9411-5CA

100

#### valve manifold on differential pressure transmitters

- C.C.	Add $\textbf{-Z}$ to the Article No. of the transmitter and add Order codes	Order code
s	SITRANS P DSIII 7MF443 and 7MF4531 <sup>1)</sup> mounted with gaskets made of PTFE and screws made of • chromized steel • Stainless steel Delivery incl. high-pressure test certified by test report to EN 10204-2.2	U03 U04
	Further designs:	
	Delivery includes mounting bracket and mounting clips made of • Steel • Stainless steel (instead of the mounting bracket supplied with the transmitter)	A01 A02
	Supplied acceptance test certificate to EN 10204-3.1 for transmitters and mounted valve manifold	C12
	With manufacturer declaration according to NACE, MR-0175	D07

For 7MF453.-... transmitters, you require a 7/10-20 UNF connection thread in the process flange

Transmitters for general requirements

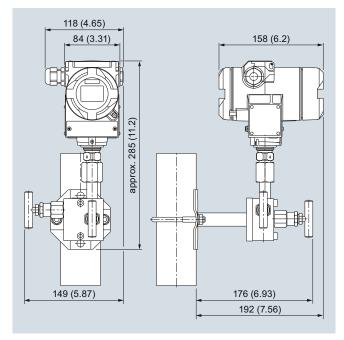
### SITRANS P DS III - Factory-mounting of valve manifolds on transmitters

#### Dimensional drawings

Valve manifolds mounted on SITRANS P DS III



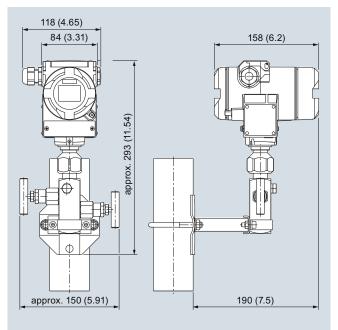
7MF9011-4EA valve manifold with mounted gauge pressure and absolute pressure transmitters



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



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)

© Siemens AG 2014

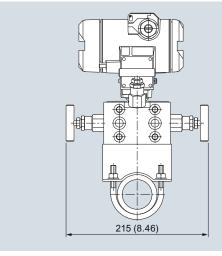
## **Pressure Measurement**

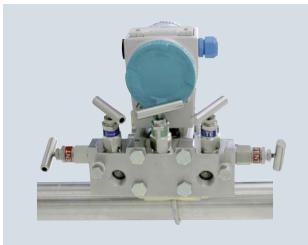
Transmitters for general requirements

## SITRANS P DS III - Factory-mounting of valve manifolds on transmitters

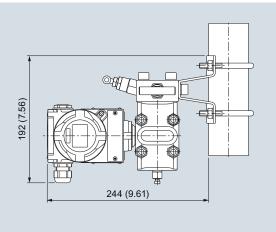


7MF9411-5BA valve manifold with mounted differential pressure transmitter

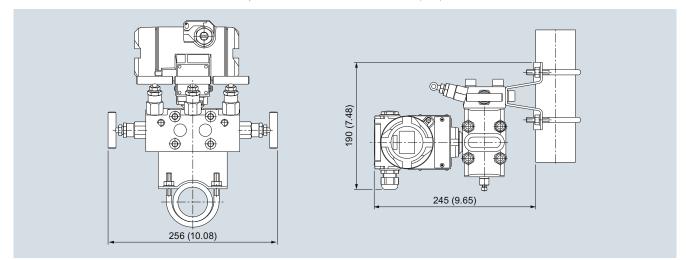




7MF9411-5CA valve manifold with mounted differential pressure transmitter



7MF9411-5BA valve manifold with mounted differential pressure transmitter, dimensions in mm (inch)



7MF9411-5CA valve manifold with mounted differential pressure transmitter, dimensions in mm (inch)

Transmitters for High Performance requirements

### SITRANS P500 - Technical description

#### Overview



SITRANS P500 pressure transmitters are digital pressure transmitters featuring extensive user-friendliness and which fulfil the most stringent demands of accuracy, long-term stability, speed and lots more.

Extensive functionality allows you to set the pressure transmitter specifically to your own requirements. Despite their many settings options, local set-up is easy. A multi-lingual menu with clear text instructions guides you through the process. There are also help texts available.

The innovative EDD with integrated QuickStart assistance is also quick and easy to configure by computer using the HART protocol.

Extensive diagnostic functions, e.g. min/max pointer for pressure and temperature, or limit value indicator, make sure you always have the process under control. You can also display additional process values such as temperature or static pressure. The simultaneous display of mass, resulting from a volume, is also easy.

The SITRANS P500 pressure transmitters can be configured to measure:

- Differential pressure
- Level
- Volume
- Mass
- Volume flow
- Mass flow

#### Benefits

- High measuring accuracy
- Very fast response time
- Extremely good long-term stability
- High reliability even under extreme chemical and mechanical loads
- For aggressive and non-aggressive gases, vapors and liquids
- Extensive diagnosis and simulation functions which can be used both on site as well as via HART.
- Optional separate replacement of measuring cell and electronics without recalibration.
- · Extremely low conformity error values



- Infinitely adjustable spans of 1.25 mbar to 32 bar (0.018 to 465 psi; 0.5 to 12860 inH\_2O)
- Extremely good total performance and conformity error values with no loss of performance up to a turndown of 10 guaranteed.
- Additional integrated sensor for static pressure
- · Parameterization via on-site control keys or HART
- Short process flanges nable space-saving installation.

#### Application

The SITRANS P500 pressure transmitters can be used in industrial areas with extreme chemical and mechanical loads. Electromagnetic compatibility in the range 10 kHz to 1 GHz makes them suitable for locations with high electromagnetic emissions.

Pressure transmitters with ratings "Intrinsic safety" and "Explosion-proof" may be installed within potentially explosive atmospheres (zone 1) or in zone 0. The pressure transmitter comes with a CE-declaration of conformity and fulfils the corresponding unified European directives (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".

With newly designed measuring cell, it is possible to work with process temperatures of -40 to 125  $^{\circ}$ C (-40 to +257  $^{\circ}$ F)) without having to use a remote seal.

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

The pressure transmitter can be fully parameterized locally via the three operating keys and externally via HART.

Transmitters for High Performance requirements

### **SITRANS P500 - Technical description**

#### Pressure transmitters for differential pressure and flow

- Measured variables:
  - Differential pressure
  - Small positive or negative pressure
  - Flow  $\dot{q} \sim \sqrt{\Delta p}$  (together with a primary element (see Chapter "Flow Meters"))
- Span (freely adjustable) for SITRANS P500: 1.25 mbar to 32 bar (0.018 to 465 psi; 0.5 to 12860 inH<sub>2</sub>O)

#### Pressure transmitters for level

- · Measured variable: Level of aggressive and non-aggressive liquids in open and closed vessels.
- Span (freely adjustable) for SITRANS P500: 1.25 to 6250 mbar (0.5 to 2509 inH<sub>2</sub>O)

#### · Nominal diameter of the mounting flange

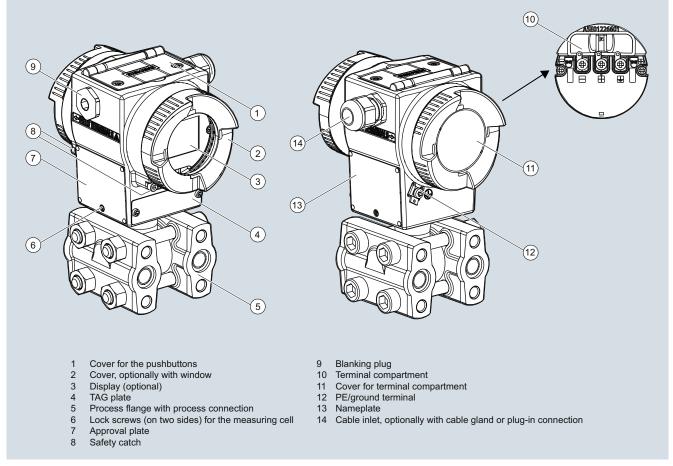
- DN 50 / PN 40
- DN 80 / PN 40
- DN 100/ PN 16, PN 40 - 2 inch/class 150, class 300
- 3 inch/class 150, class 300
- 4 inch/ class 150, class 300
- customized special version

In the case of level measurements in open vessels, the low-pressure connection of the measuring cell remains open (measurement "compared to atmospheric")

In the case of measurements in closed vessels, the lower-pressure connection has to be connected to the vessel in order to compensate the static pressure.

The wetted parts are made from a variety of materials, depending on the degree of corrosion resistance required.

#### Design



#### View of transmitter

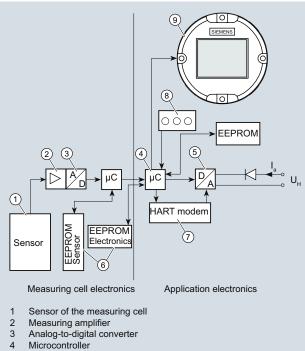
- The electronics housing is made of coated die-cast aluminum.
- The casing has round screwed covers front and back.
- Depending on the design the front cover is fitted with an inspection window. You can read off the measured value directly rom the optional display through the window.
- The inlet to the terminal compartment is located either on the left or right side. The unused opening in each case is sealed by a blanking plug.
- The PE/ground terminal is on the back of the housing.
- · Access to the terminal compartment for auxiliary power and shielding by unscrewing the cover.
- Beneath the electronic housing is the measuring cell with its process flanges at which the process connections are available. The modular design of the pressure transmitter lets you replace the measuring cell, electronics and connection board as required.
- On the top of the housing you can see the screwed cover of the three local pushbuttons of the transmitter.

Transmitters for High Performance requirements

### **SITRANS P500 - Technical description**

#### Function

#### Operation of electronics with HART communication



- 5
- Digital-to-analog converter One EEPROM each in the measuring cell and in the electronics 6
- 7 HART modem
- 8 Keys (local operation)
- 9 Digital display
- Output current
- Û., Auxiliary power

Function diagram of electronics

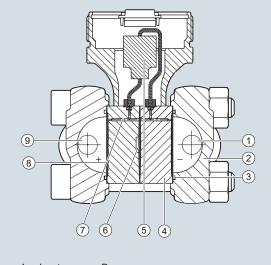
- The input pressure is converted into an electrical signal by the sensor.
- · This signal is amplified by the measuring amplifier and digitalized in an analog-to-digital converter.
- The digital signal is analyzed in a microcontroller and corrected according to linearity and thermal characteristics.
- In a digital-to-analog converter it is then converted into the output current of 4 to 20 mA. When connected to supply lines, a diode circuit provides reverse polarity protection.
- The measuring cell-specific data, the electronic data and the parameterization data is held in two EEPROMs. One EEPROM is incorporated into the measuring cell electronics, the other is incorporated into the application electronics.

#### Operation

- The three local pushbuttons enable you both to navigate and carry out configuration and to visually track messages and process values, provided a display is available.
- If you have a device without a display, you can carry out zero adjustment using the three local pushbuttons. It is possible to retrofit a display at any time.
- You can also carry out settings by computer via a HART modem

#### Mode of operation of the measuring cells

Measuring cell for differential pressure and flow



- Input pressure P-
- 2 Process flange with process connection
- 3 O-Ring
- 4 Measuring cell body
- 5 Silicon pressure sensor
- 6 Overload diaphragm
- 7 Filling liquid
- 8 Seal diaphragm
- 9 Input pressure P+

Measuring cell for differential pressure and flow, function diagram

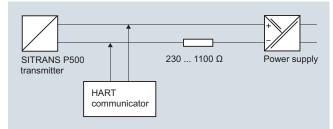
- The differential pressure is transmitted via the seal diaphragm and the filling liquid to the silicon pressure sensor.
- If the measuring limits are exceeded, the overload diaphragm flexes until the seal diaphragm touches the body of the measuring cell. This protects the sensor module from overload.
- The differential pressure causes the measuring diaphragm of the silicon pressure sensor to flex.
- The displacement changes the resistance value of the 4 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 for High Performance requirements

#### **SITRANS P500 - Technical description**

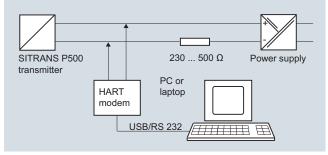
#### Configuration using HART

Parameterization using HART is carried out using a HART Communicator or a PC in conjunction with a HART modem.



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

For configuring via PC a HART modem is used which connects the transmitter to the PC.

The signals needed for communication in conformity with the HART 6.0 protocols are superimposed on the output current using the Frequency Shift Keying (FSK) method.

The necessary device files are available for download on the Internet.

#### SITRANS P500 configuration options

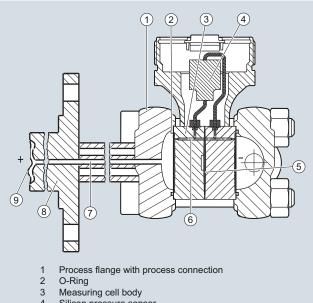
The transmission offers you full configuring options both via HART as well as in situ provided the optional display is available.

For simple parameterizing we also offer the easy to understand QuickStart function with guided commissioning.

SITRANS P500 diagnostic functions

- Maintenance timer
- Min/Max pointer (both resetable and non-resetable)
  - Pressure (incl. time and temperature stamp)
  - Static pressure (incl. time and temperature stamp)
  - Sensor temperature (incl. time stamp)
  - Electronic temperature (incl. time stamp)
- Limit monitor block
- Diagnostic warning
- Diagnostic alarm
- Simulation functions
- Display of trends and histograms
- · Operating hours meter

#### Measuring cell for level



- 4 Silicon pressure sensor
- 5 Overload diaphragm
- 6 Filling liquid of the measuring cell
- Capillary tube with filling liquid of the mounting flange
- Flange with optional tube 8 9
  - Seal diaphragm for mounting flange

Measuring cell for level, function diagram

- The input pressure (hydrostatic pressure) acts hydraulically on the measuring cell via the seal diaphragm on the mounting flange
- The differential pressure applied to the measuring cell is transmitted via the seal diaphragm and the filling liquid to the silicon pressure sensor.
- If the measuring limits are exceeded, the overload diaphragm flexes until the seal diaphragm touches the body of the measuring cell. This protects the sensor module from overload.
- The differential pressure causes the measuring diaphragm of the silicon pressure sensor to flex.
- The displacement changes the resistance value of the 4 piezo resistors in the measuring diaphragm in a bridge circuit.
- The change in the resistance causes a differential pressure proportional to the input pressure.

#### Configuration of SITRANS P500 HART

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

Configuration using the pushbuttons (local operation)

You can configure the transmitter in situ using the three keys provided a display is available. If you have no display, you can only carry out zero adjustment.

It is possible to retrofit a display. See accessories.

1

Transmitters for High Performance requirements

# SITRANS P500 - Technical description

Physical dimensions available for	or the SITRANS P500 HART				
display					
Physical variable	Physical dimensions				
Pressure (setting can also be made in the factory)	Pa, MPa, kPa, bar, mbar, torr, atm, psi, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , mmH <sub>2</sub> O (4 °C), inH <sub>2</sub> O (4 °C), inH <sub>2</sub> O (20 °C), mmH <sub>2</sub> O, mmH <sub>2</sub> O (4 °C), ftH <sub>2</sub> O (20 °C), inHg, mmHg, hPA				
Level	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> , gallon, Imp. gallon, bushel, barrel, barrel liquid, I; Norm (standard) I; Norm (standard) m <sup>3</sup> , Norm (standard) feet <sup>3</sup>				
Mass	g, kg, t (metric), lb, Ston, Lton, oz				
Volume flow	m <sup>3</sup> /d, m <sup>3</sup> /h, m <sup>3</sup> /s, I/min, I/s, ft <sup>3</sup> /d, ft <sup>3</sup> /min, ft <sup>3</sup> /s, US gallon/min, gallon/s, I/h, milL/d, gallon/d, gal- lon/h, milgallon/d, Imp.gallon/s, Imp.gallon/d, Norm (standard) m <sup>3</sup> /h, Norm (standard) I/h, Norm (standard) ft <sup>3</sup> /h, Norm (standard) ft <sup>3</sup> /m, barrel liquid/s, barrel liq- uid/m, barrel liquid/h				
Mass flow	t/d, t/h, t/min, kg/d, kg/h, kg/min, kg/s, g/h, g/min, g/s, lb/d, lb/min, lb/s, LTon/d, LTon/h, STon/d, STon/h, STon/min				
Temperature	K, °C, °F, °R				
Miscellaneous	%, mA				

Transmitters for High Performance requirements

# SITRANS P500 for differential pressure and flow

Input			Measuring accuracy			
Measured variable Span (infinitely adjustable)	Differential pressure an Span (min max.)	nd flow Maximum operating pressure (static pressure)	Reference conditions (in accordance with IEC 60770-1) All error information always refers to the set span.	Start of scale     Stainless stee     Measuring ce		
	1.25 250 mbar (0.5 100 inH <sub>2</sub> O) 6.25 1250 mbar	<sub>2</sub> O) bar	Error in measurement at limit setting incl. hysteresis and reproducibility r: Span ratio			
	(2.5 502 INH <sub>2</sub> O) (2320 psi) 31.25 6250 mbar	(2320 psi)	(r: Span ratio (r = max. span / set span))			
	(12.54 2509 inH <sub>2</sub> O) 0.16 32 bar		Linear characteristic	r ≤ 10	r ≥ 10	
Lower range limit	(2.33 465 psi)		<ul> <li>250 mbar (100 inH<sub>2</sub>O)</li> <li>1250 mbar (502 inH<sub>2</sub>O)</li> <li>6250 mbar (2509 inH<sub>2</sub>O)</li> <li>32 bar (465 psi)</li> </ul>	≤0.03 %	≤ (0.003 · r) %	
filling	-100 % of max. span and/or 30 mbar a (0.44 psia) 100 % of max. span Between measuring limits (freely adjustable)		Square-rooted characteristic		I	
Upper range limit			• Flow > 50 %	r ≤ 10	r ≥ 10	
Start of scale			- 250 mbar (100 inH <sub>2</sub> O) 1250 mbar (502 inH <sub>2</sub> O)	≤0.03 %	≤ (0.003 · r) %	
Output			6250 mbar (2509 inĤ <sub>2</sub> O) 32 bar (465 psi)			
Output current signal	4 20 mA 3.55 mA, factory setting 3.8 mA 23 mA, factory setting 20.5 mA		• Flow 25 % 50 %	r ≤ 10	r ≥ 10	
Lower current limit (freely adjustable)			- 250 mbar (100 inH <sub>2</sub> O) 1250 mbar (502 inH <sub>2</sub> O)	≤0.06 %	≤ (0.006 · r) %	
<ul> <li>Upper current limit (freely adjustable)</li> </ul>			6250 mbar (2509 inH <sub>2</sub> O) 32 bar (465 psi)			
<ul> <li>Ripple (without HART communication)</li> </ul>	$I_{pp} \le 0.4$ % of max. out	tput current	Influence of ambient tempera- ture per 28 °C (50 °F)		I	
<ul> <li>adjustable damping</li> </ul>	0 100 s in steps of 0	.1 s,	• 250 mbar (100 inH <sub>2</sub> O)	≤ (0.025 · r + 0.014) % ≤ (0.006 · r + 0.03) %		
current transmitter	factory-seting: 2 s 3.55 23 mA		<ul> <li>1250 mbar (502 inH<sub>2</sub>O)</li> <li>6250 mbar (2509 inH<sub>2</sub>O)</li> <li>32 bar (465 psi)</li> </ul>			
<ul> <li>Failure signal</li> </ul>	adjustable within limits		Influence of static pressure			
	<ul> <li>Bottom: 3.55 3.7 mA (default value: 3.6 mA)</li> </ul>		<ul> <li>At the start of scale value</li> </ul>			
	• Top: 21.0 23 mA	~ ( )	(PKN)			
Load	(default value: 22.8 r	11-()	- 250 mbar (100 inH <sub>2</sub> O)		per 70 bar (1015 psi) ero point correction	
Without HART communication	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.02$ $U_{\rm H}$ : Power supply in V		- 1250 mbar (502 inH <sub>2</sub> O) 6250 mbar (2509 inH <sub>2</sub> O)	$\leq$ (0.007 · r) % per 70 bar (1015 ps correction via zero point correction		
<ul> <li>With HART communication</li> </ul>			32 bar (465 psi)			
- HART Communicator	$R_{\rm B} = 230 \dots 1100  \Omega$		<ul> <li>On the span (PKS)</li> <li>250 mbar (100 inH<sub>2</sub>O)</li> </ul>	< 0.03 % por 7	0 bar (1015 psi)	
- HART modem	$R_{\rm B}=230\dots500\Omega$		$1250 \text{ mbar (100 InH}_2\text{O})$ 1250 mbar (502 inH <sub>2</sub> O)	≥ 0.05 % per /1	o bar (1015 psi)	
Characteristic curve	Linearly rising, linearly rooted characteristic r		- 6250 mbar (2509 inH <sub>2</sub> O)	≤ 0.09 % per 70	0 bar (1015 psi)	
	tional square rooted ch		- 32 bar (465 psi)	≤ 0.05 % per 70	0 bar (1015 psi)	

Transmitters for High Performance requirements

SITRANS P500 for different	ntial pressure a	and flow		
Total Performance <sup>1)</sup>			Design	
Linear characteristic	r ≤ 5	5 < r ≤ 10	Weight (without options)	Approx. 3.3 kg (7.3 lb)
- 250 mbar (100 inH <sub>2</sub> O)	≤0.14 %	≤ 0.27 %	Material of parts in contact with	
- 1250 mbar (502 inH <sub>2</sub> O) 6250 mbar (2509 inH <sub>2</sub> O) 32 bar (465 psi)	≤0.09 %	≤ 0.14 %	the medium • Seal diaphragm	Stainless steel, mat. no. 1.4404/316L, Hastelloy C276, Monel 400
Square rooted characteristic			<ul> <li>Process connection and seal- ing screw</li> </ul>	PN 160: stainless steel, matNo.
• Flow > 50 %	r ≤ 5	5 < r ≤ 10	Ū	1.4404/316L
- 250 mbar (100 inH <sub>2</sub> O)	≤0.14 %	≤0.27 %	<ul> <li>Sealing material in the pro- cess connections</li> </ul>	
- 1250 mbar (502 inH <sub>2</sub> O) 6250 mbar (2509 inH <sub>2</sub> O) 32 bar (465 psi)	≤ 0.09 %	≤ 0.14 %	- O-Ring	• Standard: Viton (FKM (FPM))
• Flow 25 % 50 %	r ≤ 5	5 < r ≤ 10		• Optional: NBR
- 250 mbar (100 inH <sub>2</sub> O)	≤0.28 %	≤ 0.54 %		PTFE (virginal) PTFE (glass fiber-reinforced)
- 1250 mbar (502 inH <sub>2</sub> O) 6250 mbar (2509 inH <sub>2</sub> O)	≤0.18 %	≤0.28 %		FFPM (Kalrez) <sup>2)2)</sup> Graphite
32 bar (465 psi) Step response time T <sub>63</sub> without			Material of parts not in contact with media	
electrical damping • 250 mbar (100 inH <sub>2</sub> O) 1250 mbar (502 inH <sub>2</sub> O)	≤ 88 ms, contains ≤ 45 ms	a dead time of	Electronics housing	Low copper die-cast aluminum AC-AlSi12 (Fe) or AC-AlSi 10 Mg (Fe) to DIN EN 1706
6250 mbar (2509 inĤ <sub>2</sub> Ó) 32 bar (465 psi)				<ul> <li>Lacquer on polyurethane base, op- tional epoxy-based primer</li> </ul>
Long-term stability	≤ (0.05 <sup>.</sup> r) % per 5 years ≤ (0.08 <sup>.</sup> r) % per 10 years			Stainless steel name plates (mat. no. 1.4404/316L)
Influence of power supply	≤ 0.005 %/1 V		Process connection screws	Stainless steel, mat. no. 1.4404/316L
Rated conditions			Mounting bracket	Steel or stainless steel mat. no. 1.4301
Mounting position	Any		Measuring cell filling	Silicone oil
Ambient conditions			Process connection	1/4-18 NPT female thread and flange
Ambient temperature     (Note: Observe the tempera- ture class in areas subject to				connection with M10 to DIN 19213 or 7/16-20 UNF mounting thread to IEC 61518
explosion hazard.) - Total device	-40 +85 °C (-40	185 °E)	Electrical connection	Screw terminals
<ul> <li>Readable display</li> <li>Storage temperature</li> </ul>	-20 +85 °C (-4 . -50 +90 °C (-58	+185 °F)		<ul> <li>Cable entry via the following screwed glands:</li> <li>M20 x 1.5</li> </ul>
Climatic class				- ½-14 NPT - Han 7D/Han 8D connector
Condensation	Relative humidity ( (condensation per		Diaplaya and controls	- Han 7D/Han 8D connector - M12 plug
Degree of protection (to IEC 60529)	IP66/IP 68 and NE sponding cable g	MA 4X (with corre- land)	Displays and controls Pushbuttons	3 for local programming directly on transmitter
Electromagnetic Compatibility			Display	With or without integrated display
<ul> <li>Emitted interference and inter- ference immunity</li> </ul>	Acc. to IEC 61326	and NAMUR NE 21		Cover with or without window
Permissible pressures	According to 97/2		Auxiliary power supply	
<b>—</b>	equipment directiv	ve	Terminal voltage on transmitter	• DC 10.6 44 V
Temperature of medium	10 105 00 1	0 057 (5)		With intrinsically-safe operation DC 10.6 30 V
<ul> <li>Measuring cell with silicone oil filling</li> </ul>	-40 +125 °C (-4	∪…+257 °F)		

1

Transmitters for High Performance requirements

# SITRANS P500 for differential pressure and flow

Certificates and approvals		Explosion protection for USA	
Classification according to PED		(to FM)	
97/23/EC		Certificate of Compliance	No. 3033013
PN 160 (MAWP 2320 psi)     Explosion protection	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)	Identification (XP/DIP) or (IS)	XP CL I, DIV 1, GP ABCDEFG T4 / T6 DIP CL II, III, DIV1, GP EFG T4/T6 IS CL I, II, III, DIV1, GP ABCDEFG T4 CL I, Zone 0, AEx ia IIC T4
Explosion protection for Europe		Dermissible Archient Term	CL I, Zone 1, AEx ib IIC T4
(to ATEX) • Intrinsic safety "i"	PTB 09 ATEX 2004 X	<ul> <li>Permissible Ambient Tem- perature</li> </ul>	$\begin{array}{l} T_{a} = T4: -40 \dots +85 \ ^{\circ}\text{C} \\ (-40 \dots +185 \ ^{\circ}\text{F}) \\ T_{a} = T6: -40 \dots +60 \ ^{\circ}\text{C} \\ (-40 \dots +140 \ ^{\circ}\text{F}) \end{array}$
- Marking	Ex II 1/2 G Ex ia/ib IIC T4	- Entity parameters	According to "control drawing":
<ul> <li>Permissible ambient tem- perature</li> <li>Connection</li> </ul>	-40 +85 °C (-40 +185 °F) To certified intrinsically-safe circuits		A5E02189134N $U_m = 30 \text{ V}, \text{ I}_m = 100 \text{ mA},$ $P_i = 750 \text{ mW}, \text{ L}_i = 400 \mu\text{H}, \text{ Ci} = 6 \text{ nF}$
	with peak values: $U_i = 30 \text{ V}, I_i = 100 \text{ mA}, P_i = 750 \text{ mW};$	Marking (NI/NO)	NI CL I, DIV 2, GP ABCD T4/T6
<ul> <li>Effective internal induc- tance:</li> <li>Effective inner capacitance:</li> </ul>	$\begin{aligned} &R_{\rm i} = 300 \ \Omega \\ &L_{\rm i} = 400 \ \mu {\rm H} \\ &C_{\rm i} = 6 \ {\rm nF} \end{aligned}$		NI CL I, Zone 2, GP IIC T4/T6 S CL II, III, GPFG T4/T6 NI CL I, DIV 2, GP ABCD T4/T6, NIFW NI CL I, Zone 2, GP IIC T4/T6, NIFW
<ul> <li>Explosion-proof "d"</li> </ul>	BVS 09 ATEX E 027	- Permissible Ambient Tem-	NI CLII, III, DIV 2, GP FG T4/T6, NIFW T <sub>a</sub> = T4: -40 +85 °C
<ul> <li>Marking</li> <li>Permissible ambient tem- perature</li> </ul>	Ex II 1/2 G Ex d IIC T4/T6 -40 +85 °C (-40 +185 °F) temperature class T4;	perature	$f_a = 16, -40, \dots +60 \text{ °C}$ (-40, + 185 °F) $T_a = 16; -40, \dots +60 \text{ °C}$ (-40, + 140 °F)
	-40 +60 °C (-40 +140 °F) temperature class T6	- (NI/S) parameters	According to "control drawing": A5E02189134N
- Connection	To circuits with values: $U_{\rm m} = {\rm DC} \ 10.5 \dots 45 {\rm V}$		$U_m$ = 45 V, $L_i$ = 400 $\mu H,C_i$ = 6 nF,
Dust explosion protection for zone 20	PTB 09 ATEX 2004 X	Explosion protection for Canada (to <sub>C</sub> CSA <sub>US</sub> )	
- Marking	Ex II 1 D Ex iaD 20 T 120 °C	Certificate of Compliance	No. 2280963
<ul> <li>Permissible ambient tem- perature</li> </ul>	-40 +85 °C (-40 +185 °F)	<ul> <li>Marking (XP/DIP)</li> </ul>	CL I, DIV 1, GP ABCD T4 /T6; CL II, DIV 1, GP EFG T4/T6
<ul> <li>Max. surface temperature</li> <li>Connection</li> </ul>	120 °C (248 °F) To certified intrinsically-safe circuits with peak values:	<ul> <li>Permissible ambient tem- perature</li> </ul>	$\begin{array}{l} T_a = \text{T4: -40 } + 85 \ ^\circ\text{C} \ (\text{-40 } + 185 \ ^\circ\text{F}) \\ T_a = \text{T6: -40 } + 60 \ ^\circ\text{C} \ (\text{-40 } + 140 \ ^\circ\text{F}) \end{array}$
	$U_{\rm i} = 30$ V, $I_{\rm i} = 100$ mA, $P_{\rm i} = 750$ mW, $R_{\rm i} = 300$ $\Omega$	- Entity parameters	According to "control drawing": A5E02189134N U <sub>m</sub> = 45 V
<ul> <li>Effective internal induc- tance:</li> </ul>	L <sub>i</sub> = 400 μH	<ul> <li>Marking (ia/ib)</li> </ul>	CL I, Ex ia/Ex ib IIC, T4
- Effective inner capacitance:	C <sub>i</sub> = 6 nF		CL II, III, Ex ia/Ex ib, GP EFG, T4 CL I, AEx ia/AEx ib IIC, T4
<ul> <li>Dust explosion protection for zone 21/22</li> </ul>	BVS 09 ATEX E 027		CL II, III, AEx ia/ AEx ib, GP EFG, T4
- Marking	Ex II 2 D Ex tD A21 IP68 T120 °C Ex ia D21	<ul> <li>Permissible ambient tem- perature</li> </ul>	T <sub>a</sub> = T4: -40 +85 °C (-40 +185 °F)
- Connection	To circuits with values: $U_{\rm m}$ = 10.5 45 V DC; $P_{\rm max}$ = 1.2 W	- Entity parameters	$U_i$ = 30 V, $I_i$ = 100 mA, $P_i$ = 750 mW, $R_i$ = 300 $\Omega$ , $L_i$ = 400 $\mu H,$ $C_i$ = 6 nF
<ul> <li>Type of protection "n" (zone 2)</li> <li>Marking</li> <li>"nA" connection</li> </ul>		• Marking (NI/n)	CL I, DIV 2, GP ABCD T4/T6 CL II, III, DIV 2, GP FG T4/T6 Ex nA IIC T4/T6 AEx nA IIC T4/T6 Ex nL IIC T4/T6 AEx nL IIC T4/T6
- "nL, ic" connection - Effective internal induc-	$\begin{array}{l} U_i = 45 \ V \\ L_i = 400 \ \mu \text{H} \end{array}$	<ul> <li>Permissible ambient tem- perature</li> </ul>	T <sub>a</sub> = T4: -40 +85 °C (-40 +185 °F) T <sub>a</sub> = T6: -40 +60 °C (-40 +140 °F)
tance: - Effective inner capacitance:	$C_i = 6 \text{ nF}$	- NI/nA parameters	According to "control drawing": A5E02189134N U <sub>m</sub> = 45 V
		- nL parameters	According to "control drawing": A5E02189134N U <sub>i</sub> = 45 V, I <sub>i</sub> = 100 mA, L <sub>i</sub> = 400 $\mu$ H, C <sub>i</sub> = 6 nF

Transmitters for High Performance requirements

# SITRANS P500 for differential pressure and flow

### Explosion protection for China

(acc. to NEPSI)	
<ul> <li>Intrinsic safety "i"</li> </ul>	GYJ111111X
- Marking	Ex ia/ib IIB/IIC T4
- Perm. ambient temperature	40 +85 °C (-40 +185 °F)
- Connection	To certified intrinsically-safe circuits with maximum values:
	$U_i = 30 \text{ V} \text{ I}_i = 100 \text{ mA}, \text{ P}_i = 750 \text{ mW}$
- Effective internal inductance	$L_{i} = 400 \text{ mH}$
- Effective inner capacitance	$C_i = 6 \text{ nF}$
<ul> <li>Explosion-proof "d"</li> </ul>	GYJ111112
- Marking	Ex dia IIC T4/T6
- Permissible ambient tem- perature	-40 +85 °C (-40 +185 °F) temperature class T4; -40 +60 °C (-40 +140 °F) temperature class T6
- Connection	To circuits with values: U <sub>m</sub> = DC 10.5 45 V
Dust explosion protection for zone 21/22	GYJ111112
- Marking	DIP A21 TA,T120 °C IP68 D21
- Connection	To circuits with values: $U_m = DC \ 10.5 \dots 45 \ V$
• Type of protection "n" (zone 2)	GYJ111111X
- Marking	Ex nL IIB/IIC T4/T6 Ex nA II T4/T6
- Connection	$U_i = 45 \text{ V DC}$
- Effective internal inductance	L <sub>i</sub> = 400 mH
- Effective inner capacitance	$C_i = 6 \text{ nF}$

1) The total performance includes the errors caused by temperature effects, static pressure effects and conformity error, including hysteresis and repeatability.

<sup>2)</sup> Not in combination wiht span "G".

#### HART communication

Load with connection of	
<ul> <li>HART communicator</li> </ul>	$R_{\rm B} = 230 \dots 1100 \ \Omega$
HART modem	$R_{\sf B}=230\dots500\Omega$
Cable	2 wire shielded: ≤ 3.0 km (1.86 miles), multiwire shielded: ≤ 1.5 km (0.93 miles)
Protocol	HART Version 6.0
PC/laptop requirements	IBM compatible, RAM > 32 MByte, hard disk > 70 MByte, depending on modem type: RS 232-interface or USB connection, VGA graphics
Software for computer	SIMATIC PDM 6.0

Transmitters for High Performance requirements

Selection and Ordering data			Article No.
	ressure transmitters for differential pressure and flow, 7 ITRANS P500 HART, PN 160 (MAWP 2320 psi)		
abla Click on the Article No. for	the online configuration in the I	PIA Life Cycle Portal.	
Enclosure		Thread for cable gland	
Die-cast aluminum, dual comp	partment	M20x1.5	0
Die-cast aluminum, dual comp	partment	1/2-14 NPT	1
<b>Output</b> 4 20 mA, HART			3
Measuring cell filling	Measuring cell cleaning		
Silicone oil	normal		1
Measuring span			
1.25 250 mbar	(0.5 100.4 inH <sub>2</sub> O)		D
6.25 1250 mbar	(2.5 502 inH <sub>2</sub> O)		E
31.25 6250 mbar	(12.54 2509 inH <sub>2</sub> O)		F
0.16 32 bar	(2.33 465 psi)		G
Wetted parts materials (stainless steel process flange	es)		
Seal diaphragm	Process connection		
Stainless steel 1.4404/316L	Stainless steel 1.4404/316L	-	A
Hastelloy C276 <sup>1)</sup>	Stainless steel 1.4404/316L	-	B
Monel 400 <sup>1)</sup>	Stainless steel 1.4404/316L	-	с
Process connection			
Female thread 1/4-18 NPT			
<ul> <li>Sealing screw opposite proc - Mounting thread 7/16 - 20</li> <li>Mounting thread M10 to DI</li> </ul>	UNF according to EN 61518		0 1
<ul> <li>Vent on side of process flang</li> <li>Mounting thread 7/16 - 20</li> <li>Mounting thread M10 to DI</li> </ul>	UNF according to EN 61518		4 5

 $^{1)}$  Can be ordered for measuring ranges D, E, F and G.

 $^{\mbox{2})}$  Not in conjunction with remote seals.

Order code Selection and Ordering data

Order code

### **Pressure Measurement**

Selection and Ordering data

Transmitters for High Performance requirements

### SITRANS P500 for differential pressure and flow

Selection and Ordering data	Order code	Selection and Ordering data	Order code
Further designs Add "-Z" to Article No. and specify Order code.		Further designs Add "-Z" to Article No. and specify Order code.	
Attachments		Degree of protection approvals: Ex ia/ib (intrinsic safety)	
Mounting bracket made of steel	A01	Ex ia/ib protection (ATEX) (T4)	E00
Mounting bracket made of stainless steel	A02	Ex IS protection (FM) (T4)	E01
Display		Ex IS protection ( $_{C}CSA_{US}$ ) (T4)	E02
(Standard: no display, cover closed)		Ex ia/ib protection (NEPSI) (T4)	E06
With display and blanking cover	A10	<b>Degree of protection approvals: Ex d (flameproof)</b> Ex d explosion-proof (ATEX)(T4/T6)	E20
With display and glass cover	A11	Ex XP explosion-proof and DIP (FM)(T4/T6)	E21
Special casing / cover version		Ex XP explosion-proof and DIP ( <sub>C</sub> CSA <sub>US</sub> )(T4/T6)	E22
Two coats of lacquer on casing, cover (PU on epoxy)	A20	Ex d explosion-proof (NEPSI)(T4/T6)	E26
Electrical connection and cable entry (Standard: no cable gland, only dust protection caps)		<b>Degree of protection approvals: n/NI</b> Zone 2 (nA, nL, ic) (ATEX) (T4/T6)	E40
Cable gland made of plastic (IP66/68) <sup>4)</sup>	A50	Div2 NI, Div2 NI-field wiring (FM) (T4/T6)	E41
Cable glands made of metal (IP66/68)	A51	Zone 2 (nA, nL), Div2 NI ( <sub>C</sub> CSA <sub>US</sub> ) (T4/T6) Zone 2 (nA, nL) (NEPSI) (T4/T6)	E42 E46
Cable glands made of stainless steel (IP66/68)	A52		E40
M12 connectors without cable socket (IP66/67) <sup>4)</sup>	A60	Degree of protection approvals: Dust Zone 20/21/22 Use in Zone 21/22 (Ex tD) (ATEX)	E60
M12 connectors complete with cable socket (IP66/67) <sup>4</sup>	A61	Use in Zone 20/21/22 (Ex ia) (ATEX)	E61
Han 7D connectors, plastic, straight	A71	Use in Zone 21/22 (Ex DIP) (NEPSI)	E66
(with cable socket) (IP65) <sup>4)</sup>	A/1	Degree of protection approvals: Combinations	
Han 7D connectors, plastic, angled	A72	IS protection and XP and DIP (FM)	E71
with cable socket) (IP65) <sup>4)</sup>		IS protection and XP and DIP ( $_{\rm C}{\rm CSA}_{\rm US}$ )	E72
łan 7D connectors, metal enclosure, straight with cable socket) (IP65) <sup>4)</sup>	A73	IS protection and XP and DIP (FM/ <sub>C</sub> CSA <sub>US</sub> ) Supplementary approvals/degree of protection	E73
lan 7D connectors, metal enclosure, angled with cable socket) (IP65) <sup>4)</sup>	A74	Dual Seal approval <sup>5)</sup> Export approval Korea	E85 E86
lan 8D connectors, plastic, straight with cable socket) (IP65) <sup>4)8)</sup>	A75	Special process connection versions (diff. pressure)	
Han 8D connectors, plastic, angled with cable socket) (IP65) <sup>4)8)</sup>	A76	Side vents for gas measurements <sup>7)</sup> Swap process connection: high-pressure side at front	L32 L33
Han 8D connectors, metal enclosure, straight (with cable socket) (IP65) <sup>4)8)</sup>	A77	<b>Mosquito protection</b> 4 pcs. for ¼-18 NPT thread	L36
Han 8D connectors, metal enclosure, angled (with cable socket) (IP65) <sup>4)8)</sup>	A78	Process flanges, O-rings, special material Standard: Viton (FKM (FPM)	
PG 13.5 adapters <sup>4)</sup>	A82	Process conn. sealing rings made of PTFE (Teflon), virginal	L60
Language for labels, leporellos, menu language default <sup>9)</sup>		Process connection sealing rings made of PTFE (Teflon), glass fiber-reinforced	L61
(instead of English as standard)		Process connection sealing rings made of FFPM (Kalrez) <sup>10</sup>	L62
German	B10	Process connection sealing rings made of NBR	L63
French	B12	Process connection sealing rings made of graphite	L64
Spanish	B13	Drain/Vent valve (1 set = 2 units)	
Italian	B14	2 ventilation valves 1/4- 18 NPT, in material of process flanges)	L80
Chinese	B15	Remote seals	
Russian	B16	Transmitters with connection of remote seal <sup>6)</sup> (For premounted valve manifolds see page 1/203)	V00
Japanese	B17	<ol> <li>Enclosed in print or as CD: see page 1/201.</li> </ol>	
English with units psi/inH <sub>2</sub> O/°F	B21	<ul> <li><sup>2)</sup> When also ordering the quality inspection certificate (factory)</li> </ul>	calibration)
Special version: Supplementary menu languages (Standard: English, German, French, Spanish, Italian)		according to IEC 60770-2 for transmitters with mounted diap Order this certificate only together with the remote seals. The accuracy of the total combination is certified here.	hragm seals:
Asia language package in addition: Chinese, Japanese, Russian)	B80	<sup>3)</sup> When also ordering the acceptance test certificate according 3.1 for transmitters with mounted diaphragm seals: Order this	to EN 10204- certificate as
Certificates (available online for downloading) <sup>1)</sup>		<ul> <li>well in addition to the respective remote seals.</li> <li><sup>4)</sup> Not together with types of protection "Explosion-proof", "Ex n/</li> </ul>	Δ" and
Quality inspection certificate (Five-step factory calibration)	C11	"Intrinsic safety and explosion-proof"	( anu
according to IEC 60770-2 <sup>2)</sup>		<ol> <li>Only in conjunction with FM and/or <sub>C</sub>CSA<sub>US</sub></li> <li>Please select a remote seal separately. Also refer to the infor</li> </ol>	mation under
Acceptance test certificate according to EN 10204-3.1 <sup>3)</sup>	C12	footnote 2). Remote seals see page 1/199.	nation under
		7) Only in conjunction with process connection "Vent on side"	

7) Only in conjunction with process connection "Vent on side".

- <sup>8)</sup> The Han 8D plug is identical with the former Han 8U version.
- <sup>9)</sup> For option B15, B16 and B17 the menu language default is english. Otherwise the Option B80 (Asia language package) is necessary.
- <sup>10)</sup>Not together with Measuring span "G".

Transmitters for High Performance requirements

SITRANS P500 for differential pressure and flow

Selection and Ordering data	Order cod
Additional data Please add "-Z" to Article No. and specify Order code(s) and plain text.	
Measuring range to be set	
Specify in plain text:	
<ul> <li>In the case of linear characteristic curve (max. 5 characters):</li> <li>Y01: up to mbar, bar, kPa, MPa, psi</li> </ul>	Y01
<ul> <li>In the case of square rooted characteristic (max. 5 characters):</li> <li>Y02: up to mbar, bar, kPa, MPa, psi</li> </ul>	Y02
Measuring point number and measuring point identifie (only standard ASCII character set)	r
Specify in plain text:	
Measuring point number (TAG No.), max. 16 characters	Y15
Y15:	
Measuring point text (max. 27 char.) Y16:	Y16
Entry of HART address (TAG), max. 32 characters Y17:	Y17
Setting of pressure indication in pressure units	Y21
Specify in plain text (standard setting: mbar) Y21: bar, kPa, MPa, psi,	
Note: The following pressure units are selectable: bar, mbar, mm H <sub>2</sub> O <sup>*</sup> ), in H <sub>2</sub> O <sup>*</sup> ), ftH <sub>2</sub> O <sup>*</sup> ), mmHG, inHG, psi Pa, kPa, MPa, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , Torr, ATM, % or mA	,
*) Reference temperature 20 °C	
Setting of pressure indication in non-pressure units <sup>1</sup> ) Specify in plain text:	Y22 + Y01 or Y0
Y22: up to I/min, m <sup>3</sup> /h, m, USgpm, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	6
Customer-specific settings	
Damping setting (range: 0 100 s)	Y30

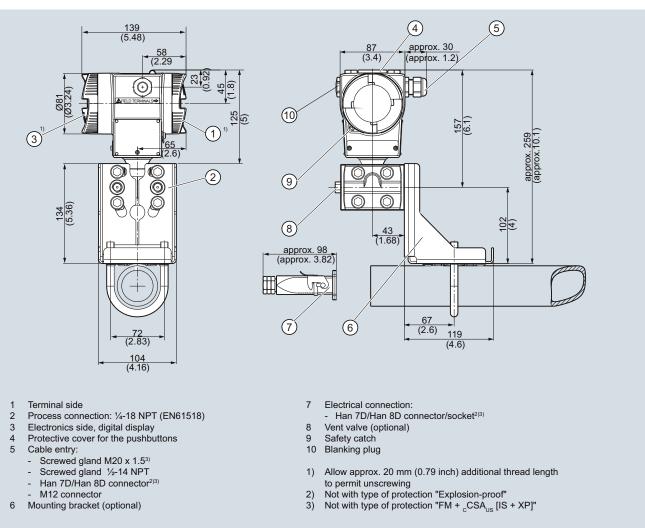
 $^{1)}\,$  Preset values can only be changed over SIMATIC PDM.

Siemens FI 01 · 2015 1/187

Transmitters for High Performance requirements

### SITRANS P500 for differential pressure and flow

#### Dimensional drawings



SITRANS P pressure transmitter for differential pressure and flow, P500 series, measurements in mm (inch)

Transmitters for High Performance requirements

# SITRANS P500 for level

Technical specifications				
Input			Long-term stability	≤ (0.05 · r) % per 5 years
Measured variable	Level			≤ (0.08 <sup>.</sup> r) % per 10 years
Span (infinitely adjustable)	Span (min max.)	Maximum operating	Influence of ambient tempera- ture per 28 °C (50 °F) <sup>1)</sup>	
		pressure	• 250 mbar (100 inH <sub>2</sub> O)	≤ (0.025 <sup>·</sup> r + 0.014) %
	1.25 250 mbar (0.5 100 inH <sub>2</sub> O)		<ul> <li>1250 mbar (502 inH<sub>2</sub>O)</li> <li>6250 mbar (2509 inH<sub>2</sub>O)</li> </ul>	≤ (0.006 · r + 0.03) %
	6.25 1250 mbar (2.5 500 inH <sub>2</sub> O)	See "Mounting	Influence of static pressure	
	31.25 6250 mbar (12.54	flange"	<ul> <li>At the start of scale value (PKN)</li> </ul>	
Lower range limit	2509 inH <sub>2</sub> O)		- 250 mbar (100 inH <sub>2</sub> O)	$\leq$ (0.035 $\cdot$ r) % je 70 bar (1015 psi) correction via zero point correction
Measuring cell with silicone oil filling	-100 % of max. span (7.25 psia) vacuum re		- 1250 mbar (502 inH <sub>2</sub> O) 6250 mbar (2509 inH <sub>2</sub> O)	$\leq$ (0.007 $\cdot$ r) % je 70 bar (1015 psi) correction via zero point correction
	Also available as vac		<ul> <li>On the span (PKS)</li> </ul>	
Upper range limit	remote seal: 30 mbar 100% of max. span	a (0.44 psia)	- 250 mbar (100 inH <sub>2</sub> O) 1250 mbar (502 inH <sub>2</sub> O)	≤ 0.03 % je 70 bar (1015 psi)
Start of scale	Between measuring li	imits (freely	- 6250 mbar (2509 inH <sub>2</sub> O)	≤ 0.09 % je 70 bar (1015 psi)
	adjustable)		Influence of power supply	≤ 0.005 %/1 V
Output			Rated conditions	
Output current signal	4 20 mA		Mounting position	Defined by flange
<ul> <li>Lower current limit (freely adjustable)</li> </ul>	3.55 mA, factory setting	ng 3.8 mA	Ambient conditions	
Upper current limit (freely adjustable)	23 mA, factory setting 20.5 mA		<ul> <li>Ambient temperature (Note: Observe the tempera- ture class in areas subject to</li> </ul>	
• Ripple (without HART commu- nication)	$I_{pp} \le 0.4$ of max. output current		explosion hazard.) - total device	-40 +85 °C (-40 +185 °F)
<ul> <li>adjustable damping</li> </ul>	0 100 s in steps of 0.1 s, factory setting 2 s		<ul> <li>Readable display</li> <li>Storage temperature</li> </ul>	-20 +85 °C (-4 +185 °F) -50 +90 °C (-58 +194 °F)
<ul> <li>current transmitter</li> </ul>	3.55 23 mA		Climatic class	
• Failure signal	Adjustable within limit • Lower: 3.55 3.7 r		Condensation	Relative humidity 0 100 % (condensation permissible)
	ting 3.6 mA) • Upper: 21.0 23 m		Degree of protection to IEC 60529	IP66/IP68 and NEMA 4X (with corresponding cable gland)
	ting 22.8 mA)		Electromagnetic Compatibility	
• Without HART communication	<i>R</i> <sub>B</sub> ≤ ( <i>U</i> <sub>H</sub> - 10.5 V)/0.0	)23 A in Ω,	<ul> <li>Emitted interference and inter- ference immunity</li> </ul>	Acc. to IEC 61326 and NAMUR NE
With HART communication	$U_{\rm H}$ : Power supply in	V	Permissible pressures	According to 97/23/EC pressure equipment directive
- HART Communicator	R <sub>B</sub> = 230 1100 Ω		Medium temperature of high- pressure side	
- HART modem Characteristic curve	$R_{\rm B} = 230 \dots 500 \Omega$ Linearly rising or linear	arly falling and	<ul> <li>Measuring cell with silicone oil filling</li> </ul>	
Measuring acouracy	user-specific		- p <sub>abs</sub> ≥1 bar	-40 +175 <sup>2)</sup> °C (-40 +347 <sup>2)</sup> °F)
Measuring accuracy	• Dioing share-tail it		- p <sub>abs</sub> < 1 bar	-40 +80 °C (-40 +176 °F)
Reference conditions (in accordance with IEC 60770-1)	<ul> <li>Rising characteristic</li> <li>Start of scale 0 bar</li> </ul>		<b>Design</b> Weight	
All error information always refers to the set span.	<ul><li>Stainless steel seal</li><li>Measuring cell with</li><li>Room temperature (</li></ul>	silicone oil filling	<ul> <li>To EN (pressure transmitter with mounting flange, without tube)</li> </ul>	approx. 9.8 11.8 kg (21.6 26.0 (lb)
Error in measurement at limit setting incl. hysteresis and reproducibility r: Span ratio			<ul> <li>To ASME (pressure transmitter with mounting flange, without tube)</li> </ul>	approx. 9.8 16.8 kg (21.6 37. lb)
(r = max. span / set span)		10		
Linear characteristic		≥ 10		
<ul> <li>250 mbar (100 inH<sub>2</sub>O)</li> <li>1250 mbar (502 inH<sub>2</sub>O)</li> <li>6250 mbar (2509 inH<sub>2</sub>O)</li> </ul>	≤ 0.03 % ≤	(0.003 · r) %		

Transmitters for High Performance requirements

# SITRANS P500 for level

SITRANS P500 for level			
Material of wetted parts at the		Auxiliary power supply	
high-pressure side		Terminal voltage on transmitter	• DC 10.6 44 V
<ul> <li>Seal diaphragm of mounting flange</li> </ul>	Stainless steel 1.4404/316L, Hastelloy C276, mat. no. 2.4819, Monel 400, mat. no. 2.4360, Tantal,		With intrinsically-safe operation DC 10.6 30 V
	PFA auf Edelstahl 1.4404/316L,	Certificates and approvals	
Sealing face	PTFE auf Edelstahl 1.4404/316L Smooth to EN 1092-1, Form B1 and/or	Classification according to PED 97/23/EC	
-	ASME B16.5 RF 125 250 AA for stainless steel316L, EN1092-1 Form B2 and/or ASME B16.5 RFSF in the case of other materials	• PN 160 (MAWP 2320 psi)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)
<ul> <li>Sealing material in the pro- cess connection</li> </ul>		Explosion protection	
- O-Ring	Standard: Viton (FKM (FPM))	Explosion protection for Europe (to ATEX)	
	Optional:	<ul> <li>Intrinsic safety "i"</li> </ul>	PTB 09 ATEX 2004 X
	NBR PTFE (virginal)	- Marking	Ex II 1/2 G Ex ia/ib IIC T4
	PTFE (glas fiber-reinforced) FFPM (Kalrez)	<ul> <li>Permissible ambient tem- perature</li> </ul>	-40 +85 °C (-40 +185 °F)
<ul> <li>For vacuum application of mounting flange</li> </ul>	Graphite copper	- Connection	To certified intrinsically-safe circuits with peak values:
Material of wetted parts at the low-pressure side			$U_{\rm i} = 30$ V, $I_{\rm i} = 100$ mA, $P_{\rm i} = 750$ mW; $R_{\rm i} = 300 \ \Omega$
Seal diaphragm	Stainless steel, mat. no. 1.4404/316L, Hastelloy C276, Monel 400	<ul> <li>Effective internal induc- tance:</li> </ul>	$L_i = 400 \ \mu H$
Dranges connection and coal	Stainless steel, mat. no. 1.4404/316L	- Effective inner capacitance:	$C_i = 6 \text{ nF}$
<ul> <li>Process connection and seal- ing screw</li> </ul>	• Stainless steel, mat. no. 1.4404/316L	<ul> <li>Explosion-proof "d"</li> </ul>	BVS 09 ATEX E 027
<ul> <li>Sealing material in the pro-</li> </ul>		- Marking	Ex II 1/2 G Ex d IIC T4/T6
cess connection - O-Ring	• Standard: Viton (FKM (FPM))	<ul> <li>Permissible ambient tem- perature</li> </ul>	-40 +85 °C (-40 +185 °F) temperature class T4; -40 +60 °C (-40 +140 °F) temperature class T6
	Optional: NBR PTFE (virginal)	- Connection	To circuits with values: $U_{\rm m}$ = DC 10.5 45 V
	PTFE (glas fiber-reinforced) FFPM (Kalrez) Graphite	<ul> <li>Dust explosion protection for zone 20</li> </ul>	PTB 09 ATEX 2004 X
Material of parts not in contact	Graphite	- Marking	Ex II 1 D Ex iaD 20 T 120 °C
with media	Low copper die-cast aluminum AC-	<ul> <li>Permissible ambient tem- perature</li> </ul>	-40 +85 °C (-40 +185 °F)
Electronics housing	AlSi12 (Fe) or AC-AlSi 10 Mg (Fe) to	- Max. surface temperature	120 °C (248 °F)
	<ul> <li>DIN EN 1706</li> <li>Lacquer on polyurethane base, optional epoxy-based primer</li> <li>Stainless steel serial plate</li> </ul>	- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}, \ l_i = 100 \text{ mA}, P_i = 750 \text{ mW}, \ R_i = 300 \Omega$
Process connection screws	Stainless steel	<ul> <li>Effective internal induc- tance:</li> </ul>	$L_i = 400 \ \mu H$
Measuring cell filling	Silicone oil	- Effective inner capacitance:	C – 6 pE
<ul> <li>Liquid mounting flange</li> <li>Process connection</li> </ul>	Silicone oil or other material	Dust explosion protection for	BVS 09 ATEX E 027
High-pressure side	Flange to EN and ASME	zone 21/22 - Marking	Ex II 2 D Ex tD A21 IP68 T120 °C Ex ia
Low-pressure side	14-18 NPT female thread and flange connection with M10 to DIN 19213 or	<u> </u>	D21
	7/16-20 UNF mounting thread to IEC 61518	- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC; $P_{\rm max}$ = 1.2 W
Electrical connection	Screw terminals	<ul> <li>Type of protection "n" (zone 2)</li> </ul>	PTB 09 ATEX 2004 X
	<ul> <li>Cable entry via the following screwed glands:</li> <li>M20 x 1.5</li> <li>½-14 NPT</li> </ul>	- Marking	Ex II 3 G Ex nA II T4/T6 Ex II 2/3 G Ex ib/nL IIC T4/T6 Ex II 2/3 G Ex ib/ic IIC T4/T6
	- Han 7D/Han 8D connector	- "nA" connection	$U_m = 45 V DC$
Diaplaya and controls	- M12 plug	- "nL, ic" connection	U <sub>i</sub> = 45 V
Displays and controls	2) for opportion directly and the day	- Effective internal inductance	$L_i = 400 \ \mu H$
Push buttons Display	<ul><li>3; for operation directly on the device</li><li>With or without integrated display</li></ul>	- Effective inner capacitance	$C_i = 6 \text{ nF}$
	Cover with or without window		

1/190

Transmitters for High Performance requirements

# SITRANS P500 for level

Explosion protection for USA (to FM)		Explosion protection for China (acc. to NEPSI)	
Certificate of Compliance	No. 3033013	<ul> <li>Intrinsic safety "i"</li> </ul>	GYJ111111X
<ul> <li>Identification (XP/DIP) or (IS)</li> </ul>	XP CL I, DIV 1, GP ABCDEFG T4 / T6	- Marking	Ex ia/ib IIB/IIC T4
	DIP CL II, III, DIV1, GP EFG T4/T6 IS CL I, II, III, DIV1, GP ABCDEFG T4	<ul> <li>Permissible ambient tem- perature</li> </ul>	40 +85 °C (-40 +185 °F)
	CL I, Zone 0, AEx ia IIC T4 CL I, Zone 1, AEX ib IIC T4	- Connection	To certified intrinsically-safe circuits with maximum values:
<ul> <li>Permissible Ambient Tem- perature</li> </ul>	T <sub>a</sub> = T4: -40 +85 °C (-40 +185 °F)		$U_i = 30 \text{ V} \text{ I}_i = 100 \text{ mA}, \text{ P}_i = 750 \text{ mW}$
perature	T <sub>a</sub> = T6: -40 +60 °C (-40 +140 °F)	<ul> <li>Effective internal inductance</li> <li>Effective inner capacitance</li> </ul>	
- Entity parameters	According to "control drawing":	Explosion-proof "d"	GYJ111112
	A5E02189134N	- Marking	Ex dia IIC T4/T6
	$U_{\rm m}$ = 30 V, I <sub>m</sub> = 100 mA, P <sub>i</sub> = 750 mW, L <sub>i</sub> = 400 µH , C <sub>i</sub> = 6 nF	<ul> <li>Permissible ambient tem- perature</li> </ul>	-40 +85 °C (-40 +185 °F) temper- ature class T4;
• Marking (NI/NO)	NI CL I, DIV 2, GP ABCD T4/T6 NI CL I, Zone 2, GP IIC T4/T6 S CL II, III, GPFG T4/T6	polatalo	-40 +60 °C (-40 +140 °F) temper- ature class T6
	NI CL I, DIV 2, GP ABCD T4/T6, NIFW NI CL I, Zone 2, GP IIC T4/T6, NIFW NI CL I, III, DIV 2, GP FG T4/T6, NIFW	- Connection	To circuits with values: $U_m = DC 10.5 \dots 45 V$
<ul> <li>Permissible Ambient Tem- perature</li> </ul>	T <sub>a</sub> = T4: -40 +85 °C (-40 +185 °F)	<ul> <li>Dust explosion protection for zone 21/22</li> </ul>	GYJ111112
poratale	T <sub>a</sub> = T6: −40 +60 °C	- Marking	DIP A21 TA,T120 °C IP68 D21
- (NI/S) parameters	(-40 +140 °F) According to "control drawing":	- Connection	To circuits with values: $U_m = DC \ 10.5 \dots 45 \ V$
	A5E02189134N U <sub>m</sub> = 45 V, L <sub>i</sub> = 400 μH, Ci = 6 nF	• Type of protection "n" (zone 2)	GYJ111111X
Explosion protection for	$O_{\rm m} = 43$ V, $E_{\rm i} = 400 \mu$ H, $O_{\rm i} = 0$ H	- Marking	Ex nL IIB/IIC T4/T6 Ex nA II T4/T6
<u>Canada</u> (to <sub>C</sub> CSA <sub>US</sub> )		- Connection	$U_i = 45 \text{ V DC}$
Certificate of Compliance	No. 2280963	- Effective internal inductance	L <sub>i</sub> = 400 mH
Marking (XP/DIP)	CL I, DIV 1, GP ABCD T4 /T6;	- Effective inner capacitance	C <sub>i</sub> = 6 nF
	CL II, DIV 1, GP EFG T4/T6	remote seal must calculated sep	
- Permissible Ambient Tem- perature	T <sub>a</sub> = T4: -40 +85 °C (-40 +185 °F) T <sub>a</sub> = T6: -40 +60 °C (-40 +140 °F)	lated.	ne process connection is sufficiently insu-
- Entity parameters	According to "control drawing":	HART communication	
	A5E02189134N, U <sub>m</sub> = 45 V	Load with connection of	
<ul> <li>Marking (ia/ib)</li> </ul>	CL I, Ex ia/Ex ib IIC, T4 CL II, III, Ex ia/Ex ib, GP EFG, T4	HART Communicator	$R_{\rm B} = 230 \dots 1100 \Omega$
	CL I, AEx ia/AEx ib IIC, T4	HART modem	$R_{\rm B} = 230 \dots 500 \ \Omega$
- Permissible Ambient Tem-	CL II, III, AEx ia/ AEx ib, GP EFG, T4 $T_a = T4: -40 \dots +85 \text{ °C}$	Cable	2 wire shielded: ≤ 3.0 km (1.86 miles), multiwire shielded:
perature - Entity parameters	(-40 +185 °F) U <sub>i</sub> = 30 V, I <sub>i</sub> = 100 mA, P <sub>i</sub> = 750 mW,		≤ 1.5 km (0.93 miles)
- Entity parameters	$R_i = 300 \Omega$ , $L_i = 100 \text{ mA}$ , $P_i = 730 \text{ mW}$ , $R_i = 300 \Omega$ , $L_i = 400 \mu\text{H}$ , $C_i = 6 \text{ nF}$	Protocol	HART Version 6.0
• Marking (NI/n)	CL I, DIV2, GP ABCD T4/T6 CL II, III, DIV2, GP FG T4/T6 Ex nA IIC T4/T6 AEx nA IIC T4/T6 Ex nL IIC T4/T6 AEx nL IIC T4/T6	PC/laptop requirements	IBM compatible, RAM > 32 MByte, hard disk > 70 MByte, depending on modem type: RS 232-interface or USB connection, VGA graphics
- Permissible Ambient Tem-	T <sub>a</sub> = T4: -40 +85 °C	Software for computer	SIMATIC PDM 6.0
perature	(-40 +185 °F) T <sub>a</sub> = T6: -40 +60 °C (-40 +140 °F)		
- NI/nA parameters	According to "control drawing": A5E02189134N, U <sub>m</sub> = 45 V		
- nL parameters	According to "control drawing": A5E02189134N, U <sub>i</sub> = 45 V, I <sub>i</sub> = 100 mA, L <sub>i</sub> = 400 $\mu$ H, C <sub>i</sub> = 6 nF		

1

Transmitters for High Performance requirements

### SITRANS P500 for level

Selection and Ordering data		HADT	Article No.	-	rder coo
Pressure transmitters for le			7 7 M F 5 6	0 -	
Click on the Article No. for	the online configura	ation in the PIA Life Cycle Portal.			
Enclosure		Thread for cable gland			
Die-cast aluminum, dual com		M20x1.5	0		
Die-cast aluminum, dual com	partment	1⁄2-14 NPT	1		
			2		
4 20 mA, HART Measuring cell filling	Measuring cell	cleaning	3		
Silicone oil	normal	cleaning	1		
Measuring span (min ma					
1.25 250 mbar	(0.5 100 inH <sub>2</sub>	0)	D		
6.25 1250 mbar	(2.5 500 inH <sub>2</sub>		E		
31.25 6250 mbar	(12.54 2509 ii	nH <sub>2</sub> O)	F		
Wetted parts of the low-pre (stainless steel process flang					
Seal diaphragm	Process connec	tion			
Stainless steel 1.4404/316L	Stainless steel 1		A		
Hastelloy C276	Stainless steel 1	.4404/316L	В		
Monel 400	Stainless steel 1	.4404/316L	с		
Process connection of low-	pressure side				
Female thread 1/4-18 NPT					
<ul> <li>Sealing screw opposite pro</li> </ul>					
<ul> <li>Mounting thread 7/16 - 20</li> <li>Mounting thread M10 to E</li> </ul>		EC 61518		0	
0					
<ul> <li>Vent on side of process flar</li> <li>Mounting thread 7/16 20</li> </ul>	-	EC 61519		4	
<ul> <li>Mounting thread 7/16 - 20</li> <li>Mounting thread M10 to E</li> </ul>	0	EC 01510		4 5	
Wetted parts materials (hig	n-pressure side)				
Stainless steel 1.4404/316L	10			0	
Hastelloy C276 mat. no. 2.48 Monel 400 mat. no. 2.4360	19			1	
Tantalum				2	
PFA coated on stainless stee	I			4	
PTFE on stainless steel 1.440		ination with an extension)		6 A	
Other version				9 Y	N 1
Add Order code and plain te				• .	
Material: ; Extension length					
Process connection on hig	h-pressure side: Ex	tension length			
None				A	
50 mm (1.97 inch) 100 mm (2.04 inch)				B C	
100 mm (3.94 inch) 150 mm (5.90 inch)				D	
200 mm (7.87 inch)				E	
Other version: See option "9"	for "Wetted parts ma	aterials"		-	
	•	ominal diameter/Nominal pressure			
DN 50, PN 40 <sup>6)</sup>		-		в	
DN 80, PN 40				D	
DN 100, PN 16				G	
DN 100, PN 40				н	
2", class 150 <sup>6)</sup>				L	
2", class 300 <sup>6)</sup>				М	
3", class 150				Q	
3", class 300				R	
4", class 150				Т	
4", class 300				U	
Other version, add				Z	Q 1
Order code and plain text:					

Transmitters for High Performance requirements

	Auticia Nia	Ordenes
Selection and Ordering data	Article No.	Order co
Pressure transmitters for level, SITRANS P500 HART	7 M F 5 6	0 -
Process connection on high-pressure side: Filling liquid		
Silicone oil M5		0
Silicone oil M50		1
High-temperature oil		2
Halocarbon (for oxygen measurement)		3
-DA compliant oil		4
Other version, add		9 R 1
Order code and plain text: Filling liquid:		

Transmitters for High Performance requirements

1

Selection and Ordering data	Order code	Selection and Ordering data	Order cod
<i>Further designs</i> Add "- <b>Z</b> " to Article No. and specify Order code.		Further designs Add "- <b>Z</b> " to Article No. and specify Order code.	
Display (Standard: no diaplay, cover closed)		Degree of protection approvals: Ex d (flameproof)	
(Standard: no display, cover closed)	A10	Ex d explosion-proof (ATEX)(T4/T6)	E20
With display and blanking cover	A10	Ex XP explosion-proof and DIP (FM)(T4/T6)	E21
With display and glass cover	A11	Ex XP explosion-proof and DIP ( <sub>C</sub> CSA <sub>US</sub> )(T4/T6)	E22
Special version: cover/casing		Ex d explosion-proof (NEPSI)(T4/T6)	E26
Two coats of lacquer on casing, cover (PU on epoxy)	A20	Degree of protection approvals: n/NI	
Electrical connection and cable entry (Standard: no cable gland, only dust protection		Zone 2 (nA, nL, ic) (ATEX) (T4/T6)	E40
caps)		Div2 NI, Div2 NI-field wiring (FM) (T4/T6)	E41
Cable gland made of plastic (IP66/68) <sup>4)</sup>	A50	Zone 2 (nA, nL), Div2 NI ( <sub>C</sub> CSA <sub>US</sub> ) (T4/T6)	E42
Cable glands made of metal (IP66/68)	A51	Zone 2 (nA, nL) (NEPSI) (T4/T6)	E46
Cable glands made of stainless steel (IP66/68)	A52	Degree of protection approvals: Zone 20/21/22	
M12 connectors without cable socket (IP66/67) <sup>4)</sup>	A60	Use in Zone 21/22 (Ex tD) (ATEX)	E60
M12 connectors, cable socket (IP66/67) <sup>4)</sup>	A61	Use in Zone 20/21/22 (Ex iaD) (ATEX)	E61
Han 7D connectors, plastic, straight	A71	Use in Zone (Ex DIP) (ATEX)	E66
(with cable socket) (IP65) <sup>4)</sup>		Degree of protection approvals: Combinations	
Han 7D connectors, plastic, angled (with cable socket) (IP65) <sup>4)</sup>	A72	IS protection and XP and DIP (FM)	E71
Han 7D connectors, metal enclosure, straight	A73	IS protection and XP and DIP ( $_{\rm C}{\rm CSA}_{\rm US}$ )	E72
(with cable socket) (IP65) <sup>4)</sup>		IS protection and XP and DIP ( $FM/_CCSA_{US}$ )	E73
Han 7D connectors, metal enclosure, angled	A74	Supplementary approvals / degree of protection	
(with cable socket) (IP65) <sup>4)</sup>		Dual Seal approval <sup>5)</sup>	E85
Han 8D connectors, plastic, straight (with cable socket) (IP65) <sup>4)7)</sup>	A75	Export approval Korea	E86
Han 8D connectors, plastic, angled	A76	Special process connection versions (diff. pressure)	
(with cable socket) (IP65) <sup>4)7)</sup>		Swap process connection: high-pressure side at front	L33
Han 8D connectors, metal enclosure, straight (with cable socket) (IP65) <sup>4)7)</sup>	A77	Mosquito protection 4 pcs. for ¼-18 NPT thread	L36
Han 8D connectors, metal enclosure, angled (with cable socket) $(\mathrm{IP65})^{4/7}$	A78	Process flanges, O-rings, special material Standard: Viton (FKM (FPM)	
PG 13.5 adapters <sup>4)</sup>	A82	Process connection sealing rings made of PTFE (Teflon),	L60
Language for labels, leporellos and menu language		virginal	
default <sup>8)</sup> (instead of English as standard)		Process connection sealing rings made of PTFE (Teflon), glass fiber-reinforced	L61
German	B10	Process connection sealing rings made of FFPM (Kalrez)	L62
French	B12	Process connection sealing rings made of NBR	L63
Spanish	B13	Process connection sealing rings made of graphite	L64
Italian	B14	Drain/Vent valve	
Chinese	B15	(1  set = 2  units)	
Russian	B16	2 ventilation valves ¼- 18 NPT, in material of process flange)	L80
Japanese	B17	Vacuum-proof design	
English with units: psi/inH <sub>2</sub> O	B21	Vacuum service	V04
Special version: Supplementary menu languages (Standard: English, German, French, Spanish, Italian)		Spark arrester	V04 V05
Asia language package (in addition: Chinese, Japanese, Russian)	B80	For mounting on zone 0 (including documentation) <sup>1)</sup> Enclosed in print or as CD: see page 1/201.	
Certificates (available online for downloading) <sup>1)</sup>		<sup>2)</sup> When also ordering the quality inspection certificate (factory	calibration)
Quality inspection certificate (Five-step factory calibration) according to IEC 60770-2 <sup>2</sup> )	C11	according to IEC 60770-2 for transmitters with mounted diag Order this certificate only together with the remote seals. Th accuracy of the total combination is certified here.	
Acceptance test certificate according to EN 10204-3.1 <sup>3)</sup>	C12	<sup>3)</sup> When also ordering the acceptance test certificate accordin EN 10204-3.1 for transmitters with mounted diaphragm seal	ig to s: Order this
Degree of protection approvals: Ex ia/ib (intrinsic safety)		<ul> <li>certificate as well in addition to the respective remote seals.</li> <li><sup>4)</sup> Not together with types of protection "Explosion-proof", "Ex r "lotting agont, and avalaging proof".</li> </ul>	A" and
Ex ia/ib protection (ATEX) (T4)	E00	"Intrinsic safety and explosion-proof" <sup>5)</sup> Only in conjunction with FM and/or <sub>C</sub> CSA <sub>US</sub>	
Ex IS protection (FM) (T4)	E01	<ul> <li>6) Not recommended for Measuring span "D"</li> </ul>	
Ex IS protection ( $_{C}CSA_{US}$ ) (T4)	E02	7) The Han 8D plug is identical with the former Han 8U version	I.
Ex ia/ib protection (NEPSI) (T4)	E06	<sup>8)</sup> For option B15, B16 and B17 the menu language default is	enalish. Othe

Transmitters for High Performance requirements

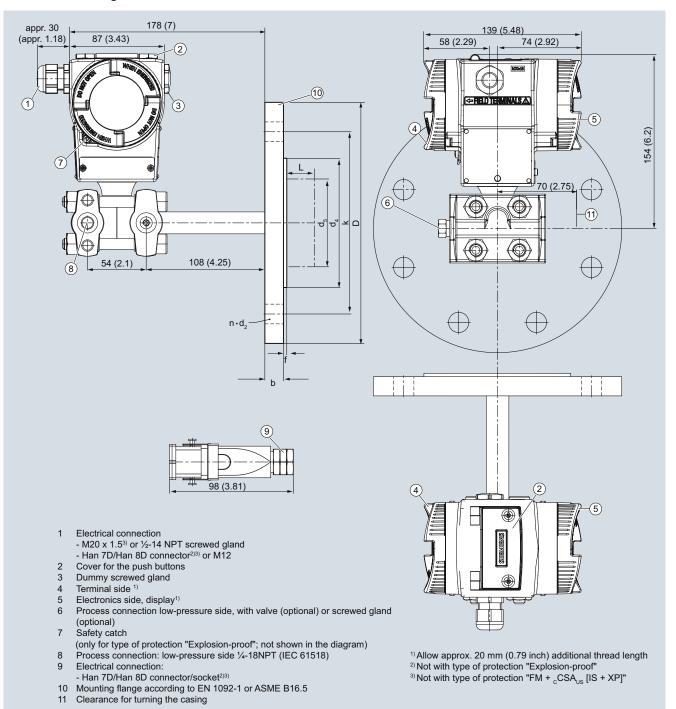
SITRANS P500 for level

Selection and ordering data	Order cod
Additional data Please add "-Z" to Article No. and specify Order code(s) and plain text.	
Measuring range to be set	
Specify in plain text:	
Linear characteristic curve (max. 5 characters): Y01: up to mbar, kPa, MPa, psi	Y01
Measuring point number and measuring point identifier (only standard ASCII character set)	
Specify in plain text:	
Measuring point number (TAG No.), max. 16 characters	Y15
Y15:	
Measuring point text (max. 27 char.) Y16:	Y16
Entry of HART address (TAG), max. 32 characters Y17:	Y17
Setting of pressure indication in pressure units	Y21
Specify in plain text (standard setting: mbar) Y21: bar, kPa, MPa, psi,	
Note: The following pressure units are selectable: bar, mbar, mm H <sub>2</sub> O <sup>*</sup> ), in H <sub>2</sub> O <sup>*</sup> ), ftH <sub>2</sub> O <sup>*</sup> ), mmHG, inHG, psi, Pa, kPa, MPa, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , Torr, ATM, % or mA	
*) Reference temperature 20 °C	
Setting of pressure indication in non-pressure units <sup>1)</sup> Specify in plain text:	Y22 + Y01
Y22: up to l/min, $m^3/h$ , m, USgpm, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	
Customer-specific settings	
Damping setting (range: 0 100 s) (Standard setting: 2 s)	Y30

<sup>1)</sup> Preset values can only be changed over SIMATIC PDM.

Transmitters for High Performance requirements

#### Dimensional drawings



SITRANS P pressure transmitter for filling level, P500 series, measurements in mm (inch)

Transmitters for High Performance requirements

										SITRANS	P50	0 for level
Connect	ion to EN	1092-1										
Nominal diameter	Nominal pressure		D	d	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub>	f	k	n	L
		mm	mm	mm	mm	mm	mm	mm	mm	mm		mm
DN50	PN 40	20	165	61	18	102	48.3	45 <sup>1)</sup>	2	125	4	
DN 80	PN 40	24	200	90	18	138	76	72 <sup>2)</sup>	2	160	8	0, 50, 100,
DN 100	PN 16	20	220	115	18	158	94	89	2	180	8	150 or 200
	PN 40	24	235	115	22	162	94	89	2	190	8	

#### Connection 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>	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)
2 inch	class 150	0.77 (19.5)	5.91 (150)	0.75 (19.0)	3.62 (92)	1.9 (48.3)	1.77 (45) <sup>1)</sup>	0.079 (2.0)	4.75 (120.7)	4	0, 2, 3.94,
	class 300	0.89 (22.7)	6.49 (165)	0.75 (19.0)	3.62 (92)	1.9 (48.3)	1.77 (45) <sup>1)</sup>	0.079 (2.0)	5.0 (127)	8	5.94 or 7.87
3 inch	class 150	0.96 (24.3)	7.5 (190.5)	0.75 (19.0)	5 (127)	3.0 (76)	2.83 (72) <sup>2)</sup>	0.079 (2.0)	6 (152.4)	4	(0, 50,
	class 300	1.14 (29.0)	8.27 (210)	0.87 (22.2)	5 (127)	3.0 (76)	2.83 (72) <sup>2)</sup>	0.079 (2.0)	6.69 (168.3)	8	100, 150 or 200)
4 inch	class 150	0.96 (24.3)	9.06 (230)	0.75 (19.0)	6.19 (157.2)	3.69 (94)	3.5 (89)	0.079 (2.0)	7.5 (190.5)	8	-
	class 300	1.27 (32.2)	10.04 (255)	0.87 (22.2)	6.19 (157.2)	3.69 (94)	3.5 (89)	0.079 (2.0)	7.88 (200)	8	

Explanations of tables:

d: Internal diameter of gasket to DIN 2690

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

d<sub>5</sub>: Diameter of extension

f: Milling edge

L: Extension length

 $^{1)}\,$  59 mm = 2.32 inch with tube length L=0..

<sup>2)</sup> 89 mm =  $3\frac{1}{2}$  inch with tube length L=0.

Transmitters for High Performance requirements

### SITRANS P500 - Supplementary electronics for 4-wire connection

#### Overview



SITRANS P pressure transmitter with supplementary electronics for 4-wire connection

Direct connection of the supplementary electronics to a SITRANS P pressure transmitter from the P500 series produces a transmitter for four-wire connection.

The supplementary electronics cannot be attached to explosionprotected pressure transmitters. The supplementary electronics is fitted in a light metal housing which is mounted on the left side of the pressure transmitter.

#### Note on ordering:

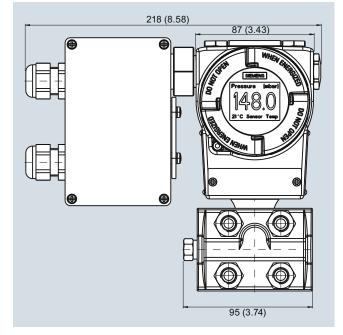
The supplementary electronics has to be be ordered through the **supplementary options** of the pressure transmitter in question.

# Technical specifications

Output	
Output	
Output signal	0 20 mA or 4 20 mA
Load	Max. 750 Ω
Voltage measurement	Linear (square-rooting in transmit- ter if necessary)
Electrical isolation	Between power supply and input/ output
Measuring accuracy	According to IEC 60770-1
Conformity error (in addition to transmitter)	$\leq$ 0.15 % of set span
Influence of ambient temperature	≤ 0.1 % per 10 K
Power supply effect	$\leq$ 0.1 % per 10 % change in voltage or frequency
Load effect	≤ 0.1 % per 100 % change
Rated conditions	
Ambient temperature	
• 24 V version	-20 +80 °C (-4 +176 °F)
• 230 V version	-20 +60 °C (-4 +140 °F)
Storage temperature	-50 +85 °C (-58 +185 °F)
Degree of protection	IP54 to IEC 60529
Electromagnetic compatibility (EMC)	IEC 61236-1
Condensation	Relative humidity 0 95 % condensation permissible

Structural design	
Dimensions (W x H x D) in mm (inch)	80 x 120 x 60 (3.15 x 4.72 x 2.36)
Electrical connection	Screw terminals (Pg 13.5 cable inlet) or Han 7D / Han 8D plug
Power supply	
Supply voltage	230 V AC (-10 +6 %, 47 63 Hz, approx. 6 VA) or 24 V AC/DC (24 V AC ± 10 %,
	47 63 Hz, approx. 3 VA)
Permissible ripple (within the speci- fied limits)	Approx. 2.5 V <sub>pp</sub>

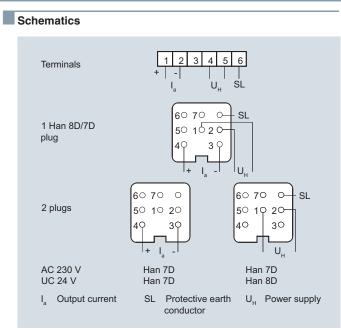
### Dimensional drawings



SITRANS P pressure transmitters with supplementary electronics for fourwire connection, dimension drawing, dimensions in mm (inch)

Transmitters for High Performance requirements

SITRANS P500 - Supplementary electronics for 4-wire connection



Supplementary electronics for 4-wire connection, connection diagram (the HAN 8D conector is identical to the previous version of the HAN 8U)

Selection and	Ordering data	Or	de	r code
Article No. of th	or <b>7MF56</b> add <b>"-Z</b> "	V		
Power supply	Electrical connection			
24 V AC/DC	Terminals; 2 Pg screwed glands, to left		1	
	2 Han 7D/Han 8D plugs incl. mating connector, to left	3	3	
	1 Han 7D plug incl. mating connector, angled	Ę	5	
	Terminals; 1 Pg screwed gland, downwards	6	5	
	1 Han 8D plug incl. mating connector, downwards (observe arrangement of plug and differential pressure line)	ę	9	
230 V AC	Terminals; 2 Pg screwed glands, to left	7	7	
	2 Han 7D plugs incl. mating connector, to left	8	3	
Output current	1			
0 20 mA 4 20 mA			0 1	
Accessories		Ar	ticl	e No.
Instruction Ma German/English		<b>A</b> 5	EC	00322799

Transmitters for High Performance requirements

SITRANS P500 Accessories/Spare parts

Selection and ordering	data	A	١rti	cle	No.		
Replacement measurin	7	M	F 5	994 -			
<b>pressure</b> SITRANS P pressure tran pressure and flow, P500 (MAWP 2320 psi)	1		ľ	1			
Click on the Article Not tion in the PIA Life Cy	b. for the online configura- cle Portal.						
Measuring cell filling Silicone oil	Measuring cell cleaning normal	1	I				
Measuring span (min 1.25 250 mbar 6.25 1250 mbar 31.25 6250 mbar 0.16 32 bar	<b> max.)</b> (0.5 100.4 inH <sub>2</sub> O) (2.5 502 inH <sub>2</sub> O) (12.54 2509 inH <sub>2</sub> O) (2.33 465 psi)		D E F G				
Wetted parts materials							
(stainless steel process f	langes)						
Seal diaphragm	Parts of measuring cell						
Stainless steel 1.4404/316L	Stainless steel 1.4404/316L			A			
Hastelloy C276	Stainless steel1.4404/316L			в			
Monel 400	Stainless steel1.4404/316L			С			
Process connection Female thread ¼-18 NPT • Sealing screw opposite - Mounting thread <sup>7</sup> / <sub>16</sub> - - Mounting thread M10 • Vent on side of process - Mounting thread <sup>7</sup> / <sub>16</sub> - - Mounting thread M10	e process connection 20 UNF to IEC 61518 to DIN 19213 s flange 20 UNF to IEC 61518			0 1 4 5			
Further designs		(	Drd	ler	code		
Add "-Z" to Article No. ar	nd specify Order code.						
Acceptance test certific Acc. to EN 10204-3.1	cate	(	212	2			
Without process flanges		ŀ	K00				
Vent on side for gas measurements <sup>1)</sup>				L32			
Process flanges, O-ring, special material Standard: Viton (FKM (FPM))							
Process connection sealing rings made of PTFE (Teflon), virginal				)			
Process connection sealing rings made of PTFE (Teflon), glass fiber-reinforced							
Process connection sealing rings made of FFPM $(Kalrez)^{2)}$							
Process flanges, O-rings	made of NBR	L	.63				
Process flanges, O-rings	made of graphite	L	.64				
1) Only in conjunction with		F					

<sup>1)</sup> Only in conjunction with process connection code 4 or 5.

<sup>2)</sup> Not together with Measuring span "G".

Transmitters for High Performance requirements

SITRANS P500 Accessories/Spare parts

Selection and Ordering data	
	Article No.
Mounting brackets For differential pressure transmitters with flange thread M10 (7MF5410 and 7MF5450) • Made of steel	7MF5987-1AA
Made of stainless steel	7MF5987-1AD
Mounting brackets for differential pressure transmitter with flange thread 7/16-20 UNF (7MF5400 and 7MF5440) • Made of steel • Made of stainless steel	7MF5987-1AC 7MF5987-1AF
Cover	
<ul><li>Made of die-cast aluminum, including O-ring</li><li>Without window</li><li>With window</li></ul>	7MF5987-1BE 7MF5987-1BF
Digital indicator Including mounting material	7MF5987-1BR
TAG plate (incl. fastening material)	
Without inscription (5 pcs.)	7MF5987-1CA
Printed (1 pc.) Data according to Y01 or Y02, Y15 and Y16 (see "SITRANS P transmitters")	7MF5987-1CB-Z Y:
Mounting screws	
For TAG plate, grounding and connection terminals and securing and locking screws (30 units)	7MF5987-1CC
Sealing plugs for process flange (1 set = 2 units) • Made of stainless steel • Made of Hastelloy	7MF4997-1CG 7MF4997-1CH
Vent valve Complete (1 set = 2 units) • Made of stainless steel • Made of Hastelloy	7MF4997-1CP 7MF4997-1CQ
Electronics module	
HART, intrinsically safe Ex ia for installation in transmitter casing (observe warranty conditions)	7MF5987-1DC
Connection board (incl. fastening mate- rial)	
HART, intrinsically safe Ex ia for installation in transmitter casing (observe warranty conditions)	7MF5987-1DM
O-rings for process flanges made of: • Viton (FKM (FPM)) (10 pcs.) • NBR (Buna N) (10 pcs.)	7MF5987-2DA 7MF5987-2DE
Push buttons assembly (incl. fastening material)	7MF5987-2AF
For replacement of operating keys for on- site operation of the transmitter	
Sealing ring for • Process connection	See catalog Fl01, "Fittings"
<ul> <li>NBR sealing ring for screw cover (10 pcs.)</li> <li>NBR sealing ring for interface measuring cell/housing (10 pcs.)</li> </ul>	7MF4997-2EA 7MF5987-2EB

	Article No.
Operating Instructions <sup>1)</sup>	
German	A5E02344527
English	A5E02344528
French	A5E02344529
Italian	A5E02344530
Spanish	A5E02344531
Compact operating instructions <sup>1)</sup>	
English, German, Spanish, French, Italian, Dutch	A5E02344532
English, Estonian, Latviaan, Lithuanian, Polish, Romanian	A5E02307339
English, Bulgarian, Czech, Finnish, Slovakian, Slovenian	A5E02307340
English, Danish, Greek, Portuguese, Swedish, Hungarian	A5E02307341
Russian	A5E02307338
Brief instructions (Leporello)	
German, English, French, Italian, Spanish, Chinese	A5E02344536
DVD with SITRANS P documentation	
German, English, French, Spanish, Italian Compact operating instructions in 21 EU languages	A5E00090345
Service Instructions <sup>1)</sup> for replacement of electronics, measuring cell and terminal board	
• German	A5E02822443
• English	A5E02344534
HART modem	
With USB interface	7MF4997-1DB
Operating instruction <sup>1)</sup> Supplementary electronics for 4-wire connection	A5E00322799
German, English	
Certificates (order only via SAP) addi- tional to internet download	
<ul> <li>Hard copy (to order)</li> </ul>	A5E03252406

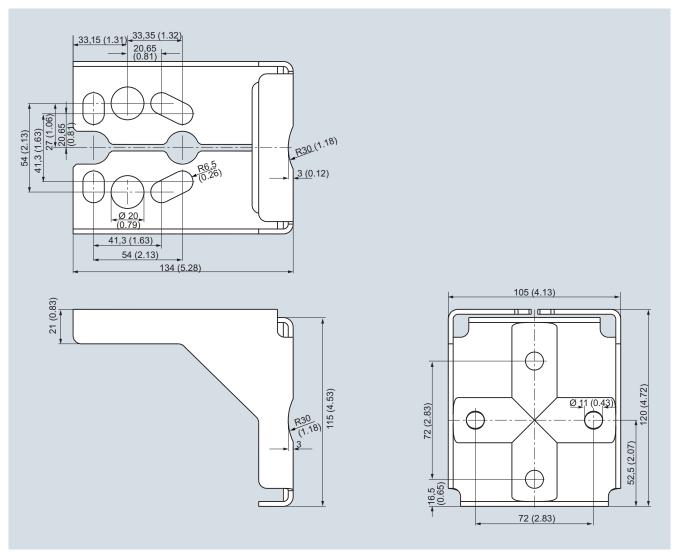
Available ex stock.

For power supply units, see catalog FI01 "Supplementary Compontents".

Transmitters for High Performance requirements

### SITRANS P500 Accessories/Spare parts

### Dimensional drawings



Mounting bracket for SITRANS P pressure transmitter, P500 series, measurements in mm (inch) Mounting bracket material: Sheet-steel Mat. No. 1.0330, chrome-plated, or stainless steel Mat. No. 1.4301 (304)

Transmitters for High Performance requirements

### SITRANS P500 Factory-mounting of valve manifolds on transmitters

### Overview

Design

The SITRANS P500 transmitter can be delivered factory-fitted with the following manifolds:

- Valve manifolds 7MF9411-5BA: Three valve manifold for differential pressure transmitter
- Valve manifolds 7MF9411-5CA: Three valve manifold for differential pressure transmitter

The 7MF9411-5BA and 7MF9411-5CA manifolds are sealed with PTFE sealing rings between the transmitter and the manifold.

Once installed, the complete unit is checked under pressure for leaks (compressed air 6 bar (2411 inH<sub>2</sub>O)) and is certified leak-proof with a test report to EN 10204 - 2.2.

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

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

If you order an acceptance test certificate 3.1 to EN10204 when choosing the option "Factory mounting of manifolds", a separate certificate is provided for the transmitters and the manifolds respectively.

#### Selection and ordering Data

#### Manifold 7MF9411-5BA on SITRANS P pressure transmitter P500 for differential pressure and flow

Ten	Add -Z to the Article No. of the transmitter and add Order codes	Order code
5 5	SITRANS P500 7MF54	
	mounted with gaskets made of PTFE and screws made of	
	Chromized steel	U01
	Stainless steel	U02
	Delivery incl. high-pressure test certified by factory certificate to EN10204-2.2	
	Further designs:	
	Delivery includes mounting bracket and mounting clips made of	
	Steel	A01
	Stainless steel	A02
	(instead of the mounting bracket supplied with the transmitter)	
	Supplied acceptance test certificate to EN10204-3.1 for transmitters and mounted valve manifold	C12

# Manifold 7MF9411-5CA on SITRANS P500 pressure transmitter for differential pressure and flow

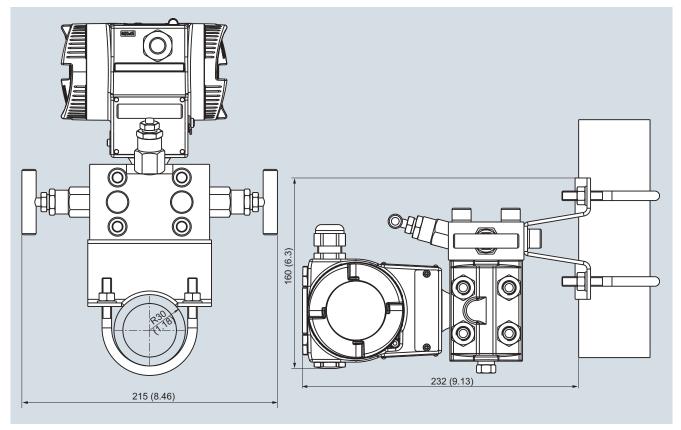
- Cont	Add -Z to the Article No. of the transmitter and add Order codes	Order code
· · · ·	SITRANS P500 7MF54	
	mounted with gaskets made of PTFE and screws made of	
	Chromized steel	U03
	Stainless steel	U04
	Delivery incl. high-pressure test certified by factory certificate to EN10204-2.2	
	Further designs:	
	Delivery includes mounting bracket and mounting clips made of	
	• Steel	A01
	Stainless steel	A02
	(instead of the mounting bracket supplied with the transmitter)	
	Supplied acceptance test certificate to EN10204-3.1 for transmitters and mounted valve manifold	C12

Transmitters for High Performance requirements

### Dimensional drawings



Manifold 7MF9411-5BA with attached SITRANS P500 pressure transmitter for differential pressure and flow (incl. mounting bracket)



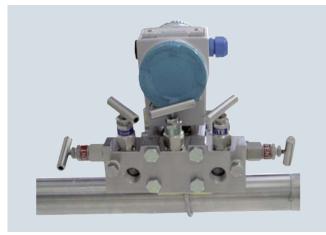
Manifold 7MF9411-5BA with attached SITRANS P500 pressure transmitter for differential pressure and flow, measurements in mm (inch)

© Siemens AG 2014

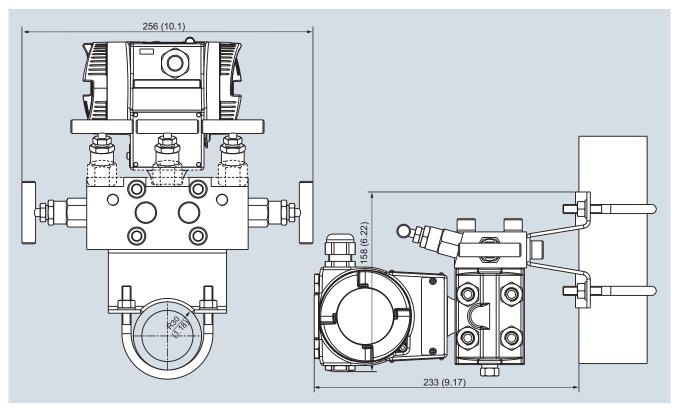
### **Pressure Measurement**

Transmitters for High Performance requirements

SITRANS P500 Factory-mounting of valve manifolds on transmitters



Manifold 7MF9411-5CA with attached SITRANS P500 pressure transmitter for differential pressure and flow (incl. mounting bracket)



Manifold 7MF9411-5CA with attached SITRANS P500 pressure transmitter for differential pressure and flow, measurements in mm (inch)

Remote seals for transmitters and pressure gauges

#### **Technical description**

#### 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 P pressure transmitter series:

- Pressure (P300, DS III with HART, DS III with PROFIBUS PA, DS III with FOUNDATION Fieldbus)
- Absolute pressure (P300, DS III with HART, DS III with PROFIBUS PA, DS III with FOUNDATION Fieldbus)
- Differential pressure and flow (P500, DS III with HART, DS III with PROFIBUS PA, DS III with FOUNDATION Fieldbus)

#### 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 data". Only then will the remote seal work to optimum effect.

#### Benefits

- No direct contact between the pressure transmitter and the 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 if a separation between the measured medium and the measuring instrument is essential or appropriate.

Examples of such cases:

- The temperature of the medium is outside the limits specified for the pressure transmitter.
- The medium is corrosive and requires diaphragm materials which are not available for the pressure transmitter.
- The medium is highly viscous or contains solids which would block the measuring chambers of the pressure transmitter.
- The medium may freeze in the measuring chambers or pulse line.
- The medium is heterogeneous or fibrous.
- The medium tends towards polymerization or crystallization.
  The process requires quick-release remote seals, as neces-
- sary e.g. in the food industry for fast cleaning.
- The process requires cleaning of the measuring point, e.g. in a batch process.

#### Design

A remote seal system consists of the following components.

- Pressure transmitter
- One or two remote seals
- Filling liquid
- Connection between pressure transmitter and remote seal (direct mounting or by means of capillary)

The volume in contact with the measured medium is terminated by a flat elastic diaphragm lying in a bed. Between the diaphragm and the pressure transmitter is the filling liquid.

In many cases, a capillary has to be connected between the remote seal and the pressure transmitter in order e.g. to minimize temperature effects on the latter when hot media are involved. However, the capillary influences the response time and the temperature response of the complete remote seal system. Two capillaries of equal length must always be used to connect a remote seal to a pressure transmitter for differential pressure.

The remote seal can be optionally equipped with a projecting diaphragm (tube).

Remote seals of sandwich design are fitted with a dummy flange.

#### Designs

#### Diaphragm seal

With diaphragm seals, the pressure is measured by means of a flat diaphragm which rests in a bed.

The following types of diaphragm seals exist:



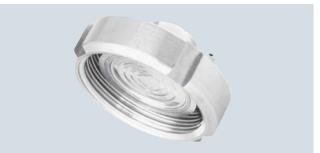
Diaphragm seal of sandwich design without (left) and with a projecting diaphragm (tube)

- Sandwich design
- Sandwich design with projecting diaphragm (tube) to DIN or ASME which are secured using a dummy flange.



Diaphragm seal of flange design without (left) and with a projecting diaphragm (tube)

- Flange design
- Flange design with projecting diaphragm (tube) to DIN or ASME, secured using holes in the flange.



Quick-release diaphragm seal

- Quick-release remote seals, e.g. to DIN 11851, SMS standard, IDF standard, APV RJF standard, clamp connection, etc.
- Miniature diaphragm seal with male thread for screwing into tapped holes
- · Remote seals with customer-specific process connections

**Technical description** 

Remote seals for transmitters and pressure gauges

Miniature diaphragm seal with diaphragm flush with front

• Miniature diaphragm seals

The quick-release remote seals are used above all in the food industry. Their design means that the measured medium cannot accumulate in dead volumes. The quick-release clamp present on the remote seal means that quick dismounting is possible for cleaning.

#### Clamp-on seal



Clamp-on seal with quick-release design (left) and for flange mounting

With clamp-on seals, the pressure is first measured using a cylindrical diaphragm positioned in a pipe, and then transmitted to the pressure transmitter by means of the filling liquid.

The clamp-on seal is a special design for flowing media. It consists of a cylindrical pipe in which a cylindrical diaphragm is embedded. Since it is completely integrated in the process pipe, no turbulences, dead volumes or other obstructions to the flow occur. Furthermore, the clamp-on seal can be cleaned by a pig.

The following types of clamp-on seals exist:

- Quick-release clamp-on seals, e.g. to DIN 11851, SMS standard, IDF standard, APV/RJF standard, clamp connection etc. The quick-release facility attached to the remote seal enables the seal to be removed quickly for cleaning purposes.
- Clamp-on seals for flanging to EN or ASME.
- · Clamp-on seals with customer-specific process connections.

#### Note

The pressure data on the transmitter and the remote seal must be observed with regard to pressure/temperature behavior.

### Function

The measured pressure is transferred from the diaphragm to the filling liquid and passes through the capillary to the measuring chamber of the pressure transmitter. The interior of the diaphragm seal and of the capillary, as well as the measuring chamber of the transmitter, are filled gas-free by the filling liquid.

#### 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 the change of volume of the filling liquid due to temperature variations. To select the right remote seal you must calculate the temperature error.

Below you will find an overview of the factors which influence the size of the temperature error, as well as information on how to calculate the temperature error.

The temperature error is dependent on the following variables:

- · Rigidity of the diaphragm used
- · Filling liquid used
- Influence of the filling liquid underneath the process flanges or in the connection shank of the pressure transmitter
- Internal diameter of the capillary: The bigger the internal diameter, the bigger the temperature error
- Length of the capillary: The longer the capillary, the bigger the temperature error

#### Diaphragm rigidity

The rigidity of the diaphragm is of decisive importance. The bigger the diameter of the diaphragm, the softer the diaphragm and the more sensitively it reacts to temperature-induced changes in volume of the filling liquid.

The result is that small measuring ranges are only possible with large diaphragm diameters.

Other factors apart from diaphragm rigidity which also play a role:

- Diaphragm thickness
- Diaphragm material
- · Coatings if present

#### Filling liquid

Every filling liquid reacts to temperature variations with a change of volume. Temperature errors can be minimized by selecting a suitable filling liquid, but the filling liquid must also be appropriate for the temperature limits and operating pressure. Furthermore, the filling liquid must also be physiologically harmless.

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

#### Note

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

An example of a temperature error calculation can be found in the section "Technical Specifications".

Remote seals for transmitters and pressure gauges

### **Technical description**

### Response time

The response time is dependent on the following factors:

- Internal diameter of the capillary: The bigger the internal diameter, the shorter the response time
- Viscosity of the filling liquid The greater the viscosity, the longer the response time
- Length of the capillary: The longer the capillary, the longer the response time
- Pressure in the pressure measuring system: The higher the pressure, the shorter the response time

#### Recommendations

The following should be observed to obtain an optimum combination of transmitter and remote seal:

- Choose the biggest possible diameter for the remote seal. The effective diameter of the seal diaphragm is then bigger and the temperature error smaller.
- Choose the shortest possible capillary. The response time is then shorter and the temperature error smaller
- Choose the filling liquid with the least viscosity and the smallest coefficient of expansion. Make sure, however, that the filling liquid meets the process requirements with regard to pressure, vacuum and temperature. And ensure that the filling liquid and the medium are compatible with one another.
- Note the following points for use in the vacuum range:
  - The pressure transmitter must always be positioned below the lowest spigot.
  - The operating range of some filling liquids is very limited with regard to the permissible temperature of the medium.
  - A vacuum-proof seal is necessary for continuous operation in the low-pressure range.
- Recommendations for the minimum span can be found in the section "Technical data".

#### Note

The remote seals listed here are a selection of the most common designs. On account of the large variety of process connections, certain remote seals which are not listed here may be available nevertheless.

Other versions can be:

- Other process connections, standards
- Aseptic or sterile connections
- Other dimensions
- Other nominal pressures
- · Special diaphragm materials, including coatings
- · Other sealing faces
- Other filling liquids
- Other capillary lengths
- · Sheathing of capillaries with protective hose
- Calibration at higher/lower temperatures etc.

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

Remote seals for transmitters and pressure gauges

Technical description

# Technical specifications

### Temperature error Diaphragm seals

Temperature errors of diaphragm seals when connected to pressure transmitters for pressure, absolute pressure, differential pressure (single-sided) and level

	Nominal diameter/ design				erature of remote IS	Temperature e capillary f <sub>Cap</sub>	error of	Temperature error of process flange/connec- tion spigot f <sub>PF</sub>		min. spa ance val	Recommended min. spans (guid- ance values, observe temp. error)	
		mm	(inch)	mbar/ 10 K	(psi/ 10 K)	mbar/ (10 K ⋅ m <sub>Cap</sub> )	(psi/ (10 K · m <sub>Cap)</sub> ))	mbar/ 10 K	(psi/ 10 K)	mbar	(psi)	
Sandwich	DN 50 without tube	59	(2.32)	1.5	(0.022)	2	(0.029)	2	(0.029)	200	(2.90)	
design or with flange to	DN 50 with tube	45	(1.89)	5	(0.073)	10	(0.145)	10	(0.145)	500	(7.25)	
EN 1092-1	DN 80 without tube	89	(3.50)	0.2	(0.003)	0.2	(0.003)	0.2	(0.003)	100	(1.45)	
	DN 80 with tube	72	(2.83)	1	(0.015)	1	(1.015)	1	(1.015)	250	(3.63)	
	DN 100 without tube	89	(3.50)	0.2	(0.003)	0.4	(0.006)	0.4	(0.006)	100	(1.45)	
	DN 100 with tube	89	(3.50)	0.4	(0.006)	0.4	(0.006)	0.4	(0.006)	100	(1.45)	
	DN 125 without tube	124	(4.88)		(0.003)	0.1	(0.002)	0.1	(0.002)	20	(0.29)	
	DN 125 with tube	124	(4.88)	0.2	(0.003)	0.1	(0.002)	0.1	(0.002)	20	(0.29)	
Sandwich	2 inch without tube	59	(2.32)	1.5	(0.022)	2	(0.029)	2	(0.029)	200	(2.90)	
design or with flange to ASME B16.5	2 inch with tube	45	(1.89)	5	(0.073)	10	(0.145)	10	(0.145)	500	(7.25)	
	3 inch without tube	89	(3.50)	0.2	(0.003)	0.2	(0.003)	0.2	(0.003)	100	(1.45)	
	3 inch with tube	72	(2.83)	1	(0.015)	1	(1.015)	1	(1.015)	250	(3.63)	
	4 inch without tube	89	(3.50)	0.2	(0.003)	0.4	(0.006)	0.4	(0.006)	100	(1.45)	
	4 inch with tube	89	(3.50)	0.4	(0.006)	0.4	(0.006)	0.4	(0.006)	100	(1.45)	
	5 inch without tube	124	(4.88)	0.2	(0.003)	0.1	(0.002)	0.1	(0.002)	20	(0.29)	
	5 inch with tube	124	(4.88)	0.2	(0.003)	0.1	(0.002)	0.1	(0.002)	20	(0.29)	
Remote seal	DN 25	25	(0.98)	20	(0.290)	60	(0.870)	60	(0.870)	6000	(87)	
with union nut to DIN 11851	DN 32	32	(1.26)	8	(0.116)	25	(0.363)	25	(0.363)	4000	(58)	
	DN 40	40	(1.57)	4	(0.058)	10	(0.145)	10	(0.145)	2000	(29)	
	DN 50	52	(2.05)	4	(0.058)	5	(0.073)	5	(0.073)	500	(7.25)	
	DN 65	59	(2.32)	3	(0.044)	4	(0.058)	4	(0.058)	500	(7.25)	
	DN 80	72	(2.83)		(0.015)	1	(0.015)	1	(0.015)	250	(3.63)	
Remote seal, screwed gland design	DN 50	52	(2.05)	4	(0.058)	5	(0.073)	5	(0.073)	500	(7.25)	
Remote seal	DN 25	25	· · ·	20	(0.290)	60	(0.870)	60	(0.870)	6000	(87)	
with threaded socket to	DN 32	32	` '	8	(0.116)	25	(0.363)	25	(0.363)	4000	(58)	
DIN 11851	DN 40	40	(1.57)		(0.058)	10	(0.145)	10	(0.145)	2000	(29)	
	DN 50	52	(2.05)		(0.058)	5	(0.073)	5	(0.073)	500	(7.25)	
	DN 65	59	(2.32)		(0.044)	4	(0.058)	4	(0.058)	500	(7.25)	
	DN 80	72	(2.83)		(0.015)	1	(0.015)	1	(0.015)	250	(3.63)	
Clamp connec-	1½ inch	32	(1.26)		(0.116)	25	(0.363)	25	(0.363)	4000	(58)	
.011	2 inch	40	` '	4	(0.058)	10	(0.145)	10	(0.145)	2000	(29)	
	2½ inch	59	(2.32)		(0.044)	5	(0.073)	5	(0.073)	500	(7.25)	
	3 inch	72	( /	1	(0.015)	1	(0.015)	1	(0.015)	250	(3.63)	
Viniature dia- ohragm seal	G1B	25	(0.98)	20	(0.290)	60	(0.870)	60	(0.870)	6000	(87)	
eagin oou	G1½B	40	(1.57)		(0.058)	10	(0.145)	10	(0.145)	2000	(29)	
	G2B	52	(2.05)	4	(0.058)	5	(0.073)	5	(0.073)	500	(7.25)	

<u>Remarks:</u>
Values apply for the filling liquids silicone oil M5, silicone oil M50, high-temperature oil, halocarbon oil and food oil (FDA listed).

Remote seals for transmitters and pressure gauges

### Technical description

Temperature errors of diaphragm seals with connection to differential pressure transmitters (double-sided)

	Nominal diameter/ design		Diaphragm Temperature of remote sea		ature error te seal f <sub>RS</sub>	Temperature capillary f <sub>Cap</sub>	error of	Temperature error of process flange/connec- tion spigot f <sub>PF</sub>		Recommended min. spans (guidance val- ues, observe temperature error)	
		mm	(inch)	mbar/ 10 K	(psi/ 10 K)	mbar/ (10 K ⋅ m <sub>Cap</sub> )	(psi/ (10 K · m <sub>Cap</sub> ))	mbar/ 10 K	(psi/ 10 K)	mbar	(psi)
Sandwich	DN 50 without tube	59	(2.32)	0.3	(0.0043)	0.3	(0.0045)	0.3	(0.0045)	250	(3.626)
design or with flange to	DN 50 with tube	45	(1.89)	1.26	(0.018)	1.7	(0.025)	1.7	(0.025)	250	(3.626)
EN 1092-1	DN 80 without tube	89	(3.50)	0.05	(0.001)	0.05	(0.001)	0.05	(0.0007)	50	(0.725)
	DN 80 with tube	72	(2.83)	0.24	(0.004)	0.17	(0.003)	0.17	(0.003)	100	(1.45)
	DN 100 without tube	89	(3.50)	0.05	(0.001)	0.07	(0.001)	0.07	(0.001)	50	(0.725)
	DN 100 with tube	89	(3.50)	0.1	(0.002)	0.07	(0.001)	0.07	(0.001)	50	(0.725)
	DN 125 without tube	124	(4.88)	0.05	(0.001)	0.03	(0.0004)	0.03	(0.0004)	20	(0.29)
	DN 125 with tube	124	(4.88)	0.05	(0.001)	0.03	(0.0004)	0.03	(0.0004)	20	(0.29)
Sandwich	2 inch without tube	59	(2.32)	0.3	(0.0043)	0.3	(0.0043)	0.3	(0.0045)	250	(3.626)
design with flange to	2 inch with tube	45	(1.89)	1.26	(0.018)	1.7	(0.025)	1.7	(0.025)	250	(3.626)
ASME B16.5	3 inch without tube	89	(3.50)	0.05	(0.001)	0.05	(0.0007)	0.05	(0.0007)	50	(0.725)
	3 inch with tube	72	(2.83)	0.24	(0.004)	0.17	(0.003)	0.17	(0.003)	100	(1.45)
	4 inch without tube	89	(3.50)	0.05	(0.001)	0.07	(0.001)	0.07	(0.001)	50	(0.725)
	4 inch with tube	89	(3.50)	0.1	(0.002)	0.07	(0.001)	0.07	(0.001)	50	(0.725)
	5 inch without tube	124	(4.88)	0.05	(0.001)	0.03	(0.0004)	0.03	(0.0004)	20	(0.29)
	5 inch with tube	124	(4.88)	0.05	(0.001)	0.03	(0.0004)	0.03	(0.0004)	20	(0.29)
Remote seal, screwed gland design	DN 50	52	(2.05)	1	(0.015)	0.83	(0.012)	0.83	(0.012)	250	(3.626)
Remote seal	DN 50	52	(2.05)	1	(0.015)	0.83	(0.012)	0.83	(0.012)	250	(3.626)
with union nut to DIN 11851	DN 65	59	(2.32)	0.7	(0.010)	0.67	(0.010)	0.67	(0.010)	250	(3.626)
	DN 80	72	(2.83)	0.24	(0.004)	0.17	(0.003)	0.17	(0.003)	100	(1.450)
Remote seal	DN 50	52	(2.05)	1	(0.015)	0.83	(0.012)	0.83	(0.012)	250	(3.626)
with threaded socket to	DN 65	59	(2.32)	0.7	(0.010)	0.67	(0.010)	0.67	(0.010)	250	(3.626)
DIN 11851	DN 80	72	(2.83)	0.24	(0.004)	0.17	(0.003)	0.17	(0.003)	100	(1.450)
Clamp connec-	2 inch	40	(1.57)	1	(0.015)	2.5	(0.036)	2.5	(0.036)	2000	(29.01)
tion	21/2 inch	59	(2.32)	0.7	(0.010)	0.67	(0.010)	0.67	(0.010)	250	(3.626)
	3 inch	72	(2.83)	0.24	(0.004)	0.17	(0.003)	0.17	(0.003)	100	(1.450)

#### Remarks:

• Values apply for the filling liquids silicone oil M5, silicone oil M50, high-temperature oil, halocarbon oil and food oil (FDA listed).

• Values apply to stainless steel as the diaphragm material.

Remote seals for transmitters and pressure gauges

Technical description

#### Temperature error Clamp-on seals

Temperature errors of clamp-on seals when connected to pressure transmitters for gauge pressure and absolute pressure, and with single-sided connection to pressure transmitters for differential pressure

Nominal diameter/ design	Temperature error of remote seal f <sub>RS</sub>		Temperature e capillary f <sub>Cap</sub>		Temperature e cess flange/co spigot f <sub>PF</sub>		Recommended min. spans (guidance values, observe temperature error)	
	mbar/10 K	(psi/10 K)	mbar/10 K	(psi/10 K)	mbar/10 K	(psi/10 K)	mbar	(psi)
DN 25 (1 inch)	6.0	(0.0870)	8.5	(0.123)	8.5	(0.123)	1000	(14.5)
DN 40 (1½ inch)	4.5	(0.065)	4.5	(0.065)	4.5	(0.065)	250	(3.63)
DN 50 (2 inch)	4.0	(0.058)	3.0	(0.044)	3.0	(0.044)	100	(1.45)
DN 80 (3 inch)	9.5	(0.138)	5.0	(0.073)	5.0	(0.073)	100	(1.45)
DN 100 (4 inch)	8.0	(0.012)	3.0	(0.044)	3.0	(0.044)	100	(1.45)

Temperature errors of clamp-on seals with double-sided connection to pressure transmitters for differential pressure

Nominal diameter/ design	Temperature error of remote seal f <sub>RS</sub>		Temperature e capillary f <sub>Cap</sub>	rror of	Temperature e cess flange/co spigot f <sub>PF</sub>		Recommended min. spans (guidance values, observe temperature error)	
	mbar/10 K	(psi/10 K)	mbar/10 K	(psi/10 K)	mbar/10 K	(psi/10 K)	mbar	(psi)
DN 25 (1 inch)	2.3	(0.033)	1.8	(0.026)	1.8	(0.026)	1000	(14.5)
DN 40 (1½ inch)	0.8	(0.012)	0.3	(0.004)	0.3	(0.004)	250	(3.63)
DN 50 (2 inch)	0.3	(0.004)	0.1	(0.002)	0.1	(0.002)	100	(1.45)
DN 80 (3 inch)	3.0	(0.044)	0.5	(0.007)	0.5	(0.007)	100	(1.45)
DN 100 (4 inch)	1.0	(0.015)	0.1	(0.002)	0.1	(0.002)	100	(1.45)

Remarks:

• Values apply for the filling liquids silicone oil M5, silicone oil M50, high-temperature oil, halocarbon oil and food oil (FDA listed).

• Half the values apply to glycerin/water mixture as the filling liquid.

• Values apply to stainless steel as the diaphragm material.

• Diaphragm thickness 0.05 mm (0.002 inch) for DN 25/DN 40/DN 50 and 0.1 mm (0.004 inch) for DN 80/DN 100

Remote seals for transmitters and pressure gauges

### **Technical description**

### Calculation of the temperature error

The following equation is used to calculate the temperature error:

$dp = (\vartheta_{RS} - \vartheta_{Cal})$	$f_{RS} + (\vartheta_{Cap} - \vartheta_{Cal}) \cdot I_{Cap} \cdot f_{Cap} + (\vartheta_{TR} - \vartheta_{Cal}) \cdot f_{PF}$
dp	Additional temperature error (mbar)
9 <sub>RS</sub>	Temperature on remote seal diaphragm (generally corresponds to temperature of medium)
$\vartheta_{Cal}$	Calibration (reference) temperature (20 °C (68 °F))
f <sub>RS</sub>	Temperature error of remote seal
9 <sub>Cap</sub>	Ambient temperature on the capillaries
I <sub>Cap</sub>	Capillary length
f <sub>Cap</sub>	Temperature error of capillaries
$\vartheta_{TR}$	Ambient temperature on pressure transmitter

flanges of the pressure transmitter

Temperature error of the oil filling in the process

#### Example of temperature error calculation

#### **Existing conditions:**

f<sub>PF</sub>

SITRANS P pressure transmitter for differential pressure, 250 mbar, set to 0 100 mbar, with DN 100 remote seal diaphragms without tube, diaphragm made of stainless steel, mat. No. 1.4404/316L	f <sub>RS</sub> = 0.05 mbar/10 K (0.039 inH <sub>2</sub> O/10 K)
Capillary length	I <sub>Cap</sub> = 6 m (19.7 ft)
Capillaries fitted on both sides	f <sub>Cap</sub> = 0.07 mbar/(10 K · m <sub>Cap</sub> ) (0.028 inH <sub>2</sub> O/(10 K · m <sub>Cap</sub> ))
Filling liquid silicone oil M5	f <sub>PF</sub> = 0.07 mbar/10 K (0.028 inH <sub>2</sub> O/10 K)
Process temperature	θ <sub>RS</sub> = 100 °C (212 °F)
Temperature on the capillaries	θ <sub>Cap</sub> = 50 °C (122 °F)
Temperature on pressure transmitter	ϑ <sub>TR</sub> = 50 °C (122 °F)
Calibration temperature	θ <sub>Cal</sub> = 20 °C (68 °F)

#### **Required:**

Additional temperature error of remote seals: dp

#### Calculation:

### in mbar

 $\begin{array}{l} dp = (100\ ^{\circ}C - 20\ ^{\circ}C) \cdot 0.05\ mbar/10\ K + (50\ ^{\circ}C - 20\ ^{\circ}C) \cdot 6\ m \cdot 0.07\ mbar/(10\ K \cdot m) + (50\ ^{\circ}C - 20\ ^{\circ}C) \cdot 0.07\ mbar/10\ K \\ \end{array}$ 

dp = 0.4 mbar + 1.26 mbar + 0.21 mbar

#### in inH<sub>2</sub>O

 $\begin{array}{l} dp = (212\ ^\circ F - 68\ ^\circ F) \cdot 0.039\ inH_2O/10\ K + (112\ ^\circ F - 68\ ^\circ F) \cdot 19.7\ ft \cdot 0.028\ inH_2O/(10\ K \cdot 3.28\ ft) + (112\ ^\circ F - 68\ ^\circ F) \cdot (0.028\ inH_2O/10\ K) \\ dp = 0.16\ inH_2O + 0.51\ inH_2O + 0.08\ inH_2O \\ \end{array}$ 

#### Result:

### $dp = 1.87 \text{ mbar} (0.75 \text{ inH}_2\text{O})$

(corresponds to 2.27% of set span)

#### Note

The determined temperature error only applies to the error resulting from connection of the remote seal.

The transmission response of the respective transmitter is <u>not</u> included in this consideration. It must be calculated separately, and the resulting error added to the

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
	Increase in values by
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 dia- phragm	40 %
Inconel	50 %
Incoloy	50 %

#### Maximum temperature of medium

The following maximum temperatures of the medium apply depending on the material of the wetted parts:

p <sub>abs</sub> < 1 k (402 inH <sub>2</sub>	oar O)	$p_{abs} > 1 k$ (402 inH <sub>2</sub>	oar O)
°C	(°F)	°C	(°F)
200	(392)	400	(662)
200	(392)	260	(500)
100	(212)	150	(302)
200	(392)	260	(500)
200	(392)	260	(500)
200	(392)	400	(662)
200	(392)	400	(662)
200	(392)	300	(572)
200	(392)	300	(572)
100	(212)	150	(302)
200	(392)	400	(752)
200	(392)	400	(752)
200	(392)	400	(752)
	'C           200	200         (392)           200         (392)           100         (212)           200         (392)           200         (392)           200         (392)           200         (392)           200         (392)           200         (392)           200         (392)           200         (392)           200         (392)           200         (392)           200         (392)           200         (392)           200         (392)           200         (392)           200         (392)	(402 inH <sub>2</sub> O)     (402 inH <sub>2</sub> C)       °C     (°C)       200     (392)     400       200     (392)     260       100     (212)     150       200     (392)     260       200     (392)     260       200     (392)     260       200     (392)     400       200     (392)     300       200     (392)     300       200     (392)     400       200     (392)     400       200     (392)     400       200     (392)     400       200     (392)     400

# Maximum capillary length for diaphragm seals (guidance values)

Nom. diam		Max. length of capillary							
		Diaphragr	n seal	Clamp-on seal					
		m	(ft)	m	(ft)				
DN 25	(1 inch)	2.5	(8.2)	2.5	(8.2)				
DN 32	(1¼ inch)	2.5	(8.2)	2.5	(8.2)				
DN 40	(1½ inch)	4	(13.1)	6	(19.7)				
DN 50	(2 inch)	6	(19.7)	10	(32.8)				
DN 65	(2½ inch)	8	(26.2)	10	(32.8)				
DN 80	(3 inch)	15	(49.1)	10	(32.8)				
DN 100	(4 inch)	15	(49.1)	10	(32.8)				
DN 125	(5 inch)	15	(49.1)	-	-				

Remote seals for transmitters and pressure gauges

1

#### Response times

The values listed in the following table are the response times (in seconds per meter of capillary) for a change in pressure which corresponds to the set span.

The listed values must be multiplied by the respective length of the capillary, or with transmitters for differential pressure and flow by the total length of both capillaries.

The response times are independent of the set span within the range of the respective transmitter. The response times are of insignificant importance for spans above 10 bar (145 psi). The response times of the pressure transmitters are not considered in the table.

Filling liquid	Density		Tempe on cap		Response time in s/m (s/ft) with max. 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)	

#### Technical data of filling liquids

When selecting the filling liquid, check that it is suitable with respect to the permissible temperature of the medium and the process pressure.

Also check the compatibility of the filling liquid with the measured medium. For example, only physiologically harmless filling liquids may be used in the food industry.

Oxygen and chlorine are special cases of measured medium. The liquid must not react with either of these two media or a leaking remote seal may lead to an explosion or fire.

Halocarbon oil must be used as the fill fluid with the media oxygen and chlorine.

Filling liquid	Digit in Article No.								Viscosity at 20 °C (68 °F)		Coefficient of expansion	
		p <sub>abs</sub> < 1 bar	(p <sub>abs</sub> < 402 inH <sub>2</sub> O)									
		°C	(°F)	°C	(°F)	kg/dm <sup>3</sup>	(lb/in <sup>3</sup> )	m²/s⋅10 <sup>6</sup>	(ft²/s⋅10 <sup>6</sup> )	1/°C	(1/°F)	
Silicone oil M5	1	-60 +80	(-76 +176)	-90 +180	(-130 +356)	0.914	(0.03)	4	(43)	0.00108	(0.00060)	
Silicone oil M50	2	-40 +150	(-40 +302)	-40 +250	(-40 +482)	0.96	(0.03)	50	(538)	0.00104	(0.00058)	
High-tempera- ture oil	3	-10 +200	(+14 +392)	-20 +400	(-4 +752)	1.07	(0.04)	57	(613)	0.00080	(0.00044)	
Halocarbon oil	4 <sup>1)</sup>	-40 +80	(-40 +176)	-40 +175	(-40 +347)	1.968	(0.07)	14	(151)	0.00086	(0.00048)	
Food oil (FDA listed)	7	-20 +160	(-4 +320)	-20 +200	(-4 +392)	0.92	(0.03)	10	(107)	0.00080	(0.00044)	

<sup>1)</sup> Max. pressure and temperature for oxygen measurements: 50 bar (725 psi) and 60° (140 °F).

Remote seals for transmitters and pressure gauges

### Overview



Diaphragm seals of sandwich design

Diaphragm seals of sandwich design		Sealing material in the process		
Nominal diameter	Nominal pressure	flanges		
• DN 50	PN 16 PN 400	<ul> <li>For pressure transmitters, absolute pressure transmitters and low-</li> </ul>	Copper	
• DN 80	PN 16 PN 400	pressure applications		
• DN 100	PN 16 PN 400	<ul> <li>For other applications</li> </ul>	Viton	
• DN 125	PN 16 PN 400			
• 2 inch	Class 150 class 2500	Maximum pressure	See above and the technical dat of the pressure transmitters	
• 3 inch	Class 150 class 2500	Tube length	Without tube as standard (tube	
• 4 inch	Class 150 class 2500	Tube length	available on request)	
• 5 inch	Class 150 class 2500	Capillary		
Sealing face • For stainless steel, mat. No.	To EN 1092-1, form B1 or	• Length	Max. 10 m (32.8 ft), longer lengths on request	
1.4404/316L	ASME B16.5 RF 125 250 AA	Internal diameter	max. 2 mm (0.079 inch)	
• For the other materials	To EN 1092-1, form B2 or	Minimum bending radius	150 mm (5.9 inch)	
	ASME B16.5 RFSF	Filling liquid	Silicone oil M5	
Materials			Silicone oil M50	
<ul> <li>Main body</li> <li>Wetted parts</li> </ul>	Stainless steel mat. no.		High-temperature oil	
	1.4404/316L		Halocarbon oil (for measuring C	
	Stainless steel mat. no. 1.4404/316L		Food oil (FDA listed)	
	<ul><li>Without coating</li><li>PTFE coating (for vacuum on re-</li></ul>	Permissible ambient temperature	Dependent on the pressure tran mitter and the filling liquid of the remote seal	
	<ul> <li>PTE coating (for vacuum on request)</li> <li>PFA coating (for vacuum on request)</li> </ul>		More information can be found the technical data of the pressui transmitters and in the section "Technical data of filling liquid" in the Technical description to the remote seals	
	Monel 400, mat. No. 2.4360	Weight	Approx. 4 kg (8.82 lb)	
	Hastelloy C276, mat. No. 2.4819	Certificate and approvals		
	Hastelloy C4, mat. No. 2.4610	Classification according to pressure	uids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering	
	Tantalum	equipment directive (DRGL 97/23/EC)		
	Duplex 2205, mat. no. 1.4462			
	Stainless steel 316L, gold plated, thickness approx. 25 $\mu\text{m}$		practice)	
• Capillary	Stainless steel, mat. No. 1.4571/316Ti			
• Sheath	Spiral hose made of stainless steel, mat. No. 1.4301/316			

1/214

Remote seals for transmitters and pressure gauges

			Remote seals for transmitters and p	coolic gauge	
			Diaphragm seals of sandwich design with flexible capillary		
Selection and Ordering data	Article N	lo. Ord.coc		Article No. Ord.cod	
Diaphragm seal			Diaphragm seal		
Sandwich-type design, with flexible capillary connected to a SITRANS P transmitter (order separately):			Sandwich-type design, with flexible capillary connected to a SITRANS P transmitter (order separately):		
for pressure 7MF403 and 7MF423 together with Order code "V01" (vacuum-proof design) and 7MF802 <sup>1)</sup> ; Scope of delivery (1 off)	7 7 MF 4 9 0 0 - roof rry		for pressure 7MF403 and 7MF423 together with Order code "V01" (vacuum-proof design) and 7MF802 <sup>1)</sup> ; Scope of delivery (1 off)	7 M F 4 9 0 0 -	
for absolute pressure 7MF433; A Scope of delivery (1 off)	↗ 7MF4901-		for absolute pressure 7MF433; Scope of delivery (1 off)	7 M F 4 9 0 1 -	
for differential pressure and flow 7MF443 A and 7MF54; scope of delivery 2 off	🗷 7MF4903-		for differential pressure and flow 7MF443 and 7MF54; scope of delivery 2 off	7 M F 4 9 0 3 -	
Click on the Article No. for the online configu- ration in the PIA Life Cycle Portal.	1	- B	Length of capillary <sup>5)</sup> ● 1.0 m (3.28 ft)	2	
Nominal diameter and nominal pressure			• 1.6 m (5.25 ft)	3	
• DN 50 PN 16 400	A		• 2.5 m (8.20 ft)	4	
(recommended only for pressure transmitters			• 4.0 m (13.1 ft)	5	
for pressure)			• 6.0 m (19.7 ft)	6	
• DN 80 PN 16 400	В		• 8.0 m (26.25 ft)	7	
• DN 100 PN 16 400	С		• 10.0 m (32.8 ft)	8	
• DN 125 PN 16 400	D		Special lengths for capillaries		
• 2 inch Class 150 2500	E				
(recommended only for pressure transmitters	-		• 2.0 m	9 N 1 C	
for pressure)			• 3.0 m	9 N 1 E	
• 3 inch Class 150 2500	н		• 5.0 m	9 N 1 G	
• 4 inch Class 150 2500	L		• 7.0 m	9 N 1 J	
• 5 inch Class 150 2500	N		• 9.0 m	9 N1L	
Smooth sealing face to EN 1092-1, form B1 or to ASME B16.5 RF 125 250 AA			only for 7MF4903		
Other version	Z	J 1 '	• 11.0 m	9 N 1 N	
Add Order code and plain text:			• 12.0 m	9 N 1 P	
Nominal diameter:; Nominal pressure:			• 13.0 m	9 N 1 G	
Sealing face: see "Technical data"			• 14.0 m	9 N 1 R	
Wetted parts materials			• 15.0 m	9 N 1 S	
<ul> <li>Stainless steel 316L</li> </ul>			<sup>1)</sup> With 7MF802 and the measuring cells Q, S, T a		
<ul> <li>without coating</li> </ul>	A		uum-tight version.	nd U also order the vac	
- with PTFE coating <sup>2)</sup>	E 0		<sup>2)</sup> Only possible up to max. PN 100.		
- with ECTFE coating <sup>2) 3)</sup>	F		<sup>3)</sup> For vacuum on request		
- with PFA coating <sup>2)</sup>	D		<sup>4)</sup> Oil- and grease- free cleaning to DIN 25410, level	2 and packaging	
			included in the scope of delivery.		
• Monel 400, mat. No. 2.4360	G		5) Max. capillary length, see section "Technical desc	ription".	
• Hastelloy C276, mat. No. 2.4819	J				
Hastelloy C4, mat. No. 2.4610	U				
• Tantalum	К				
• Duplex 2205, mat. no. 1.4462	Q				
• Duplex 2205, mat. no. 1.4462, incl. main body	R				
<ul> <li>Stainless steel 316L, gold plated, thickness approx. 25 μm</li> </ul>	S 0				
Other version	z	К1			
Add Order code and plain text:	-	K I			
Wetted parts materials:					
Tube length					
without tube	0				
Other version:	9	L1			
Add Order code and plain text:	Ű				
Tube length:					
Filling liquid					
Silicone oil M5	1				
Silicone oil M50	2				
High-temperature oil	2				
	3				
	4				
• Halocarbon oil (for measuring $O_2$ ) <sup>4)</sup>	-				
<ul> <li>Halocarbon oil (for measuring O<sub>2</sub>)<sup>4)</sup></li> <li>Food oil (FDA listed)I</li> </ul>	7				
<ul> <li>Halocarbon oil (for measuring O<sub>2</sub>)<sup>4)</sup></li> <li>Food oil (FDA listed)l</li> <li>Other version</li> </ul>	7 9				
<ul> <li>Halocarbon oil (for measuring O<sub>2</sub>)<sup>4)</sup></li> <li>Food oil (FDA listed)I</li> </ul>					

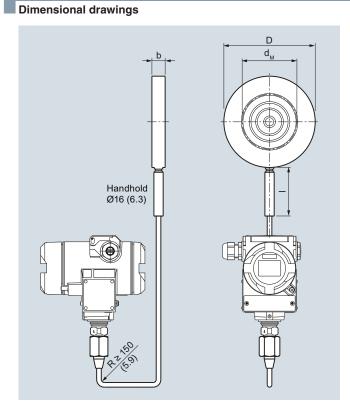
Remote seals for transmitters and pressure gauges

# Diaphragm seals of sandwich design with flexible capillary

Order code	Selection and Ordering data	Order code
	-	
	Please add "-Z" to Article No. and specify Order code.	
	Sealing surface B1 or ASME B16.5 RF 125 250 AA instead of sealing surface B2 or RFSF	J12
A01	(2.4819), tantalum and Duplex 2205 (1.4462)	
-		11.4
B20	instead of sealing surface B1 (only for wetted parts made of stainless steel 316L)	J14
C10	Sealing surface RJF (groove) ASME B16.5 instead of sealing surface	J24
	ASME B16.5 RF 125 250 AA (only for wetted parts made of stainless steel 316L)	
C11	PE protective tube over the spiral protective tube (color: white) of	
C12	the capillaries	
	1.0 m	N20
C17		N21 N22
	2.5 m	N23
C20	3.0 m 4.0 m	N24 N25
	5.0 m 6.0 m	N26 N27
C23	7.0 m	N28 N29
	9.0 m	N30 N31
D07		1151
	11.0 m	N32
Dag		N33 N34
D08		N35
	15.0 m	N36
E10		
	Gauge and absolute pressure from the pres-	V01
	Differential pressure transmitters	V03
E15		
	A01 A02 B20 C10 C11 C12 C17 C20 C23 D07 D08 E10	Further designs         Please add "-Z" to Article No. and specify Order code.         Sealing surface B1 or ASME B16.5 RF 125 250 AA instead of sealing surface B2 or RFSF (only for wetted parts made of Hastelloy C276 (2.4819), tantalum and Duplex 2205 (1.4462) and for nominal sizes 2", 3", DN 50 and DN 80)         B20       Sealing surface groove, EN 1092-1, form D instead of sealing surface B1 (only for wetted parts made of stainless steel 316L)         C10       Sealing surface RJF (groove) ASME B16.5 Inistead of sealing surface B1 (only for wetted parts made of stainless steel 316L)         C11       PE protective tube over the spiral protective tube (color: white) of the capillaries         C11       PE protective tube         Over the spiral protective tube (color: white) of the capillaries         1.0 m       1.6 m         2.5 m       3.0 m         3.0 m       9.0 m         9.0 m       10.0 m         5.0 m       8.0 m         9.0 m       10.0 m         10.0 m       13.0 m         12.0 m

Remote seals for transmitters and pressure gauges

# Diaphragm seals of sandwich design with flexible capillary



Diaphragm seals of sandwich design with flexible capillary for connection to SITRANS P pressure transmitters for pressure, dimensions in mm (inch)

#### Connection to EN 1092-1

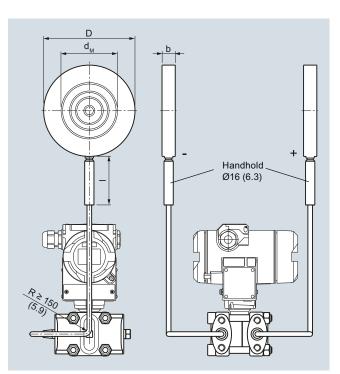
Nom. diam.	Nom. press.	b	D	d <sub>M</sub>	I
		mm	mm	mm	mm
DN 50	PN 16 PN 400	20	102	59	100
DN 80	-	20	138	89	100
DN 100	-	20	158	89	100
DN 125		22	188	124	100

#### Connection to ASME B16.5

Nom. diam.	Nom. press.	b	D	d <sub>M</sub>	I
	lb/sq.in.	mm	mm	mm	mm
		(inch)	(inch)	(inch)	(inch)
2 inch	150 2500	20	100	59	100
		(0.79)	(3.94)	(2.32)	(3.94)
3 inch	_	20	134	89	100
		(0.79)	(5.28)	(2.32)	(3.94)
4 inch	-	20	158	89	100
		(0.79)	(6.22)	(2.32)	(3.94)
5 inch	-	22	186	124	100
		(0.87)	(7.32)	(4.88)	(3.94)

d: Inside diameter of gasket according to EN 1092-1 / ASME B16.5  $\,$ 

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



Diaphragm seals of sandwich design (without flange) with flexible capillary for connection to SITRANS P pressure transmitters for absolute pressure or differential pressure and flow, dimensions in mm (inch)

#### Connection to EN 1092-1

Nom. diam.	Nom. press.	b	D	d <sub>M</sub>	I
		mm	mm	mm	mm
DN 50	PN 16 PN 400	20	102	59	100
DN 80	-	20	138	89	100
DN 100	-	20	158	89	100
DN 125	-	22	188	124	100

#### Connection to ASME B16.5

Nom. diam.	Nom. press.	b	D	d <sub>M</sub>	I
	lb/sq.in.	mm	mm	mm	mm
		(inch)	(inch)	(inch)	(inch)
2 inch	150 2500	20	100	59	100
		(0.79)	(3.94)	(2.32)	(3.94)
3 inch		20	134	89	100
		(0.79)	(5.28)	(2.32)	(3.94)
4 inch		20	158	89	100
		(0.79)	(6.22)	(2.32)	(3.94)
5 inch		22	186	124	100
		(0.87)	(7.32)	(4.88)	(3.94)

d: Inside diameter of gasket according to EN 1092-1 / ASME B16.5  $\,$ 

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

Remote seals for transmitters and pressure gauges

# Overview



Diaphragm seals of flange design

Diaphragm seals of flange design	with flexible capillary	Sealing material in the process		
Nominal diameter	Nominal pressure	flanges		
• DN 50 (recommendable only for pressure transmitters for pressure)	PN 10/16/25/40, PN 100	<ul> <li>For pressure transmitters, absolute pressure transmitters and low- pressure applications</li> </ul>	Copper	
• DN 80	PN 10/16/25/40, PN 100	<ul> <li>For other applications</li> </ul>	Viton	
• DN 100	PN 10/16, PN 25/40	Maximum pressure	See above and the technical data	
• DN 125	PN 16, PN 40	·	of the pressure transmitter	
• 2 inch (recommendable only for pressure transmitters for pressure)	class 150, class 300, class 400/600, class 900/1500	Tube length	Without tube as standard (tube available on request)	
• 3 inch	Class 150, class 300, class 600	Capillary		
• 4 inch	Class 150, class 300, class 400	• Length	Max. 10 m (32.8 ft), longer	
• 5 inch	Class 150, class 300, class 400		lengths on request	
Sealing face		Internal diameter	2 mm (0.079 inch)	
<ul> <li>For stainless steel, mat.</li> </ul>	To EN 1092-1, form B1 or	Minimum bending radius	150 mm (5.9 inch)	
No. 1.4404/316L	ASMR B16.5 RF 125 250 AA	Filling liquid		
<ul> <li>For the other materials</li> </ul>	To EN 1092-1, form B2 or ASME B16.5 RFSF	(for remote seals of sandwich and flange design)	Silicone oil M5	
Materials			Silicone oil M50	
• Main body	Stainless steel		High-temperature oil	
	mat. no. 1.4404/316L		Halocarbon oil (for measuring $O_2$ )	
Wetted parts	Stainless steel mat. no. 1.4404/316L	Permissible ambient temperature	Food oil (FDA listed) Dependent on the pressure trans-	
	<ul><li>Without coating</li><li>PTFE coating (for vacuum on</li></ul>	remissible ambient temperature	mitter and the filling liquid of the remote seal	
	request)		More information can be found in	
	<ul> <li>ECTFE coating (for vacuum on request)</li> </ul>		the technical data of the pressure transmitters and in the section "Technical data of filling liguid" in	
	<ul> <li>PFA coating (for vacuum on request)</li> </ul>		the Technical description to the remote seals	
	Monel 400, mat. No. 2.4360	Weight	Approx. 4 kg (8.82 lb)	
	Hastelloy C276, mat. No. 2.4819	Certificate and approvals		
	Hastelloy C4, mat. No. 2.4610	Classification according to pressure	For gases of fluid group 1 and liq-	
	Tantalum	equipment directive (DRGL 97/23/EC)	uids of fluid group 1; complies with requirements of article 3,	
	Duplex 2205, mat. no. 1.4462		paragraph 3 (sound engineering	
	Stainless steel 316L, gold plated, thickness approx. 25 μm		practice)	
• Capillary	Stainless steel, mat. No. 1.4571/316Ti			
• Sheath	Spiral hose made of stainless steel, mat. No. 1.4404/316L			

1/218

Remote seals for transmitters and pressure gauges

Diaphragm seals of flange design with flexible capillary

Selection and O	rdering data	Arti	cle No	o. Ord.	code
Diaphragm seal					
Flange design, w to a pressure trar SITRANS P (orde					
together with Orde	403 and 7MF423 er code "V01" (vacuum-proof 302 <sup>1)</sup> ; scope of delivery: 1 off	7 7 M	IF 4 9	20-	
for absolute pre scope of delivery		⁄7 7 M	IF 4 9	21-	
	ressure and flow 7MF443 , scope of delivery: 2 off	7 7 M	IF 4 9	23-	
	rticle No. for the online configu- IA Life Cycle Portal.	1		- B	
• DN 50	er and nominal pressure PN 10/16/25/40 PN 100 nded only for pressure	AB			
transmitters for p	ressure)				
• DN 80	PN 10/16/25/40 PN 100	D			
• DN 100	PN 10/16 PN 25/40	G			
• DN 125	PN 16 PN 40	J K			
• 2 inch	Class 150 Class 300 class 400/600 class 900/1500	L M N			
(2 inch recomme transmitters for p	nded only for pressure	F			
• 3 inch	Class 150 Class 300 Class 600	Q R S			
• 4 inch	Class 150 Class 300 Class 400	T U V			
• 5 inch	Class 150 Class 300 Class 400	W X Y			
Smooth sealing fatter to ASME B16.5 R	ace to EN 1092-1, form B1 or				
Other version Add Order code Nominal diamete Sealing face: See	r:; Nominal pressure:	z			J 1 Y
Wetted parts ma	Iterials	-			
Stainless steel 3					
- without coatin			A		
- with PTFE coa	•		E O		
- with ECTFE c	0		F D		
<ul> <li>with PFA coat</li> <li>Monel 400, mat</li> </ul>	-		G		
	, mat. No. 2.4819		J		
<ul> <li>Hastelloy C270</li> <li>Hastelloy C4, m</li> </ul>			Ŭ		
Tantalum			ĸ		
• Duplex 2205, m	nat. no. 1.4462		Q		
	nat. no. 1.4462, incl. main body		R		
	316L, gold plated,		S 0		
thickness appro Other version	Jλ. 20 μΠ		z		K 1 Y
Add Order code Wetted parts mat					
• without tube			0		
Other version:			9		L 1 Y
			~		

Selection and Orde	ering data	Article No	. Ord	. code			
Diaphragm seal	•						
Flange design, with to a pressure transn SITRANS P (order s							
for pressure 7MF40 together with Order of design) and 7MF802	3 and 7MF423 code "V01" (vacuum-proof 2 <sup>1)</sup> ; scope of delivery: 1 off	7 M F 4 9 2	7 M F 4 9 2 0 -				
for absolute press scope of delivery: 1		7 M F 4 9 2	21 -				
for differential pres and 7MF54; sco	ssure and flow 7MF443 ope of delivery: 2 off	7 M F 4 9 2	23 -				
		1	В				
Filling liquid • Silicone oil M5 • Silicone oil M50 • High-temperature • Halocarbon oil (fo • Food oil (FDA liste Other version Add Order code an Filling liquid:	1 2 3 4 7 9		M 1 Y				
Length of capillary							
<ul> <li>1.0 m</li> <li>1.6 m</li> <li>2.5 m</li> <li>4.0 m</li> <li>6.0 m</li> <li>8.0 m</li> <li>10.0 m</li> </ul>	(3.28 ft) (5.25 ft) (8.20 ft) (13.1 ft) (19.7 ft) (26.25 ft) (32.8 ft)		2 3 4 5 6 7 8				
Special lengths for	capillaries						
• 2.0 m • 3.0 m • 5.0 m			9 9 9	N 1 C N 1 E N 1 G			
• 7.0 m • 9.0 m			9 9	N 1 J N 1 L			
only for 7MF4923	-						
• 11.0 m • 12.0 m • 13.0 m • 14.0 m			9 9 9	N 1 N N 1 P N 1 Q N 1 B			
• 15.0 m			9	N 1 S			

With 7MF802.-... and the measuring cells Q, S, T and U also order the vacuum-tight version.
 For vacuum on request.
 Oil- and grease- free cleaning to DIN 25410, level 2 and packaging included in the scope of delivery.
 Magnetil the scope of delivery.

<sup>4)</sup> Max. capillary length, see section "Technical description".

Remote seals for transmitters and pressure gauges

Diaphragin scals of hange design with	noxiolo capiliai j		
Selection and Ordering data	Order code	Selection and Ordering data	Order code
Further designs Please add "-Z" to Article No. and specify Order code.		Further designs Please add "-Z" to Article No. and specify Order code.	
Spark arrestor With spark arrestor for mounting on zone 0 (including documentation) for transmitters for • pressure and absolute pressure	A01	Sealing surface B1 or ASME B16.5 RF 125 250 AA instead of sealing surface B2 or RFSF (only for wetted parts made of Hastelloy C276 (2.4819), tantalum and Duplex 2205 (1.4462)	J12
<ul> <li>differential pressure</li> </ul>	A02	and for nominal sizes 2", 3", DN 50 and DN 80)	
Remote seal nameplate Attached out of stainless steel, contains MLFB and order number of the remote seal	B20	Sealing surface groove, EN 1092-1, form D instead of sealing surface B1 (only for wetted parts made of stainless steel 316L)	J14
<b>Oil- and grease-free cleaned version</b> Oil- and grease-free cleaned and packed ver- sion, not for oxygen application, only in conjunc- tion with halocarbon oil fill fluid, certified by certificate acc. to EN 10204-2.2	C10	Sealing surface RJF (groove) ASME B16.5 instead of sealing surface ASME B16.5 RF 125 250 AA (only for wetted parts made of stainless steel 316L)	J24
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11	PE protective tube over the spiral protective tube (color: white) of	
Inspection certificate to EN 10204, section 3.1	C12	the capillaries	N20
2.2 Certificate of FDA approval of fill oil Only in conjunction with "Food-grade oil" fill liquid (FDA listed)"	C17	1.6 m 2.0 m 2.5 m	N21 N22 N23
Functional safety certificate ("SIL 2") to IEC 61508 (Only in conjunction with the Order code "C20"	C20	3.0 m 4.0 m	N24 N25
in the case of SITRANS P DSIII transmitter) Functional safety certificate ("SIL 2/3") to	C23	5.0 m 6.0 m	N26 N27
(Only in conjunction with the Order code "C23" in the case of SITRANS P DSIII transmitter)	010	7.0 m 8.0 m 9.0 m	N28 N29 N30
Certification acc. to NACE MR-0175 Includes acceptance test certificate 3.1 accor- ding to EN 10204 (only for wetted parts made of stainless steel 1.4404/316L and Hastelloy C276)	D07	10.0 m only for 7MF4923 11.0 m	N31
Certification acc. to NACE MR-0103 Includes acceptance test certificate 3.1 accor- ding to EN 10204 (only for wetted parts made of stainless steel 1.4404/316L and Hastelloy C276)	D08	12.0 m 13.0 m 14.0 m 15.0 m	N33 N34 N35 N36
Oil- and grease-free cleaned version	E10	Vacuum-proof design	
Oil- and grease-free cleaned and packed ver- sion, only for oxygen application, only inert fill fluid may be used. Max. temperature: 60 °C (140 °F), max. pressure 50 bar (725 psi), only in		for use in low-pressure range for transmitters for • Gauge and absolute pressure from the pres- sure series	V01
connection with halocarbon oil, certified by certi- ficate acc. to EN 10204-2.2		Differential pressure	V03

#### Epoxy painting

1/220

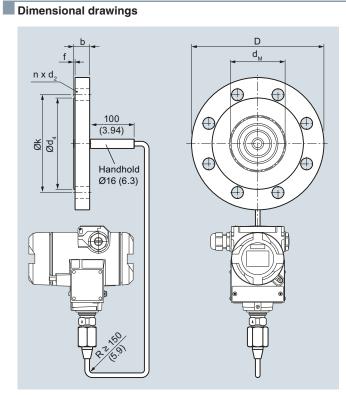
(not possible with vacuum-proof design and not for 7MF4921-...)

Color: transparent, coverage: front and rear of the remote seal, capillary(ies) or connecting tube, process connection of the transmitter. With transmitters 7MF40.. and 7MF42... only possible with process connection G½B according to EN837-1. E15

# Siemens FI 01 · 2015

Remote seals for transmitters and pressure gauges

# Diaphragm seals of flange design with flexible capillary



Diaphragm seals of flange design with flexible capillary for connection to SITRANS P pressure transmitters for pressure, dimensions in mm (inch)

Conne	ction to E	EN 10	92-1						
Nom. diam.	Nom. press.	b mm	D mm	d <sub>2</sub> mm	d <sub>4</sub> mm	d <sub>M</sub> mm	f mm	k mm	n
DN 50	PN 10/16/ 25/40	20	165	18	102	59	2	125	4
	PN 100	28	195	26	102	59	2	145	4
DN 80	PN 10/16/	24	200	18	138	89	2	160	8
	PN 100	32	230	26	138	89	2	180	8
DN 100	PN 10/16	20	220	18	158	89	2	180	8
	PN 25/40	24	235	22	162	89	2	190	8
DN 125	PN 16	22	250	18	188	124	2	210	8
	PN 40	26	270	26	188	124	2	220	8

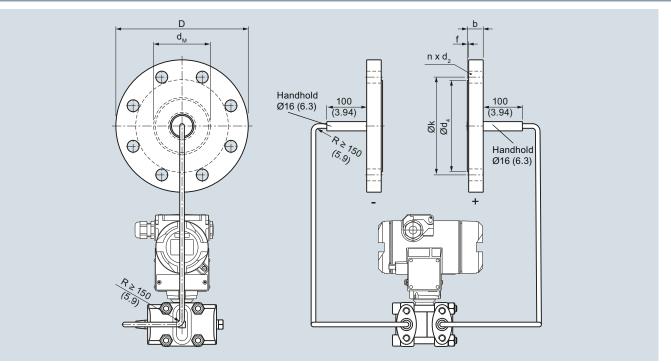
#### Connection to ASME B16.5

Nom. diam.	Nom. press.	b	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>M</sub>	f	k	n
	lb/sq.in.	mm	mm	mm	mm	mm	mm	mm	
		(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	
2 inch	150	19.5	150	20	92	59	2	120.5	4
		(0.77)	(5.80)	(0.79)	(3.62)	(2.32)	(0.08)	(4.74)	
	300	22.7	165	20	92	59	2	127	8
		(0.89)	(6.50)	(0.79)	(3.62)	(2.32)	(0.08)	(5)	
	400/600	32.4	165	20	92	59	2	127	8
		(1.28)	(6.50)	(0.79)	(3.62)	(2.32)	(0.08)	(5)	
	900/1500	45.1	215	26	92	59	7	165	8
		(1.78)	(8.46)	(1.02)	(3.62)	(2.32)	(0.28)	(6.5)	
3 inch	150	24.3	190	20	127	89	2	152.5	4
		(0.96)	(7.48)	(0.79)	(5)	(3.50)	(0.08)	(6)	
	300	29	210	22	127	89	2	168.5	8
		(1.14)	(8.27)	(0.87)	(5)	(3.50)	(0.08)	(6.63)	
	600	38.8	210	22	127	89	7	168.5	8
		(1.53)	(8.27)	(0.87)	(5)	(3.50)	(0.28)	(6.63)	
4 inch	150	24.3	230	20	158	89	2	190.5	4
		(0.96)	(9.06)	(0.79)	(6.22)	(3.50)	(0.08)	(7.5)	
	300	32.2	255	22	158	89	2	200	8
		(1.27)	(10.04)	(0.87)	(6.22)	(3.50)	(0.08)	(7.87)	
	400	42	255	26	158	89	7	200	8
		(1.65)	(10.04)	(1.02)	(6.22)	(3.50)	(0.28)	(7.87)	
5 inch	150	24.3	255	22	186	124	2	216	4
		(0.96)	(10.04)	(0.87)	(7.32)	(4.88)	(0.08)	(8.50)	
	300	35.8	280	22	186	124	2	235	8
		(1.41)	(11.02)	(0.87)	(7.32)	(4.88)	(0.08)	(9.25)	
	400	45.1	280	26	186	124	7	235	8
		(1.79)	(11.02)	(1.02)	(7.32)	(4.88)	(0.28)	(9.25)	

d: Inside diameter of gasket according to EN 1092-1 / ASME B16.5  $\rm d_{M^{\rm :}}$  Effective diaphragm diameter

Remote seals for transmitters and pressure gauges

# Diaphragm seals of flange design with flexible capillary



Diaphragm seals of flange design with flexible capillary for connection to SITRANS P pressure transmitters for absolute pressure or for differential pressure and flow, dimensions in mm (inch)

#### Connection to EN 1092-1

Nom. diam.	Nom. press.	b mm	D mm	d <sub>2</sub> mm	d <sub>4</sub> mm	d <sub>M</sub> mm	f mm	k mm	n
DN 80	PN 10/16	24	200	18	138	89	2	160	8
	PN 100	32	230	26	138	89	2	180	8
DN 100	PN 10/16	20	220	18	158	89	2	180	8
	PN 25/40	24	235	22	162	89	2	190	8
DN 125	PN 16	22	250	18	188	124	2	210	8
	PN 40	26	270	26	188	124	2	220	8

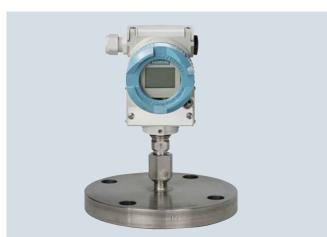
Connection to ASME B16.5									
Nom. diam.	Nom. press.	b	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>M</sub>	f	k	n
	lb/sq.in	mm	mm	mm	mm	mm	mm	mm	
	•	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	
	150	24.3	190	20	127	89	2	152.5	4
	100	(0.96)	(7.48)	(0.79)	(5)	(3.50)	(0.08)	(6)	4
Qinah	200	29	210	22	127	89	2	168.5	8
3 inch 300	300	(1.14)	(8.27)	(0.87)	(5)	(3.50)	(0.08)	(6.63)	0
600	000	38.8	210	22	127	89	7	168.5	~
	600	(1.52)	(8.27)	(0.87)	(5)	(3.50)	(0.28)	(6.63)	8
	150	24.3	230	20	158	89	2	190.5	4
		(0.96)	(9.06)	(0.79)	(6.22)	(3.50)	(0.08)	(7.5)	4
4 in als	000	32.2	255	22	158	89	2	200	~
4 inch	300	(1.27)	(10.04)	(0.87)	(6.22)	(3.50)	(0.08)	(7.87)	8
	100	42	255	26	158	89	7	200	0
	400	(1.65)	(10.04)	(1.02)	(6.22)	(3.50)	(0.28)	(7.87)	8
	150	24.3	255	22	186	124	2	216	4
	150	(0.96)	(10.04)	(0.87)	(7.32)	(4.88)	(0.08)	(8.50)	4
		35.8	280	22	186	124	2	235	0
5 inch	300	(1.41)	(11.02)	(0.87)	(7.32)	(4.88)	(0.08)	(9.25)	8
	100	45.1	280	26	186	124	7	235	
	400	(1.79)	(11.02)	(1.02)	(7.32)	(4.88)	(0.28)	(9.25)	8

d: Inside diameter of gasket according to EN 1092-1 / ASME B16.5  $\rm d_M$ : Effective diaphragm diameter

Remote seals for transmitters and pressure gauges

# Diaphragm seals of flange design directly fitted on transmitter

Overview



Diaphragm seals of flange design, directly fitted on a pressure transmitter for pressure

# Technical specifications

Sealing material at the transmitter connection

Copper

recifical specifications			
Diaphragm seals (flange desigr sure, directly fitted on a transm	n) for pressure and absolute pres- litter	Maximum pressure	See above and the technical data of the transmitter
Nominal diameter	Nominal pressure	Tube length	• Without tube
• DN 50	PN 10/16/25/40, PN 100		• 50 mm (1.97 inch)
• DN 80	PN 10/16/25/40, PN 100		• 100 mm (3.94 inch)
• DN 100	PN 10/16, PN 25/40		• 150 mm (5.91 inch)
• 2 inch	class 150, class 300, class 400/600, class 900/1500	Capillary	• 200 mm (7.87 inch)
• 3 inch	Class 150, class 300, class 600	• Length	Max. 10 m (32.8 ft), longer lengths on request
• 4 inch	Class 150, class 300, class 400	Internal diameter	2 mm (0.079 inch)
Sealing face		Minimum bending radius	150 mm (5.9 inch)
<ul> <li>For stainless steel, mat. No. 1,4404/316L</li> </ul>	To EN 1092-1, form B1 or ASME B16.5 RF 125 250 AA	Filling liquid	Silicone oil M5
For the other materials	Smooth to EN 1092-1, form B2 or	0.1	• Silicone oil M50
Tor the other materials	ASME B16.5 RFSF		High-temperature oil
Materials			<ul> <li>Halocarbon oil (for measuring O<sub>2</sub>)</li> </ul>
• Main body	Stainless steel mat. no. 1.4404/316L		Food oil (FDA listed)
Wetted parts	Stainless steel mat. no. 1.4404/316L	Max. recommended process temperature	170 °C (338 °F)
	<ul><li>Without coating</li><li>PTFE coating (for vacuum on</li></ul>	Permissible ambient temperature	Dependent on the pressure trans- mitter and the filling liquid of the remote seal.
	request)		More information can be found in
	ECTFE coating (for vacuum on request)		the technical data of the pressure transmitters and in the section "Technical data of filling liquid" in
	<ul> <li>PFA coating (for vacuum on request)</li> </ul>		the Technical description to the remote seals.
	Monel 400, mat. No. 2.4360	Weight	Approx. 4 kg (8.82 lb)
	Hastelloy C276, mat. No. 2.4819	Certificate and approvals	
	Hastelloy C4, mat. No. 2.4610	Classification according to	For gases of fluid group 1 and liq-
	Tantalum	pressure equipment directive (DRGL 97/23/EC)	uids of fluid group 1; complies with requirements of article 3,
	Duplex 2205, mat. no. 1.4462		paragraph 3 (sound engineering
	Stainless steel 316L, gold plated, thickness approx. 25 μm		practice)
Capillary	Stainless steel, 1.4571/316Ti		

1

Remote seals for transmitters and pressure gauges

1

Selection and O	rdering data	Article No.		Selection and Ordering data	Article No.	Ord
Diaphragm seal	•			Diaphragm seal	7 MF 4 9 1 0	
Directly fitted to a SITRANS P for pr 7MF423 toget	a pressure transmitter ressure 7MF403 and her with Order code "V01" esign) and 7MF802 <sup>1)</sup> ; must			Directly fitted to a pressure transmitter SITRANS P for pressure 7MF403 and 7MF423 together with Order code "V01" (vacuum-proof design) and 7MF802 <sup>1)</sup> ; must be ordered separately		1
Click on the Arration in the Pl	rticle No. for the online configu- IA Life Cycle Portal.			Filling liquid <ul> <li>Silicone oil M5</li> </ul>	1	
Process connec		0 2		<ul> <li>Silicone oil M50</li> <li>High-temperature oil</li> <li>Halocarbon oil (for measuring O<sub>2</sub>)<sup>3)</sup></li> </ul>	2 3 4	
Nominal diamete • DN 50	er and nominal pressure PN 10/16/25/40 PN 100	AB		<ul> <li>Food oil (FDA listed)</li> <li>Other version</li> <li>Add Order code and plain text:</li> <li>Filling liquid:</li> </ul>	7 9	I
• DN 80	PN 10/16/25/40 PN 100	D E		<ol> <li>With 7MF802 and the measuring cells Q, S, T uum-tight version.</li> </ol>	and U also orde	er th
• DN 100	PN 10/16 PN 25/40	G H		<ol> <li>For vacuum on request.</li> <li>Oil- and grease- free cleaning to DIN 25410, leve included in the scope of delivery.</li> </ol>	el 2 and packag	ging
• 2 inch	Class 150 Class 300 class 400/600 class 900/1500	L M N P				
• 3 inch	Class 150 Class 300 Class 600	Q R S				
	Class 150 Class 300 Class 400 ace to DIN 1092-01, form B1 or	T U V				
Other version Add Order code	and plain text: r:; Nominal pressure:	z	J 1 Y			
Wetted parts ma	•					
<ul> <li>Stainless steel 3</li> <li>without coatin</li> <li>with PTFE coating</li> </ul>	316L Ig	A E 0				
<ul><li>with ECTFE control</li><li>with PFA coat</li><li>Monel 400, mat</li></ul>	ing	F D G				
<ul><li>Hastelloy C276</li><li>Hastelloy C4, m</li><li>Tantalum</li></ul>	nat. No. 2.4610	J U K				
<ul> <li>Duplex 2205, W</li> <li>Stainless steel 3 thickness approx</li> </ul>	316L, gold plated,	Q S 0				
<ul><li>Tube length</li><li>Without tube</li><li>50 mm</li></ul>	• (1.97 inch)	0				
• 100 mm • 150 mm • 200 mm	• (1.97 inch) • (3.94 inch) • (5.90 inch) • (7.87 inch)	2 3 4				
• 200 mm Other version: Add Order code Wetted parts mat	and plain text:	2 8	К 1 Ү			

Remote seals for transmitters and pressure gauges

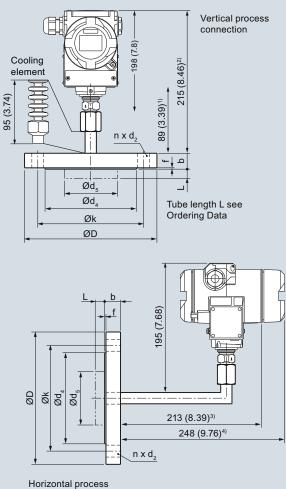
Diaphragm seals of flange design directly fitted on transmitte
--

		iaphragm seals of flange design directly fit	
Selection and Ordering data	Order code	Selection and Ordering data	Order code
Further designs		Further designs	
Please add "-Z" to Article No. and specify Order code.		Please add "-Z" to Article No. and specify Order code.	
<b>Spark arrestor</b> With spark arrestor for mounting on zone 0 (including documentation) for transmitters for gauge pressure and absolute pressure	A01	Sealing surface B1 or ASME B16.5 RF 125 250 AA Instead of sealing surface B2 and RFSF (Only for wetted parts in Hastelloy C276 (2.4819), Tantal and Duplex 2205 (1.4462) and	J12
Remote seal nameplate Attached out of stainless steel, contains MLFB and order number of the remote seal	B20	for sizes 2", 3", DN 50 and DN 80) Sealing surface groove, EN 1092-1, form D	J14
Oil- and grease-free cleaned version	C10	instead of sealing surface B1 (only for wetted parts made of stainless steel 316L)	
Oil- and grease-free cleaned and packed ver- sion, not for oxygen application, only in conjunc- tion with halocarbon oil fill fluid, certified by certificate acc. to EN 10204-2.2		Sealing surface RJF (groove) ASME B16.5 instead of sealing surface ASME B16.5 RF 125 250 AA	J24
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11	(only for wetted parts made of stainless steel 316L)	
Inspection certificate to EN 10204, section 3.1	C12	Elongated pipe 200 mm instead of 89 mm, max. medium temperature 300 °C, observe the	R20
2.2 Certificate of FDA approval of fill oil	C17	maximum permissible media temperature of the	
Only in conjunction with "Food-grade oil" fill liquid (FDA listed)"		filling liquid. Elongated pipe elbow	R21
Functional safety certificate ("SIL 2") to IEC 61508 (Only in conjunction with the Order code "C20"	C20	200 mm instead of 130 mm, max. medium temperature 300 °C, observe the maximum permissible media temperature of the	
in the case of SITRANS P DSIII transmitter)		filling liquid.	
Functional safety certificate ("SIL 2/3") to IEC 61508 (Only in conjunction with the Order code "C23"	C23	Cooling element max. medium temperature 300 °C, observe the maximum permissible media temperature of the filling liquid.	R22
in the case of SITRANS P DSIII transmitter)		Vacuum-proof design	V01
Certification acc. to NACE MR-0175	D07	for use in low-pressure range for transmitters for	VOI
Includes acceptance test certificate 3.1 accor- ding to EN 10204 (only for wetted parts made of stainless steel 1.4404/316L and Hastelloy C276)		gauge and absolute pressure from the pressure series	
Certification acc. to NACE MR-0103 Includes acceptance test certificate 3.1 accor- ding to EN 10204 (only for wetted parts made of stainless steel 1.4404/316L and Hastelloy C276)	D08		
Oil- and grease-free cleaned version	E10		
Oil- and grease-free cleaned and packed ver- sion, only for oxygen application, only inert fill fluid may be used. Max. temperature: 60 °C (140 °F), max. pressure 50 bar (725 psi), only in connection with halocarbon oil, certified by certi- ficate acc. to EN 10204-2.2			
Epoxy painting	E15		
Not possible with vacuum-proof design			
Color: transparent, coverage: front and rear of the remote seal, capillary(ies) or connecting tube, process connection of the transmitter. With transmitters 7MF40 and 7MF42, only possible with process connection G½B accord- ing to EN837-1.			

Remote seals for transmitters and pressure gauges

Diaphragm seals of flange design directly fitted on transmitter

#### Dimensional drawings



connection

 $^{1)}$  200 (7.9) with option R20, 278 (11.0) with cooling element opt. R22)  $^{2)}$  324 (12.8) mit option R20, 326 (12.9) with cooling element opt. R22)  $^{3)}$  283 (11.14) mit option R21

4) 318 (12.52) mit option R21

Diaphragm seals of flange design, direct connection to a SITRANS P (bottom)), dimensions in mm (inch)

Nom. diam.	Nom. press.	b	D	d <sub>2</sub>	d <sub>4</sub>	$d_5$	d <sub>M</sub>	f	k	n
		mm	mm	mm	mm	mm	mm	mm	mm	
DN 50	PN 10/16/ 25/40	20	165	18	102	48.3	45 <sup>1)</sup>	2	125	4
	PN 100	28	195	26	102	48.3	45 <sup>1)</sup>	2	145	4
DN 80	PN 10/16/ 25/40	24	200	18	138	76	72 <sup>1)</sup>	2	160	8
	PN 100	32	230	26	138	76	72 <sup>1)</sup>	2	180	8
DN 100	PN 10/16	20	220	18	158	94	89-2	2	180	8
	PN 25/40	24	235	22	162	94	89	2	190	8

#### Connection to ASME B16.5

Connection to EN 1092-1

Nom. diam.	Nom. press.	b	D	d <sub>2</sub>	$d_4$	$d_5$	d <sub>M</sub>	f	k	n
	lb/	mm	mm	mm	mm	mm	mm	mm	mm	
	sq.in.	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	
2 inch	150	19.5	150	20	92	48.3	45 <sup>1)</sup>	2	120.5	4
		(0.77)	(5.91)	(0.79)	(3.62)	(1.9)	(1.77) <sup>1)</sup>	(0.08)	(4.74)	
	300	22.7	165	20	92	48.3	45 <sup>1)</sup>	2	127	8
		(0.89)	(6.5)	(0.79)	(3.62)	(1.9)	(1.77) <sup>1)</sup>	(0.08)	(5)	
	400/	32.4	165	20	92	48.3	45 <sup>1)</sup>	7	127	8
	600	(1.28)	(6.5)	(0.79)	(3.62)	(1.9)	(1.77) <sup>1)</sup>	(0.28)	(5)	
	900/	45.1	215	26	92	48.3	45 <sup>1)</sup>	7	165	8
	1500	(1.78)	(8.46)	(1.02)	(3.62)	(1.9)	(1.77) <sup>1)</sup>	(0.28)	(6.5)	
3 inch	150	24.3	190	20	127	76	72 <sup>2)</sup>	2	152.5	4
		(0.96)	(7.48)	(0.79)	(5)	(3)	$(2.83)^{2)}$	(0.08)	(6)	
	300	29	210	22	127	76	72 <sup>2)</sup>	2	168.5	8
		(1.14)	(8.27)	(0.87)	(5)	(3)	$(2.83)^{2)}$	(0.08)	(6.63)	
	600	38.8	210	22	127	76	72 <sup>2)</sup>	7	168.5	8
		(1.53)	(8.27)	(0.87)	(5)	(3)	$(2.83)^{2)}$	(0.28)	(6.63)	
4 inch	150	24.3	230	20	158	94	89	2	190.5	8
		(0.96)	(9.06)	(0.79)	(6.22)	(3.69)	(3.50)	(0.08)	(7.5)	
	300	32.2	255	22	158	94	89	2	200	8
		(1.27)	(10.04)	(0.79)	(6.22)	(3.69)	(3.50)	(0.08)	(7.87)	
	400	42	255	26	158	94	89	7	200	8
		(1.65)	(10.04)	(1.02)	(6.22)	(3.69)	(3.50)	(0.28)	(7.87)	

d: Inside diameter of gasket according to EN 1092-1/ ASME B16.5

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

<sup>1)</sup> 59 mm = 2.32 inch with tube length L = 0

<sup>2)</sup> 89 mm =  $3\frac{1}{2}$  inch with tube length L = 0

#### **Pressure Measurement**

Remote seals for transmitters and pressure gauges

#### Diaphragm seals of flange design fixed connection and with capillary

Overview



Diaphragm seals of screwed design for pressure transmitters for differential pressure, fixed connection and with flexible capillary

#### Technical specifications

Diaphragm seals of screwed design for pressure transmitters for	
differential pressure, fixed connection and with flexible capillary	

Nominal diameter

- DN 50
- DN 80
- DN 100
- 2 inch
- 3 inch
- 4 inch

Sealing face

- For stainless steel, mat. No. 1.4404/316L
- For the other materials
- Materials
- Main body
- Wetted parts

- Capillary
- Sheath

Nominal pressure
PN 10/16/25/40, PN 100
PN 10/16/25/40
PN 10/16, PN 25/40
class 150, class 300, class 400/600, class 900/1500
Class 150, class 300
Class 150, class 300

To EN 1092-1, form B1 or ASME B16.5 RF 125 ... 250 AA To EN 1092-1, form B2 or ASME B16.5 RFSF

Stainless steel mat. no. 1.4404/316L

Stainless steel mat. no. 1.4404/316L

- Without coating
- PTFE coating (for vacuum on request)
- ECTFE coating (for vacuum on request)
- PFA coating (for vacuum on request)

Monel 400, mat. No. 2.4360

- Hastelloy C276, mat. No. 2.4819 Hastelloy C4, mat. No. 2.4610
- Tantalum
- Duplex 2205, mat. no. 1.4462
- Stainless steel 316L, gold plated, thickness approx. 25  $\mu m$

Stainless steel, mat. No. 1.4571/316Ti

Spiral hose made of stainless steel, mat. No. 1.4301/316

Sealing material in the process flanges	
• For pressure transmitters, absolute pressure transmitters and low-pressure applications	Copper
<ul> <li>For other applications</li> </ul>	Viton
Maximum pressure	See above and the technical data of the pressure transmitter
Tube length	Without tube
	50 mm (1.97 inch)
	100 mm (3.94 inch)
	150 mm (5.91 inch)
	200 mm (7.87 inch)
Capillary	
• Length	Max. 10 m (32.8 ft), longer lengths on request
<ul> <li>Internal diameter</li> </ul>	2 mm (0.079 inch)
<ul> <li>Minimum bending radius</li> </ul>	150 mm (5.9 inch)
Filling liquid	Silicone oil M5
	Silicone oil M50
	High-temperature oil
	Halocarbon oil (for measuring O <sub>2</sub> )
	Food oil (FDA listed)
Max. recommended process temperature	170 °C (338 °F)

Permissible ambient temperature

mitter and the filling liquid of the remote seal More information can be found in the technical data of the pressure transmitters and in the section "Technical data of filling liquid" in the Technical description to the

Approx. 4 kg (8.82 lb)

remote seals

Dependent on the pressure trans-

Weight

#### Certificate and approvals

Classification according to pressure equipment directive (DRGL 97/23/EC)

For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)

1/227

Article No. Ord. code

N 1 C

N 1 E

N 1 G N 1 J

N 1 L

7MF4913-1 - B

#### **Pressure Measurement**

Remote seals for transmitters and pressure gauges

Selection and Ore	dering data	Artic	le No	o. Or	rd. cc	ode	Selection and Ord	ering data	Article No	. Ord	1. (
Diaphragm seal		7 7 M	F49	13-	•		Diaphragm seal		7 M F 4 9 1	3 -	
direct mounting to flanged remote so means of capillary SITRANS P for diffe	(with tube as option) for high-pressure side and eal without tube, fitted by to low-pressure side of erential pressure, DS III series SITRANS P500 (7MF54)	1		- ■ E	3		direct mounting to the flanged remote se means of capillary the SITRANS P for diffe	with tube as option) for nigh-pressure side and al without tube, fitted by to low-pressure side of rential pressure, DS III series ITRANS P500 (7MF54)	1	B	
	icle No. for the online configu- A Life Cycle Portal.						Length of capillary • 1.0 m	<b>(</b> 3.28 ft)		2	
Flange, connection	on to EN 1092-1						• 1.6 m	(5.25 ft)		3	
<b>Nom. diam.</b> • DN 50	<b>Nom. press.</b> PN 10/16/25/40 PN 100	AB					• 2.5 m • 4.0 m • 6.0 m	(8.20 ft) (13.1 ft) (19.7 ft)		4 5 6	
• DN 80 • DN 100	PN 10/16/25/40 PN 10/16 PN 25/40	D G H					• 8.0 m • 10.0 m	(26.25 ft) (32.8 ft)		7 8	
Flange, connection	on to ASME B16.5						Special lengths fo	r capillaries			
Nom. diam.	Nom. press.						• 2.0 m			9	N
• 2 inch	class 150	L					• 3.0 m • 5.0 m			9 9	r N
	class 300	М					• 7.0 m			9	,
	class 400/600 class 900/1500	N P					• 9.0 m			9	ľ
• 3 inch	Class 150 Class 300	Q R					<ol> <li>For vacuum on re</li> <li>Oil- and grease- f included in the sc</li> </ol>	ree cleaning to DIN 25410, level	2 and packa	aging	]
• 4 inch	Class 150 Class 300	T U					<sup>3)</sup> Max. capillary len	gth, see section "Technical desc	cription".		
Other version Add Order code a Flange:, Nomina pressure:	nd plain text: al diameter:; Nominal	Z			J.	1 Y					
	ce to EN 1092-1, form B1 or 6.5 RF 125 250 AA or RFSF										
<ul> <li>without coating</li> <li>with PTFE coat</li> </ul>	]		4 E 0								
<ul> <li>with ECTFE cost</li> <li>with PFA coatir</li> </ul>	-		F								
<ul><li>Monel 400, mat.</li><li>Hastelloy C276,</li></ul>	No. 2.4360	(	G								
<ul> <li>Hastelloy C270,</li> <li>Hastelloy C4, ma</li> </ul>			J								
Tantalum			<								
• Duplex, mat. no.			ג								
<ul> <li>Duplex, mat. no.</li> <li>Stainless steel 3 thickness approx</li> </ul>	1.4462, incl. main body 16L, gold plated, κ. 25 μm		R S 0								
Tube length	•	-									
•	ge on high-pressure side) (1.97 inch) (3.94 inch)		0 1 2								

3

4

1

2

3

4

7

9

K 1 Y

M 1 Y

Z 8

Diaphra
Selection
Diaphroar

1

• 150 mm • 200 mm

Other version:

Tube length: ... Filling liquid • Silicone oil M5

• Silicone oil M50

Other version

Filling liquid: ...

1/228

• High-temperature oil

• Food oil (FDA listed)

Add Order code and plain text: Wetted parts materials: .....,

• Halocarbon oil (for measuring  $O_2$ )<sup>2)</sup>

Add Order code and plain text:

(5.90 inch)

(7.87 inch)

Remote seals for transmitters and pressure gauges

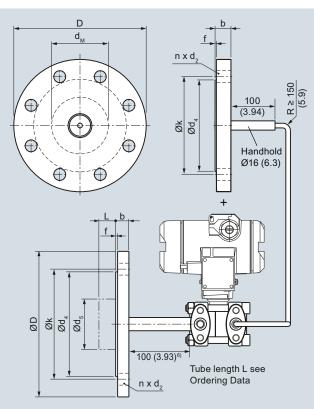
# Diaphragm seals of flange design fixed connection and with capillary

Selection and Ordering data	Order code	Selection and Ordering data	Order code
Further designs		Further designs	
Please add "-Z" to Article No. and specify Order code.		Please add "-Z" to Article No. and specify Order code.	
Spark arrestor With spark arrestor for mounting on zone 0 (including documentation)	A02	PE protective tube over the spiral protective tube (color: white) of the capillaries	
Remote seal nameplate Attached out of stainless steel, contains MLFB and order number of the remote seal	B20	1.0 m 1.6 m 2.0 m	N20 N21 N22
<b>Oil- and grease-free cleaned version</b> Oil- and grease-free cleaned and packed ver- sion, not for oxygen application, only in conjunc- tion with halocarbon oil fill fluid, certified by certificate acc. to EN 10204-2.2	C10	2.5 m 3.0 m 4.0 m 5.0 m	N23 N24 N25 N26
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11	6.0 m 7.0 m	N27 N28
Inspection certificate to EN 10204, section 3.1	C12	8.0 m 9.0 m	N29 N30
2.2 Certificate of FDA approval of fill oil	C17	10.0 m	N31
Only in conjunction with "Food-grade oil" fill liquid (FDA listed)"		Elongated pipe, distance from transmitter process flange to flange is 150 mm instead of	R15
Functional safety certificate ("SIL 2") to IEC 61508 (Only in conjunction with the Order code "C20" in the case of SITRANS P DSIII transmitter)	C20	<b>100 mm,</b> max. medium temperature 250 °C, observe the maximum permissible media temperature of the filling liquid.	
Functional safety certificate ("SIL 2/3") to IEC 61508	C23	Elongated pipe, distance from transmitter process flange to flange is 100 mm instead of 100 mm,	R20
(Only in conjunction with the Order code "C23" in the case of SITRANS P DSIII transmitter)		max. medium temperature 300 °C, observe the maximum permissible media temperature of the	
Certification acc. to NACE MR-0175 Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stainless steel 1.4404/316L and Hastelloy C276)	D07	filling liquid. Vacuum-proof design for use in low-pressure range	V03
Certification acc. to NACE MR-0103 Includes acceptance test certificate 3.1 accor- ding to EN 10204 (only for wetted parts made of stainless steel 1.4404/316L and Hastelloy C276)	D08		
Oil- and grease-free cleaned version	E10		
Oil- and grease-free cleaned and packed version, only for oxygen application, only inert fill fluid may be used. Max. temperature: $60 ^{\circ}C$ (140 °F), max. pressure 50 bar (725 psi), only in connection with halocarbon oil, certified by certificate acc. to EN 10204-2.2			
Epoxy painting Not possible with vacuum-proof design.	E15		
Color: transparent, coverage: front and rear of the remote seal, capillary(ies) or connecting tube, process connection of the transmitter. With transmitters 7MF40 and 7MF42, only possible with process connection G½B accord- ing to EN837-1.			
Sealing surface B1 or ASME B16.5 RF 125 250 AA Instead of sealing surface B2 and RFSF (Only for wetted parts in Hastelloy C276 (2.4819), Tantal and Duplex 2205 (1.4462) and for sizes 2", 3", DN 50 and DN 80)	J12		
Sealing surface groove, EN 1092-1, form D instead of sealing surface B1 (only for wetted parts made of stainless steel 316L)	J14		
Sealing surface RJF (groove) ASME B16.5 instead of sealing surface ASME B16.5 RF 125 250 AA (only for wetted parts made of stainless steel 316L)	J24		

Remote seals for transmitters and pressure gauges

Diaphragm seals of flange design fixed connection and with capillary

#### Dimensional drawings



Diaphragm seals of screwed design with flexible capillary, fixed connection, for connection to a SITRANS P pressure transmitter for differential pressure, dimensions in mm (inch)

Nom. diam.	Nom. press.	b	D	d <sub>2</sub>	$d_4$	$d_5$	d <sub>M</sub>	f	k	n
		mm	mm	mm	mm	mm	mm	mm	mm	
DN 50	PN 10/16/ 25/40	20	165	18	102	48.3	45 <sup>1)</sup>	2	125	4
	PN 100	28	195	26	102	48.3	45 <sup>1)</sup>	2	145	4
DN 80	PN 10/16/ 25/40	24	200	18	138	76	72 <sup>2)</sup>	2	160	8
	PN 100	32	230	26	138	76	72 <sup>2)</sup>	2	180	8
DN 100	PN 10/16	20	220	18	158	94	89	2	180	8
	PN 25/40	24	235	22	162	94	89	2	190	8

#### Connection to ASME B16.5

Connection to EN 1092-1

Nom. diam.	Nom. press.	b	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub>	f	k	n
	lb/	mm	mm	mm	mm	mm	mm	mm	mm	
	sq.in.	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	
2 inch	150	19.5	150	20	92	48.3	45 <sup>1)</sup>	2	120.5	4
		(0.77)	(5.91)	(0.79)	(3.62)	(1.9)	(1.77) <sup>1)</sup>	(0.08)	(4.74)	
	300	22.7	165	20	92	48.3	45 <sup>1)</sup>	2	127	8
		(0.89)	(6.5)	(0.79)	(3.62)	(1.9)	(1.77) <sup>1)</sup>	(0.08)	(5)	
	400/	32.4	165	20	92	48.3	45 <sup>1)</sup>	7	127	8
	600	(1.28)	(6.5)	(0.79)	(3.62)	(1.9)	(1.77) <sup>1)</sup>	(0.28)	(5)	
	900/	45.1	215	26	92	48.3	45 <sup>1)</sup>	7	165	8
	1500	(1.78)	(8.46)	(1.02)	(3.62)	(1.9)	(1.77) <sup>1)</sup>	(0.28)	(6.5)	
3 inch	150	24.3	190	20	127	76	72 <sup>2)</sup>	2	152.5	4
		(0.96)	(7.48)	(0.79)	(5)	(3)	(2.83) <sup>2)</sup>	(0.08)	(6)	
	300	29	210	22	127	76	72 <sup>2)</sup>	2	168.5	8
		(1.14)	(8.27)	(0.87)	(5)	(3)	(2.83) <sup>2)</sup>	(0.08)	(6.63)	
4 inch	150	24.3	230	20	158	94	89	2	190.5	8
		(0.96)	(9.06)	(0.79)	(6.22)	(3.69)	(3.50)	(0.08)	(7.5)	
	300	32.2	255	22	158	94	89	2	200	8
		(1.27)	(10.04)	(0.79)	(6.22)	(3.69)	(3.50)	(0.08)	(7.87)	

d: Inside diameter of gasket according to EN 1092-1 / ASME B16.5  $\,$ 

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

<sup>1)</sup> 59 mm = 2.32 inch with tube length L = 0

<sup>2)</sup> 89 mm =  $3\frac{1}{2}$  inch with tube length L = 0

Remote seals for transmitters and pressure gauges

# Diaphragm seal, screwed design directly mounted or/and with capillary

Overview



Diaphragm seal, screwed gland design with inside diaphragm for gauge, absolute and differential pressure for direct mounting

#### Technical specifications

Diaphragm seal, screwed gland wi	ith inside diaphragm	Capillary					
Process connection	Nominal pressure	• Length	Max. 10 m (32.8 ft)				
• Male thread G1/2B to EN 837-1	PN 100, PN 250	<ul> <li>Internal diameter</li> </ul>	2 mm (0.079 inch)				
• External thread 1/2-14" NPT-M	PN 100, PN 250	<ul> <li>Minimum bending radius</li> </ul>	150 mm (5.9 inch)				
<ul> <li>open measurement flange</li> </ul>		Filling liquid	• Silicone oil M5				
- DN 25	PN 10 PN 40		Silicone oil M50				
- 1 inch	class 150, class 300		High-temperature oil				
Sealing face for open measurement flange			• Halocarbon oil (for measuring O <sub>2</sub> )				
<ul> <li>For stainless steel, mat. no.</li> </ul>	To EN 1092-1, form B1 or		<ul> <li>Food oil (FDA listed)</li> </ul>				
1.4404/316L	ASME B16.5 RF 125 250 AA	Max. recommended process tem- perature	170 °C (338 °F)				
Materials		Permissible ambient temperature	Dependent on the pressure				
<ul> <li>Lower section (in the case of process connection thread)</li> </ul>			transmitter and the filling liquid of the remote seal				
Diaphragm	Stainless steel, Mat. no. 1.4404/316L		More information can be found in the technical specifications of the				
	No coating		pressure transmitters and in the section "Technical data of filling				
	<ul> <li>With PTFE coating</li> </ul>		liquid" in the introduction to the remote seals				
	Monel 400, mat. no. 2.4360	Weight	Approx. 1.5 kg (3.3 lb)				
	Hastelloy C276, mat. no. 2.4819		Approx. 1.5 kg (3.3 lb)				
	Hastelloy C4, mat. no. 2.4610	Cleasificates and approvals	For ecose of fluid erous 1 and lin				
	Tantal	Classification according to pressure equipment directive	For gases of fluid group 1 and liq- uids of fluid group 1; complies				
	Stainless steel 316L, gold plated, thickness approx. 25 μm	(PED 97/23/EC)	with requirements of article 3, paragraph 3 (sound engineering practice)				
• Top section (process connection in the case of an open measure- ment flange)	Stainless steel, mat. no. 1.4404/316L		practice)				
Capillary	Stainless steel 1.4571/316Ti						
Sealing material on the process connection	Viton or copper (in the case of vacuum-free version)						
<ul> <li>Sealing material between top and bottom section</li> </ul>	Viton (FKM) (standard) Teflon (PTFE) metal spring ring (silver-coated)						

1/232

Remote seals for transmitters and pressure gauges

#### Diaphragm seal, screwed design directly mounted or/and with capillary

	Ordering data	a design directi	Article No. Ord		Selection and Ordering data	Article No. Or	d Cr	nde
	screwed gland	with inside			Remote seal, screwed gland with inside		u. Ul	100
diaphragm	giand				diaphragm			
Mounted on SITRANS P pressure transmitter for		7 M F 4 9 3 0 -		Mounted on SITRANS P pressure transmitter for	7 M F 4 9 3 0 -			
• absolute pre 7MF423 a	and SITRANS P3 <b>SSUIE</b> and SITRANS P3	800, 7MF802 800, 7MF802 e "V01" (vacuum-			• gauge pressure 7MF403 and SITRANS P300, 7MF802 • absolute pressure 7MF423 and SITRANS P300, 7MF802 In conjunction with Order code "V01" (vacuum- proof design)			
lounted on e	ither side of SI	TRANS P 🧷	7 M F 4 9 3 3 -		Mounted on either side of SITRANS P	7 M F 4 9 3 3 -		
oressure trans differential p 7MF54	oressure 7MF44	13 and			pressure transmitter for • differential pressure 7MF443 and 7MF54			
Click on the	Article No. for t PIA Life Cycle	he online configu-	- B			- B		
<b>ype</b> no flushing h	ole	unsealed (only	1 2		Sealing material between top and bottom section FKM (standard with diaphragm and 316L pro- cess connection)	1		
	connection 316 add		9	H 1 Y	PTFE (standard with custom material with max. 260 °C) Metal C- circlip, silver coated for >260 °C) incl. high temperature-resistant screwed gland	2 3		
rocess conn	ection version				Filling liquid			
ower flange aterial	Process con- nection	Nominal diam- eter and pres- sure level			<ul><li>Silicone oil M5</li><li>Silicone oil M50</li><li>High-temperature oil</li></ul>	1 2 3		
16L/1.4404 16L/1.4404	Thread Thread	G½B/PN100 G½B/PN250	B C		<ul> <li>Halocarbon oil (for measuring O<sub>2</sub>)<sup>1)</sup></li> <li>Food oil (FDA-listed)</li> </ul>	4 7		
16L/1.4404 16L/1.4404	Thread Thread	1/2NPT-M/PN100 1/2NPT-M/PN250	E		Other version, add Order code and plain text: filling liquid:	9	<b>M</b> 1	IY
16L/1.4404 16L/1.4404	Thread Thread	1⁄2NPT-F/PN100 1∕2NPT-F/PN250	H		Capillary length <sup>2)</sup>	_		
16L/1.4404	open measure ment flange	- DN 25/ PN 10 40	N		<ul> <li>none, direct mounting</li> <li>none, direct mounting with cooling element (not in conjunction with transmitter for differen-</li> </ul>	0 1		
16L/1.4404 16L/1.4404	ment flange	- 1"/Class 150 - 1"/Class 300	P		tial pressure) • 1 m	2		
TFE	ment flange Thread	G½B/PN100	т		• 1.6 m • 2.5 m	3 4		
TFE	open measure ment flange	PN 10 40	U		• 4 m • 6 m	5		
TFE	open measure ment flange open measure		v		• 8 m • 10 m	7 8		
	ment flange	.,			Special lengths for capillaries			
ther version, rder code an ower flange r ocess conne ominal diame	d plain text: material:;	/el:	Z	J 1 Y	<ul> <li>2.0 m</li> <li>3.0 m</li> <li>5.0 m</li> <li>7.0 m</li> </ul>	9 9 9	N 1 N 1 N 1	I E I G
iaphragm ma	aterial				• 9.0 m	9	<b>N</b> 1	L
astelloy C276	steel with PTFE	film	A E J		<ol> <li>Oil- and grease- free cleaning to DIN 25410, leve included in the scope of delivery.</li> <li>Max. capillary length, see section "Technical desc</li> </ol>		g	
	316L, gold plat	ed,	U K S					
iickness appr	υλ. 25 μm							

Other version, add Order code and plain text: Diaphragm material: ...

Siemens FI 01 · 2015

z

K 1 Y

V03

Remote seals for transmitters and pressure gauges

# Diaphragm seal, screwed design directly mounted or/and with capillary

Selection and Ordering data	Order cod
Further designs	
Add "-Z" to Article No. and specify Order code.	
Remote seal nameplate Attached out of stainless steel, contains MLFB and order number of the remote seal	B20
<b>Oil- and grease-free cleaned version</b> Oil- and grease-free cleaned and packed ver- sion, <u>not for oxygen application</u> , only in conjunc- tion with halocarbon oil fill fluid, certified by certificate acc. to EN 10204-2.2	C10
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11
Inspection certificate to EN 10204, section 3.1	C12
<b>2.2 Certificate of FDA approval of fill oil</b> Only in conjunction with "Food-grade oil" fill liquid (FDA listed)"	C17
Functional safety certificate ("SIL 2") to IEC 61508	C20
(Only in conjunction with the Order code "C20" in the case of SITRANS P DSIII transmitter)	
Functional safety certificate ("SIL 2/3") to IEC 61508	C23
(Only in conjunction with the Order code "C23" in the case of SITRANS P DSIII transmitter)	
<b>Certification acc. to NACE MR-0175</b> Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stainless steel 1.4404/316L and Hastelloy C276)	D07
<b>Certification acc. to NACE MR-0103</b> Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stainless steel 1.4404/316L and Hastelloy C276)	D08
Oil- and grease-free cleaned version	E10
Oil- and grease-free cleaned and packed ver- sion, <u>only for oxygen application</u> , only inert fill fluid may be used. Max. temperature: 60 °C (140 °F), max. pressure 50 bar (725 psi), only in connection with halocarbon oil, certified by certi- ficate acc. to EN 10204-2.2	
Epoxy painting Not possible with vacuum-proof design.	E15
Color: transparent, coverage: front and rear of the remote seal, capillary(ies) or connecting tube, process connection of the transmitter. With transmitters 7MF40 and 7MF42, only possible with process connection G½B accord- ing to EN837-1.	
Sealing surface groove, EN 1092-1, form D	J14
instead of sealing surface B1 (only for wetted parts made of stainless steel 316L)	
Sealing surface RJF (groove) ASME B16.5	J24
instead of sealing surface ASME B16.5 RF 125 250 AA (only for wetted parts made of stainless steel	

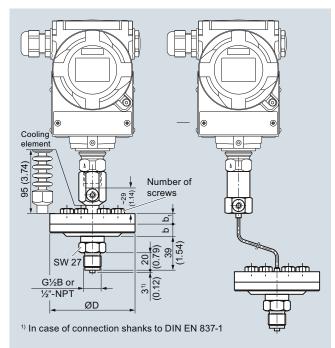
Selection and Ordering data	Order code
Further designs	
Add "-Z" to Article No. and specify Order code.	
<b>PE protective tube</b> over the spiral protective tube (color: white) of the capillaries	
1.0 m 1.6 m 2.0 m	N20 N21 N22
2.5 m 3.0 m 4.0 m	N23 N24 N25
5.0 m 6.0 m 7.0 m	N26 N27 N28
8.0 m 9.0 m 10.0 m	N29 N30 N31
Vacuum-proof design for use in low-pressure range for tranmitters for • Gauge and absolute pressure from the pres- sure series	V01

#### Differential pressure

Remote seals for transmitters and pressure gauges

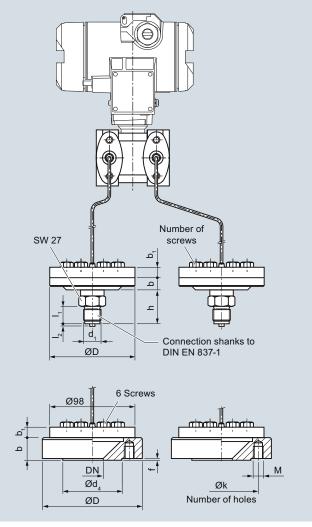
Diaphragm seal, screwed design directly mounted or/and with capillary

#### Dimensional drawings



Diaphragm seal, screwed gland with inside diaphragm, for gauge and absolute pressure, direct and attached directly to the transmitter with with capillaries, dimensions in mm (inch)

Range	D mm	b mm	b <sub>1</sub> mm	Number of screws	
bis 100 bar	98	14	16	6	
bis 250 bar	98	14	20	12	



Diaphragm seal, screwed gland with inside diaphragm, for differential pressure, direct and attached directly to the transmitter with with capillaries, dimensions in mm (inch)

Nomi- nal diam- eter	Nominal pressure	D mm	d <sub>4</sub> mm	k mm	Μ	Number of holes	b mm	b <sub>1</sub> mm	f mm
DN 25	PN 10/16/ 25/40	115	68	85	M12	4	26	12	2
1 inch	150 Ib/sq.in	108	50.8	79.2	M12	4	22	12	1.6
1 inch	300 lb/sq.in	124	50.8	88.9	M16	4	22	12	1.6

Remote seals for transmitters and pressure gauges



Weight

EHEDG

Certificates and approvals Classification according to pressure

equipment directive (DRGL 97/23/EC)

Quick-release diaphragm seal	
Connection, nominal diameter	Nominal pressure
For pressure	
To DIN 11851 with slotted union nu	Jt
- DN 25	PN 40
- DN 32	PN 40
- DN 40	PN 40
- DN 50	PN 25
- DN 65	PN 25
- DN 80	PN 25
<ul> <li>To DIN 11851 with threaded socked</li> </ul>	et
- DN 25	PN 40
- DN 32	PN 40
- DN 40	PN 40
- DN 50	PN 25
- DN 65	PN 25
- DN 80	PN 25

Siemens FI 01 · 2015

practice)

mendations

remote seals

Approx. 4 kg (8.82 lb)

More information can be found in the technical data of the pressure transmitters and in the section "Technical data of filling liquid" in the Technical description to the

For gases of fluid group 1 and liq-

uids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering

Complies with EHEDG recom-

Remote seals for transmitters and pressure gauges

#### Quick-release diaphragm seals

• 3.0 m

• 5.0 m

• 7.0 m

• 9.0 m

Selection and Ordering data	Article No. O	rd. code	Selection and Ordering data	Ord. code
Quick-release diaphragm seal 7	7MF4940	-	Further designs	
for SITRANS P pressure transmitters for pressure 7MF403 and 7MF423 together with Order code "V01" (vacuum-proof design)	A 0	В	Please add "-2" to Article No. and specify Order code.	
and 7MF8021); must be ordered separately Filling liquid: Food oil (FDA listed) Material: Stainless steel, mat. No. 1.4435			Remote seal nameplate Attached out of stainless steel, contains MLFB and order number of the remote seal	B20
Click on the Article No. for the online configu- ration in the PIA Life Cycle Portal.			Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11
Nom. diam. Nom. press.			Inspection certificate	C12
Connection to DIN 11851 with slotted union nut			to EN 10204, section 3.1	
- DN 25 PN 40	1 B		2.2 Certificate of FDA approval of fill oil	C17
- DN 32 PN 40	1 C		Only in conjunction with "Food-grade oil" fill liquid	•
- DN 40 PN 40	1 D		(FDA listed)"	
- DN 50 PN 25	1 E			C20
- DN 65 PN 25	1 F		Functional safety certificate ("SIL 2") to IEC 61508	620
- DN 80 PN 25	1 G		(Only in conjunction with the Order code "C20"	
Connection to DIN 11851 with screw necks			in the case of SITRANS P DSIII transmitter)	
- DN 25 PN 40	2 B		,	
- DN 32 PN 40	2 B 2 C		Functional safety certificate ("SIL 2/3") to	C23
	2 C 2 D		IEC 61508	
- DN 40 PN 40			(Only in conjunction with the Order code "C23"	
- DN 50 PN 25	2 E		in the case of SITRANS P DSIII transmitter)	
- DN 65 PN 25	2 F		PE protective tube	
- DN 80 PN 25	2 G		over the spiral protective tube (color: white) of	
<ul> <li>Tri-Clamp connection to DIN 32676/ISO 2852</li> </ul>			the capillaries	
- DN 40/1½ inch PN 16	4 L		1.0 m	N20
- DN 50/2 inch PN 16	4 M		1.6 m	N21
- DN 65/21/2 inch PN 16	4 N		2.0 m	N22
- DN 80/3 inch PN 10	4 P			
Other version			2.5 m	N23
Add Order codes and plain text:			3.0 m	N24
Process connection:, Nominal diameter:;	9 A	H1Y	4.0 m	N25
Nominal pressure:			5.0 m	N26
Filling liquid			6.0 m	N27
Food oil (FDA listed)	7		7.0 m	N28
Other version	9	M 1 Y	8.0 m	N29
Add Order code and plain text:	9	IN T T	9.0 m	N29 N30
Filling liquid:			9.0 m 10.0 m	N30 N31
Connection to pressure transmitter				
• direct	0		Cooling element	R22
	0		max. medium temperature 300 °C, observe the maximum permissible media temperature of the	
through capillary, length: <sup>2)</sup>			filling liquid.	
• 1.0 m (3.28 ft)	2		5 1	Vot
• 1.6 m (5.25 ft)	3		Vacuum-proof design	V01
• 2.5 m (8.20 ft)	4		for use in low-pressure range for gauge and	
• 4.0 m (13.1 ft)	5		absolute pressure from the pressure series	
• 6.0 m (19.7 ft)	6			
• 8.0 m (26.25 ft)	7			
• 10.0 m (32.8 ft)	8			
Special lengths for capillaries				
• 2.0 m	9	N 1 C		
▼ ∠.U III	9	NIC		

N 1 E

N 1 G

N 1 J

N 1 L

9

9

9

9

 $^{1)}\,$  With 7MF802.-... and the measuring cells Q, S, T and U also order the vacuum-tight version.

<sup>2)</sup> Max. capillary length, see section "Technical description"

Remote seals for transmitters and pressure gauges

# Quick-release diaphragm seals

B20

C11

C12

C17

C20

C23

N20 N21 N22 N23 N24 N25 N26 N27 N28 N29 N30 N31 V03

Order code

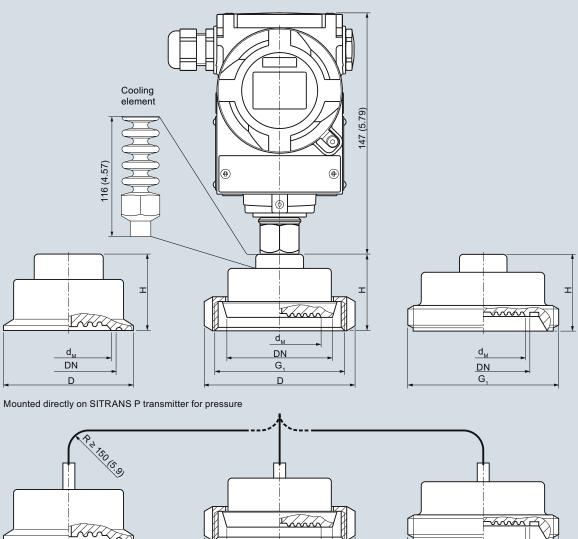
Selection and Ordering data	Article	e No. Or	d. co	e Selection and Ordering data
Quick-release diaphragm seal	7 7 M F 4	1943 -		Further designs
for SITRANS P pressure transmitters for pres- sure for differential pressure and flow, type 7MF443 and 7MF54; order separately	<b>A</b> (	) <b>-</b> - <b>B</b>		Please add "-Z" to Article No. and specify Order code.
Mirado,, and Mirado,, order separately Filing liquid: Food oil (FDA listed) Material: Stainless steel, mat. No. 1.4435 Delivery unit: 2 off				Remote seal nameplate Attached out of stainless steel, contains MLFB and order number of the remote seal
Click on the Article No. for the online configu- ration in the PIA Life Cycle Portal.				Quality inspection certificate (Five-step factory calibration) to IEC 60770-2
Nom. diam. Nom. press.				Inspection certificate
Connection to DIN 11851 with slotted union nut				to EN 10204, section 3.1
- DN 50 PN 25	1 E			2.2 Certificate of FDA approval of fill oil
- DN 65 PN 25 - DN 80 PN 25	1 F 1 G			Only in conjunction with "Food-grade oil" fill liquid (FDA listed)"
Connection to DIN 11851 with threaded socket				Functional safety certificate ("SIL 2") to IEC 61508
- DN 50 PN 25 - DN 65 PN 25	2 E 2 F			(Only in conjunction with the Order code "C20" in the case of SITRANS P DSIII transmitter)
- DN 80 PN 25 • Tri-Clamp connection to DIN 32676/ ISO 2852	2 G			Functional safety certificate ("SIL 2/3") to IEC 61508
- DN 50/2 inch PN 16 - DN 65/2½ inch PN 16	4 M 4 N			(Only in conjunction with the Order code "C23" in the case of SITRANS P DSIII transmitter)
- DN 80/3 inch PN 10	4 P			PE protective tube
Other version Add Order codes and plain text:				over the spiral protective tube (color: white) of the capillaries
Process connection:, Nominal diameter:; Nominal pressure:	9 A		H 1	1.0 m 1.6 m
Filling liquid				2.0 m
Food oil (FDA listed)		7		. 2.5 m
Other version		9	M 1	3.0 m
Add Order code and plain text: Filling liquid:				4.0 m
Connection to transmitter	-			5.0 m
through capillary, Length: <sup>1)</sup>				6.0 m
• 1.0 m (3.28 ft)		2		7.0 m
• 1.6 m (5.25 ft)		3		8.0 m
• 2.5 m (8.20 ft)		4		9.0 m
• 4.0 m (13.1 ft)		5		10.0 m
• 6.0 m (19.7 ft)		6		Vacuum-proof design
• 8.0 m (26.25 ft)		7		
• 10.0 m (32.8 ft)		8		for use in low-pressure range
Special lengths for capillaries				
• 2.0 m		9	N 1 (	
• 3.0 m		9	N 1	
• 5.0 m		9	N 1	
• 7.0 m • 9.0 m		9 9	N1	
• 9 U III		9	N 1	

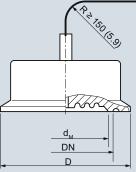
1) Max. capillary length, see section "Technical description"

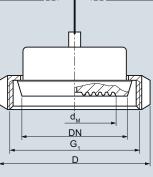
Remote seals for transmitters and pressure gauges

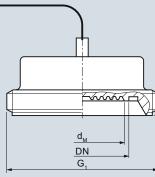
#### Quick-release diaphragm seals

# Dimensional drawings









Mounted on SITRANS P transmitter for pressure or differential pressure and flow

Quick-release diaphragm seal, dimensions in mm (inch)

Clamp connection (left)													
DN	Ød	м	ØD		н								
40 (1½ inch)	32	(1.26)	50.5	(2)	35	(1.38)							
50 (2 inch)	40	(1.57)	64	(2.52)	35	(1.38)							
65 (2½ inch)	52	(2.05)	77.5	(3.05)	35	(1.38)							
80 (3 inch)	72	(2.83)	91	(3.58)	35	(1.38)							

Connection to DIN 11851 with slotted union nut (center)								
DN	Ød <sub>M</sub>	ØD	н	G <sub>1</sub>				
25	25	63	36	Rd 52x1/6				
32	32	70	36	Rd 52x1/6				
40	40	78	36	Rd 65x1/6				
50	52	112	36	Rd 78x1/6				
65	65	112	36	Rd 95x1/6				
80	72	127	36	Rd 110x1/6				
25	25	63	36	Rd 52x1/6				

Connection to DIN 11851 with threaded socket (right)						
DN	Ø d <sub>M</sub>	н	G <sub>1</sub>			
25	25	36	Rd 52x1/6			
32	32	36	Rd 52x1/6			
40	40	36	Rd 65x1/6			
50	52	36	Rd 78x1/6			
65	65	36	Rd 95x1/6			
80	72	36	Rd 110x1/6			

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

Miniature diaphragm seals

Remote seals for transmitters and pressure gauges

# 

Miniature diaphragm seals

The miniature diaphragm seals are available for the following SITRANS P pressure transmitter series for pressure:

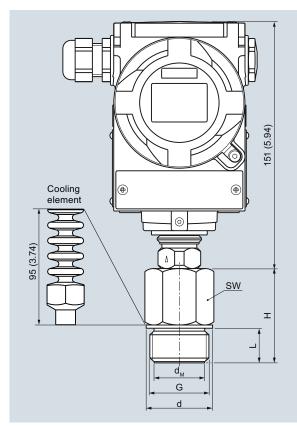
 P300, DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus

Suitable for high pressures, contaminated, fibrous and viscous media in the chemical, paper, food and drink industries.

# Design

- Flush-mounted diaphragm
- No dead spaces
- · Fixed threaded stems

#### Dimensional drawings



Miniature diaphragm seal, dimensions in mm (inch)

G	Ø	d <sub>M</sub>		SW		ðd				н
G						(inch) mm		L (inch)		
	mm	(inch)	111111	(inch)	mm	(Inch)	mm	(Inch)	mm	(inch)
G1B	25	(0.98)	41	(1.61)	39	(1.53)	28	(1.1)	56	(2.21)
G11/2B	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>		SV	W L				ł	-
	mm	(!	۱							
	mm	(inch	) r	nm (i	nch)	mm	(inc	h) m	m (	(inch)
1"-NPT	27	(1.06	<i>,</i>	· ·	ncn) 1.61)	<b>mm</b> 25	(inc (0.9	'		( <b>inch)</b> (1.57)
1"-NPT 1½"-NPT	27	•	) 4	11 (*			•	8) 40	) (	
	27	(1.06	) 4 ) 5	11 (* 55 (2	.61)	25	(0.9	8) 4( 2) 45	) ( 5 (	1.57)

Technical specifications

Miniature diaphragm seals	
Span with • G1B and 1"-NPT • G1½B and 1½"-NPT • G2B and 2"-NPT	> 6 bar (> 87 psi) > 2 bar (> 29 psi) > 600 mbar (> 8.7 psi)
Filling liquid	Silicone oil M5 or food oil (FDA listed)
Material • Main body • Diaphragm Maximum pressure	Stainl. steel mat No. 1.4404/ 316L Stainl. steel mat No. 1.4404 / 316L 100% of nominal pressure of pressure transmitter, up to maximum of PN 400
	(5802 psi) (depending on the seal used)
Temperature of use	Same as pressure transmitter
Temperature range of medium	Same as pressure transmitter
Max. recommended process temperature	150 °C (302 °F)
Weight • G1B and 1"-NPT • G1½B and 1½"-NPT • G2B and 2"-NPT	Approx. 0.3 kg (approx. 0.66 lb) Approx. 0.5 kg (approx. 1.10 lb) Approx. 0.8 kg (approx. 1.76 lb)
Certificate and approvals	
Classification according to pressure equipment directive	For gases of fluid group 1 and liquids of fluid group 1; complies with

(DRGL 97/23/EC) of fluid group (arguirements) of fluid group

For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)

Remote seals for transmitters and pressure gauges

Selection and Ordering data	Article No. Ord. code	Selection and Ordering data	Order code
Miniature diaphragm seals directly fitted to SITRANS P pressure transmitters for pressure; type, 7MF403 and 7MF423	7 M F 4 9 6 0 - 1 0 0 0 0 0 0 0	Further designs Please add "-Z" to Article No. and specify Order code.	
together with Order code "V01" (vacuum-proof design) and 7MF802 <sup>1</sup> ; must be ordered sepa- rately Material: Stainless steel, mat. No. 1.4404/316L		Remote seal nameplate Attached out of stainless steel, contains MLFB and order number of the remote seal	B20
Nominal pressure, see "Pressure transmitters"		Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11
Click on the Article No. for the online configu- ration in the PIA Life Cycle Portal.		Inspection certificate to EN 10204, section 3.1	C12
Process connection • G1B • G112B • OPP	C D	2.2 Certificate of FDA approval of fill oil Only in conjunction with "Food-grade oil" fill liquid (FDA listed)"	C17
• G2B • 1" - NPT • 1½" - NPT • 2" - NPT Other version, add Order code and plain text:	E K L Z J1Y	Functional safety certificate ("SIL 2") to IEC 61508 (Only in conjunction with the Order code "C20" in the case of SITRANS P DSIII transmitter)	C20
Process connection: Wetted parts materials • Stainless steel 316L Other version, and Order and plain text.	A Z K1Y	Functional safety certificate ("SIL 2/3") to IEC 61508 (Only in conjunction with the Order code "C23" in the case of SITRANS P DSIII transmitter)	C23
Other version, add Order code and plain text: Wetted parts materials: Filling liquid • Silicone oil M5	1	Certification acc. to NACE MR-0175 Includes acceptance test certificate 3.1 accor- ding to EN 10204 (only for wetted parts made of stainless steel 1.4404/316L and Hastelloy C276)	D07
<ul> <li>Food oil (FDA listed)</li> <li>Other version, add Order code and plain text: Filling liquid:</li> <li><sup>1)</sup> With 7MF802 and the measuring cells Q, S, T a</li> </ul>	7 9 M1Y	Certification acc. to NACE MR-0103 Includes acceptance test certificate 3.1 accor- ding to EN 10204 (only for wetted parts made of stainless steel 1.4404/316L and Hastelloy C276)	D08
vacuum-tight version.		Cooling element max. medium temperature 300 °C, observe the	R22

max. medium temperature 300 °C, observe the maximum permissible media temperature of the filling liquid.

V01

#### Vacuum-proof design

for use in low-pressure range for gauge and absolute pressure from the pressure series

Technical specifications

## **Pressure Measurement**

Remote seals for transmitters and pressure gauges

# Flushing rings for diaphragm seals



Flushing ring

Flushing rings are required for flange-mounted and sandwich-type remote seals (Article No. 7MF4900 ... 7MF4923) if the danger exists that the process conditions and the geometry of the connection could cause the medium to form deposits or blockages.

The flushing ring is clamped between the process flange and the remote seal.

Deposits can be flushed away from the diaphragm through the holes in the side, or the pressure volume can be vented. Different nominal diameters and forms permit adaptation to the respective process flange.

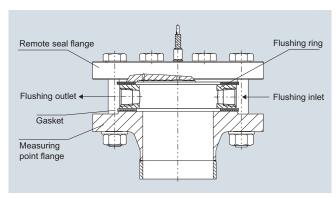
#### **Process connection**

For flanges 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 design

Material: CrNi-Stahl, mat. No. 1.4404/316L Sealing faces and flushing holes: See Selection and Ordering data

#### Design



Installation example

Flushing ring for remote seals of s	sandwich and flange design						
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 inch	Class 150 class 600						
• 3 inch	Class 150 class 600						
• 4 inch	Class 150 class 600						
• 5 inch	Class 150 class 600						
Sealing face							
• To EN 1092-1	Form B1						
	Form B2						
	Form D/Form D						
	Form C/Form C						
	Form C/Form C						
	Form E						
	Form F						
• To ASME B16.5	RF 125 250 AA						
	RFSF						
	RJF ring groove						
Flushing holes (2 off), female	• G1⁄4						
thread	• G1⁄2						
	• 1⁄4-18 NPT						
	• ½-14 NPT						
Material	Stainless steel 1.4404/316L						

Remote seals for transmitters and pressure gauges

# Flushing rings for diaphragm seals

Selection and Ord	ering data	Artic	le No.	.Ord. cod	e Dim	ensional o	Irawin	igs						
Flushing ring	7	1 7 M F	492	5 -				-						
↗ Click on the Artic	IF4900 to 7MF4923 cle No. for the online configu- Life Cycle Portal.	1										Thread		
Nom. diam. • DN 50 • DN 80 • DN 100 • DN 125 • 2 inch • 3 inch • 4 inch • 5 inch Other version	Nom. press. PN 16 PN 100 PN 16 PN 100 PN 16 PN 100 PN 16 PN 100 Class 150 600 Class 150 600 Class 150 600 Class 150 600	A B C D G H J K Z		J1Y	Con	ing ring, dir <b>nection to</b>			c				-	
Add Order code an	id plain text: ; Nominal pressure:	-		511	DN (mm	PN ) (bar		d <sub>4</sub> (mm)		d <sub>i</sub> (mm)		h (mm)		Vei kg
Sealing face ►EN 1092-1 - Form B1 - Form B2	·	A	;		50 80 100 125	16 . 16 . 16 .	, 100 100 100 100	102 138 162 188		62 92 92 126		30 30 30 30 30	1 1 3	.1 .9 .1
<ul><li>Form C/Form C</li><li>Form D/Form C</li><li>Form D/Form D</li></ul>		DEF			Con	nection to	ASM			120		30		-
<ul> <li>Form E</li> <li>Form F</li> <li>ASME B16.5</li> <li>RF 125 250 A</li> <li>RFSF</li> <li>RJF ring groove</li> <li>Other version</li> <li>Add Order code an</li> <li>Sealing face:</li> </ul>		G H Q R Z		К 1 Ү	DN inch 2 3 4 5	Class 150 600 150 600 150 600	127 157	(in.) (3.62) (5) (6.18) (7.3)	62 92 92	(in.) (2.44) (3.62) (3.62) (4.96)	30 30 30	(in.) (1.18) (1.18) (1.18) (1.18)	1.05 2.85	ht
Flushing holes (2 • Female thread G) • Female thread G) • Female thread 1/4- • Female thread 1/2-	4 2 18 NPT	_	1 2 3 4											
Material • Stainless steel 31 Other version Add Order code an Material:			0 9	M 1 Y	,									
<i>Further designs</i> Please add " <b>-Z</b> " to A code.	Article No. and specify Order	Orde	er cod	e										
Inspection certific	ate	C12			_									

(lb) (1.32) (2.31) (6.28) (7.28)

Remote seals for transmitters and pressure gauges

# Inline seals for flange-mounting



Inline seals for flange-mounting

The inline seal is completely integrated in the process line. It is particularly suitable for flowing and highly viscous media.

The inline remote seal consists of a cylindrical jacket into which a thin-walled pipe is welded. It is clamped directly between two flanges in the pipeline.

#### Design

- Inline seals for flange-mounting (flange design) to EN/ASME for SITRANS P pressure transmitters
  - For pressure: P300, DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus
  - For differential pressure and flow: DS III with HART, DS III with PROFIBUS PA, DS III with FOUNDATION Fieldbus and P500
- Sealing face to EN 1092-1 or ASME B16.5
- Connection to the transmitter directly or by means of a flexible capillary (max. 10 m long)
- See Technical data for details of materials used for the wetted parts
- Material used for the capillary, the guard sleeve, the 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) or glycerin/water (not suitable for uses in low-pressure range)

#### Function

The measured pressure is transferred from the diaphragm to the filling liquid and passes either directly or through the capillary to the measuring chamber of the pressure transmitter. The interior of the diaphragm seal and of the capillary, as well as the measuring chamber of the pressure transmitter, are filled gas-free by the filling liquid.

#### Note:

When operating in the low-pressure range, also during commissioning, it is recommended to use a vacuum-proof remote seal (see Selection and Ordering data).

Technical specifications						
Inline seals for flange-mounting						
Nominal diameter	Nominal pressure					
• DN 25	PN 6 PN 100					
• DN 40	PN 6 PN 100					
• DN 50	PN 6 PN 100					
• DN 80	PN 6 PN 100					
• DN 100	PN 6 PN 100					
• 1 inch	Class 150 class 2500					
• 1½ inch	Class 150 class 2500					
• 2 inch	Class 150 class 2500					
• 3 inch	Class 150 class 2500					
• 4 inch	Class 150 class 2500					
Process connection	Flange to EN 1092-1 or ASME B 16.5					
Sealing face	To EN 1092-1, form B1 or to ASME B16.5 RF 125 250 A or RFSF					
Materials						
Main body	Stainless steel 1.4404/316L					
• Diaphragm	Stainless steel 1.4404/316L					
Wetted parts	Stainless steel 1.4404/316L					
	Without coating					
	ECTFE coating					
	<ul> <li>PFA coating (for vacuum on request)</li> </ul>					
	Monel 400, mat. No. 2.4360					
	Hastelloy C276, mat. No. 2.4819					
	Hastelloy C4, mat. No. 2.4610					
	Tantalum					
• Capillary	Stainless steel, mat. No. 1.4571/316Ti					
• Sheath	Spiral hose made of stainless steel, mat. No. 1.4301/316					
Capillary						
• Length	Max. 10 m (32.8 ft)					
<ul> <li>Internal diameter</li> </ul>	2 mm (0.079 inch)					
<ul> <li>Minimum bending radius</li> </ul>	150 mm (5.9 inch)					
Filling liquid	Silicone oil M5					
	Silicone oil M50					
	High-temperature oil					
	Halocarbon oil					
	Food oil (FDA listed)					
Permissible ambient temperature	See pressure transmitters, see fill- ing liquid					
Weight	Approx. 4 kg (8.82 lb)					
Certificates and approvals						
Classification according to pressure equipment directive (DRGL 97/23/EC)	For gases of fluid group 1 and liq- uids of fluid group 1; complies with the requirements of article 3, paragraph 1 (appendix 1); assigned to category III, confor- mity evaluation module H by the TÜV Nord					

Remote seals for transmitters and pressure gauges

# Inline seals for flange-mounting

Selection and Ordering data	Article	No.Ord. code	Selection and Ordering data	Article No.Ord. code			
Inline seal for flange-mounting for SITRANS P pressure transmitters							
for gauge pressure 7MF403 and 7MF423 together with Order code "V01" (vacuum-proof design) and 7MF802 <sup>1</sup> ; must be ordered separately, scope of delivery: 1 off		980-	for gauge pressure 7MF403 and 7MF423 together with Order code "V01" (vacuum-proof design) and 7MF802 <sup>1</sup> ); must be ordered separately, scope of delivery: 1 off	7 M F 4 9 8 0 -			
for differential pressure and flow 7MF4433 or 7MF54; order separately, scope of delivery: 1 pair (set); Material: Completely of stainless steel, mat. No. 1.4404/316L; Process connection to EN 1092-1 or ASME B16.5; sealing face to EN 1092-1, form B1, or to ASME B16.5 RF 125 250 AA		983-	for differential pressure and flow 7MF4433 or 7MF54; order separately, scope of delivery: 1 pair (set); Material: Completely of stainless steel, mat. No. 1.4404/316L; Process connection to EN 1092-1 or ASME B16.5; sealing face to EN 1092-1, form B1, or to ASME B16.5 RF 125 250 AA	7 M F 4 9 8 3 -			
Click on the Article No. for the online configu- ration in the PIA Life Cycle Portal.	1 0	- B	-	1 0 - B			
Nominal diameter and nominal pressure           • DN 25         PN 6 100           • DN 40         PN 6 100           • DN 50         PN 6 100           • DN 80         PN 6 100           • DN 100         PN 6 100           • DN 100         PN 6 100           • Di 100         PN 6 2500           • 1 inch         Class 150 2500           • 1½ inch         Class 150 2500           • 2 inch         Class 150 2500           • 3 inch         Class 150 2500           • 4 inch         Class 150 2500           Other version         Add Order code and plain text:           Nominal diameter:; Nominal pressure:         Wetted parts materials	B D E G H L M N P Q Z	J1Y	Connection to transmitter         • direct (only for 7MF4980)         through capillary, length: <sup>4)</sup> • 1.0 m       (3.28 ft)         • 1.6 m       (5.25 ft)         • 2.5 m       (8.20 ft)         • 4.0 m       (13.1 ft)         • 6.0 m       (19.7 ft)         • 8.0 m       (26.25 ft)         • 10.0 m       (32.8 ft)         • 10.0 m       (32.8 ft)         • 5.0 m       • 5.0 m         • 7.0 m       • 7.0 m	0 2 3 4 5 6 7 8 9 N1C 9 N1C 9 N1C 9 N1J			
<ul> <li>Stainless steel 316L</li> <li>Without coating</li> <li>With PFA coating</li> <li>With ECTFE coating<sup>2)</sup></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>Tantalum</li> <li>Other version</li> <li>Add Order code and plain text:</li> <li>Weted parts materials:</li> <li>Filling liquid</li> <li>Silicone oil M5</li> <li>Silicone oil M50</li> <li>High-temperature oil</li> </ul>		K 1 Y 1 2 3	<ul> <li>9.0 m</li> <li>only for 7MF4983</li> <li>11.0 m</li> <li>12.0 m</li> <li>13.0 m</li> <li>14.0 m</li> <li>15.0 m</li> <li><sup>1)</sup> With 7MF802 and the measuring cells Q, S, T vacuum-tight version.</li> <li><sup>2)</sup> For vacuum on request.</li> <li><sup>3)</sup> Oil- and grease- free cleaning to DIN 25410, leve included in the scope of delivery.</li> <li><sup>4)</sup> Max. capillary length, see section "Technical descrete"</li> </ul>	l 2 and packaging			

4 7 9

M 1 Y

Other version Add Order code and plain text: Filling liquid: ...

• Food oil (FDA listed)

• Halocarbon oil (for measuring  $O_2)^{3)}$ 

# **Pressure Measurement**

Remote seals for transmitters and pressure gauges

# Inline seals for flange-mounting

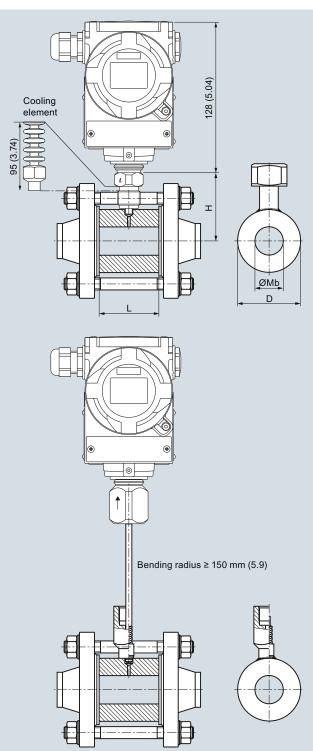
Selection and Ordering data	Order code
Further designs	
Please add "-Z" to Article No. and specify Order code.	
Spark arrestor	
With spark arrestor for mounting on zone 0 (including documentation)	
Pressure and absolute pressure	A01
• for differential pressure transmitters	A02
Remote seal nameplate	B20
Attached out of stainless steel, contains MLFB	
and order number of the remote seal Oil- and grease-free cleaned version	C10
Oil- and grease-free cleaned and packed ver-	010
sion, not for oxygen application, only in conjunc-	
tion with halocarbon oil fill fluid, certified by certificate acc. to EN 10204-2.2	
Quality inspection certificate (Five-step	C11
factory calibration) to IEC 60770-2	
Inspection certificate to EN 10204, section 3.1	C12
2.2 Certificate of FDA approval of fill oil	C17
Only in conjunction with "Food-grade oil" fill liquid	•
(FDA listed)"	
Functional safety certificate ("SIL 2") to IEC 61508	C20
(Only in conjunction with the Order code "C20"	
in the case of SITRANS P DSIII transmitter)	
Functional safety certificate ("SIL 2/3") to IEC 61508	C23
Certification acc. to NACE MR-0175	D07
Includes acceptance test certificate 3.1 according	
to EN 10204 (only for wetted parts made of stain-	
	D08
to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) Certification acc. to NACE MR-0103 Includes acceptance test certificate 3.1 according	D08
to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) <b>Certification acc. to NACE MR-0103</b> Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stain-	D08
to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276)	D08
to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) <b>Certification acc. to NACE MR-0103</b> Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276)	D08
to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) Certification acc. to NACE MR-0103 Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) Oil- and grease-free cleaned version Oil- and grease-free cleaned and packed ver- sion, only for oxygen application, only inert fill	D08
to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) <b>Certification acc. to NACE MR-0103</b> Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) <b>Oil- and grease-free cleaned version</b> Oil- and grease-free cleaned and packed ver- sion, only for oxygen application, only inert fill fluid may be used. Max. temperature: 60 °C	D08
to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) Certification acc. to NACE MR-0103 Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) Oil- and grease-free cleaned version Oil- and grease-free cleaned version Oil- and grease-free cleaned and packed ver- sion, only for oxygen application, only inert fill fluid may be used. Max. temperature: 60 °C (140 °F), max. pressure 50 bar (725 psi), only in connection with halocarbon oil, certified by certi-	D08
to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) <b>Certification acc. to NACE MR-0103</b> Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) <b>Oil- and grease-free cleaned version</b> Oil- and grease-free cleaned and packed ver- sion, <u>only for oxygen application</u> , only inert fill fluid may be used. Max. temperature: 60 °C (140 °F), max. pressure 50 bar (725 psi), only in connection with halocarbon oil, certified by certi- ficate acc. to EN 10204-2.2	D08
to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) Certification acc. to NACE MR-0103 Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) Oil- and grease-free cleaned version Oil- and grease-free cleaned version Oil- and grease-free cleaned and packed ver- sion, only for oxygen application, only inert fill fluid may be used. Max. temperature: 60 °C (140 °F), max. pressure 50 bar (725 psi), only in connection with halocarbon oil, certified by certi- ficate acc. to EN 10204-2.2 PE protective tube	D08
to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) Certification acc. to NACE MR-0103 Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) Oil- and grease-free cleaned version Oil- and grease-free cleaned version Oil- and grease-free cleaned and packed ver- sion, only for oxygen application, only inert fill fluid may be used. Max. temperature: 60 °C (140 °F), max. pressure 50 bar (725 psi), only in connection with halocarbon oil, certified by certi- ficate acc. to EN 10204-2.2 PE protective tube over the spiral protective tube (color: white) of	D08
to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) Certification acc. to NACE MR-0103 Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) Oil- and grease-free cleaned version Oil- and grease-free cleaned version Oil- and grease-free cleaned and packed ver- sion, only for oxygen application, only inert fill fluid may be used. Max. temperature: 60 °C (140 °F), max. pressure 50 bar (725 psi), only in connection with halocarbon oil, certified by certi- ficate acc. to EN 10204-2.2 PE protective tube over the spiral protective tube (color: white) of the capillaries 1.0 m	D08 E10 N20
to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) Certification acc. to NACE MR-0103 Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) Oil- and grease-free cleaned version Oil- and grease-free cleaned version Oil- and grease-free cleaned version Oil- and grease-free cleaned and packed ver- sion, <u>only for oxygen application</u> , only inert fill fluid may be used. Max. temperature: 60 °C (140 °F), max. pressure 50 bar (725 psi), only in connection with halocarbon oil, certified by certi- ficate acc. to EN 10204-2.2 <b>PE protective tube</b> over the spiral protective tube (color: white) of the capillaries 1.0 m 1.6 m	D08 E10 N20 N21
to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) Certification acc. to NACE MR-0103 Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) Oil- and grease-free cleaned version Oil- and grease-free cleaned version Oil- and grease-free cleaned and packed ver- sion, only for oxygen application, only inert fill fluid may be used. Max. temperature: 60 °C (140 °F), max. pressure 50 bar (725 psi), only in connection with halocarbon oil, certified by certi- ficate acc. to EN 10204-2.2 <b>PE protective tube</b> over the spiral protective tube (color: white) of the capillaries 1.0 m 1.6 m 2.0 m	D08 E10 N20 N21 N22
to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) <b>Certification acc. to NACE MR-0103</b> Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) <b>Oil- and grease-free cleaned version</b> Oil- and grease-free cleaned and packed ver- sion, <u>only for oxygen application</u> , only inert fill fluid may be used. Max. temperature: 60 °C (140 °F), max. pressure 50 bar (725 psi), only in connection with halocarbon oil, certified by certi- ficate acc. to EN 10204-2.2 <b>PE protective tube</b> over the spiral protective tube (color: white) of the capillaries 1.0 m 1.6 m 2.0 m 2.5 m	D08 E10 N20 N21 N22 N23
to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) Certification acc. to NACE MR-0103 Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) Oil- and grease-free cleaned version Oil- and grease-free cleaned version Oil- and grease-free cleaned and packed ver- sion, only for oxygen application, only inert fill fluid may be used. Max. temperature: 60 °C (140 °F), max. pressure 50 bar (725 psi), only in connection with halocarbon oil, certified by certi- ficate acc. to EN 10204-2.2 <b>PE protective tube</b> over the spiral protective tube (color: white) of the capillaries 1.0 m 1.6 m 2.0 m 2.5 m 3.0 m	D08 E10 N20 N21 N22 N23 N24
to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) Certification acc. to NACE MR-0103 Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) Oil- and grease-free cleaned version Oil- and grease-free cleaned version, Oil- and grease-free cleaned version, only inert fill fluid may be used. Max. temperature: 60 °C (140 °F), max. pressure 50 bar (725 psi), only in connection with halocarbon oil, certified by certi- ficate acc. to EN 10204-2.2 <b>PE protective tube</b> over the spiral protective tube (color: white) of the capillaries 1.0 m 1.6 m 2.5 m 3.0 m 4.0 m	D08 E10 N20 N21 N22 N23 N24 N25
to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) Certification acc. to NACE MR-0103 Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) Oil- and grease-free cleaned version Oil- and grease-free cleaned version, Oil- and grease-free cleaned version, only for oxygen application, only inert fill fluid may be used. Max. temperature: 60 °C (140 °F), max. pressure 50 bar (725 psi), only in connection with halocarbon oil, certified by certi- ficate acc. to EN 10204-2.2 <b>PE protective tube</b> over the spiral protective tube (color: white) of the capillaries 1.0 m 1.6 m 2.0 m 2.5 m 3.0 m 4.0 m 5.0 m	D08 E10 N20 N21 N22 N23 N24 N25 N26
to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) Certification acc. to NACE MR-0103 Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) Oil- and grease-free cleaned version Oil- and grease-free cleaned version Oil- and grease-free cleaned version, only for oxygen application, only in ert fill fluid may be used. Max. temperature: 60 °C (140 °F), max. pressure 50 bar (725 psi), only in connection with halocarbon oil, certified by certi- ficate acc. to EN 10204-2.2 <b>PE protective tube</b> over the spiral protective tube (color: white) of the capillaries 1.0 m 1.6 m 2.0 m 2.5 m 3.0 m 4.0 m 5.0 m 6.0 m	D08 E10 N20 N21 N22 N23 N24 N25 N26 N27
to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) Certification acc. to NACE MR-0103 Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) Oil- and grease-free cleaned version Oil- and grease-free cleaned version Oil- and grease-free cleaned version, only inert fill fluid may be used. Max. temperature: 60 °C (140 °F), max. pressure 50 bar (725 psi), only in connection with halocarbon oil, certified by certi- ficate acc. to EN 10204-2.2 PE protective tube over the spiral protective tube (color: white) of the capillaries 1.0 m 1.6 m 2.5 m 3.0 m 4.0 m 5.0 m 6.0 m 7.0 m	D08 E10 N20 N21 N22 N23 N24 N25 N26 N27 N28
to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) Certification acc. to NACE MR-0103 Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) Oil- and grease-free cleaned version Oil- and grease-free cleaned version Oil- and grease-free cleaned version, only inert fill fluid may be used. Max. temperature: 60 °C (140 °F), max. pressure 50 bar (725 psi), only in connection with halocarbon oil, certified by certi- ficate acc. to EN 10204-2.2 <b>PE protective tube</b> over the spiral protective tube (color: white) of the capillaries 1.0 m 1.6 m 2.0 m 2.5 m 3.0 m 4.0 m 5.0 m 6.0 m 7.0 m 8.0 m	D08 E10 N20 N21 N22 N23 N24 N25 N26 N27 N28 N29
to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) <b>Certification acc. to NACE MR-0103</b> Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) <b>Oil- and grease-free cleaned version</b> Oil- and grease-free cleaned version, only inert fill fluid may be used. Max. temperature: 60 °C (140 °F), max. pressure 50 bar (725 psi), only in connection with halocarbon oil, certified by certi- ficate acc. to EN 10204-2.2 <b>PE protective tube</b> over the spiral protective tube (color: white) of the capillaries 1.0 m 1.6 m 2.5 m 3.0 m 4.0 m 5.0 m 6.0 m 7.0 m	D08 E10 N20 N21 N22 N23 N24 N25 N26 N27 N28
to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) <b>Certification acc. to NACE MR-0103</b> Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) <b>Oil- and grease-free cleaned version</b> Oil- and grease-free cleaned version, only for oxygen application, only for oxident of C (140 °F), max. pressure 50 bar (725 psi), only in connection with halocarbon oil, certified by certi- ficate acc. to EN 10204-2.2 <b>PE protective tube</b> over the spiral protective tube (color: white) of the capillaries 1.0 m 1.6 m 2.0 m 2.5 m 3.0 m 4.0 m 5.0 m 6.0 m 7.0 m 8.0 m 9.0 m	D08 E10 N20 N21 N22 N23 N24 N25 N26 N27 N28 N29 N30
to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) <b>Certification acc. to NACE MR-0103</b> Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) <b>Oil- and grease-free cleaned version</b> Oil- and grease-free cleaned version, only inert fill fluid may be used. Max. temperature: 60 °C (140 °F), max. pressure 50 bar (725 psi), only in connection with halocarbon oil, certified by certi- ficate acc. to EN 10204-2.2 <b>PE protective tube</b> over the spiral protective tube (color: white) of the capillaries 1.0 m 1.6 m 2.5 m 3.0 m 4.0 m 5.0 m 6.0 m 7.0 m 8.0 m 9.0 m	D08 E10 N20 N21 N22 N23 N24 N25 N26 N27 N28 N29 N30
to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) Certification acc. to NACE MR-0103 Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) Oil- and grease-free cleaned version Oil- and grease-free cleaned version, only for oxygen application, only inert fill fluid may be used. Max. temperature: 60 °C (140 °F), max. pressure 50 bar (725 psi), only in connection with halocarbon oil, certified by certi- ficate acc. to EN 10204-2.2 PE protective tube over the spiral protective tube (color: white) of the capillaries 1.0 m 1.6 m 2.0 m 2.5 m 3.0 m 4.0 m 5.0 m 6.0 m 7.0 m 8.0 m 9.0 m 10.0 m only for 7MF4983	D08 E10 N20 N21 N22 N23 N24 N25 N26 N27 N28 N29 N30 N31
to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) Certification acc. to NACE MR-0103 Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) Oil- and grease-free cleaned version Oil- and grease-free cleaned version, only for oxygen application, only inert fill fluid may be used. Max. temperature: 60 °C (140 °F), max. pressure 50 bar (725 psi), only in connection with halocarbon oil, certified by certi- ficate acc. to EN 10204-2.2 PE protective tube over the spiral protective tube (color: white) of the capillaries 1.0 m 1.6 m 2.0 m 2.5 m 3.0 m 4.0 m 5.0 m 6.0 m 7.0 m 8.0 m 9.0 m 10.0 m only for 7MF4983 11.0 m	D08 E10 N20 N21 N22 N23 N24 N25 N26 N27 N28 N29 N30 N31 N32
to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) Certification acc. to NACE MR-0103 Includes acceptance test certificate 3.1 according to EN 10204 (only for wetted parts made of stain- less steel 1.4404/316L and Hastelloy C276) Oil- and grease-free cleaned version Oil- and grease-free cleaned version, only inert fill fluid may be used. Max. temperature: 60 °C (140 °F), max. pressure 50 bar (725 psi), only in connection with halocarbon oil, certified by certi- ficate acc. to EN 10204-2.2 PE protective tube over the spiral protective tube (color: white) of the capillaries 1.0 m 1.6 m 2.5 m 3.0 m 4.0 m 5.0 m 6.0 m 7.0 m 8.0 m 9.0 m 10.0 m only for 7MF4983 11.0 m 12.0 m	D08 E10 N20 N21 N22 N23 N24 N25 N26 N27 N28 N29 N30 N31 N32 N33

Selection and Ordering data	Order code
Further designs	
Please add "-Z" to Article No. and specify Order code.	
Cooling element max. medium temperature 300 °C, observe the maximum permissible media temperature of the filling liquid.	R22
Vacuum-proof design for use in low-pressure range • for gauge and absolute pressure from the pres- sure series	V01
for transmitters for differential pressure     Note:	V03

Suffix "Y01" required with pressure transmitter

Remote seals for transmitters and pressure gauges

#### Dimensional drawings



Inline seal for flange-mounting, connected to SITRANS P pressure transmitter, dimensions in mm (inch)

Connec	Connection to EN 1092-1								
DN	PN	D	Mb	L	Н				
mm	bar	mm	mm	mm	mm				
25	6 100	63	28.5	60	78.5				
40	6 100	85	43	60	89.5				
50	6 100	95	54.5	60	92.5				
80	6 100	130	82.5	60	112				
100	6 100	150	107	60	122				

#### Connection to ASME B16.5

DN	Class	D	Mb	L	Н
(inch)		mm	mm	mm	mm
		(inch)	(inch)	(inch)	(inch)
1	150 2500	63	28.5	60	78.5
		(2.48)	(1.12)	(2.36)	(3.1)
11/2	150 2500	85	43	60	86
		(3.35)	(1.69)	(2.36)	(3.4)
2	150 2500	95	54.5	60	94.5
		(3.74)	(2.15)	(2.36)	(3.72)
3	150 2500	130	82.5	60	112
		(5.12)	(3.25)	(2.36)	(4.4)
4	150 2500	150	107	60	122
		(5.9)	(4.21)	(2.36)	(4.8)

Remote seals for transmitters and pressure gauges

Quick-release inline seals



Quick-release inline seals, to DIN 11851 with threaded socket



Quick-release inline seals, with clamp connection

Quick-release inline seals for pressure are available for the following SITRANS P pressure transmitter series:

- P300
- DS III with HART
- DS III with PROFIBUS PA
- DS III with FOUNDATION Fieldbus

#### Application

The quick-release inline seal is a special design for flowing media and high-viscosity media. Since it is completely integrated in the process pipe, no turbulences, dead volumes or other obstructions to the flow occur. The measured medium flows unhindered through the inline seal and results in self-cleaning of the measuring chamber. Furthermore, the inline seal can be cleaned by a pig.

#### Design

The quick-release clamp is available in two versions:

- DIN 11851 with threaded socket
- Clamp connection

The inline seal is connected to the pressure transmitter either directly or by way of a capillary.

#### Function

The measured pressure is transferred from the diaphragm, mounted on the inner circumference of the inline seal, to the filling liquid and then passes through the capillary to the measuring chamber of the pressure transmitter. The interior of the inline seal and of the capillary, as well as the measuring chamber of the pressure transmitter, are filled gas-free by the filling liquid.

#### Note:

When operating in the low-pressure range, also during commissioning, it is recommended to use a vacuum-proof pressure transmitter (see Selection and Ordering data).

#### Technical specifications

Inline seals of quick-release desi	an for pressure	
Connection	Nominal	Nominal
Connection	diameter	pressure
To DIN 11851 with threaded	DN 25	PN 40
socket	DN 40	PN 40
	DN 50	PN 25
	DN 65	PN 25
	DN 80	PN 25
	DN 100	PN 25
<ul> <li>Clamp connection</li> </ul>	1½ inch	PN 40
	2 inch	PN 40
	21/2 inch	PN 40
	3 inch	PN 40
Material		
Main body	Stainless steel 1.	4404/316L
<ul> <li>Diaphragm</li> </ul>	Stainless steel 1.	4404/316L
Capillary		
• Length	Max. 10 m (32.8	ft)
<ul> <li>Internal diameter</li> </ul>	2 mm (0.079 inch	ו)
<ul> <li>Minimum bending radius</li> </ul>	150 mm (5.9 inch	ו)
Filling liquid	• Food oil (FDA li	sted)
Permissible ambient temperature	Dependent on th mitter and the filli remote seal More information the technical dat transmitters and "Technical data o the Technical des remote seals	ng liquid of the can be found in a of the pressure in the section f filling liquid" in
Weight	Approx. 4 kg (ap	prox. 8.82 lb)
Certificate and approvals		
Classification according to pres- sure equipment directive (DRGL 97/23/EC)	For gases of fluic uids of fluid group the requirements paragraph 1 (app assigned to cate mity evaluation m TÜV Nord	oendix 1); gory III, confor-
EHEDG	Complies with EH dations	IEDG recommen-

Remote seals for transmitters and pressure gauges

# Quick-release inline seals

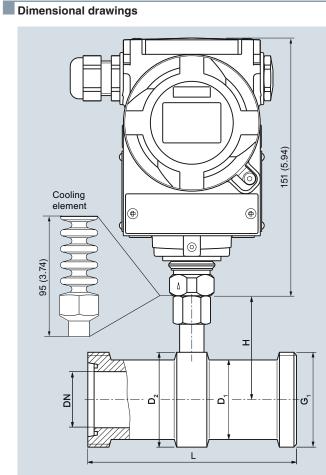
Selection and Ordering data	Article No. Or	d. code	Selection and Ordering data	Order code
Quick-release inline seal 7	7MF4950-		Further designs	
for SITRANS P pressure transmitters for pressure	A 0 - B		Please add "-Z" to Article No. and specify Order code.	
7MF403, and 7MF423, together with Order code "V01" (vacuum-proof design) and 7MF802, <sup>1</sup> ; must be ordered separately			Remote seal nameplate Attached out of stainless steel, contains MLFB and order number of the remote seal	B20
Filling liquid: Food oil (FDA listed) Material: Stainless steel 316L			Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11
Click on the Article No. for the online configu- ration in the PIA Life Cycle Portal.			Inspection certificate to EN 10204, section 3.1	C12
Nom. diam. Nom. press.				017
Connection to DIN 11851 with screw necks     DN 25     PN 40	2 B		2.2 Certificate of FDA approval of fill oil Only in conjunction with "Food-grade oil" fill liquid (FDA listed)"	C17
- DN 40 PN 40 - DN 50 PN 25	2 D 2 E		Functional safety certificate ("SIL 2") to IEC 61508	C20
- DN 65 PN 25 - DN 80 PN 25	2 F 2 G		(Only in conjunction with the Order code "C20" in the case of SITRANS P DSIII transmitter)	
- DN 100 PN 25 • Clamp connection	2 H		Functional safety certificate ("SIL 2/3") to IEC 61508	C23
- 1½ inch PN 16 - 2 inch PN 16	4 L 4 M		(Only in conjunction with the Order code "C23" in the case of SITRANS P DSIII transmitter)	
- 2½ inch PN 16	4 N 4 P		Special lengths for capillaries	
- 3 inch PN 10 Other version	4 P		2.0 m (select 2.5 m capillary pipe length for order and add N1C as identifier)	N1C
Add Order codes and plain text: Process connection:, Nominal diameter:; Nominal pressure:	9 A	H 1 Y	3.0 m (select 4 m capillary pipe length for order and add N1E as identifier)	N1E
Filling liquid			5.0 m (select 6 m capillary pipe length for order and add N1G as identifier)	N1G
<ul> <li>Food oil (FDA listed)</li> <li>Other version</li> <li>Add Order code and plain text:</li> <li>Filling liquid:</li> </ul>	7 9	M 1 Y	<ul><li>7.0 m (select 8 m capillary pipe length for order and add N1J as identifier)</li><li>9.0 m (select 10 m capillary pipe length for</li></ul>	N1J N1L
Connection to transmitter			order and add N1L as identifier) PE protective tube	
<ul> <li>Direct</li> <li>Through capillary, length:<sup>2)</sup></li> </ul>	0		over the spiral protective tube (color: white) of the capillaries	
• 1.0 m (3.28 ft)	2		1.0 m	N20
• 1.6 m (5.25 ft)	3		1.6 m	N21
• 2.5 m (8.20 ft)	4		2.0 m	N22
• 4.0 m (13.1 ft)	5		2.5 m	N23
• 6.0 m (19.7 ft) • 8.0 m (26.25 ft)	o 7		3.0 m	N24
• 10.0 m (32.8 ft)	8		4.0 m	N25
Special lengths for capillaries	0		5.0 m	N26
• 2.0 m	9	N 1 C	6.0 m	N27
• 3.0 m	9	N1E	7.0 m	N28
• 5.0 m	9	N 1 G	8.0 m	N29
• 7.0 m	9	N1J	9.0 m	N30
• 9.0 m	9	N1L	10.0 m	N31
<ol> <li>With 7MF802 and the measuring cells Q, S, T and U also order the vacuum-tight version.</li> <li>Max. capillary length, see section "Technical description"</li> </ol>			Cooling element max. medium temperature 300 °C, observe the maximum permissible media temperature of the filling liquid.	R22
			Vacuum-proof design	V01

Vacuum-proof design

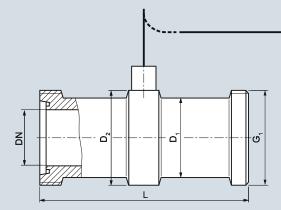
for use in low-pressure range for gauge and absolute pressure from the pressure series

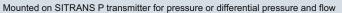
Remote seals for transmitters and pressure gauges

Quick-release inline seals



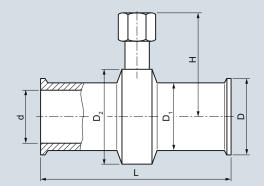
Mounted directly on SITRANS P transmitter for pressure

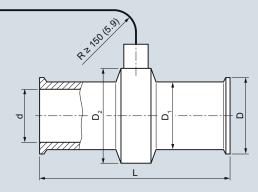




Connection to DIN 11851 with screw necks					
DN	Ø D <sub>1</sub>	$Ø D_2$	н	L	G <sub>1</sub>
25	38	52	68	128	Rd 52x1/6
40	55	65	74.5	160	Rd 65x1/6
50	68	78	81	170	Rd 78x1/6
65	85	95	89.5	182	Rd 95x1/6
80	110	110	97	182	Rd 110x1/4
100	130	130	107	182	Rd 110x1/4

Quick-release inline seal, dimensions in mm (inch)





Clam	ip conr	nectio	n for p	ipes t	o BS 4	825/	3 and c	<b>.D.</b> t	ubes		
d		$O D_1$		$O D_2$		н		L		D	
mm	(inch)	mm	(inch)	mm	(inch)	mm	(inch)	mm	(inch)	mm	(inch)
22.2	(1)	38	(1.5)	50	(1.97)	67	(2.64)	114	(4.49)	50.5	(1.98)
34.9	(1½)	43	(1.69)	65	(2.56)	74.5	(2.93)	146	(5.75)	50.5	(1.98)
47.6	(2)	56	(2.2)	75	(2.95)	79.5	(3.13)	156	(6.14)	64	(2.52)
60.3	(21/2)	68	(2.68)	77	(3.03)	80.5	(3.17)	156	(6.14)	77.5	(3.05)
73.0	(3)	82	(3.23)	91	(3.58)	87.5	(3.44)	156	(6.14)	91	(3.58)

Remote seals for transmitters and pressure gauges

#### Overview

This section shows examples of typical measuring setups for using SITRANS P pressure transmitters with and without remote seals.

Equations for calculating start of scale and full scale are provided for each example.

Questionnaires are included to help you select the right combination of remote seal and pressure transmitter.

#### Installation

Remote seals of sandwich design are fitted between the connection flange of the measuring point and a dummy flange. Remote seals of flange design are fitted directly on the connection flange of the measuring point. The respective pressure rating of the dummy flange or the flanged remote seal must be observed.

The pressure transmitter should be installed below the connection flange (and below the lower connection flange in the case of differential pressure transmitters). This arrangement <u>must</u> be used in the low-pressure range.

When measuring at pressures above atmospheric, the pressure transmitter can also be installed above the connection flange.

The capillaries between the remote seal and the pressure transmitter should be as short as possible to obtain a good transmission response.

#### Offset of measuring range

If there is a difference in height between the two connection flanges when measuring with two remote seals, an additional differential pressure will result from the oil filling of the remote seal capillaries. This results in a measuring range offset which has to be taken into account when you set the pressure transmitter.

An offset in the measuring range also occurs when combining a remote seal with a transmitter if the remote seal is not installed at the same height as the transmitter.

#### Pressure transmitter output

If the level, separation layer or density increase in closed vessels, the differential pressure and hence the output signal of the pressure transmitter also increase.

For an inverted relationship between the differential pressure and the output signal, the start-of-scale and full-scale values of the SITRANS P must be interchanged.

With open vessels, a rising pressure is usually assigned to an increasing level, separation layer or density.

#### Influence of ambient temperature

Temperature differences between the individual capillaries and between the individual remote seals should be avoided.

Temperature variations in the area of the measuring setup cause a change in volume of the filling liquid and hence measuring errors.

#### Notes

- For the separation layer measurement, the separation layer has to be positioned between the two spigots. Also you must make sure that the level in the container is always above the top spigot.
- When measuring density, make sure that the level of the medium remains constant. The level should be above the top spigot.

Possible combinations of pressure transmitters and remote							
seals	5						
-			-		_		

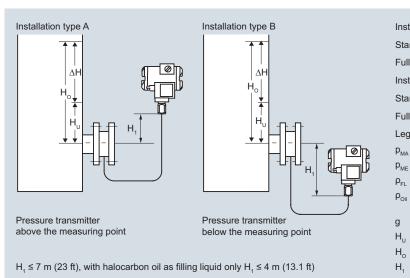
Type of installation	Pressure trans- mitters	Remote seals
A/B	7MF4033 7MF4034 7MF4035 7MF8023 7MF8024 7MF8025	7MF4900 7MF4910 7MF4920
$C_1$ and $C_2$	7MF4233 7MF4234 7MF4235	7MF4900 7MF4910 7MF4920
		(vacuum-proof design in each case)
	7MF4333 7MF4334 7MF4335	7MF4901 7MF4921
D	7MF4433 7MF4434 7MF4435 7MF5403 7MF5413	7MF4903 7MF4923
E	7MF4433 7MF4434 7MF4435 7MF5403 7MF5413	7MF4913
G, H and J	7MF4433 7MF4434 7MF4435 7MF5403 7MF5413	7MF4903 7MF4923

Remote seals for transmitters and pressure gauges

#### Measuring setups with remote seals

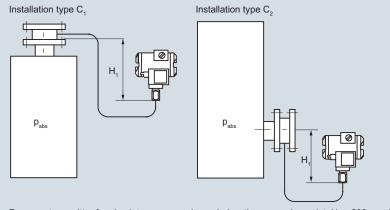
# Dimensional drawings

Types of installation for pressure and level measurements (open vessels)



Installation type A  $Start\text{-of-scale:} p_{_{MA}} = \rho_{_{FL}} \cdot g \cdot H_{_{U}} - \rho_{_{Oil}} \cdot g \cdot H_{_{1}}$  $\textbf{Full-scale:} \quad \textbf{p}_{_{\text{ME}}} = \textbf{\rho}_{_{\text{FL}}} \cdot \textbf{g} \cdot \textbf{H}_{_{\text{O}}} - \textbf{\rho}_{_{\text{OII}}} \cdot \textbf{g} \cdot \textbf{H}_{_{1}}$ Installation type B  $Start\text{-of-scale:} p_{_{MA}} = \rho_{_{FL}} \cdot g \cdot H_{_{U}} + \rho_{_{Oil}} \cdot g \cdot H_{_{1}}$ Full-scale:  $\boldsymbol{p}_{\text{ME}} = \boldsymbol{\rho}_{\text{FL}} \cdot \boldsymbol{g} \cdot \boldsymbol{H}_{\text{O}} + \boldsymbol{\rho}_{\text{Oil}} \cdot \boldsymbol{g} \cdot \boldsymbol{H}_{\text{1}}$ Legend Start-of-scale value to be set Full-scale value to be set Density of medium in vessel Density of filling oil in the capillary to the remote seal Local acceleration due to gravity Start-of-scale value Full-scale value Distance between vessel flange and pressure trans.

Types of installation for absolute level measurements (closed vessels)

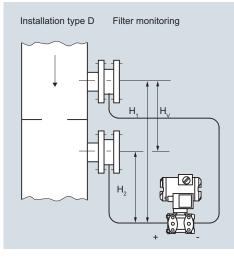


Installation type C<sub>1</sub> and C<sub>2</sub>

Start-of-scale	$p_{MA} = p_{START} + \rho_{Oil} \cdot g \cdot H_1$			
ull-scale:	$\boldsymbol{p}_{\text{ME}} = \boldsymbol{p}_{\text{END}} + \boldsymbol{\rho}_{\text{Oil}} \cdot \boldsymbol{g} \cdot \boldsymbol{H}_{1}$			
egend				
MA	Start-of-scale value to be set			
ME	Full-scale value to be set			
START	Start-of-scale value			
, END	Full-scale value			
Oil	Density of filling oil in the capillary to the remote seal			
]	Local acceleration due to gravity			
H <sub>1</sub>	Distance between vessel flange and pressure trans.			

Pressure transmitter for absolute pressure always below the measuring point:  $H_1 \ge 200 \text{ mm} (7.9 \text{ inch})$ 

Type of installation for differential pressure and flow measurements



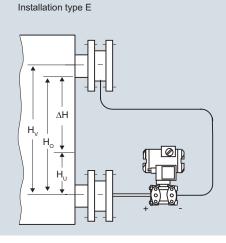
#### Installation type D Start-of-scale: $p_{MA} = p_{START} - \rho_{OII} \cdot g \cdot H_V$ Full-scale: $p_{VF} = p_{FVF} - \rho_{OI} \cdot g \cdot H_V$

P <sub>ME</sub> P <sub>END</sub> P <sub>Oil</sub> 9 N <sub>V</sub>
Start-of-scale value to be set
Full-scale value to be set
Start-of-scale value
Full-scale value
Density of filling oil in the capillary to the remote seal
Local acceleration due to gravity
Distance between the measuring points (spigots)

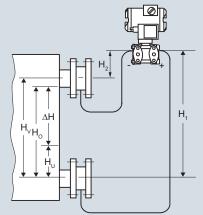
Remote seals for transmitters and pressure gauges

#### Measuring setups with remote seals

#### Types of installation for level measurements (closed vessels)



#### Installation type G

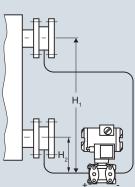


Pressure transmitter for differential pressure above the upper measuring point, no vacuum

 $H_1 \le 7 \text{ m}$  (23 ft), with halocarbon oil as filling liquid only  $H_1 \le 4 \text{ m}$  (13.1 ft)

Installation type G, H and J			
Start-of-scale	$: p_{MA} = \rho_{FL} \cdot g \cdot H_{U} - \rho_{Oil} \cdot g \cdot H_{V}$		
Full-scale:	$\boldsymbol{p}_{\text{ME}} = \boldsymbol{\rho}_{\text{FL}} \cdot \boldsymbol{g} \cdot \boldsymbol{H}_{\text{O}} \text{-} \boldsymbol{\rho}_{\text{Oil}} \cdot \boldsymbol{g} \cdot \boldsymbol{H}_{\text{V}}$		



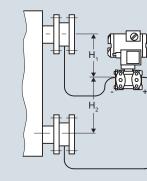


Start-of-scale value to be set Full-scale value to be set

Density of medium in vessel

the remote seal

Density of filling oil in the capillary to



Installation type J

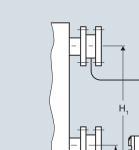
between the measuring points, no vacuum

 $H_2 \le 7 \text{ m}$  (23 ft), with halocarbon oil as filling liquid only  $H_2 \leq 4 \text{ m} (13.1 \text{ ft})$ 

g H.,	Local acceleration due to gravity Start-of-scale value
H	Full-scale value
H <sub>v</sub>	Distance between the measuring points (spigots)

#### Installation type E

Start-of-scale	$: p_{MA} = \rho_{FL} \cdot g \cdot H_{U} - \rho_{OII} \cdot g \cdot H_{V}$
Full-scale:	$p_{_{ME}} = \rho_{_{FL}} \cdot g \cdot H_{_{O}} - \rho_{_{OII}} \cdot g \cdot H_{_{V}}$
Legend	
P <sub>MA</sub>	Start-of-scale value to be set
P <sub>ME</sub>	Full-scale value to be set
$\rho_{FL}$	Density of medium in vessel
$\rho_{\text{Oil}}$	Density of filling oil in the capillary to the remote seal
g	Local acceleration due to gravity
Η <sub>υ</sub>	Start-of-scale value
H <sub>o</sub>	Full-scale value
$H_{v}$	Distance between the measuring points (spigots)



Legend р<sub>ма</sub>

 $\mathsf{p}_{\mathsf{ME}}$ 

 $\rho_{\text{FL}}$ 

 $\rho_{\text{Oil}}$ 

below the lower measuring point

Installation type for vacuum applications

Remote seals for transmitters and pressure gauges

### Overview

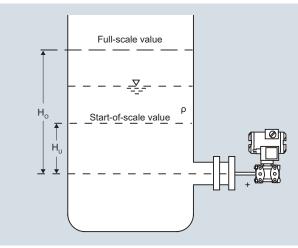
#### Notes

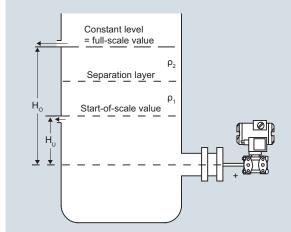
• For the separation layer measurement, the separation layer has to be positioned between the two spigots.

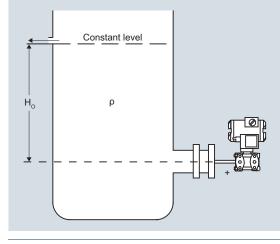
### Dimensional drawings

#### Pressure transmitters for differential pressure, for flanging

Measuring setups for open containers







Also you must make sure that the level in the container is always above the top spigot.

• When measuring density, make sure that the level of the medium remains constant. The level should be above the top spigot

## Level measurement

Start-of-scale: $p_{MA} = \rho \cdot g \cdot H_{U}$			
Full-scale:	$p_{ME} = \rho \cdot g \cdot H_{O}$		
Legend			
P <sub>MA</sub>	Start-of-scale value to be set		
P <sub>ME</sub>	Full-scale value to be set		
ρ	Density of medium in vessel		
g	Local acceleration due to gravity		
Η <sub>υ</sub>	Start-of-scale value		
H <sub>o</sub>	Full-scale value		

Separation	layer	measurement	

Start-of-scale	$p_{MA} = g \cdot (H_{U} \cdot \rho_{1} + (H_{O} - H_{U}) \cdot \rho_{2})$
Full-scale:	$p_{ME} = \rho_1 \cdot g \cdot H_0$
Legend	
P <sub>MA</sub>	Start-of-scale value to be set
P <sub>ME</sub>	Full-scale value to be set
ρ	Density of heavier liquid
$\rho_2$	Density of lighter liquid
g	Local acceleration due to gravity
Η <sub>υ</sub>	Start-of-scale value
H <sub>o</sub>	Full-scale value

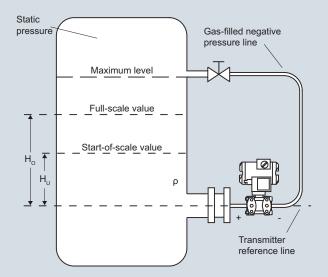
#### Density measurement

Start-of-scale:	$\boldsymbol{p}_{MA} = \boldsymbol{\rho}_{MIN} \cdot \boldsymbol{g} \cdot \boldsymbol{H}_{O}$
Full-scale:	$\boldsymbol{p}_{\text{ME}} = \boldsymbol{\rho}_{\text{MAX}} \cdot \boldsymbol{g} \cdot \boldsymbol{H}_{\text{O}}$
Legende	
р <sub>ма</sub>	Start-of-scale value to be set
P <sub>ME</sub>	Full-scale value to be set
ρ <sub>MIN</sub>	Minimum density of medium in vessel
$\rho_{MAX}$	Maximum density of medium in vessel
g	Local acceleration due to gravity
H <sub>o</sub>	Full-scale value in m

Remote seals for transmitters and pressure gauges

### Measuring setups without remote seals

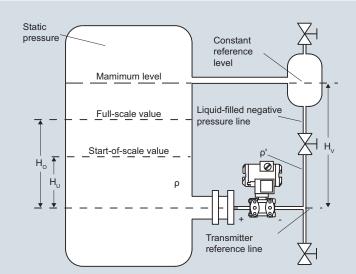
### Measuring setups for closed containers



### Level measurement, Version 1

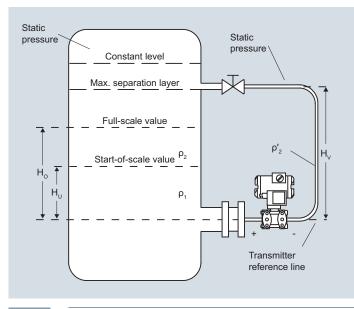
Start-of-scale:	$\Delta p_{MA} = \rho \cdot g \cdot H_{U}$
Full-scale:	$\Delta pME = \rho \cdot g \cdot H_o$
Legend	
$\Delta p_{MA}$	Start-of-scale value to be set
$\Delta p_{ME}$	Full-scale value to be set
ρ	Density of medium in vessel
g	Local acceleration due to gravity
Η <sub>υ</sub>	Start-of-scale value

H<sub>o</sub> Full-scale value



#### Level measurement, Version 2

Start-of-scale: $\Delta p_{MA} = g \cdot (H_{U} \cdot \rho - H_{V} \cdot \rho')$			
Full-scale:	$\Delta \mathbf{p}_{ME} = \mathbf{g} \cdot (\mathbf{H}_{O} \cdot \mathbf{\rho} - \mathbf{H}_{V} \cdot \mathbf{\rho}')$		
Legend			
$\Delta p_{MA}$	Start-of-scale value to be set		
$\Delta p_{ME}$	Full-scale value to be set		
ρ	Density of medium in vessel		
ρ'	Density of liquid in the negative pressure line (corresponding to the temperature existing there)		
g	Local acceleration due to gravity		
Η <sub>υ</sub>	Start-of-scale value		
H <sub>o</sub>	Full-scale value		
H <sub>v</sub>	Distance between the measuring points (spigots)		



Separation layer measurement

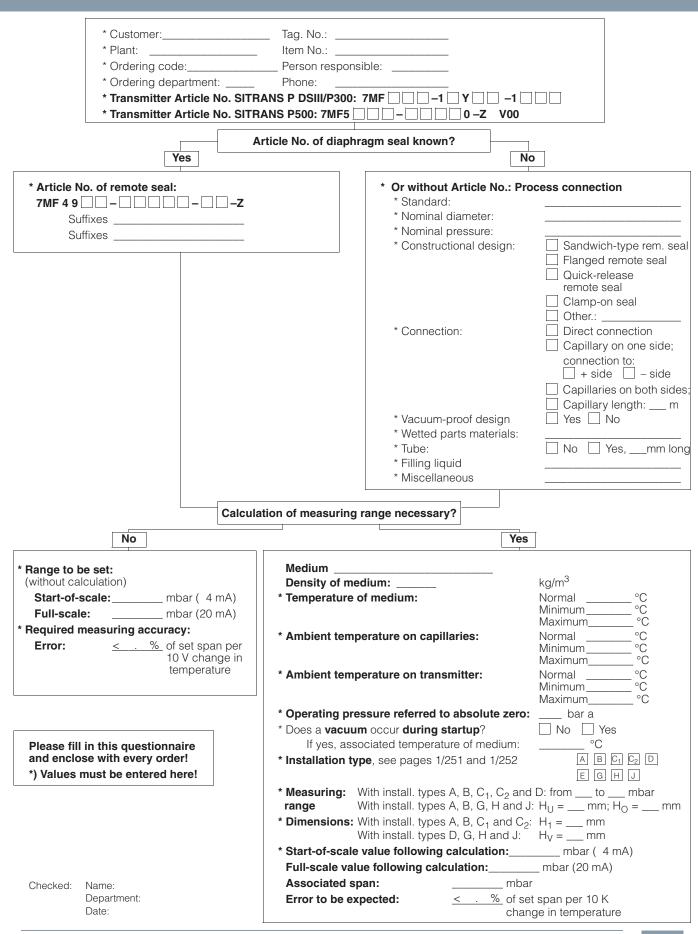
Start-of-scale:  $\Delta p_{MA} = g \cdot (H_{U} \cdot \rho_1 + (H_{O} - H_{U}) \cdot \rho_2 - H_{V} \cdot \rho'_2)$ 

Full-scale:	$\Delta p_{ME} = g \cdot (H_{o} \cdot \rho_{1} - H_{v} \cdot \rho_{2}')$
Legend	
$\Delta p_{MA}$	Start-of-scale value to be set
$\Delta p_{ME}$	Full-scale value to be set
ρ <sub>1</sub>	Density of heavier liquid with separation layer in vessel
ρ2	Density of lighter liquid with separation layer
ρ' <sub>2</sub>	Density of liquid in the negative pressure line
	(corresponding to the temperature existing there)
g	Local acceleration due to gravity
Η <sub>υ</sub>	Start-of-scale value
H <sub>o</sub>	Full-scale value
H <sub>v</sub>	Distance between the measuring points (spigots)



### Questionnaire

### Checking of transmitter/remote seal combinations



# SIEMENS

## Questionnaire for hydrostatic level measurements

Order date:		
Processing date:		~~~·/
Ordering code (customer):	- 1 ·	
Ordering code (supplier):	, n.,	
Customer reference:		
Measuring point:		
Position:	-	
Dimensions:	-	
Pressure: 🗌 bar		\$£ ``````````````````````
Temperature: K C °C		X X
Measuring range:  Cm		
Article No. of transmitter SITRANS P DS III/P300 <sup>1)</sup> :		
<u>7,M,F,4, , , , – , , , , , – , , , , – Z</u>		and a second sec
<b>Y01</b> Article No. of transmitter SITRANS P500 <sup>1)</sup> :		k J
7,M,F,5, , , , _ , , , , , , , , , , , , , ,		

Please supply the following characteristic data so that we can calculate the measuring range, start-of-scale value, full-scale value and calibration data:

Please mark type of boiler with a cross:			2)	
Medium	Open or not under p	pressure	9 <sup>2</sup> /	
Licensed boiler pressure (absolute)		_		bar
Operating pressure (absolute)	Lowest	_		bar
	Normal <sup>3)</sup>	_		bar
	Highest	_		bar
Temperature of reference column (cold)		_		K
Distance between measuring points (dir	mension according to	sketch)	H <sub>V</sub> =	m
Measuring range <sup>4)</sup> = start-of-scale value	e to full-scale value			
	Start-of-scale value	н	l <sub>U</sub> =	m
	Full-scale value	Н	l <sub>O</sub> =	m
Position of equalizing vessel above bott point if different from $\mathrm{H}_\mathrm{V}$	om measuring	-		m
Please mark pressure correction of leve		No [ Yes <sup>4)</sup> [	]	

<sup>1)</sup> Reference line filled with condensation! Falling differential pressure with increasing level.

<sup>2)</sup> Reference line without gas or filled with gas (air). Rising differential pressure with increasing level.

<sup>3)</sup> If not specified otherwise, this value is assumed as the calculation pressure of the level meter. The input signal (differential pressure) depends on the density (pressure and temperature). The influence is practically negligible for a lowest liquid level of 20 to 30% of the distance between the measuring points.

<sup>4)</sup> If a pressure correction of the level is required, the **measuring range must be the same as the distance between the measuring points**, and the transmitter is designed for the calculation pressure of 1 bar (absolute).Pressure correction means: the static pressure and the temperature are measured separately and calculated by a correction computer or measured-value computer.

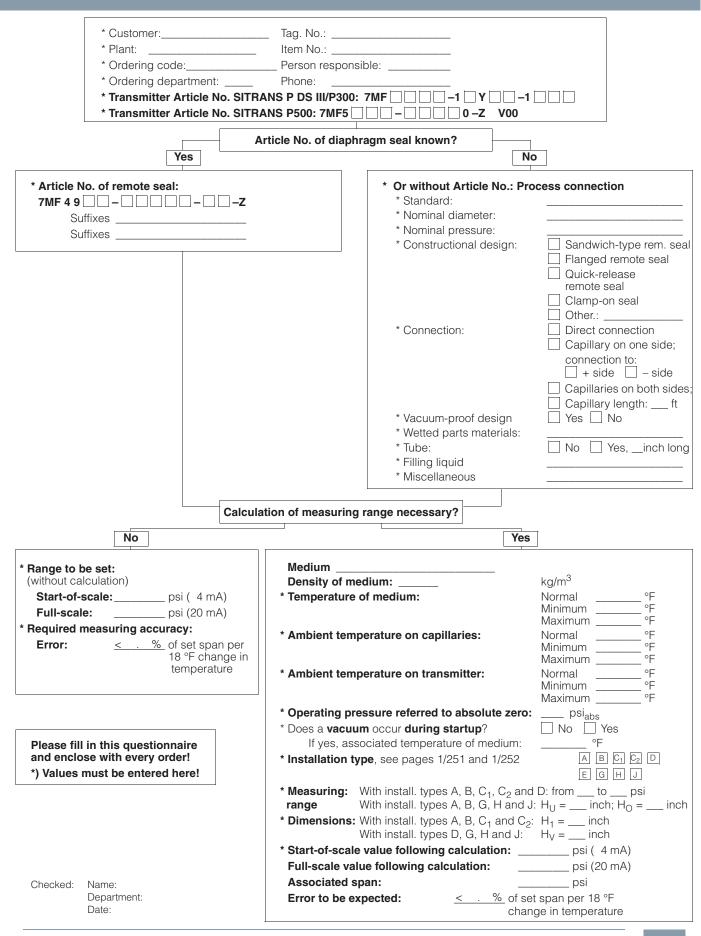
The different pressures and temperatures (densities) in the vessel and in the reference column result in an offset in the start-of-scale and full-scale values.

The calibration data are determined in addition.

It is also checked whether – as a result of the range offset – the ordered transmitter is suitable for this measurement.

SIEMENS

## Questionnaire (suitable for US market) Checking of transmitter/remote seal combinations



#### Pressure Measurement Fittings

Technical description

#### Overview

All shut-off fittings can be secured onto walls, racks (72 mm grid) and vertical and horizontal pipes.

This offers the advantage when assembling a plant that the shutoff fittings can be secured first and the lines for the medium and differential pressure 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.).

The measuring instruments can be screwed onto the shut-off fittings right at the end when all piping has been completed.

If an instrument has to be removed for maintenance, the fittings and pipes remain as they are. It is only necessary to close the valves – the instrument can then be removed, and refitted following maintenance.

# Classification according to pressure equipment directive (PED 97/23/EC):

For gases of fluid group 1 and liquids of fluid group 1; compliance with requirements of article 3, paragraph 3 (sound engineering practice).

#### New standard IEC 61518

The flange connection between transmitter and valve manifold was modified in the new standard IEC 61518. The only connection thread approved for use in the process flanges of the pressure transmitter is  $^{7}/_{16}$ -20 UNF.

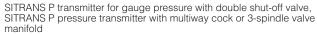
The valve manifolds for M12 screws, including the accessory sets, have therefore been deleted.

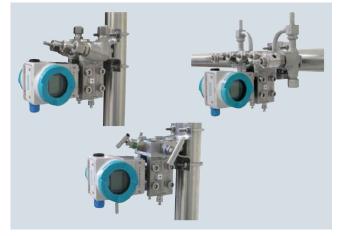
#### Material acceptance test certificate to EN 10204-3.1

If a material acceptance test certificate to EN 10204-3.1 is required when ordering valve manifolds or shut-off fittings, please note that a single certificate is sufficient for each ordered item type. This means that you will only be charged for one certificate in the cost calculations.

### Pressure transmitters with shut-off fittings - mounting examples







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)



SITRANS P pressure transmitter mounted on valve combination "Monoflange" for direct connection to flanges (available on request)

Fittings

Selection aid

Transmitters	Shut-off valves for general applications	Page		Shut-off valves for special applications	Page	
Relative and absolute pres- sure transmitters with process connection G½" male thread	Shut-off valves/double shut- off valves to DIN 16270, DIN 16271 and DIN 16272	1/261		Double shut-off valve DN 5 for crossover ½-NPT-F to G½ nipple connection 7MF9011-4EA	1/264	I
e.g. • SITRANS P200 7MF1565			1			2 Ca
• SITRANS P210 7MF1566			•	2-spindle valve manifold	1/282	19 <sup>7</sup> (1
• SITRANS P220 7MF1567				DN 5 for installation in pro- tective boxes	17202	
• SITRANS P300 7MF8020				7MF9412-1B		1 Co
• SITRANS P DS III series 7MF4030 and 7MF4230						
Relative and absolute pres- sure transmitter with ½"-14 NPT female thread	Double shut-off valve DN 5 7MF9011-4EA, -4FA, -4GA and -4KA	1/264		Double shut-off valve DN 5 for process connection	1/264	
e.g. • SITRANS P200 7MF1565			AND AN	½-NPT 7MF9011-4HA		
• SITRANS P210 7MF1566			7MF9011-4FA			
• SITRANS P220 7MF1567			<b>P</b>			
• SITRANS P300 7MF8021			land Carl			
<ul> <li>SITRANS P DS III series</li> <li>7MF4031 and</li> <li>7MF4231</li> </ul>						
			7MF9011-4KA			
Absolute pressure transmitter with process connection to IEC 61518	2-spindle valve manifold DN 5 7MF9411-5A.	1/267		2-spindle valve manifold DN 5 for installation in pro- tective boxes	1/282	0.0
e.g. • SITRANS P DS III series 7MF433			the second	7MF9412-1C.		000

### **Pressure Measurement** Fittings

# Selection aid

Transmitters	Shut-off valves for general applications	Page		Shut-off valves for special applications	Page	
Differential pressure transmit- ter with process connection to IEC 61518 e.g. SITRANS P DS III series 7MF443 and 7MF453		1/267	101110	3-way valve manifolds, DN 5, forged version 7MF9410-1	1/272	324
SITRANS P500 7MF54			C	5-way valve manifolds, DN 5, forged version 7MF9410-3	1/272	
	PN 100 multiway cocks 7MF9004	1/270		3-way valve manifolds, DN 8, forged version 7MF9416-1 and 7MF9416-2	1/275	
			HAN OF	Valve manifold combina- tion DN 5/DN 8 for vapor measurement 7MF9416-6	1/278	p.d.
				Valve manifold combina- tion DN 8 for vapor mea- surement 7MF9416-4	1/280	
				3- and 5-spindle valve manifolds for DN 5 for installation in protective boxes 7MF9412-1D. and 7MF9412-1E.	1/282	
						Harris H
				3- and 5-spindle valve manifolds for vertical dif- ferential pressure lines 7MF9413-1	1/286	
				Low-pressure multiway cock 7MF9004-4	1/289	

Fittings - Shut-off valves for gauge and absolute pressure transmitters

## Shut-off valves to DIN 16270, DIN 16271 and DIN 16272



Transmitter for pressure with double shut-off valve 7MF9401-...

The shut-off valves for pressure gauges are used to shut off the line of the measured medium when dealing with aggressive and non-aggressive gases, vapors and liquids.

#### Design

A water trap must be connected upstream of the shut-off valve in the case of temperatures of the medium above 120 °C. The shut-off valves form B have a shaft with which they can be secured on an instrument bracket. An adapter is therefore not required to secure these valves. The vent/test connection can be shut off separately with the double shut-off valves DN 5. This permits checking of the zero on the pressure gauge. In addition, the characteristic of the pressure gauge can be checked using an external pressure source.

Selection and Order	Article No.	
Shut-off valves, form		
without test collar, cor without certificate		
Material Valve housing	Maximum permissible working pressure	
CW614N (CuZn39Pb3 (mat. No. 2.0402)	3)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. 1.4571/316T	7MF9401-7AC	
Shut-off valves, form	n B, DIN 16271	-
with test collar, conne without certificate	ction shank,	
Material Valve housing	Maximum permissible working pressure	
CW614N (CuZn39Pb3 (mat. No. 2.0402)	3)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. 1.4571/316T		7MF9401-7BC

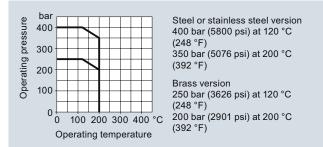
Selection and Orderin	Article No.	
Shut-off valves, form		
without test collar, pipe 12 S DIN EN ISO 8434	e union with ferrule I-1, without certificate	
Material Valve housing	Maximum permissible working pressure	
P250GH (mat. No. 1.0460)	400 bar (5800 psi)	7MF9401-8AB
		7MF9401-8AC
Shut-off valves, form	B, DIN 16271	
Material Valve housing	Maximum permissible working pressure	
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
Valve housingworking pressureP250GH400 bar (5800 psi)(mat. No. 1.0460)X 6 CrNiMoTi 17 12 2400 bar (5800 psi)(mat. No. 1.4571/316Ti)Shut-off valves, form B, DIN 16271with test collar, pipe union with ferrule12 S DIN EN ISO 8434-1, without certificateMaterialMaximum permissibleValve housingworking pressureP250GH400 bar (5800 psi)(mat. No. 1.0460)X 6 CrNiMoTi 17 12 2400 bar (5800 psi)(mat. No. 1.4571/316Ti)Double shut-off valves, form B, DIN 16272with test collar, connection shank, without certificateMaterialMaximum permissible working pressureCW614N (CuZn39Pb3)250 bar (3626 psi) (mat. No. 1.0460)X 6 CrNiMoTi 17 12 2400 bar (5800 psi)(mat. No. 1.0460)X 6 CrNiMoTi 17 12 2400 bar (5800 psi)(mat. No. 1.0460)X 6 CrNiMoTi 17 12 2400 bar (5800 psi)(mat. No. 1.4571/316Ti)Double shut-off valves, form B, DIN 16272with test collar, pipe union with ferrule 12 S DIN EN ISO 8434-1, without certificateMaterialMaximum permissible working pressureValve housingMaximum permissible working pressureP250GH400 bar (5800 psi)(mat. No. 1.4571/316Ti)Double shut-off valves, form B, DIN 16272with test collar, pipe union with ferrule 12 S DIN EN ISO 8434-1, without certificateMaterialMaximum permissible working pressureValve housingMaximum permissible working pressur		
	)250 bar (3626 psi)	7MF9401-7DA
	400 bar (5800 psi)	7MF9401-7DB
		7MF9401-7DC
Double shut-off valve	es, form B, DIN 16272	
with test collar, pipe ur 12 S DIN EN ISO 8434	nion with ferrule I-1, without certificate	
	400 bar (5800 psi)	7MF9401-8DB
		7MF9401-8DC
Accessories		
Factory test certificate	7MF9000-8AB	
Material acceptance te EN 10204-3.1	7MF9000-8AD	
Instrument bracket		

Instrument bracket, see page 1/266.

Fitttings - Shut-off valves for gauge and absolute pressure transmitters

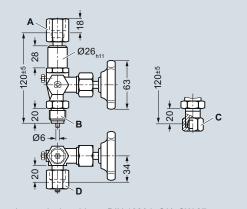
### Shut-off valves to DIN 16270, DIN 16271 and DIN 16272

#### Characteristic curves



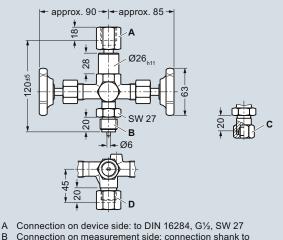
Permissible operating pressure as a function of the permissible operating temperature

#### Dimensional drawings



- A Connection on device side: to DIN 16284, G½, SW 27
   B Connection on measurement side: connection shank to DIN EN 837-1, G½
- 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



- B Connection on measurement side: connection shank to DIN EN 837-1, G<sup>1</sup>/<sub>2</sub>
- 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

Fitttings - Shut-off valves for gauge and absolute pressure transmitters

1

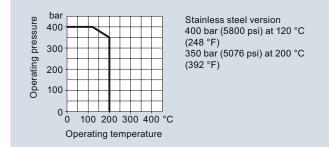


P300 pressure transmitter with shut-off valve and angle adapter

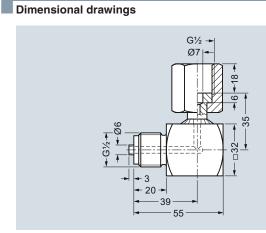
The angle adapter enables pressure transmitters with top displays to be read from the front.

Selection and Ordering data	Article No.
Angle adapters	7MF9401-7WA
Material: X 12 CrNiMoTi 17 12 2 (mat. No. 1.45714/316Ti), max. permissible operating pressure 400 bar (5800 psi)	
Accessories	
Factory test certificate EN 10204–2.2	7MF9000-8AB
Material acceptance test certificate EN 10204-3.1	7MF9000-8AD

### Characteristic curves



Permissible operating overpressure as a function of the permissible operating temperature



Angle adapter, dimensions in mm

Fitttings - Shut-off valves for gauge and absolute pressure transmitters

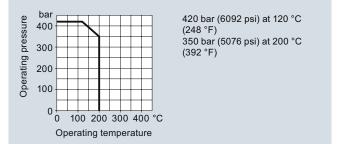
### Double shut-off valves

### Overview

The double shut-off valves DN 5 are suitable for pressure gauges and pressure transmitters and available in 5 versions:

- Sleeve-nipple
- Sleeve-sleeve
- Sleeve-collar
- Collar-collar
- Collar-sleeve

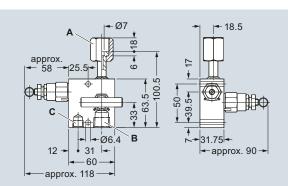
#### Characteristic curves



Permissible operating pressure as a function of the permissible operating temperature

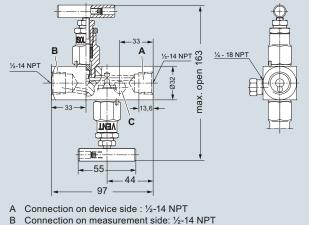
Selection and Ordering data	Article No.
Double shut-off valves DN 5	
Material: X 6 CrNiMoTi 17 13 2 (mat. No. 1.4404/316L), max. permissible working pressure 420 bar (6092 psi);	
<ul> <li>Sleeve-nipple connection</li> </ul>	7MF9011-4EA
Sleeve-sleeve	7MF9011-4HA
Sleeve-collar	7MF9011-4FA
Collar-collar	7MF9011-4GA
Collar-sleeve	7MF9011-4KA
Accessories	
Factory test certificate EN 10204-2.2	7MF9000-8AB
Material acceptance test certificate EN 10204-3.1	7MF9000-8AD
Further designs	Order code
Add "-Z" to Article No. and specify Order code.	
Oil- and grease-free cleaning for oxygen applications, max. pressure PN 100 (1450 psi) and max. temperature 60 °C (140 °F)	S12
NACE MR-0175-certified	D07
incl. acceptance test certificate 3.1 to EN 10204	

#### Dimensional drawings



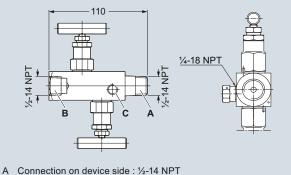
- A Connection on device side: nipple to DIN 16284, G<sup>1</sup>/<sub>2</sub>, SW 27
- B Connection on measurement side: ½-14 NPT
- C Vent and test connection: 1⁄4-18 NPT

Double shut-off valve DN 5 (sleeve-nipple) 7MF9011-4EA, dimensions in mm



C Vent and test connection: <sup>1</sup>/<sub>4</sub>-18 NPT

Double shut-off valve DN 5 (sleeve-sleeve) 7MF9011-4HA, dimensions in mm

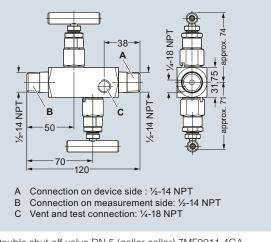


- B Connection on measurement side: 1/2-14 NPT
- C Vent and test connection: 1/4-18 NPT

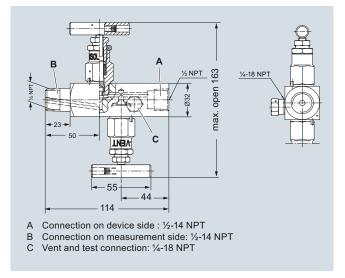
Double shut-off valve DN 5 (sleeve-collar) 7MF9011-4FA, dimensions in mm

Fitttings - Shut-off valves for gauge and absolute pressure transmitters

Double shut-off valves



Double shut-off valve DN 5 (collar-collar) 7MF9011-4GA, dimensions in mm



Double shut-off valve DN 5 (collar-sleeve) 7MF9011-4KA, dimensions in mm

Selection and Ordering data

Fitttings - Shut-off valves for gauge and absolute pressure transmitters

Article No.

### Accessories for shut-off valves/double shut-off valves

### Overview

The mounting set is suitable for the double shut-off valves 7MF9011-4.Ă and for wall, rack and pipe mounting.

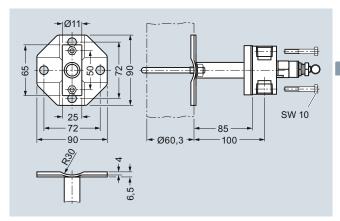
### Overview

The instrument brackets are needed to mount the following units:

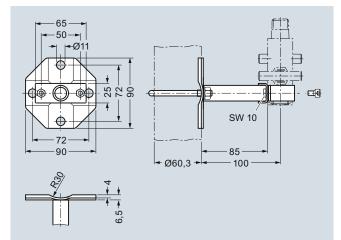
- Pressure gauges with threaded connection at the bottom
- Shut-off valves to DIN 16270, DIN 16271 and DIN 16272 • (7MF9401-7.. and 7MF9401-8..)

Mounting set for shut-off valves	
• 7MF9011-4DA und -4EA	7MF9011-8AB
made of stainless steel, scope of delivery: 1x mounting bracket, 2x hexagon screws M6x40, 1x mounting clip, 2x washers 8.4 to DIN 125; 2x hexagon nuts 8.4 to DIN EN 24032	
• 7MF9011-4FA und -4GA	7MF9011-8AC
made of stainless steel, scope of delivery: 1x mounting bracket, 2x hexagon screws M6x10, 1x mounting clip, 2x washers 8.4 to DIN 125; 2x hexagon nuts 8.4 to DIN EN 24032	

#### Dimensional drawings



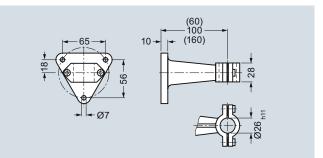
Mounting bracket (7MF9011-8AB) for shut-off valves 7MF9011-4DA and 7MF9011-4EA for wall, rack or pipe mounting, dimensions in mm



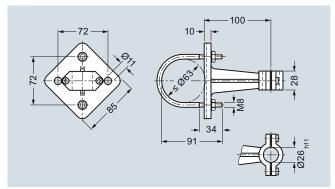
Mounting bracket (7MF9011-8AC) for shut-off valves 7MF9011-4FA and 7MF9011-4GA for wall, rack or pipe mounting, dimensions in mm

Selection and Ordering data	Article No.
Instrument bracket, form H, DIN 16281	
<ul> <li>(e.g. for gauge)</li> <li>made of aluminium alloy, painted black,</li> <li>for wall mounting, screw-type bracket cover</li> <li>Projection length 60 mm</li> <li>Projection length 100 mm</li> </ul>	M56340-A0046 M56340-A0047
Instrument bracket, form A, DIN 16281	
(e.g. for transmitter) made of annealed cast iron, galvanized and primed <b>for mounting on a wall</b> or rack or or on a sectional rail (horizontal/vertical); Screw-type bracket cover	M56340-A0053
Instrument bracket, form A, DIN 16281	
(e.g. for transmitter) made of annealed cast iron, galvanized and primed with pipe clamp for <b>wall and pipe</b> <b>mounting</b> (horizotal/vertical) Screw-type bracket cover	M56340-A0079

### Dimensional drawings



Instrument bracket form H, for wall mounting, M56340-A0046/-A0047, dimensions in mm



Instrument bracket form A, wall or pipe mounting, M56340-A0053/-A0079, dimensions in mm

1

2-, 3- and 5-spindle valve manifolds DN 5

Fitttings - Shut-off valves for differential pressure transmitters

Selection and Ordering data Article No 7 7 MF 9 4 1 1 - ■ A Valve manifolds DN 5 Click on the Article No. for the online configuration in the PIA Life Cycle Portal. for liquids and gases, for flanging to pressure transmitters for absolute and differential pressure, max. working pressure 420 bar (order accessory set with Order code), without certificate · 2-spindle valve manifold 5 A 5 B • 3-spindle valve manifold 5 C • 5-spindle valve manifold Accessories Factory test certificate EN 10204-2.2 7MF9000-8AB Material acceptance test certificate 7MF9000-8AD EN 10204-3.1 Selection and Ordering data Order code Article No The 2-spindle, 3-spindle and 5-spindle valve manifolds Further designs<sup>1</sup> Please add "-Z" to Article No. and specify Order code. Accessory set to EN (connection between valve manifold and pressure transmitter) for valve manifold 7MF9411-5A. 2x screws  $^{7}\!/_{16}$  20 UNF x 1% inch to ASME B18.2.1; chromized K35 7MF9411-7DB steel • Max. working pressure 420 bar (6092 psi) 1x gasket made of PTFE, max. permissible 420 bar (6092 psi), · Each available in version for oxygen 80 °C (176 °F) 2x screws <sup>7</sup>/<sub>16</sub>-20 UNF x 1<sup>3</sup>/<sub>4</sub> inch to ASME B18.2.1; K45 7MF9411-7DC Application stainless steel 1x gasket made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F) Each is available in a version for oxygen on request. for valve manifold 7MF9411-5B. and <u>-5C.</u>  $4x\ screws\ ^7/_{16}\ ^20\ UNF\ x$  1% inch to ASME B18.2.1; chromized K36 7MF9411-5DB steel 2x flat gaskets made of PTFE max. permissible 420 bar (6092 psi), 80 °C (176 °F)  $4x \text{ screws } ^{7}/_{16}$ -20 UNF x 1<sup>3</sup>/<sub>4</sub> inch to ASME B18.2.1; 7MF9411-5DC K46 The valves have an external spindle thread. stainless steel Materials used 2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F) Accessory set to DIN<sup>2)</sup> (connection between valve manifold and pressure transmitter) for valve manifold 7MF9411-5A. 2x screws M10x45 to DIN EN 24014; K15 7MF9411-7BB chromized steel 2x washers Ø 10.5 mm to DIN 125; Function 1x gasket made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)

- Checking the pressure transmitter zero

Additional functions of the 2-spindle and 5-spindle valve manifolds through the vent and test connection:

- Venting on the transmitter side
- · Checking the pressure transmitter characteristic

7MF9411-7BC

1/267

K25



7MF9411-5.. are for pressure transmitters for absolute pressure or differential pressure.

The valve manifolds are used to shut off the differential pressure lines and to check the pressure transmitter zero.

The 2-spindle and the 5-spindle valve manifold enable in addition venting on the transmitter side and checking of the pressure transmitter characteristic.

#### Benefits

The spindle valve manifolds DN 5 are designed for liquids and gases.

#### Design

All versions of the valve manifolds have a process connection 1/2-14 NPT. The connection for the pressure transmitter is always designed as a flange connection to IEC 61518, form B . The 2-spindle and the 5-spindle valve manifold have in addition a vent and test connection 1/4-18 NPT.

Component	Material	Mat. No.
Housing	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	-

Functions of all valve manifolds:

- · Shutting off the differential pressure lines

2x screws M10x45 to DIN EN 24014;

2x washers Ø 10.5 mm to DIN 125,

max. permissible 420 bar (6092 psi),

stainless steel

stainless steel:

80 °C (176 °F)

1x gasket made of PTFE,

Fitttings - Shut-off valves for differential pressure transmitters

### 2-, 3- and 5-spindle valve manifolds DN 5

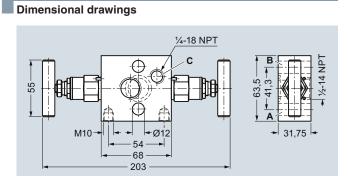
2-, 3- and 5-spindle valve man	Itolas DN 5		
Selection and Ordering data	Order code	Article No.	Accessories
Further designs <sup>1)</sup>			
Please add " <b>-Z</b> " to Article No. and specify Order code.			Accessory set for 2-, 3- and 5-spindle valve manifolds 2-spindle valve manifold DN 5
for valve manifolds 7MF9411-5B. and -5C.			<ul> <li>K35: 2 screws <sup>7</sup>/<sub>16</sub>-20 UNF x 1<sup>3</sup>/<sub>4</sub> inch to ASME B18.2.1, 1 flat gasket</li> </ul>
4x screws M10x45 to DIN EN 24014; chromized steel	K16	7MF9411-6BB	<ul> <li>K15: 2 screws M10x45 to DIN EN 24014, 2 washers, 1 flat gasket</li> </ul>
4x washers Ø 10.5 mm to DIN 125; 2x flat gaskets made of PTFE,			3-spindle and 5-way valve manifold DN 5
max. permissible 420 bar (6092 psi), 80 °C (176 °F) Flange connection with M10 screws			<ul> <li>K36: 4 screws <sup>7</sup>/<sub>16</sub>-20 UNF x 1<sup>3</sup>/<sub>4</sub> inch to ASME B18.2.1, 2 flat gaskets</li> </ul>
only permissible up to PN 160. 4x screws M10x45 to DIN EN 24014;	K26	7MF9411-6BC	<ul> <li>K16: 4 screws M10x45 to DIN EN 24014, 4 washers, 2 flat gaskets</li> </ul>
stainless steel	1120		Washers Ø 10.5 to DIN 125
4x washers Ø 10.5 mm to DIN 125, <b>stainless steel</b> ; 2x flat gaskets made of PTFE, man arminelle 400 her (2000 ppi)			Flat gaskets made of PTFE, max. 420 bar (6092 psi), 80 °C (176 °F)
max. permissible 420 bar (6092 psi), 80 °C (176 °F) Flange connection with M10 screws only permissible up to PN 160.			Note: Flange connection with M10 screws only permissible up to PN 160!
Mounting plate			Mounting plate
<ul> <li>for valve manifold, made of</li> </ul>			Made of electrogalvanized sheet-steel
electrogalvanized sheet-steel			• M11: For wall mounting or for securing on rack (72 mm grid)
<ul> <li>for wall mounting or for securing on rack (72 mm grid), weight</li> </ul>	M11	7MF9006-6EA	Scope of delivery: - 1 mounting plate with bolts for mounting on valve manifold
0.5 kg Scope of delivery:			M12: For pipe mounting
1 mounting plate with bolts for			Scope of delivery:
mounting on valve manifold - for pipe mounting, weight 0.7 kg	M12	7MF9006-6GA	<ul> <li>1 mounting plate M11</li> <li>2 pipe brackets with nuts and washers for pipes with max.</li> </ul>
Scope of delivery:	WITZ	7 WI 3000-00A	Ø 60.3 mm
1x mounting plate M11, 2x pipe brackets with nuts and washers			Valve manifold 100 bar, suitable for oxygen
(for pipe with max. Ø 60.3 mm) and fastening screws for mount-			<ul> <li>S12: For 2-way valve manifold</li> </ul>
ing on valve manifold			<ul> <li>S13: For 3-way valve manifold</li> </ul>
• for valve manifold, made of			<ul> <li>S14: For 5-way valve manifold</li> </ul>
stainless steel - for wall mounting or for securing	M21	7MF9006-6EC	Characteristic curves
on rack (72 mm grid), weight			
0.5 kg Scope of delivery:			o bar
1 mounting plate with bolts for mounting on valve manifold			
- for pipe mounting, weight 0.7 kg	M22	7MF9006-6GC	
Scope of delivery: 1x mounting plate M21, 2x pipe			
brackets with nuts and washers (for pipe with max. $\emptyset$ 60.3 mm)			
Valve manifold 100 bar			
Oil- and grease-free cleaning for			0 100 200 300 400 °C
oxygen applications, max. pressure			Operating temperature
PN 100 (1450 psi) and max. temper- ature 60 °C (140 °F)			
• for 7MF9411-5A.	S12		Valve manifolds PN 5 (7MF9411-5), permissible working pressure as a function of the permissible working temperature
<ul> <li>for 7MF9411-5B.</li> <li>for 7MF9411-5C.</li> </ul>	S13 S14		tenerion of the permission working temperature
	-		
NACE MR-0175-certified incl. acceptance test certificate 3.1	D07		
to EN 10204			

to EN 10204

When ordering accessory set or mounting together with the valve manifolds, please use Order code; otherwise use Article No.
 Flange connections to DIN 19213 only permissible up to PN 160 (2321 psi)!

Fitttings - Shut-off valves for differential pressure transmitters

### 2-, 3- and 5-spindle valve manifolds DN 5

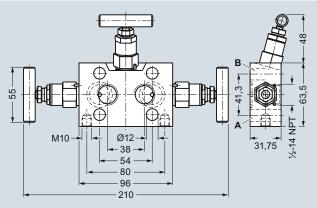


A Process connection: 1/2-14 NPT

B Transmitter connection: Flange connection to EN 61518, form B

- C Vent / test connection: 1/4-18 NPT
- Valve design: external spindle thread

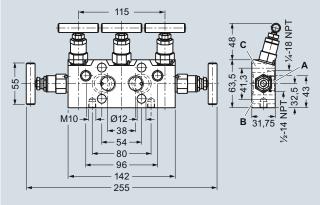
2-spindle valve manifold DN 5 (7MF9411-5A.), dimensions in mm



A Process connection: 1/2-14 NPT

B Transmitter connection: Flange connection to EN 61518, form B Valve design: external spindle thread

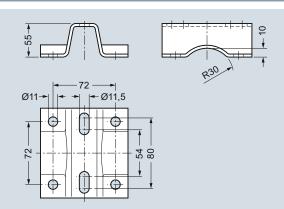
3-spindle valve manifold DN 5 (7MF9411-5B.), dimensions in mm



- A Process connection: 1/2-14 NPT

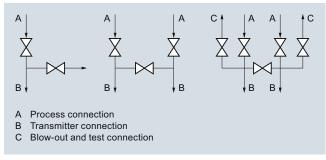
Valve design: external spindle thread

5-spindle valve manifold DN 5 (7MF9411-5C.), dimensions in mm



Mounting plate 7MF9006-6.. (M11, M12) for valve manifold, dimensions in  $\ensuremath{\mathsf{mm}}$ 

#### Schematics



2-spindle, 3-spindle and 5-spindle valve manifold DN 5, connections

1

Weight

#### **Pressure Measurement**

Fittings - Shut-off valves for differential pressure transmitters

### Multiway cocks PN 100

#### Overview



Multiway cock PN 100 (1450 psi) (7MF9004-1P.) for differential pressure transmitters

The multiway cock PN 100 (1450 psi) can be flanged to pressure transmitters for differential pressure.

#### Benefits

- Version available for aggressive liquids, gases and vapors
- Robust design
- · Oil-free and grease-free version possible
- · One-hand operation

### Application

The PN 100 (1450 psi) multiway cock is available in versions for aggressive and non-aggressive liquids, gases and vapors.

#### Design

The multiway cock can be flanged with four screws to pressure transmitters for differential pressure.

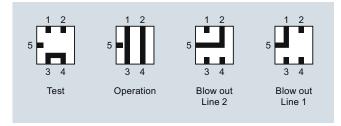
The PN 100 (1450 psi) has 2 process connections and one blowout connection. A steel version of the multiway cock is available for non-aggressive media, and a stainless steel version for aggressive media. The housing is forged in one piece. The switching lever is removable.

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 the differential pressure lines
- · Testing the pressure transmitter zero



Cock positions; the symbols are printed on the cock

#### Technical specifications Multiway cocks PN 100 Measured medium Water, non-aggressive Aggressive liquids, liquids and gases gases and vapors Material P250GH, X 6 CrNiMoTi 17 12 2, mat. No.: 1.0460 mat. No. 1.4571/316Ti Connections Steel, for pipe Stainless steel, for Ø 12 mm, L series pipe Ø 12 mm, L series • Process connection 2 bulkhead glands • Connection for blow-Pipe union with ferrule ing out Max. permissible 200 °C (392 °F) working temperature Max. permissible 100 bar (1450 psi) (up to max. 60 °C (140 °F)) working pressure

2.5 ka

Selection and Ordering data	Article No.
Multiway cock PN 100 (1450 psi)	7 M F 9 0 0 4 - 💶 A
↗ Click on the Article No. for the online confi- guration in the PIA Life Cycle Portal.	
for flanging to pressure transmitters, weight 2.5 kg (without accessory set), without certificate	
For water and non-aggressive gases and vapors	1 P
For aggressive liquids, gases and vapors	1 Q
Accessories	
Factory test certificate EN 10204–2.2 Material acceptance test certificate EN 10204-3.1	7MF9000-8AB 7MF9000-8AD

Selection and Ordering data	Order code	Article No.
Further designs <sup>1)</sup> Please add "-Z" to Article No. and spec- ify Order code.		
Accessory set to EN (required for flanging, weight 0.2 kg) 4x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 1 inch to ASME B18.2.1; chromized steel 2x gaskets made of PTFE, max. permissible temperature 80 °C (176 °F)	L31	7MF9004-5CC
Accessory set to DIN (required for flanging, weight 0.2 kg) 4x screws M10x25 to DIN EN 24017; chro- mized steel, 4x washers Ø 10.5 mm to DIN 125; 2x gaskets made of PTFE, max. permissible temperature 80 °C (176 °F)		
<ul> <li>Standard design</li> <li>Version for oxygen (together with Order code S11</li> </ul>	L11 L15	7MF9004-6AD 7MF9004-6AE
Multiway cock in oil-free and grease- free design		
Oil- and grease-free cleaning for oxy- gen applications, max. pressure PN 100 (1450 psi) and max. temperature 60 °C (140 °F), BAM-tested lubricant, gasket suitable for oxygen measure- ment (only with Article No. 7MF9004– 1Q.Z)	S11	
Mounting bracket Required for wall mounting or for securing on rack (72 mm grid), made of electrogalvanized sheet-steel, weight 0.85 kg	M13	7MF9004-6AA
NACE MR-0175-certified incl. acceptance test certificate 3.1 to EN 10204 (only available for version 7MF9004-1QA)	D07	

 When ordering accessory set or mounting together with the multiway cock, please use Order code; otherwise use Article No. Dimensional drawings

### **Pressure Measurement**

Fitttings - Shut-off valves for differential pressure transmitters

### Multiway cocks PN 100

### Accessories

#### Accessory set for multiway cock PN 100

- L31: 4 screws <sup>7</sup>/<sub>16</sub>-20 UNF x 1 inch, 2 flat gaskets
- L11: 4 screws M10x25 to DIN EN 24017, 4 washers, 2 flat gaskets
- L15 (suitable for oxygen): 4 screws M10x25 to DIN EN 24017, 4 washers, 2 flat gaskets

Washers Ø 10.5 to DIN 125

Flat gaskets made of PTFE, max. permissible temperature 80  $^{\circ}\text{C}$  (176  $^{\circ}\text{F})$ 

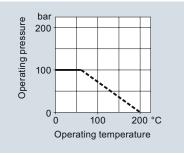
#### Multiway cock in oil-free and grease-free design

 S11 (only for aggressive liquids, gases and vapors (7MF9004-1Q.)): Max. PN 63 (914 psi) (instead of PN 100 (1450 psi)), BAM-tested lubricant, gasket suitable for oxygen

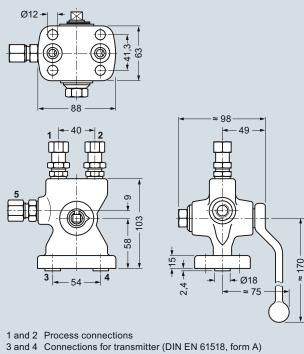
#### Mounting brackets

 M13: Required for wall mounting or for securing on rack (72 mm grid); made of electrogalvanized sheet-steel

#### Characteristic curves

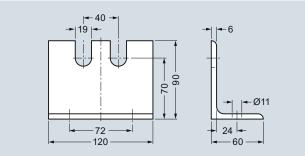


Multiway cock PN 100 (1450 psi), permissible operating pressure as a function of the permissible operating temperature



5 Connections for blowing out

Multiway cock 7MF9004-1P. for flanging to pressure transmitters for differential pressure, dimensions in mm



Mounting bracket 7MF9004-6AA (M13), dimensions in mm

Fitttings - Shut-off valves for differential pressure transmitters

#### 3-way and 5-way valve manifolds DN 5

#### Overview



The three-spindle and five-spindle valve manifolds DN 5 (7MF9410-1../-3..) are used to shut off the differential pressure lines and to check the transmitter zero.

In addition, the five-way valve manifold permits blowing out of the differential pressure lines.

#### Benefits

- Available for aggressive and non-aggressive 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 aggressive and non-aggressive liquids and gases.

Mounting plates are available for wall mounting, for securing to mounting racks or for pipe mounting.

### Design

The process connection of the 3-way and 5-way valve manifolds is a pipe union with ferrule.

Both valve manifolds have 2 flange connections for connecting a pressure transmitter.

In addition, the five-way valve manifold has 2 blow-out connections.

Depending on the version the valve manifold has either 3 or 5 valves, each with an internal spindle thread.

#### Materials used

	For non-aggressive liquids and gases		For aggressive liquids and gases	
Component	Material	Mat. No.	Material	Mat. No.
Housing	P250GH	1.0460	X 6	1.4571/
Head parts	C 35	1.0501	CrNiMoTi 17 12 2	31611
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
- · Checking the pressure transmitter zero
- In addition, the five-way valve manifold permits blowing out of the differential pressure lines.

Selection and Ordering data	Article No.
3-way valve manifold DN 5 7	7 M F 9 4 1 0 - A
↗ Click on the Article No. for the online confi- guration in the PIA Life Cycle Portal.	
For flanging to pressure transmitters for differ- ential pressure, process connection: Pipe union with ferrule, max. working pressure 420 bar (6092 psi), weight 2.9 kg (order accessory set and mounting plate with Order code), without certificate	
<ul> <li>for non-aggressive liquids and gases</li> </ul>	1 E
<ul> <li>for aggressive liquids and gases</li> </ul>	1 F
5-way valve manifold DN 5	
↗ Click on the Article No. for the online confi- guration in the PIA Life Cycle Portal.	
For flanging to pressure transmitters for differ- ential pressure, process connection: Pipe union with ferrule, max. working pressure 420 bar (6092 psi), weight 4.4 kg (order accessory set and mounting plate with Order code), without certificate	
<ul> <li>for non-aggressive liquids and gases</li> </ul>	3 E
<ul> <li>for aggressive liquids and gases</li> </ul>	3 F
Accessories	
Factory test certificate EN 10204-2.2	7MF9000-8AB
Material acceptance test certificate EN 10204-3.1	7MF9000-8AD

Fitttings - Shut-off valves for differential pressure transmitters

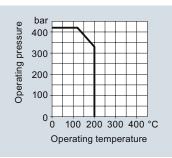
			3-way and 5-way valve manifolds DN 5
Selection and Ordering data	Order code	Article No.	Accessories
Further designs <sup>1)</sup>			Accessory set for 2 way and 5 way value manifold DN 5 for
Please add "-Z" to Article No. and specify Order code.			Accessory set for 3-way and 5-way valve manifold DN 5 for flanging
Accessory set to EN (required for flanging, weight 0.2 kg)			<ul> <li>B31: 4 screws <sup>7</sup>/<sub>16</sub>-20 UNF x 2<sup>1</sup>/<sub>8</sub> inch to ASME B18.2.1, 2 flat gaskets</li> </ul>
$4x$ screws $7/_{16}$ -20 UNF x	B31	7MF9010-5CC	<ul> <li>B34: 4 screws <sup>7</sup>/<sub>16</sub>-20 UNF x 2<sup>1</sup>/<sub>8</sub> inch to ASME B18.2.1, 2 O-rings (FPM 90)</li> </ul>
2 <sup>1</sup> / <sub>8</sub> inch to ASME B18.2; chromized steel			<ul> <li>B11: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 flat gaskets</li> </ul>
2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)			<ul> <li>B15 (suitable for oxygen): 4 screws M10x55 to DIN EN 24014, 4 washers, 2 flat gaskets</li> </ul>
4x screws $^{7}$ / <sub>16</sub> -20 UNF x $2^{1}$ / <sub>8</sub> inch to ASME B18.2; chromized	B34	7MF9410-5CA	<ul> <li>B16: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 O-rings (FPM 90)</li> </ul>
steel 2x O-rings to DIN 3771,			Washers Ø 10.5 to DIN 125
20 x 2.65 - S - FPM90, max.			Flat gaskets made of PTFE, max. 420 bar (6092 psi), 80 °C
permissble 420 bar (6092 psi), 120 °C (248 °F)			(176 °F)
Accessory set to DIN <sup>2)</sup> (required for flanging, weight 0.2 kg)			O-ring to DIN 3771, 20 x 2.65 – S – FPM90, max. 420 bar (6092 psi), 120 °C (248 °F)
4x screws M10x55 to DIN EN 24014;			Note: M10 screws only permissible up to PN 160 (2320 psi)!
chromized steel 4x washers Ø 10.5 mm to DIN 125;			Mounting plate
2x flat gaskets made of PTFE,			Made of electrogalvanized sheet-steel
max. permissible 420 bar (6092 psi), 80 °C (176 °F)			<ul> <li>M11: For wall mounting or for securing on rack (72 mm grid)</li> </ul>
Standard design	B11	7MF9010-6AD	Scope of delivery:
Version for oxygen	B15	7MF9010-6AE	<ul> <li>1 mounting plate 7MF9006-6EA with bolts for mounting on valve manifold</li> </ul>
4x screws M10x55 to DIN EN 24014;	B16	7MF9010-6CC	M12: For pipe mounting
chromized steel 4x washers Ø 10.5 mm to DIN 125;			Scope of delivery:
2x O-rings to DIN 3771,			<ul> <li>1 mounting plate M11</li> <li>2 pipe brackets with nuts and washers for pipes with max.</li> </ul>
20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi),			Ø 60.3 mm
120 °C (248 °F)			Valve manifold 100 bar, suitable for oxygen
Mounting plate			S12: Only in combination with versions for aggressive liquids
for valve manifold, made of electrogalvanized sheet-steel			and gases
for wall mounting or for securing on	M11	7MF9006-6EA	
rack (72 mm grid), weight 0.5 kg Scope of delivery:			
1 mounting plate with bolts for			
mounting on valve manifold		71150000 004	
for pipe mounting, weight 0.7 kg Scope of delivery:	M12	7MF9006-6GA	
1x mounting plate M11, 2x pipe brackets with nuts and washers			
(for pipe with max. Ø 60.3 mm)			
Valve manifold 100 bar			
suitable for oxygen			
for 7MF9410-1F	S13		
for 7MF9410-3F	S14		
NACE MR-0175-certified	D07		
incl. acceptance test certificate 3.1 to EN 10204 (only available for ver- sion 7MF9410-1FA and -3FA)			
1) When ordering accessory set or mour	ntina toaether wit	th the valve	

When ordering accessory set or mounting together with the valve manifolds, please use Order code; otherwise use Article No.
 Flange connections to DIN 19213 only permissible up to PN 160 (2321 psi)

Fitttings - Shut-off valves for differential pressure transmitters

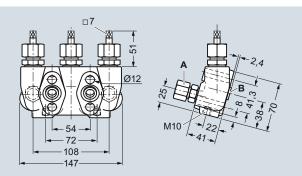
#### 3-way and 5-way valve manifolds DN 5

#### Characteristic curves



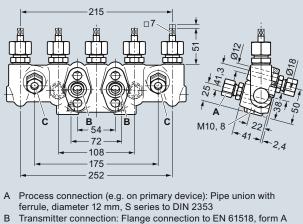
Permissible operating pressure as a function of the permissible operating temperature

#### Dimensional drawings



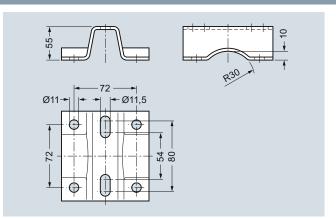
- A Process connection (e.g. on primary device): Pipe union with ferrule, diameter 12 mm, S series to DIN 2353
- B  $\;$  Transmitter connection: Flange connection to EN 61518, form A Valve design: internal spindle thread

3-way valve manifold DN 5 (7MF9410-1..), dimensions in mm



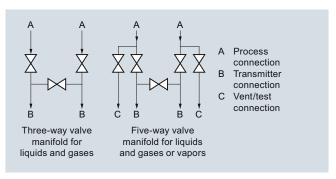
 C Blow-out connection: Pipe union with ferrule, diameter 12 mm, S series to DIN 2353
 Valve design: internal spindle thread

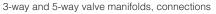
5-way valve manifold DN 5 (7MF9410-3..), dimensions in mm



Mounting plate 7MF9006-6.. (M11, M12) for valve manifold, dimensions in mm

### Schematics





Fitttings - Shut-off valves for differential pressure transmitters

### 3-way valve manifold DN 8



The 3-way valve manifold DN 8 (7MF9416-1../-2..) is for pressure transmitters for differential pressure. It is used to shut off and blow out differential pressure lines and to test the pressure transmitter zero.

In the designs with a test connection, a test device can be connected to test the pressure transmitter characteristic.

#### Benefits

- · For aggressive and non-aggressive liquids and gases
- The maximum working pressure is 420 bar (6092 psi).

#### Application

The 3-way valve manifold is available in versions for aggressive and non-aggressive liquids and gases.

Mounting plates are available for wall mounting, for securing to mounting racks or for pipe mounting.

### Design

For the process connection on the version for non-aggressive media it is possible to choose between a pipe union with ferrule and welding pins.

The version for aggressive media always has a pipe union with ferrule.

Both versions are available optionally with a test connection M20x1.5.

The valves have an internal spindle thread.

#### Materials used

	For non-aggressive li gases	For aggre		
Component	Material	Mat. No.	Material	Mat. No.
Housing	P250GH	1.0460	X 6	1.4571/
Head parts	C 35	1.0501	CrNiMoTi 17 12 2	31611
Spindles	X 12 CrMoS 17	1.4104		
Cones	X 35 CrMo 17 hard- ened 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 performs two functions as standard:

- Shutting off the differential pressure lines
- Checking the pressure transmitter zero

All versions are also available with a test connection, to which a test device for checking the pressure transmitter characteristic can be connected.

Selection and Ordering data	Article No.
3-way valve manifold DN 8 7	7 M F 9 4 1 6 - A
Click on the Article No. for the online confi- guration in the PIA Life Cycle Portal.	
For flanging to pressure transmitters for differ- ential pressure, max. working pressure 420 bar (6092 psi), (order accessory set and mounting plate with Order code), without cer- tificate	
For non-aggressive liquids and gases procedss connection: Pipe union with ferrule Ø 12 mm	
<ul> <li>without test connection</li> </ul>	1 B
with test connection	1 C
For non-aggressive liquids and gases procedss connection: Welding pin $\emptyset$ 14 x 2.5	
<ul> <li>without test connection</li> </ul>	2 C
with test connection	2 D
For aggressive liquids and gases process connection: Pipe union with ferrule Ø 12 mm	
<ul> <li>without test connection</li> </ul>	1 D
with test connection	1 E
Accessories	
Factory test certificate EN 10204-2.2	7MF9000-8AB
Material acceptance test certificate <b>7MF9000-8AE</b> EN 10204-3.1	

Fitttings - Shut-off valves for differential pressure transmitters

### 3-way valve manifold DN 8

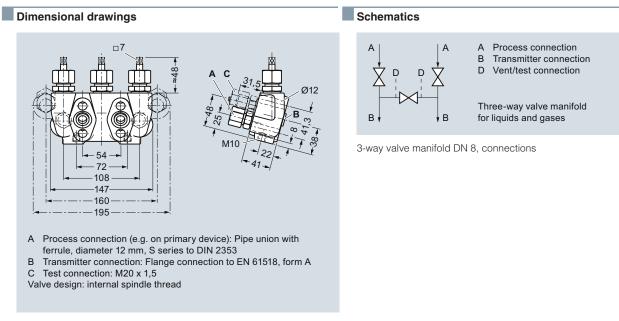
1

,			
Selection and Ordering data	Order code	Article No.	Accessories
Further designs <sup>1)</sup>			Accessory set for 3-way valve manifold DN 8 for flanging
Please add "-Z" to Article No. and specify Order code.			<ul> <li>B31: 4 screws <sup>7</sup>/<sub>16</sub>-20 UNF x 2<sup>1</sup>/<sub>8</sub> inch to ASME B18.2.1, 2 flat gaskets</li> </ul>
Accessory set to EN			<ul> <li>B34: 4 screws <sup>7</sup>/<sub>16</sub>-20 UNF x 2<sup>1</sup>/<sub>8</sub> inch to ASME B18.2.1,</li> </ul>
(required for flanging, weight 0.2 kg)			2 O-rings (FPM 90)
4x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 2 <sup>1</sup> / <sub>8</sub> inch to ASME B18.2; chromized steel	B31	7MF9010-5CC	<ul> <li>B11: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 flat gaskets</li> </ul>
2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi),			<ul> <li>B16: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 O-rings (FPM 90)</li> </ul>
80 °C (176 °F)			Washers Ø 10.5 to DIN 125
4x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 2 <sup>1</sup> / <sub>8</sub> inch to ASME B18.2; chromized steel	B34	7MF9410-5CA	Flat gaskets made of PTFE, max. 420 bar (6092 psi), 80 °C (176 °F)
2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permiss- ble 420 bar (6092 psi), 120 °C			O-ring to DIN 3771, 20 x 2.65 – S – FPM90, max. 420 bar (6092 psi), 120 °C (248 °F)
(248 °F)			Note: M10 screws only permissible up to PN 160 (2320 psi)!
Accessory set to DIN <sup>2)</sup> (required for flanging, weight 0.2 kg)			Mounting plate
4x screws M10x55 to DIN EN 24014;	B11	7MF9010-6AD	Made of electrogalvanized sheet-steel
chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi),			<ul> <li>M11: For wall mounting or for securing on rack (72 mm grid) Scope of delivery:</li> <li>1 mounting plate with bolts for mounting on valve manifold</li> </ul>
80 °C (176 °F)			M12: For pipe mounting
4x screws M10x55 to DIN EN 24014; chromized steel 4x washers Ø 10.5 mm to DIN 125;	B16	7MF9010-6CC	Scope of delivery: - 1 mounting plate M11 - 2 pipe brackets with nuts and washers for pipes with max.
2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permiss-			Ø 60.3 mm
ble 420 bar (6092 psi), 120 °C			Characteristic curves
(248 °F)			
Mounting plate For valve manifold, made of electrogalvanized sheet-steel			bar 400
for wall mounting or for securing on	M11	7MF9006-6EA	300
rack (72 mm grid), weight 0.5 kg			
Scope of delivery:			
1 mounting plate with bolts for mounting on valve manifold			Ö 100
for pipe mounting, weight 0.7 kg	M12	7MF9006-6GA	
Scope of delivery:			0 100 200 300 400 ℃ Operating temperature
1x mounting plate M11, 2x pipe brackets with nuts and washers			Operating temperature
(for pipe with max. Ø 60.3 mm)			3-way valve manifold DN 8, permissible working pressure as a function
NACE MR-0175-certified	D07		of the permissible working temperature
incl. acceptance test certificate 3.1 to EN 10204 (only available for ver- sion 7MF9416-1DA and -1EA)			
1) When ordering accessory set or moun	ting together with	the valve manifold.	•

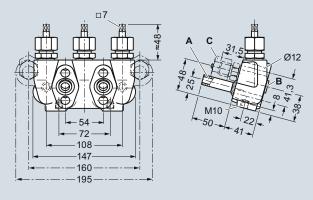
When ordering accessory set or mounting together with the valve manifold, please use Order code; otherwise use Article No.
 Flange connections to DIN 19213 only permissible up to PN 160 (2321 psi)!

3-way valve manifold DN 8

Fitttings - Shut-off valves for differential pressure transmitters

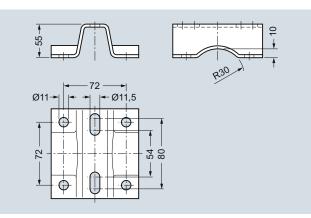


3-way valve manifold DN 8 (7MF9416-1..) with pipe union, dimensions in mm



- A Process connection (e.g. on primary device):
- Welding pin, diameter 14 x 2,5
- B Transmitter connection: Flange connection to EN 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 pin, dimensions in mm



Mounting plate 7MF9006-6.. (M11, M12) for valve manifold, dimensions in  $\ensuremath{\mathsf{mm}}$ 

Fitttings - Shut-off valves for differential pressure transmitters

#### Valve manifold combination DN 5/DN 8

#### 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 differential pressure lines and to test the pressure transmitter zero.

In the designs with a test connection, a test device can be connected to test the pressure transmitter characteristic.

### Benefits

• Max. working pressure 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 as flange connection, while the blow-out connection is designed as a pipe union with ferrule.

The manifold valves have an internal spindle thread, while the blow-out valves have an external spindle thread.

The optional test connections are M20x1.5.

#### Materials used

	Valve manifold DN 5		Blow-out val	ves DN 8
Component	Material	Mat. No.	Material	Mat. No.
Housing	P250GH	1.0460	16 Mo 3	1.5415
Head parts	C 35	1.0501	21 CrMo V57	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 tem- pered	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 the differential pressure lines
- Checking the pressure transmitter zero

As an option it is possible to order a version with a test connection, to which a test device for checking the transmitter characteristic can be connected.

Selection and Ordering data	Article No.
Valve manifold combination DN 5/DN 8 for vapors	7 MF9416-6 A
↗ Click on the Article No. for the online confi- guration in the PIA Life Cycle Portal.	
For flanging to pressure transmitters for differ- ential pressure, max. working pressure 420 bar (6092 psi), also available in stainless steel on request (order accessory set with Order code), without certificate	
<ul> <li>without test connection</li> </ul>	С
• with test connection M20 $\times$ 1.5	D
Accessories	
Factory test certificate EN 10204-2.2	7MF9000-8AB
Material acceptance test certificate EN 10204-3.1	7MF9000-8AD

Selection and Ordering data	Order code	Article No.
Further designs <sup>1)</sup>		
Please add " <b>-Z</b> " to Article No. and specify Order code.		
Accessory set to EN (required for flanging, weight 0.2 kg)		
4x screws $^{7}$ / <sub>16</sub> -20 UNF x 2 <sup>1</sup> / <sub>8</sub> inch to ASME B18.2; chromized steel 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permiss- ble 420 bar (6092 psi), 120 °C (248 °F)	B34	7MF9410-5CA
Accessory set to DIN <sup>2)</sup> (required for flanging, weight 0.2 kg)		
4x screws M10x55 to DIN EN 24014; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F);Flange connection to DIN 19213 only permissible up to PN 160!	B16	7MF9010-6CC
<sup>1)</sup> When ordering accessory set together	with the valve ma	anifold combina-

 When ordering accessory set together with the valve manifold combination, please use Order code; otherwise use Article No.

<sup>2)</sup> Flange connections to DIN 19213 only permissible up to PN 160 (2321 psi)

Valve manifold combination DN 5/DN 8

Fitttings - Shut-off valves for differential pressure transmitters

#### Accessories

#### Accessory set for valve manifold combination DN 5/DN 8 for flanging

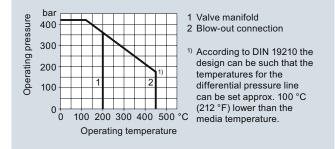
- + B34: 4 screws  $^{7}\!/_{16}$  -20 UNF x  $2^{1}\!/_{8}$  inch to ASME B18.2.1, 2 O-rings (FPM 90)
- B16: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 O-rings (FPM 90)

Washers Ø 10.5 to DIN 125

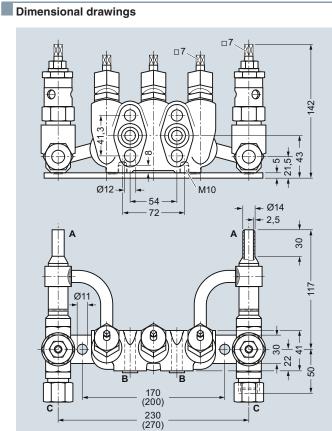
O-ring to DIN 3771, 20 x 2.65 - S - FPM90, max. 420 bar (6092 psi), 120 °C (248 °F)

Note: M10 screws only permissible up to PN 160 (2321 psi)!

#### Characteristic curves



Permissible operating pressure as a function of the permissible operating temperature

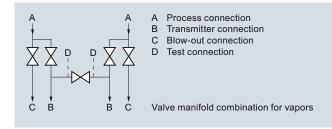


- A Process connection (e.g. on primary device): Welding pin
- В Transmitter connection: Flange connection to EN 61518, form A С Blow-out connection: Pipe union with ferrule, diameter 14 mm,
- S series to DIN 2353 Valve design:

- Manifold valves: internal spindle thread
- Blow-out valves: external spindle thread

Valve manifold combination DN 5/DN 8 (7MF9416-6C.), dimensions in mm (deviating dimensions for 7MF9416-6D. shown in brackets)

### Schematics



Valve manifold combination DN 5/DN 8, connections

Fitttings - Shut-off valves for differential pressure transmitters

#### Overview



The valve manifold combination DN 8 (7MF9416-4..) is for pressure transmitters for differential pressure.

It is used to shut off and blow out the differential pressure lines and to check the pressure transmitter zero.

In the designs with a test connection, a test device can be connected to check the pressure transmitter characteristic.

#### Benefits

• Max. working pressure 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 as flange connection, while the blow-out connection is designed as a pipe union with ferrule.

The manifold valves have an internal spindle thread, while the blow-out 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

	Valve manifold		Blow-out val	/es
Component	Material	Mat. No.	Material	Mat. No.
Housing	P250GH	1.0460	16 Mo 3	1.5415
Head parts	C 35	1.0501	21 CrMo V57	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 tem- pered	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 the differential pressure lines
- · Checking the pressure transmitter zero

As an option it is possible to order a version with a test connection, to which a test device for checking the pressure transmitter characteristic can be connected.

Selection and Ordering data	Article No.	
Valve manifold combination DN 8 for vapors	7MF9416-	A
↗ Click on the Article No. for the online confi- guration in the PIA Life Cycle Portal.		
for flanging to pressure transmitters for differ- ential pressure, with mounting plate, max. working pressure 420 bar (6092 psi), also available in stainless steel on request (order accessory set with Order code), without certif- icate		
<ul> <li>without test connection</li> </ul>		4 C
$\bullet$ with test connection M20 $\times$ 1.5		4 D
Accessories		
Factory test certificate EN 10204–2.2	7MF9000-8AE	3
Material acceptance test certificate EN 10204-3.1	7MF9000-8AE	)

Selection and Ordering data	Order code	Article No.
Further designs <sup>1)</sup>		
Please add "-Z" to Article No. and specify Order code.		
Accessory set to EN (required for flanging, weight 0.2 kg)		
4x screws $^{7}$ / <sub>16</sub> -20 UNF x 2 <sup>1</sup> / <sub>8</sub> inch to ASME B18.2; chromized steel 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F)	B34	7MF9410-5CA
Accessory set to DIN <sup>2)</sup> (required for flanging, weight 0.2 kg)		
4x screws M10x55 to DIN EN 24014; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F) Flange connection to DIN 19 213 only permissible up to PN 160!	B16	7MF9010-6CC

When ordering accessory set together with the valve manifold combination, please use Order code; otherwise use Article No.
 Flange connections to DIN 19213 only permissible up to PN 160 (2321 psi)

#### Accessories

#### Accessory set for valve manifold combination DN 8 for flanging

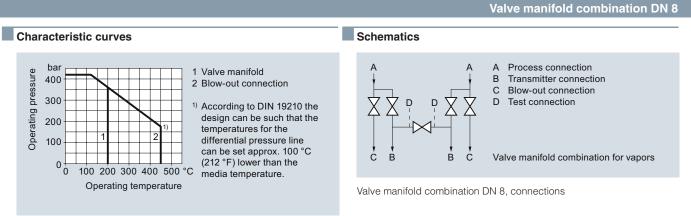
- B34: 4 screws  $^{7}\!/_{16}$  -20 UNF x  $2^{1}\!/_{8}$  inch to ASME B 18.2.1, 2 O-rings (FPM 90)
- B16: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 O-rings (FPM 90)

Washers Ø 10.5 to DIN 125

O-ring to DIN 3771, 20 x 2.65 - S - FPM90, max. 420 bar (6092 psi), 120 °C (248 °F)

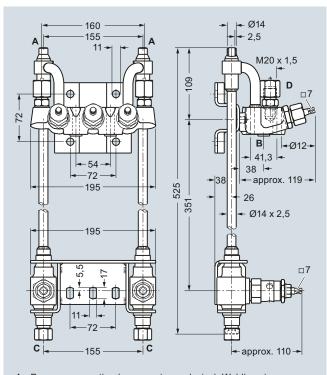
Note: M10 screws only permissible up to PN 160 (2321 psi)!

Fitttings - Shut-off valves for differential pressure transmitters



Permissible operating pressure as a function of the permissible operating temperature

#### Dimensional drawings



- Process connection (e.g. on primary device): Welding pin А
- Transmitter connection: Flange connection to EN 61518, form A Blow-out connection: Pipe union with ferrule, diameter 14 mm, В С S series to DIN 2353
- D Test connection (only with Article No. 7MF9416-4D.): M20 x 1,5 Valve design:
- Manifold valves: internal spindle thread
  Blow-out valves: external spindle thread

Valve manifold combination DN 8 (7MF9416-4..), dimensions in mm

Fitttings - Shut-off valves for differential pressure transmitters

### 2-, 3- and 5-spindle valve manifolds for installing in protective boxes

#### 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 transmitter zero.

The five-spindle valve manifold permits venting on the transmitter side and checking of the transmitter characteristic.

These valve manifolds are preferentially used when mounting in protective boxes. In addition, they can also be used for wall, frame or pipe mounting together with the mounting bracket.

Transmitters of the DS series can be operated and read from the front when using these valve manifolds.

#### Application

The valve manifolds DN 5 are designed for liquids and vapors and for installing in protective boxes.

Each is available in a version for oxygen on request

#### Design

All versions of the spindle manifolds have a process connection  $\ensuremath{^{1\!\!/_2}}\xspace$  14 NPT.

The connection for the pressure transmitter is always designed as a flange connection to IEC 61518, Form A.

The 2-spindle and the 5-spindle valve manifold have in addition a vent and test connection 1/4-18 NPT.

The valves have an external spindle thread.

#### Materials used

Components	Material	Mat. No.
Housing	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	-

#### Functions

Functions of all valve manifolds:

- Shutting off the differential pressure lines
- Checking the pressure transmitter zero

Additional functions of the 2-spindle and 5-spindle valve manifolds through the vent and test connection:

- · Venting on the transmitter side
- · Checking the pressure transmitter characteristic

Selection and Ordering data	Article No.
Valve manifolds DN 5 for mounting in protective boxes	7 MF9412 - A
Click on the Article No. for the online confi- guration in the PIA Life Cycle Portal.	
for liquids and gases for flanging to pressure transmitters for absolute and differential pressure Material: stainless steel, mat. No: 1.4404/316L max. working pressure 420 bar (6092 psi) (order accessory set with Order code), without certificate	
$\bullet$ 2-spindle valve manifold with rotatng sleeve $G^{1\!\!/_2}$	1 B
<ul> <li>2-spindle valve manifold with flange connection</li> </ul>	1 C
<ul> <li>3-spindle valve manifold</li> </ul>	1 D
<ul> <li>5-spindle valve manifold</li> </ul>	1 E
Accessories	
Factory test certificate EN 10204-2.2	7MF9000-8AB
Material acceptance test certificate EN 10204-3.1	7MF9000-8AD

Selection and Ordering data	Order code	Article No
Further designs <sup>1)</sup>		/ 11010 110.
Please add "-Z" to Article No. and specify Order code.		
Accessory set to EN		
(connection between valve manifold and pressure transmitter)		
for valve manifold 7MF9412–1C.		
2x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 2 inch to ASME B18.2.1; chromized steel 1x O-ring to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F)	F32	7MF9412-6CA
2x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 2 inch to ASME B18.2.1; chromized steel 1x gasket made of PTFE, max, permissible 420 bar (6092 psi), 80 °C (176 °F) <sup>2)</sup>	F35	7MF9412-6DA
for valve manifold 7MF9412-1D and		
<u>-1E.</u>		
4x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 2 inch to ASME B18.2.1; chromized steel 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F) <sup>2</sup> )	F34	7MF9412-6GA
4x screws $^{7}/_{16}$ -20 UNF x 2 inch to ASME B18.2.1; chromized steel 2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F) <sup>2)</sup>	F36	7MF9412-6HA

Fitttings - Shut-off valves for differential pressure transmitters

### 2-, 3- and 5-spindle valve manifolds for installing in protective boxes

Selection and Ordering data	Order code	Article No.	Accessories	
Further designs <sup>1)</sup>				
Please add "-Z" to Article No. and specify Order code.			Accessory set for 2-, 3- and 5-spindle valve manifolds (Connection between manifold and transmitter)	
Accessory set to DIN			2-spindle valve manifold DN 5 with flange connection	
(connection between valve manifold and pressure transmitter) For valve manifold 7MF9412–1C.			<ul> <li>F32: 2 screws 7/16 20 UNF x 2 inch to ASME B 18.2.1, 1 O Ring (FPM90)</li> </ul>	
2x screws M10x50 to DIN EN 24014;	F12	7MF9412-6AA	<ul> <li>F35: 2 screws 7/16 20 UNF x 2 inch to ASME B 18.2.1, 1 flat-gasket</li> </ul>	
chromized steel 2x washers Ø 10.5 mm to DIN 125; 1x O-ring to DIN 3771,			<ul> <li>F12: 2 screws M10x50 to DIN EN 24014, 2 washers, 1 O-ring (FPM90)</li> </ul>	
20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F) <sup>2)</sup>			<ul> <li>F15: 2 screws M10x50 to DIN EN 24014, 2 washers, 1 flat gasket</li> </ul>	
2x screws M10x50 to DIN EN 24014;	F15	7MF9412-6BA	3-spindle and 5-way valve manifold DN 5	
chromized steel 2x washers Ø 10.5 mm to DIN 125;	115	7 MI 3412-00A	<ul> <li>F34: 4 screws 7/16 20 UNF x 2 inch toASME B 18.2.1, 2 O-rings (FPM90)</li> </ul>	
1x gasket made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F) <sup>2)</sup>			• F36: 4 screws 7/16 20 UNF x 2 inch toASME B 18.2.1, 2 flat-gaskets	
For valve manifold 7MF9412–1D and -1E.			<ul> <li>F14: 4 screws M10x50 to DIN EN 24014, 4 washers, 2 O-rings (FPM90)</li> </ul>	
4x screws M10x50 to DIN EN 24014; chromized steel 4x washers Ø 10.5 mm to DIN 125;	F14 7MF9412-6EA		<ul> <li>F16: 4 screws M10x50 to DIN EN 24014, 4 washers, 2 flat-gaskets</li> </ul>	
2x O-rings to DIN 3771,			Washers Ø 10.5 to DIN 125	
20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F) <sup>2)</sup>			Flat-gaskets made of PTFE, max. 420 bar (6092 psi), 80 °C (176 °F)	
4x screws M10x50 to DIN EN 24014; chromized steel	F16	7MF9412-6FA	O-ring to DIN 3771, 20 x 2.65 - S - FPM90; max.420 bar (6092 psi), 120 °C (248 °F)	
4x washers Ø 10.5 mm to DIN 125; 2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F) <sup>2)</sup>			<b>Note:</b> Flange connections with M10 screws only permissible up to PN 160 (2321 psi)!	
Mounting bracket			Mounting bracket for wall mounting or for securing to	
required for wall mounting or for securing to mounting rack, with bolts			mounting rack	
for mounting on valve manifold			With bolds for mounting on valve manifold	
• for valve manifolds 7MF9412-1B. and -1C.	M14 7MF9006-6LA • M14: For 2-spindle valve manifold DN 5			
• for valve manifold 7MF9412-1D.	M17	7MF9006-6NA	<ul> <li>M17: For 3-spindle valve manifold DN 5</li> <li>M18: For 5-spindle valve manifold DN 5</li> </ul>	
<ul> <li>for valve manifold 7MF9412-1E.</li> </ul>	M18	7MF9006-6PA		
Mounting clip			<ul> <li>Mounting clips (2 off)</li> <li>M16: For securing the mounting brackets M14, M17 and M18</li> </ul>	
2 off, to secure mounting bracket to pipe	M16	7MF9006-6KA	to pipe	
Valve manifold 100 bar			Valve manifold 100 bar, suitable for oxygen	
Oil- and grease-free cleaning for			S12: For 2-spindle valve manifold DN 5	
oxygen applications, max. pressure PN 100 (1450 psi) and max. temper- ature 60 °C (140 °F)			<ul> <li>S13: For 3-spindle valve manifold DN 5</li> <li>S14: For 5-spindle valve manifold DN 5</li> </ul>	
• for valve manifolds 7MF9412-1B. and -1C.	S12		Characteristic curves	
<ul> <li>for valve manifold 7MF9412-1D.</li> </ul>	S13		bor	
<ul> <li>for valve manifold 7MF9412-1E.</li> </ul>	S14		0 bar 420 bar (6092 psi) at 120 °C (248 °F)	
NACE MR-0175-certified	D07		200 (240 T) 350 bar (5076 psi) at 200 °C	
incl. acceptance test certificate 3.1			300 100 100 300 300 (392 °F) (392 °F)	

manifolds, please use Order code; otherwise use Article No.
 <sup>2)</sup> Flange connections with M10 screws only permissible up to PN 160 (2321 psi)!

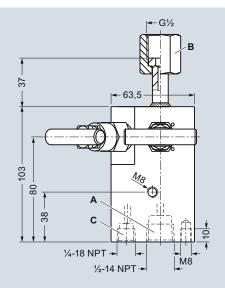
# Permissible operating pressure as a function of the permissible operating temperature

0 100 200 300 400 °C Operating temperature

Fitttings - Shut-off valves for differential pressure transmitters

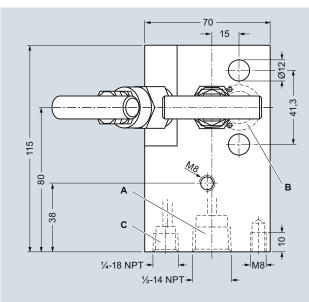
### 2-, 3- and 5-spindle valve manifolds for installing in protective boxes

#### Dimensional drawings



- Process connection: 1/2-14 NPT Α
- Transmitter connection: Nipple to DIN 16284, G<sup>1</sup>/<sub>2</sub>, SW 27 В
- C Vent / test connection: 1/4-18 NPT

2-spindle valve manifold DN 5 (7MF9412-1B..) with rotating sleeve, dimensions in mm

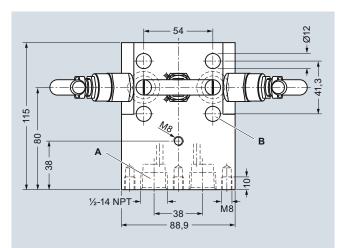


Process connection: 1/2-14 NPT А

В

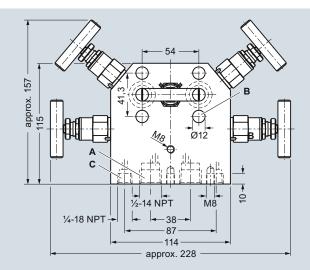
С Valve design: external spindle thread

2-spindle valve manifold DN 5 (7MF9412-1C..), dimensions in mm



- A Process connection: 1/2-14 NPT
- Transmitter connection: Flange connection EN 61518, form A В Valve design: external spindle thread

3-spindle valve manifold DN 5 (7MF9412-1D..), dimensions in mm



Process connection: 1/2-14 NPT

A B Transmitter connection: Flange connection to EN 61518, form A Vent / test connection: ¼-18 NPT

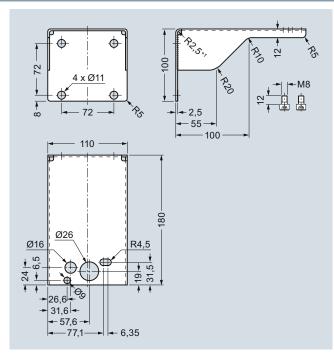
С

Valve design: external spindle thread

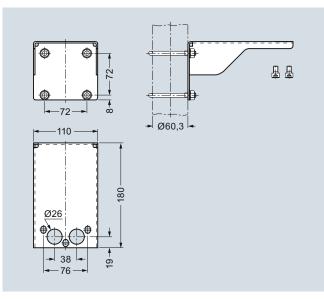
5-spindle valve manifold DN 5 (7MF9412-1E..), dimensions in mm

Fitttings - Shut-off valves for differential pressure transmitters

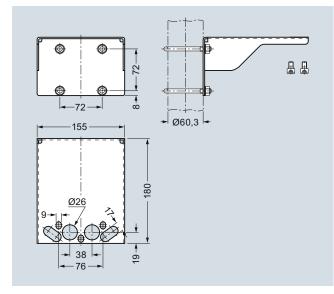
### 2-, 3- and 5-spindle valve manifolds for installing in protective boxes



Mounting bracket (7MF9006-6LA)/(M14) for 2-spindle valve manifolds, dimensions in mm

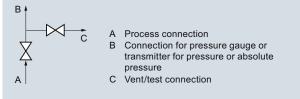


Mounting bracket (7MF9006-6NA)/(M17) for 3-spindle valve manifolds, dimensions in mm



Mounting bracket (7MF9006-6PA)/(M18) for 5-spindle valve manifolds, dimensions in mm

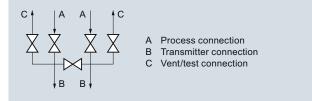
### Schematics



2-spindle valve manifold DN 5 (with rotating sleeve  $G^{\prime\prime_2}$  or flange connection), connections



3-spindle valve manifold DN 5, connections





### **Pressure Measurement**

Fitttings - Shut-off valves for differential pressure transmitters

3- and 5-spindle valve manifolds for vertical angular differential pressure lines

#### Overview



These 3-spindle and 5-spindle valve manifolds 7MF9413-1... were developed specially for vertical differential pressure lines.

The valve manifolds are used to shut off the differential pressure lines and to check the pressure transmitter zero.

The 5-spindle valve manifold permits venting on the transmitter side and checking of the pressure transmitter characteristic.

#### Benefits

- For vertical differential pressure lines
- Max. operating pressure 420 bar (6092 psi)
- Transmitters of the DS series can be operated and read from the front.

### Application

The 3-spindle and 5-spindle valve manifolds for vertical differential pressure lines are for liquids and gases. The valve manifolds are flanged on 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 to IEC 61518, form B .

The 2-spindle and the 5-spindle valve manifold have in addition a vent and test connection 1/4-18 NPT.

#### Materials used:

Component	Material	Mat. No.
Housing	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
- Checking the pressure transmitter zero

Additional functions of the 2-spindle and 5-spindle valve manifolds through the vent and test connection:

- Venting on the transmitter side
- · Checking the pressure transmitter characteristic

Selection and Ordering data		Article No.
Valve manifolds for vertical different pressure lines		7 M F 9 4 1 3 - 🗖 A
Click on the Article No. for the onlin guration in the PIA Life Cycle Portal		
for liquids and gases for flanging to pressure transmitters for lute and differential pressure Material: stainless steel, mat. No: 1.440 max. working pressure 420 bar (6092 (order accessory set with Order code) without certificate		
• 3-spindle valve manifold		1 D
<ul> <li>5-spindle valve manifold</li> </ul>		1 E
Accessories		
Factory test certificate EN 10204-2.2		7MF9000-8AB
Material acceptance test certificate EN 10204-3.1		7MF9000-8AD
Selection and Ordering data	Order co	ode Article No.
Further designs <sup>1)</sup>		
Please add "-Z" to Article No. and specify Order code.		
Accessory set to EN (connection between valve manifold and pressure transmitter)		
4x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 1 <sup>3</sup> / <sub>4</sub> inch to ASME B18.2.1; chro- mized steel 2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)	K36	7MF9411-5DB
Accessory set to DIN <sup>2)</sup>		
(connection between valve manifold and pressure transmitter)		
4x screws M10x45 to DIN EN 24014; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F); Flange connection with M10 screws only permissible up to PN 160 (2321 psi).	K16	7MF9411-6BB
Mounting bracket		
required <b>for wall mounting</b> or for securing to mounting rack, with bolts for mounting on valve manifold		
• for valve manifold 7MF9413-1D.	M17	7MF9006-6NA
• for valve manifold 7MF9413-1E.	M18	7MF9006-6PA
required <b>for mounting on 2" stand- pipe</b> , with bolts for mounting on valve manifold		
• for valve manifold 7MF9413-1D.	M19	7MF9006-6QA
Mounting clip		
2 off, to secure mounting bracket to pipe	M16	7MF9006-6KA
Valve manifold 100 bar (1450 psi) suitable for oxygen		
• for valve manifold 7MF9413-1D.	S13	
• for valve manifold 7MF9413-1E.	S14	
NACE MR-0175-certified	D07	
incl accentance test certificate 3.1		

incl. acceptance test certificate 3.1

to EN 10204

When ordering accessory set or mounting together with the multiway cock, please use Order code; otherwise use Article No. 1)

<sup>2)</sup> Flange connections to DIN 19213 only permissible up to PN 160 (2321 psi)!

Fitttings - Shut-off valves for differential pressure transmitters

### 3- and 5-spindle valve manifolds for vertical angular differential pressure lines

#### Accessories

# Accessory set (connection between manifold and transmitter)

- K36: 4 screws  $^{7}\!/_{16}\text{-}20$  UNF x 134 inch to ASME B18.2.1, 2 flat gaskets
- K16: 4 screws M10x45 to DIN EN 24014, 4 washers, 2 flat gaskets

#### Washers Ø 10.5 to DIN 125

Flat gaskets made of PTFE, max. 420 bar (6092 psi), 80  $^{\circ}\mathrm{C}$  (176  $^{\circ}\mathrm{F})$ 

**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

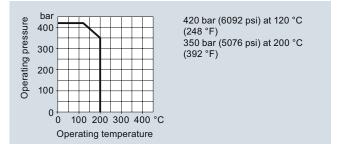
### Mounting clips (2 off)

For securing the mounting brackets M17, M18 and M19 to pipe

#### Valve manifold 100 bar, suitable for oxygen

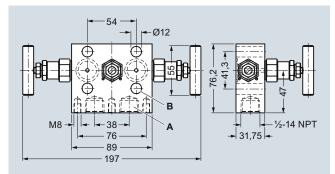
- · For 3-spindle valve manifold
- · For 5-spindle valve manifold

#### Characteristic curves

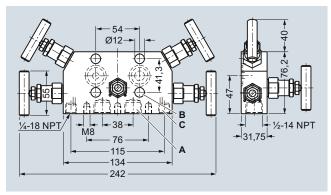


Permissible operating pressure as a function of the permissible operating temperature

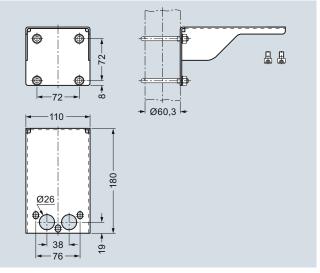
#### Dimensional drawings



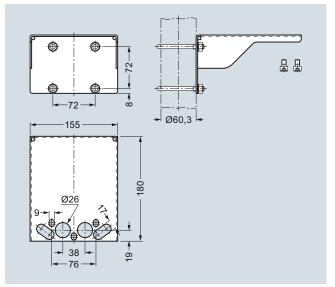
3-spindle valve manifold 7MF9413-1D. for vertical differential pressure lines, dimensions in  $\ensuremath{\mathsf{mm}}$ 



5-spindle valve manifold 7MF9413-1E. for vertical differential pressure lines, dimensions in  $\ensuremath{\mathsf{mm}}$ 



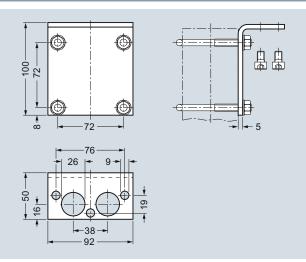
Mounting bracket (7MF9006-6NA)/(M17) for 3-spindle valve manifolds, dimensions in mm



Mounting bracket (7MF9006-6PA)/(M18) for 5-spindle valve manifolds, dimensions in mm

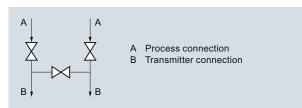
Fitttings - Shut-off valves for differential pressure transmitters

### 3- and 5-spindle valve manifolds for vertical angular differential pressure lines

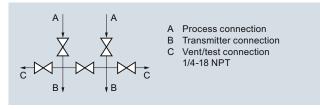


Mounting bracket (7MF9006-6QA)/(M19) for 3-spindle valve manifolds, dimensions in mm

#### Schematics



3-spindle valve manifold for vertical differential pressure lines, connections



5-spindle valve manifold for vertical differential pressure lines, connections

Fitttings - Shut-off valves for differential pressure transmitters

# Low-pressure multiway cock Article No.



The low-pressure multiway cock 7MF9004-4CA/-4DA can be flanged to pressure transmitters for differential pressure.

#### Benefits

- Robust design
- · For liquids and gases
- One-hand operation

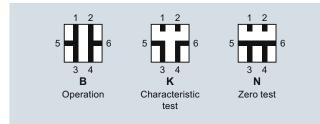
#### Design

The multiway cock has 2 process connections and 2 test connections, which are available in 2 versions (with sealing screws  $G^3/_8$  or quick-release couplings). The housing is made of hotpressed brass CuZn39Pb3, CW 614N. Test connections with sealing screws 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
- Testing the pressure transmitter zero
- Testing the pressure transmitter characteristic



Cock positions; the symbols are printed on the cock

Selection and Ordering data		ALLICIE NO.
Low-pressure multiway cock for liquids and gases, for flanging to pr transmitters, max. working pressure 25 (363 psi), max. working temperature 60 (140 °F) (up to 80 °C (176 °F) for a shor weight 1.75 kg (without accessory set) Test connections		
$2x$ sealing screws $G^3/_8$		71450004 404
0 0		7MF9004-4CA
2x quick-release couplings		7MF9004-4DA
Accessories		
Test report to EN 10204-3.1		7MF9000-8AB
Material acceptance test certificate to EN 10204-3.1		7MF9000-8AD
Selection and Ordering data	Order co	ode Article No.
Further designs <sup>1)</sup>		
Please add "-Z" to Article No. and specify Order code.		
Accessory set to EN (required for flanging, weight 0.2 kg)		
4x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 1 inch to ASME B18.2.1; chromized steel 2x gaskets made of PTFE, max. permissible temperature 80 °C (176 °F)	L31	7MF9004-5CC
Accessory set to DIN (required for flanging, weight 0.2 kg)		
4x screws M10x25 to DIN EN 24017; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x gaskets made of PTFE, max. permissible temperature 80 °C (176 °F)		
<ul> <li>Standard design</li> </ul>	L11	7MF9004-6AD
Version for oxygen	L15	7MF9004-6AE
Multiway cock in oil-free and grease-free design BAM-tested lubricant, gasket suitable for oxygen Mounting bracket	S11	
required for wall mounting or for securing on rack (72 mm grid), made of electrogalvanized sheet- steel, weight 0.85 kg	M13	7MF9004-6AA

<sup>1)</sup> When ordering accessory set or mounting together with the multiway cock, please use Order code; otherwise use Article No.

Fitttings - Shut-off valves for differential pressure transmitters

#### Low-pressure multiway cock

#### Accessories

#### Accessory set for low-pressure multiway cock

- L31: 4 screws <sup>7</sup>/<sub>16</sub>-20 UNF x 1 inch, 2 flat gaskets
- L11: 4 screws M10x25 to DIN EN 24017, 4 washers, 2 flat gaskets
- L15 (suitable for oxygen): 4 screws M10x25 to DIN EN 24017, 4 washers, 2 flat gaskets

#### Washers Ø 10.5 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, gasket suitable for oxygen

#### Mounting brackets

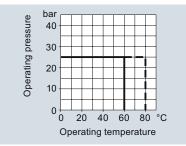
• M13: Required for wall mounting or for securing on rack (72 mm grid); made of electrogalvanized sheet-steel

## Dimensional drawings

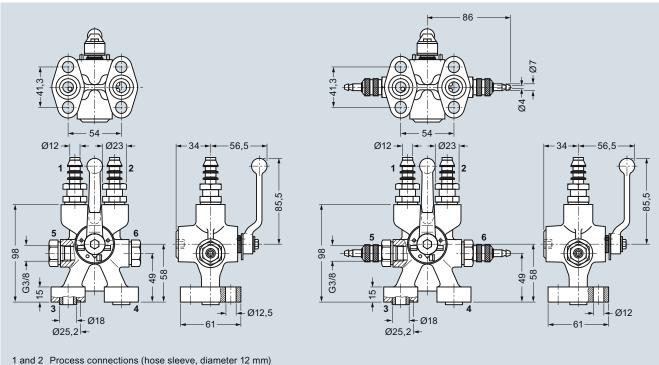
## Options

- Test connections
- 2 sealing screws G<sup>3</sup>/<sub>8</sub>
  2 quick-release couplings

#### Characteristic curves



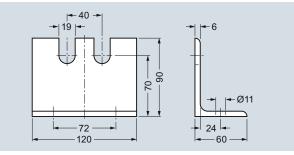
Low-pressure multiway cock, permissible operating pressure as a function of the permissible operating temperature



3 and 4 Transmitter connections (EN 61518, form A)

5 and 6 Text connections (with sealing screws G3/8 or with quick-release couplings

Low-pressure multiway cock 7MF9004-4CA/-4DA for direct flanging to pressure transmitters for differential pressure, dimensions in mm



Mounting bracket 7MF9004-6AA (M13), dimensions in mm

1

Fittings - Accessories



The oval flange 7MF9408-2C. for pressure transmitters for absolute pressure and differential pressure has a  $\frac{1}{2}$ -14 NPT female thread and is designed for max. operating pressure 400 bar (5800 psi).

#### Accessories

#### Accessory set for oval flange

- E36: 2 screws  $^{7}\!/_{16}\text{-}20$  UNF x 1½ inch to ASME B18.2.1, 1 flat gasket
- E34: 2 screws  $^{7}\!/_{16}$  20 UNF x  $1^{1\!/_{2}}$  inch to ASME B18.3, 1 O-ring (FPM 90)
- E13: 2 screws M10x40 to DIN EN 4762, 2 washers, 1 O-ring (FPM 90)
- E16: 2 screws M10x40 to DIN EN ISO 4762, 2 washers, 1 flat gasket

Washers Ø 10.5 to DIN 125

Flat gaskets made of PTFE, max. 420 bar (6092 psi), 80 °C (176 °F)

O-ring to DIN 3771, 20 x 2.65 – S – FPM90, max. 420 bar (6092 psi), 120 °C (248 °F)

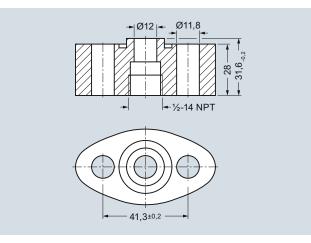
Note: M10 screws only permissible up to PN 160 (2321 psi)!

Selection and Ordering data	Article	e No.	
<b>Oval flange</b> with female thread ½-14 NPT, max. wor pressure 420 bar (6092 psi), flange con tion to IEC 61518, form A	_		
Material			
P250GH, mat. No.: 1.0460		7MF9	408-2CE
X 2 CrNiMo 17 13 2, mat. No. 1.4404/3	16L	7MF9	408-2CL
Selection and Ordering data	Order co	ode	Article No.
Further designs <sup>1)</sup>			
Please add "-Z" to Article No. and specify Order code.			
Accessory set to EN			
2x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 1½ inch to ASME B 18.2.3; chro- mized steel 1x flat gasket made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)	E36		7MF9408-5DA
2x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 1½ inch to ASME B 18.2.3; chro- mized steel 1x O-ring to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F)	E34		7MF9408-5CA
Accessory set to DIN			
2x screws M10x40 to DIN EN ISO 4762; chromized steel 2x washers Ø 10.5 mm to DIN 125; 1x O-ring to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F) <sup>2)</sup>	E13		7MF9408-6AA
2x screws M10x40 to DIN EN ISO 4762; chromized steel 2x washers Ø 10.5 mm to DIN 125; 1x flat gasket made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F) <sup>2)</sup>	E16		7MF9408-6BA
NACE MR-0175-certified incl. acceptance test certificate 3.1 to EN 10204	D07		
1)			

 When ordering accessory set together with the oval flange, please use Order code; otherwise use Article No.

<sup>2)</sup> Flange connections with M10 screws only permissible up to PN 160 (2321 psi)

#### Dimensional drawings



Oval flange 7MF9408-2C., dimensions in mm

Fittings - Accessories

#### Adapters

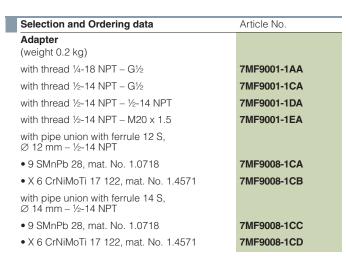
#### Overview

Adapters enable e.g. a transition from medium connections with NPT thread to shut-off valves to DIN 16270 ... 16272 or pipes in conjunction with a connection gland (e.g. 7MF9008).

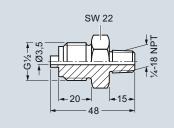
#### Design

The connection pieces are made of X 6 CrNiMoTi 17 12 2, mat. No. 1.4571 and available in 3 versions

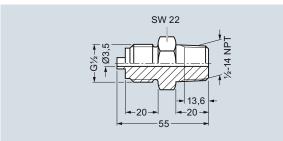
- Thread 1/4-18 NPT and connection shank G1/2 to DIN EN 837-1
- Thread <sup>1</sup>/<sub>2</sub>-14 NPT and connection shank G<sup>1</sup>/<sub>2</sub> to DIN EN 837-1
- Thread 1/2-14 NPT and thread 1/2-14 NPT



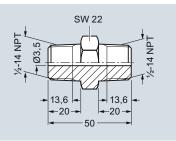
#### Dimensional drawings



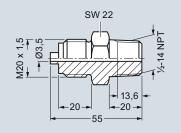
Connection piece with thread  $^{1\!\!\!/}_{4}\text{-18}$  NPT and connection shank G  $^{1\!\!\!/}_{2}$  (7MF9001-1AA), dimensions in mm



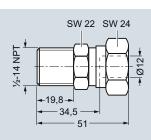
Connection piece with thread  $^{1\!\!/_2-14}$  NPT and connection shank G  $^{1\!\!/_2}$  (7MF9001-1CA), dimensions in mm



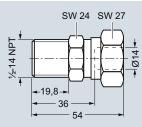
Connection piece with thread  $\rlap{l}{2}\mbox{-14}$  NPT and thread  $\rlap{l}{2}\mbox{-14}$  NPT (7MF9001-1DA), dimensions in mm



Connection piece with thread  $\rlap{blue}{2-14}$  NPT and connection shank M20 x 1.5 (7MF9001-1EA), dimensions in mm



Connection piece with pipe union with ferrule 12 S, Ø 12 mm and thread  $\rlap{le}{2}\mbox{-14}$  NPT (7MF9008-1CA and -1CB), dimensions in mm



Connection piece with pipe union with ferrule 14 S,  $\varnothing$  14 mm and thread  $\rlap{le}{2}\mbox{-14}$  NPT (7MF9008-1CC and -1CD), dimensions in mm



Fittings - Accessories

1

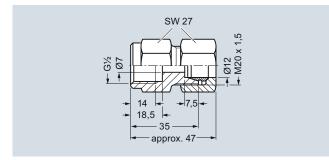
## Overview

Connection glands to connect medium or differential pressure lines to collars  $G^{\prime\!\!/}_{2}$  to DIN EN 837-1

- For rated pressures up to PN 630 (9137psi)
- For oxygen only up to PN 250 (3626 psi)

Selection and Ordering	Article No.					
Connection screwed g for pipelines (weight 0.2 kg)	land					
Material						
11SMn30 (mat. No. 1.0715)	Standard	7MF9008-1GA				
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)	Standard	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

Fittings - Accessories

### Connection parts G 1/2

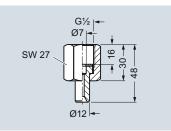
## Overview

Connection parts  $G\!\!\!\!/_2$  for pressure gauges and shut-off fittings are available in 3 versions:

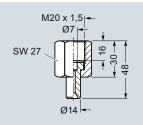
- Nipple connection
- Clamping sleeve
- Collar connection piece

Selection and Order	ing data	Article No.
Selection and Order	ing uata	Article NO.
for pressure gauges a		
Nipple connection G½ to DIN 16284 (un gasket); max. working (5802 psi); weight 0.1 connection: G½ to DI Female thread G½	-	
Material	Mat. No.	
CuZn39Pb3	CW 614N	M56340-A0001
Union nut 9 SMn 28 k Nipple:	1.0715	M56340-A0002
RSt 37-2	1.0037	
Union nut X 8 CrNiS 18 9 Nipple:	1.4305	M56340-A0003
X 6 CrNiMoTi 17 12 2	1.4571/316Ti	
M20 x 1.5 to DIN 162 and gasket); max. wc (5802 psi); weight 0.1 connection: M20 x 1.4 Female thread M20 x Material		
Union nut X 8 CrNiS 18 9 Nipple: X 6 CrNiMoTi 17 12 2		M56340-A0008
Clamping sleeve G½ to DIN 16283; ma 400 bar (5802 psi); w Connections: G½ to D Female thread: G½ ri		
Material	Mat. No.	
CuZn39Pb3	CW614N	M56340-A0004
9 SMn 28 k	M56340-A0005	
Collar-adapter		
max. working pressur Connections: G½ to I Male thread: G½, G½		
Material		

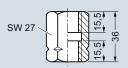
## Dimensional drawings



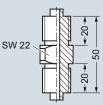
Nipple connection  $G^{1\!\!/_2}$  (M56340-A0001 to -A0003), dimensions in mm



Nipple connection M20 x 1.5 (M56340-A0008), dimensions in mm



Clamping sleeve (M56340-A0004/-A0005), dimensions in mm



Collar connection piece (M56340-A0006/-A0007), dimensions in mm

CW614N

1.0715

M56340-A0006

M56340-A0007

CuZn39Pb3

9 SMn 28 k

Fittings - Accessories

## Water traps, Sealing rings to EN 837-1

#### Overview

Water traps protect pressure gauges and shut-off fittings from heating up (e.g. by steam) by the water column produced by the water trap.

The max. working temperature is 120 °C (248 °F) at 100 bar (1450 psi), 300 °C (572 °F) at 80 bar (1160 psi) or 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

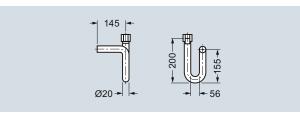
The water traps are available in U shape (type B) or circular shape (type D) to DIN 16282. They have a weld-on end  $\emptyset$  20 mm × 2.6 mm on the measurement side. The connection on the device side is a clamping sleeve G<sup>1</sup>/<sub>2</sub> to DIN 16283.

The water traps are made of steel (P250GH) or stainless steel (X 6 CrNiMoTi 17 12 2)

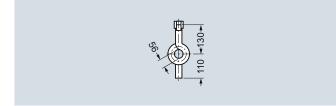
Water traps are designed as standard for max. operating temperature 120 °C (248 °F) at max. operating pressure 100 bar (1450 psi) (300 °C (572 °F) at 80 bar (1160 psi), 400 °C (752 °F) at 63 bar (914 psi). Water traps for higher operating pressures and temperatures are available on request.

Selection and Ordering	ng data	Article No.
Water traps for pressure gauges a ters, max. working term (248 °F), max. working (1450 psi) (or 300 °C ( (1160 psi), or 400 °C ( (914 psi)), weight 0.7 H		
Water trap B to DIN 1	6282	
Material	Mat. No.	
P235GH	1.0345	M56340-A0043
X 6 CrNiMoTi 17 12 2	1.4571/316Ti	M56340-A0061
Water trap D to DIN 1	6282	
Material		
P235GH	M56340-A0045	
X 6 CrNiMoTi 17 12 2	1.4571/316Ti	M56340-A0063

#### Dimensional drawings



Water traps, type B, M56340-A0043/-A0061, dimensions in mm

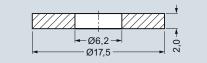


Water traps, type D, M56340-A0045/-A0063, dimensions in mm

#### Overview

The sealing rings to EN 837-1 are required to seal measuring instruments for pressure with the process connection  $G1\!\!^2\text{B}.$ 

#### Dimensional drawings



Sealing ring 7MF9007-7A. to EN 837-1, dimensions in mm

Selection and Ordering data	Article No.
Sealing ring to EN 837-1 for thread G <sup>1</sup> / <sub>2</sub> made of (packing unit 100 pcs)	
• Copper	7MF9007-7AA
Soft iron	7MF9007-7AB
Stainless steel, matNo. 1.4571	7MF9007-7AC
• PTFE	7MF9007-7AD
Accessories	
Test report to EN 10204-3.1	7MF9000-8AB
Material acceptance test certificate to EN 10204-3.1	7MF9000-8AD

Fittings - Accessories

## Pressure surge reducers

#### Overview

The pressure surge reducer protects the pressure gauge against damage, premature wear and tear and inaccurate/fluctuating indications.

#### Application

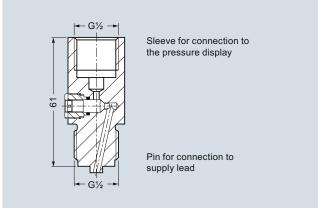
The pressure reducer is used when pulsations occur in the measured medium (e.g. in slow-running vapor engines, piston pumps and compressors), or if drastic fluctuations are likely to occur in the measured medium (e.g. in hydraulic presses and tensile testing machines).

### Design

- Enclosure made of brass or stainless steel (mat. no. 1.4571)
- Adjustable nozzle
- · Sleeve for connection to the measuring instrument
- Pin for connection to supply lead

Selection an	d Ordering data	Article No.	
Pressure sur Weight appro			
Material	Full-scale value	Weight approx. in kg	
Brass	250 bar (3626 psi)	0.21	M56340-A54
Stainless steel	600 bar (8702 psi)	0.21	M56340-A59

#### Dimensional drawings



Pressure surge reducer, dimensions in mm

Fittings - Accessories

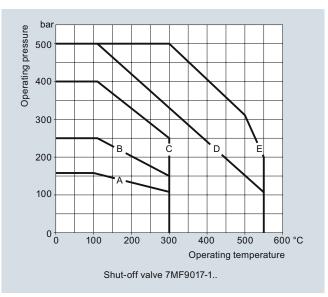
## Primary shut-off valves

## Overview

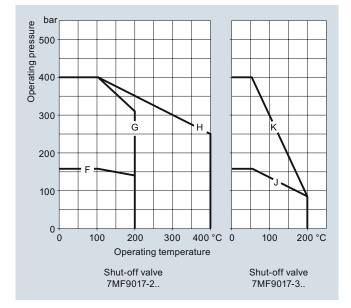
- Primary shut-off valves are available in the following versions:
- For non-corrosive liquids, gases and vapors
- For corrosive liquids and gases
- Grease-free for oxygen

The shut-off valves are available in various materials and with various connections (see Selection and Ordering data)

#### Characteristic curves

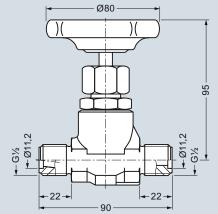


Shut-off valve 7MF9017-1.., permissible working pressure as a function of the permissible working temperature

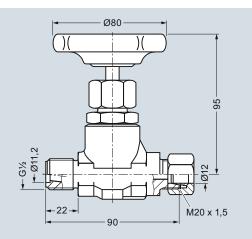


Shut-off valve 7MF9017-2.. and -3.., permissible working pressure as a function of the permissible working temperature

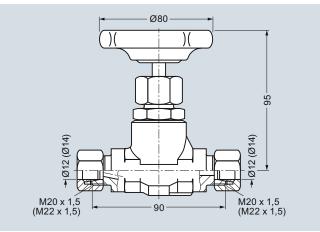
## Dimensional drawings



Shut-off valve 7MF9017-1A., dimensions in mm

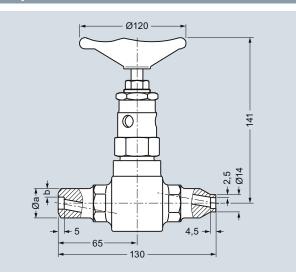


Shut-off valve 7MF9017-1B. and -2B., dimensions in mm



Shut-off valves 7MF9017-1C., -1D. and -2C., dimensions in mm

Fittings - Accessories



#### Shut-off valves 7MF9017-, dimensions in mm

ØAxb	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.

Primary shut-off v	valves, wi	thout certificate						
Max. working pressure	Charac- teristic <sup>1)</sup>	Material	Mat. No.	Spindle thread	Connections	Approx. weight kg	Article No.	
Shut-off valve for	non-aggi	ressive liquids, gases	and vapo	ors		7	7MF9017-1	
↗ Click on the Arti	icle No. fo	r the online configuration	on in the F	PIA Life Cy	vcle Portal.			
160 bar (2321 psi)	А	P250GH	1.0460	Internal	Threaded socket G1/2 form R, DIN 19207	0.8		Α
160 bar (2321 psi)	A	P250GH	1.0460	Internal	Threaded socket $G^{1/2}$ form R, DIN 19207 DIN 19207 and pipe union with ferrule for pipe $\varnothing$ 12 mm, S series	0.8		В
400 bar (5800 psi)	С	P250GH	1.0460	Internal	Pipe union with ferrule for pipe $\varnothing$ 12 mm, S series	1		С
400 bar (5800 psi)	С	P250GH	1.0460	Internal	Pipe union with ferrule for pipe $\emptyset$ 14 mm, S series	1		D
500 bar (7252 psi)	D	16 Mo 3	1.5415	External	Welding sleeves $\varnothing$ 14 mm $ imes$ 2.5 mm	1.6		F
500 bar (7252 psi)	E	11 CrMo 9 10	1.7383	External	Welding sleeves $\varnothing$ 14 mm $ imes$ 2.5 mm	1.6		G
500 bar (7252 psi)	D	16 Mo 3	1.5415	External	Welding sleeves Ø 21.3 mm $\times$ 6.3 mm and Ø 14 mm $\times$ 2.5 mm	1.6		Η
500 bar (7252 psi)	D	16 Mo 3	1.5415	External	Welding sleeves Ø 24 mm $\times$ 7.1 mm and Ø 14 mm $\times$ 2.5 mm	1.6		J
500 bar (7252 psi)	E	11 CrMo 9 10	1.7383	External	Welding sleeves Ø 24 mm $\times$ 7.1 mm and Ø 14 mm $\times$ 2.5 mm	1.6		K
Shut-off valve for	aggressi	ve liquids and gases				7	7MF9017-2	!
160 bar (2321psi)	F	X 6 CrNiMoTi 17 12 2	1.4571/ 316Ti	Internal	Threaded socket $G^{1/2}$ form R, DIN 19207 DIN 19207 and pipe union with ferrule for pipe $\varnothing$ 12 mm, S series	0.8		В
400 bar (5800 psi)	G	X 6 CrNiMoTi 17 12 2	1.4571/ 316Ti	Internal	Pipe union with ferrule for pipe Ø 12 mm, S series	1		С
400 bar (5800 psi)	Н	X 6 CrNiMoTi 17 12 2	1.4571/ 316Ti	External	Welding sleeves Ø 21.3 mm $\times$ 6.3 mm and Ø 14 mm $\times$ 2.5 mm	1.6		н
400 bar (5800 psi)	Н	X 6 CrNiMoTi 17 12 2	1.4571/ 316Ti	External	Welding sleeves Ø 24 mm $\times$ 7.1 mm and Ø 14 mm $\times$ 2.5 mm	1.6		J

Factory test certificate EN 10204–2.2

Material acceptance test certificate EN 10204-3.1

7MF9000-8AB 7MF9000-8AD

<sup>1)</sup> See Figure "Permissible working pressure as a function of the permissible working temperature"

Fittings - Accessories

## Compensation vessels

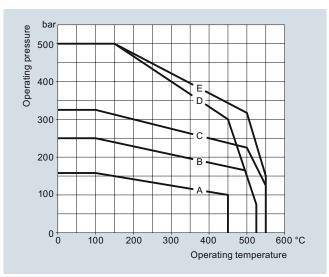
## Overview

The compensation vessels prevent the level difference which occurs with pressure changes in the pressure lines and which falsifies the measurement.

According to DIN 19211, the temperature in the compensation vessel must be assumed to be 50 K less than the steam temperature in the pipe when calculating the wall thicknesses. This is because the temperature in the compensation vessel during operation can only rise up to the saturated steam temperature.

A material acceptance test certificate A to EN 10204-3.1 is available for the materials from which the compensation vessels are made.

### Characteristic curves



Permissible operating pressure as a function of the permissible operating temperature

#### Selection and Ordering data

Selection and Ord	ering dat	a						
Compensation ves	ssel, with	out certificate						
Max. working pressure	Charac teristic <sup>1</sup>	- Material	Mat. No.	Connections Input	Output	Approx. contents cm <sup>3</sup>	Approx. weight kg	Article No.
							7	7 M F 9 0 1 5 - A
↗ Click on the Artic	cle No. fo	r the online con	figuration	in the PIA Life Cycle Port	al.			
160 bar (2321 psi)	А	16 Mo 3	1.5415	Threaded socket G½, form R, DIN 19207	Threaded socket G½, form V, DIN 19207	250	0.8	1 A
250 bar (3626 psi)	В	16 Mo 3	1.5415	Welding sleeve Ø 21.3 mm × 6.3 mm	Welding sleeve $\varnothing$ 21.3 mm $\times$ 6.3 mm	250	0.8	1 B
250 bar (3626 psi)	В	16 Mo 3	1.5415	Welding sleeve $\emptyset$ 24 mm × 7.1 mm	Welding sleeve $\emptyset$ 24 mm × 7.1 mm	250	1	1 C
500 bar (7252 psi)	Е	11 CrMo 9 10	1.7383	Welding sleeve $\emptyset$ 24 mm × 7.1 mm	Welding sleeve $\emptyset$ 24 mm × 7.1 mm	170	1	1 D
250 bar (3626 psi)	В	16 Mo 3	1.5415	Welding sleeve $\varnothing$ 33.7 mm $\times$ 4.5 mm	Welding sleeve $\emptyset$ 24 mm × 7.1 mm	700	0.7	1 E
160 bar (2321 psi)	А	16 Mo 3	1.5415	Threaded socket G½, form R, DIN 19207	Threaded socket 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 $\emptyset$ 21.3 mm × 6.3 mm	20	1.6	5 B
500 bar (7252 psi)	D	16 Mo 3	1.5415	Welding sleeve $\emptyset$ 24 mm × 7.1 mm	Welding sleeve $\emptyset$ 24 mm × 7.1 mm	20	1.6	5 C
500 bar (7252 psi)	E	11 CrMo 9 10	1.7383	Welding sleeve $\emptyset$ 24 mm × 7.1 mm	Welding sleeve $\emptyset$ 24 mm × 7.1 mm	20	1.6	5 D
Accession								

#### Accessories

Factory test certificate EN 10204-2.2

Material acceptance test certificate EN 10204-3.1

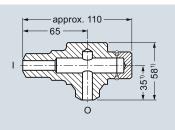
<sup>1)</sup> See Figure "Permissible working pressure as a function of the permissible working temperature"

## 

Dimensional drawings

I Input (see Ordering data for dimensions)O Output (see Ordering data for dimensions)

Compensation vessel 7MF9015-1.., dimensions in mm



- Input (see Ordering data for dimensions)
   O Output (see Ordering data for dimensions)
   <sup>1)</sup> 30 mm longer with 7MF9015-5A.
- Compensation vessel 7MF9015-5.., dimensions in mm

7MF9000-8AB 7MF9000-8AD

Fittings - Accessories

Connection parts

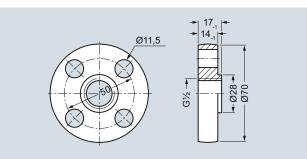
## Overview

- Connection parts are available in the following versions:
- Threaded flange pair G1/2 with stainless steel gasket
- Nipple G1/2 form V to DIN 19207
- Union nut G1/2 made of C 35 to DIN 16284
- Gasket B1/2 (grooved) to DIN 19207

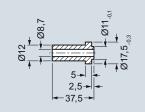
All connection parts are also available grease-free for oxygen.

Selection and Ordering data	Article No.
Threaded flange pair G1/2	
<ul> <li>with stainless steel gasket</li> </ul>	7MF9007-4CA
<ul> <li>grease-free for oxygen, with stainless steel gasket</li> </ul>	7MF9007-4DA
Scope of delivery:	
2x threaded flanges G1/2 to DIN 19207; material: P250GH (mat. No. 1.0460)	
4x hexagon screws M10x45 to DIN EN 24014; Material: C35E (mat. No. 1.1181)	
4x hexagon screws M10x50 to DIN EN 24032	
1x gasket G½ (7MF9007-6BA) grooved, to DIN 19207; Material: X 6 CrNiMoTi 17 12 2 (mat. No. 14571/316Ti)	
Only for 7MF9007-4CA!	
1x gasket G½ (7MF9k007-6CA), grease-free for oxygen, grooved, to DIN 19207; Material: X 6 CrNiMoTi 17 12 2 (mat. No. 14571/316Ti)	
Only for 7MF9007-4DA!	
Nipple G½	
to DIN 19207	
• Material: 16 Mo 3 (mat. No. 1.5415)	7MF9007-4KA
• grease-free for oxygen, Material: X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)	7MF9007-4LA
Union nut G½	
to DIN 16284	
• Material: C35E (mat. No. 1.1181)	7MF9007-4MA
• grease-free for oxygen, Material: X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)	7MF9007-4NA
Gasket G½	
to DIN 19207, grooved	
• Material: X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)	7MF9007-6BA
• grease-free for oxygen, Material: X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)	7MF9007-6CA

## Dimensional drawings



Threaded flange 7MF9007-4CA/-4DA, dimensions in mm



Nipple G1/2 7MF9007-4KA/-4LA, dimensions in mm



Union nut G1/2 7MF9007-4MA/-4NA, dimensions in mm



Gasket 7MF9007-6BA/-6CA, dimensions in mm