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## **Pressure Measurement**



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			You can download all instructions,
			catalogs and certificates for SITRANS P
			free of charge at the following Internet
			address: www.siemens.com/sitransp

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# Pressure Measurement Product overview

#### Overview

	Application	Description		Software for parameterization
SITRANS P · Transmitters for ba	sic requirements			
	Two or three-wire transmitters for measuring gauge and absolute pressure	SITRANS P Z Compact single-range transmitters Analog electronics Available ex stock	2/4	-
1	Two or three-wire transmitter for measuring differential pressure	SITRANS P250  Compact single-range transmitters  Analog electronics  Available ex stock	2/13	-
	Two-wire transmitter for measuring hydrostatic levels	SITRANS P MPS (submersible sensor) For measuring liquid levels in wells, tanks, channels, dams etc.	2/18	-
	Transmitters for gauge and absolute pressure for food, pharmaceuticals and biotechnology	SITRANS P Compact Single-range transmitters in two-wire system Hygiene-based design with various aseptic connections according to EHEDG, FDA and GMP recommendations.	2/22	-
SITRANS P · Transmitters with \	WirelessHART communication			
	Wireless transmitter with Wireless HART for measuring gauge and absolute pressure	SITRANS P280 Wireless communication with WirelessHART Battery operation Parameterization using 3 buttons and SIMATIC PDM with HART modem or wireless with WirelessHART	2/29	SIMATIC PDM
SITRANS P · Transmitters for fo	od, pharmaceuticals and bioted	chnology		
	Two-wire transmitters for measuring gauge and absolute pressure	SITRANS P300  Hygiene-based design according to EHEDG, 3A, FDA and GMP  Parameterization using 3 buttons and communication over HART, PROFIBUS PA or FOUNDATION Fieldbus  Standard process connection G½", ½-NPT and front-flush process connections available  Range adjustment 100: 1	2/34	SIMATIC PDM
		Factory-mounting of valve manifolds on SITRANS P300 transmitters  • Simplified assembly  • With pressure test  • Stainless steel valve manifolds	2/55	-
SITRANS P · Transmitter for gau	ge pressure for the paper indu	stry		
	Two-wire transmitters for measuring gauge and absolute pressure	SITRANS P DS III and SITRANS P300 with PMC connection  • Range adjustment 100: 1  • Process connections for the paper industry  • Parameterization using 3 buttons and HART, PROFIBUS PA or FOUNDATION Fieldbus	2/57	SIMATIC PDM

# Pressure Measurement Product overview

	Application	Description		Software for parameterization
SITRANS P · Transmitter for ger	neral 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  • Available ex stock	2/74	SIMATIC PDM SIMATIC PDM
	Supplementary electronics for adaptation of two-wire transmitters for four-wire connections	Output: 0 or 4 to 20 mA Power supply: 24 V AC/DC, 230 V AC	2/139	-
		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	2/147	-
Remote seals for transmitters a	nd pressure gauges			
	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 available	2/150	-
Fittings				
	Shutting off the lines for the medium and differential pressure  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	2/195	-

#### Transmitters for basic requirements

SITRANS P Z for gauge pressure

#### Overview



The SITRANS P Z pressure transmitter, (7MF1562-...) measures the gauge pressure of aggressive and non-aggressive gases, liquids and vapors.

#### Benefits

- High measuring accuracy
- · Sturdy brass housing
- For aggressive and non-aggressive media
- For measuring the gauge pressure of liquids, gases and vapor
- Temperature-compensated measuring cell
- · Compact design

#### Application

The SITRANS P Z pressure transmitter for gauge pressure (7MF1562-...) is used above all in the following industrial areas:

- Power engineering
- Mechanical engineering
- Shipbuilding
- · Water supply etc.

A concrete application example is the measurement of compressed air containing oil in compressors or compressor stations.

#### Design

The main components of the pressure transmitter are:

- Brass housing with silicon measuring cell and electronics plate
- Process connection
- · Electrical connection

The silicon measuring cell has a thin-film strain gauge which is mounted on a ceramic diaphragm. The ceramic diaphragm can also be used for aggressive media.

The process connection to DIN EN 837-1 is made of brass and has a male thread  $G^{1}/_{8}B$ .

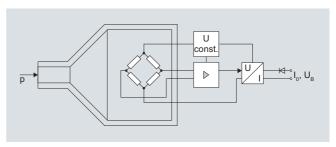
The electrical connection is made using a plug to DIN 43650 with a  $M16 \times 1.5$  cable inlet.

#### Function

The pressure transmitters of the SITRANS P Z for gauge pressure measure the gauge pressure of aggressive and non-aggressive gases, liquids and vapors.

The measuring cell is temperature-compensated.

#### Mode of operation



SITRANS P Z pressure transmitters (7MF1562-...), function diagram

The thin-film measuring cell has a thin-film resistance bridge at which the operating pressure p is transmitted through a ceramic diaphragm.

The measuring cell output voltage is fed to an amplifier and converted into an output current of 4 to 20 mA. The output current is linearly proportional to the input pressure.

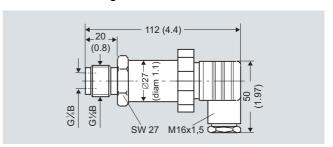
# Pressure Measurement Transmitters for basic requirements

for gauge pressure

Technical specifications						
SITRANS P Z pressure transmitte	rs for gauge pressure					
Mode of operation						
Measuring principle	Thin-film strain gauge					
Input						
Measured variable	Gauge pressure					
Measuring range	0 16 bar g (0 232 psi g) or 0 25 bar g (0 363 psi g)					
Output						
Current output signal	4 20 mA					
Measuring accuracy	as per EN 60770-1					
Error in measurement (at 25 °C (77 °F), including conformity error, hysteresis and repeatability)	0.5 % of full-scale value – typical					
Response time T <sub>99</sub>	< 0.1 s					
Long-term drift	0.3 % of full-scale value/year - typical					
Influence of ambient temperature						
• Start of scale	0.3 %/10 K of full-scale value - typical					
Measuring span	0.3 %/10 K of full-scale value - typical					
Rated conditions						
Medium conditions						
Temperature of medium	-30 +120 °C (-22 +248 °F)					
degree of protection to EN 60529	IP65					
Ambient conditions						
Ambient temperature	-25 +85 °C (-13 +185 °F)					
Storage temperature	-50 +100 °C (-58 +212 °F)					

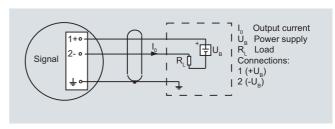
Design	
Weight	≈ 0.2 kg (≈ 0.44 lb)
Wetted parts materials	
Measuring cell	Al <sub>2</sub> O <sub>3</sub> – 96 %
• Process connection	Brass, mat. no. 2.0402
• Gasket	Viton
Process connection	Male thread G½B female thread G <sup>1</sup> / <sub>8</sub> B
Power supply	
Terminal voltage on pressure transmitter	
For current output	10 36 V DC
Certificates and approvals	
Classification according to PED 97/23/EC	For gases of fluid group 1 and liquids of fluid 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)

#### Dimensional drawings



SITRANS P Z pressure transmitters (7MF1562-...), dimensions in mm (inch)

#### Schematics



SITRANS P Z pressure transmitters (7MF1562-...), connection diagram

Selection and Ordering data			Order No.	Order code	
SITRANS P Z pressure transmitters for gauge pressure 2-wire system, characteristic rising			7MF1562 - 0 0		
Measured range	Max. working pressure				
0 16 bar g (0 232 psi g)	32 bar g (464 psi g)		3 C B		
0 25 bar g (0 363 psi g)	64 bar g (928 psi g)		3 C D		
Other version for measuring range Measuring range: to bar g (ps	≥ 1 bar g (≥ 14.5 psi g), add Order code and plain text: i g)		9 A A	H 1 Y	

D) Subject to export regulations AL: N, ECCN: EAR99H.

#### Transmitters for basic requirements

SITRANS P Z for gauge and absolute pressure

#### Overview



SITRANS P Z pressure transmitters (7MF1564-...), measure the gauge and absolute pressure as well as the level of liquids and gases.

#### Benefits

- · High measuring accuracy
- · Sturdy stainless steel housing
- For aggressive and non-aggressive media
- For measuring the pressure of liquids, gases and vapor
- · Temperature-compensated measuring cell
- · Compact design

#### Application

The SITRANS P Z pressure transmitter for gauge pressure and absolute pressure (7MF1564-...) is used above all in the following industrial areas:

- Chemical industry
- · Pharmaceutical industry
- Food industry
- · Mechanical engineering
- Shipbuilding
- Water supply

#### Design

The design of the pressure transmitter is dependent on the measuring range.

#### Measuring range < 1 bar (< 14.5 psi)

Main components:

- Stainless steel housing with piezo-resistive silicon measuring cell (with stainless steel diaphragm, temperature-compensated) and electronics module
- Process connection made of stainless steel in diverse designs (see Selection and Ordering data)
- Electrical connection made using a plug to DIN 43650 with the cable inlet M16 x 1.5, ½-14 NPT or round plug connector M12

The pressure transmitters with a nominal range < 1 bar g (< 14.5 psi g) are optionally available with or without explosion protection

#### Measuring range ≥ 1 bar (≥ 14.5 psi)

#### Main components:

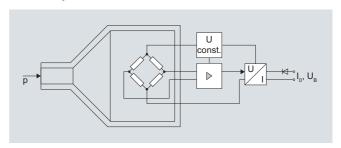
- Stainless steel housing with ceramic measuring cell and electronics module. The temperature-compensated ceramic measuring cell has a thin-film strain gauge which is mounted on a ceramic diaphragm. The ceramic diaphragm can also be used for aggressive media.
- Process connection made of stainless steel in diverse designs (see Selection and Ordering data)
- Electrical connection made using a plug to DIN 43650 with the cable inlet M16 x 1.5, ½-14 NPT or round plug connector M12.

The pressure transmitters with a nominal range  $\geq$  1 bar ( $\geq$  14.5 psi) are optionally available with or without explosion protection.

#### Function

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

#### Mode of operation



SITRANS P Z pressure transmitters (7MF1564-...), functional diagram

The mode of operation of the pressure transmitter is dependent on the measuring range.

#### Measuring range < 1 bar (<14.5 psi)

The silicon measuring cell of the pressure transmitter has a piezo-resistive bridge to which the operating pressure p is transmitted through silicone oil and a stainless steel diaphragm.

The measuring cell output voltage is fed to an amplifier and converted into an output current of 4 to 20 mA. The output current is linearly proportional to the input pressure.

#### Measuring range ≥ 1 bar (≥14.5 psi)

The thin-film 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

for gauge and absolute pressure

ACS 07 ACC NY 195

File E194458

#### Technical specifications

Technical specifications						
SITRANS P Z pressure transmitter pressure and level	rs for gauge pressure, absolute					
Mode of operation						
<ul><li>Measuring range &lt; 1 bar (&lt; 14,5 psi)</li></ul>	Piezo-resistive Thin-film strain gauge					
<ul> <li>Measuring range ≥ 1 bar (≥ 14,5 psi)</li> </ul>	······ au gaage					
Input						
Measured variable	Gauge and absolute pressure					
Measuring range						
Gauge pressure						
- Metric	0 400 bar g (0 5802 psi g)					
- US measuring range	0 6000 psi g					
Absolute pressure						
- Metric	0 16 bar a (0 232 psi a)					
- US measuring range	0 300 psi a					
Output						
Output signal						
Current output signal	4 20 mA					
<ul> <li>Voltage output signal (only mea- suring range ≥ 1 bar (14.5 psi))</li> </ul>	0 10 V DC					
Measuring accuracy	Acc. to EN 60770-1					
Error in measurement (at 25 °C (77 °F), including conformity error, hysteresis and repeatability)	0.25 % of full-scale value – typical					
Response time T <sub>99</sub>	< 0.1 s					
Long-term drift	0.25 % of full-scale value/year					
Influence of ambient temperature						
• Start of scale	0.25 %/10 K of full-scale value/year					
	0.7 %/10 K of full-scale value for measuring cells < 600 mbar (8.7 psi)					
• Full-scale value	0.25 %/10 K of full-scale value					
Rated conditions						
Temperature of medium	-30 °C +120 °C (-22 +248 °F)					
Ambient temperature	-25 °C +85 °C (-13 +185 °F)					
Storage temperature	-50 °C +100 °C (-58 +212 °F)					
Degree of protection acc. to EN 60529	IP65					
Design						
Weight	≈ 0.25 kg (≈ 0.55 lb)					
Wetted parts materials						
Measuring cell						
<ul> <li>Measuring range &lt; 1 bar (&lt;14,5 psi)</li> </ul>	Stainless steel, mat. no. 1.4404/316L					
<ul> <li>Measuring range ≥ 1 bar (≥14,5 psi)</li> </ul>	Al <sub>2</sub> O <sub>3</sub> – 96 %					
• Process connection	Stainless steel, mat. no. 1.4404/316L					
Gasket	Viton					
Process connection	See "Selection and Ordering Data"					

Power supply U <sub>H</sub>	
Terminal voltage on pressure transmitter	
For current output	10 36 V DC (10 30 V DC for Ex)
<ul> <li>For voltage output signal (only measuring range 1 bar (14.5 psi))</li> </ul>	15 36 V DC
Certificates and approvals	
Classification according to PED 97/23/EC	For gases of fluid group 1 and liq uids of fluid 1; complies with requirements of article 3, para- graph 3 (sound engineering prac tice)
Explosion protection	
• Intrinsic safety "i" (only with current output)	TÜV 02 ATEX 1953X
- Marking	Ex II 1/2G EEx ia IIC T4
<ul> <li>Intrinsic safety "T.I.I.S." (only with current output)</li> </ul>	applied
Lloyd's Register of Shipping	Certificate no. 05/20049 (EZ)
Germanischer Lloyd	33229-06 H
American Bureau of Shipping (ABS)	06-HG205130-PDA
Bureau Veritas (BV)	19113/AO BV
Det Norske Veritas	A-10351

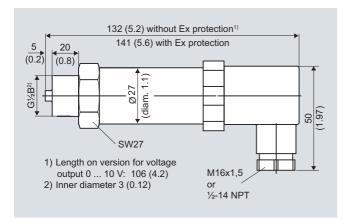
Drinking water approval (ACS)

Underwriters Laboritories

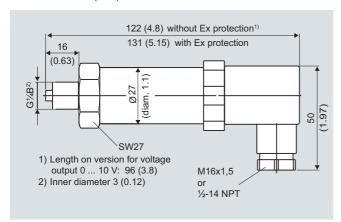
## Transmitters for basic requirements

SITRANS P Z for gauge and absolute pressure

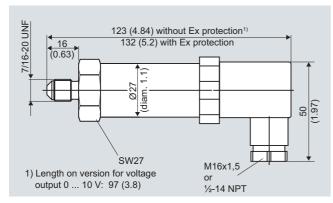
#### Dimensional drawings



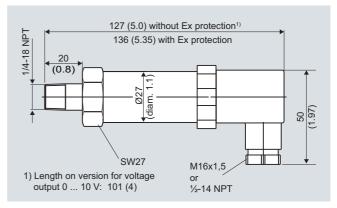
Pressure transmitter 7MF1564-... with process connection  $G\frac{1}{2}$ " male, dimensions in mm (inch)



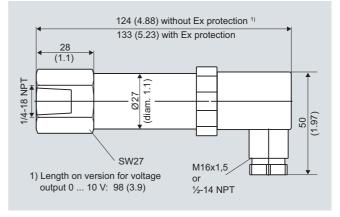
Pressure transmitter 7MF1564-... with process connection  $G^{1/4}$ " male, dimensions in mm (inch)



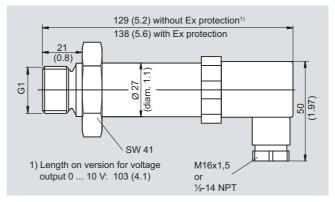
Pressure transmitter 7MF1564-... with process connection 7/16-20 UNF male, dimensions in mm (inch)



Pressure transmitter 7MF1564-... with process connection  $\frac{1}{4}$ "-18 NPT male, dimensions in mm (inch)



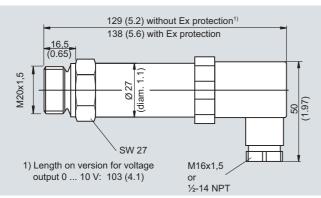
Pressure transmitter 7MF1564-... with process connection ½"-18 NPT female, dimensions in mm (inch)



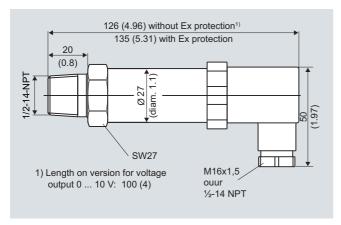
Pressure transmitter 7MF1564-... with process connection G1" male, dimensions in mm (inch)

## Transmitters for basic requirements

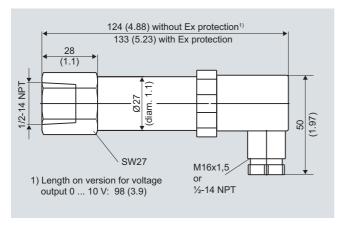
for gauge and absolute pressure



Pressure transmitter 7MF1564-... with process connection M20 x 1.5 male, dimensions in mm (inch)

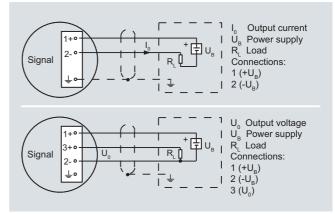


Pressure transmitter 7MF1564-... with process connection 1/2"-14 NPT male, dimensions in mm (inch)



Pressure transmitter 7MF1564-... with process connection  $\frac{1}{2}$ "-14 NPT female, dimensions in mm (inch)

#### Schematics



SITRANS P Z pressure transmitters(7MF1564-...), connection diagram, with current output (top) and voltage output (bottom)

## Transmitters for basic requirements

SITRANS P Z

for gauge and absolute pressure

	Ordering data								Order No.		der coc
	ressure transmit em, rising characte			olute pres	ssure			D)	7 MF 1 5 6 4 -		1
Measuring rang			rking pressu	re		Burst pre	ssure				
weasuring rang	,	Min.	rking pressu	Max.		Buist pre	Source				
or gauge pres	sure										
vith metal meas	urina cell										
0 100 mbar g 0 160 mbar g 0 250 mbar g 0 400 mbar g	(0 1.45 psi g) (0 2.32 psi g) (0 3.63 psi g) (0 5.80 psi g) (0 8.70 psi g)	-0,6 bar g -0,6 bar g -1 bar g -1 bar g -1 bar g	(-8.7 psi g) (-8.7 psi g) (-14.5 psi g) (-14.5 psi g) (-14.5 psi g)	0,6 bar g 1 bar g 1 bar g	(8.7 psi g) (8.7 psi g) (14.5 psi g) (14.5 psi g) (43.5 psi g)	1 bar g 1 bar g 1.7 bar g 1.7 bar g 5 bar g	(14.5 psi g) (14.5 psi g) (25 psi g) (25 psi g) (72 psi g)	J) > J) >		3 A A O 3 A B O 3 A C O 3 A D O 3 A G O	
	r measuring range e: up to mba		14.5 psi g),	add Orde	r code and p	lain text:				9 A C 0	H 1
vith ceramic me		, à (bei à)									
O 1 bar g O 1.6 bar g O 2.5 bar g O 4 bar g O 6 bar g	(0 14.5 psi g) (0 23.2 psi g) (0 36.3 psi g) (0 58.0 psi g) (0 87.0 psi g)	-0,4 bar g	(-5.8 psi g) (-5.8 psi g) (-11.6 psi g) (-11.6 psi g) (-14.5 psi g)	5 bar g 8 bar g	(30 psi g) (45 psi g) (72 psi g) (115 psi g) (175 psi g)	5 bar g 5 bar g 12 bar g 12 bar g 25 bar g	(72 psi g) (72 psi g) (175 psi g) (175 psi g) (360 psi g)	<b>*</b> * * *		3 B A 3 B B 3 B D 3 B E 3 B G	
0 10 bar g 0 16 bar g 0 25 bar g 0 40 bar g 0 60 bar g	(0 145 psi g) (0 232 psi g) (0 363 psi g) (0 580 psi g) (0 870 psi g)	-1 bar g -1 bar g -1 bar g -1 bar g -1 bar g	(-14.5 psi g) (-14.5 psi g) (-14.5 psi g) (-14.5 psi g) (-14.5 psi g)	32 bar g 50 bar g 80 bar g	(1150 psi g)	50 bar g 50 bar g 120 bar g 120 bar g 250 bar g	(725 psi g) (725 psi g) (1750 psi g) (1750 psi g) (3600 psi g)	<b>&gt;</b>		3 C A 3 C B 3 C D 3 C E 3 C G	
0 100 bar g 0 160 bar g 0 250 bar g 0 400 bar g	(0 1450 psi g) (0 2320 psi g) (0 3626 psi g) (0 5802 psi g)	-1 bar g -1 bar g -1 bar g -1 bar g	(-14.5 psi g) (-14.5 psi g) (-14.5 psi g) (-14.5 psi g)	320 bar g 500 bar g	g(2900 psi g) g(4640 psi g) g(7250 psi g) g(8700 psi g)	450 bar g 450 bar g 650 bar g 650 bar g	(6525 psi g) (6525 psi g) (9425 psi g) (9425 psi g)	) <b>&gt;</b>		3 D A 3 D B 3 D D 3 D E	
	r measuring range e: up to bar (¡		(≥ 14.5 psi g)	, add Ord	ler code and	plain text:				9 A A	H 1
or absolute pr	essure										
0 600 mbar a 0 1 bar a 0 1.6 bar a 0 2.5 bar a	(0 8.7 psi a) (0 14.5 psi a) (0 23.2 psi a) (0 36.3 psi a)	0 bar a 0 bar a 0 bar a 0 bar a	(0 psi a) (0 psi a) (0 psi a) (0 psi a)	3,2 bar a	(43.5 psi a) (30 psi a) (45 psi a) (72 psi a)	5 bar a 5 bar a 5 bar a 12 bar a	(72 psi a) (72 psi a) (72 psi a) (175 psi a)	J) > J) >		5 A G 0 5 B A 5 B B 5 B D	
) 4 bar a ) 6 bar a ) 10 bar a ) 16 bar a	(0 58.0 psi a) (0 87.0 psi a) (0 145 psi) (0 232 psi)	0 bar a 0 bar a 0 bar a 0 bar a	(0 psi a) (0 psi a) (0 psi a) (0 psi a)	12 bar a 20 bar a	(115 psi a) (175 psi a) (290 psi a) (460 psi a)	12 bar a 25 bar a 50 bar a 50 bar a	(175 psi a) (360 psi a) (725 psi a) (725 psi a)	J) > J) > J) >		5 B E 5 B G 5 C A 5 C B	
	r measuring range e: up to mba		: 14.5 psi a),	add Orde	r code and p	lain text:		J)		9 A B 0	H 1

Available ex stock

- D) Subject to export regulations AL: N, ECCN: EAR99H.
  J) Subject to export regulations AL: 91999, ECCN: EAR99.

- It is not possible to have a smaller span than the smallest span of the device of the entire device range.
- The value must not fall below the minimum permissible operating pressure of the special measuring range of the selected measuringcell.
- The required span of the device must lie between the smallest and the largest possible span of the entire device range.

<sup>1)</sup> The transmitters can also be ordered with special measuring ranges, e.g. the transmitter with the 1 bar measuring cell (14.5 psi measuring cell):
-0.2 ... +0.8 bar g (-2.9 ... +11.6 psi g) or
-0.4 ... +0.6 bar g (-5.8 ... +8.7 psi g) or ..., however start-of-scale value not under -0.4 bar g (-5.8 psi g), also see column "min. perm. operating pressure"

# Pressure Measurement Transmitters for basic requirements

for gauge and absolute pressure

Selection and Ordering data				Order No.		order cod
SITRANS P Z pressure trans 2 or 3-wire system, rising chara		osolute pressure		D) <b>7 MF 1 5 6 4</b>		1
			<b>1</b> .			
Measuring range	Perm. working pressur	e '	Burst pressure			
	min.	max.				
Measuring ranges for gauge	pressure (only for US m	arket)				
(0 10 psi g)	(-3 psi g)	(20 psi g)	(60 psi g)		4 B A	
(0 15 psi g)	(-6 psi g)	(30 psi g)	(72 psi g)		4 B B	
(3 15 psi g)	(-6 psi g)	(30 psi g)	(72 psi g)		4 B C	
(0 20 psi g)	(-6 psi g)	(40 psi g)	(72 psi g)		4 B D	
(0 30 psi g)	(-6 psi g)	(60 psi g)	(72 psi g)		4 B E	
(0 60 psi g)	(-11.5 psi g)	(120 psi g)	(175 psi g)		4 B F	
(0 100 psi g)	(-14.5 psi g)	(200 psi g)	(360 psi g)		4 B G	
(0 150 psi g)	(-14.5 psi g)	(300 psi g)	(725 psi g)		4 C A	
(0 200 psi g)	(-14.5 psi g)	(400 psi g)	(725 psi g)		4 C B	
(0 300 psi g)	(-14.5 psi g)	(600 psi g)	(1750 psi g)		4 C D	
(0 500 psi g)	(-14.5 psi g)	(1000 psi g)	(1750 psi g)		4 C E	
(0 750 psi g)	(-14.5 psi g)	(1500 psi g)	(3600 psi g)		4 C F	
(0 1000 psi g)	(-14.5 psi g)	(2000 psi g)	(3600 psi g)		4 C G	
(0 1500 psi g)	, , ,	(3000 psi g)	(6525 psi g)		4 D A	
(0 2000 psi g)	(-14.5 psi g)	(4000 psi g)	(6525 psi g)		4 D B	
(0 3000 psi g)	(-14.5 psi g)	(6000 psi g)	(9425 psi g)		4 D D	
(0 5000 psi g)	(-14.5 psi g)	(8700 psi g)	(9425 psi g)		4 D E	
(0 6000 psi g)	(-14.5 psi g)	(8700 psi g)	(9425 psi g)		4 D F	
Other version, add Order code	and plain text: Measurin	g range: up to psi g	•		9 B A	H 1
Measuring ranges for absolu	te pressure (only for US	market)				
(0 10 psi a)	(0 psi a)	(20 psi a)	(60 psi a)	J)	6 A G	
(0 15 psi a)	(0 psi a)	(30 psi a)	(72 psi a)	J)	6 B A	
(0 20 psi a)	(0 psi a)	(40 psi a)	(72 psi a)	J)	6 B B	
(0 30 psi a)	(0 psi a)	(60 psi a)	(72 psi a)	J)	6 B D	
(0 60 psi a)	(0 psi a)	(120 psi a)	(175 psi a)	J)	6 B E	
(0 100 psi a)	(0 psi a)	(200 psi a)	(360 psi a)	J)	6 B G	
(0 150 psi a)	(0 psi a)	(300 psi a)	(725 psi a)	J)	6 C A	
(0 200 psi a)	(0 psi a)	(400 psi a)	(725 psi a)	J)	6 C B	
(0 300 psi a)	(0 psi a)	(600 psi a)	(1725 psi a)	J)	6 C C	
Other version, add Order code	and plain text: Measurin	g range: up to psi a	!	J)	9 B B	H 1
Output signal						
4 20 mA; 2-wire system; pov	ver supply 10 36 V DC			<b>•</b>	0	
0 10 V; 3-wire system; powe					1 0	
Explosion protection						
Without				<b>•</b>	0	
With explosion protection Ex II		1				
power supply 10 30 V DC)	172 G EEX IG 110 1 1 (Only	101 VOI 01011 1 20 111/1 (, 2	wii o cyclom,		· ·	
Electrical connection						
Plug to DIN 43650, Form A, ca	ble inlet M16 x 1.5			<b>&gt;</b>	1	
Round connector M12, IP67					2	
Plug to DIN 43650, cable inlet	½-14 NPT				3	
Plug to DIN 43650, cable inlet	Pg9				4	
Cable gland Pg11 with 2 m PE	cable, IP68				6	
Special version (specify Order	code and plain text)				9	N 1

Available ex stock

- D) Subject to export regulations AL: N, ECCN: EAR99H.

  J) Subject to export regulations AL: 91999, ECCN: EAR99.

# Pressure Measurement Transmitters for basic requirements

SITRANS P Z for gauge and absolute pressure

Selection and Ordering data		Order No.	Orde	r code
SITRANS P Z pressure transmitters gauge and absolute pressure 2 or 3-wire system, rising characteristic curve	D)	7 MF 1 5 6 4 -	1	
Process connection				
G½" male to EN 837-1 (½" BSP male) (standard for metric pressure ranges mbar, bar) G½" male thread and G1/8" female thread G¼" male to EN 837-1 (¼" BSP male) 7/16"-20 UNF male ½"-18 NPT male (standard for pressure ranges psi)	•		A B C D	
½"-18 NPT female ½"-14 NPT male ½"-14 NPT female RC ½" male to JIS B 7505 G1" male (only for measuring ranges ≥ 1 bar g (14.5 psi g)) and max. permissible working pressure 100 bar g (1450 psi g) Special version (specify Order code and plain text)			F G H K M	P1Y
Sealing material between sensor and housing				
Viton (standard) Neoprene Perbunan Special version (specify Order code and plain text)	•		A B C Z	Q1 Y
Further designs		Order code		
Quality inspection certificate (Factory calibration) to IEC 60770-2, add "-Z" to Order No. and Order code.		C11		
Accessories		Order No.		
Quality inspection certificate (Factory calibration) to IEC 60770-2 supplied later, specify factory no. of transmitter.	D)	7MF1564-8CC11		

Available ex stock

D) Subject to export regulations AL: N, ECCN: EAR99H.

## 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

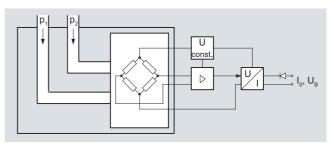
Main components:

- 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.

#### Mode of operation



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

Response time T<sub>99</sub>

Load variation

SITRANS P250 differential pressure 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	≤ 25 bar at a differential pressure range > 6 bar ≤ 50 bar at a differential pressure range > 10 bar						
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							
Dynamic behavior (at 25 °C (77 °F), including conformity error, hysteresis and repeatability)	≤ 1 % of typical full-scale value, see "Measuring range" table"						
Long-term drift acc. to IEC 60770	≤ 0.5 % of full-scale value/year						
Influence of ambient temperature							
Start of scale	≤ 0.6 %/10 K of full-scale value (≤ 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						

< 5 ms

< 50 Hz

## Transmitters for basic requirements

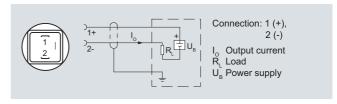
## SITRANS P250 for differential pressure

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	<ul><li>Plug EN 175301-803-A</li><li>Circular plug EN 60130-9</li><li>Cable 1.5 m</li></ul>
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, CuZn 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 connection against the other with max. supply voltage.
Certificates and approvals	

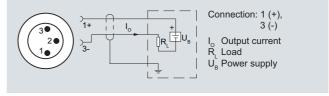
CE conformity

Measurin	g range	Max. perm. oper- ating pres- sure (on either side)	Burst pres- sure	Max. perm. oper- ating pres- sure (on one side)	Accu- racy
[bar]	[psi]				
0 0.1	0 1.45	25 bar (363 psi)	37.5 bar (544 psi)	0.6 bar (8.7 psi)	≤ 1,0 %
0 0.2	0 2.9	25 bar (363 psi)	37.5 bar (544 psi)	0.6 bar (8.7 psi)	≤ 0,8 %
0 0.25	0 3.63	25 bar (363 psi)	37.5 bar (544 psi)	0.6 bar (8.7 psi)	≤ 0,5 %
0 0.3	0 4.35	25 bar (363 psi)	37.5 bar (544 psi)	0.6 bar (8.7 psi)	≤ 0,5 %
0 0.4	0 5.8	25 bar (363 psi)	37.5 bar (544 psi)	1.2 bar (17.4 psi)	≤ 0,8 %
0 0.5	0 7.25	25 bar (363 psi)	37.5 bar (544 psi)	1.2 bar (17.4 psi)	≤ 0,5 %
0 0.6	0 8.7	25 bar (363 psi)	37.5 bar (544 psi)	1.2 bar (17.4 psi)	≤ 0,5 %
0 1.0	0 14.5	25 bar (363 psi)	37.5 bar (544 psi)	2 bar (29 psi)	≤ 0,5 %
0 1.6	0 23.2	25 bar (363 psi)	37.5 bar (544 psi)	3.2 bar (46.4 psi)	≤ 0,5 %
0 2.5	0 36.3	25 bar (363 psi)	37.5 bar (544 psi)	5 bar (72.5 psi)	≤ 0,5 %
0 4	0 58	25 bar (363 psi)	37.5 bar (544 psi)	8 bar (116 psi)	≤ 0,5 %
0 6	0 87	25 bar (363 psi)	37.5 bar (544 psi)	12 bar (174 psi)	≤ 0,5 %
0 10	0 145	50 bar (725 psi)	75 bar (1088 psi)	20 bar (290 psi)	≤ 0,5 %
0 16	0 232	50 bar (725 psi)	75 bar (1088 psi)	32 bar (464 psi)	≤ 0,5 %
0 25	0 363	50 bar (725 psi)	75 bar (1088 psi)	50 bar (725 psi)	≤ 0,5 %

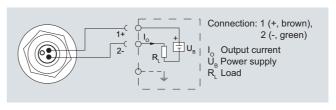
#### Schematics



Connection with current output 4  $\dots$  20 mA and plug to EN 175301-803-A



Connection with current output 4 ... 20 mA and round connector

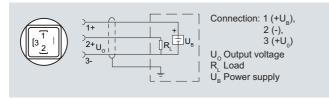


Connection with current output 4  $\dots$  20 mA and permanently fixed cable

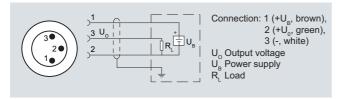
Approval

## Transmitters for basic requirements

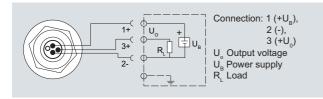
SITRANS P250 for differential pressure



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

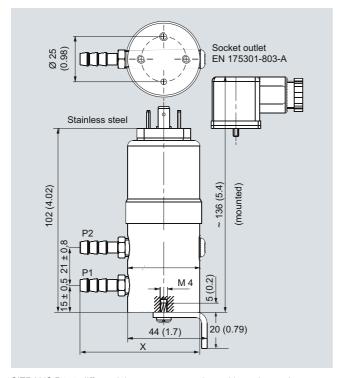


Connection with voltage output 0 ... 5 V DC (0 ... 10 V DC) and round connector

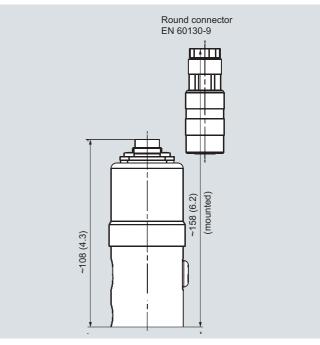


Connection with voltage output 0  $\dots$  5 V DC (0  $\dots$  10 V DC) and permanently fixed cable

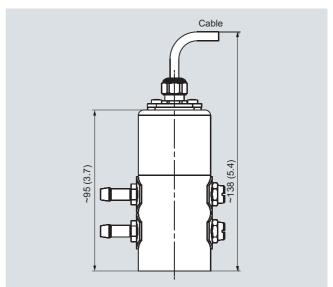
#### Dimensional drawings



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)

# Pressure Measurement Transmitters for basic requirements

SITRANS P250 for differential pressure

Process connections		Ø		Width across flats	L		Х	
		[mm]	[inch]		[mm]	[inch]	[mm]	[inch]
	Hose connection for hose (CuZn nickel-	4	0.16	a = 10	20	0.79	61	2.40
a 1/8-27 NP 1	plated)	6	0.24	a = 10	25	0.99	66	2.60
L *	Pipe union with screw-in nipple for outer pipe (CuZn nickel-plated)	6	0.24	a = 10 b = 12	24	0.95	65	2.56
La L		8	0.32	a = 12 b = 14	25	0.99	66	2.60
L d	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
LdN 12-8/L		8	0.32	a = 12 b = 14	26	1	67	2.64
7/16-20 UNF	Male thread G1/8 7/16-20 UNF (CuZn nickel-plated)	-	-	a = 14	18	0.71	59	2.32
G1/8 LdN L2-8/1	Female thread G1/8 (stainless steel 1.4305/AISI 303)	-	-	a = 14	12	0.47	53	2
Ta p p p p p p p p p p p p p p p p p p p	Male thread G1/8 (CuZn nickel-plated)	-	-	a = 10 b = 12	20	0.79	61	2.40

# Pressure Measurement Transmitters for basic requirements SITRANS P250 for differential pressure

SITRANS P 250 pressure transmitter for differential pressure Accuracy ≤ 1 %, wetted parts ceramic/stainless steel 1.4301, scope of delivery: transmitter, mounting bracket and instruction manual, without explosion protect		7MF1641-	- O		
scope of delivery: transmitter, mounting bracket and instruction manual, without explosion protect					
	LIUII				
Measuring range					
0 0.1 bar (0 1.45 psi)			AA		
0 0.2 bar (0 2.90 psi)	<b></b>		A C		
0 0.25 bar (0 3.63 psi)	<b></b>		A D		
0 0.3 bar (0 5.35 ps)	<b>&gt;</b>	3 /	A E		
0 0.4 bar (0 5.80 psi)	<b>&gt;</b>	3	A F		
0 0.5 bar (0 7.25 psi)	<b>&gt;</b>	3 /	A G		
0 0.6 bar (0 8.70 psi)	<b>&gt;</b>	3	AΗ		
0 1.0 bar (0 14.5 psi)	<b>&gt;</b>	31	ВА		
0 1.6 bar (0 23.2 psi)	<b>&gt;</b>	3	ВВ		
0 2.5 bar (0 36.3 psi)	<b>&gt;</b>	3	ВD		
0 4.0 bar (0 58.0psi)	<b>&gt;</b>	31	BE		
0 6.0 bar (0 87.0 psi)	<b>&gt;</b>	3	ВG		
0 10.0 bar (0 145 psi)	•		CA		
0 16.0 bar (0 232 psi)	•		СВ		
0 25.0 bar (0 363 psi)	•		CD		
		-			
Output signal					
4 20 mA	•		0		
0 5 V DC			1		
0 10 V DC			2		
Cable 1.5 m with cable gland  Process connection		-		3	
Without connections, female thread 1/8-27 NPT Hose connection	•			A	
CuZn nickel-plated, for hose Ø 4 mm				В	
• CuZn nickel-plated, for hose Ø 6 mm				С	
● PVDF, for hose Ø 6 mm				D	
Pipe union					
• CuZn nickel-plated, for pipe Ø 6 mm				Е	
• Stainless steel 1.4304, for pipe Ø 6 mm				F	
• CuZn nickel-plated, for pipe Ø 8 mm				G	
• Stainless steel 1.4304, for pipe Ø 8 mm				H	
Male thread, 7/16-20 UNF (CuZn nickel-plated)				L	
Adapter					
• Inner, G1/8 (stainless steel), for pipe Ø 6 mm				М	
• Outer, G1/8 (stainless steel), with union nut, for pipe Ø 6 mm				N	
ealing material					
Fluoro rubber (Viton/FPM)				Α	
Ethylene propylene diene monomer rubber (EPDM)				B	
Nitrile butadiene rubber (NBR)				C	
Silicone rubber (MVQ)				D	
Neoprene (CR)				E	
Further designs		Order Code			
Please add "-Z" to Order No. and specify Order code(s).					
Quality inspection certificate (Factory calibration) to IEC 60770-2 supplied		C11			

Available ex stock

#### Transmitters for basic requirements

SITRANS P MPS (submersible sensor) Transmitter for hydrostatic level

#### Overview



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 IP 68

#### Application

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

- · Oil and gas industries
- Shipbuilding
- Water supply

#### Design

SITRANS P MPS pressure transmitters have a front-flush piezo-resistive 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.

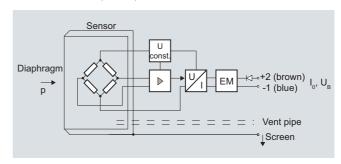
The diaphragm is protected against external influences by a protective cap.

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.

#### Function

SITRANS P MPS pressure transmitters are for measuring the liquid levels in wells, tanks, channels and dams.



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.

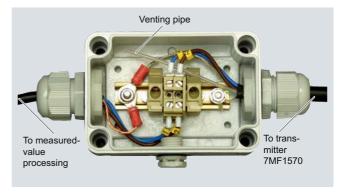
The hydrostatic pressure of the liquid column acts on the sensor diaphragm, and transmits the pressure to the piezo-resistive bridge in the sensor.

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

# Pressure Measurement Transmitters for basic requirements SITRANS P MPS (submersible sensor) Transmitter for hydrostatic level



Measuring point setup, in principle

#### Technical specifications

•  $\geq$  6 mH<sub>2</sub>O ( $\geq$  18 ftH<sub>2</sub>O)

ement transmitter
piezo-resistive
Hydrostatic level
Maximum operating pressure
<ul> <li>1,4 bar (20.3 psi) (corresponds to 14 mH<sub>2</sub>O (42 ftH<sub>2</sub>O))</li> </ul>
<ul> <li>1,4 bar (20.3 psi) (corresponds to 14 mH<sub>2</sub>O (42 ftH<sub>2</sub>O))</li> </ul>
<ul> <li>1,4 bar (20.3 psi) (corresponds to 14 mH<sub>2</sub>O (42 ftH<sub>2</sub>O))</li> </ul>
<ul> <li>3,0 bar (43.5 psi) (corresponds to 30 mH<sub>2</sub>O (90 ftH<sub>2</sub>O))</li> </ul>
<ul> <li>3,0 bar (43.5 psi) (corresponds to 30 mH<sub>2</sub>O (90 ftH<sub>2</sub>O))</li> </ul>
<ul> <li>6,0 bar (87.0 psi) (corresponds to 60 mH<sub>2</sub>O (180 ftH<sub>2</sub>O))</li> </ul>
4 20 mA
Acc. to EN 60770-1
0.3% of full-scale value (typical)
0.45 %/10 K of full-scale value

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
• ≥ 6 mH <sub>2</sub> O (≥ 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 protection 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	Stainless steel, mat. no. 316L/316 Ti
Enclosure	Stainless steel, mat. no. 316L/ 316 Ti
Gasket	Viton
Connecting cable	Either PE/HFFR sheath (non-halogen) o FEP sheath
Power supply	
Terminal voltage on pressure transmitter $U_{\rm B}$	10 36 V DC
Certificates and approvals	
The transmitter is not subject to the pressure equipment directive (PED 97/23/EC)	
Explosion protection	
Intrinsic safety "i"	TÜV 03 ATEX 2004X
- Marking	Ex II 1 G EEx ia IIC T4
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 protection to DIN EN 60529	IP54
Cable hanger	
Application	for mounting the transmitter
Design	
Weight	0.16 kg (0.35 lb)
Material	Galvanized steel, polyamide
Material	dalvanized steel, polyanide

## Transmitters for basic requirements

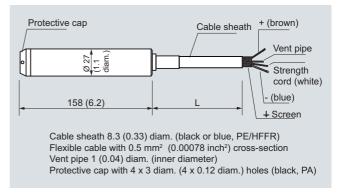
SITRANS P MPS (submersible sensor) Transmitter for hydrostatic level

Selection and Ord	lering data	_	Order No.	_	Ord	der	CC	de
SITRANS P MPS	pressure transmit- sure (submersible	C)						
2-wire system								
Note: Junction box included in deliver								
Connection cable	material					Ī		
PE FEP			5					
Measuring range	Cable length L							
0 2 mH <sub>2</sub> O	10 m	$\blacktriangleright$		С				
0 4 mH <sub>2</sub> O	10 m	▶		D				
0 5 mH <sub>2</sub> O	<sup>25</sup> m	<b></b>		В				
(with PE cable only	•	<b></b>		E				
0 6 mH <sub>2</sub> O	25 m	<b></b>		F				
0 10 mH <sub>2</sub> O	25 m			G				
0 20 mH <sub>2</sub> O	25 m							
0 6 ftH <sub>2</sub> O	32 ft			K				
0 12 ftH <sub>2</sub> O	32 ft			L				
0 18 ftH <sub>2</sub> O	82 ft			M				
0 30 ftH <sub>2</sub> O	82 ft 82 ft			N P				
0 60 ftH <sub>2</sub> O				ľ				<i>.</i>
Special measuring cable length) Specify measuring length in plain text	range and cable			Z			J	1 Y
Explosion protect								
None		<b></b>				1		
with type of prote safety" (Ex II 1 G		•				2		
Approvals • with drinking wate WRAS and ACS	er approval to	<b>&gt;</b>				6		
Further designs			Order code					
Supplied with qual cate (factory calibriec 60770-2, add add order code.			C11					
			Order No.					
Quality inspection calibration) to IEC later, in this case si number of transmit	60770-2 supplied tate manufacturing		7MF1564-8CC	11				
Accessories (as s	pare part)							
Junction box			7MF1570-8AA					
for connecting the	transmitter cable							
Cable hanger For attachment of t			7MF1570-8AB					
A 21.1.1								

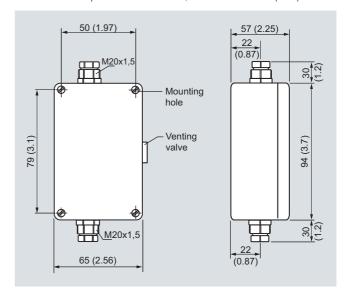
Available ex stock

Power supply units see Chap. 8 "Supplementary Components".

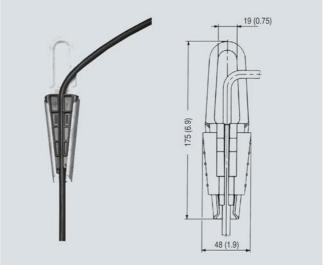
#### Dimensional drawings



SITRANS P MPS pressure transmitters, dimensions in mm (inch)



Junction box, dimensions in mm (inch)



Cable hanger, dimensions in mm (inch)

<sup>1)</sup> Special measuring ranges of between 0 ... 1 mH<sub>2</sub>O (0 ... 3 ftH<sub>2</sub>O) and 0 ... 200 mH<sub>2</sub>O (0 ... 656 ftH<sub>2</sub>O) and special cable lengths of up to 1000 m (3281 ft) are possible. With Ex versions the max. custom cable length is 50 m (150 (ft). The length of free-hanging cable should not exceed 375 m (1230 ft).

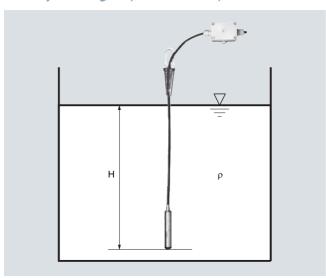
C) Subject to export regulations AL: N, ECCN: EAR99.

## Transmitters for basic requirements

SITRANS P MPS (submersible sensor)
Transmitter for hydrostatic level

#### More information

Determination of the measuring range in case of media with a density ≠ 1000 kg/m3 (medium ≠ water)



#### Calculation of the measuring range:

#### $p = \rho x g x H$

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

#### Calculation:

 $p = 850 \text{ kg/m}^3 \times 9.81 \text{ m/s}^2 \times 6.2 \text{ m}$ 

 $p = 51698.7 \text{ N/m}^2$ 

p = 517 mbar

#### Transmitter to be ordered:

#### 7MF1570-5ZA02-Z

**J1Y:**  $0 \dots 517 \text{ mbar}$ ; cable length e.g. 8 m

#### 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. It is therefore possible, for example, to guarantee roughness values down to  $R_a=0.4~\mu m~(1.57\cdot 10^{-5}~\text{inch})$  in the wetted area (welded seam area  $R_a<0.8~\mu m~(3.15\cdot 10^{-5}~\text{inch})$ ). 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  $^{\circ}$ C (392  $^{\circ}$ 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 EEx [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.

Explosion protection

• Intrinsic safety "i"

- Marking

# **Pressure Measurement**

## Transmitters for basic requirements

**SITRANS P Compact** for gauge and absolute pressure

#### Function

The process pressure acts on a piezo-resistive semiconductor measuring bridge through a remote seal and a transmission liquid. The pressure transmitter converts the pressure values into a load-independent current.

A compensation network makes the output signal largely independent of the ambient temperature. As a result of a specially adapted remote seal connection with minimized volume, the influence of the process temperature on the output signal is greatly reduced compared to a conventional screw connection.

The pressure transmitters can be powered with a non-regulated DC voltage of 10 to 30 V. Output signals common to measuring technology are available.

#### Technical specifications

Pressure transmitters for food, pharmaceuticals and biotechnology					
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 EN 60770-1				
Linearity error including hysteresis (reference point adjustment)	≤ 0,2 % of full-scale value				
Adjustment accuracy	$\leq$ ± 0,2 % of full-scale value				
Response time	< 20 ms				
Influence of ambient temperature					
On the enclosure					
• Zero point	< 0,2 %/10 K of full-scale value				
Measuring span	< 0,2 %/10 K of full-scale value				
On the process connection (remote seals)	Zero error (depends on design)				
Flange remote seal					
- DN 25 / 1"	4.8 mbar/10 K (0.070 psi/10 K)				
- DN 32 / 11/4"	2.3 mbar/10 K (0.033psi/10 K)				
- DN 40/ 1½"	1.6 mbar/10 K (0.023 psi/10 K)				
- DN 50 / 2"	0.6 mbar/10 K (0.009 psi/10 K)				
Clamp-on seal					
- DN 25 / 1"	9.5 mbar/10 K (0.138 psi/10 K)				
- DN 32 / 11/4"	4.1 mbar/10 K (0.060 psi/10 K)				
- DN 40/ 1½"	3.9 mbar/10 K (0.057 psi/10 K)				
- DN 50 / 2"	3.9 mbar/10 K (0.057 psi/10 K)				
The save array are sified for the green					

The zero error specified for the process connection should be considered 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.

Rated conditions	
Installation conditions	
Mounting position	Any, vertical as standard
Ambient conditions	
Ambient temperature	-10 +70 °C (14 158 °F)
Storage temperature	-10 +90 °C (14 194 °F)
Process temperature	Max. 200 °C (392 °F), depending
	on design
• Degree of protection (to EN 60529)	IP65, optional IP67
Electromagnetic Compatibility	
- 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)
Design	
Weight (without remote seal)	
Field enclosure	≈ 460 G (≈ 1.01 (lb)
Enclosure with plug	≈ 200 g (≈ 0.44 lb)
Enclosure	
• Designs	<ul> <li>Field housing IP65 or IP67, with screwed gland</li> </ul>
	<ul> <li>Angled plug DIN 43650, IP65</li> </ul>
	Cable connection, IP67
	<ul> <li>Round plug connector M12, IP65</li> </ul>
Material	Stainless steel, mat. no. 1.4404/316L/1.4305
Material of union nut	Polyamide (with electrical con- nection using plug or cable) Electronics unit potted with sili-
	cone
	Internal ventilation for measuring ranges < 16 bar (< 232 psi), through housing thread or connection cable depending on design
Process connection	
• Versions	See ordering data
Material of coupling	Stainless steel, mat. no. 1.4404/316L
Power supply	
Terminal voltage on transmitter	10 30 V DC
Rated voltage	24 V DC
Certificates and approvals	
Classification according to pressure equipment directive (PED 97/23/EC)	For gases of fluid group 1 and liquids of fluid group 1; complies with the requirements of article 3, paragraph 1 (appendix 1); assigned to category III, conformity evaluation module H by the

mity evaluation module H by the

TÜV Nord

TÜV 03 ATEX 2099 X

Ex II 2G EEx ib IIC T6

# Pressure Measurement Transmitters for basic requirements

SITRANS P Compact for gauge and absolute pressure

Selection and Ordering data	Order No.	Ord. code	Selection and Ordering data	Order No.	Ord. cod		
SITRANS P Compact pressure trans- mitters for pressure and absolute pressure with diaphragm flush at front	7MF8010-		SITRANS P Compact pressure trans- mitters for pressure and absolute pressure with diaphragm flush at front	7MF8010-	10-		
2-wire system	1===		2-wire system	1====-			
Process temperature up to 140 °C			Process temperature up to 140 °C				
(284 °F) Accuracy: 0.2 % of full-scale value			(284 °F) Accuracy: 0.2 % of full-scale value				
Output 4 20 mA			Output 4 20 mA				
Diaphragm seal with quick-release clamp			Diaphragm seal with aseptic connection				
Milk pipe union to DIN 11851 with slotted union nut			Aseptic screwed gland to DIN 11864-1, form A, with slotted union nut				
• DN 25	A D		• 1 inch	PM			
• DN 32	AE		• 1½ inch	PN			
• DN 40	AF		• 2 inch	PP			
• DN 50	AG		• 2½ inch	PQ			
• DN 65	AH		Aseptic screwed gland to	. "			
Milk pipe union to DIN 11851 with	^"		DIN 11864-1, form A				
threaded socket			with threaded socket				
• DN 25	BD		• 1 inch	QM			
• DN 32	BE		• 1½ inch	QN			
• DN 40	BF		• 2 inch	QP			
• DN 50	BG		• 2½ inch	QQ			
• DN 65	ВН		Aseptic screwed NEUMO				
Clamp connection to DIN 32676	5.11		with slotted union nut <sup>1)</sup>				
• DN 25	CD		• DN 25	RD			
• DN 40	CF		• DN 32	RE			
• DN 50	CG		• DN 40	RF			
Clamp connection to ISO 2852	Cu		• DN 50	RG			
• 1 inch	рм		Aseptic screwed NEUMO				
• 1½ inch	DN		with threaded socket <sup>1)</sup>				
• 2 inch	DP		• DN 25	SD			
	DQ		• DN 32	SE			
• 2½ inch	υQ		• DN 40	SF			
DF standard with slotted union nut	- M		• DN 50	SG			
• 1 inch	EM		Aseptic screwed NEUMO				
• 1½ inch	EN		with clamp connection, form R <sup>1)</sup>				
<ul> <li>2 inch</li> <li>DF standard with threaded socket</li> </ul>	E P		• DN 25	T D			
	- 14		• DN 32	TE			
• 1 inch	FM		• DN 40	TF			
• 1½ inch	FN		• DN 50	TG			
• 2 inch	FP		Aseptic screwed NEUMO				
SMS standard with slotted union nut	011		with clamp connection, form V <sup>1)</sup>				
• 1 inch	GM		• DN 25	UD			
• 1½ inch	GN		• DN 32	UE			
• 2 inch	GP		• DN 40	UF			
SMS standard with threaded socket			• DN 50	UG			
• 1 inch	HM		Special version	ZA	J 1 Y		
• 1½ inch	HN		(add Order code and plain text)				
• 2 inch	HP		Filling liquid				
DRD flange, without welding-type flange			Vegetable oil	1			
• DN 50, PN 40	JH		medicinal white oil	2			
Varivent connection (Tuchenhagen)							
<ul> <li>D = 50, for Varivent housing DN 25 and 1 inch</li> </ul>	KF		Food oil, FDA-listed  Special version	3 9	L1Y		
<ul> <li>D = 68, for Varivent housing</li> <li>DN 40 DN 125 and 1½ 6 inch</li> </ul>	KL		(add Order code and plain text)	9			
Special version	ZA	J 1 Y	Output signal				
(add Order code and plain text)	2 A	311	4 20 mA	1			
<u>'</u>			Special version	9	M 1 Y		
Filling liquid	4		(add Order code and plain text)	3	IVI I I		
Vegetable oil	1		, , ,				
medicinal white oil	2		<ol> <li>Please specify as well: Connections for pipes: R01, R02 or R03, se</li> </ol>	otoblo "Eurthor -! -	ciano" on -		
Food oil, FDA-listed	3		connections for pipes: RU1, RU2 or RU3, se page	e lable Further de	signs on n		
Special version (add Order code and plain text)	9	L 1 Y	h~2.				
Output signal 4 20 mA							
		M 1 Y					
Special version	9	M 1 V					

# Pressure Measurement Transmitters for basic requirements SITRANS P Compact for gauge and absolute pressure

SITRANS P Compact pressure transmitters for pressure and absolute pressure with diaphragm flush at front 2-wire system Process temperature up to 140 °C (284 °F) Accuracy: 0.2 % of full-scale value Output 4 20 mA Housing design (stainless steel mat. No. 1.440/316L) / electr. connection Housing with round plug M12, IP65, union nut made of polyamide Housing with round plug M12, IP65, union nut made of polyamide Housing with round plug M12, IP65, union nut made of stainless steel Stainless steel field housing (small) with cable gland, IP67 Internal ventilation for measuring ranges < 10 bar (c 145 psi)  Measured range Overload pressure 0 160 mbar g 0 232 psi g) 0 250 mbar g 0 260 mbar g 0 363 psi g) 0 600 mbar g 0 160 mbar g 0 16 bar g 0 16 bar g 0 16 bar g 0 2.2 psi g) 0 2.2 psi g) 0 2.3 psi g) 0 4 bar g 0 16 bar g 0 2.3 psi g) 0 2.5 bar g 0 2.5 bar g 0 2.5 bar g 0 36.3 psi g) 0 36.3 psi	Selection and Ord	ering data	Order No.		Ord. code
Process temperature up to 140 °C (284 °F) Accuracy: 0.2 % of full-scale value Output 4 20 mA  Housing design (stainless steel mat. No. 1.4404/316L) / electr. connection Housing with angled plug to DIN 43650, IP85  Housing with round plug M12, IP65, union nut made of polyamide Housing with round plug M12, IP65, union nut made of stainless steel Stainless steel field housing (small) with cable gland, IP67 stainless steel field housing (small) with cable gland, IP67 Internal ventilation for measuring ranges < 10 bar (c 145 psi)  Measured range Overload pressure 0 160 mbar g 2 bar g 0 250 mbar g 2 bar g 0 250 mbar g 2 bar g 0 3.63 psi g) (29 psi g) 0 260 mbar g 6 bar g 8 BC (0 8.7 psi g) (87 psi g) 0 600 mbar g 6 bar g (0 8.7 psi g) (87 psi g) 0 1.6 bar g 10 bar g 0 1.6 bar g 10 bar g 0 2.5 bar g 16 bar g 0 2.5 bar g 50 bar g 6 3.3 0 psi g) (29 psi g) 9 250 0 bar g 50 bar g 6 3.3 0 psi g) (29 psi g) 9 250 0 bar g 50 bar g 6 250 bar g 50 bar g 50 bar g 6 3.3 0 psi g) (29 psi g) 9 250 0 bar g 6 250	mitters for pressu	re and absolute	7 M F 8 0 1	0 -	
No. 1.4404/316L) / electr. connection	Process temperatur (284 °F) Accuracy: 0.2 % of		1		
Housing with round plug M12, IP65, union nut made of polyamide Housing with round plug M12, IP65, union nut made of stainless steel Stainless steel field housing (small) with cable gland, IP65 Stainless steel field housing (small) with cable gland, IP67 Internal ventilation for measuring ranges < 10 bar (< 145 psi)  Measured range Overload pressure 0 160 mbar g 2 bar g BB (0 232 psi g) (29 psi g) 0 232 psi g) (29 psi g) 0 400 mbar g 6 bar g BB (0 1.5 psi g) 0 1 bar g 10 bar g CA (14.5 psi) 0 1.6 bar g 10 bar g CB (0 36.3 psi g) (232 psi g) 0 2.3.2 psi g) (232 psi g) 0 2.5 bar g 16 bar g CB (0 36.3 psi g) (232 psi g) 0 4 bar g 16 bar g CB (0 36.3 psi g) (232 psi g) 0 1.6 bar g 10 bar g CB (0 36.3 psi g) (232 psi g) 0 2.5 bar g 16 bar g CB (0 36.3 psi g) (232 psi g) 0 4 bar g 10 bar g CB (0 36.3 psi g) (232 psi g) 0 4 bar g 10 bar g CB (0 36.3 psi g) (232 psi g) 0 4 bar g 16 bar g CB (0 36.3 psi g) (232 psi g) 0 6 bar g 30 bar g CB (0 36.3 psi g) (232 psi g) 0 6 bar g 30 bar g CB (0 36.3 psi g) (232 psi g) 0 16 bar g 50 bar g DB (0 25 bar g 50 bar g	No. 1.4404/316L) / Housing with angle	electr. connection		1	
union nut made of stainless steel  Stainless steel field housing (small) with cable gland, IP65  Stainless steel field housing (small) with cable gland, IP67 Internal ventilation for measuring ranges < 10 bar (< 145 psi)  Measured range  0 160 mbar g 2 bar g BB (0 2.32 psi g) (29 psi g)  0 250 mbar g 2 bar g BB (0 3.63 psi g) (29 psi g)  0 400 mbar g 6 bar g BB (0 8.7 psi g)  0 1 bar g 10 bar g CB (0 1.5 bar g CB (0 1.45 psi g)  0 1.6 bar g 10 bar g CB (0 1.45 psi g)  0 2.5 bar g 16 bar g CB (0 1.45 psi g)  0 1.6 bar g 10 bar g CB (0 1.45 psi g)  0 2.5 bar g 16 bar g CB (0 1.45 psi g)  0 1.5 bar g 10 bar g CB (0 1.45 psi g)  0 1.6 bar g 10 bar g CB (0 1.45 psi g)  0 1.6 bar g 10 bar g CB (0 1.45 psi g)  0 1.6 bar g 10 bar g CB (0 1.45 psi g)  0 1.6 bar g 10 bar g CB (0 1.45 psi g)  0 1.6 bar g 10 bar g CB (0 1.45 psi g)  0 1.6 bar g 10 bar g CB (0 1.45 psi g)  0 1.6 bar g 10 bar g CB (0 1.45 psi g)  0 1.6 bar g 10 bar g CB (0 1.45 psi g)  0 1.6 bar g 10 bar g CB (0 1.45 psi g)  0 1.6 bar g 10 bar g CB (0 1.45 psi g)  0 1.6 bar g 10 bar g CB (0 1.45 psi g)  0 1.6 bar g 10 bar g CB (0 1.45 psi g)  0 1.6 bar g 10 bar g CB (0 1.45 psi g)  0 1.6 bar g 10 bar g CB (0 1.45 psi g)  0 1.6 bar g 10 bar g CB (0 1.45 psi g)  1 1.6 bar g 10 bar g EB (0 1.45 psi g)  1 0 bar g 10 bar g EB (0 1.45 psi g)  1 0 bar g 10 bar g FB (0 1.45 psi g)  1 0 bar g 10 bar g FB (0 1.45 psi g)  1 1.5 bar g 10 bar g FB (0 1.45 psi g)  1 1.5 bar g 10 bar g FB (0 1.45 psi g)  1 1.5 bar g 10 bar g FB (0 1.45 psi g)  1 1.5 bar g 16 bar g FB (0 1.45 psi g)  1 1.5 bar g 16 bar g FB (0 1.45 psi g)  1 1.5 bar g 16 bar g FB (0 1.45 psi g)  1 1.5 bar g 10 bar g FB (0 1.45 psi g)  1 1.5 bar g 10 bar g FB (0 1.45 psi g)  1 1.5 bar g 10 bar g FB (0 1.45 psi g)  1 1.5 bar g 10 bar g FB (0 1.45 psi g)  1 1.5 bar g 10 bar g FB (	Housing with round			2	
cable gland, IP65       Stainless steel field housing (small) with cable gland, IP67 Internal ventilation for measuring ranges       5         10 bar (< 145 psi)				3	
cable gland, IP67 Internal ventilation for measuring ranges       < 10 bar (< 145 psi)		housing (small) with		4	
0 160 mbar g       2 bar g       BB         (0 2.32 psi g)       (29 psi g)       BC         (0 3.63 psi g)       (29 psi g)       BC         (0 3.63 psi g)       (29 psi g)       BD         (0 400 mbar g       6 bar g       BD         (0 5.8 psi g)       (87 psi g)       BE         (0 8.7 psi g)       (87 psi g)       CA         (0 14.5 psi g)       (145 psi g)       CB         (0 23.2 psi g)       (145 psi g)       CB         (0 23.2 psi g)       (145 psi g)       CC         (0 23.2 psi g)       (145 psi g)       CC         (0 23.2 psi g)       (232 psi g)       CD         (0 25.5 bar g       16 bar g       CD         (0 25.8 psi g)       (232 psi g)       CD         (0 25.8 psi g)       (232 psi g)       CE         (0 58 psi g)       (232 psi g)       CE         (0 58 psi g)       (30 bar g       CE         (0 58 psi g)       (435 psi g)       DA         (0 58 psi g)       (725 psi g)       DA         (0 58 psi g)       (725 psi g)       DA         (0 58 psi g)       (725 psi g)       DC	cable gland, IP67 Internal ventilation f	or measuring ranges		5	
(0 2.32 psi g)	-			D D	
(0 3.63 psi g) (29 psi g) 0 400 mbar g 6 bar g BD (0 5.8 psi g) (87 psi g) 0 600 mbar g 6 bar g BE (0 8.7 psi g) (87 psi g) 0 1 bar g 10 bar g CA (0 14.5 psi g) (145 psi g) 0 1 bar g 10 bar g CB (0 23.2 psi g) (145 psi g) 0 2.5 bar g 16 bar g CD (0 36.3 psi g) (232 psi g) 0 4 bar g 16 bar g CD (0 87 psi g) (232 psi g) 0 6 bar g 10 bar g CD (0 87 psi g) (232 psi g) 0 10 bar g 16 bar g CD (0 87 psi g) (232 psi g) 0 10 bar g 10 bar g CD (0 145 psi g) (435 psi g) 0 16 bar g 50 bar g DA (0 232 psi g) (725 psi g) 0 25 bar g 50 bar g DD (0 232 psi g) (725 psi g) 0 25 bar g 50 bar g DD (0 363 psi g) (725 psi g) 0 25 bar g 50 bar g DD (0 363 psi g) (1015 psi g) -160 0 mbar g 2 bar g CD (-3.73 0 psi g) (29 psi g) -400 0 bar g 6 bar g ED (-5.8 0 psi g) (87 psi g) -1 0 bar g 10 bar g FA (-14.5 0 psi g) (145 psi g) -1 0 bar g 16 bar g FD (-14.5 87 psi g) (232 psi g) -1 1.5 bar g 16 bar g FD (-14.5 21.8 psi g) (232 psi g) -1 5 bar g 50 bar g FD (-14.5 43.5 psi g) (232 psi g) -1 5 bar g 50 bar g FD	(0 2.32 psi g)	(29 psi g)			
(0 5.8 psi g) (87 psi g) 0 600 mbar g 6 bar g (0 8.7 psi g) (87 psi g) 0 1 bar g (10 bar g (2.4 bar g) (3 14.5 psi g) (145 psi g) 0 1.6 bar g (10 bar g (2.32 psi g) (2.37 3 0 psi g) (2.32 psi g) (2.3				ВС	
(0 8.7 psi g) (87 psi g)  0 1 bar g 10 bar g CA (0 14.5 psi g) (145 psi g)  0 1.6 bar g 10 bar g CB (0 23.2 psi g) (145 psi g)  0 2.5 bar g 16 bar g CD (0 36.3 psi g) (232 psi g)  0 4 bar g 16 bar g CD (0 58 psi g) (232 psi g)  0 6 bar g 30 bar g CE (0 87 psi g) (435 psi g)  0 10 bar g 30 bar g (0 145 psi g) (435 psi g)  0 10 bar g 50 bar g (0 232 psi g)  0 25 bar g 50 bar g (0 232 psi g)  0 4 bar g 50 bar g CD (0 363 psi g) (725 psi g)  0 10 bar g 50 bar g CD (0 363 psi g) (725 psi g)  0 25 bar g 50 bar g CD (0 363 psi g) (725 psi g)  0 40 bar g 70 bar g CD (0 580 psi g) (1015 psi g)  -160 0 mbar g 2 bar g -250 0 bar g 2 bar g -250 0 bar g 6 bar g -250 0 bar g 6 bar g -400 0 bar g 6 bar g -1 0 bar g 10 bar g -1 1.5 bar g 16 bar g -1 1.5 bar g 16 bar g -1 5 bar g 30 bar g  FE				ВD	
(0 14.5 psi g) (145 psi g) 0 1.6 bar g (0 23.2 psi g) (145 psi g) 0 2.5 bar g 16 bar g (0 36.3 psi g) (232 psi g) 0 4 bar g 16 bar g (0 58 psi g) (232 psi g) 0 58 psi g) (232 psi g) 0 6 bar g 30 bar g (0 87 psi g) (435 psi g) 0 10 bar g 30 bar g (0 145 psi g) 0 145 psi g) (435 psi g) 0 16 bar g 50 bar g DB (0 232 psi g) (725 psi g) 0 25 bar g 50 bar g DC (0 580 psi g) (725 psi g) 0 26 bar g 50 bar g DC (0 580 psi g) (725 psi g) 0 27 bar g 50 bar g DC (0 580 psi g) (1015 psi g) 0 40 bar g 70 bar g DD (0 580 psi g) (29 psi g) -250 0 bar g 2 bar g EB (-2.32 0 psi g) (29 psi g) -250 0 bar g 6 bar g EC (-3.73 0 psi g) (87 psi g) -400 0 bar g 6 bar g EC (-8.7 0 psi g) (145 psi g) -1 0 bar g 10 bar g FA (-14.5 0 psi g) (145 psi g) -1 0 bar g 16 bar g FA (-14.5 21.8 psi g) (232 psi g) -1 1.5 bar g 16 bar g FC (-14.5 21.8 psi g) (232 psi g) -1 5 bar g 30 bar g FE				BE	
(0 23.2 psi g) (145 psi g) 0 2.5 bar g 16 bar g CC (0 36.3 psi g) (232 psi g) 0 4 bar g 16 bar g CD (0 58 psi g) (232 psi g) 0 6 bar g 16 bar g CE (0 87 psi g) (435 psi g) 0 10 bar g 30 bar g (0 145 psi g) (435 psi g) 0 16 bar g 50 bar g (0 232 psi g) (725 psi g) 0 25 bar g 50 bar g (0 363 psi g) (725 psi g) 0 40 bar g 70 bar g (0 580 psi g) (1015 psi g) -160 0 mbar g 2 bar g (-2.32 0 psi g) (29 psi g) -400 0 bar g 6 bar g (-5.8 0 psi g) (87 psi g) -1 0 bar g 10 bar g (-14.5 21.8 psi g) (145 psi g) -1 15 bar g 16 bar g (-14.5 21.8 psi g) (232 psi g) -1 5 bar g 30 bar g FE				CA	
0 2.5 bar g       16 bar g       CC         (0 36.3 psi g)       (232 psi g)       CD         0 4 bar g       16 bar g       CD         (0 58 psi g)       (232 psi g)       CE         0 6 bar g       30 bar g       CE         (0 10 bar g       30 bar g       DA         (0 145 psi g)       (435 psi g)       DA         (0 145 psi g)       (435 psi g)       DB         0 16 bar g       50 bar g       DB         (0 232 psi g)       (725 psi g)       DC         (0 232 psi g)       (725 psi g)       DC         (0 363 psi g)       (725 psi g)       DC         (0 363 psi g)       (725 psi g)       DD         (0 580 psi g)       (1015 psi g)       DD         -160 0 mbar g       2 bar g       EB         (-2.32 0 psi g)       (29 psi g)       EC         (-3.73 0 psi g)       (29 psi g)       EC         (-3.73 0 psi g)       (87 psi g)       ED         (-5.8 0 psi g)       (87 psi g)       FA         (-600 0 bar g       10 bar g       FA         (-14.5 0 psi g)       (145 psi g)       FA         (-14.5				СВ	
O 4 bar g	0 2.5 bar g	16 bar g		СС	
O 6 bar g 30 bar g CE  (0 87 psi g) (435 psi g)  O 10 bar g 30 bar g (0 145 psi g) (435 psi g)  O 16 bar g 50 bar g (0 232 psi g) (725 psi g)  O 25 bar g 50 bar g (0 363 psi g) (725 psi g)  O 40 bar g 70 bar g (0 580 psi g) (1015 psi g)  -160 0 mbar g 2 bar g (-2.32 0 psi g) (29 psi g) -250 0 bar g 6 bar g (-5.8 0 psi g) (87 psi g)  -600 0 bar g 6 bar g (-8.7 0 psi g) (87 psi g)  -1 0 bar g 10 bar g (-14.5 0 psi g) (145 psi g)  -1 1.5 bar g 16 bar g (-14.5 21.8 psi g) (232 psi g)  -1 5 bar g 30 bar g  FE	0 4 bar g	16 bar g		CD	
(0 145 psi g)	0 6 bar g	30 bar g		CE	
0 16 bar g 50 bar g				DA	
0 25 bar g 50 bar g	0 16 bar g	50 bar g		DB	
0 40 bar g 70 bar g	0 25 bar g	50 bar g		DC	
-160 0 mbar g 2 bar g (-2.32 0 psi g) (29 psi g)   -250 0 bar g 2 bar g	0 40 bar g	70 bar g		D D	
-250 0 bar g	-160 0 mbar g	2 bar g		EΒ	
-400 0 bar g 6 bar g ED (-5.8 0 psi g) (87 psi g) EE (-8.7 0 psi g) (87 psi g) EE (-8.7 0 psi g) (87 psi g) EE (-8.7 0 psi g) (145 psi g) FA (-14.5 0 psi g) (145 psi g) FB (-14.5 8.7 psi g) (145 psi g) FB (-14.5 8.7 psi g) (145 psi g) FC (-14.5 21.8 psi g) (232 psi g) FC (-14.5 21.8 psi g) (232 psi g) FD (-14.5 43.5 psi g) (232 psi g) FD (-14.5 43.5 psi g) (232 psi g) FE	-250 0 bar g	2 bar g		EC	
-600 0 bar g 6 bar g EE (-8.7 0 psi g) (87 psi g) FA (-14.5 0 psi g) (145 psi g) FB (-14.5 8.7 psi g) (145 psi g) FB (-14.5 8.7 psi g) (145 psi g) FC (-14.5 8.7 psi g) (145 psi g) FC (-14.5 21.8 psi g) (232 psi g) FC (-14.5 21.8 psi g) (232 psi g) FC (-14.5 43.5 psi g) (232 psi g) FD (-14.5 43.5 psi g) (232 psi g) FE		· . · · · · ·		E D	
(-8.7 0 psi g) (87 psi g) -1 0 bar g 10 bar g (-14.5 0 psi g) (145 psi g) -1 0.6 bar g 10 bar g (-14.5 8.7 psi g) (145 psi g) -1 1.5 bar g 16 bar g (-14.5 21.8 psi g) (232 psi g) -1 3 bar g 16 bar g (-14.5 43.5 psi g) (232 psi g) -1 5 bar g 30 bar g  FE				ΕE	
(-14.5 0 psi g) (145 psi g) -1 0.6 bar g 10 bar g FB (-14.5 8.7 psi g) (145 psi g) -1 1.5 bar g 16 bar g FC (-14.5 21.8 psi g) (232 psi g) -1 3 bar g 16 bar g FD (-14.5 43.5 psi g) (232 psi g) -1 5 bar g 30 bar g FE	(-8.7 0 psi g)	(87 psi g)			
(-14.5 8.7 psi g) (145 psi g) -1 1.5 bar g 16 bar g FC (-14.5 21.8 psi g) (232 psi g) -1 3 bar g 16 bar g FD (-14.5 43.5 psi g) (232 psi g) -1 5 bar g 30 bar g FE	(-14.5 0 psi g)	(145 psi g)			
(-14.5 21.8 psi g) (232 psi g) -1 3 bar g 16 bar g <b>FD</b> (-14.5 43.5 psi g) (232 psi g) -1 5 bar g 30 bar g <b>FE</b>	(-14.5 8.7 psi g)	(145 psi g)			
(-14.5 43.5 psi g) (232 psi g) -1 5 bar g 30 bar g <b>FE</b>	(-14.5 21.8 psi g)	(232 psi g)			
		(232 psi g)			
				FE	

Selection and Orderi	ng data		Order No.	Ord. code	
SITRANS P Compact mitters for pressure pressure with diaphr	and absolute	t	7MF8010-		
2-wire system Process temperature up to 140 °C (284 °F)			1		
Accuracy: 0.2 % of full Output 4 20 mA	I-scale value				
Measured range	Overload pres- sure				
(continued)	Suite				
-1 +9 bar g (-14.5 +130.5 psi g -1 +15 bar g	50 bar g		G A G B		
(-14.5 +217.6 psi g 0 1 bar a	) (725 psi g) 10 bar a	F)	НА		
(0 14.5 psi a) 0 1.6 bar a	(145 psi a) 10 bar a	F)	нв		
(0 23.2 psi a) 0 2.5 bar a	(145 psi a) 16 bar a	F)	нс		
(0 36.3 psi a)	(232 psi a)	,			
0 4 bar a (0 58 psi a)	16 bar a (232 psi a)	F)	HD		
0 6 bar a (0 87 psi a)	30 bar a (435 psi a)	F)	HE		
0 10 bar a (0 145 psi a)	30 bar a (435 psi a)	F)	JA		
Special version (add Order code and	plain text)	F)	ZA	P 1 Y	
Explosion protection without with, to ATEX 100a, II				1 2	
Further designs			Order code		
Please add "-Z" to Ord Order code	ler No. and specify	/			
Hygiene version Roughness of process Foil R <sub>a</sub> < 0.8 μm (3.15 Welded seams R <sub>a</sub> < 1 (5.9·10 <sup>-8</sup> inch)	·10 <sup>-8</sup> inch);		P01		
Integral cooling elem Process temperature (392 °F) instead of 14	max. 200 °C		K01		
Pipes to DIN 11850 ISO pipes to DIN 2463	Connections for pipe Pipes to DIN 11850 ISO pipes to DIN 2463 Pipes to O. D. Tubing "BS 4825 Part 1"				
Certificates Quality inspection certificate (Factory calibration) to IEC 60770-2			C11		
Inspection certificate to EN 10204-3.1 Use of FDA-listed remote seal filling liquids certified by test report to EN 10204-2.2			C12 C17		
Roughness depth mea		C18			
	Certification to EHEDG for clamp-on seals with aseptic screwed gland				
F) Subject to export re	gulations AL: 91999,	EC	CN: N.		

# Pressure Measurement Transmitters for basic requirements

SITRANS P Compact for gauge and absolute pressure

Selection and Ordering data	Order No.	Ord. code
SITRANS P Compact pressure trans- mitters for pressure and absolute pressure with clamp-on remote seal	7MF8010-	
2-wire system Process temperature up to 140 °C (284 °F) Accuracy: 0.2 % of full-scale value Output 4 20 mA	2	
Clamp-on remote seal (screwed gland at both ends) with quick-release clamps Milk pipe union to DIN 11851 with threaded socket DN 25 DN 32 DN 40 DN 50 DN 65 Clamp connection to DIN 32676 DN 25 DN 32 DN 40 DN 50 DN 50 DN 65 Clamp connection to ISO 2852 <sup>1)</sup> 1 inch 1½ inch 2 inch Special version (add Order code and plain text)	AD AE AF AG AH CD CE CF CG CH DM DN DP DQ ZA	J1Y
Filling liquid Vegetable oil	1	
Medicinal white oil	2	
Food oil, FDA-listed	3	
Special version (add Order code and plain text)	9	L 1 Y
Output signal 4 20 mA	1	
Special version (add Order code and plain text)	9	M 1 Y

<sup>1)</sup> Please note the internal diameter of the pipe. Please specify pipe classes (see "Further designs")

Selection and Ordering data	Order No.	Ord. code
SITRANS P Compact pressure trans- mitters for pressure and absolute pressure with clamp-on remote seal	7MF8010-	
2-wire system Process temperature up to 140 °C (284 °F) Accuracy: 0.2 % of full-scale value Output 4 20 mA	2	
Clamp-on seal with aseptic connection		
Aseptic screwed gland to		
DIN 11864-1, form A		
with threaded socket		
• 1 inch	QM	
• 1½ inch	QN	
• 2 inch	QP	
Aseptic screwed NEUMO with threaded socket 1)		
• DN 25	SD	
• DN 32	SE	
• DN 40	SF	
• DN 50	SG	
• DN 65	SH	
Aseptic screwed NEUMO		
with clamp connection, form R <sup>1)</sup>		
• DN 25	TD	
• DN 32	TE	
• DN 40	TF	
• DN 50	TG	
Aseptic screwed gland SÜDMO with threaded socket W 501		
• 1 inch	VM	
• 1½ inch	V N	
• 2 inch	V P	
Aseptic screwed gland SÜDMO		
with clamp connection W 601		
• 1 inch	WM	
• 1½ inch	WN	
• 2 inch	WP	
Special version (add Order code and plain text)	ZA	J 1 Y
· · · · · · · · · · · · · · · · · · ·		
Filling liquid		
Vegetable oil	1	
medicinal white oil	2	
Food oil, FDA-listed	3	
Special version (add Order code and plain text)	9	L 1 Y
Output signal		
4 20 mA	1	
Special version (add Order code and plain text)	9	M 1 Y
•		

Please specify as well: Connections for pipes: R01, R02 or R03, see table "Further designs" on next page

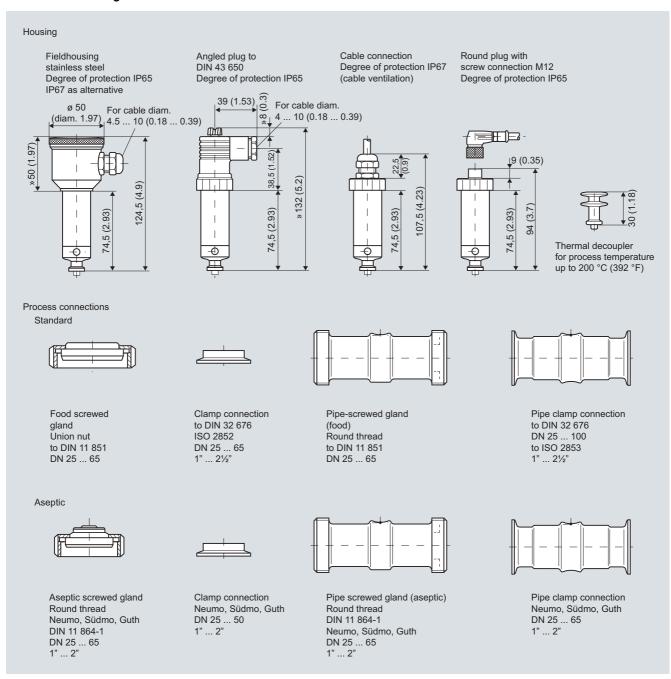
# Pressure Measurement Transmitters for basic requirements SITRANS P Compact for gauge and absolute pressure

Co 58 psi g)	Selection and Orde	ering data	Order No.	Ord. code	Selection and Ord	ering data	Order No.	0	rd. d	code
Process temperature up to 140 °C (284 °F)	mitters for pressure	e and absolute	7MF8010-		SITRANS P Compact pressure trans- mitters for pressure and absolute		7MF8010-			
No. 1.4304316L) / electr. connection housing with angled plug to DIN 43650, 1 P65, union nut made of polyamide housing with round plug M12, IP65, union nut made of polyamide housing with round plug M12, IP65, union nut made of polyamide housing with round plug M12, IP65, union nut made of stainless steel 3	Process temperature up to 140 °C (284 °F Accuracy: 0.2% of fu	=)	2		Process temperatur up to 140 °C (284 ° Accuracy: 0.2% of	F)	2			
Housing with angled plug to DIN 43650,   1   P65, union unt made of polyamide   -19 barg   30 barg   GA						Overload pressure				
Stainless steel field housing (small) with cable gland, IP65   Cable gland, IP65   Cable gland, IP65   Cable gland, IP67   C	Housing with angled IP65, union nut made Housing with round union nut made of po Housing with round	d plug to DIN 43650, e of polyamide plug M12, IP65, olyamide plug M12, IP65,	2		-1 9 bar g (-14.5 130.5 psi ( -1 15 bar g (-14.5 217.6 psi (	g)(435 psi g) 50 bar g g)(725 psi g)	C	ВВ		
Stainless steel field housing (small) with cable gland, IP67   C			4		(0 14.5 psi a)	(145 psi a)				
Cable gland, IP67	9	housing (small) with	5		(0 23.2 psi a)	(145 psi a)				
Measured range	cable gland, IP67 Internal ventilation fo	or measuring ranges			(0 36.3 psi a) 0 4 bar a	(232 psi a) 16 bar a F)				
(0	•	•			0 6 bar a	30 bar a F)	H	łE		
(0 3.63 psi g)   (29 psi g)   (29 psi g)   (29 psi g)   (20 58 psi g)   (87 psi g)   (145 psi g)   (1	(0 2.32 psi g)	(29 psi g)			0 10 bar a	30 bar a F)	,	JA		
(0 5.8 psi g)	(0 3.63 psi g)	(29 psi g)			Special version	F)	2	ZA	P 1 '	Y
O 8.7 psi g)   (87 psi g)   (87 psi g)   (10 bar g   CA   (0 14.5 psi g)   (145 psi g)   (15 psi g)   (16 bar g g governorm)   (16 bar governorm)   (16 bar g governorm	(0 5.8 psi g)	(87 psi g)			<u></u>		_			
Co 14.5 psi g)	(0 8.7 psi g)	(87 psi g)	CA			II 2 G. EEx ib IIC T6		1 2		
C	(0 14.5 psi g)	(145 psi g)			Further designs		Order code			
Columbric   Col	(0 23.2 psi g)	(145 psi g)				Order No. and specify				
(0 58 psi g) (232 psi g) 0 6 bar g 30 bar g (0 87 psi g) (435 psi g)  0 10 bar g 30 bar g (0 145 psi g) (435 psi g)  0 16 bar g 50 bar g (0 232 psi g) (725 psi g)  0 25 bar g 50 bar g (0 40 bar g 70 bar g (0 580 psi g) (1015 psi g)  -160 0 mbar g (29 psi g)  -250 0 bar g (-3.73 0 psi g) (-5.8 0 psi g) (87 psi g)  -600 0 bar g (-5.8 0 psi g) (87 psi g)  -1 0 bar g 10 bar g (87 psi g)  -1 0 bar g 10 bar g (10 bar g)  -10	(0 36.3 psi g)	(232 psi g)			Roughness of proc	ess connection:	P01			
(0 145 psi g) (435 psi g) (435 psi g)  (0 145 psi g) (435 psi g)  (0 232 psi g) (725 psi g)  (0 232 psi g) (725 psi g)  (0 25 bar g (0 25 bar g (0 363 psi g) (725 psi g)  (0 40 bar g (0 580 psi g) (1015 psi g)  -160 0 mbar g (29 psi g)  (-2.32 0 psi g) (29 psi g)  -400 0 bar g (6 bar g (-5.8 0 psi g) (87 psi g)  -600 0 psi g) (87 psi g)  -1 0 bar g 10 bar g (87 psi g)  -1 0 bar g 10 bar g (10 bar g)  -1 0 bar	(0 58 psi g) 0 6 bar g	(232 psi g) 30 bar g			Foil R <sub>a</sub> < 0.8 µm (3. Welded seams R <sub>a</sub> <	15·10 <sup>-8</sup> inch);				
0 16 bar g			DA				K01			
0 25 bar g       50 bar g       DC       Pipes to DIN 11850       R01         (0 363 psi g)       (725 psi g)       DD       ISO pipes to ISO 2463       R02         0 40 bar g       70 bar g       DD       Pipes to O. D. Tubing "BS 4825 Part 1"       R03         -160 0 mbar g       2 bar g       EB       Certificates         (-2.32 0 psi g)       (29 psi g)       Cuality inspection certificate (Factory calibration) to IEC 60770-2 Inspection certificate to EN 10204-3.1       C12         (-3.73 0 psi g)       (29 psi g)       ED       Use of FDA-listed remote seal filling liquids certified by test report to EN 10204-2.2       C17         (-5.8 0 psi g)       (87 psi g)       EE       R02         -6.00 0 bar g       6 bar g       EE       EE       R02         (-8.7 0 psi g)       (87 psi g)       R03       R04       R05       R04         -1 0 bar g       10 bar g       FA       C18       C18	0 16 bar g	50 bar g	DB		,	, ,				
0 40 bar g       70 bar g       DD       R03         -160 580 psi g)       (1015 psi g)       Pipes to O. D. Tubing "BS 4825 Part 1"         -160 0 mbar g       2 bar g       EB       Certificates         (-2.32 0 psi g)       (29 psi g)       C11         -250 0 bar g       2 bar g       EC       (Factory calibration) to IEC 60770-2         (-3.73 0 psi g)       (29 psi g)       Inspection certificate to EN 10204-3.1       C12         -400 0 bar g       6 bar g       ED       Use of FDA-listed remote seal filling liquids certified by test report to EN 10204-2.2       C17         (-8.7 0 psi g)       (87 psi g)       Roughness depth measurement Ra certified by test report       C18		50 bar g (725 psi g)	DC		Pipes to DIN 11850	•				
C11  Quality inspection certificate (Factory calibration) to IEC 60770-2 Inspection certificate to EN 10204-3.1  C12  C3.73 0 psi g) (29 psi g)  C400 0 bar g (5.8 0 psi g) (87 psi g)  C600 0 bar g (-8.7 0 psi g) (87 psi g)  C11  Quality inspection certificate (Factory calibration) to IEC 60770-2 Inspection certificate to EN 10204-3.1  C12  C13  C14  C15  C17  C16  C17  C17  C18  C18  C18  C18	0 40 bar g	70 bar g	D D							
-250 0 bar g 2 bar g (Factory calibration) to IEC 60770-2 Inspection certificate to EN 10204-3.1 C12 -400 0 bar g 6 bar g Use of FDA-listed remote seal filling liquids certified by test report to EN 10204-2.2 Roughness depth measurement Ra certified by test report			E B		Quality inspection of		C11			
-400 0 bar g 6 bar g (-5.8 0 psi g) (87 psi g) -600 0 bar g 6 bar g (-8.7 0 psi g) (87 psi g) -1 0 bar g 10 bar g FA Use of FDA-listed remote seal filling liquids certified by test report to EN 10204-2.2 Roughness depth measurement Ra certified by test report	-250 0 bar g	2 bar g	EC		` ,	,	C12			
(-8.7 0 psi g) (87 psi g)  -1 0 bar g 10 bar g FA Roughness depth measurement R <sub>a</sub> C18	-400 0 bar g (-5.8 0 psi g)	6 bar g	ED		liquids certified by		C17			
	(-8.7 0 psi g)	(87 psi g)			Roughness depth r		C18			
( 1 1 1 3)	(-14.5 0 psi g)	(145 psi g)			certified by test rep to EN 10204-3.1	ort				
-1 0.6 bar g 10 bar g FB Certification to EHEDG for clamp-on seals with aseptic screwed gland	(-14.5 8.7 psi g)	(145 psi g)			seals with aseptic s		C19			
-1 1.5 bar g 16 bar g FC to DIN 11864 (-14.5 21.8 psi g) (232 psi g) FD FD FD Subject to export regulations AL: 91999, ECCN: N.	(-14.5 21.8 psi g)	(232 psi g)				regulations AL - QIQQQ - EC-	CN: N			
(-14.5 43.5 psi g) (232 psi g)	(-14.5 43.5 psi g)	(232 psi g)			i j oubject to export	oguiations AL. 31333, EU	<b>∪1</b> Ν. 1 Ν.			
-1 5 bar g 30 bar g (-14.5 72.5 psi g) (435 psi g)			FE							

### Transmitters for basic requirements

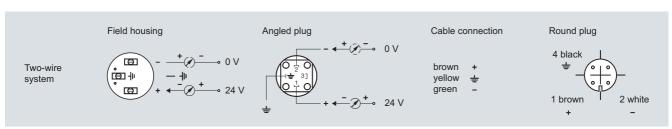
SITRANS P Compact for gauge and absolute pressure

#### Dimensional drawings



SITRANS P, dimensions in mm (inch)

#### Schematics



SITRANS P Compact, connection diagram

## Transmitters for pressure with WirelessHART communication

SITRANS P280 for gauge and absolute pressure

#### Overview



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

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

#### 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 2, 10, 50, 200 and 400 bar (0 to 29, 145, 725, 2900 and 5800 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 9 or <a href="http://www.siemens.de/wirelesshart">http://www.siemens.de/wirelesshart</a>.

Detailed information on IE/WSN-PA can be found in the FI 01 catalogue, section 9 or http://www.siemens.de/wirelesshart.

### Transmitters for pressure with WirelessHART communication

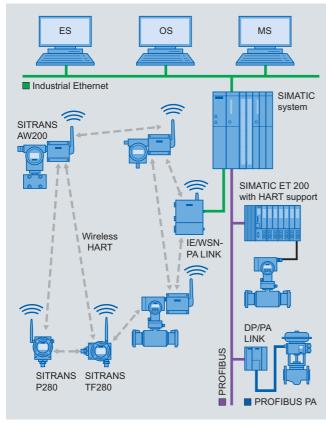
SITRANS P280 for gauge and absolute pressure

#### 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

SITRANS P280 WirelessHART pressure transmitter

Mode of energian	soure transmittel
Mode of operation	piezo registivo
Measuring principle	piezo-resistive
Measured variable	Gauge and absolute pressure
Gauge pressure input	0 1 11 11/0 11
Measuring range	Overload limit/Bursting pressure
0 2 bar g	5 bar g (72.5 psi g)
0 10 bar g	50 bar g (363 psi g)
0 50 bar g	250 bar g (1740 psi g)
0 200 bar g	650 bar g (7250 psi g)
0 400 bar g	650 bar g (7250 psi g)
Units	mbar, bar, mmH <sub>2</sub> O, inH <sub>2</sub> O, atm, Torr, gcm <sup>2</sup> , kgcm <sup>2</sup> , mPa, KPa, Pa 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 2 bar a	5 bar a (72.5 psi a)
0 10 bar a	50 bar a (363 psi a)
0 50 bar a	250 bar a (1740 psi a)
0 200 bar a	650 bar a (7250 psi a)
0 400 bar a	650 bar a (7250 psi a)
Units	mbar, bar, mmH <sub>2</sub> O, inH <sub>2</sub> O, atm, Torr, gcm², kgcm², mPa, KPa, Pa 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 EN 60770-1
Error in measurement (including hysteresis and repeatability, at 25 °C (77 °F))	typ. 0.17 % of sensor's span max. 0.25 % of sensor's span
Long-term drift	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 conditions  • Ambient temperature	20 °C (-4 °F) and above +70 °C
	(in ambient temperatures below 20 °C (-4 °F) and above +70 °C (158 °F), readability of the display
Ambient temperature	(in ambient temperatures below 20 °C (-4 °F) and above +70 °C (158 °F), readability of the display is limited.)
<ul><li>Ambient temperature</li><li>Storage temperature</li></ul>	(in ambient temperatures below 20 °C (-4 °F) and above +70 °C (158 °F), readability of the display is limited.) -40 +85 °C (-40 +185 °F) < 95 % 4K4H in accordance with EN
<ul><li>Ambient temperature</li><li>Storage temperature</li><li>Relative humidity</li></ul>	(in ambient temperatures below 20 °C (-4 °F) and above +70 °C (158 °F), readability of the display is limited.) -40 +85 °C (-40 +185 °F) < 95 % 4K4H in accordance with EN 60721-3-4(stationary use at locations not protected against

# Pressure Measurement Transmitters for pressure with WirelessHART communication

for gauge and absolute pressure

Design	
Enclosure material	low-copper die-cast aluminum, GD-AISi12
Shock resistance	in accordance with DIN EN 60068-2-29 / 03.95
Resistance to vibration	in accordance with DIN EN 60068-2-6/ 12.07
	20 ≤ f ≤ 2000 Hz
NAZ - 1 -	0.01 g <sup>2</sup> /Hz
Weight	4.51(0.04.11.)
without battery	1.5 kg (3.31 lb)
With battery	1.6 kg (3.53 lb)
Dimensions (W x H x D)	See Dimensional drawing
Process connection	• G½B male thread as per EN837-1 • ½-14 NPT
Conner breek	,
Sensor break	Is recognized
Displays and controls  Displays and controls	
Display (with illumination)	104 00 1
Size of display	104 x 80 pixels
Number of digits	adjustable
Number of spaces after comma	adjustable
Setting options	on site with 3 buttons     with SIMATIC PDM or HART Communicator
Power supply	
Battery	3.6 V DC
Communication	
Radio	WirelessHART V7.1 conforming
Transmission frequency band	2.4 GHz (ISM-Band)
Transmission range under reference conditions	Up to 250 m (line of sight) in outside areas
	Up to 50 m (greatly dependent on obstacles) in inside areas
Communication interfaces	<ul> <li>HART communication with HART modem</li> </ul>
	WirelessHART
Certificates and approvals	
Wireless communication approvals	R&TTE FCC
Classification according to pressure	Gases: Fluid group 1
equipment directive (PED 97/23/EC)	Liquids: Fluid group 1;
(1 20 31/20/20)	meets requirements as per Section 3, Subsection 3 (sound engineering practice)

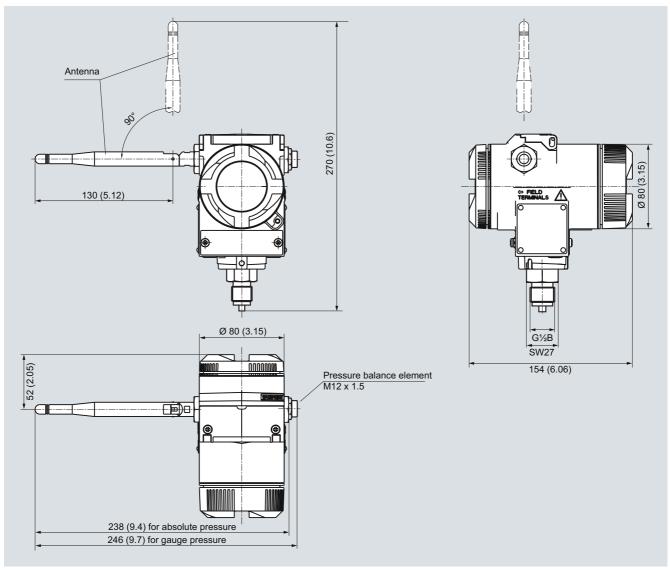
Selection and Ordering data		Order No.		
SITRANS P280 WirelessHART	7MP1120-			
pressure transmitter				
(Required battery not included with delivery, see accessories)				
Measuring cell filling				
Dry measuring cell		0		
Measuring span				
Gauge pressure 0 2 bar g (0 29 psi g)		D		
0 10 bar g (0 145 psi g)		E		
0 50 bar g (0 725 psi g) 0 200 bar g (0 2900 psi g)		F G		
0 400 bar g (0 5800 psi g)		H		
Absolute pressure				
0 2 bar a (0 29 psi a)		M N		
0 10 bar a (0 145 psi a) 0 50 bar a (0 725 psi a)		P		
0 200 bar a (0 2900 psi a)		Q		
0 400 bar a (0 5800 psi a)		R		
Wetted parts				
Ceramic		К		
Display  Digital display visible		1		
Digital display, visible  Enclosure				
Die-cast aluminum		1		
Process connection		- 1		
G½ as per EN 837-1		0		
½-14 NPT		1		
Explosion protection				
Without		A		
Antenna				
Variable, attached to device		A		
Further designs		Order code		
Please add "-Z" to Order No. and specify Order code(s) and plain text.				
Measuring point number (TAG Nr.) max. 16 digits entered in plain text Y15:		Y15		
Measuring point message max. 27 characters entered in plain text: Y16:		Y16		
Accessories		Order No.		
Lithium battery for SITRANS TF280/P280	D) 🕨	7MP1990-0AA00		
Mounting bracket, steel		7MF4997-1AC		
Mounting bracket, stainless steel	<b>&gt;</b>	7MF4997-1AJ		
Cover, die-cast aluminum, without window F)		7MF4997-1BB		
Cover, die-cast aluminum, with window F) ▶		7MF4997-1BE		
IE/WSN-PA LINK		see Sec. 9		
HART modem with RS232 interface D) ▶		7MF4997-1DA		
HART modem with USB interface	7MF4997-1DB			
SIMATIC PDM		see Sec. 9		
► Available ex stock				

D) Subject to export regulations AL: N, EAR 99H. F) Subject to export regulations AL: 91999, ECCN: N.

# Pressure Measurement Transmitters for pressure with WirelessHART communication

SITRANS P280 for gauge and absolute pressure

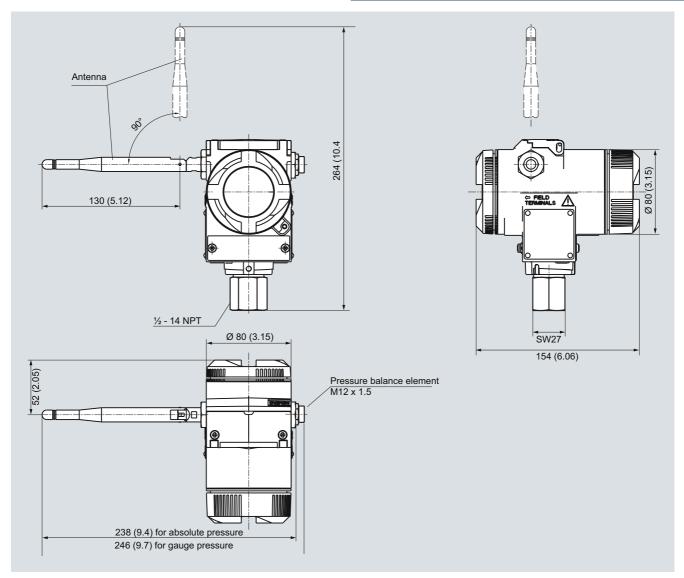
#### Dimensional drawings



SITRANS P280 WirelessHART pressure transmitter, process connection 6%, dimensions in mm (inch) The dimensional drawing of the mounting bracket see on page 2/146.

# Pressure Measurement Transmitters for pressure with WirelessHART communication

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 2/146.

#### 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 All conventional thread versions are available as process connections. In addition, various hygiene-based connections and flange connections with front-flush diaphragms meet the requirements of a dead space free process connection.

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 communication and/or PROFIBUS PA communication or FOUNDATION Fieldbus Communication

#### 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" EEx 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 g (0.15 psi g), the largest is 400 bar g (5802 psi g).

#### Level

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

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

### Transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressure

#### Design

The device comprises:

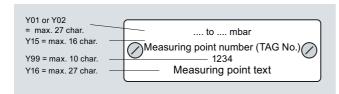
- Electronics
- Housing
- · Measuring cell



#### Perspective view of SITRANS P300

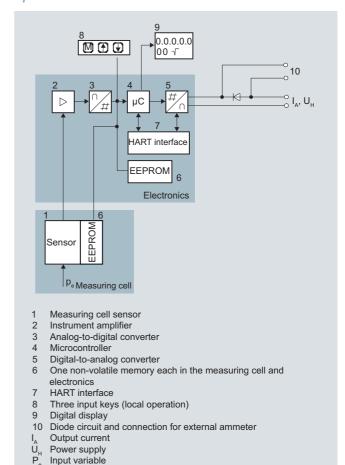
The housing has a screw-on cover (5) and, depending on the version, is with or without an inspection window. The electrical terminal housing, the buttons for operation of the device are located under this cover and, depending on the version, the digital display. The connections for the auxiliary power UH 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



#### Function

#### Operation of electronics with HART communication



#### Function diagram of electronics

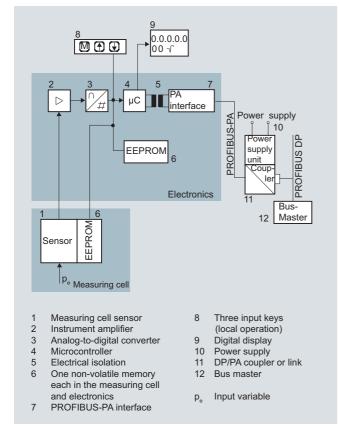
The input pressure is converted into an electrical signal by the sensor (1). This signal is amplified by the measuring amplifier (2) and digitalized in an analog-to-digital converter (3). The digital signal is analyzed in a microcontroller (4) and corrected according to linearity and thermal characteristics.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

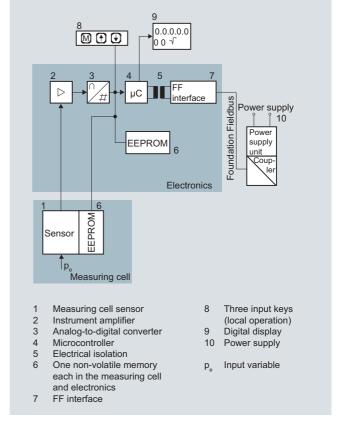


#### Function diagram of electronics

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 available 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 digital 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.

### 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") 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 digital 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

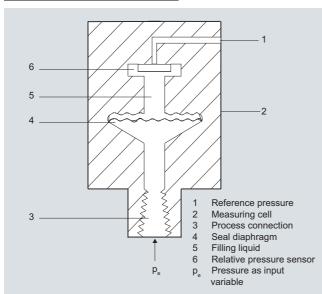
The process connections available include the following:

- G½
- ½-14 NPT
- Flush-mounted diaphragm:
  - Flanges to EN
  - Flanges to ASME
  - NuG and pharmaceutical connections

## Transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressure

#### Measuring cell for gauge pressure

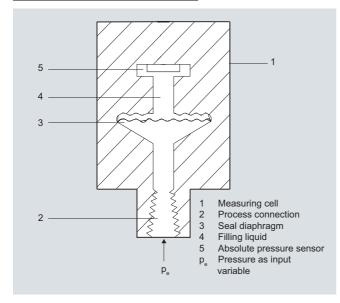


Measuring cell for gauge pressure, function diagram

The input pressure  $(p_e)$  is transferred to the gauge pressure sensor (6via 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.

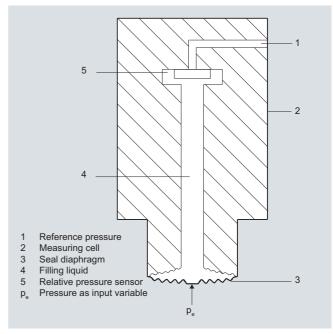
#### Measuring cell for absolute pressure



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

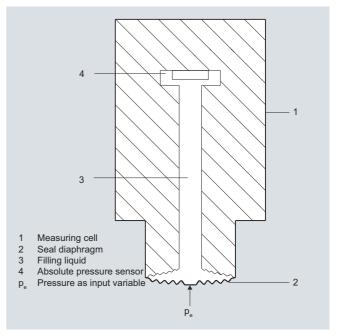


Measuring cell for gauge pressure, front-flush diaphragm, function diagram

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**

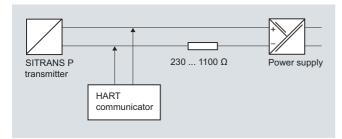
Depending on the version, there are a range of options for parameterizing the pressure transmitter and for setting or scanning the parameters.

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

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

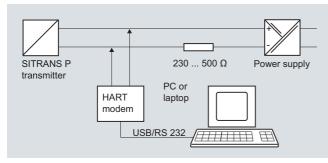
#### Parameterization using HART communication

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

<sup>1)</sup> 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, lmp. 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 PA and FF

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

## Diagnostic functions for SITRANS P300 PA and FF

- 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/cm², kg/cm², mm $\rm H_2O$ , mm $\rm H_2O$ (4 °C), in $\rm H_2O$ , in $\rm H_2O$ (4 °C), ft $\rm H_2O$ (20 °C), mm $\rm H_2O$ , in $\rm H_2O$
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
volume flow	$\rm m^3/s,m^3/min,m^3/h,m^3/d,l/s,l/min,l/h,l/d,Ml/d,ft^3/s,ft^3/min,ft^3/h,ft^3/d,USgallon/s,USgallon/min,USgallon/h,USgallon/d,bbl/s,bbl/min,bbl/h,bbl/d$
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	%

#### 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.

SITRANS P300 for gauge and absolute pressure

## Technical specifications

Technical specifications					
SITRANS P300 for gauge and absolute pre-					
	HART		PROFIBUS PA and FO	UNDATION Fieldbus	
Gauge pressure input					
Measured variable	Gauge pressure				
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Measuring span	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure	
	0.01 1 bar g (0.15 14.5 psi g)	6 bar g (87 psi g)	1 bar g (14.5 psi g)	6 bar g (87 psi g)	
	0.04 4 bar g (0.58 58 psi g)	10 bar g (145 psi g)	4 bar g (58 psi g)	10 bar g (145 psi g)	
	0.16 16 bar g (2.3 232 psi g)	32 bar g (464 psi g)	16 bar g (232 psi g)	32 bar g (464 psi g)	
	0.6 63 bar g (9.1 914 psi g)	100 bar g (1450 psi g)	63 bar g (914 psi g)	100 bar g (1450 psi g)	
	1.6 160 bar g (23.2 2321 psi g)	250 bar g (3626 psi g)	160 bar g (2321 psi g)	250 bar g (3626 psi g)	
	4.0 400 bar g (58 5802 psi g)	600 bar g (8700 psi g)	400 bar g (5802 psi g)	600 bar g (8700 psi g)	
	Depending on the proce may differ from these va	ess connection, the span lues		ess connection, the nomi- ay differ from these values	
Lower measuring limit		00 1	(0.44 ===================================		
Measuring cell with silicone oil		30 mbar a	(0.44 psi a)		
Upper measuring limit	1000/ of may are an		100 0/ of the many many		
Measuring cell with silicone oil  Absolute pressure input	100% of max. span		100 % of the max. nomi	nai measuring range	
Measured variable		Absolute	e pressure		
Spans (infinitely adjustable) or nominal mea-	Measuring span	Max. perm. test	Nominal measuring	Max. perm. test	
suring range and max. permissible test pressure	wicasuring spari	pressure	range	pressure	
	8 250 mbar a (0.12 3.6 psi a)	6 bar a (87 psi a)	250 mbar a (3.6 psi a)	6 bar a (87 psi a)	
	0.043 1.30 bar a (0.62 19 psi a)	10 bar a (145 psi a)	1,30 bar a (19 psi a)	10 bar a (145 psi a)	
	0.16 5 bar a (2.3 73 psi a)	30 bar a (435 psi a)	5 bar a (73 psi a)	30 bar a (435 psi a)	
Lower measuring limit	1 30 bar a (14.5 435 psi a)	100 bar a (1450 psi a)	30 bar a (435 psi a)	100 bar a (1450 psi a)	
Measuring cell with silicone oil		0 mbar	a (0 psi a)		
Upper measuring limit		UTIDAL	a (0 psi a)		
Measuring cell with silicone oil	100% of max. span		100 % of the max. nomi	nal measuring range	
Input of gauge pressure, with front-flush	TOO AS ON ASSOCIATION OF SIX				
diaphragm					
Measured variable		1	ure, front-flush		
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Measuring span	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure	
	0,01 1 bar g(0.15 14.5 psi g)	6 bar g (87 psi g)	1 bar g (14.5 psi g)	6 bar g (87 psi g)	
	0,04 4 bar g (0.58 58 psi g)	10 bar g (145 psi g)	4 bar g (58 psi g)	10 bar g (145 psi g)	
	0,16 16 bar g (2.32 232 psi g)	32 bar g (464 psi g)	16 bar g (232 psi g)	32 bar g (464 psi g)	
	0,6 63 bar g (9.14 914 psi g)	100 bar g (1450 psi g)	63 bar g (914 psi g)	100 bar g (1450 psi g)	
Lower measuring limit	-100 mbar g (-1.45 psi g)				
Upper measuring limit	1000/ of		100.0/ 01.11-	nol monocontin	
Measuring cell with silicone oil	100% of max. span		100 % of the max. nomi	nai measuring range	

	HART			PROFIBUS PA and FO	DUNDATION	Fieldbus	
Input of absolute pressure, with front-flush diaphragm							
Measured variable		A	Absolute pres	sure, front-flush			
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Measuring span	Measuring span Max. perm. test Nominal measuring pressure nange Max. p				erm. test re	
	43 1300 mbar a (0.62 18.9 psi a)	10 bar a (145 psi a)		1300 mbar a (18.9 psi a)	10 bar a (145 psi a	)	
	0.16 5 bar a (2.32 72.5 psi a)	30 bar a (435 psi a)		5 bar a (72.5 psi a)	30 bar a (435 psi a	)	
	1 30 bar a (14.5 435 psi a)	100 bar a (1450 psi a	a)	30 bar a (435 psi a)	100 bar a (1450 psi	a)	
	Depending on the proce may differ from these val	Depending on the process connection, the span may differ from these values  Depending on the process connection, the span nal measuring range may differ from these					
Lower measuring limit			0 bar a	(0 psi a)			
Upper measuring limit							
Measuring cell with silicone oil	100% of max. span			100 % of the max. non	ninal measurir	ng range	
Output							
Output signal	4 20 mA Digital PROFIBUS PA signal						
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.				er with max.		
Electrical damping T <sub>63</sub> (step width 0.1 s)	Set to 0.1 s (0 100 s)						
Measuring accuracy	as per EN60770-1						
Reference conditions (All error data refer always refer to the set span)	Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, measuring ce with silicone oil, room temperature 25 °C (77 °F), span ratio (r = max. span / set span)						
Measurement deviation with limit setting, including hysteresis and repeatability.					_		
	Gauge pressure	Absolute pressure	Absolute pressure, front-flush	Gauge pressure	Absolute pressure	Absolute pressure, front-flush	
Linear characteristic				≤ 0.075 %	≤ 0.1 %	≤ 0.2 %	
• r + 10	$\leq (0.0029 \cdot r + 0.071) \%$	≤ 0.1 %	≤ 0.2 %				
• 10 < r ≤ 30	$\leq (0.0045 \cdot r + 0.071) \%$	≤ 0.2 %	≤ 0.4 %				
• 20 < r < 100	$\leq (0.005 \cdot r + 0.05) \%$	-	-				
• 30 < r ≤ 100	approx. 0.2 NO						
			approx	. U.Z NO			
	≤ (0.25 · r) %/5 years	≤ (0.1 · r) %		. 0.2 NO ≤ 0.25 %/5 years	≤ 0.1 %/ye	ear	
Settling time T <sub>63</sub> without electrical damping Long-term drift at ±30 °C (±54 °F)	≤ (0.25 · r) %/5 years	≤ (0.1 · r) %			≤ 0.1 %/ye	ear	
Settling time T <sub>63</sub> without electrical damping Long-term drift at ±30 °C (±54 °F) Influence of ambient temperature	$\leq$ (0.25 · r) %/5 years $\leq$ (0.08 · r + 0.1) %	≤ (0.1 · r) %			≤ 0.1 %/ye	ear  ≤ 0.5 %	
Settling time T <sub>63</sub> without electrical damping		≤ (0.1 · r) %	6/year ≤ (0.2 · r	≤ 0.25 %/5 years ≤ 0.3 % ≤ 0.25 %/10 K	≤ 0.1 %/ye		
Settling time T <sub>63</sub> without electrical damping Long-term drift at ±30 °C (±54 °F) Influence of ambient temperature  • at -10 +60 °C (14 140 °F)  • at -4010 °C and +60 +85 °C	≤ (0.08· r + 0.1) %	≤ (0.1 · r) %	≤ (0.2 · r + 0 3) % ≤ (0.2 · r +	≤ 0.25 %/5 years ≤ 0.3 % ≤ 0.25 %/10 K	≤ 0.1 %/y∈	≤ 0.5 % ≤	

SITRANS P300 for gauge and absolute pressu	re
	HART PROFIBUS PA and FOUNDATION Fieldbus
Rated conditions	
Installation conditions	
Ambient temperature	Observe the temperature class in areas subject to explosion hazard.
Measuring cell with silicone oil	-40 +85 °C (-40 +185 °F)
Measuring cell with Neobee oil (with front-flush diaphragm)	-10 +85 °C (14 +185 °F)
<ul> <li>Measuring cell with inert liquid (not with front- flush diaphragm)</li> <li>Digital display</li> </ul>	-20 +85 °C (-4 +185 °F)
	-30 +85 °C (-22 +185 °F)
Storage temperature	-50 +85 °C (-58 +185 °F) (for Neobee: -20 +85 °C (-4 +185 °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	Acc to EN 01000 I NAMED NE 01
Emitted interference and interference immunity	Acc. to EN 61326 and NAMUR NE 21
Medium conditions Temperature of medium	
Measuring cell with silicone oil	-40 +100 °C (-40 +212 °F)
<ul> <li>Measuring cell with silicone oil (with front-flush diaphragm)</li> </ul>	-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 with front-flush dia- phragm)</li> </ul>	-40 +200 °C (-40 +392 °F)
<ul> <li>Measuring cell with inert liquid</li> </ul>	-20 +100 °C (-4 +212 °F)
<ul> <li>Measuring cell with high-temperature oil</li> </ul>	-10 +250 °C (14 482 °F)
Design (standard version)	
Weight (without options)	Approx. 800 g (1.8 lb)
Enclosure material	Stainless steel, mat. no. 1.4301/304
Material of parts in contact with the medium  Connection shank	0
Oval flange	Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819
Seal diaphragm	Stainless steel, mat. no. 1.4404/316L
Measuring cell filling	Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819  •Silicone oil
	•Inert filling liquid
Process connection	•G½B to EN 837-1
	<ul> <li>Female thread ½-14 NPT</li> <li>Oval flange PN 160 (MWP 2320 psi) with fastening thread:</li> <li>-7<sub>16</sub>-20 UNF to IEC 61518</li> </ul>
	-M10 as per DIN 19213
Design (version with front-flush diaphragm)	·
Weight (without options)	approx. 1 13 kg (2.2 29 lb)
Enclosure material	Stainless steel, mat. no. 1.4301/304
Material of parts in contact with the medium  • Process connection	
Seal diaphragm	Stainless steel, mat. no. 1.4404/316L
Measuring cell filling	Stainless steel, mat. no. 1.4404/316L  •Silicone oil
- woasumg cen miling	Inert filling liquid
	•FDA compliant fill fluid (Neobee oil)
Process connection	•Flanges as per EN and ASME
Ourface and the Associated 1	•F&B and pharmaceutical flanges
Surface quality touched-by-media	$R_a$ -values $\leq$ 0.8 μm (32 μ-inch)/welds $R_a$ ) $\leq$ 1.6 μm (64 μ-inch) (Process connections acc. to 3A; $R_a$ -values $\leq$ 0.8 μm (32 μ-inch)/welds $R_a$ $\leq$ 0.8 μm (32 μ-inch)/welds

SITRANS P300 for gauge and absolute pressu	ure HART	PROFIBUS PA and FOUNDATION Fieldbus		
Power supply U <sub>H</sub>	HANI	PROFIBOS PA AIIU POUNDATION FIEIUDUS		
	10.5 42 V DC	Supplied through bus		
Terminal voltage on transmitter	for intrinsically safe operation: 10.5 30 V DC			
Separate power supply	-	Not necessary		
Bus voltage				
• Without EEx	-	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	For gases of fluid group 1 and liquids of fluid garagraph 3 (sound engineering practice)	group 1; complies with requirements of Article		
Water, waste water	In prep	paration		
Explosion protection				
ntrinsic safety "i"	PTB 05 A	ATEX 2048		
Marking	Ex II 1/2 G EEx ia/	/ib 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	To certified intrinsically-safe circuits with peak		
	values: $ U_i = 30 \text{ V, } I_i = 100 \text{ mA,}  $ $ P_i = 750 \text{ mW, } P_i = 300  \Omega $	values: FISCO supply unit: $U_i = 17.5 \text{ V}, I_i = 380 \text{ mA},$ $P_i = 5.32 \text{ W}$		
		Linear barrier: $U_i = 24 \text{ V}, I_i = 250 \text{ mA}, P_i = 1.2 \text{ W}$		
Effective inner capacitance:	$C_i = 6 \text{ nF}$	$C_i = 1.1 \text{ nF}$		
Effective internal inductance:	$L_i = 0.4 \text{ mH}$	$L_i \le 7 \mu H$		
Explosion protection to FM for USA $\underline{\text{and}}$ Canada (cFM $_{\text{US}}$ )				
Identification (DIP) or (IS); (NI)	Certificate of Cor	mpliance 3025099		
	CL I, DIV 1, GP ABCD T4 T6; CL II, DIV 1, GP DIV 2, GP ABCD T4 T6	EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4 T6; CL; CL II, DIV 2, GP FG; CL III		
• Identification (DIP) or (IS)		npliance 3025099C , GP EFG; CL III; Ex ia IIC 4 T6; CL I, DIV 2,		
		_ II, DIV 2, GP FG; CL III		
Dust explosion protection for zone 20/21/22	PTB 05 A	ATEX 2048		
• Marking	Ex II 2D Ex ib	D 20 T 120 °C D 21 T 120 °C		
Permissible ambient temperature	EX II 3D EX ID	D 21 T 120 °C		
Permissible ambient temperature     Temperature along T4	40	( 40 , 105 °E)		
- Temperature class T4	(in the case of miner	(-40 +185 °F) ral glass windows only (-4 +185 °F))		
- Temperature class T5	in the case of miner	-40 +158 °F) ( al glass windows only (-4 +158 °F))		
- Temperature class T6	(in the case of miner	(-40 +140 °F) ral glass windows only (-4 +140 °F))		
• Connection	To certified intrinsically-safe circuits with peak values:	To certified intrinsically-safe circuits with peak values:		
Tel- alian in a same it	$U_i = 30 \text{ V}, I_i = 100 \text{ mA}, P_i = 750 \text{ mW}$	$U_i = 24 \text{ V}, I_i = 380 \text{ mA}, P_i = 5.32 \text{ mW}$		
Effective inner capacitance:	$C_i = 6 \text{ nF}$	C <sub>i</sub> = 5 nF		
<ul> <li>Effective internal inductance:</li> </ul>	$L_i = 0.4 \mu\text{H}$	$L_i = 10 \mu\text{H}$		

SITRANS P300 for gauge and absolute press	ure		
	HART PROFIBUS PA and FOUNDATION Fieldbus		
Type of protection Ex nA/nL/ic (Zone 2)	PTB 05 A	ATEX 2048	
Marking	II 2/3 G Ex ic I	IIB/IIC T4/T5/T6	
	II 2/3 G Ex	nA T4/T5/T6	
	II 2/3 G Ex nL	IIB/IIC T4/T5/T6	
<ul> <li>Permissible ambient temperature</li> </ul>			
- Temperature class T4	(in the case of miner	(-40 +185 °F) al glass windows only (-4 +185 °F))	
- Temperature class T5	-40 +70 °C (-40 +158 °F) (in the case of mineral glass windows only -20 +70 °C (-4 +158 °F))		
- Temperature class T6	$-40 \dots +60$ °C ( $-40 \dots +140$ °F) (in the case of mineral glass windows only $-20 \dots +60$ °C ( $-4 \dots +140$ °F))		
• Ex nA connection	To certified intrinsically-safe circuits with peak values:	To certified intrinsically-safe circuits with peak values:	
	$U_{\rm m} = 45 \text{ V}$	$U_{\rm m} = 32 \text{ V}$	
• Ex ic/nL connection	To certified intrinsically-safe circuits with	To certified intrinsically-safe circuits with	
	peak values:	peak values:	
	$U_i = 45 \text{ V}$	$U_i = 32 \text{ V}$	
Effective inner capacitance:	$C_i = 6 \text{ nF}$	$C_i = 5 \text{ nF}$	
Effective internal inductance:	$L_i = 0.4 \text{ mH}$	$L_i = 20 \mu H$	

## SITRANS P300 for gauge and absolute pressure

		SITRANS P300 for gaug	ge and absolute pressure		
HART Communication		FOUNDATION Fieldbus communication			
HART communication	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 - Electrical damping T <sub>63</sub> , adjust-	characteristic 0 100 s		
The address can be set using	Configuration tool or local operation	able - Simulation function	Output/input (can be locked		
	(standard setting Address 126)		within the device with a bridge)		
Cyclic data usage		- Failure mode	parameterizable (last good		
Output byte	5 (one measured value) or		value, substitute value, incorrect value)		
	10 (two measured values)	- Limit monitoring	Yes, one upper and lower warn-		
• Input byte	0.1 or 2 (totalizer mode and reset function for dosing)		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-			Standard FF function block		
	cess Control Devices Version 3.0, Class B  • PID • Physical block	1 resource block			
Function blocks	2	Transducer blocks	1 transducer block Pressure with		
Analog input		naneace. Sieche	calibration, 1 transducer block		
<ul> <li>Adaptation to customer-specific process variables</li> </ul>	Yes, linearly rising or falling characteristic	Pressure transducer block	LCD		
<ul> <li>Electrical damping T<sub>63</sub>, adjustable</li> </ul>	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 function	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 parameterizable 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				
Physical block	1				

2

Yes

Yes

Max. 30 nodes

Constant value or over parameterizable ramp function

Transducer blocks

two pressures

characteristic with

sor temperature

• Pressure transducer block - Can be calibrated by applying

- Monitoring of sensor limits

- Specification of a container

- Simulation function for measured pressure value and sen-

## Transmitters for food, pharmaceuticals and biotechnology

## SITRANS P300 for gauge and absolute pressure

0 1 11 10 1 1			0 1	_						
Selection and Ordering			Ord	er N	10.					
sitrans P300 pressur tive and absolute press suring housing, rating pl	sure, single-chamber mea	-								
4 20 mA/HART					7MF8023-					
PROFIBUS PA										
	(EE)		7MF8024- 7MF8025-							
FOUNDATION Fieldbus	(FF)									
Measuring cell filling	Measuring cell cleaning	)		П	ı					
Silicone oil	normal		1							
Inert liquid	Cleanliness level 2 to DIN 25410		3							
max. span										
0.01 1 bar g	(0.145 14.5 psi g)		В							
0.04 4 bar g	(0.58 58 psi g)		С							
0.1616 bar g	(2.32 232 psi g)		D							
0.63 63 bar g	(9.14 914 psi g)		E							
1.6 160 bar g	(23.2 2320 psi g) (58 5802 psi g)		F							
4 400 bar g 2.5 250 mbar a		Ε/	G Q							
2.5 250 mbar a	(0,036 3.63 psi a) (0.19 18.9 psi a)	F) F)	N							
	, , ,	- 1								
0.05 5 bar a 0.3 30 bar a	(0,7 72.5 psi a) (4.35 435 psi a)	F) F)	Ŭ							
<b>Wetted parts materials</b> Seal diaphragm	Measuring cell									
Stainless steel	Stainless steel	_		4						
Hastelloy	Stainless steel	F)	1	3						
Hastelloy	Hastelloy	F)	(	0						
Version for diaphragm se	eal <sup>1)2)</sup>		1	Y						
Process connection										
• G1/2B to EN 837-1				0						
• ½-14 NPT				1						
• Stainless steel oval flange										
- Mounting thread <sup>7</sup> / <sub>16</sub> -20 UNF to EN 61518				2						
- Mounting thread M10 to DIN 19213				3						
<ul> <li>Mounting thread M12 to DIN 19213</li> <li>Male thread M20 x 1.5</li> </ul>				4						
Male thread ½ -14 NPT	-			5 6						
				ŭ						
Non-wetted parts mater  Stainless steel, deep-deep-deep-deep-deep-deep-deep-deep				,	1					
polished	rawir and electrolytically									
Version					1					
Standard versions					١					
Explosion protection										
<ul> <li>None</li> <li>With ATEX Type of pro-</li> </ul>	tection:					Α				
With ATEX, Type of protection:     "Intrinsic safety (EEx ia)"						В				
• Zone 20/21/22 <sup>3)</sup>						C				
• Ex nA/nL (Zone 2) <sup>4)</sup>						E				
• with FM "intrinsic safety	/" (cFM <sub>US</sub> )					М				
Electrical connection / cable entry										
<ul> <li>Screwed gland M20x1.</li> </ul>	.5 (polyamide) <sup>5)</sup>					Α				
<ul> <li>Screwed gland M20x1</li> </ul>	,					В				
Screwed gland M20x1			С							
M12 connectors (metal     M12 connectors (metal			F							
M12 connectors (stain)						G				
<ul> <li>½-14 NPT metal thread</li> <li>½-14 NPT stainless ste</li> </ul>						H				
▼ 72-14 INF ESTAINIESS STE	er inteau 7					J				

Selection and Ordering data	Order No.
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 -
PROFIBUS PA	7 M F 8 0 2 4 -
FOUNDATION Fieldbus (FF)	7 M F 8 0 2 5 -
Display Without display, with keys, closed covers <sup>5)</sup> With display and keys, closed lid With display and keys, lid with Makrolon pane	1 2 4
(setting on HART devices: mA, with PROFIBUS PA and FOUNDATION Fieldbus equipment: pressure units)	
<ul> <li>With display (setting acc. to specifications, Order Code "Y21" or "Y22" required), lid with Mak- rolon pane</li> </ul>	5
With display and keys, lid with glass pane (setting on HART devices: mA, with PROFIBUS and FOUNDATION Fieldbus equipment: pressure units)	6
<ul> <li>With display (setting acc. to specifications, Order Code "Y21" or "Y22" required), lid with glass pane</li> </ul>	7

Power supply units see Chap. 8 "Supplementary Components".

Included in delivery of the device:

- Brief instructions (Leporello)
- CD-ROM with detailed documentation
- 1) 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.
- 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.
- $^{\rm 3)}$  Not available together with electrical connection option A
- <sup>4)</sup> Only available together with electrical connection options B, C, F or G.
- <sup>5)</sup> Only together with HART electronics.
- 6) Without cable gland.
- F) Subject to export regulations AL: 91999, ECCN: N.

## Transmitters for food, pharmaceuticals and biotechnology

## SITRANS P300 for gauge and absolute pressure

Selection and Orderin	g data		Order No.
SITRANS P300 pressu and absolute pressure			
<b>brane</b> , single-chamber plate inscription in Engl	measuring housing, rating ish		
4 20 mA/HART		F)	7MF8123-
PROFIBUS PA		F)	7MF8124-
FOUNDATION Fieldbu	s (FF)	F)	7MF8125-
Measuring cell filling	Measuring cell cleaning		
Silicone oil	normal		1
Inert liquid	Cleanliness level 2 to DIN 25410		3
FDA compliant fill fluid	BIIV 20110		
<ul> <li>Neobee oil</li> </ul>	normal		4
max. span			
0.01 1 bar g	(0.15 14.5 psi g)		В
0.04 4 bar g 0.16 16 bar g	(0.58 58 psi g) (2.32 232 psi g)		C D
0.63 63 bar g	(9.14 914 psi g)		E
13 1300 mbar a <sup>1)</sup>	(0.19 18.9 psi a)		N
1)			0
0.05 5 bar a <sup>1)</sup> 0.03 30 bar a <sup>1)</sup>	(0.7 72.5 psi a) (4.35 435 psi a)		T U
Wetted parts materials	, , ,		o l
Seal diaphragm	Measuring cell		
Stainless steel	Stainless steel	-	A
Hastelloy <sup>2)</sup>	Stainless steel		В
Process connection			
<ul> <li>Flange version with Order Code M, N, R or Q (see "Further designs")</li> </ul>			7
Non-wetted parts mate	*		
•	drawn and electrolytically		4
Version • Standard versions			1
Explosion protection			
• None			A
With ATEX, Type of pro			
- "Intrinsic safety (EEx ia)"  • Zone 20/21/22 <sup>3)</sup>			B C
• Ex nA/nL (Zone 2) <sup>4)</sup>			E
• with FM "intrinsic safety" (cFM <sub>US</sub> )			M
Electrical connection			
Screwed gland M20x			A
<ul> <li>Screwed gland M20x</li> </ul>	, ,		В
<ul> <li>Screwed gland M20x<sup>2</sup></li> <li>M12 connectors (with</li> </ul>			C F
	nless steel), without cable		G
socket)	-		
<ul> <li>½-14 NPT metal threa</li> <li>½-14 NPT stainless st</li> </ul>			H J
- /2-14 INF I Stailliess st	cci ulicau 1		J

Selection and Ordering data	Order No.
SITRANS P300 pressure transmitters for relative and absolute pressure with front-flush mem- brane, single-chamber measuring housing, rating plate inscription in English	
<b>4 20 mA/HART</b> F)	7 M F 8 1 2 3 -
PROFIBUS PA F)	7 M F 8 1 2 4 -
FOUNDATION Fieldbus (FF)	7MF8125-
Display Without display, with keys, closed covers <sup>5)</sup> With display and keys, closed lid	1 2
With display and keys, lid with Makrolon pane (setting on HART devices: mA, with PROFIBUS PA and FOUNDATION Fieldbus equipment: pressure units)	4
With display (setting acc. to specifications, Order Code "Y21" or "Y22" required), lid with Mak- rolon pane	5
With display and keys, lid with glass pane (setting on HART devices: mA, with PROFIBUS PA and FOUNDATION Fieldbus equipment: pressure units)	6
With display (setting acc. to specifications, Order Code "Y21" or "Y22" required), lid with glass pane	7

Power supply units see Chap. 8 "Supplementary Components"...

Included in delivery of the device:

- Brief instructions (Leporello)
- CD-ROM with detailed documentation
- Not with temperature decoupler P00 and P10, not for process connections R01, R02, R04, R10 and R11, and can only be ordered in conjunction with silicone oil.
- $^{2)}\,$  Only possible for flange with M.., N.. and Q.. option.
- <sup>3)</sup> Not together with electrical connection option A.
- <sup>4)</sup> Only available together with electrical connection options B, C, F or G.
- 5) Only together with HART electronics.
- 6) Without cable gland.
- F) Subject to export regulations AL: 91999, ECCN: N.

Selection and Ordering data				
	Order	code		
Further designs		HART	PA	FF
Add "-Z" to Order No. and				
specify Order Code.				
Pressure transmitter with mounting	A02	1	✓	✓
bracket (2 shackles, 4 nuts, 4 U-plates,				
1 angle) made of: made completely of stainless steel, for wall or				
pipe mounting				
Cable socket for M12 plug	A50		./	./
metal     Stainless steel	A50 A51		· /	./
• Stainless steel	ADI			•
Rating plate inscription				
(instead of English)			,	,
• German	B10	<b>V</b>	<b>V</b>	<b>V</b>
• French	B12	<b>1</b>	1	1
• Spanish	B13	1	1	<b>V</b>
• Italian	B14	✓	✓	✓
English rating plate	B21	✓	✓	✓
Pressure units in inH <sub>2</sub> 0 and/or psi				
Quality inspection certificate (factory cali-	C11	1	✓	✓
bration) to IEC 60770-2 1)				
Inspection certificate <sup>2)</sup>	C12	1	1	1
Acc. to EN 10204-3.1				
	C14	1	/	1
Test report Acc. to EN 10204-2.2	C14	•	٧	•
Degree of protection IP68	D12	✓	✓	✓
(only for M20x1.5 and ½-14 NPT)				
Ex Approval IEC Ex (EEx ia)	E45	✓	✓	✓
(only for transmitter 7MF4B)				
Ex Approval EEx 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	1	1
• DN 25, PN 100 <sup>4)</sup>	M21	1	1	1
• DN 40, PN 40	M13	1	1	1
• DN 40, PN 100	M23	1	1	1
• DN 50, PN 16	M04	1	1	1
• DN 50, PN 40	M14	1	1	1
• DN 80, PN 16	M06	1	1	1
• DN 80, PN 40	M16	1	1	1
Flanges to ASME B16.5				
• 1", class 150 <sup>4</sup> )	1440			,
▼ L. GIBSS TOU /	M40 M41	1	1	<b>√</b>
	WIAT	Ψ,	<b>V</b>	<b>✓</b>
• 1½", class 150		./		<b>√</b>
• 1½", class 150 • 2", class 150	M42	1		<b>V</b>
• 1½", class 150 • 2", class 150 • 3", class 150	M42 M43	✓	1	
• 1½", class 150 • 2", class 150 • 3", class 150 • 4", class 150	M42 M43 M44	<b>√</b>	✓	✓
• 1½", class 150 • 2", class 150 • 3", class 150 • 4", class 150 • 1", class 300 <sup>4)</sup>	M42 M43 M44 M45	<b>* * *</b>	<b>√</b>	<b>√</b>
• 1½", class 150 • 2", class 150 • 3", class 150 • 4", class 150 • 1", class 300 <sup>4)</sup> • 1½", class 300	M42 M43 M44 M45 M46	* * * * * * * * * * * * * * * * * * *	<b>∀ ∀ ∀</b>	<b>√ √</b>
• 1½", class 150 • 2", class 150 • 3", class 150 • 4", class 150 • 1", class 300 <sup>4)</sup> • 1½", class 300 • 2", class 300	M42 M43 M44 M45 M46 M47	* * * * * * * * * * * * * * * * * * *		✓ ✓ ✓
• 1½", class 150 • 2", class 150 • 3", class 150 • 4", class 150 • 1", class 300 <sup>4)</sup> • 1½", class 300 • 2", class 300 • 3", class 300	M42 M43 M44 M45 M46 M47	* * * * * * * * * * * * * * * * * * *	<b>* * * * *</b>	<b>* * * * *</b>
• 1½", class 150 • 2", class 150 • 3", class 150 • 4", class 150 • 1", class 300 <sup>4)</sup> • 1½", class 300 • 2", class 300 • 3", class 300 • 4", class 300	M42 M43 M44 M45 M46 M47 M48 M49	* * * * * * * * * * * * * * * * * * *		✓ ✓ ✓
• 1½", class 150 • 2", class 150 • 3", class 150 • 4", class 150 • 1", class 300 <sup>4)</sup> • 1½", class 300 • 2", class 300 • 3", class 300 • 4", class 300 • Threaded connector to DIN 3852-2, form A	M42 M43 M44 M45 M46 M47 M48 M49	* * * * * * * * * * * * * * * * * * *	<b>* * * * *</b>	<b>* * * * *</b>
• 1½", class 150 • 2", class 150 • 3", class 150 • 4", class 150 • 1", class 300 <sup>4)</sup> • 1½", class 300 • 2", class 300 • 4", class 300 Threaded connector to DIN 3852-2, form A thread to ISO 228	M42 M43 M44 M45 M46 M47 M48 M49	* * * * * * * * * * * * * * * * * * * *	<b>* * * * *</b>	<b>* * * * *</b>
• 1½", class 150 • 2", class 150 • 3", class 150 • 4", class 150 • 1", class 300 <sup>4)</sup> • 1½", class 300 • 2", class 300 • 4", class 300 <b>Threaded connector to DIN 3852-2, form A thread to ISO 228</b> • G ¾"-A, front-flush <sup>4)</sup>	M42 M43 M44 M45 M46 M47 M48 M49	* * * * * * * * * * * * * * * * * * *	<b>* * * * *</b>	<b>* * * * *</b>
• 1½", class 150 • 2", class 150 • 3", class 150 • 4", class 150 • 1", class 300 <sup>4)</sup> • 1½", class 300 • 2", class 300 • 4", class 300 • 4", class 300 • Threaded connector to DIN 3852-2, form A thread to ISO 228 • G 3¼"-A, front-flush 4) • G 1"-A, front-flush 4)	M42 M43 M44 M45 M46 M47 M48 M49	* * * * * * * * * * * * * * * * * * * *	<b>* * * * *</b>	<b>* * * * *</b>
• 1½", class 150 • 2", class 150 • 3", class 150 • 4", class 150 • 1", class 300 • 1½", class 300 • 2", class 300 • 4", class 300 • 4", class 300  Threaded connector to DIN 3852-2, form A thread to ISO 228 • G 3¼"-A, front-flush 4) • G 1"-A, front-flush 4) • G 2"-A, front-flush 4)	M42 M43 M44 M45 M46 M47 M48 M49	* * * * * * * * * * * * * * * * * * * *	<b>* * * * *</b>	<b>* * * * *</b>
• 1½", class 150 • 2", class 150 • 3", class 150 • 4", class 150 • 1", class 300 • 1", class 300 • 2", class 300 • 3", class 300 • 4", class 300  Threaded connector to DIN 3852-2, form A thread to ISO 228 • G 3¼"-A, front-flush 4) • G 1"-A, front-flush 4) • G 2"-A, front-flush 4) Tank connection <sup>5)</sup>	M42 M43 M44 M45 M46 M47 M48 M49	* * * * * * * * * * * * * * * * * * * *	<b>* * * * *</b>	<b>* * * * *</b>
• 1½", class 150 • 2", class 150 • 3", class 150 • 4", class 150 • 1", class 300 • 1", class 300 • 2", class 300 • 2", class 300 • 4", class 300  Threaded connector to DIN 3852-2, form A thread to ISO 228 • G 3¼"-A, front-flush 4) • G 1"-A, front-flush 4) • G 2"-A, front-flush 4) • Tank connection <sup>5)</sup> Sealing is included in delivery	M42 M43 M44 M45 M46 M47 M48 M49 R01 R02 R04	* * * * * * * * * * * * * * * * * * * *	<b>* * * * *</b>	<b>* * * * *</b>
• 1½", class 150 • 2", class 150 • 3", class 150 • 4", class 150 • 1", class 300 • 1", class 300 • 2", class 300 • 3", class 300 • 4", class 300  Threaded connector to DIN 3852-2, form A thread to ISO 228 • G 3¼"-A, front-flush 4) • G 1"-A, front-flush 4) • G 2"-A, front-flush 4) Tank connection <sup>5)</sup>	M42 M43 M44 M45 M46 M47 M48 M49	* * * * * * * * * * * * * * * * * * * *	<b>* * * * *</b>	<b>* * * * *</b>

Selection and Ordering data	Order			
Further designs		HART	PA	FF
Add "- <b>z</b> " to Order No. and specify Order Code.				
Sanitary process connection according DIN 11851 (Dairy connection)				
Certified to 3A <sup>b)</sup>	Nos		,	
<ul><li>DN 50, PN 25</li><li>DN 80, PN 25</li></ul>	N04 N06	1	1	<b>√</b>
<b>Tri-Clamp connection according DIN 32676/ISO 2852</b> Certified to 3A <sup>6)</sup>				
• DN 50/2", PN 16	N14	✓	✓	1
• DN 65/3", PN 10	N15	✓	✓	✓
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	1		
for front-flush diaphragm version	F00	Ů	•	•
<b>Temperature decoupler up to 250 °C</b> Measuring cell filling: High-temperature oil,	P10	✓	✓	1
only in conjunction with measuring cell filling silicone oil				
<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	✓	✓	✓
• 65 mm, PN 40	M32	✓	✓	✓
SMS socket with union nut				,
• 2" • 2½"	M67 M68	1	1	<b>√</b>
• 3"	M69	1	✓	1
SMS threaded socket				
• 2" • 2½"	M73 M74	1	1	<b>√</b>
• 3"	M75	1	✓	1
IDF socket with union nut ISO 2853			,	
• 2" • 2½"	M82 M83	1	1	1
• 3"	M84	1	✓	1
IDF threaded socket ISO 2853				
• 2" • 2½"	M92 M93	<b>√</b>	1	1
• 3"	M94	1	<b>*</b>	1
Sanitary process connection to NEUMO Bio-Connect screw connection				
Certified to 3A and EHEDG <sup>6)</sup> • DN 50, PN 16	Q05	1	✓	1
• DN 65, PN 16	Q06	✓	✓	✓
• DN 80, PN 16	Q07	1	1	1
<ul><li>DN 100, PN 16</li><li>DN 2", PN 16</li></ul>	Q08 Q13	<b>√</b>	<b>√</b>	1
• DN 2½", PN 16	Q14	1	<b>√</b>	✓
• DN 3", PN 16	Q15	1	<b>V</b>	1
• DN 4", PN 16	Q16	✓	✓	✓
Sanitary process connection to NEUMO Bio-Connect flange connection				
Certified to 3A and EHEDG <sup>6)</sup> • DN 50, PN 16	Q23	1	1	1
• DN 65, PN 16	Q23 Q24	1	<b>∀</b>	<b>✓</b>
• DN 80, PN 16	Q25	✓	✓	✓
• DN 100, PN 16	Q26	1	<b>1</b>	1
<ul><li>DN 2", PN 16</li><li>DN 2½", PN 16</li></ul>	Q31 Q32	1	<b>√</b>	<b>√</b>
• DN 3", PN 16	Q33	1	<b>V</b>	1
• DN 4", PN 16	Q34	✓	✓	✓

## 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 Order No. and				
specify Order Code.				
Sanitary process connection to NEUMO				
<b>Bio-Connect clamp connection</b> Certified to 3A and EHEDG <sup>6)</sup>				
• DN 50, PN 16	Q39	1	1	1
• DN 65, PN 10	Q40	1	✓	1
• DN 80, PN10	Q41	✓	✓	✓
• DN 100, PN 10	Q42	✓	✓	✓
• DN 2½", PN 16	Q48	<b>√</b>	1	✓.
• DN 3", PN 10	Q49	1	1	1
• DN 4", PN 10	Q50	•	•	٧
Sanitary process connection to NEUMO Bio-Connect S flange connection				
Certified to 3A and EHEDG				
• DN 50, PN 16	Q63	✓	✓	✓
• DN 65, PN 10	Q64	✓	✓	✓
• DN 80, PN 10	Q65	✓	✓	✓
• DN 100, PN 10	Q66	<b>√</b>	1	<b>V</b>
• DN 2", PN 16	Q72	1	<b>✓</b>	1
<ul> <li>DN 2½", PN 10</li> <li>DN 3", PN 10</li> </ul>	Q73 Q74	<b>√</b>	<b>*</b>	<b>*</b>
• DN 4". PN 10	Q75	1	1	1
Aseptic threaded socket to DIN 11864-1 Form A				
Certified to 3A and EHEDG				
• DN 50, PN 25	N33	✓	✓	1
• DN 65, PN 25	N34	✓	✓	✓
• 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				
• DN 50, PN 16	N43	1	1	1
• DN 65, PN 16	N44	✓	1	✓
• 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				
• DN 50, PN 16	N43 +	1	1	1
	P11			
• DN 65, PN 16	N44 + P11	✓	✓	✓
• DN 80, PN 16	N45 +	1	✓	✓
- DN 400 DN 40	P11	,	,	,
• DN 100, PN 16	N46 + P11	1	✓	✓
Aseptic clamp with groove to DIN 11864-3 FormA				
Certified to 3A and EHEDG				
• DN 50, PN 25	N53	1	1	1
• DN 65, PN 25	N54	1	1	1
• DN 80, PN 16	N55	✓	✓	✓
• DN 100, PN 16	N56	✓	✓	✓

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

Selection and Ordering data	Order code			
Additional data		HART	PA	FF
Please add "-Z" to Order 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				
Stainless steel tag plate (measuring point description)	Y15	✓	✓	✓
Max. 16 characters, specify in plain text: Y15:				
Measuring point text	Y16	1	✓	1
Max. 27 characters, specify in plain text: Y16:				
Entry of HART TAG	Y17	✓		
Max. 8 characters, specify in plain text: Y17:				
Setting of pressure indication in pressure	Y21	✓	✓	✓
units 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 indicator in non-	Y22 +	✓		
pressure units <sup>8)</sup> Specify in plain text: Y22: up to I, m³, 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) Specify in plain text: Y25:	Y25		✓	

Factory mounting of valve manifolds, see accessories.

Only "Y01" and "Y21" 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>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.

 $<sup>^{\</sup>rm 3)}$  Special seal in Viton included in the scope of delivery

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

<sup>5)</sup> The weldable socket can be ordered under accessories.

<sup>6) 3</sup>A certification only if used in conjunction with 3A-compliant sealing rings.

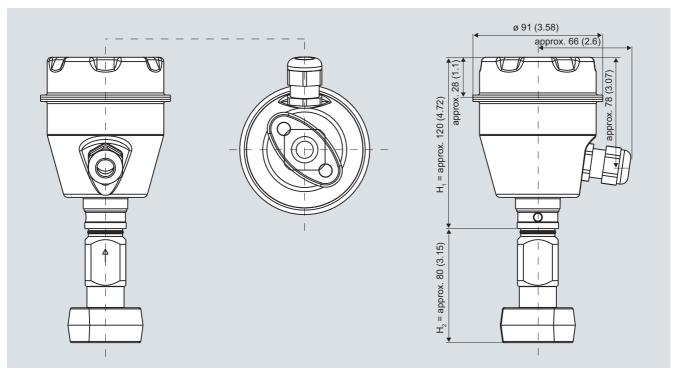
The maximum permissible temperatures of the medium depend on the respective cell fillings.

<sup>8)</sup> Preset values can only be changed over SIMATIC PDM.

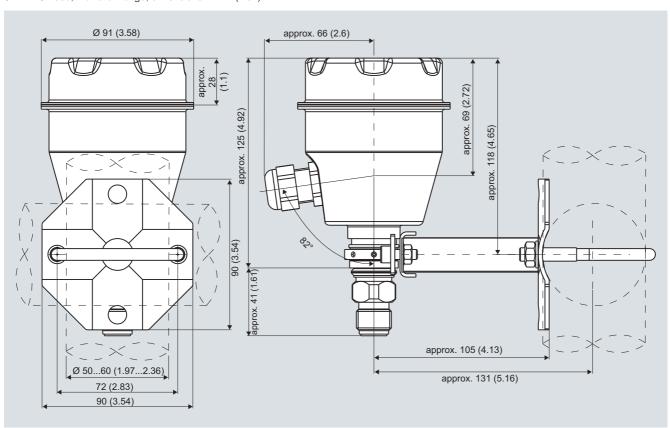
## Transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressure

### Dimensional drawings

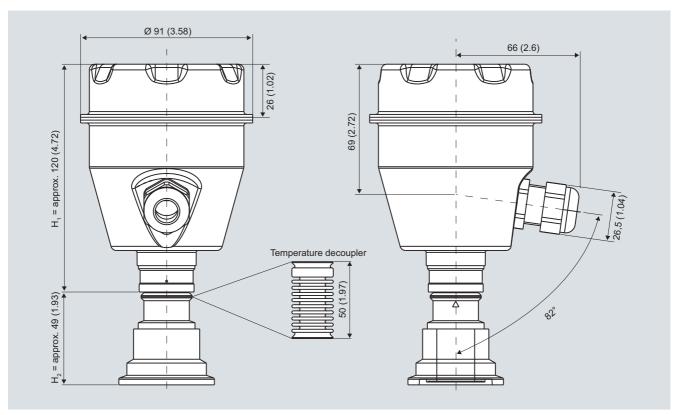


SITRANS P300, with oval flange, dimensions in mm (inch)



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

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  $\rm H_1$  and  $\rm H_2$ .

H<sub>1</sub> = 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.

## 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

DN	PN	ØD	H <sub>2</sub>
25	40	115 mm (4.5")	Approx.
25	100	140 mm (5.5")	52 mm (2")
40	40	150 mm (5.9")	
40	100	170 mm (6.7")	
50	16	165 mm (6.5")	
50	40	165 mm (6.5")	
80	16	200 mm (7.9")	
80	40	200 mm (7.9")	

### Flanges to ASME

### **ASME B16.5**



DN	Class	ØD	H <sub>2</sub>
1"	150	110 mm (4.3")	Approx.
1"	300	125 mm (4.9")	52 mm (2")
11/2"	150	130 mm (5.1")	
1½"	300	155 mm (6.1")	
2"	150	150 mm (5.9")	
2"	300	165 mm (6.5")	
3"	150	190 mm (7.5")	
3"	300	210 mm (8.1")	
4"	150	230 mm (9.1")	
4"	300	255 mm (10.0")	

### NuG and pharmaceutical connections

#### Connections to DIN

DIN 11851 (milk pipe
<b>T</b>

ic	ion)						
	DN	PN	ØD	H <sub>2</sub>			
	50	25	92 mm (3.6")	Approx.			
	80	25	127 mm (5.0")	52 mm (2")			

#### TriClamp to DIN 32676



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

## Other connections

## Varivent connection



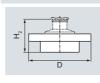
DN	PN	ØD	H <sub>2</sub>
40 125	40	84 mm (3.3")	Approx. 52 mm (2")

## **Biocontrol connection**



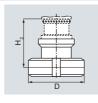
DN	PN	ØD	H <sub>2</sub>
50	16	90 mm (3.5")	Approx.
65	16	120 mm (4.7")	52 mm (2")

### Sanitary process connection to DRD



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

## Sanitary process screw connection to NEUMO Bio-Connect



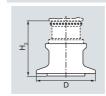
DN	PN	ØD	H <sub>2</sub>
50	16	82 mm (3.2")	Approx.
65	16	105 mm (4.1")	52 mm (2")
80	16	115 mm (4.5")	
100	16	145 mm (5.7")	
2"	16	82 mm (3.2")	
21/2"	16	105 mm (4.1")	
3"	16	105 mm (4.1")	
4"	16	145 mm (5.7")	

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



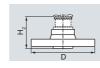
DN	PN	ØD	H <sub>2</sub>
50	16	110 mm (4.3")	Approx.
65	16	140 mm (5.5")	52 mm (2")
80	16	150 mm (5.9")	
100	16	175 mm (6.9")	
2"	16	100 mm (3.9")	
21/2"	16	110 mm (4.3")	
3"	16	140 mm (5.5")	
4"	16	175 mm (6.9")	

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



DN	PN	ØD	H <sub>2</sub>
50	16	77.4 mm (3.0")	Approx.
65	10	90.9 mm (3.6")	52 mm (2")
80	10	106 mm (4.2")	
100	10	119 mm (4.7")	
2"	16	64 mm (2.5")	
21/2"	16	77.4 mm (3.0")	
3"	10	90.9 mm (3.6")	
4"	10	119 mm (4.7")	

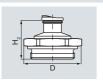
## Sanitary process connection to NEUMO Bio-Connect S flange con-



DN	PN	ØD	H <sub>2</sub>
50	16	125 mm (4.9")	Approx.
65	10	145 mm (5.7")	52 mm (2")
80	10	155 mm (6.1")	
100	10	180 mm (7.1")	
2"	16	125 mm (4.9")	
21/2"	10	135 mm (5.3")	
3"	10	145 mm (5.7")	
4"	10	180 mm (7.1")	

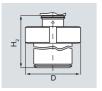
## SITRANS P300 for gauge and absolute pressure

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



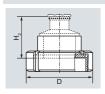
DN	PN	ØD	H <sub>2</sub>
3/4"	63	37 mm (1.5")	approx. 45 mm (1.8")
1"	63	48 mm (1.9")	approx. 47 mm (1.9")
2"	63	78 mm (3.1")	Approx. 52 mm (2")

### Tank connection TG 52/50 and TG52/150



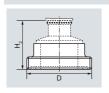
DN	PN	ØD	H <sub>2</sub>
25	40	63 mm (2.5")	approx. 63 mm (2.5")
25	40	63 mm (2.5")	approx. 170 mm (6.7")

#### SMS socket with union nut



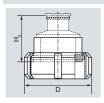
DN	PN	ØD	H <sub>2</sub>
2"	25	84 mm (3.3")	Approx.
21/2"	25	100 mm (3.9")	52 mm (2.1")
3"	25	114 mm (4.5")	

#### SMS threaded socket



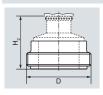
DN	PN	ØD	H <sub>2</sub>
2"	25	70 x 1/6 mm	Approx.
21/2"	25	85 x 1/6 mm	52 mm (2.1")
3"	25	98 x 1/6 mm	

#### IDF socket with union nut

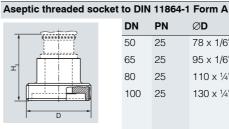


DN	PN	ØD	H <sub>2</sub>
2"	25	77 mm (3")	Approx.
21/2"	25	91 mm (3.6")	52 mm (2.1")
3"	25	106 mm (4.2")	

### **IDF** threaded socket



DN	PN	$\emptyset \mathbf{D}$	H <sub>2</sub>
2"	25	64 mm (2.5")	Approx.
21/2"	25	77.5 mm (3.1")	52 mm (2.1")
3"	25	91 mm (3.6")	



•					
	DN	PN	ØD	H <sub>2</sub>	
	50	25	78 x 1/6"	Approx.	
	65	25	95 x 1/6"	52 mm (2.1")	
	80	25	110 x 1/4"		
	100	25	130 x 1/4"		

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

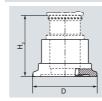
DN	PN	ØD	H <sub>2</sub>
50	16	94	Approx.
65	16	113	52 mm (2.1")
80	16	133	
100	16	159	

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



DN	PN	$\emptyset \mathbf{D}$	H <sub>2</sub>	
50	16	94	Approx.	
65	16	113	52 mm (2.1")	
80	16	133		
100		159		

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



•	70 10 5111 11001 01 0111171						
	DN	PN	$\emptyset \mathbf{D}$	H <sub>2</sub>			
	50	25	77,5	Approx.			
	65	25	91	52 mm (2.1")			
	80	16	106				
	100	16	130				

## Transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 Accessories/Spare parts

Selection and Odering data	Order No.
Spare parts / Accessories	
Mounting bracket and fastening parts kit made of stainless steel	7MF8997-1AA
Cover without window gasket not included	7MF8997-1BA
Cover with glass window gasket not included	7MF8997-1BD
NBR enclosure sealing F)	7MF8997-1BG
Measuring point label unlabeled	7MF8997-1CA
Cable gland  • metal  • plastic (blue)	7MF8997-1EA 7MF8997-1EB
Weldable sockets for PMC connection  • PMC Style Standard: Thread 1½"  • PMC Style Minibolt: front-flush 1"	7MF4997-2HA 7MF4997-2HB
Gaskets for PMC connection (packing unit = 5 units)  • PTFE seal for PMC Style Standard: F) Thread 1½*	7MF4997-2HC
Gasket made of Viton for PMC Style Minibolt: F) front-flush 1"	7MF4997-2HD
Weldable socket for TG52/50 and TG52/150 connection  • TG52/50 connection	7MF4997-2HE
TG52/150 connection02  Seals for TG 52/50 and TG 52/150 made of silicone	7MF4997-2HF 7MF4997-2HG
Seals for flange connection with front-flush diaphragm Material FPM (Viton), 10 units	
,	7MF4997-2HH
<ul> <li>DN 25, PN 100 (M21)</li> <li>1", class 150 (M40)</li> <li>F)</li> </ul>	
• 1", class 300 (M45)	

Selection and Odering data		Order No.
Operating Instructions <sup>1)</sup>		
<ul> <li>for SITRANS P300 series with HART communication</li> <li>German</li> <li>English</li> <li>French</li> <li>Spanish</li> <li>Italian</li> <li>Leporello German/English</li> </ul>	-	A5E00359580 A5E00359579 A5E00359578 A5E00359576 A5E00359577 A5E00359581
<ul> <li>for SITRANS P300 series with PROFIBUS PAcommunication</li> <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
CD with documentation for SITRANS P300 and SITRANS DS III		
German, English, French, Spanish, Italian		A5E00090345
Certificates (order only via SAP) instead of Internet download		
• hard copy (to order)		A5E03252406
• on CD (to order)		A5E03252407
HART modem		
• with RS232 interface	D)	7MF4997-1DA
with USB interface	D)	7MF4997-1DB

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

- D) Subject to export regulations AL: N, ECCN: EAR99H
- F) Subject to export regulations AL: 91999, ECCN: N

Power supply units see Chap. 8 "Supplementary Components".

<sup>►</sup> available ex stock

## 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 g (87 psi g))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



Add <b>-Z</b> to the Order No. of the transmitter and add order codes	Order code
SITRANS P300 7MF8021	T03
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 Order No. of the transmitter and add order codes	Order code
SITRANS P300 7MF8020	T02
with process connection collar G1/2 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

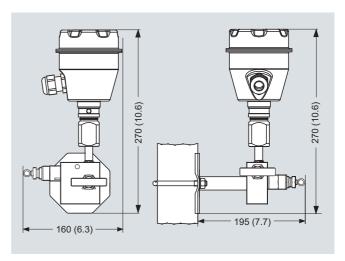
SITRANS P300 - Factory-mounting of valve manifolds on transmitters

## Dimensional drawings

Valve manifolds mounted on SITRANS P300



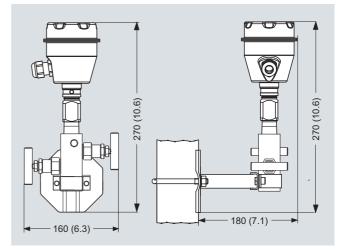
7MF9011-4EA valve manifold with mounted gauge pressure and absolute pressure transmitters



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



 $7 MF 9011 \hbox{-} 4 FA$  valve manifold with mounted gauge pressure and absolute pressure transmitters



 $7MF9011\mbox{-}4FA$  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 1½" 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 user-friendliness and high accuracy. The parameterization is performed using control keys via HART communication, 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 life
- High 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 g to 16 bar g (0.43 psi g to 232 psi g) for DS III with HART interface
- Nominal measuring range from 1 bar g to 16 bar g (14.5 psi g to 232 psi g) for DS III with PROFIBUS PA and FOUNDATION Fieldbus interface
- Infinitely adjustable span from 0.03 bar g to 16 bar g (0.43 psi g to 232 psi g) for SITRANS P300 with HART interface
- Nominal measuring range from 1 bar g to 16 bar g (14.5 psi g to 232 psi g) for SITRANS P300 with PROFIBUS PA interface
- · High measuring accuracy
- Parameterization over control keys and HART interface, 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 communication 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 HART: 0,03 ... 16 bar g (0.433 ... 232 psi g)

#### Nominal measuring range

For DS III PA and FF: 1 ... 16 bar g (14.5 ... 232 psi g)

#### SITRANS P300

## Span (infinitely adjustable)

For DS III HART: 0,03 ... 16 bar g (0.433 ... 232 psi g)

#### Nominal measuring range

For DS III PA: 1 ... 16 bar g (14.5 ... 232 psi g)

## 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 Order 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).

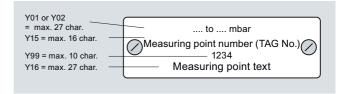
The approval label is located on the opposite side.

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 digital 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 of attached measuring points sign



#### SITRANS P300

The device comprises:

- Electronics
- Housing
- Measuring cell



Perspective view of the SITRANS P300

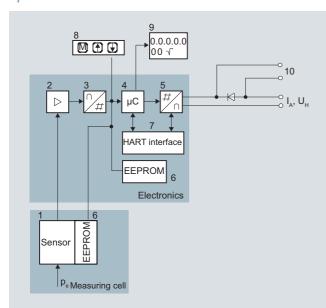
The housing has a screw-on cover (5) and, depending on the version, is with or without an inspection window. The electrical terminal housing, the buttons for operation of the device are located under this cover and, depending on the version, the digital display. The connections for the auxiliary power 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



- 1 Measuring cell sensor
- 2 Instrument amplifier
- 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
- I Output current
- $\hat{\mathsf{U}}_{\mathsf{H}}$  Power supply
- P 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.

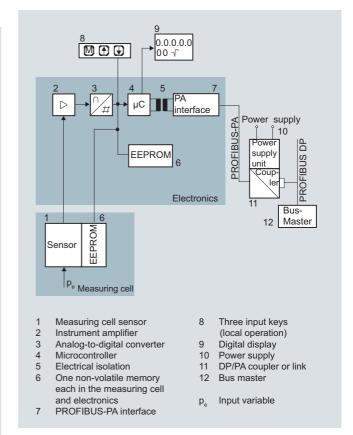
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced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

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

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

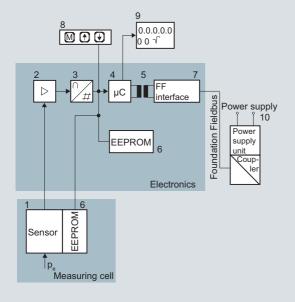
Using the three input buttons (8) you can parameterize the pressure transmitter directly at the measuring point. The input buttons can also be used to control the view of the results, the error messages and the operating modes on the digital display (9).

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



- 1 Measuring cell sensor
- 2 Instrument amplifier
- 3 Analog-to-digital converter
- 4 Microcontroller
- 5 Electrical isolation
- 6 One non-volatile memory each in the measuring cell and electronics
- 7 FF interface

- 8 Three input keys (local operation)
- 9 Digital display
- 10 Power supply
- p 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 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.

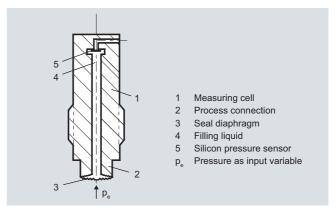
Using the three input buttons (8) you can parameterize the pressure transmitter directly at the measuring point. The input buttons can also be used to control the view of the results, the error messages and the operating modes on the digital display (9).

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 cell

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  $p_{\rm e}$  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**

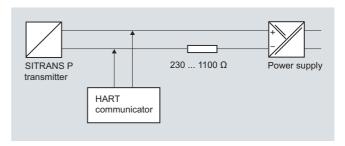
Depending on the version, there are a range of options for parameterizing the pressure transmitter and for setting or scanning the parameters.

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

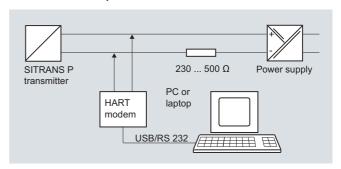
With the input buttons you can easily set the most important parameters without any additional equipment.

#### Parameterization using HART 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.



## Transmitters for gauge pressure for the paper industry

SITRANS P DS III and P300 with PMC connection Technical description

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 parameter DS III HART and P300 HART

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

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

## Diagnostic functions for DS III HART and P300 HART

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

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

Physical variable	Physical dimensions
Pressure (setting can also be made in the factory)	Pa, MPa, kPa, bar, mbar, torr, atm, psi, $g/cm^2$ , $kg/cm^2$ , $inH_2O$ , $inH_2O$ (4 °C), $mmH_2O$ , $ftH_2O$ (20 °C), $inHg$ , $mmHg$
Level (height data)	m, cm, mm, ft, in
Volume	m³, dm³, hl, yd³, ft³, in³, US gallon, lmp. gallon, bushel, barrel, barrel liquid
Mass	g, kg, t, lb, Ston, Lton, oz
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. 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 FF 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 PA and FF and P300 PA and FF

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

#### Diagnostic functions for DS III PA and FF and P300 PA and FF

- · 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, hPa, kPa, Pa, bar, mbar, torr, atm, psi, g/cm², kg/cm², mm $H_2O$ , mm $H_2O$ (4 °C), in $H_2O$ , in $H_2O$ (4 °C), ft $H_2O$ , mm $H_3$ , in $H_3$
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	%

# Pressure Measurement Transmitters for gauge pressure for the paper industry

## SITRANS P DS III with PMC connection

## Technical specifications

orritation, be in series for gauge pressure to		or the paper industry			
	HART		PROFIBUS PA and F	OUNDATION Fieldbus	
Input					
Measured variable		Gauge	e pressure		
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure	
	0.01 1 bar g (0.15 14.5 psi g)	6 bar g (87 psi g)	1 bar g (14.5 psi g)	6 bar g (87 psi g)	
	0.04 4 bar g (0.58 58 psi g)	10 bar g (145 psi g)	4 bar g (58 psi g)	10 bar g (145 psi g)	
	0.16 16 bar g (2.32 232 psi g)	32 bar g (464 psi g)	16 bar g (232 psi g)	32 bar g (464 psi g)	
Lower measuring limit					
Measuring cell with silicone oil filling		-100 mbar	g (1.45 psi g)		
Jpper measuring limit		100% o	f max. span		
Output					
Output signal	4 20 mA		Digital PROFIBUS PA FOUNDATION Fieldbu		
Lower limit (infinitely adjustable)	3.55 mA, factory pres	et to 3.84 mA	-		
<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	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.0$ $U_{\rm H}$ : Power supply in V		-		
With HART communication	$R_{\rm B} = 230 \dots 500 \Omega$ (S $R_{\rm B} = 230 \dots 1100 \Omega$ (H		-		
Physical bus	-		IEC 61158-2		
Protection against polarity reversal	Protected against sho		y voltage.	against the other with ma	
Measuring accuracy			EN 60770-1		
Reference conditions All error data refer always refer to the set span)	Increasing characteris		bar, stainless steel seal 25 °C (77 °F)) r: Span ra pan / set span)		
Error in measurement and fixed-point setting (including hysteresis and repeatability)					
Linear characteristic			≤ 0.075 %		
- r ≤ 10	$\leq (0.0029 \cdot r + 0.071)$	%			
- 10 < r ≤ 30	$\leq$ (0.0045 · r + 0.071)	%			
- 30 < r ≤ 100	$\leq (0.005 \cdot r + 0.05) \%$				
_ong-term drift (temperature change ±30 °C ±54 °F))					
- to 4-bar measuring cell	≤ (0.25 · r) % per 5 ye	ars	≤ 0.25 % per 5 years		
6-bar measuring cell	≤ (0.125 · r) % per 5 y	ears	≤ 0.125 % per 5 years	3	
nfluence of ambient temperature					
at -10 +60 °C (14 140 °F)	$\leq (0.08 \cdot r + 0.1)\%$		≤ 0.3 %		
• at -4010 °C and +60 +85 °C (-40 +14 °F and 140 185 °F)	$\leq$ (0.1 · r + 0.15) %/10	K	≤ 0.25 %/10 K		
nfluence of the medium temperature (only with ront-flush diaphragm)					
Temperature difference between medium temperature and ambient temperature			( (0.04 psi/10 K)		
nfluence of mounting position		≤ 0.1 mbar g (0.00145	5 psi g) per 10° inclination	n	
Measured Value Resolution			3 · 10 <sup>-5</sup> of nominal me		

# Pressure Measurement Transmitters for gauge pressure for the paper industry

## SITRANS P DS III with PMC connection

SITRANS P, DS III series for gauge pressure v	vith PMC connection for the paper industry	
	HART	PROFIBUS PA and FOUNDATION Fieldbus
Rated conditions		
Degree of protection (to EN 60529)	IP65, IP68, NEMA 4X, enclosure cleaning	ng, resistant to lyes, steam to 150 °C (302 °F)
Temperature of medium	-20 +100 °	°C (-4 +212 °F)
Ambient conditions		
Ambient temperature	-20 +85 °	C (-4 +185 °F)
Storage temperature	-50 +85 °C	C (-58 +185 °F)
Climatic class		
- Condensation	Relative hur Condensation permissible	nidity 0 100 % e, suitable for use in the tropics
Electromagnetic Compatibility		
- Emitted interference and interference immunity	Acc. to EN 6132	6 and NAMUR NE 21
Design		
Weight (without options)	≈ 1.5 k	g (≈ 3.3 lb)
Enclosure material	Low-copper die-cast aluminum, GD-AlSi12 o	r stainless steel precision casting, mat. no. 1.4408
Wetted parts materials		
• Gasket (standard)	PTFE	flat gasket
• O-ring (minibolt)	FPM (Viton) or op	tionally: FFPM or NBR
Measuring cell filling	Silicone oil o	r inert filling liquid
Process connection (standard)	Flush-mounted, 11/2	", PMC Standard design
Process connection (minibolt)	Flush-mounted	, 1", minibolt design
Power supply U <sub>H</sub>		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 ≤ 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, d engineering practice)

## Transmitters for gauge pressure for the paper industry

## SITRANS P DS III with PMC connection

SITRANS P DS III with PMO	C connection	
HART communication		FOUNDATION Fieldbus
HART communication	230 1100 Ω	communication
Protocol	HART Version 5.x	Function blocks
Software for computer	SIMATIC PDM	<ul> <li>Analog input</li> </ul>
PROFIBUS PA communication Simultaneous communication with	4	<ul> <li>Adaptation to customer-specific process variables</li> </ul>
master class 2 (max.)	·	<ul> <li>Electrical damping T<sub>63</sub>, adjust</li> </ul>
The address can be set using	Configuration tool or local opera- tion (standard setting address 126)	able - Simulation function
Cyclic data usage		- Failure mode
Output byte	5 (one measured value) or 10 (two measured values)	Tanaro mode
Input byte	0, 1, or 2 (register operating mode and reset function for metering)	- Limit monitoring
Internal preprocessing		<ul> <li>Square-rooted characteristic for flow measurement</li> </ul>
Device profile	PROFIBUS PA Profile for Process Control Devices Version	PID
	3.0, Class B	Physical block
Function blocks	2	Transducer blocks
Analog input		
<ul> <li>Adaptation to customer-specific process variables</li> </ul>	Yes, linearly rising or falling characteristic	Pressure transducer block
<ul> <li>Electrical damping T<sub>63</sub>, adjustable</li> </ul>	0 100 s	<ul> <li>Can be calibrated by applying two pressures</li> </ul>
- Simulation function	Input /Output	- Monitoring of sensor limits
- 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>
- Limit monitoring	Yes, one upper and lower warning 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	
Physical block	1	
Transducer blocks	2	
Pressure transducer block		
- Can be calibrated by applying two pressures	Yes	
- Monitoring of sensor limits	Yes	
- Specification of a container characteristic with	Max. 30 nodes	
- Square-rooted characteristic for flow measurement	Yes	

Parameterizable

Constant value or over parame-

terizable ramp function

- if-

- ıg
- a-

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 FF function block

1 resource block

1 transducer block Pressure with calibration, 1 transducer block

Yes

Yes

Constant value or over parameterizable ramp function

- Gradual volume suppression and implementation point of

sured pressure value and sen-

square-root extraction - Simulation function for mea-

sor temperature

## Transmitters for gauge pressure for the paper industry

## SITRANS P DS III with PMC connection

Selection and Ordering	g data		Order No.
SITRANS P pressure t		F)	7MF4133-
pressure, with PMC co series DS III HART	onnection		
Measuring cell filling	Measuring cell clean-		
Silicone oil	normal		1
Inert liquid	Grease-free		3
Measuring span			
0,01 1 bar g <sup>1)</sup>	(0.15 14.5 psi g) <sup>1)</sup>		В
0.04 4 bar g	(0.58 58 psi g)		С
0.1.6 16 bar g	(2.32 232 psi g)		D
Wetted parts materials	3	T	
Seal diaphragm	Connection shank		
Hastelloy	Stainless steel		В
Process connection			
• PMC Style Standard:	Thread 1½"		2
PMC Style Minibolt: fro	ont-flush 1" (not with mini-		3
	(7.25 psi) - version "B")		
Non-wetted parts mate	erials		
<ul> <li>Housing made of die-</li> </ul>	cast aluminium		0
<ul> <li>Housing stainless stee</li> </ul>	el precision casting		3
Version			
<ul> <li>Standard versions</li> </ul>			1
	English label inscriptions,		2
documentation in 5 la	nguages on CD		
Explosion protection			
None			A
Electrical connection	cable entry	П	
<ul> <li>Female thread M20 x</li> </ul>	***		В
<ul> <li>Female thread ½-14 N</li> </ul>			С
<ul> <li>M12 connectors (meta)</li> </ul>	al) <sup>2)</sup>		F
Display			
<ul> <li>Without indicator</li> </ul>			0
<ul> <li>Without visible digital</li> </ul>		▶	1
indicator concealed, s	,		
With visible digital ind			6
<ul> <li>With customer-specifical as specified, Order Control</li> </ul>	c digital indicator (setting		7
as specified, Order Co	oue izi requireu)		

Available ex stock

Power supply units see Chap. 8 "Supplementary Components".

Included in delivery of the device:

- Brief instructions (Leporello)CD-ROM with detailed documentation
- sealing ring
- 1) Only with "PMC Style Standard" process connection
- 2) M12 delivered without cable socket

		_	_	_	_	_	_	-	_	-
Selection and Ordering data Order No.										
SITRANS P pressure t pressure, with PMC co										
DS III PA (PROFIBUS F	PA)	F)	7 M	F 4	1	3 4	١-			
DS III FF (FOUNDATION Fieldbus)		7 M	F 4	1	3 5	; <b>-</b>				
				ī					1	
Measuring cell filling	Measuring cell clean- ing									
Silicone oil	normal		1							
Inert liquid	Grease-free		3							
Nominal measuring ra	nge									
1 bar g <sup>1)</sup>	(14.5 psi g) <sup>1)</sup>		В							
4 bar g	(58 psi g)		С							
16 bar g	(232 psi g)		D							
Wetted parts materials	3									
Seal diaphragm	Connection shank									
Hastelloy	Stainless steel		ı	В						
1-bar-measuring cell ( Non-wetted parts mate  Housing made of die- Housing stainless stee  Version  Standard versions	psi), not available with (Option B))  erials cast aluminium el precision casting  English label inscriptions,			3	0 3	1 2				
None							A			
• Screwed gland M20x • Screwed gland ½-14 • M12 connectors (metal	1.5 NPT							B C F		
Display										
Without indicator	to all a casa / all a 9 - 1								0	
<ul> <li>Without visible digital indicator concealed,</li> </ul>		•							1	
<ul> <li>With visible digital ind</li> </ul>	9 ,								6	
0	c digital indicator (setting								7	

Available ex stock

Included in delivery of the device:
• Brief instructions (Leporello)

- CD-ROM with detailed documentation
- sealing ring
- 1) Only with "PMC Style Standard" process connection
- <sup>2)</sup> Sealing is included in delivery.
- 3) M12 delivered without cable socket
- F) Subject to export regulations AL:9I999, ECCN:N

## Transmitters for gauge pressure for the paper industry

## SITRANS P DS III with PMC connection

Selection and Ordering data	Order code			
Further designs		HART	PA	FF
Add " <b>-Z</b> " to Order No. and specify Order Code.				
Plug				
<ul><li>Angled</li><li>Han 8D (metal, gray)</li></ul>	A32 A33	1		
M12 cable sockets (metal)	A50	1	1	1
Rating plate inscription				
(instead of German)				
• English	B11	✓.	<b>1</b>	<b>V</b>
<ul><li>French</li><li>Spanish</li></ul>	B12 B13	<b>√</b>	1	1
Italian	B14	<b>✓</b>	<b>√ √</b>	<b>V</b>
English rating plate	B21	1	/	1
Pressure units in inH <sub>2</sub> 0 and/or psi	DZI		Ť	Ť
Quality inspection certificate (factory calibration) to IEC 60770-2	C11	✓	✓	✓
Inspection certificate Acc. to EN 10204-3.1	C12	✓	✓	✓
Factory certificate Acc. to EN 10204-2.2	C14	✓	✓	✓
"Functional safety (SIL2)" certificate	C20	1		
"Functional safety (SIL2/3)" certificate	C23	✓		
Output signal can be set to upper limit of 22.0mA	D05	✓	✓	✓
Degree of protection IP68 (only for M20 x 1.5 and ½-14 NPT)	D12	✓	✓	✓
Mounting  • Weldable sockets for standard 1½" threaded connection	P01	<b>✓</b>	✓	<b>✓</b>
Weldable socket for minibolt connection 1" (incl. screw 5/16-18 UNC-2B and washer)	P02	✓	✓	✓

Selection and Ordering data	Order	code		
Additional data		HART	PA	FF
Please add "-Z" to Order 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	✓		
Stainless steel tag plate (measuring point description)  Max. 16 characters, specify in plain text: Y15:	Y15	✓	✓	✓
Measuring point text Max. 27 characters, specify in plain text: Y16:	Y16	✓	✓	1
Entry of HART address (TAG) Max. 8 characters, specify in plain text: Y17:	Y17	✓		
Setting of pressure indication 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 <sub>2</sub> O*), inH <sub>2</sub> O*), ftH <sub>2</sub> O*), mmHG, inHG, psi, Pa, kPa, MPa, g/cm², kg/cm², Torr, ATM or % *) ref. temperature 20 °C				
Setting of pressure indication in non-	Y22 +	✓		
pressure units <sup>1)</sup> Specify in plain text: Y22: up to I, m³, m, USg, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	Y01			
Preset bus address	Y25		✓	
possible between 1 and 126  Max. 8 characters, specify in plain text: Y25:				

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

✓ = available

### ordering example

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

B line: C11 + Y01 + Y21

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

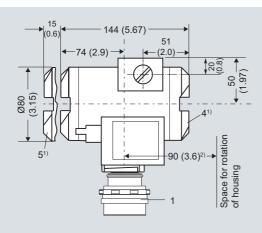
C line: Y21: bar (psi)

<sup>1)</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



approx. 30 (1.18)

100 (3.94)

(21.3)

7

100 (3.94)

- 1 Process connection: PMC standard
- 2 Blanking plug
- 3 Electrical connection:
  - Screwed gland M20x1,5,
  - Screwed gland ½-14 NPT or
  - M12 conector
- Terminal side
- 5 Electronics side, digital display (longer overall length for cover with window)
- 6 Protective cover over keys
- 7 Mounting bracket (option)

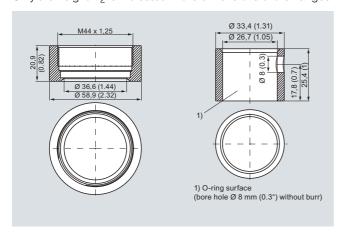
- 1) Allow approx. 20 mm (0.79 inch) thread length in addition
- 2) 92 mm (3.6 inch) for minimum distance to permit rotation with indicator

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  $H_2$ .

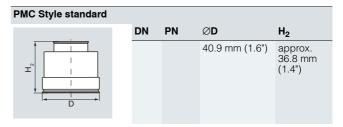
 $\ensuremath{\mathrm{H}_{1}} = \ensuremath{\mathrm{Height}}$  of the SITRANS P DS III up to a defined cross-section

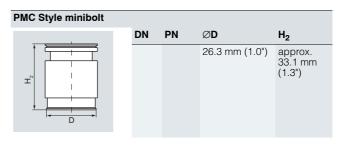
 $H_2$  = Height of the flange up to this defined cross-section Only the height  $H_2$  is indicated in the dimensions of the flanges.



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

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





# Pressure Measurement Transmitters for gauge pressure for the paper industry

## SITRANS P300 with PMC connection

## Technical specifications

Technical specifications					
SITRANS P300 for gauge pressure with PMC	• •	er industry	DDOFIDUO DA LE	01111D 471011 F: 1 II	
	HART		PROFIBUS PA and F	OUNDATION Fieldbus	
Input			(6 - 1 (1 - 1 )		
Measured variable		1	ure (front-flush)	1	
Spans (infinitely adjustable) or nominal measuring range and max. pemissible test pressure	Measuring span	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure	
	0.01 1 bar g (0.15 14.5 psi g)	6 bar g (87 psi g)	1 bar g (14.5 psi g)	6 bar g (87 psi g)	
	0.04 4 bar g (0.58 58 psi g)	10 bar g (145 psi g)	4 bar g (58 psi g)	10 bar g (145 psi g)	
	0.16 16 bar g (2.3 232 psi g)	32 bar g (464 psi g)	16 bar g (232 psi g)	32 bar g (464 psi g)	
	Depending on the proce may differ from these va	ess connection, the span alues	Depending on the pro nominal measuring ra values	cess connection, the nge may differ from thes	
_ower measuring limit					
• Measuring cell with silicone oil		-100 mbar a	a (1.45 psi a)		
Upper measuring limit					
Measuring cell with silicone oil	100 % of max. span		100 % of the max. nor	minal measuring range	
Output					
Output signal	4 20 mA		Digital PROFIBUS PA signal		
Physical bus	-		IEC 61158-2		
Protection against polarity reversal	Protected against short-circuit and polarity reversal. Each connection against the other wimax. supply voltage.				
Electrical damping T <sub>63</sub> (step width 0.1 s)		Set to 0.1 s	(0 100 s)		
Measuring accuracy		Acc. to E	N 60770-1		
Reference conditions (All error data always refer o the set span)					
Measurement deviation with limit setting, includ- ng hysteresis and repeatability.					
Linear characteristic			≤ 0,075 %		
r + 10	$\leq$ (0.0029 · r + 0.071) %				
• 10 < r ≤ 30	$\leq$ (0.0045 · r + 0.071) %				
930 < r ≤ 100	$\leq$ (0.005 · r + 0.05) %				
Settling time T <sub>63</sub> without electrical damping		appro	x. 0.2 s		
ong-term drift at ±30 °C (±54 °F)	≤ (0.25 · r) %/5 years		≤ 0.25 %/5 years		
nfluence of ambient temperature					
• at -10 +60 °C (14 140 °F)	≤ (0.1 · r + 0.2) %		≤ 0,3 %		
• at -4010 °C and 60 85 °C (-40 14 °F and 140 185 °F)	$\leq$ (0.1 · r + 0.15) %/10 k	(	≤ 0.25 %/10 K		
nfluence of the medium temperature (only with ront-flush diaphragm)					
• 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 explos	sion hazard.	
• Measuring cell with silicone oil		-40 +85 °C (	(-40 +185 °F)		
Digital display		-30 +85 °C (	(-22 +185 °F)		
Storage temperature		-50 +85 °C (	(-58 +185 °F)		
Climatic class					
Condensation			dity 0 100 %		
		ndensation permissible,		•	
Degree of protection acc. to EN 60529	IP65, IP68, NEM	A 4X, enclosure cleaning	, resistant to lyes, stean	n to 150 °C (302 °F)	
Electromagnetic Compatibility					
• Emitted interference and interference immunity		Acc. to EN 61326	and NAMUR NE 21		

# Pressure Measurement Transmitters for gauge pressure for the paper industry

## SITRANS P300 with PMC connection

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	C (-40 +212 °F)
Design	10 1100	, (10 1212 1)
Weight (without options)	Approx	1 kg (2.2 lb)
Enclosure material		nat. no. 1.4301/304
Material of parts in contact with the medium	otaliness steel, i	nat. no. 1.450 1/504
• Seal diaphragm	Haatallay C276	S mot no 2 4910
Measuring cell filling		5, mat. no. 2.4819 one oil
ů ů		
Surface quality touched-by-media	Ha-values ≤ 0.8 μm (32 μ mcr	n)/welds Ra ≤ 1.6 μm (64 μ inch)
Power supply U <sub>H</sub>	10.5 40.V.DO	Cuspilled through hos
erminal 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 EEx	-	9 32 V
With intrinsically-safe operation	-	9 24 V
Current consumption		
Max. basic current	-	12.5 mA
Start-up current ≤ basic current	-	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		group 1; complies with requirements of Article I engineering practice)
Explosion protection		
ntrinsic safety "i"	PTB 05	ATEX 2048
Marking	Ex II 1/2 G EEx ia	/ib 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 peavalues:
	$\begin{aligned} &U_i = 30 \text{ V}, \text{ I}_i = 100 \text{ mA}, \\ &P_i = 750 \text{ mW}, \text{ R}_i = 300 \Omega \end{aligned}$	FISCO supply unit:
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 <sub>i</sub> ≤ 7 μH
Explosion protection to FM for USA $\underline{\text{and}}$ CanadacFM $_{\text{US}}$ )	a	
Identification (DIP) or (IS); (NI)	Certificate of Co	mpliance 3025099
	CL I, DIV 1, GP ABCD T4 T6; CL II, DIV 1,	GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4 To T6; CL II, DIV 2, GP FG; CL III
Identification (DIP) or (IS)	Certificate of Cor	mpliance 3025099C
	CL I, DIV 1, GP ABCD T4 T6; CL II, DIV 1 GP ABCD T4 T6; C	, GP EFG; CL III; Ex ia IIC 4 T6; CL I, DIV 2, L II, DIV 2, GP FG; CL III

## Transmitters for gauge pressure for the paper industry

### **SITRANS P300 with PMC connection**

HART communication		FOUNDATION Fieldbus commu- nication	
HART communication	230 1100 Ω	Function blocks	3 function blocks analog input,
Protocol	HART Version 5.x	Turiction blocks	1 function block PID
Software for computer	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	characteristic
The address can be set using	Configuration tool	<ul> <li>Electrical damping T<sub>63</sub>, adjustable</li> </ul>	0 100 s
	Local operation	- Simulation function	Output/input (can be locked
	(standard setting Address 126)		within the device with a bridge)
Cyclic data usage		- Failure mode	parameterizable (last good value, substitute value, incorrect
Output byte	One measured value: 5 bytes		value)
	Two measured values: 10 bytes	- Limit monitoring	Yes, one upper and lower warn-
• Input byte	Register operating mode: 1 bytes		ing limit and one alarm limit respectively
	Reset function due to metering. 1 bytes	<ul> <li>Square-rooted characteristic for flow measurement</li> </ul>	Yes
Device profile	PROFIBUS PA Profile for Pro-	• PID	Standard FF function block
	cess Control Devices Version 3.0, Class B	<ul><li>Physical block</li></ul>	1 resource block
Function blocks	2	Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block
<ul> <li>Analog input</li> </ul>		_	LCD
<ul> <li>Adaptation to customer-specific process variables</li> </ul>	Linearly rising or falling characteristic	<ul> <li>Pressure transducer block</li> <li>Can be calibrated by applying</li> </ul>	Yes
- Electrical damping T <sub>63</sub>	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 parameterizable ramp function
Register (totalizer)	Can be reset and preset Optional direction of counting Simulation function of the register output	ture	
- 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			
- Monitoring of sensor limits	Yes		
<ul> <li>Specification of a container characteristic with</li> </ul>	Max. 31 nodes		
- Characteristic curve	Linear		
- Simulation function	Available		

2/70

• Transducer block "Electronic

Available

Simulation function

## Transmitters for gauge pressure for the paper industry

## **SITRANS P300 with PMC connection**

Selection and Orderin	g data		Or	der	No	).	
SITRANS P300 pressu	re transmitters with PMC mber measuring housing,		311	201	. 10		
4 20 mA/HART	· ·	F)	7 N	1F	8 1 :	2 3	
PROFIBUS PA		F)			8 1 :		
FOUNDATION Fieldbu	s (FF)		7 N				
TOONDATION TIERDS	5 (I I <i>)</i>	٠,					
Measuring cell filling Silicone oil Inert liquid	Measuring cell cleaning normal Cleanliness level 2 to DIN 25410	J	1 3				
Measuring span							
1 bar g <sup>1)</sup>	(14.5 psi g)		E	3			
4 bar g	(58 psi g)		C	;			
16 bar g	(232 psi g)			)			
Wetted parts materials	}						
Seal diaphragm	Measuring cell						
Hastelloy <sup>2)</sup>	Stainless steel	-		В			
1-bar-measuring cell (     Non-wetted parts mate     • Stainless steel, deep- polished					4		
Version							
Standard versions						1	
Explosion protection							
• None							Α
With ATEX, Type of pre- "Intrinsic sefety (FF)  "							
<ul> <li>"Intrinsic safety (EEx</li> <li>Zone 20/21/22<sup>3)</sup></li> </ul>	. Ia)						B C
• Ex nA/nL (Zone 2) <sup>4)</sup>							E
• With FM + CSA, Type	of protection:						
- "Intrinsic Safe (is)" (p	planned)						М
Electrical connection	,						
Screwed gland M20 x							A
<ul> <li>Screwed gland M20 x</li> </ul>	, ,						В
<ul> <li>Screwed gland M20 x</li> <li>M12 connectors (with</li> </ul>	,						C F
,	nless steel), without cable						G
socket)	-1						_
• ½-14 NPT metal threa							Н
<ul> <li>½-14 NPT stainless st</li> </ul>	eel thread <sup>b)</sup>						J

Selection and Ordering data		Order No.	
SITRANS P300 pressure transmitters with PMC connection, single-chamber measuring housing, rating plate inscription in English			
4 20 mA/HART	F)	7MF8123-	
PROFIBUS PA	F)	7MF8124-	
FOUNDATION Fieldbus (FF)	F)	7MF8125-	
Display			П
<ul> <li>Without display, with keys, closed covers</li> </ul>			1
<ul> <li>With display and keys, closed lid</li> </ul>			2
<ul> <li>With display and keys, lid with glass pane (setting on HART devices: mA,</li> </ul>	l		6
with PROFIBUS PA and FOUNDATION Fieldbus			
equipment: pressure unit)			L
<ul> <li>With display (setting acc. to specifications, Order Code "Y21" or "Y22" required), lid with glass pane</li> </ul>			7

Power supply units see Chap. 8 "Supplementary Components".

Included in delivery of the device:

- Brief instructions (Leporello)
- CD-ROM with detailed documentation
- sealing ring
- 1) Only with "Standard" process connection"
- $^{2)}\,$  Only possible for flange with M.., N.. and Q.. option
- 3) Not in conjunction with electrical connection option A.
- $^{\rm 4)}$  Only available together with electrical connection options B, C, F or G.
- $^{5)}\,$  Only together with HART electronics.
- 6) Without cable gland.
- F) Subject to export regulations AL: 91999, ECCN: N.

# Pressure Measurement Transmitters for gauge pressure for the paper industry

## **SITRANS P300 with PMC connection**

Selection and Ordering data				
Further designs		HART	PA	FF
Add "-Z" to Order No. and specify Order Code.				
Cable socket for M12 plug				
metal     Stainless steel	A50 A51		1	1
	ASI			•
Rating plate inscription (instead of English)				
• German	B10	✓	✓	✓
• French	B12	<b>1</b>	1	1
Spanish     Italian	B13 B14	<b>✓</b>	<b>✓</b>	1
English rating plate	B21	1	1	1
Pressure units in inH <sub>2</sub> 0 and/or psi	D21	·	Ť	·
Quality inspection certificate (factory calibration) to IEC 60770-2	C11	✓	✓	✓
Inspection certificate	C12	1	1	1
Acc. to EN 10204-3.1				
Factory certificate	C14	1	1	1
Acc. to EN 10204-2.2	014			
Set output signal to upper limit of 22.0mA	D05	✓	✓	1
Degree of protection IP68	D12	✓	✓	1
(only for M20x1.5 and ½-14 NPT)				
Mounting	D04	,	1	,
<ul> <li>Weldable sockets for standard 1½" threaded connection</li> </ul>	P01	<b>√</b>	•	•
• Weldable socket for minibolt connection 1" (incl. screw 5/16-18 UNC-2B and washer)	P02	✓	✓	✓
Additional data				
Please add "-Z" to Order 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				
Stainless steel tag plate (measuring point	Y15	1	1	/
description)  Max. 16 char., specify in plain text: Y15:	110	·	Ť	·
Measuring point text	Y16	1	1	1
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	Y21	✓	✓	✓
pressure units 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-pres-		✓		
sure units <sup>9)</sup> 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)				
Preset bus address	Y25		1	
possible between 1 and 126 Specify in plain text: Y25:				

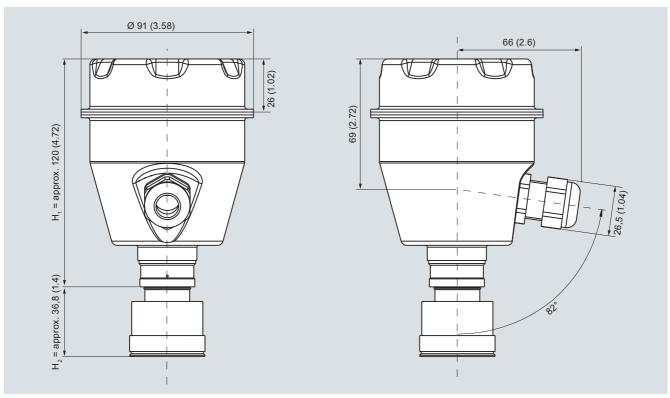
Only "Y01" and "Y21" can be factory preset

✓ = available

# Transmitters for gauge pressure for the paper industry

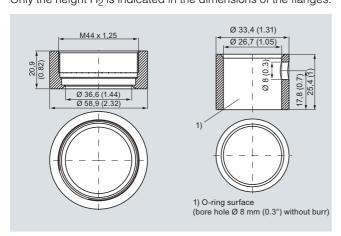
SITRANS P300 with PMC connection

# Dimensional drawings



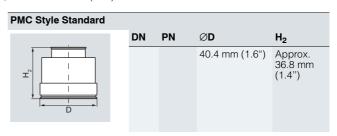
SITRANS P300 pressure transmitters for gauge pressure, with PMC connection, dimensions in mm (inch)

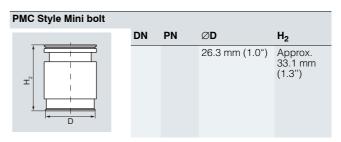
The diagram shows a SITRANS P300 with an example of a flange. In this drawing the height is subdivided into  $H_1$  and  $H_2$ .  $H_1$  = Height of the SITRANS P300 up to a defined cross-section  $H_2$  = Height of the flange up to this defined cross-section Only the height  $H_2$  is indicated in the dimensions of the flanges.



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

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 communication, 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
- Small long-term drift
- 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 communication, PROFIBUS PA communication 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 operated locally over 3 control buttons or programmed externally over HART communication or over PROFIBUS PA or FOUNDATION Fieldbus interface.

# Transmitters for general requirements

SITRANS P DS III
Technical description

### Pressure transmitter for gauge pressure

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

Span (infinitely adjustable)

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

Nominal measuring range

for DS III PA and FF: 1 bar to 700 bar (14.5 psi to 10153 psi)

### Pressure transmitters for absolute pressure

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

Span (infinitely adjustable)

for DS III HART: 8.3 mbar a ... 100 bar a (0.12 ... 1450 psi)

Nominal measuring range

for DS III PA and FF: 250 mbar a ... 100 bar a (3.6 ... 1450 psi)

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 ~ √Δp (together with a primary differential pressure device (see Chap.ter "Flow Meters"))

Span (infinitely adjustable)

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

Nominal measuring range

for DS III PA and FF: 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 HART: 25 mbar ... 5 bar (0.363 ... 72.5 psi)

Nominal measuring range

for DS III PA and FF: 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 low-pressure 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.

### Design



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 Order 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).

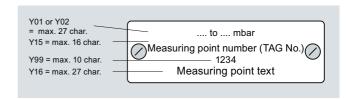
The approval label is located on the opposite side.

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 digital 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

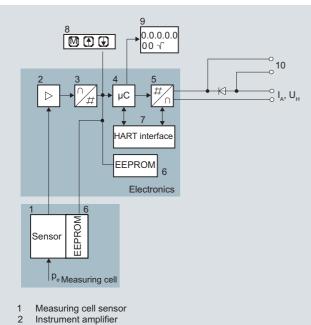


# Transmitters for general requirements

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
- I Output current
- Ü<sub>H</sub> 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.

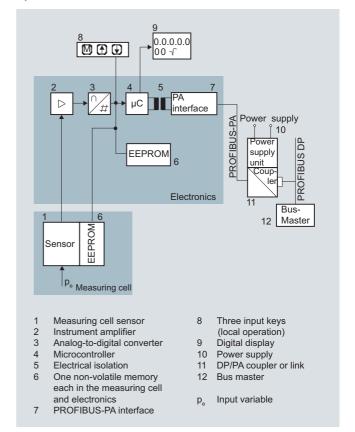
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced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

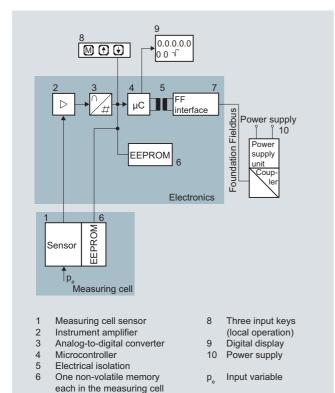
Using the three input buttons (8) you can parameterize the pressure transmitter directly at the measuring point. The input buttons can also be used to control the view of the results, the error messages and the operating modes on the digital display (9).

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



## Function diagram of electronics

FF interface

7

and 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).

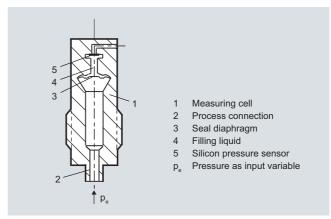
The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The one memory is coupled to the measuring cell, the other to the electronics. As the result of this modular design, the electronics and the measuring cell can be replaced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

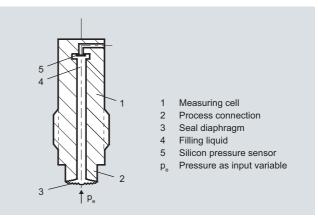
### Measuring cell for gauge pressure



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



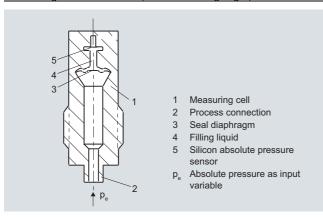
Measuring cell for gauge pressure, with front-flush diaphragm for paper industry, function diagram

The pressure pe 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.

# Transmitters for general requirements

SITRANS P DS III Technical description

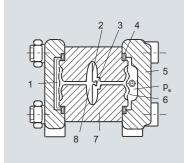
Measuring cell for absolute pressure from gauge pressure series



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

The absolute pressure  $_{\rm p}{\rm e}$  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



- 1 Reference vacuum
- 2 Overload diaphragm
- 3 Silicon pressure sensor
- 4 O-ring
- 5 Process flange
- 6 Seal diaphragm
- 7 Body of measuring cell
- 8 Filling liquid
- p<sub>e</sub> Absolute pressure as input variable

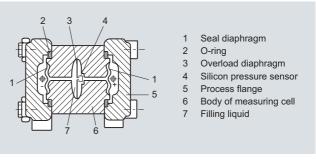
Measuring cell for absolute pressure from differential pressure series, function diagram

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



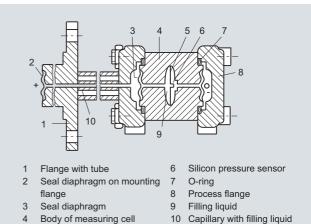
Measuring cell for differential pressure and flow, function diagram

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 (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 level



Measuring cell for level, function diagram

Overload diaphragm

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

of mounting flange

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 (2) is flexed until the seal diaphragm rests on the body of the measuring cell (7), thus protecting the silicon pressure sensor from overloads.

# Transmitters for general requirements

SITRANS P DS III
Technical description

### Parameterization DS III

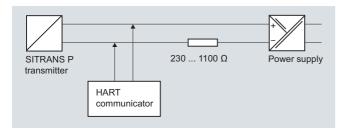
Depending on the version, there are a range of options for parameterizing the pressure transmitter and for setting or scanning the parameters.

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

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

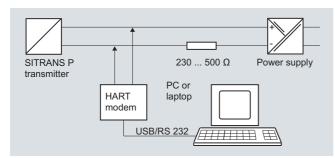
### Parameterization using HART communication

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, DS III HART

Input keys (DS III HART)	HART communication
Х	Х
X	Χ
X	Χ
Х	Х
X	X
X	X
X	X
X	X
X	x <sup>1)</sup>
X	X
x <sup>2)</sup>	x <sup>2)</sup>
	X
	X
	X
	(DS III HART)  X  X  X  X  X  X  X  X  X  X

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

### Diagnostic functions for DS III HART

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

### Available physical units of display for DS III 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/cm², kg/cm², 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, lmp. 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. The PROFIBUS puts the DS III PA is in connection with 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 FF 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 PA and FF

Adjustable parameters for DS III FA and FF					
Parameters	Input keys	PROFIBUS PA and FOUNDATION Field-bus interface			
Electrical damping	Х	X			
Zero adjustment (correction of position)	X	×			
Buttons and/or function disabling	X	Х			
Source of measured-value display	X	Х			
Physical dimension of display	X	X			
Position of decimal point	X	X			
Bus address	X	X			
Adjustment of characteristic	X	X			
Input of characteristic		X			
Freely-programmable LCD		Х			
Diagnostics functions		X			

<sup>2)</sup> Only differential pressure

# Pressure Measurement Transmitters for general requirements

# SITRANS P DS III **Technical description**

# Diagnostic functions for DS III PA and FF

- 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/cm², kg/cm², mmH $_2$ O, mmH $_2$ O (4 °C), inH $_2$ O, inH $_2$ O (4 °C), ftH $_2$ 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, Imp. 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 gallon/s, US gallon/min, US gallon/h, US gallon/d, bbl/s, bbl/min, bbl/h, bbl/d
Mass flow	g/s, g/min, g/h, g/d, kg/s, kg/min, kg/h, kg/d, t/s, t/min, t/h, /t/d, lb/s, lb/min, lb/h, lb/d, STon/s, STon/min, STon/h, STon/d, LTon/s, LTon/min, LTon/h, LTon/d
Total mass flow	t, kg, g, lb, oz, LTon, STon
Temperature	K, °C, °F, °R
Miscellaneous	%

# Pressure Measurement Transmitters for general requirements

SITRANS P DS III for gauge pressure

# Technical specifications

SITRANS P, DS III series for gauge pressure						
	HART		PROFIBUS PA and			
Input						
Measured variable	Gauge pressure					
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure		
	0.01 1 bar g (0.15 14.5 psi g)	6 bar g (87 psi g)	1 bar g (14.5 psi g)	6 bar g (87 psi g)		
	0.04 4 bar g (0.58 58 psi g)	10 bar g (145 psi g)	4 bar g (58 psi g)	10 bar g (145 psi g)		
	0.16 16 bar g (2.32 232 psi g)	32 bar g (464 psi g)	16 bar g (232 psi g)	32 bar g (464 psi g)		
	0.6 63 bar g (9.14 914 psi g)	100 bar g (1450 psi g)	63 bar g (914 psi g)	100 bar g (1450 psi g)		
	1.6 160 bar g (23.2 2320 psi g)	250 bar g (3626 psi g)	160 bar g (2320 psi g)	250 bar g (3626 psi g)		
	4.0 400 bar g (58 5802 psi g)	600 bar g (8700 psi g)	400 bar g (5802 psi g)	600 bar g (8700 psi g)		
	7.0 700 bar g (102 10153 psi g)	800 bar g (11603 psi g)	700 bar g (10153 psi g)	800 bar g (11603 psi g)		
Lower measuring limit		00 1	(0.405)			
• Measuring cell with silicone oil filling			a (0.435 psi a)			
• Measuring cell with inert filling liquid	100.0/ of many amon		a (0.435 psi a)	100 har a (1710 hai a))		
Upper measuring limit	100 % of max. spar	i (for oxygen version and	d inert filling liquid; max.	120 bar g (1740 psi g))		
<b>Dutput</b> Dutput signal	4 20 mA		Digital PROFIBUS PA and FOUN			
Lower limit (infinitely adjustable)	3.55 mA, factory prese	t to 3.84 mA	-			
Upper limit (infinitely adjustable)	23 mA, factory preset to 20.5 mA or optionally set to 22.0 mA		-			
Load						
Without HART communication	$R_{\rm B} \le (U_{\rm H} - 10.5  \text{V})/0.03$ $U_{\rm H}$ : Power supply in V	23 A in Ω,	-			
With HART communication	$R_{\rm B}$ = 230 500 $\Omega$ (SII) $R_{\rm B}$ = 230 1100 $\Omega$ (H					
Physical bus	-		IEC 61158-2			
Protection against polarity reversal	Protected against short	suppl	ersal. Each connection a y voltage.	gainst the other with ma		
Measuring accuracy			EN 60770-1			
Reference conditions All error data refer always refer to the set span)	ing, room te	tic, start-of-scale value ( mperature 25 °C (77 °F)	bar, stainless steel seal ) r: Span ratio (r = max. s	diaphragm, silicone oil s span / set span)		
Error in measurement and fixed-point setting including hysteresis and repeatability)  Linear characteristic			≤ 0.075 %			
- r ≤ 10	$\leq (0.0029 \cdot r + 0.071)$ %	6	\$ 0.075 %			
- 1 ≤ 10 - 10 < r ≤ 30	$\leq (0.0029 \cdot 1 + 0.071) \%$ $\leq (0.0045 \cdot r + 0.071) \%$					
- 30 < r ≤ 100	$\leq (0.0043 \cdot 1 + 0.071) $ $\leq (0.005 \cdot r + 0.05) $ %					
ong-term drift (temperature change ± 30 °C ± 54 °F))	_ (0.000 1 1 0.00) /0					
1- to 4-bar measuring cell	≤ (0.25 · r) % per 5 yea	ars	≤ 0.25 · ) % per 5 yea	rs		
16- to 400-bar measuring cell	≤ (0.125 · r) % per 5 ye		≤ 0.125 · ) % per 5 ye	ars		
nfluence of ambient temperature						
• at -10 +60 °C (14 140 °F)	$\leq$ (0.08 · r + 0.1)% (at 700 bar: $\leq$ (0.1 · r +	0.2)%	≤ 0,3 %			
at -4010 °C and +60 +85 °C (-40 +14 °F and 140 185 °F)	$\leq$ (0.1 · r + 0.15) %/10	K	≤ 0.25 %/10 K			
Measured Value Resolution	-		3 · 10 <sup>-5</sup> of nominal me	asuring range		

# Pressure Measurement Transmitters for general requirements SITRANS P DS III for gauge pressure

SITRANS P, DS III series for gauge pressure	HADT	DDOCIDUS DA and FOUNDATION Fieldhus
Date de a sudition a	HART	PROFIBUS PA and FOUNDATION Fieldbus
Rated conditions		Doc
Degree of protection (to EN 60529)	II.	P65
Temperature of medium		
Measuring cell with silicone oil filling	-40 +100 °C (-40 +212 °F)	
Measuring cell with inert filling liquid		C (-4 +212 °F)
In conjunction with dust explosion protection	-20 +60 °C (-4 +140 °F)	
Ambient conditions		
Ambient temperature		
- Digital indicator	-30 +85 °C	(-22 +185 °F)
Storage temperature	-50 +85 °C	(-58 +185 °F)
Climatic class		
- Condensation		idity 0 100 %
	Condensation permissible,	suitable for use in the tropics
Electromagnetic Compatibility		
- Emitted interference and interference immunity	Acc. to EN 61326 and NAMUR NE 21	
Design		
Weight (without options)	≈ 1.5 kg	g (≈ 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. 1.4404/3	16L or Hastelloy C4, mat. no. 2.4610
Oval flange	Stainless steel, m	nat. no. 1.4404/316L
Seal diaphragm	Stainless steel, mat. no. 1.4404/316	6L or Hastelloy C276, mat. no. 2.4819
Measuring cell filling		ue with oxigen measurement pressure 120 bar g at 60 °C (140 °F))
Process connection		-1, female thread $1/2$ -14 NPT or oval flange mounting thread M10 or $7/16$ -20 UNF to EN 61518
Material of mounting bracket		
Steel	Sheet-steel, Mat. No.	1.0330, chrome-plated
Stainless steel	Sheet stainless steel, r	mat. no. 1.4301 (SS 304)
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	-	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 ≤ basic current		Yes
Max. current in event of fault		15.5 mA
a Janoni in ovoni or lauli		

# Pressure Measurement 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	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of articl paragraph 3 (sound engineering practice)			
Explosion protection				
• Intrinsic safety "i"	PTB 99 ATEX 2122			
- Marking	Ex II 1/2 G EE	x ia/ib IIB/IIC T6		
- 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: $U_{\rm i}=30$ V, $I_{\rm i}=100$ mA, $P_{\rm i}=750$ mW; $P_{\rm i}=300$ $\Omega$	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	$L_{i} = 0.4 \text{ mH}, C_{i} = 6 \text{ nF}$	$L_i = 7 \mu H, C_i = 1.1 nF$		
• Explosion-proof "d"	PTB 99 A	ATEX 1160		
- Marking	Ex II 1/2 G E	Ex d IIC T4/T6		
- Permissible ambient temperature		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 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: $U_{\rm i}=$ 30 V, $I_{\rm i}=$ 100 mA, $P_{\rm i}=$ 750 mW, $P_{\rm i}=$ 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	$L_{i} = 0.4 \text{ mH}, C_{i} = 6 \text{ nF}$	$L_{i} = 7 \mu H, C_{i} = 1.1 nF$		
• Dust explosion protection for zone 21/22	PTB 01 A	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; $P_{\rm max}$ = 1.2 W		
• Type of protection "n" (zone 2)	TÜV 01 ATEX 1696 X	Planned		
- Marking	Ex II 3 G EEx nA L IIC T4/T5/T6	-		
• Explosion protection acc. to FM	Certificate of Co.	mpliance 3008490		
- Identification (XP/DIP) or (IS); (NI)		EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4T6; CL I, CL II, DIV 2, GP FG; CL III		
• Explosion protection to CSA	Certificate of Co	mpliance 1153651		
- Identification (XP/DIP) or (IS)		FG; CL III; Ex ia IIC T4T6; CL I, DIV 2, GP ABCD V 2, GP FG; CL III		

# Transmitters for general requirements

# SITRANS P DS III for gauge pressure

HART communication	
HART communication	230 1100 Ω
Protocol	HART Version 5.x
Software for computer	SIMATIC PDM
PROFIBUS PA communication	
Simultaneous communication with master class 2 (max.)	4
The address can be set using	Configuration tool or local opera- tion (standard setting address 126)
Cyclic data usage	
Output byte	5 (one measured value) or 10 (two measured values)
Input byte	1, or 2 (register operating 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	
<ul> <li>Adaptation to customer-specific process variables</li> </ul>	Yes, linearly rising or falling characteristic
- Electrical damping $T_{63}$ , 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 warn- ing 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)
- Limit monitoring	One upper and lower warning limit and one alarm limit respec- tively
Physical block	1
Transducer blocks	2
Pressure transducer block	
- Can be calibrated by applying two pressures	Yes
- Monitoring of sensor limits	Yes
<ul> <li>Specification of a container characteristic with</li> </ul>	Max. 30 nodes
- Square-rooted characteristic for flow measurement	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-	Constant value or over parameterizable ramp function

# FOUNDATION Fieldbus communication

Function blocks

- Analog input
- Adaptation to customer-specific process variables
- Electrical damping T<sub>63</sub>, 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 FF function block

1 resource block

1 transducer block Pressure with calibration, 1 transducer block LCD

Yes

Yes

Constant value or over parameterizable ramp function

sor temperature

# Transmitters for general requirements

SITRANS P DS III for gauge pressure

	g data		Orc				
Pressure transmitter for gauge pressure, SITRANS P DS III HART						3 3	
	•						
Measuring cell filling	Measuring cell clean- ing						
Silicone oil	normal	•	1				
nert liquid <sup>1)</sup>	Grease-free		3				
Measuring span							
).01 1 bar g	(0.15 14.5 psi g)	•	В				
).04 4 bar g	(0.58 58 psi g)	•	С				
).16 16 bar g	(2.32 232 psi g)	•	D				
).63 63 bar g	(9.14 914 psi g)	•	E				
.6 160 bar g	(23.2 2320 psi g)	•	F				
I.0 400 bar g	(58.0 5802 psi g)	•	G				
'.0 700 bar g	(102.010153 psi g)	•	J				
Vetted parts materials							
Seal diaphragm	Process connection	_					
Stainless steel	Stainless steel			A			
Hastelloy	Stainless steel			В			
Hastelloy	Hastelloy			C			
ersion as diaphragm s	eal <sup>2/3)</sup>			Y			
Process connection							
Connection shank G1/2		•		0			
Female thread ½-14 N				1			
Stainless steel oval fla	0						
- Mounting thread <sup>7</sup> / <sub>16</sub>				2	!		
- Mounting thread M1	0 to DIN 19213			3	1		
- Mounting thread M1	2 to DIN 19213			4	l		
	5			5	;		
Male thread M20 x 1.5 Male thread ½ -14 NP	5			5			
Male thread ½ -14 NP	5 T erials						
Male thread ½ -14 NP Non-wetted parts mate Housing made of die-	o T <b>erials</b> cast aluminium	•			0		
Male thread ½ -14 NP Non-wetted parts mate Housing made of die-	o T <b>erials</b> cast aluminium	•			3		
• Male thread ½ -14 NP Non-wetted parts mate • Housing made of die- • Housing stainless stee /ersion	o T <b>erials</b> cast aluminium	•			0		
Male thread ½ -14 NP Non-wetted parts mate Housing made of die- Housing stainless stee /ersion Standard versions	orials cast aluminium el precision casting <sup>4)</sup>	•			0	1	
Male thread ½ -14 NP Non-wetted parts mate Housing made of die- Housing stainless stee /ersion Standard versions International version,	T  Prials  cast aluminium  of precision casting <sup>4)</sup> English label inscriptions	<b>.</b>			0	1 2	
Male thread ½ -14 NP Non-wetted parts mate Housing made of die-Housing stainless stee Nersion Standard versions International version, I documentation in 5 la	T  Prials  cast aluminium  of precision casting <sup>4)</sup> English label inscriptions	<b>&gt;</b>			0		
Male thread ½ -14 NP Non-wetted parts mate Housing made of die- Housing stainless stee /ersion Standard versions International version, documentation in 5 la Explosion protection	T  Prials  cast aluminium  of precision casting <sup>4)</sup> English label inscriptions	<b>&gt;</b>			0	2	A
Male thread ½ -14 NP Non-wetted parts mate Housing made of die- Housing stainless stee Version Standard versions International version, documentation in 5 la Explosion protection None	orials cast aluminium el precision casting <sup>4)</sup> English label inscriptions nguages on CD	<b>&gt;</b>			0	2	A
Male thread ½ -14 NP Non-wetted parts mate Housing made of die- Housing stainless stee Version Standard versions International version, documentation in 5 la Explosion protection None	orials cast aluminium of precision casting <sup>4)</sup> English label inscriptions nguages on CD	<b>&gt;</b>			0	2	A B
Male thread ½ -14 NP Non-wetted parts mate Housing made of die- Housing stainless stee Housing stainless stee Fersion International version, documentation in 5 la Explosion protection None With ATEX, Type of pro- "Intrinsic safety (EEx	orials cast aluminium el precision casting <sup>4)</sup> English label inscriptions nguages on CD  otection: ia)"	<b>▶</b>			0	2	
Male thread ½ -14 NP Non-wetted parts mate Housing made of die- Housing stainless stee Housing stainless stee International version, documentation in 5 la Explosion protection None With ATEX, Type of pro- "Intrinsic safety (EEx- "Explosion-proof (EEx-	erials cast aluminium el precision casting <sup>4)</sup> English label inscriptions nguages on CD  otection: ia)" (xd)*5)	<b>▶</b>			0	2	В
Male thread ½ -14 NP Non-wetted parts mate Housing made of die- Housing stainless stee Housing stainless stee Fersion International version, documentation in 5 la Explosion protection None With ATEX, Type of pro- "Intrinsic safety (EEx	erials cast aluminium el precision casting <sup>4)</sup> English label inscriptions nguages on CD  otection: ia)" (xd)*5)	<b>&gt;</b>			0	2	B D
Male thread ½ -14 NP Non-wetted parts mate Housing made of die- Housing stainless stee Persion Standard versions International version, I documentation in 5 la Explosion protection None With ATEX, Type of pro- "Intrinsic safety (EEx - "Explosion-proof (EE - "Intrinsic safety and	erials cast aluminium el precision casting <sup>4)</sup> English label inscriptions nguages on CD  otection: ia)" (xd)*5)	<b>&gt;</b>			0	2	B D
Male thread ½ -14 NP Non-wetted parts mate Housing made of die- Housing stainless stee Housing safety (EEx - "Intrinsic safety and (EEx ia + EEx d)"6) - "Ex nA/nL (Zone 2)" - "Intrinsic safety expl	English label inscriptions nguages on CD  Detection:  (a)"  (a) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c				0	2	B D P
Male thread ½ -14 NP Non-wetted parts mate Housing made of die- Housing stainless stee Housing stainless stee Housing stainless stee Horsion International version, I documentation in 5 la Explosion protection None With ATEX, Type of properties "Intrinsic safety (EEx "Explosion-proof (EE "Explosion-proof (EE "Intrinsic safety and (EEx ia + EEx d)"6) "Ex nA/nL (Zone 2)" "Intrinsic safety explosion-greatery explosion-greatery explosion-greatery	English label inscriptions nguages on CD  Detection:  (a)"  (a) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c				0	2	B D P
Male thread ½ -14 NP Non-wetted parts mate Housing made of die- Housing stainless stee Housing protection None With ATEX, Type of pro- "Intrinsic safety (EEx "Explosion-proof (EEx "Explosion-proof (EEx "Explosion-proof (EEx ia + EEx d)"6) - "Ex nA/nL (Zone 2)" - "Intrinsic safety, explosion, protection protection protection protection control of the con	erials cast aluminium el precision casting <sup>4</sup> )  English label inscriptions nguages on CD  otection:  ia)" (xd)" <sup>5</sup> ) flameproof enclosure"  osion-proof enclosure and				0	2	B D P
Male thread ½ -14 NP Non-wetted parts mate Housing made of die- Housing stainless stee Housing protection None With ATEX, Type of pro- "Intrinsic safety (EEx "Explosion-proof (EEx "Explosion-proof (EEx "Explosion-proof (EEx "Intrinsic safety and (EEx ia + EEx d)"6) "Ex nA/nL (Zone 2)" "Intrinsic safety and (ETX ia + EEX d)"6) "Ex nA/nL (Zone 2)" "Intrinsic safety and dust explosion, protection protection in the safety and With FM + CSA, Type	erials cast aluminium el precision casting <sup>4</sup> )  English label inscriptions nguages on CD  otection:  ia)" (xd)" <sup>5</sup> ) flameproof enclosure"  osion-proof enclosure and	d▶			0	2	B D P
Male thread ½ -14 NP Non-wetted parts mate Housing made of die- Housing stainless stee Persion Standard versions International version, I documentation in 5 la Explosion protection None With ATEX, Type of pro- "Intrinsic safety (EEx "Explosion-proof (EE "Explosion-proof (EE "Ex nA/nL (Zone 2)" "Intrinsic safety, expl dust explosion prote Zone 1D/2D)" With FM + CSA, Type - "Intrinsic Safe und E	English label inscriptions nguages on CD  Detection:  Lia)"  Explosion-proof enclosure"  Design-proof enclosure and the content of the conten	d▶			0	2	B D P E R
Male thread ½ -14 NP Non-wetted parts mate Housing made of die- Housing stainless stee Nersion Standard versions International version, documentation in 5 la Explosion protection None With ATEX, Type of pro- "Intrinsic safety (EEx- "Explosion-proof (EE- "Explosion-proof (EE- "Intrinsic safety and (EEx ia + EEx d)"6) - "Ex nA/nL (Zone 2)" - "Intrinsic safety, explodust explosion protection protection of the property of the property of the protection of the property of the protection of the prot	prials cast aluminium el precision casting <sup>4</sup> )  English label inscriptions nguages on CD  Detection: (ia)" (ixd)" <sup>5</sup> ) flameproof enclosure"  osion-proof enclosure and cetion (EEx ia + EEx d + of protection: xplosion Proof (is + xp)" <sup>5</sup> (cable entry	d▶			0	2	B D P E R
Male thread ½ -14 NP Non-wetted parts mate Housing made of die- Housing stainless stee Persion Standard versions International version, I documentation in 5 la Explosion protection None With ATEX, Type of pro- "Intrinsic safety (EEx- "Explosion-proof (EEx- "Explosion-proof (EEx- "Intrinsic safety and (EEx ia + EEx d)"6) - "Ex nA/nL (Zone 2)" - "Intrinsic safety, expl dust explosion protection protection in the company of t	erials cast aluminium el precision casting <sup>4</sup> )  English label inscriptions nguages on CD  otection:ia)" xd)"5) flameproof enclosure"  osion-proof enclosure and ction (EEx ia + EEx d + of protection: xplosion Proof (is + xp)"5 (cable entry 5 (adapter) <sup>7</sup> )	d▶			0	2	B D D P E R
Male thread ½ -14 NP Non-wetted parts mate Housing made of die- Housing stainless stee Housing Protection  None With ATEX, Type of pro- "Intrinsic safety (EEx "Explosion-proof (EEx "Intrinsic safety, explodust explosion prote Zone 1D/2D)" With FM + CSA, Type "Intrinsic Safe und E Electrical connection ( Screwed gland Pg 13 Screwed gland M20 x	prials cast aluminium el precision casting <sup>4</sup> )  English label inscriptions nguages on CD  Detection:  (ia)" (ia)" (ib) (ib) (ib) (ib) (ib) (ib) (ib) (ib)	d ▶			0	2	B D D P E E R
Male thread ½ -14 NP Non-wetted parts mate Housing made of die- Housing stainless stee Housing protection None With ATEX, Type of pro- "Intrinsic safety (EEx "Explosion-proof (EE- "Intrinsic safety and (EEx ia + EEx d)"6) "Ex nA/nL (Zone 2)" "Intrinsic safety, expl dust explosion protection protection With FM + CSA, Type "Intrinsic Safe und E Electrical connection of the	prials cast aluminium el precision casting <sup>4</sup> )  English label inscriptions inguages on CD  Detection: ia)" (xd)* <sup>5</sup> ) flameproof enclosure and incition (EEx ia + EEx d + incition) of protection: explosion Proof (is + xp)* <sup>5</sup> (cable entry 1.5 (adapter) <sup>7</sup> ) 1.5	d ▶			0	2	B D D P E R R
Male thread ½ -14 NP Non-wetted parts mate Housing made of die- Housing stainless stee International version, documentation in 5 la  Explosion protection None With ATEX, Type of pro- "Intrinsic safety (EEx "Explosion-proof (EE "Intrinsic safety and (EEx ia + EEx d)"6) "Ex nA/nL (Zone 2)" "Intrinsic safety, expl dust explosion, prote Zone 1D/2D)"6) With FM + CSA, Type	prials cast aluminium el precision casting <sup>4</sup> )  English label inscriptions inguages on CD  Detection: ia)" (xd)* <sup>5</sup> ) flameproof enclosure and incition (EEx ia + EEx d + incition) of protection: explosion Proof (is + xp)* <sup>5</sup> (cable entry 1.5 (adapter) <sup>7</sup> ) 1.5	d ▶			0	2	B D P E R R

Selection and Ordering data	Order No.	
Pressure transmitter for gauge pressure,	7MF4033-	
SITRANS P DS III HART		
Display		П
Without indicator		0
<ul> <li>Without visible digital indicator (digital indicator concealed, setting: mA)</li> </ul>		1
<ul> <li>With visible digital indicator, setting: mA</li> </ul>		6
<ul> <li>with customer-specific digital indicator (setting as specified, Order Code "Y21" or "Y22" re- quired)</li> </ul>		7

Available ex stock

Power supply units see Chap. 8 "Supplementary Components".

Included in delivery of the device:
• Brief instructions (Leporello)

- CD-ROM with detailed documentation
- 1) For oxygen application, add Order code E10.
- 2) 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.
- 3) 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.
- $^{\rm 4)}$  Not in conjunction with Electrical connection "Screwed gland Pg 13.5" and "Han7D plug".
- 5) Without cable gland, with blanking plug
- $^{6)}$  With enclosed cable gland EEx ia and blanking plug
- $^{7)}\,$  Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".
- 8) M12 delivered without cable socket

# Transmitters for general requirements

SITRANS P DS III for gauge pressure

Selection and Orderin		Order	No.
Pressure transmitter f			
SITRANS P DS III PA (	PROFIBUS PA)	7 M F 4	4034-
SITRANS P DS III FF (FOUNDATION Fieldbus)		7 M F 4	4035-
Measuring cell filling	Measuring cell clean- ing		
Silicone oil	normal	1	
Inert liquid <sup>1)</sup>	Grease-free	3	
Nominal measuring ra	•		
1 bar g	(14.5 psi g)	B C	
4 bar g 16 bar g	(58 psi g)	D	
63 bar g	(232 psi g) (914 psi g)	E	
160 bar g	(2320 psi g)	F	
400 bar g	(5802 psi g)	G	
700 bar g	(10153 psi g)	J	
Wetted parts materials	3		
Seal diaphragm	Process connection		
Stainless steel	Stainless steel	A	
Hastelloy	Stainless steel	В	
Hastelloy	Hastelloy	С	
Version as diaphragm s	eal <sup>2)3)</sup>	Y	
Process connection			
• Connection shank G1/2			D
• Female thread ½-14 N		-	1
<ul> <li>Stainless steel oval flag</li> </ul>			2
- Mounting thread <sup>7</sup> / <sub>16</sub> -20 UNF to EN 61518 - Mounting thread M10 to DIN 19213			3
- Mounting thread M12 to DIN 19213			4
Male thread M20 x 1.5			5
• Male thread ½ -14 NPT			6
Non-wetted parts mate	erials		
Housing made of die-cast aluminium			0
<ul> <li>Housing stainless stee</li> </ul>	el precision casting		3
Version			
<ul> <li>Standard versions</li> </ul>			1
<ul> <li>International version, documentation in 5 la</li> </ul>	English label inscriptions,		2
	nguages on CD	_	
Explosion protection None			Α
	ootion:		
With ATEX, Type of prot "Intrinsic safety (EEx ia)			В
"Explosion-proof (EExd)			D
"Intrinsic safety and flar			Р
(EEx ia + EEx d)"5)	neproor enclosure		E
"Ex nA/nL (Zone 2)"			R
"Intrinsic safety, explosi dust explosion protection 1D/2D)" (not for DS III	on (EEx ia + EExd + Zone		ĸ
ווו פט וטו וטו אי (וטבוטו) יי (וטבוטו			
	f protection:		
With FM + CSA, Type o "Intrinsic Safe und Expl	·		NC
With FM + CSA, Type o	osion Proof (is + xp)" <sup>5)</sup>		NC
With FM + CSA, Type o "Intrinsic Safe und Expl	osion Proof (is + xp)" <sup>5)</sup> / cable entry	_	N C B
With FM + CSA, Type o "Intrinsic Safe und Expl Electrical connection	osion Proof (is + xp) <sup>v5)</sup> cable entry 1.5  NPT		

Selection and Ordering data	Order No.
Pressure transmitter for gauge pressure	
SITRANS P DS III PA (PROFIBUS PA)	7 M F 4 0 3 4 -
SITRANS P DS III FF (FOUNDATION Fieldbus)	7 M F 4 0 3 5 -
Display	
Without indicator	0
<ul> <li>Without visible digital indicator(digital indicator concealed, setting: bar)</li> </ul>	1
With visible digital indicator	6
<ul> <li>with customer-specific digital indicator (setting as specified, Order Code "Y21" required)</li> </ul>	7

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

- 1) For oxygen application, add Order code E10.
- 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.
- 3) 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.
- 4) Without cable gland, with blanking plug.
- 5) With enclosed cable gland EEx ia and blanking plug.
- 6) M12 delivered without cable socket

# Pressure Measurement Transmitters for general requirements

SITRANS P DS III for gauge pressure

	Order	code				
Selection and Ordering data  Further designs		HART	PA	FF		
Add "-Z" to Order No. and specify Order Code.				••		
Pressure transmitter with mounting bracket (2 shackles, 4 nuts, 4 U-plates, 1 angle) made of:						
• Steel	A01	1	✓	1		
Stainless steel	A02	1	1	1		
plug						
• Han 7D (metal, gray)	A30	1				
Han 8U (instead of Han 7D)	A31	✓				
• Angled	A32	✓				
Han 8D (metal, gray)	A33	<b>~</b>				
Cable sockets for M12 connectors (metal)	A50	✓	<b>✓</b>	✓		
Rating plate inscription (instead of German)						
• English	B11	<b>√</b>	<b>✓</b>	<b>1</b>		
• French	B12	1	1	1		
<ul><li>Spanish</li><li>Italian</li></ul>	B13 B14	1	1	1		
	B21	1	1	1		
English rating plate Pressure units in inH <sub>2</sub> 0 and/or psi	DZ I	•	•	•		
Quality inspection certificate (factory cali-	C11	✓	<b>✓</b>	✓		
bration) to EC 60770-2 <sup>1)</sup> Inspection certificate <sup>2)</sup>	C12			./		
Acc. to EN 10204-3.1	CIZ	•	•	•		
Factory certificate Acc. to EN 10204-2.2	C14	✓	✓	✓		
"Functional safety (SIL2)" certificate	C20	1				
PROFIsafe certificate and protocol	C21		1			
"Functional safety (SIL2/3)" certificate	C23	1				
Setting of upper limit of output signal to	D05	✓				
22.0 mA  Manufacturer's declaration acc. to NACE	D07	1	1	_		
Degree of protection IP68	D12	1	✓	✓		
(only for M20x1.5 and ½-14 NPT)						
<b>Supplied with oval flange</b> (1 item), PTFE packing and screws in thread of oval flange	D37	•	•	•		
Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")	E01	✓	<b>✓</b>	✓		
Oxygen application (In the case of oxygen measurement and inert liquid max. 120 bar G (1740 psi G) at 60°C	E10	<b>✓</b>	✓	✓		
(140 °F))						
Explosion-proof "Intrinsic safety" to INMETRO (Brazil)	E25	✓	✓	✓		
Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)		1	✓	✓		
Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)	E45	✓		4		
Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4D)	E45 E46	* *	✓	4 4		
Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4D)  Explosion-proof "Intrinsic safety" to NEPSI (China)	E45 E46	* * * * *	<td>* * * *</td>	* * * *		
Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4D)  Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)  Explosion protection "Explosion-proof" to	E45 E46	* * * * * * *	<td>* * * * * *</td>	* * * * * *		
Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4D)  Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)	E45 E46 E55	* * * * * *		* * * * *		
Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4D)  Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)  Explosion protection "Explosion-proof" to NEPSI (China)	E45 E46 E55	* * * * * * * * * *	4 4 4 4 4	* * * * * * * * * * * * * * * * * * *		

Selection and Ordering data	Order code				
Additional data Please add "-Z" to Order No. and specify Order code(s) and plain text.		HART	PA	FF	
<b>Measuring range to be set</b> Specify in plain text (max. 5 characters): Y01: up to mbar, bar, kPa, MPa, psi	Y01	✓			
Stainless steel tag plate (measuring point description) Max. 16 characters, specify in plain text: Y15:	Y15	✓	✓	✓	
Measuring point text Max. 27 characters, specify in plain text: Y16:	Y16	✓	✓	✓	
Entry of HART address (TAG)	Y17	✓			
Max. 8 characters, specify in plain text: Y17:					
Setting of pressure indication in pressure units Specify in plain text (standard setting: bar):	Y21	✓	✓	✓	
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	Y22 +	✓			
non-pressure units <sup>3</sup> ) 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)	Y01				
Preset bus address possible between 1 and 126 Specify in plain text: Y25:	Y25		✓		

Factory mounting of valve manifolds, see accessories.

Only "Y01", "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 psi)

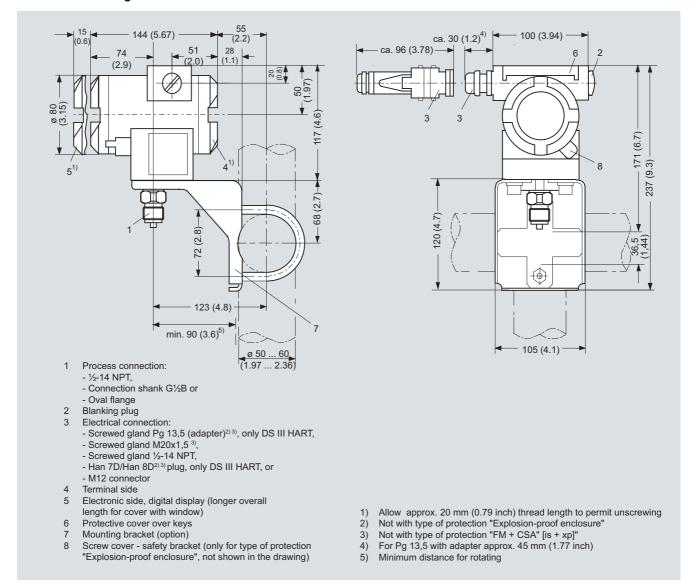
C line: Y21: bar (psi)

- 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.
- 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) 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)

# Technical specifications

SITRANS P DS III series for gauge and absolu	HART	naon diapinagin	PROFIBUS PA and FO	NINDATION Eiglabur	
Input of gauge pressure, with front-flush dia-	ПАКІ		PROFIBUS PA and FO	JUNDALION FIEIDDUS	
ohragm					
Measured variable		Gauge press	ure, front-flush		
Spans (infinitely adjustable) or nominal measur- ng range and max. permissible test pressure	Span	Max. perm. test pressure	Nominal measuring range	Max. perm. test pres- sure	
	0.01 1 bar g (0.15 14.5 psi g)	6 bar g (87 psi g)	1 bar g (14.5 psi g)	6 bar g (87 psi g)	
	0.04 4 bar g (0.58 58 psi g)	10 bar g (145 psi g)	4 bar g (58 psi g)	10 bar g (145 psi g)	
	0.16 16 bar g (2.32 232 psi g)	32 bar g (464 psi g)	16 bar g (232 psi g)	32 bar g (464 psi g)	
	0.6 63 bar g (9.14 914 psi g)	100 bar g (1450 psi g)	63 bar g (914 psi g)	100 bar g (1450 psi g)	
ower measuring limit		-100 mbar g	(-1.45 psi g)		
Jpper measuring limit	100 % of max. span		100 % of the max. nom	inal measuring range	
nput of absolute pressure, with front-flush diaphragm					
Measured variable		Absolute pres	sure, front-flush		
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure	
	43 1300 mbar a (0.62 18.9 psi a)	10 bar a (145 psi a)	1300 mbar a (18.9 psi a)	10 bar a (145 psi a)	
	0.16 5 bar a (2.32 72.5 psi a)	30 bar a (435 psi a)	5 bar a (72.5 psi a)	30 bar a (435 psi a)	
	1 30 bar a (14.5 435 psi a)	100 bar a (1450 psi a)	30 bar a (435 psi a)	100 bar a (1450 psi a)	
ower measuring limit		0 bar a	(0 psi a)		
Jpper measuring limit <b>Dutput</b>	100 % of max. span		100 % of the max. nominal measuring rang		
Dutput signal	4 20 mA		Digital PROFIBUS PA and FOUNDATION Fibus signal		
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	-		
oad					
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	$R_{\rm B}$ = 230 500 $\Omega$ (SIM $R_{\rm B}$ = 230 1100 $\Omega$ (HA		-		
Physical bus	-		IEC 61158-2		
Protection against polarity reversal	Protected against short	circuit and polarity reversing supply	rsal. Each connection ag voltage.	ainst the other with ma	
Measuring accuracy			N 60770-1		
Reference conditions All error data refer always refer to the set span)	Increasing characteristi	c, start-of-scale value 0 k ing, room temperature 2 (r = max. sp			
error in measurement and fixed-point setting including hysteresis and repeatability)					
	Gauge pressure, front-flush	Absolute pressure, front-flush	Gauge pressure, front-flush	Absolute pressure, front-flush	
Linear characteristic			≤ 0.075 %	≤ 0.2 %	
- r≤10	≤ (0.0029 · r + 0.071) %	≤ 0.2 %			
- 10 < r ≤ 30	≤ (0.0045 · r + 0.071) %	≤ 0.4 %			
- 30 < r ≤ 100	$\leq (0.005 \cdot r + 0.05) \%$				
_ong-term drift (temperature change ± 30 °C ± 54 °F))	≤ (0.25 · r) % per 5 years		≤ 0.25 % per 5 years		

SITRANS P DS III series for gauge and absolu	•	lush diaphragm		
	HART		PROFIBUS PA and	FOUNDATION Fieldbus
Influence of ambient temperature				
• at -10 +60 °C (14 140 °F)	$\leq$ (0.1 · r + 0.2) %	≤ (0.2 · r + 0.3) %	≤ 0.3 %	≤ 0.5 %
• 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	≤ 0.25 %/10 K	≤ 0.5 %/10 K
nfluence of mounting position		0.1 mbar g (0.00145 p	si g) per 10° inclinat	ion
Measured Value Resolution	-		3 · 10 <sup>-5</sup> of nominal i	measuring range
nfluence of the medium temperature (only with ront-flush diaphragm)				
Temperature difference between medium temperature and ambient temperature		3 mbar/10 K	(0.04 psi/10 K)	
Rated conditions				
Installation conditions				
Ambient temperature	Observe t	he temperature class in	areas subject to exp	losion 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)	
<ul> <li>Measuring cell with inert liquid (not with front- flush diaphragm)</li> </ul>		-20 +85 °C	(-4 +185 °F)	
Digital display		-30 +85 °C (	(-22 +185 °F)	
• Storage temperature	(in	-50 +85 °C ( the case of Neobee: -2	(-58 +185 °F) 0 +85 °C (-4 +1	85/°F))
Climatic class				
- Condensation	Con	Relative humindensation permissible,	dity 0 100 % suitable for use in the	e tropics
Degree of protection (to EN 60529)	IP65, IP68, NEMA	4X, enclosure cleaning,	resistant to lyes, ste	am to 150 ° C (302 °F)
Electromagnetic Compatibility				
- Emitted interference and interference immunity		Acc. to EN 61326	and NAMUR NE 21	
Medium conditions				
Temperature of medium				
• Measuring cell with silicone oil		-40 +100 °C	(-40 +212 °F)	
<ul> <li>Measuring cell with silicone oil (with front-flush diaphragm)</li> </ul>		-40 +150 °C	(-40 +302 °F)	
<ul> <li>Measuring cell with Neobee oil (with front-flush diaphragm)</li> </ul>		-10 +150 °C	C (14 302 °F)	
<ul> <li>Measuring cell with silicone oil, with tempera- ture decoupler (only with front-flush dia- phragm)</li> </ul>		-40 +200 °C	(-40 +392 °F)	
<ul> <li>Measuring cell with inert liquid</li> </ul>		-20 +100 °C	(-4 +212 °F)	
Measuring cell with high-temperature oil		-10 +250 °C	C (14 482 °F)	
Design				
Weight (without options)		≈ 1.5 kg	(≈ 3.3 lb)	
Enclosure material	Low-copper die-cast al	uminum, GD-AISi12 or s	tainless steel precis	on casting, mat. no. 1.44
Wetted parts materials		Stainless steel, ma	at. no. 1.4404/316L	
Measuring cell filling		Silicone oil or i	nert filling liquid	
Process connection		•Flanges as p	er EN and ASME	
		•F&B and pharr	naceutical flanges	
Surface quality touched-by-media	R <sub>a</sub> -valu	ues ≤ 0.8 μm (32 μ-inch)	/welds R <sub>a)</sub> ≤ 1.6 µm	(64 μ-inch)
		s according to 3A; R <sub>a</sub> -va	,	-inch)/welds R <sub>a</sub> ) ≤ 0,8 μm

	te pressure, with front-flush diaphragm HART	PROFIBUS PA and FOUNDATION Fieldbus
Power supply U $_{ m H}$	IIANI	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
<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		group 1; complies with requirements of article I engineering practice)
Explosion protection		
Intrinsic safety "i"	PTB 99	ATEX 2122
- Marking	Ex II 1/2 G EE	x ia/ib IIB/IIC T6
- Permissible ambient temperature	-40 +70 °C (-40 +15	85 °F) temperature class T4; 88 °F) temperature class T5; 40 °F) temperature class T6
- Connection	To certified intrinsically-safe circuits with peak	FISCO supply unit:
	values: $U_i = 30 \text{ V}, I_i = 100 \text{ mA},$	$U_0 = 17.5 \text{ V}, I_0 = 380 \text{ mA}, P_0 = 5.32 \text{ W}$ Linear barrier:
	$P_{i} = 750 \text{ mW}; R_{i} = 300 \Omega$	$U_0 = 24 \text{ V}, I_0 = 250 \text{ mA}, P_0 = 1.2 \text{ W}$
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4  {\rm mH},  C_{\rm i} = 6  {\rm nF}$	$L_i = 7 \mu\text{H},  C_i = 1.1 \text{nF}$
Explosion-proof "d"	PTB 99 .	ATEX 1160
- Marking	Ex II 1/2 G E	EEx d IIC T4/T6
- Permissible ambient temperature		85 °F) temperature class T4; 40 °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		P65 T 120 °C IP65 T 120 °C
- Permissible ambient temperature	-40 +85 °C	(-40 +185 °F)
- Max. surface temperature	120 °C	C (248 °F)
- Connection	To certified intrinsically-safe circuits with peak values: $U_{\rm i} = 30 \text{ V}, I_{\rm i} = 100 \text{ mA},$ $P_{\rm i} = 750 \text{ mW}, R_{\rm i} = 300 \Omega$	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	$L_i = 0.4 \text{ mH}, C_i = 6 \text{ nF}$	
Dust explosion protection for zone 21/22	' '	$L_{\rm i} = 7 \mu\text{H},  C_{\rm i} = 1.1 \text{nF}$ ATEX 2055
- Marking		P65 T 120 °C
- Connection		
	To circuits with values: $U_H = 10.5 \dots 45 \text{ V DC}$ ; $P_{\text{max}} = 1.2 \text{ W}$	To circuits with values: $U_H = 9 32 \text{ V DC}$ ; $P_{\text{max}} = 1.2 \text{ W}$
• Type of protection "n" (zone 2)	TÜV 01 ATEX 1696 X	Planned
- Marking	Ex II 3 G EEx nA L IIC T4/T5/T6	-
Explosion protection acc. to FM	Certificate of Co	mpliance 3008490
- Identification (XP/DIP) or (IS); (NI)		GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4T6; T6; CL II, DIV 2, GP FG; CL III
<ul> <li>Explosion protection to CSA</li> </ul>	Certificate of Co	mpliance 1153651
		EFG; CL III; Ex ia IIC T4T6; CL I, DIV 2, GP AB

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

Hygiene version			
In the case of SITRANS P DSIII w	vith 7MF413x front-flush diaphra	gm, selected connections comply w	rith the requirements of EHEDG
HART communication		FOUNDATION Fieldbus	
HART communication	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	Analog input	
PROFIBUS PA communication		- Adaptation to customer-specif-	Yes, linearly rising or falling
Simultaneous communication with master class 2 (max.)	4	ic process variables - Electrical damping T <sub>63</sub> , adjust-	characteristic 0 100 s
The address can be set using	Configuration tool or local	able	0 100 3
	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
Output byte	5 (one measured value) or 10 (two measured values)		value, substitute value, incorrect 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		<ul> <li>Square-rooted characteristic for flow measurement</li> </ul>	Yes
Device profile	PROFIBUS PA Profile for Process Control Devices Version	• PID	Standard FF function block
	3.0, Class B	<ul> <li>Physical block</li> </ul>	1 resource block
Function blocks	2	Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block
Analog input			LCD
<ul> <li>Adaptation to customer-specific process variables</li> </ul>	Yes, linearly rising or falling characteristic	Pressure transducer block	
<ul> <li>Electrical damping T<sub>63</sub>, adjustable</li> </ul>	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- ture</li> </ul>	Constant value or over parameterizable 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 respectively		

• Physical block

Transducer blocks

two pressures

• Pressure transducer block - Can be calibrated by applying

- Monitoring of sensor limits

- Specification of a container

- 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-

characteristic with

sor temperature

2

Yes

Yes

Yes

Max. 30 nodes

Parameterizable

Constant value or over parame-

terizable ramp function

# **Pressure Measurement** Transmitters for general requirements

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

Selection and Orderin	•	Ord	er No	Э.	
		7 M I	F 4 1	3 3 -	
pressure, front-flush ( SITRANS P DS III HAF	ларпгадт, ₹Т				
Measuring cell filling	Measuring cell clean-				
Silicone oil	normal	1			
Inert liquid	Grease-free	3			
FDA compliant fill fluid					
Neobee oil	normal	4			
<b>Measuring span</b> 0,01 1 bar g 0,04 4 bar g 0,16 16 bar g 0,63 63 bar g	(0.15 14.5 psi g) (0.58 58 psi g) (2.32 232 psi g) (9.14 914 psi g)	B C D			
13 1300 mbar a <sup>1)</sup> 0,05 5 bar a <sup>1)</sup> 0,3 30 bar a <sup>1)</sup>	(0.19 18.9 psi a) <sup>1)</sup> (0.7 72.5 psi a) <sup>1)</sup> (4.35 435 psi a) <sup>1)</sup>	S T U			
Wetted parts material					
Seal diaphragm	Connection shank				
Stainless steel Hastelloy <sup>2)</sup>	Stainless steel Stainless steel		A 3		
Process connection  • Flange version with Or	der Code M, N, R or Q		7		
Non-wetted parts mat		_			
<ul> <li>Housing made of die-</li> <li>Housing stainless ste</li> </ul>	cast aluminium		0		
Version		-			
	English label inscriptions,			1 2	
documentation in 5 la	nguages on CD	_			
Explosion protection					
• None				Α	
<ul> <li>With ATEX, Type of pr</li> <li>"Intrinsic safety (EEx</li> </ul>				В	
- "Explosion-proof (El				D	
- "Intrinsic safety, exp	losion-proof enclosure and ection (EEx ia+ EEx d +			R	
<ul> <li>With FM + CSA, Type</li> </ul>	of protection:				
	Explosion Proof (is $+ xp)^{(3)}$			NC	;
Electrical connection	/ cable entry				
• Inner thread M20 x 1.	•			E	3
<ul> <li>Female thread ½-14 N</li> </ul>				C	
<ul> <li>M12 connectors (met</li> </ul>	al) <sup>o</sup>			F	
Display					l.
Without indicator	1 P 1				0
<ul> <li>Without visible digital (digital indicator cond</li> </ul>					1
<ul> <li>with visible digital ind</li> </ul>	ication, setting: mA				6
<ul> <li>with customer-specifi (setting as specified, required)</li> </ul>	c digital indication Order Code "Y21" or "Y22"				7
Davida avada ku valta aaa	Chan Q "Cumplementer Co				

Power supply units see Chap. 8 "Supplementary Components".

Included in delivery of the device:
• Brief instructions (Leporello)

- CD-ROM with detailed documentation
- 1) Not with temperature decoupler P00 and P10, not for process connections R02, R04, R10 and R11, and can only be ordered in conjunction with silicone oil.
- $^{2)}\,$  Only possible for flange with M.., N.. and Q.. option.
- 3) Without cable gland, with blanking plug
- 4) With enclosed cable gland EEx ia and blanking plug
- 5) M12 delivered without cable socket
- F) Subject to export regulations AL: 91999, ECCN: N.

# Transmitters for general requirements

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

Selection and Ordering		Order	No					
Pressure transmitter P pressure, front-flush d								
SITRANS P DS III PA (F	PROFIBUS PA)	F)	7 M F	4 1 3	3 4	-		
SITRANS P DS III FF (F	OUNDATION Fieldbus)	F)	7MF4135-					
Measuring cell filling	Measuring cell clean-							
Silicone oil	normal		1					
Inert liquid	Grease-free		3					
FDA compliant fill fluid  Neobee oil	normal		4					
Nominal measuring ra		-						
1 bar g	(14.5 psi g)		В					
4 bar g	(58 psi g)		С					
16 bar g	(232 psi g)		D					
63 bar g	(914 psi g)		E					
1300 mbar a <sup>1)</sup>	(18.9 psi a) <sup>1)</sup>		N O					
5 bar a <sup>1)</sup>	(72.5 psi a) <sup>1)</sup>		T					
30 bar a <sup>1)</sup>	(435 psi a) <sup>1)</sup>		U					
Wetted parts materials	1							
Seal diaphragm	Connection shank							
Stainless steel	Stainless steel		A					
Hastelloy <sup>2)</sup>	Stainless steel	_	В					
Process connection	der Code M, N, R or			7				
Q	der Code M, N, h or			<b>'</b>				
Non-wetted parts mate	erials	┪						
Housing made of die-				0				
Housing stainless stee	el precision casting			3				
Version								
Standard versions					1			
<ul> <li>International version, to documentation in 5 lar</li> </ul>	English label inscriptions, nauges on CD				2			
Explosion protection	.99	-						
• None					,	Ą		
• With ATEX, Type of pro								
- "Intrinsic safety (EEx						3		
- "Explosion-proof (EE						) R		
dust explosion prote	osion-proof enclosure and ction (EEx ia+ EEx d +				ľ	٦.		
	ction (EEx ia+ EEx d +							
With FM + CSA, Type								
(Available soon)	xplosion Proof (is + xp)"3)				1	۷С		
Electrical connection /	cable entry	_						
• Screwed gland M20 x	1.5					В		
<ul> <li>Screwed gland ½-14 i</li> </ul>						С		
<ul> <li>Han 7D plug (plastic h connector <sup>5)</sup></li> </ul>	nousing) incl. mating					D		
M12 connectors (meta)	al) <sup>6)</sup>					F		
Display	,	-						
Without indicator							0	
<ul> <li>Without visible digital</li> </ul>		▶					1	
(digital indicator conc	- ·						c	
<ul><li>With visible digital disp</li><li>With customer-specification</li></ul>							6 7	
	ode "Y21" required)							

- 1) Not with temperature decoupler P00 and P10, not for process connections R01, R02, R04, R10 and R11, and can only be ordered in conjunction with
- $^{2)}\,$  Only possible for flange with M.., N.. and Q.. option.
- 3) Without cable gland, with blanking plug
- 4) With enclosed cable gland EEx ia and blanking plug
- $^{5)}$  Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".
- 6) M12 delivered without cable socket
- F) Subject to export regulations AL: 91999, ECCN: N.

Included in delivery of the device: • Brief instructions (Leporello)

- CD-ROM with detailed documentation

Selection and Ordering data	Order	code		
Further designs Add "-Z" to Order No. and pecify Order Code.		HART	PA	FF
lug				
Angled	A32	1		
Han 8D (metal, gray)	A33		,	,
Cable sockets for M12 connectors (metal)	A50	✓	✓	✓
Rating plate inscription instead of German)				
English	B11	✓	<b>V</b>	✓
French	B12	1	1	<b>✓</b>
Spanish Italian	B13 B14	<b>*</b>	<b>✓</b>	<b>✓</b>
		1	· /	1
<b>English rating plate</b> Pressure units in inH <sub>2</sub> 0 and/or psi	B21	•	•	•
Quality inspection certificate (factory cali- oration) to IEC 60770-2	C11	✓	✓	1
nspection certificate Acc. to EN 10204-3.1	C12	✓	✓	✓
Factory certificate Acc. to EN 10204-2.2	C14	✓	✓	✓
PROFIsafe certificate and protocol	C21		1	
Functional safety (SIL2/3)" certificate	C23	1	Ť	
Ex Approval IEC Ex (EEx ia)	E45	1	1	1
only for transmitter 7MF4	L45	ľ	•	·
x Approval IEC Ex (EEx id) only for transmitter 7MF4D)	E46	✓	✓	✓
wo coats of lacquer on casing and cover PU on epoxy)	G10	✓	✓	1
langes to EN 1092-1, Form b1				
DN 25, PN 40 <sup>1)</sup>	M11	<b>1</b>	1	<b>1</b>
DN 25, PN 100 <sup>1)</sup> DN 40, PN 40	M21 M13	1	<b>✓</b>	1
DN 40, PN 100	M23	1	1	1
DN 50, PN 16	M04	1	1	1
DN 50, PN 40	M14	1	✓	1
DN 80, PN 16	M06	1	✓	✓
DN 80, PN 40	M16	✓	✓	✓
Flanges to ASME B16.5				
Stainless steel flange 1" class 1501)	M40	✓	1	✓
Stainless steel flange 1½" class 150	M41	<b>1</b>	<b>V</b>	<b>V</b>
Stainless steel flange 2" class 150	M42	1	1	1
Stainless steel flange 3" class 150	M43	1	1	1
Stainless steel flange 4" class 150	M44	1	1	1
Stainless steel flange 1" class 300 <sup>1)</sup>	M45 M46	1	<b>✓</b>	1
Stainless steel flange 1½" class 300 Stainless steel flange 2" class 300	M47	<b>✓</b>	<b>√</b>	<b>V</b>
Stainless steel flange 2" class 300 Stainless steel flange 3" class 300	M48	<b>∀</b>	<b>∨</b>	<b>✓</b>
Stainless steel flange 3" class 300 Stainless steel flange 4" class 300	M48 M49	<b>*</b>	<b>V</b>	<b>∀</b>
<u> </u>	14149		_	
hreaded connector to DIN 3852-2, orm A, thread to ISO 228				
G ¾"-A, front-flush <sup>2)</sup>	R01	✓	✓	✓
G 1"-A, front-flush <sup>2)</sup>	R02	✓	✓	✓
G 2"-A, front-flush <sup>2)</sup>	R04	✓	✓	✓
ank connection <sup>3)</sup>				
Sealing is included in delivery				
TO 50/50 DM 45			/	
TG 52/50, PN 40 TG 52/150, PN 40	R10 R11	<b>V</b>	<b>1</b>	٧.

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

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

HART PA FF   Add '-Z' to Order No. and specify Order Code.	Selection and Ordering data	Order code			
Add '-Z' to Order No. and specify Order Code.  Sanitary process connection to NEUMO Bio-Connect clamp connection Certified to EHEDG  • DN 50, PN 16  • DN 80, PN 10  • DN 80, PN 10  • DN 100, PN 10  • DN 100, PN 10  • DN 4', PN 10  Sanitary process connection to NEUMO Bio-Connect S flange connection Certified to EHEDG  • DN 50, PN 16  • DN 80, PN 10  • DN 50, PN 16  • DN 80, PN 10  • DN 100, PN 10  • DN 100, PN 10  • DN 100, PN 10  • DN 80, PN 10  • DN 80, PN 10  • DN 80, PN 10  • DN 100, PN 10  • DN 2'', PN 10  • DN 4'', PN 10  Aseptic threaded socket to DIN 11864-1  Form A  • DN 50, PN 25  • DN 80, PN 16				PA	FF
Sanitary process connection to NEUMO Bio-Connect clamp connection Certified to EHEDG  • DN 50, PN 16 • DN 65, PN 10 • DN 80, PN 10 • DN 100, PN 10 • DN 2**, PN 10 • DN 4**, PN 10 • DN 50, PN 16 • DN 50, PN 16 • DN 50, PN 16 • DN 2**, PN 10 • DN 100, PN 10 • DN 2**, PN 10 • DN 100, PN 10 • DN 2**, PN 10 • DN 100, PN 16 • DN 100, PN 1	Add "-Z" to Order No. and				
NEUMÖ Bio-Connect clamp connection Certified to EHEDG  ○ DN 50, PN 16  ○ DN 65, PN 10  ○ DN 80, PN 10  ○ DN 100, PN 10  ○ DN 100, PN 10  ○ DN 2½², PN 16  ○ DN 3², PN 10  ○ DN 4², PN 10  ○ DN 50, PN 16  ○ DN 50, PN 16  ○ DN 80, PN 10  ○ DN 50, PN 16  ○ DN 80, PN 10  ○ DN 100, PN 10  ○ DN 50, PN 16  ○ DN 80, PN 10  ○ DN 100, PN 10  ○ DN 2½², PN 16  ○ DN 80, PN 10  ○ DN 100, PN 10  ○ DN 2½², PN 10  ○ DN 2½², PN 10  ○ DN 2½², PN 10  ○ DN 100, PN 10  ○ DN 2½², PN 10  ○ DN 2½², PN 10  ○ DN 2½², PN 10  ○ DN 100, PN 25  ○ DN 65, PN 25  ○ DN 80, PN 25  ○ DN 80, PN 16  ○ DN 50, PN 25  ○ DN 65, PN 25  ○ DN 65					
• DN 50, PN 16 • DN 65, PN 10 • DN 80, PN 10 • DN 80, PN 10 • DN 100, PN 10 • DN 2½², PN 16 • DN 3³, PN 10 • DN 4³, PN 10 • DN 50, PN 16 • DN 50, PN 16 • DN 50, PN 16 • DN 100, PN 10 • DN 100, PN 10 • DN 100, PN 10 • DN 50, PN 16 • DN 80, PN 10 • DN 50, PN 25 • DN 100, PN 16 • DN 50, PN 10 • DN 50, PN 16 • DN 50, PN 55 • DN 50, PN 25	NEUMO Bio-Connect clamp connection				
• DN 65, PN 10 • DN 80, PN 10 • DN 80, PN 10 • DN 100, PN 10 • DN 100, PN 10 • DN 2½°, PN 16 • DN 3°, PN 10 • DN 4°, PN 10  Sanitary process connection to NEUMO Bio-Connect S flange connection Certified to EHEDG • DN 50, PN 16 • DN 80, PN 10 • DN 80, PN 10 • DN 80, PN 10 • DN 100, PN 10 • DN 2½°, PN 16 • DN 2½°, PN 10 • DN 2½°, PN 10 • DN 3°, PN 10 • DN 3°, PN 10 • DN 3°, PN 10 • DN 50, PN 25 • DN 50, PN 25 • DN 100, PN 25  Aseptic flange with notch to DIN 11864-2 Form A • DN 50, PN 16 • DN 80, PN 16		Q39	1	1	1
• DN 80, PN 10 • DN 100, PN 10 • DN 100, PN 10 • DN 2½², PN 16 • DN 3², PN 10 • DN 3², PN 10 • DN 4², PN 10 • DN 65, PN 16 • DN 80, PN 16 • DN 80, PN 10 • DN 83², PN 10 • DN 80, PN 25 • DN 80, PN 25 • DN 80, PN 25 • DN 100, PN 25 • DN 100, PN 16 • DN 50, PN 16 • DN 65, PN 16 • DN 80, PN 16					
• DN 100, PN 10 • DN 2½", PN 16 • DN 3", PN 10 • DN 4", PN 10 • DN 4", PN 10 • DN 50, PN 16 • DN 50, PN 25 • DN 50, PN 16 • DN 50, PN 10 • DN 50, PN 25 • DN 50, PN 16 • DN 50, PN 25 • DN 65, PN 25		Q41	1	✓	✓
• DN 3", PN 10 • DN 4", PN 10 Sanitary process connection to NEUMO Bio-Connect S flange connection Certified to EHEDG • DN 50, PN 16 • DN 65, PN 10 • DN 80, PN 10 • DN 100, PN 10 • DN 3", PN 10 • DN 4", PN 10 • DN 4", PN 10 • DN 2", PN 10 • DN 2", PN 10 • DN 3", PN 10 • DN 3", PN 10 • DN 4", PN 10 • DN 4", PN 10 • DN 4", PN 10  Aseptic threaded socket to DIN 11864-1 Form A • DN 50, PN 25 • DN 80, PN 25 • DN 100, PN 25 • DN 100, PN 16 • DN 80, PN 16 • DN 100, PN 16 • DN 80, PN 16 • DN 100, PN 16 • DN 80, PN 16 • DN 100, PN 16 • DN 80, PN 16 • DN 100, PN 16 • DN 80, PN 16 • DN 100, PN 16 • DN 80, PN 25 • DN 80, PN 16	• DN 100, PN 10	Q42	✓	✓	✓
• DN 4", PN 10  Sanitary process connection to NEUMO Bio-Connect S flange connection Certified to EHEDG  • DN 50, PN 16 • DN 65, PN 10 • DN 80, PN 10 • DN 100, PN 10 • DN 2", PN 16 • DN 2", PN 10 • DN 4", PN 10 • DN 4", PN 10  Aseptic threaded socket to DIN 11864-1 Form A • DN 50, PN 25 • DN 100, PN 16 • DN 50, PN 16 • DN 100, PN 16 • DN 50, PN 16 • DN 100, PN 16 • DN 50, PN 50 • DN 50, PN 55 • DN 65, PN 55 • DN 80, PN 16	• DN 21/2", PN 16	Q48	✓	✓	✓
Sanitary process connection to NEUMO Bio-Connect S flange connection Certified to EHEDG  • DN 50, PN 16 • DN 65, PN 10 • DN 80, PN 10 • DN 100, PN 10 • DN 2", PN 16 • DN 2", PN 10 • DN 3", PN 10 • DN 4", PN 10  Aseptic flange with notch to DIN 11864-2 Form A • DN 50, PN 16 • DN 80, PN 16 • DN 100, PN 16 • DN 80, PN 25 • DN 80, PN 16	• DN 3", PN 10	Q49		✓	✓
NEUMÓ Bio-Connect S flange connection Certified to EHEDG  • DN 50, PN 16 • DN 65, PN 10 • DN 80, PN 10 • DN 100, PN 10 • DN 2", PN 16 • DN 2", PN 10 • DN 3", PN 10 • DN 3", PN 10 • DN 4", PN 10 • DN 50, PN 25 • DN 80, PN 16 • DN 50, PN 16 • DN 50, PN 16 • DN 50, PN 16 • DN 100, PN 25 • DN 100, PN 16 • DN 50, PN 16 • DN 65, PN 16 • DN 80, PN 16 • DN 80, PN 16 • DN 100, PN 10	• DN 4", PN 10	Q50	✓	✓	✓
• DN 50, PN 16 • DN 65, PN 10 • DN 80, PN 10 • DN 100, PN 10 • DN 2", PN 16 • DN 2", PN 10 • DN 3", PN 10 • DN 4", PN 10 • DN 4", PN 10 • DN 65, PN 25 • DN 80, PN 25 • DN 100, PN 16 • DN 50, PN 16 • DN 80, PN 16 • DN 100, PN 16 • DN 80, PN 16 • DN 100, PN 16 • DN 80, PN 16 • DN 100, PN 16	NEUMO Bio-Connect S flange connection				
• DN 65, PN 10 • DN 80, PN 10 • DN 100, PN 10 • DN 100, PN 10 • DN 2", PN 16 • DN 2", PN 10 • DN 3", PN 10 • DN 4", PN 10  Aseptic threaded socket to DIN 11864-1 Form A • DN 50, PN 25 • DN 80, PN 25 • DN 100, PN 25 • DN 80, PN 16 • DN 80, PN 16 • DN 50, PN 16 • DN 80, PN 16 • DN 100, PN 16 • DN 80, PN 16 • DN 100, PN 16 • DN 80, PN 16 • DN 100, PN 16 • DN 80, PN 16 • DN 100, PN 16 • DN 80, PN 16 • DN 100, PN 16 • DN 80, PN 16 • DN 100, PN 16 • DN 80, PN 16 • DN 100, PN 16 • DN 80, PN 16 • DN 100, PN 15 • DN 100, PN 25 • DN 80, PN 25 • DN 80, PN 16		063	1	/	1
• DN 80, PN 10 • DN 100, PN 10 • DN 2", PN 16 • DN 2", PN 16 • DN 2", PN 10 • DN 3", PN 10 • DN 4", PN 10 • DN 4", PN 10  Aseptic threaded socket to DIN 11864-1 Form A • DN 50, PN 25 • DN 65, PN 16 • DN 80, PN 16 • DN 100, PN 16 • DN 100, PN 16 • DN 80, PN 16 • DN 100, PN 16 • DN 80, PN 16 • DN 80, PN 16 • DN 100, PN 16 • DN 80, PN 16 • DN 100, PN 16 • DN 80, PN 16 • DN 100, PN 16 • DN 80, PN 16 • DN 100, PN 16 • DN 80, PN 16 • DN 80, PN 16 • DN 100, PN 16 • DN 80, PN 16 • DN 100, PN 16 • DN 80, PN 16 • DN 80, PN 16 • DN 100, PN 16 • DN 80, PN 16 • DN 100, PN 16  Aseptic clamp with groove to DIN 11864-3 FormA • DN 50, PN 25 • DN 80, PN 25 • DN 80, PN 16	•				
• DN 100, PN 10 • DN 2", PN 16 • DN 2½", PN 10 • DN 3", PN 10 • DN 3", PN 10 • DN 4", PN 10  Aseptic threaded socket to DIN 11864-1 Form A • DN 50, PN 25 • DN 100, PN 25  Aseptic flange with notch to DIN 11864-2 Form A • DN 50, PN 16 • DN 80, PN 16 • DN 100, PN 16  Aseptic flange with groove to DIN 11864-2 Form A • DN 50, PN 16 • DN 50, PN 16 • DN 50, PN 16 • DN 100, PN 16  Aseptic flange with groove to DIN 11864-2 Form A • DN 50, PN 16 • DN 50, PN 16 • DN 80, PN 16					
• DN 2", PN 16 • DN 2½", PN 10 • DN 3", PN 10 • DN 4", PN 10  Aseptic threaded socket to DIN 11864-1 Form A • DN 50, PN 25 • DN 80, PN 25 • DN 100, PN 25 • DN 80, PN 16 • DN 100, PN 16  Aseptic flange with groove to DIN 11864-2 Form A • DN 50, PN 16 • DN 80, PN 16 • DN 80, PN 16 • DN 100, PN 16  Aseptic flange with groove to DIN 11864-2 Form A • DN 50, PN 16 • DN 80, PN 16		Q66	1		1
• DN 2½", PN 10 • DN 3", PN 10 • DN 4", PN 10  Aseptic threaded socket to DIN 11864-1 Form A • DN 50, PN 25 • DN 80, PN 25 • DN 100, PN 25 • DN 80, PN 16 • DN 80, PN 16 • DN 80, PN 16 • DN 50, PN 16 • DN 50, PN 16 • DN 50, PN 16 • DN 100, PN 16  Aseptic flange with groove to DIN 11864-2 Form A • DN 50, PN 16 • DN 80, PN 16 • DN 80, PN 16 • DN 100, PN 16  Aseptic flange with groove to DIN 11864-2 Form A • DN 50, PN 16 • DN 100, PN 16 • DN 80, PN 16 • DN 80, PN 16 • DN 100, PN 16  Aseptic flange with groove to DIN 11864-2 Form A • DN 50, PN 16 • DN 80, PN 16 • DN 100, PN 16  Aseptic clamp with groove to DIN 11864-3 FormA • DN 50, PN 25 • DN 65, PN 25 • DN 80, PN 16	• DN 2", PN 16	Q72		✓	1
• DN 4*, PN 10  Aseptic threaded socket to DIN 11864-1 Form A  • DN 50, PN 25 • DN 65, PN 25 • DN 80, PN 25 • DN 100, PN 25  Aseptic flange with notch to DIN 11864-2 Form A  • DN 50, PN 16 • DN 65, PN 16 • DN 80, PN 16 • DN 100, PN 16  Aseptic flange with groove to DIN 11864-2 Form A  • DN 50, PN 16 • DN 80, PN 16 • DN 80, PN 16  Aseptic flange with groove to DIN 11864-2 Form A  • DN 50, PN 16  Aseptic flange with groove to DIN 11864-2 Form A  • DN 50, PN 16  Aseptic flange with groove to DIN 11864-2 Form A  • DN 80, PN 16  • DN 100, PN 16  Aseptic clamp with groove to DIN 11864-3 FormA  • DN 50, PN 25 • DN 65, PN 25 • DN 80, PN 16		Q73	✓	✓	✓
Aseptic threaded socket to DIN 11864-1 Form A  • DN 50, PN 25 • DN 65, PN 25 • DN 80, PN 25 • DN 100, PN 25  Aseptic flange with notch to DIN 11864-2 Form A  • DN 50, PN 16 • DN 65, PN 16 • DN 80, PN 16 • DN 100, PN 16  Aseptic flange with groove to DIN 11864-2 Form A  • DN 50, PN 16 • DN 50, PN 16 • DN 50, PN 16  Aseptic flange with groove to DIN 11864-2 Form A  • DN 50, PN 16  Aseptic flange with groove to DIN 11864-2 Form A  • DN 50, PN 16  Aseptic flange with groove to DIN 11864-2 Form A  • DN 65, PN 16  • DN 80, PN 16  Aseptic clamp with groove to DIN 11864-3 FormA  • DN 50, PN 25 • DN 65, PN 25 • DN 80, PN 16	• DN 3", PN 10	Q74			
Form A	• DN 4", PN 10	Q75	✓	✓	✓
• DN 65, PN 25 • DN 80, PN 25 • DN 100, PN 25  Aseptic flange with notch to DIN 11864-2 Form A • DN 50, PN 16 • DN 80, PN 16 • DN 80, PN 16 • DN 100, PN 16  Aseptic flange with groove to DIN 11864-2 Form A • DN 50, PN 16 • DN 50, PN 16  Aseptic flange with groove to DIN 11864-2 Form A • DN 50, PN 16 • DN 80, PN 16 • DN 100, PN 16  Aseptic clamp with groove to DIN 11864-3 FormA • DN 50, PN 25 • DN 65, PN 25 • DN 80, PN 16					
• DN 80, PN 25 • DN 100, PN 25  Aseptic flange with notch to DIN 11864-2 Form A  • DN 50, PN 16 • DN 65, PN 16 • DN 100, PN 16  Aseptic flange with groove to DIN 11864-2 Form A  • DN 50, PN 16  Aseptic flange with groove to DIN 11864-2 Form A  • DN 50, PN 16  • DN 80, PN 16  • DN 100, PN 16  Aseptic clamp with groove to DIN 11864-3 FormA  • DN 50, PN 25 • DN 65, PN 25 • DN 80, PN 16	• DN 50, PN 25	N33			
• DN 100, PN 25  Aseptic flange with notch to DIN 11864-2 Form A  • DN 50, PN 16 • DN 65, PN 16 • DN 100, PN 16  Aseptic flange with groove to DIN 11864-2 Form A  • DN 50, PN 16  Aseptic flange with groove to DIN 11864-2 Form A  • DN 50, PN 16  • DN 65, PN 16  • DN 80, PN 16  • DN 100, PN 16  Aseptic clamp with groove to DIN 11864-3 FormA  • DN 50, PN 25 • DN 65, PN 25 • DN 80, PN 16	• DN 65, PN 25	N34			
Aseptic flange with notch to DIN 11864-2 Form A  • DN 50, PN 16  • DN 65, PN 16  • DN 80, PN 16  • DN 100, PN 16  Aseptic flange with groove to DIN 11864-2 Form A  • DN 50, PN 16  • DN 50, PN 16  • DN 65, PN 16  • DN 80, PN 16  • DN 100, PN 16  Aseptic clamp with groove to DIN 11864-3 FormA  • DN 50, PN 25  • DN 65, PN 25  • DN 80, PN 16	,				✓.
Form A  • DN 50, PN 16  • DN 65, PN 16  • DN 80, PN 16  • DN 100, PN 16  Aseptic flange with groove to DIN 11864-2 Form A  • DN 50, PN 16  • DN 65, PN 16  • DN 80, PN 16  • DN 100, PN 16  Aseptic clamp with groove to DIN 11864-3 FormA  • DN 50, PN 25  • DN 65, PN 25  • DN 80, PN 16	• DN 100, PN 25	N36	✓	✓	✓
• DN 65, PN 16 • DN 80, PN 16 • DN 100, PN 16  Aseptic flange with groove to DIN 11864-2 Form A • DN 50, PN 16 • DN 65, PN 16 • DN 80, PN 16 • DN 80, PN 16 • DN 80, PN 16 • DN 100, PN 16  Aseptic clamp with groove to DIN 11864-3 FormA • DN 50, PN 25 • DN 65, PN 25 • DN 80, PN 16					
• DN 80, PN 16 • DN 100, PN 16  Aseptic flange with groove to DIN 11864-2 Form A • DN 50, PN 16  • DN 65, PN 16  • DN 80, PN 16  • DN 80, PN 16  • DN 100, PN 16  Aseptic clamp with groove to DIN 11864-3 FormA • DN 50, PN 25 • DN 65, PN 25 • DN 80, PN 16			✓		
• DN 100, PN 16  Aseptic flange with groove to DIN 11864-2 Form A  • DN 50, PN 16  • DN 65, PN 16  • DN 80, PN 16  • DN 100, PN 16  • DN 100, PN 16  Aseptic clamp with groove to DIN 11864-3 FormA  • DN 50, PN 25  • DN 65, PN 25  • DN 80, PN 16					
Aseptic clamp with groove to DIN 11864-2 Form A  • DN 50, PN 16  • DN 80, PN 16  • DN 80, PN 16  • DN 100, PN 16  Aseptic clamp with groove to DIN 11864-3 FormA  • DN 50, PN 25  • DN 65, PN 25  • DN 80, PN 16	,				1
Form A  • DN 50, PN 16  • DN 65, PN 16  • DN 80, PN 16  • DN 80, PN 16  • DN 100, PN 16  • DN 100, PN 16  Aseptic clamp with groove to DIN 11864-3  FormA  • DN 50, PN 25  • DN 65, PN 25  • DN 80, PN 16		N46	•	•	•
• DN 65, PN 16  • DN 80, PN 16  • DN 100, PN 16  • DN 100, PN 16  • DN 100, PN 16  Aseptic clamp with groove to DIN 11864-3 FormA  • DN 50, PN 25  • DN 65, PN 25  • DN 80, PN 16	Form A				
P11  P11  N45 + ✓ ✓ ✓  P11  N46 + ✓ ✓ ✓  N46 + ✓ ✓ ✓  Aseptic clamp with groove to DIN 11864-3  FormA  DN 50, PN 25  DN 65, PN 25  DN 65, PN 25  DN 80, PN 16  P11  N46 + ✓ ✓ ✓  N46 + ✓ ✓ ✓  N57  N58  N59  N59  N59  N59  N59  N59  N59		P11	<b>√</b>		
P11		P11		•	<b>√</b>
Aseptic clamp with groove to DIN 11864-3 FormA  • DN 50, PN 25  • DN 65, PN 25  • DN 80, PN 16  P11  N53  ✓ ✓ ✓  ✓ ✓  ✓ ✓  N54  ✓ ✓  ✓ ✓  ✓ ✓  ✓ ✓  ✓ ✓  ✓ ✓  ✓ ✓  ✓		P11	~	·	<b>√</b>
FormA         • DN 50, PN 25       N53       ✓       ✓         • DN 65, PN 25       N54       ✓       ✓         • DN 80, PN 16       N55       ✓       ✓	• DN 100, PN 16		✓	✓	<b>√</b>
• DN 50, PN 25       N53       ✓       ✓         • DN 65, PN 25       N54       ✓       ✓         • DN 80, PN 16       N55       ✓       ✓					
• DN 80, PN 16 N55 ✓ ✓ ✓		N53	✓	1	1
	• DN 65, PN 25	N54	✓	✓	1
• DN 100, PN 16 <b>N56</b> ✓ ✓ ✓	• DN 80, PN 16	N55			✓
	• DN 100, PN 16	N56	✓	1	✓

<sup>1)</sup> Special seal in Viton included in the scope of delivery.

Selection and Ordering data	Order code			
Additional data		HART	PA	FF
Please add "-Z" to Order 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				
Stainless steel tag plate (measuring point description)	Y15	✓	✓	✓
Max. 16 characters, specify in plain text: Y15:				
Measuring point text	Y16	1	1	1
Max. 27 characters, specify in plain text: Y16:				
Entry of HART address (TAG)	Y17	✓		
Max. 8 characters, 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 selected:				
bar, mbar, mm H <sub>2</sub> O*), inH <sub>2</sub> O*), ftH <sub>2</sub> O*), mmHG, inHG, psi, Pa, kPa, MPa, g/cm <sup>2</sup> , kg/cm <sup>2</sup> , Torr, ATM or % ") ref. temperature 20 °C				
Preset bus address	Y25		✓	
possible between 1 and 126				
Specify in plain text: Y25:				

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

✓ = available

# ordering example

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

B line: A22 + Y01 + Y21 Y01: 1 ... 10 bar (14.5 ... 145 psi) C line:

C line: Y21: bar (psi)

<sup>2)</sup> Lower measuring limit -100 mbar g (1.45 psi g).

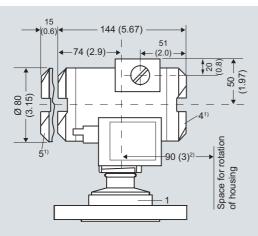
<sup>3)</sup> The weldable socket can be ordered under accessories.

<sup>4)</sup> The maximum permissible temperatures of the medium depend on the respective cell fillings.

# Transmitters for general requirements

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

# Dimensional drawings



100 (3.94) approx. 30 (1.18) = approx. 130 (5.12)

- 1 Process connection: see flange tables
- 2 Blanking plug
- 3 Electrical connection:
- Screwed gland M20x1,5,
- Screwed gland 1/2-14 NPT or
- M12 connector
- 4 Terminal side
- 5 Electronics side, digital display (longer overall length for cover with window)
- 6 Protective cover over keys
- 7 Screw cover safety bracket (only for explosion-proof enclosure, not shown in the drawing)

- 1) Allow approx. 20 mm (0.79 inch) thread length in addition
- 2) 92 mm (3.6 inch) for minimum distance to permit rotation with indicator

 $H_2$ 

(5.0")

Approx. 52 mm (2")

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

## Flanges as per EN and ASME

### Flange to EN

# EN 1092-1

DN	PN	ØD	H <sub>2</sub>
25	40	115 mm (4.5")	Approx.
25	100	140 mm (5.5")	52 mm (2")
40	40	150 mm (5.9")	
40	100	170 mm (6.7")	
50	16	165 mm (6.5")	
50	40	165 mm (6.5")	
80	16	200 mm (7.9")	
80	40	200 mm (7.9")	

### Flanges to ASME

**ASME B16.5** 

DN	Class	ØD	H <sub>2</sub>
1"	150	110 mm (4.3")	Approx.
1"	300	125 mm (4.9")	52 mm (2")
11/2"	150	130 mm (5.1")	
11/2"	300	155 mm (6.1")	
2"	150	150 mm (5.9")	
2"	300	165 mm (6.5")	
3"	150	190 mm (7.5")	
3"	300	210 mm (8.1")	
4"	150	230 mm (9.1")	
4"	300	255 mm (10.0")	

### F&B and pharmaceutical flanges

## Connections to DIN

OIN 11851 (milk pipe unic	on)		
<del>, ,==</del>	DN	PN	ØD
i 📮	50	25	92 mm (3.6")
T <sup>N</sup> D	80	25	127 mm (5.0")

TriClamp to DIN 32676				
+ <del></del>	DN	PN	ØD	H <sub>2</sub>
	50	16	64 mm (2.5")	Approx.
	65	16	91 mm (3.6")	52 mm (2")
<u> </u>				
D				

### Other connections

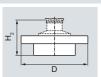
Varivent connection				
ı	DN	PN	∅D	H <sub>2</sub>
	40 125	40	84 mm (3.3")	Approx. 52 mm (2")

Biocontrol connection				
	DN	PN	ØD	H <sub>2</sub>
	50	16	90 mm (3.5")	Approx. 52 mm (2")
F	65	16	120 mm (4.7")	52 mm (2")
<u> </u>				
D				

# Transmitters for general requirements SITRANS P DS III for gauge/absolute pressure,

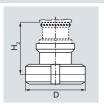
with front-flush diaphragm

# Sanitary process connection to DRD



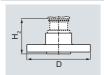
DN	PN	ØD	H <sub>2</sub>
65	40	105 mm (4.1")	Approx. 52 mm (2")

# Sanitary process screw connection to NEUMO Bio-Connect



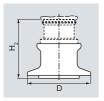
DN	PN	ØD	H <sub>2</sub>
50	16	82 mm (3.2")	Approx.
65	16	105 mm (4.1")	52 mm (2")
80	16	115 mm (4.5")	
100	16	145 mm (5.7")	
2"	16	82 mm (3.2")	
2½"	16	105 mm (4.1")	
3"	16	105 mm (4.1")	
4"	16	145 mm (5.7")	

# Sanitary process connection to NEUMO Bio-Connect flange connection



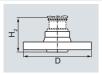
DN	PN	ØD	H <sub>2</sub>
50	16	110 mm (4.3")	Approx.
65	16	140 mm (5.5")	52 mm (2")
80	16	150 mm (5.9")	
100	16	175 mm (6.9")	
2"	16	100 mm (3.9")	
21/2"	16	110 mm (4.3")	
3"	16	140 mm (5.5")	
4"	16	175 mm (6.9")	

# Sanitary process connection to NEUMO Bio-Connect clamp connection



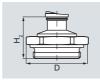
DN	PN	ØD	H <sub>2</sub>
50	16	77.4 mm (3.0")	Approx.
65	10	90.9 mm (3.6")	52 mm (2")
80	10	106 mm (4.2")	
100	10	119 mm (4.7")	
2"	16	64 mm (2.5")	
2½"	16	77.4 mm (3.0")	
3"	10	90.9 mm (3.6")	
4"	10	779 mm (4.7")	

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



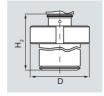
DN	PN	ØD	H <sub>2</sub>
50	16	125 mm (4.9")	Approx.
65	10	145 mm (5.7")	52 mm (2")
80	10	155 mm (6.1")	
100	10	180 mm (7.1")	
2"	16	125 mm (4.9")	
21/2"	10	135 mm (5.3")	
3"	10	145 mm (5.7")	
4"	10	180 mm (7.1")	

### Threaded connection G3/4", G1" and G2" acc. to DIN 3852



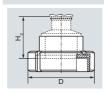
DN	PN	ØD	H <sub>2</sub>
3/4"	63	37 mm (1.5")	Approx. 45 mm (1.8")
1"	63	48 mm (1.9")	approx. 47 mm (1.9")
2"	63	78 mm (3.1")	Approx. 52 mm (2")

### Tank connection TG 52/50 and TG52/150



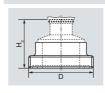
DN	PN	ØD	H <sub>2</sub>
25	40	63 mm (2.5")	Approx. 63 mm (2.5")
25	40	63 mm (2.5")	approx. 170 mm (6.7")

### SMS socket with union nut



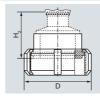
DN	PN	ØD	H <sub>2</sub>
2"	25	84 mm (3.3")	Approx.
21/2"	25	100 mm (3.9")	52 mm (2.1")
3"	25	114 mm (4.5")	,

### SMS threaded socket



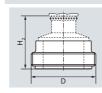
DN	PN	ØD	H <sub>2</sub>
2"	25	70 x 1/6 mm	Approx.
2½"	25	85 x 1/6 mm	52 mm (2.1")
3"	25	98 x 1/6 mm	

## IDF socket with union nut



DN	PN	ØD	H <sub>2</sub>
2"	25	77 mm (3")	Approx.
21/2"	25	91 mm (3.6")	52 mm (2.1")
3"	25	106 mm (4.2")	,

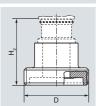
## IDF threaded socket



DN	PN	ØD	H <sub>2</sub>
2"	25	64 mm (2.5")	Approx.
21/2"	25	77.5 mm (3.1")	52 mm (2.1")
3"	25	91 mm (3.6")	,

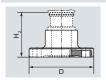
Transmitters for general requirements
SITRANS P DS III for gauge/absolute pressure,
with front-flush diaphragm

# Aseptic threaded socket to DIN 11864-1 Form A



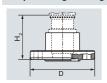
DN	PN	ØD	H <sub>2</sub>
50	25	94	Approx. 52 mm
65	25	113	52 mm (2.1")
80	25	133	,
100	25	159	

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



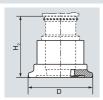
DN	PN	ØD	H <sub>2</sub>
50	16	78 x 1/6"	Approx.
65	16	95 x 1/6"	52 mm (2.1")
80	16	110 x 1/4"	,
100	16	130 x 1/4"	

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



DN	PN	∅D	H <sub>2</sub>
50	16	94	Approx. 52 mm
65	16	113	52 mm (2.1")
80	16	133	,
100	16	159	

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



DN	PN	ØD	H <sub>2</sub>
50	25	77,5	Approx. 52 mm
65	25	91	(2.1")
80	16	106	
100	16	130	

Pressure Measurement
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 (from the gauge pressure series)				
	HART		PROFIBUS PA and FOUNDATION Fieldbus	
Input				
Measured variable	Absolute pressure			
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure
	8,3 250 mbar a (0.12 3.6 psi a)	6 bar a (87 psi a)	250 mbar a (3.6 psi a)	6 bar a (87 psi a)
	43 1300 mbar a (0.62 18.9 psi a)	10 bar a (145 psi a)	1300 mbar a (18.9 psi a)	10 bar a (145 psi a)
	160 5000 mbar a (2.32 72.5 psi a)	30 bar a (435 psi a)	5 bar a (72.5 psi a)	30 bar a (435 psi a)
	1 30 bar a (14.5 435 psi a)	100 bar a (1450 psi a)	30 bar a (435 psi a)	100 bar a (1450 psi a)
Lower measuring limit		'		
Measuring cell with silicone oil filling		0 mbar	a (0 psi a)	
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 communication	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.02$ $U_{\rm H}$ : Power supply in V	23 A in Ω,	-	
With HART communication	$R_{\rm B}$ = 230 500 $\Omega$ (SIM $R_{\rm B}$ = 230 1100 $\Omega$ (HA			
Physical bus	-		IEC 61158-2	
Protection against polarity reversal	Protected against shor		rsal. Each connection ag voltage.	gainst the other with max.
Measuring accuracy		Acc. to E	N 60770-1	
Reference conditions (All error data refer always refer to the set span)	Increasing characterist	ing, room temperature 2	bar, stainless steel seal c 25 °C (77 °F)) r: Span rati an / set span)	liaphragm, silicone oil fill- o
Error in measurement and fixed-point setting (including hysteresis and repeatability)				
Linear characteristic			≤ 0.1 %	
- r ≤ 10	≤ 0.1 %			
- 10 < r ≤ 30	≤ 0.2 %			
Long-term drift (temperature change $\pm$ 30 °C ( $\pm$ 54 °F))	≤ (0.1 · r) %/year		≤ 0.1 %/year	
Influence of ambient temperature				
• at -10 +60 °C (14 140 °F)	$\leq$ (0.1 · r + 0.2) %		≤ 0.3 %	
• at -4010 °C and 60 85 °C (-40 +14 °F and 140 185 °F)	$\leq (0.1 \cdot r + 0.15) \%/10 \text{ f}$	<	≤ 0.25 %/10 K	
Measured Value Resolution	-		3 · 10 <sup>-5</sup> of nominal mea	suring range

# Pressure Measurement Transmitters for general requirements SITRANS P DS III for absolute pressure (from gauge pressure series)

SITRANS P DS III series for absolute pressure (from the gauge pressure series)				
	HART	PROFIBUS PA and FOUNDATION Fieldbus		
Rated conditions				
Degree of protection (to EN 60529)	IP65			
Temperature of medium				
Measuring cell with silicone oil filling	-40 +100 °C	C (-40 +212 °F)		
Measuring cell with inert filling liquid	-20 +100 °	C (-4 +212 °F)		
• In conjunction with dust explosion protection	-20 +60 °C	C (-4 +140 °F)		
Ambient conditions				
Ambient temperature				
- Digital indicator	-30 +85 °C	: (-22 +185 °F)		
Storage temperature	-50 +85 °C	: (-58 +185 °F)		
Climatic class				
- Condensation	Relative hum	nidity 0 100 %		
		, suitable for use in the tropics		
Electromagnetic Compatibility				
- Emitted interference and interference immunity	- Acc. to EN 61326 and NAMUR NE 21			
Design				
Weight (without options)	≈ 1.5 k <u>(</u>	g (≈ 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, n	nat. no. 1.4404/316L		
Seal diaphragm	Stainless steel, mat. no. 1.4404/31	6L or Hastelloy C276, mat. no. 2.4819		
Measuring cell filling		ue with oxigen measurement pressure 120 bar a) at 60 °C (140 °F))		
Process connection		female thread $\frac{1}{2}$ -14 NPT or oval flange mounting thread M10 or $^7/_{16}\text{-}20$ UNF to EN 61518		
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 $U_{H}$		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		
• Start-up current ≤ basic current	-	Yes		
Max. current in event of fault	-	15.5 mA		
Fault disconnection electronics (FDE) available	-	Yes		
` '				

Pressure Measurement
Transmitters for general requirements
SITRANS P DS III for absolute pressure
(from gauge 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 99 A	ATEX 2122	
- Marking	Ex II 1/2 G EE	x ia/ib IIB/IIC T6	
- Permissible ambient temperature	-40 +70 °C (-40 +15	15°F) temperature class T4; 18°F) temperature class T5; 10°F) temperature class T6	
- Connection	To certified intrinsically-safe circuits with peak values: $U_{\rm i}=30$ V, $I_{\rm i}=100$ mA, $P_{\rm i}=750$ mW; $P_{\rm i}=300$ $\Omega$	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	$L_{i} = 0.4 \text{ mH}, C_{i} = 6 \text{ nF}$	$L_i = 7 \mu\text{H},  C_i = 1.1 \text{nF}$	
Explosion-proof "d"	' '	ATEX 1160	
- Marking		EEx d IIC T4/T6	
Permissible ambient temperature	, -	55 °F) temperature class T4;	
·	-40 +60 °C (-40 +14	40 °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		ATEX 2055	
- Marking		P65 T 120 °C IP65 T 120 °C	
- Permissible ambient temperature	-40 +85 °C	(-40 +185 °F)	
- Max. surface temperature	120 °C	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	$L_{i} = 0.4 \text{ mH}, C_{i} = 6 \text{ nF}$	$L_i = 7 \mu H, C_i = 1.1 nF$	
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; $P_{\rm max}$ = 1.2 W	
Type of protection "n" (zone 2)	TÜV 01 ATEX 1696 X	Planned	
- Marking	Ex II 3 G EEx nA L IIC T4/T5/T6	-	
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		
Explosion protection to CSA	Certificate of Co	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		

# Transmitters for general requirements

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

HART communication	
HART communication	230 1100 Ω
Protocol	HART Version 5.x
Software for computer	SIMATIC PDM
PROFIBUS PA communication	
Simultaneous communication with master class 2 (max.)	4
The address can be set using	Configuration tool or local opera tion (standard setting address 126)
Cyclic data usage	
Output byte	5 (one measured value) or 10 (two measured values)
Input byte	0, 1, or 2 (register operating 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	
<ul> <li>Adaptation to customer-specific process variables</li> </ul>	Yes, linearly rising or falling characteristic
<ul> <li>Electrical damping T<sub>63</sub>, adjustable</li> </ul>	0 to 100 s
- Simulation function	Input /Output
- Failure mode	parameterizable (last good value, substitute value, incorrect value)
- Limit monitoring	Yes, one upper and lower warn- ing 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)
- Limit monitoring	One upper and lower warning limit and one alarm limit respec- tively
Physical block	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
- Square-rooted characteristic for flow measurement	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 parameterizable ramp function

sor temperature

### FOUNDATION Fieldbus communication

Function blocks

- Analog input
  - Adaptation to customer-specific process variables
- Electrical damping T<sub>63</sub>, 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

Standard FF function block

1 resource block

1 transducer block Pressure with calibration, 1 transducer block

Yes

Constant value or over parameterizable ramp function

# Transmitters for general requirements

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

	ing data		Orde	r No.	
	rs for absolute pressure , SITRANS P DS III HART	F)		4233-	
Measuring cell filling	g Measuring cell clean- ing				
Silicone oil	normal		1		
Inert liquid <sup>1)</sup>	Grease-free		3		
Measuring span					
8.3 250 mbar a	(0.12 3.63 psi a)		D		
43 1300 mbar a	(0.62 18.9 psi a)		F		
0.16 5 bar a	(2.32 72.5 psi a)		G		
1 30 bar a	(14.5 435 psi a)		Н		
<b>Wetted parts materia</b> Seal diaphragm	Process connection				
Stainless steel	Stainless steel	_ F)	А		
Hastelloy	Stainless steel	F)	В		
Hastelloy	Hastelloy	F)	C		
Version for diaphragn		(	Y		
Process connection					
<ul> <li>Connection shank 0</li> </ul>	6½B to EN 837-1			0	
<ul> <li>Female thread ½-14</li> </ul>	I NPT			1	
<ul> <li>Stainless steel oval</li> </ul>					
-	/ <sub>16</sub> -20 UNF to EN 61518			2	
- Mounting thread N				3	
<ul> <li>Mounting thread N</li> <li>Male thread M20 x</li> </ul>				5	
	· · <del>· ·</del>				
<ul> <li>Male thread ½ -14 N</li> </ul>	NPT			6	
		_		6	
Non-wetted parts ma  • Housing made of di	aterials e-cast aluminium			0	
Non-wetted parts ma  • Housing made of di	aterials				
Non-wetted parts ma  Housing made of di  Housing stainless s	aterials e-cast aluminium			0	
Non-wetted parts made of di  Housing made of di Housing stainless si Version  Standard versions	aterials e-cast aluminium teel precision casting <sup>5)</sup>			0 3	
Non-wetted parts made of di  Housing made of di Housing stainless si Version  Standard versions  International versior	aterials e-cast aluminium teel precision casting <sup>5)</sup> n, English label inscriptions	,		0 3	
Non-wetted parts made of di  Housing made of di Housing stainless si Version  Standard versions International version documentation in 5	aterials e-cast aluminium teel precision casting <sup>5)</sup> n, English label inscriptions languages on CD	,		0 3	
Non-wetted parts ma  Housing made of di Housing stainless s  Version Standard versions International versior documentation in 5  Explosion protection	aterials e-cast aluminium teel precision casting <sup>5)</sup> n, English label inscriptions languages on CD	,		0 3	
Non-wetted parts made of die Housing made of die Housing stainless sield Version Standard versions International version documentation in 5 Explosion protection None With ATEX, Type of	aterials e-cast aluminium teel precision casting <sup>5)</sup> n, English label inscriptions languages on CD n protection:	,		0 3	
Non-wetted parts made of die Housing made of die Housing stainless siems.  Version  Standard versions International version documentation in 5  Explosion protection  None  With ATEX, Type of littinsic safety (E	aterials e-cast aluminium teel precision casting <sup>5)</sup> n, English label inscriptions languages on CD n protection: Ex ia)"	,		0 3	
Non-wetted parts ma • Housing made of di • Housing stainless si Version • Standard versions • International version documentation in 5 Explosion protection • None • With ATEX, Type of - "Intrinsic safety (E - "Explosion-proof (i	aterials e-cast aluminium teel precision casting <sup>5)</sup> n, English label inscriptions languages on CD  n protection: Ex ia)" EEx d)*6)	,		0 3 1 2 A B D	
Non-wetted parts may Housing made of di Housing stainless si Version Standard versions International version documentation in 5 Explosion protection None With ATEX, Type of "Intrinsic safety (E "Explosion-proof (i "Intrinsic safety and in the saf	aterials e-cast aluminium teel precision casting <sup>5)</sup> n, English label inscriptions languages on CD n protection: Ex ia)" EEx d)" <sup>6)</sup> Id flameproof enclosure"	,		0 3 1 2 A B	
Non-wetted parts may Housing made of di Housing stainless si Version Standard versions International version documentation in 5 Explosion protection None With ATEX, Type of - "Intrinsic safety (E - "Explosion-proof (I - "Intrinsic safety an (EEx ia + EEx d)"	aterials e-cast aluminium teel precision casting <sup>5)</sup> n, English label inscriptions languages on CD n protection: Ex ia)" EEx d)" <sup>6)</sup> d flameproof enclosure"	,		0 3 1 2 A B D P	
Non-wetted parts ma  Housing made of di Housing stainless s' Version Standard versions International versior documentation in 5 Explosion protection None With ATEX, Type of lintrinsic safety (E - "Explosion-proof (I - "Intrinsic safety ar (EEx ia + EEx d)"  "Ex nA/nL (Zone 2 - "Intrinsic safety av	aterials e-cast aluminium teel precision casting <sup>5)</sup> n, English label inscriptions languages on CD  protection: Ex ia) d flameproof enclosure ) n			0 3 1 2 A B D P	
Non-wetted parts ma  Housing made of di Housing stainless s' Version Standard versions International versior documentation in 5  Explosion protection None With ATEX, Type of Intrinsic safety (E "Explosion-proof (I "Intrinsic safety an (EEx ia + EEx d)" "Ex nA/nL (Zone 2	aterials e-cast aluminium teel precision casting <sup>5)</sup> n, English label inscriptions languages on CD  protection: Ex ia) d flameproof enclosure ) n			0 3 1 2 A B D P	
Version Standard versions International version documentation in 5 Explosion protection None With ATEX, Type of "Intrinsic safety (E "Explosion-proof (I "Intrinsic safety an (EEx ia + EEx d)" "Ex nA/nL (Zone 2 "Intrinsic safety, ex dust explosion pro Zone 1D/2D)"  Versions	aterials e-cast aluminium teel precision casting <sup>5)</sup> n, English label inscriptions languages on CD  protection: Ex ia)" EEx d)*6) d flameproof enclosure" )" plosion-proof enclosure and tection (EEx ia+ EEx d)+			0 3 1 2 A B D P	
Non-wetted parts ma  Housing made of di  Housing stainless si Version  Standard versions  International version documentation in 5  Explosion protection  None  With ATEX, Type of  "Intrinsic safety (E  "Explosion-proof (I  "Intrinsic safety an (EEx ia + EEx d)"  "Ex nA/nL (Zone 2  "Intrinsic safety, ex dust explosion produst explosion product explosion produst explosion produst explosion product explosion exp	aterials e-cast aluminium teel precision casting <sup>5</sup> )  n, English label inscriptions languages on CD  n  protection: Ex ia)" EEx d)*6 d flameproof enclosure* )" plosion-proof enclosure anotection (EEx ia+ EEx d +	d		0 3 1 2 A B D P	
Non-wetted parts may be Housing made of di Housing stainless s' Version  Standard versions International version documentation in 5  Explosion protection  None  With ATEX, Type of - "Intrinsic safety (E - "Explosion-proof (I - "Intrinsic safety and (EEx ia + EEx d)" - "Ex nA/nL (Zone 2 - "Intrinsic safety, ex dust explosion produst explosion product ex	aterials e-cast aluminium teel precision casting <sup>5)</sup> n, English label inscriptions languages on CD  n  protection: Ex ia)" EEx d)" <sup>6)</sup> Id flameproof enclosure" )" plosion-proof enclosure anotection (EEx ia+ EEx d + Decision Proof (is + xp)" <sup>6</sup> pe of protection: Explosion Proof (is + xp)" <sup>6</sup>	d		0 3 1 2 A B D P E R	,
Non-wetted parts ma  Housing made of di Housing stainless s' Version Standard versions International versior documentation in 5  Explosion protection None With ATEX, Type of Intrinsic safety (E "Explosion-proof (I "Intrinsic safety an (EEx ia + EEx d)" "Ex nA/nL (Zone 2 "Intrinsic safety, ex dust explosion pro Zone 1D/2D)" With FM + CSA, Typ "Intrinsic Safe und	aterials e-cast aluminium teel precision casting <sup>5)</sup> n, English label inscriptions languages on CD  n  protection: Ex ia)" EEx d)*6) d flameproof enclosure" )" plosion-proof enclosure and tection (EEx ia+ EEx d + ibe of protection: Explosion Proof (is + xp)*6 n / cable entry	d		0 3 1 2 A B D P E R	
Non-wetted parts may be a considered parts of the Housing made of di Housing stainless so the Housing stainless safety (E - "Explosion-proof (I - "Intrinsic safety and (EEx ia + EEx d)" - "Ex nA/nL (Zone 2 - "Intrinsic safety, ex dust explosion produst explosion product e	aterials e-cast aluminium teel precision casting <sup>5)</sup> n, English label inscriptions languages on CD  protection: Ex ia)" EEx d)*6) d flameproof enclosure" )" plosion-proof enclosure and encoure and encoure tection (EEx ia+ EEx d + incomplete tection) Explosion Proof (is + xp)*6  n / cable entry 13.58)	d		0 3 1 2 A B D P E R	١
Non-wetted parts ma  Housing made of di Housing stainless si Version Standard versions International version documentation in 5  Explosion protection None With ATEX, Type of "Intrinsic safety (E "Explosion-proof (I "Intrinsic safety an (EEx ia + EEx d)" "Ex nA/nL (Zone 2 "Intrinsic safety, ex dust explosion pro Zone 1D/2D)" With FM + CSA, Typ "Intrinsic Safe und Electrical connectio Screwed gland M20 Screwed gland M20 Screwed gland M20	aterials e-cast aluminium teel precision casting <sup>5)</sup> n, English label inscriptions languages on CD  n  protection: Ex ia)" EEx d)" <sup>6)</sup> d flameproof enclosure" )" plosion-proof enclosure anotection (EEx ia+ EEx d + be of protection: Explosion Proof (is + xp)" <sup>6</sup> n / cable entry 13.5 <sup>8)</sup> bx1.5 4 NPT	d		0 3 1 2 A B D P E R	۱ 3
Non-wetted parts ma  Housing made of di Housing stainless si Version Standard versions International version documentation in 5  Explosion protection None With ATEX, Type of - "Intrinsic safety (E - "Explosion-proof (I - "Intrinsic safety an (EEx ia + EEx d)" - "Ex nA/nL (Zone 2 - "Intrinsic safety, ex dust explosion protection (I - "Intrinsic safe und I - "Intrinsic safe	aterials e-cast aluminium teel precision casting <sup>5)</sup> n, English label inscriptions languages on CD  protection: Ex ia)" EEx d)*6) d flameproof enclosure" )" plosion-proof enclosure anotection (EEx ia+ EEx d + be of protection: Explosion Proof (is + xp)*6 n / cable entry 13.58) bx1.5	d		0 3 1 2 A B D P E R	\ 3 ;
Non-wetted parts ma  Housing made of di Housing stainless si Version Standard versions International version documentation in 5  Explosion protection None With ATEX, Type of "Intrinsic safety (E "Explosion-proof (I "Intrinsic safety an (EEx ia + EEx d)" "Ex nA/nL (Zone 2 "Intrinsic safety, ex dust explosion pro Zone 1D/2D)" With FM + CSA, Typ "Intrinsic Safe und Electrical connectio Screwed gland M20 Screwed gland M20 Screwed gland M20	aterials e-cast aluminium teel precision casting <sup>5)</sup> n, English label inscriptions languages on CD  protection: Ex ia)" EEx d)" old flameproof enclosure anotection (EEx ia+ EEx d + be of protection: Explosion-proof (is + xp)" on / cable entry 13.58) bx1.5 4 NPT c housing) incl. mating	d		0 3 1 2 A B D P E R	A 3 5 0

Selection and Ordering data	Order No.
	7MF4233-
aus series pressure, SITRANS P DS III HART	
Display	
Without indicator	0
<ul> <li>Without visible digital indicator(digital indicator concealed, setting: mA)</li> </ul>	1
With visible digital indicator	6
<ul> <li>with customer-specific digital indicator (setting as specified, Order Code "Y21" or "Y22" re- quired)</li> </ul>	7

Power supply units see Chap. 8 "Supplementary Components".

Included in delivery of the device:

- Brief instructions (Leporello)
- CD-ROM with detailed documentation
- 1) For oxygen application, add Order code E10.
- <sup>2)</sup> Version 7MF4233-1DY... only up to max. span 200 mbar a (2.9 psi a).
- 3) 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. 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.
- 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 respective remote seals.
- 5) Not in conjunction with Electrical connection "Screwed gland Pg 13.5" and "Han7D plug".
- 6) Without cable gland, with blanking plug.
- 7) With enclosed cable gland EEx ia and blanking plug.
- 8) Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".
- <sup>9)</sup> M12 delivered without cable socket
- F) Subject to export regulations AL: 91999, ECCN: N.

# Pressure Measurement Transmitters for general requirements

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

Selection and Orderin	•		Orde	er No	Ο.	
	(from the gauge pres-					
sure series)						
SITRANS P DS III PA (	•		7 M F			
SITRANS P DS III FF (I	FOUNDATION Fieldbus)	F)	7 M F	4 2	3 5	-
					•	-
Measuring cell filling	Measuring cell clean-					
0111	ing					
Silicone oil Inert liquid <sup>1)</sup>	normal Grease-free		1			
		_	3			
<b>Nominal measuring ra</b> 250 mbar a	(3.63 psi a)		D			
230 mbar a 1300 mbar a	(3.63 psi a) (18.9 psi a)		F			
5 bar a	(72.5 psi a)		Ġ			
30 bar a	(435 psi a)		H			
Wetted parts materials		-				
Seal diaphragm	Process connection					
Stainless steel	Stainless steel	F)	Δ			
Hastelloy	Stainless steel	F)	E			
Hastellov	Hastellov	F)	C			
Version ås diaphragm s	seal <sup>2) 3) 4)</sup>	1	Υ	'		
Process connection						
• Connection shank G1/	2B to EN 837-1			0		
• Female thread 1/2-14 N	NPT			1		
<ul> <li>Stainless steel oval_fla</li> </ul>						
- Mounting thread <sup>7</sup> / <sub>16</sub> -20 UNF to EN 61518				2		
- Mounting thread M10 to DIN 19213				3		
- Mounting thread M12 to DIN 19213				4		
<ul> <li>Male thread M20 x 1.5</li> <li>Male thread ½ -14 NPT</li> </ul>				5 6		
				_		
Non-wetted parts mate • Housing made of die-				0		
<ul> <li>Housing made of die-</li> <li>Housing stainless ster</li> </ul>				3		
Version	or prodiction dudining			_		
Standard versions					1	
	English label inscriptions,				2	
documentation in 5 la						
Explosion protection						
• None						Α
• With ATEX, Type of protection:						
- "Intrinsic safety (EEx ia)"						В
- "Explosion-proof (EEx d)" <sup>5)</sup>						D
- "Intrinsic safety and flameproof enclosure" (EEx ia + EEx d)" <sup>6)</sup>						Р
- "Ex nA/nL"						Е
- "Intrinsic safety, explosion-proof enclosure and						R
dust explosion protection (FEx ia + FEx d +						
Zone 1D/2D) <sup>"6)</sup> (not						
<ul> <li>With FM + CSA, Type of protection:</li> <li>"Intrinsic Safe und Explosion Proof (is + xp)"5)</li> </ul>						
						NC
Electrical connection	•					
<ul> <li>Screwed gland M20 x</li> </ul>						В
<ul> <li>Screwed gland ½-14</li> <li>M12 connectors (met</li> </ul>						C F
• IVI I∠ CONNECTORS (Metal	al) ′					-

Selection and Ordering data	Order No.	
For absolute pressure (from the gauge pressure series)		
SITRANS P DS III PA (PROFIBUS PA)	7 M F 4 2 3 4 -	
SITRANS P DS III FF (FOUNDATION Fieldbus) F)	7 M F 4 2 3 5 -	
Display		
Without indicator		0
Without visible digital indicator     (digital indicator and a setting up A)		1
(digital indicator concealed, setting: mA)		_
With visible digital indicator		6
<ul> <li>with customer-specific digital indicator (setting as specified, Order Code "Y21" or "Y22" required)</li> </ul>		7

Included in delivery of the device:

- Brief instructions (Leporello)
- CD-ROM with detailed documentation
- 1) For oxygen application, add Order code E10.
- <sup>2)</sup> Version 7MF4233-1DY... only up to max. span 200 mbar a (2.9 psi a).
- 3) 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.
- 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 respective remote seals.
- 5) Without cable gland, with blanking plug.
- 6) With enclosed cable gland EEx ia and blanking plug.
- 7) M12 delivered without cable socket
- F) Subject to export regulations AL: 91999, ECCN: N.

# Transmitters for general requirements

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

## Further designs	Selection and Ordering data	Order	code		
Specify Order Code.  Pressure transmitter with mounting bracket (2 shackles, 4 nuts, 4 U-plates, 1 angle) made of:  Stainless steel  A01				PA	FF
• Steel	bracket (2 shackles, 4 nuts, 4 U-plates,				
Plug  Han 7D (metal, gray)  A30  Han 8U (instead of Han 7D)  A31  A32  A33  Cable sockets for M12 connectors (metal)  English  English  Erench  Spanish  B11  Spanish  B13  Rating plate  Spanish  B14  English rating plate  Pressure units in inH <sub>2</sub> 0 and/or psi  Quality inspection certificate (factory calibration) to IEC 60770-2¹)  Inspection certificate  Acc. to EN 10204-3.1  Factory certificate  Acc. to EN 10204-2.2  "Functional safety (SIL2)" certificate  C14  Setting of upper limit of output signal to 22.0 mA  Manufacturer's declaration acc. to NACE  Degree of protection IP68 (only for M20 x 1.5 and ½-14 NPT)  Supplied with oval flange  (1 item), PTFE packing and screws in thread of oval flange  Use in or on zone 1D/2D  (only together with type of protection 'Intrinsic safety (EEx ia)'  Oxygen application (In the case of oxygen measurement and inert liquid max. 120 bar a (1740 psi a) at 60°C (140 °F))  Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B.)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B.)  Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4B.)  Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4B.)  Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4B.)  Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4B.)	<del>•</del> •			✓	✓
<ul> <li>Han 7D (metal, gray)</li> <li>Han 8U (instead of Han 7D)</li> <li>A31  ✓</li> <li>Angled</li> <li>A32  ✓</li> <li>Han 8D (metal, gray)</li> <li>A33  ✓</li> <li>Cable sockets for M12 connectors (metal)</li> <li>A50  ✓  ✓</li> <li>Rating plate inscription (instead of German)</li> <li>English</li> <li>English</li> <li>B11  ✓  ✓  ✓</li> <li>French</li> <li>Spanish</li> <li>B13  ✓  ✓  ✓</li> <li>Spanish</li> <li>Italian</li> <li>B14  ✓  ✓  ✓</li> <li>English rating plate</li> <li>Pressure units in inH₂0 and/or psi</li> <li>Quality inspection certificate (factory calibration) to IEC 60770-2¹¹)</li> <li>Inspection certificate²</li> <li>Acc. to EN 10204-3.1</li> <li>Factory certificate</li> <li>Acc. to EN 10204-2.2</li> <li>"Functional safety (SIL2)" certificate</li> <li>C20  ✓</li> <li>PROFisafe certificate and protocol</li> <li>"Functional safety (SIL2/3)" certificate</li> <li>C23  ✓</li> <li>Setting of upper limit of output signal to 22.0 mA</li> <li>Manufacturer's declaration acc. to NACE</li> <li>D05  ✓</li> <li>Setting of upper limit of output signal to 22.0 mA</li> <li>Manufacturer's declaration acc. to NACE</li> <li>D07  ✓  ✓  ✓</li> <li>Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flange</li> <li>Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")</li> <li>Oxygen application (In the case of oxygen measurement and inert liquid max. 120 bar a (1740 psi a) at 60°C (140 °F))</li> <li>Explosion-proof "Intrinsic safety" to INMETRO (Brazi)</li> <li>(only for transmitter 7MF4B)</li> <li>Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)</li> <li>Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4B)</li> <li>Explosion-proof "Intrinsic safety" to NEPSI</li> <li>E55  ✓  ✓  ✓</li> </ul>	Stainless steel	A02	✓	✓	✓
• Han 8U (instead of Han 7D) • Angled • Angled • Han 8D (metal, gray)  Cable sockets for M12 connectors (metal)  Rating plate inscription (instead of German) • English • French • Spanish • B11 • V • V  Spanish • Italian  B14 • V • V  English rating plate Pressure units in inH <sub>2</sub> O and/or psi  Quality inspection certificate (factory calibration) to IEC 60770-2¹)  Inspection certificate Acc. to EN 10204-3.1  Factory certificate Acc. to EN 10204-2.2  "Functional safety (SIL2)" certificate PROFisafe certificate and protocol 22.0 mA  Manufacturer's declaration acc. to NACE Degree of protection IP68 (only for M20 x 1.5 and ½-14 NPT)  Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flange  Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")  Oxygen application (In the case of oxygen measurement and inert liquid max. 120 bar a (1740 psi a) at 60°C (140 °F))  Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)	. •	A20	1		
• Angled • Han 8D (metal, gray)  Cable sockets for M12 connectors (metal)  Rating plate inscription (instead of German) • English • French • Spanish • Italian • Italian  But Pressure units in inH <sub>2</sub> 0 and/or psi  Quality inspection certificate (factory calibration) to IEC 60770-2¹)  Inspection certificate² Acc. to EN 10204-3.1  Factory certificate Acc. to EN 10204-2.2  "Functional safety (SIL2)" certificate C23  "Functional safety (SIL2)" certificate C23  "Functional safety (SIL2/3)" certificate C23  "Functional safety (SIL2/3)" certificate C24  Ranufacturer's declaration acc. to NACE D05  Setting of upper limit of output signal to 22.0 mA  Manufacturer's declaration acc. to NACE Only for M20 x 1.5 and ½-14 NPT)  Supplied with oval flange (1 item), PTEE packing and screws in thread of oval flange Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")  Oxygen application (In the case of oxygen measurement and inert liquid max. 120 bar a (1740 psi a) at 60°C (140°F))  Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)					
Cable sockets for M12 connectors (metal)  Rating plate inscription (instead of German)  • English French • Spanish • Italian  English rating plate Pressure units in inH <sub>2</sub> 0 and/or psi  Quality inspection certificate (factory calibration) to IEC 60770-2¹) Inspection certificate² Acc. to EN 10204-3.1  Factory certificate Acc. to EN 10204-2.2  "Functional safety (SIL2)" certificate PROFIsafe certificate and protocol "Functional safety (SIL2/3)" certificate Setting of upper limit of output signal to 22.0 mA  Manufacturer's declaration acc. to NACE Degree of protection IP68 (only for M20 x 1.5 and ½-14 NPT)  Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flange  Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")  Oxygen application (In the case of oxygen measurement and inert liquid max. 120 bar a (1740 psi a) at 60°C (140°F))  Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Explosion-proof "Intrinsic safety" to NEPSI (China)	,	A32	✓		
Rating plate inscription (instead of German)  • English • French • Spanish • Italian  English rating plate Pressure units in inH <sub>2</sub> 0 and/or psi  Quality inspection certificate (factory calibration) to IEC 60770-2¹)  Inspection certificate² Acc. to EN 10204-3.1  Factory certificate PROFIsafe certificate and protocol "Functional safety (SIL2)" certificate C20 "Functional safety (SIL2/3)" certificate C21 "Functional safety (SIL2/3)" certificate C23  Setting of upper limit of output signal to 22.0 mA  Manufacturer's declaration acc. to NACE D07  Supplied with oval flange (I item), PTFE packing and screws in thread of oval flange Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")  Oxygen application (In the case of oxygen measurement and inert liquid max. 120 bar a (1740 psi a) at 60°C (140°F))  Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B.)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B.)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B.)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B.)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B.)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B.)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B.)	<ul><li>Han 8D (metal, gray)</li></ul>	A33	✓		
(instead of German)  • English • English • French • Spanish • Italian • Italian • Italian • English rating plate • English rating plate • Pressure units in inH <sub>2</sub> 0 and/or psi  Quality inspection certificate (factory calibration) to IEC 60770-2¹¹)  Inspection certificate²² Cc. to EN 10204-3.1  Factory certificate Acc. to EN 10204-2.2  "Functional safety (SIL2)" certificate PROFIsafe certificate and protocol "Functional safety (SIL2/3)" certificate C23  Setting of upper limit of output signal to 22.0 mA  Manufacturer's declaration acc. to NACE Dogree of protection IP68 (only for M20 x 1.5 and ½-14 NPT)  Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flange  Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")  Oxygen application (In the case of oxygen measurement and inert liquid max. 120 bar a (1740 psi a) at 60°C (140°F))  Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B.)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B.)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B.)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B.)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B.)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B.)	Cable sockets for M12 connectors (metal)	A50	✓	✓	✓
• English • French • French • Spanish • French • Spanish • Italian • Italian • Italian • Italian • English rating plate Pressure units in inH <sub>2</sub> 0 and/or psi  Quality inspection certificate (factory calibration) to IEC 60770-2 <sup>1)</sup> Inspection certificate (factory carificate Acc. to EN 10204-3.1  Factory certificate Acc. to EN 10204-2.2  "Functional safety (SIL2)" certificate PROFIsafe certificate and protocol "Functional safety (SIL2/3)" certificate Setting of upper limit of output signal to 22.0 mA  Manufacturer's declaration acc. to NACE D07  Manufacturer's declaration acc. to NACE D07  Degree of protection IP68 (only for M20 x 1.5 and ½-14 NPT)  Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flange Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")  Oxygen application (In the case of oxygen measurement and inert liquid max. 120 bar a (1740 psi a) at 60°C (140°F))  Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4B)	- · · · · · · · · · · · · · · · · · · ·				
• French • Spanish • Italian B13 • Italian B14 • Italian Pressure units in inH <sub>2</sub> 0 and/or psi  Quality inspection certificate (factory calibration) to IEC 60770-2¹) Inspection certificate  Quality inspection certificate (factory calibration) to IEC 60770-2¹) Inspection certificate Acc. to EN 10204-3.1 Factory certificate Acc. to EN 10204-2.2 "Functional safety (SIL2)" certificate PROFIsafe certificate and protocol "Functional safety (SIL2/3)" certificate C23 • Italian Setting of upper limit of output signal to 22.0 mA  Manufacturer's declaration acc. to NACE D07 • Italian Manufacturer's declaration acc. to NACE D07  Degree of protection IP68 (only for M20 x 1.5 and ½-14 NPT)  Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flange  Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")  Oxygen application (In the case of oxygen measurement and inert liquid max. 120 bar a (1740 psi a) at 60°C (140°F))  Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4B)  Explosion-proof "Intrinsic safety" to NEPSi (China)	,	D11	1	1	1
• Spanish • Italian B14 • Italian B14  Fenglish rating plate Pressure units in inH <sub>2</sub> 0 and/or psi  Quality inspection certificate (factory calibration) to IEC 60770-2 <sup>1)</sup> Inspection certificate <sup>2)</sup> Acc. to EN 10204-3.1 Factory certificate Acc. to EN 10204-2.2  "Functional safety (SIL2)" certificate PROFIsafe certificate and protocol "Functional safety (SIL2/3)" certificate  Setting of upper limit of output signal to 22.0 mA  Manufacturer's declaration acc. to NACE Degree of protection IP68 (only for M20 x 1.5 and ½-14 NPT)  Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flange Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")  Oxygen application (In the case of oxygen measurement and inert liquid max. 120 bar a (1740 psi a) at 60°C (140°F))  Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4B)  Explosion-proof "Intrinsic safety" to NEPSi (China)	· ·			<b>*</b>	<b>*</b>
English rating plate Pressure units in inH <sub>2</sub> 0 and/or psi  Quality inspection certificate (factory calibration) to IEC 60770-2 <sup>1)</sup> Inspection certificate <sup>2)</sup> Acc. to EN 10204-3.1  Factory certificate Acc. to EN 10204-2.2  "Functional safety (SIL2)" certificate PROFIsafe certificate and protocol "Functional safety (SIL2/3)" certificate Setting of upper limit of output signal to 22.0 mA  Manufacturer's declaration acc. to NACE Dogree of protection IP68 (only for M20 x 1.5 and ½-14 NPT)  Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flange  Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")  Oxygen application (In the case of oxygen measurement and inert liquid max. 120 bar a (1740 psi a) at 60°C (140°F))  Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Explosion-proof "Intrinsic safety" to NEPSi (China)		B13			✓
Pressure units in inH <sub>2</sub> 0 and/or psi  Quality inspection certificate (factory calibration) to IEC 60770-2¹)  Inspection certificate²)  Acc. to EN 10204-3.1  Factory certificate  Acc. to EN 10204-2.2  "Functional safety (SIL2)" certificate  PROFIsafe certificate and protocol  "Functional safety (SIL2/3)" certificate  Setting of upper limit of output signal to 22.0 mA  Manufacturer's declaration acc. to NACE  Degree of protection IP68 (only for M20 x 1.5 and ½-14 NPT)  Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flange  Use in or on zone 1D/2D  (only together with type of protection "Intrinsic safety (EEx ia)")  Oxygen application (In the case of oxygen measurement and inert liquid max. 120 bar a (1740 psi a) at 60°C (140 °F))  Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4B)  Explosion-proof "Intrinsic safety" to NEPSI (China)	• Italian	B14	✓	✓	✓
Quality inspection certificate (factory calibration) to IEC 60770-2¹)  Inspection certificate²)  Acc. to EN 10204-3.1  Factory certificate  Acc. to EN 10204-2.2  "Functional safety (SIL2)" certificate  PROFIsafe certificate and protocol  "Functional safety (SIL2/3)" certificate  Setting of upper limit of output signal to 22.0 mA  Manufacturer's declaration acc. to NACE  Degree of protection IP68 (only for M20 x 1.5 and ½-14 NPT)  Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flange  Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")  Oxygen application (In the case of oxygen measurement and inert liquid max. 120 bar a (1740 psi a) at 60°C (140 °F))  Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4B)  Explosion-proof "Intrinsic safety" to NEPSI (china)		B21	✓	✓	✓
Inspection certificate <sup>2)</sup> Acc. to EN 10204-3.1  Factory certificate Acc. to EN 10204-2.2  "Functional safety (SIL2)" certificate PROFIsafe certificate and protocol "Functional safety (SIL2/3)" certificate C23  Setting of upper limit of output signal to 22.0 mA  Manufacturer's declaration acc. to NACE Degree of protection IP68 (only for M20 x 1.5 and ½-14 NPT)  Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flange Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")  Oxygen application (In the case of oxygen measurement and inert liquid max. 120 bar a (1740 psi a) at 60°C (140 °F))  Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4D)  Explosion-proof "Intrinsic safety" to NEPSI (China)					
Factory certificate Acc. to EN 10204-2.2  "Functional safety (SIL2)" certificate PROFIsafe certificate and protocol "Functional safety (SIL2/3)" certificate  Setting of upper limit of output signal to 22.0 mA  Manufacturer's declaration acc. to NACE Degree of protection IP68 (only for M20 x 1.5 and ½-14 NPT)  Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flange Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")  Oxygen application (In the case of oxygen measurement and inert liquid max. 120 bar a (1740 psi a) at 60°C (140 °F))  Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4D)  Explosion-proof "Intrinsic safety" to NEPSI (China)	(factory calibration) to IEC 60770-2 <sup>1)</sup>	C11	✓	✓	✓
Acc. to EN 10204-2.2  "Functional safety (SIL2)" certificate PROFIsafe certificate and protocol  "Functional safety (SIL2/3)" certificate  Setting of upper limit of output signal to 22.0 mA  Manufacturer's declaration acc. to NACE Degree of protection IP68 (only for M20 x 1.5 and ½-14 NPT)  Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flange  Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")  Oxygen application (In the case of oxygen measurement and inert liquid max. 120 bar a (1740 psi a) at 60°C (140 °F))  Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4D)  Explosion-proof "Intrinsic safety" to NEPSI (China)		C12	✓	✓	✓
PROFIsafe certificate and protocol  "Functional safety (SIL2/3)" certificate  Setting of upper limit of output signal to 22.0 mA  Manufacturer's declaration acc. to NACE  Degree of protection IP68 (only for M20 x 1.5 and ½-14 NPT)  Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flange  Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")  Oxygen application (In the case of oxygen measurement and inert liquid max. 120 bar a (1740 psi a) at 60°C (140 °F))  Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4D)  Explosion-proof "Intrinsic safety" to NEPSI (China)		C14	✓	✓	✓
"Functional safety (SIL2/3)" certificate  Setting of upper limit of output signal to 22.0 mA  Manufacturer's declaration acc. to NACE  Degree of protection IP68 (only for M20 x 1.5 and ½-14 NPT)  Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flange  Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")  Oxygen application (In the case of oxygen measurement and inert liquid max. 120 bar a (1740 psi a) at 60°C (140 °F))  Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4D)  Explosion-proof "Intrinsic safety" to NEPSI (China)	"Functional safety (SIL2)" certificate	C20	✓		
Setting of upper limit of output signal to 22.0 mA  Manufacturer's declaration acc. to NACE  Degree of protection IP68 (only for M20 x 1.5 and ½-14 NPT)  Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flange  Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")  Oxygen application (In the case of oxygen measurement and inert liquid max. 120 bar a (1740 psi a) at 60°C (140 °F))  Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4D)  Explosion-proof "Intrinsic safety" to NEPSI (China)	PROFIsafe certificate and protocol	C21		1	
22.0 mA  Manufacturer's declaration acc. to NACE  Degree of protection IP68 (only for M20 x 1.5 and ½-14 NPT)  Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flange  Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")  Oxygen application (In the case of oxygen measurement and inert liquid max. 120 bar a (1740 psi a) at 60°C (140 °F))  Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4D)  Explosion-proof "Intrinsic safety" to NEPSI (China)	"Functional safety (SIL2/3)" certificate	C23	✓		
Degree of protection IP68 (only for M20 x 1.5 and ½-14 NPT)  Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flange  Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")  Oxygen application (In the case of oxygen measurement and inert liquid max. 120 bar a (1740 psi a) at 60°C (140°F))  Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4D)  Explosion-proof "Intrinsic safety" to NEPSI (China)		D05	1		
(only for M20 x 1.5 and ½-14 NPT)  Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flange  Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")  Oxygen application (In the case of oxygen measurement and inert liquid max. 120 bar a (1740 psi a) at 60°C (140°F))  Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4D)  Explosion-proof "Intrinsic safety" to NEPSI (China)	Manufacturer's declaration acc. to NACE	D07	✓	✓	✓
(1 item), PTFE packing and screws in thread of oval flange  Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")  Oxygen application (In the case of oxygen measurement and inert liquid max. 120 bar a (1740 psi a) at 60°C (140 °F))  Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4D)  Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4D)  Explosion-proof "Intrinsic safety" to NEPSI (China)	Degree of protection IP68 (only for M20 x 1.5 and ½-14 NPT)	D12	✓	✓	✓
(only together with type of protection "Intrinsic safety (EEx ia)")  Oxygen application (In the case of oxygen measurement and inert liquid max. 120 bar a (1740 psi a) at 60°C (140°F))  Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4D)  Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4D)  Explosion-proof "Intrinsic safety" to NEPSI (China)	(1 item), PTFE packing and screws in thread	D37	✓	✓	✓
"Intrinsic safety (EEx ia)")  Oxygen application (In the case of oxygen measurement and inert liquid max. 120 bar a (1740 psi a) at 60°C (140°F))  Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4D)  Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4D)  Explosion-proof "Intrinsic safety" to NEPSI (China)	•	E01	✓	✓	✓
(In the case of oxygen measurement and inert liquid max. 120 bar a (1740 psi a) at 60°C (140°F))  Explosion-proof "Intrinsic safety" to INMETRO (Brazil) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4D)  Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4D)  Explosion-proof "Intrinsic safety" to NEPSI (China)					
INMETRO (Brazil)  (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx ia)  (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx id)  (only for transmitter 7MF4D)  Explosion-proof "Intrinsic safety" to NEPSI (China)	(In the case of oxygen measurement and inert liquid max. 120 bar a (1740 psi a) at 60°C	E10	✓	✓	✓
Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4D)  Explosion-proof "Intrinsic safety" to NEPSI (China)		E25	✓	✓	✓
(only for transmitter 7MF4B)  Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4D)  Explosion-proof "Intrinsic safety" to NEPSI (China)	(only for transmitter 7MF4B)				
(only for transmitter 7MF4D)  Explosion-proof "Intrinsic safety" to NEPSI E55 ✓ ✓ ✓ (China)	• • • • • • • • • • • • • • • • • • • •	E45	✓	✓	✓
Explosion-proof "Intrinsic safety" to NEPSI E55	• • • • • • • • • • • • • • • • • • • •	E46	✓	✓	✓
	Explosion-proof "Intrinsic safety" to NEPSI	E55	✓	✓	✓
	•				

Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "-Z" to Order No. and specify Order Code.				
Explosion protection "Explosion-proof" to NEPSI (China)	E56	✓	✓	✓
(only for transmitter 7MF4D)				
<b>Explosion-proof "Zone 2" to NEPSI (China)</b> (only for transmitter 7MF4E)	E57	✓	✓	✓
Two coats of lacquer on casing and cover (PU on epoxy)	G10	✓	1	✓
Additional data				
Please add "-Z" to Order 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	✓		
Stainless steel tag plate (measuring point description)  Max. 16 characters, specify in plain text: Y15:	Y15	✓	✓	✓
Measuring point text 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 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>3)</sup> Specify in plain text: Y22: up to //min, m <sup>3</sup> /h, m, USgpm, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	Y22 + Y01	<b>√</b>		
Preset bus address possible between 1 and 126 Specify in plain text: Y25:	Y25		✓	

Factory mounting of valve manifolds, see accessories.

Only "Y01", "Y21", "Y22", "Y25" and "D05" can be factory preset

✓ = available

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.

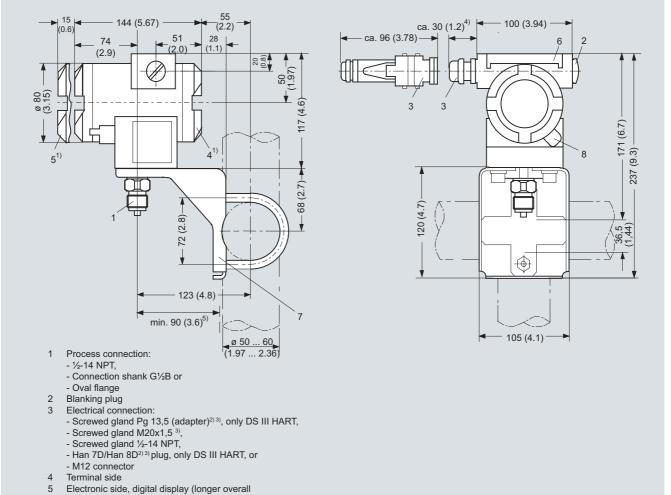
<sup>2)</sup> If the acceptance test certificate 3.1 is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.

<sup>3)</sup> 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



- Allow approx. 20 mm (0.79 inch) thread length to permit unscrewing
  - 2) Not with type of protection "Explosion-proof enclosure"
- 3)
- Not with type of protection "FM + CSA" [is + xp]" For Pg 13,5 with adapter approx. 45 mm (1.77 inch) 4)
- Minimum distance for rotating

"Explosion-proof enclosure", not shown in the drawing)

Screw cover - safety bracket (only for type of protection

length for cover with window)

Protective cover over keys

Mounting bracket (option)

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

Pressure Measurement
Transmitters for general requirements
SITRANS P DS III for absolute pressure
(from differential pressure series)

# Technical specifications

Technical specifications					
SITRANS P, DS III for absolute pressure (from		re series)			
	HART		PROFIBUS PA and FO	OUNDATION Fieldbus	
Input					
Measured variable	Absolute pressure				
Spans (infinitely adjustable) or nominal measuring range and max. permissible operating pressure	Span (infinitely adjustable)			Maximum operating pressure	
	8.3 250 mbar a (0.12 3.6 psi a)	32 bar a (464 psi a)	250 mbar a (3.6 psi a)	32 bar a (464 psi a)	
	43 1300 mbar a (0.62 18.9 psi a)	32 bar a (464 psi a)	1300 bar a (18.9 psi a)	32 bar a (464 psi a)	
	160 5000 mbar a (2.32 72.5 psi a)	32 bar a (464 psi a)	5 bar a (72.5 psi a)	32 bar a (464 psi a)	
	1 30 bar a (14.5 435 psi a)	160 bar a (2320 psi a)	30 bar a (435 psi a)	160 bar a (2320 psi a)	
	5.3 100 bar a (76.9 1450 psi a)	160 bar a (2320 psi a) (for connection thread M10 and 7/16-20 UNF in the process flanges)	100 bar a (1450 psi a)	160 bar a (2320 psi a) (for connection thread M10 and 7/16-20 UNF in the process flanges)	
Lower measuring limit		ı		'	
Measuring cell with silicone oil filling		0 mbar a	a (0 psi a)		
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 communication	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.02$ $U_{\rm H}$ : Power supply in V	3 A in Ω,	-		
With HART communication	$R_{\rm B}$ = 230 500 $\Omega$ (SIM $R_{\rm B}$ = 230 1100 $\Omega$ (HA		-		
Physical bus	-		IEC 61158-2		
Protection against polarity reversal	Protected against short		rsal. Each connection a voltage.	gainst the other with max.	
Measuring accuracy		Acc. to E	N 60770-1		
Reference conditions (All error data refer always refer to the set span)	Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil filling, room temperature 25 °C (77 °F)) r: Span ratio (r = max. span / set span)				
Error in measurement and fixed-point setting (including hysteresis and repeatability)					
Linear characteristic			≤ 0.1 %		
- r ≤ 10	≤ 0.1 %				
- 10 < r ≤ 30	≤ 0.2 %				
Long-term drift (temperature change $\pm$ 30 °C ( $\pm$ 54 °F))	≤ (0.1 · r) %/year		≤ 0.1 %/year		
Influence of ambient temperature					
• at -10 +60 °C (14 140 °F)	$\leq$ (0.1 · r + 0.2) %		≤ 0.3 %		
• at -4010 °C and 60 85 °C (-40 +14 °F and 140 185 °F)	$\leq$ (0.1 · r + 0.15) %/10 k		≤ 0.25 %/10 K		
Measured Value Resolution	-		$3 \cdot 10^{-5}$ of nominal mea	asuring range	

# Pressure Measurement Transmitters for general requirements SITRANS P DS III for absolute pressure (from differential pressure series)

	the differential pressure series) HART	PROFIBUS PA and FOUNDATION Fieldbus	
Rated conditions	HART	FROI IDOS FA AIIU I CONDATION I IEIGDUS	
Degree of protection (to EN 60529)	11	P65	
	"	1 03	
Temperature of medium  Measuring cell with silicone oil filling	40 ±100 °C	C (-40 +212 °F)	
Measuring cell with sincone on filling    Measuring cell with inert filling liquid		C (-4 +212 °F)	
		· ·	
In conjunction with dust explosion protection	-20 +60 °C (-4 +140 °F)		
Ambient conditions			
Ambient temperature	20 .05.90	/ 00 . 10E 9E)	
- Digital indicator		(-22 +185 °F)	
• Storage temperature	-50 +85 °C	(-58 +185 °F)	
• Climatic class			
- Condensation		idity 0 100 % suitable for use in the tropics	
Electromagnetic Compatibility	,		
- Emitted interference and interference immu-	Acc. to EN 61326	and NAMUR NE 21	
nity			
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. 1.440		
Wetted parts materials			
• Seal diaphragm	Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819, Monel, mat. no. 2.43 tantalum or gold		
<ul> <li>Process flanges and sealing screw</li> </ul>	Stainless steel, mat. no. 1.4408, Hastelloy 0	C4, mat. no. 2.4610 or Monel, mat. no. 2.4360	
O-Ring	FPM (Viton) or optionally:	PTFE, FEP, FEPM and NBR	
Measuring cell filling		ue with oxigen measurement pressure 120 bar a) t 60 °C (140 °F))	
Process connection		nting thread M10 to DIN 19213 or <sup>7</sup> / <sub>16</sub> -20 UNF 161518	
Material of mounting bracket			
• Steel	Sheet-steel, Mat. No.	1.0330, chrome-plated	
Stainless steel	Sheet stainless steel, i	mat. no. 1.4301 (SS 304)	
Power supply $oldsymbol{\it U}_{ m H}$		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	
• Start-up current ≤ basic current	-	Yes	
Max. current in event of fault	-	15.5 mA	
		Yes	

Pressure Measurement
Transmitters for general requirements
SITRANS P DS III for absolute pressure
(from differential pressure series)

SITRANS P, DS III for absolute pressure (from	HART	PROFIBUS PA and FOUNDATION Fieldbus		
Contification and appropriate	MANI	PROFIDUS PA AIIU FOUNDATION FIEIDDUS		
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 paragraph 3 (sound engineering practice)			
Explosion protection				
Intrinsic safety "i"		ATEX 2122		
- Marking	Ex II 1/2 G EE	x ia/ib IIB/IIC T6		
- Permissible ambient temperature	-40 +70 °C (-40 +15	15 °F) temperature class T4; 18 °F) temperature class T5; 40 °F) temperature class T6		
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}$ , $I_i = 100 \text{ mA}$ ,	FISCO supply unit: $U_0 = 17.5 \text{ V}, I_0 = 380 \text{ mA}, P_0 = 5.32 \text{ W}$		
	$P_{\rm i} = 750 \text{ mW}; R_{\rm i} = 300 \Omega$	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"		ATEX 1160		
- Marking	Ex II 1/2 G E	Ex d IIC T4/T6		
- Permissible ambient temperature	-40 +60 °C (-40 +14	55 °F) temperature class T4; 40 °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	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 V, $I_0$ = 380 mA, $P_0$ = 5.32 W		
	$P_{i} = 30 \text{ W}, \ P_{i} = 100 \text{ H/A}, \ P_{i} = 750 \text{ mW}, \ P_{i} = 300 \Omega$	Linear barrier: $U_0 = 24 \text{ V}$ , $I_0 = 250 \text{ mA}$ , $P_0 = 1.2 \text{ W}$		
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4  {\rm mH},  C_{\rm i} = 6  {\rm nF}$	$L_{i} = 7 \mu H, C_{i} = 1.1 nF$		
Dust explosion protection for zone 21/22	PTB 01 A	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; $P_{\rm max}$ = 1.2 W		
<ul> <li>Type of protection "n" (zone 2)</li> </ul>	TÜV 01 ATEX 1696 X	Planned		
- Marking	Ex II 3 G EEx nA L IIC T4/T5/T6	-		
<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, 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 Co	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			

## Transmitters for general requirements

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

HART communication	
HART communication	230 1100 Ω
Protocol	HART Version 5.x
Software for computer	SIMATIC PDM
PROFIBUS PA communication	
Simultaneous communication with master class 2 (max.)	4
The address can be set using	Configuration tool or local opera tion (standard setting address 126)
Cyclic data usage	
Output byte	5 (one measured value) or 10 (two measured values)
Input byte	0, 1, or 2 (register operating 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	
<ul> <li>Adaptation to customer-specific process variables</li> </ul>	Yes, linearly rising or falling characteristic
<ul> <li>Electrical damping T<sub>63</sub>, adjustable</li> </ul>	0 100 s
- Simulation function	Input /Output
- Failure mode	parameterizable (last good value, substitute value, incorrect value)
- Limit monitoring	Yes, one upper and lower warn- ing 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)
- Limit monitoring	One upper and lower warning limit and one alarm limit respec- tively
Physical block	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 parameterizable ramp function

#### **FOUNDATION Fieldbus** communication

Function blocks

- Analog input
- Adaptation to customer-specific process variables
- Electrical damping T<sub>63</sub>, 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 to 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

Standard FF function block

1 resource block

1 transducer block Pressure with calibration, 1 transducer block

Yes

Constant value or over parameterizable ramp function

## Transmitters for general requirements

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

Selection and Ordering	g data		Orde		
Pressure transmitters for absolute pressure F) from differential pressure series, SITRANS P DS III HART		7 M F		3 3 - - <b></b>	
Measuring cell filling					
0111	ing				
Silicone oil Inert liquid <sup>1)</sup>	normal Grease-free		1		
Measuring span					
8.3 250 mbar a	(0.12 3.63 psi a)	E)	D		
43 1300 mbar a	(0.62 18.9 psi a)	E)	F		
0.16 5 bar a	(2.32 72.5 psi a)	E)	G		
1 30 bar a	(14.5 435 psi a)		Н		
5.3 100 bar a	(76.9 1450 psi a)		KE		
Wetted parts materials Seal diaphragm	Parts of measuring cell				
Stainless steel	Stainless steel	-	А		
Hastelloy	Stainless steel		В		
Hastelloy	Hastelloy		c		
Tantalum	Tantalum		Ē		
Monel	Monel	E)	Н		
Gold	Gold		L		
Version for diaphragm s	eal <sup>2)3)4)</sup>		Υ		
Process connection					
	T with flange connection				
Sealing screw opposit					
- Mounting thread <sup>7</sup> / <sub>16</sub>				2	
<ul> <li>Mounting thread M10 (only for replacement</li> </ul>				0	
<ul> <li>Vent on side of proces</li> </ul>					
- Mounting thread <sup>7</sup> / <sub>16</sub>				6	
- Mounting thread M10				4	
(only for replacemen					
Non-wetted parts mate process flange screws					
Stainless steel	Die-cast aluminum	-		2	
Stainless steel	Stainless steel precision			2	
Statilless steel	casting <sup>6)</sup>			J	
Version					
Standard versions					1
<ul> <li>International version, Education in 5 lar</li> </ul>	English label inscriptions,				2
	Iguages on OD				
<ul><li>Explosion protection</li><li>None</li></ul>					Α
With ATEX, Type of pro	otection:				
- "Intrinsic safety (EEx					В
- "Explosion-proof (EE					D
- "Intrinsic safety and	flameproof enclosure"				P
(EEx ia + EEx d)" 8)					
- "Ex nA/nL (Zone 2)"					E
<ul> <li>"Intrinsic safety, explosion-proof enclosure and dust explosion protection (EEx ia+ EEx d + Zone 1D/2D)*8)</li> </ul>					R
Zone 1D/2D) <sup>#8)</sup>	OUGH (EENIGT EEN GT				
• With FM + CSA, Type	of protection:				
	xplosion Proof (is + xp)" 7	)			NC
Electrical connection /					
<ul> <li>Screwed gland Pg 13.</li> </ul>					A
<ul> <li>Screwed gland M20 x</li> </ul>					В
• Screwed gland ½-14 N	NPT				C
<ul> <li>Han 7D plug (plastic h connector<sup>9)</sup></li> </ul>	iousing) inci. mating				D
M12 connectors (meta)					F
2 33111001010 (111010	,				

Selection and Ordering data	Order No.	
	7MF4333-	
from differential pressure series, SITRANS P DS III HART		
Display		
Without indicator		0
<ul> <li>Without visible digital indicator(digital indicator concealed, setting: mA)</li> </ul>		1
With visible digital indicator		6
with customer-specific digital indicator (setting as specified, Order Code "Y21" or "Y22" required)		7

Power supply units see Chap. 8 "Supplementary Components".

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) For oxygen applications, add Order code E10.
- $^{2)}\,$  Version 7MF4333-1DY... only up to max. span 200 mbar a (2.9 psi a).
- 3) 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.
- 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 respective remote seals.
- 5) Not for span "5.3 ... 100 bar a (76.9 ... 1450 psi a)". Position of the top vent valve in the process flange (see dimensional drawing).
- 6) Not in conjunction with Electrical connection "Screwed gland Pg 13.5" and "Han7D plug".
- 7) Without cable gland, with blanking plug
- 8) With enclosed cable gland EEx ia and blanking plug
- 9) Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".
- 10)M12 delivered without cable socket
- E) Combinations of the versions marked with E) are subject to the export regulations AL: 2B230, ECCN: N.
- F) Subject to export regulations AL: 91999, ECCN: N.

## Pressure Measurement Transmitters for general requirements

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

Selection and Ordering			Orde	r N	0.	
Pressure transmitter for differential press						
SITRANS P DS III PA (I	PROFIBUS PA)	F)	7 M F	4 3	3 4	-
SITRANS P DS III FF (F	FOUNDATION Fieldbus)	F)				
Measuring cell filling	Measuring cell clean-					
Silicone oil	normal		1			
Inert liquid <sup>1)</sup>	Grease-free		3			
Nominal measuring ra	nge					
250 mbar a	(3.63 psi a)	E)	D			
1300 mbar a	(18.9 psi a)	E)	F			
5 bar a	(72.5 psi a)	E)	G			
30 bar a	(435 psi a)		Н			
100 bar a	(1450 psi a)		ΚE			
Wetted parts materials Seal diaphragm	Parts of measuring cell					
Stainless steel	Stainless steel	-	А			
Hastelloy	Stainless steel		B			
Hastelloy	Hastelloy		c			
Tantalum	Tantalum		E			
Monel	Monel	E)	Н			
Gold	Gold	,	L			
Version as diaphragm s	eal <sup>2)3)4)</sup>		Υ			
<ul> <li>Sealing screw opposit</li> <li>Mounting thread <sup>7</sup>/<sub>16</sub></li> <li>Mounting thread M1 (only for replacement</li> </ul>	s-20 UNF to EN 61518 0 to DIN 19213 nt requirement)			2		
<ul> <li>Vent on side of proces</li> <li>Mounting thread <sup>7</sup>/<sub>16</sub></li> </ul>	<sub>3</sub> -20 UNF to EN 61518			6		
- Mounting thread M1 (only for replacemen	nt requirement)			4		
Non-wetted parts mate						
process flange screws		_				
Stainless steel Stainless steel	Die-cast aluminum Stainless steel precision casting	ı		3		
Version						
<ul> <li>Standard versions</li> <li>International version, I documentation in 5 land</li> </ul>	English label inscriptions, nguages on CD				1	
Explosion protection						
• None						Α
With ATEX, Type of pro						
- "Intrinsic safety (EEx						В
- "Explosion-proof (EE						D P
<ul> <li>"Intrinsic safety and (EEx ia + EEx d)" <sup>7)</sup></li> </ul>	nameproor enclosure"					7
- "Ex nA/nL (Zone 2)"						Е
- "Intrinsic safety, expl	osion-proof enclosure and ection (EEx ia + EEx d + for DS III FF)	k				R
• With FM + CSA, Type	of protection:	.,				
- "Intrinsic Safe und E	xplosion Proof (is + xp)" <sup>6</sup>	)				NC
Electrical connection	cable entry					
Screwed gland M20 x						В
• Screwed gland ½-14 l						C
M12 connectors (meta)	d1)⁻′					F

Selection and Ordering data	Order No.	
Pressure transmitter for absolute pressure from differential pressure series		
SITRANS P DS III PA (PROFIBUS PA) F)	7 M F 4 3 3 4 -	
SITRANS P DS III FF (FOUNDATION Fieldbus) $$ $$ $$ $$	7 M F 4 3 3 5 -	
		1
Display		
Without indicator		0
<ul> <li>Without visible digital indicator(digital indicator concealed, setting: mA)</li> </ul>		1
<ul> <li>With visible digital indicator</li> </ul>		6
<ul> <li>With customer-specific digital indicator (setting as specified, Order Code "Y21" required)</li> </ul>		7

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) For oxygen application, add Order code E10.
- $^{2)}\,$  Version 7MF4334-1DY... only up to max. span 200 mbar a (2.9 psi a).
- 3) 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.
- 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 respective remote seals.
- 5) Not for nominal measuring range 100 bar a (1450 psi a). Position of the top vent valve in the process flange (see dimensional drawing).
- 6) Without cable gland, with blanking plug
- $^{7)}$  With enclosed cable gland EEx ia and blanking plug
- 8) M12 delivered without cable socket
- E) Combinations of the versions marked with E) are subject to the export regulations AL: 2B230, ECCN: N.
- F) Subject to export regulations AL: 91999, ECCN: N.

Pressure Measurement
Transmitters for general requirements
SITRANS P DS III for absolute pressure
(from differential pressure series)

	0 1			
Selection and Ordering data	Order			
Further designs Add "-Z" to Order No. and specify Order Code.		HART	PA	FF
Pressure transmitter with mounting bracket (2 shackles, 4 nuts, 4 U-plates, 1 angle) made of:				
• Steel	A01	1	✓	1
• Stainless steel	A02	✓	✓	✓
O-rings for process flanges				
(instead of FPM (Viton))				
• PTFE (Teflon)	A20	✓	✓	✓
• FEP (with silicone core, approved for food)	A21	<b>√</b>	<b>1</b>	<b>V</b>
<ul><li>FFPM (Kalrez, compound 4079)</li><li>NBR (Buna N)</li></ul>	A22 A23	1	1	1
. ,	AZS	v	•	•
• Han 7D (metal, gray)	A30	1		
• Han 8U (instead of Han 7D)	A31	1		
• Angled	A32	✓		
• Han 8D (metal, gray)	A33	✓		
Sealing screw	A40	✓	✓	✓
1/4-18 NPT, with valve in mat. of process flanges				
Cable sockets for M12 connectors (metal)	A50	✓	✓	✓
Rating plate inscription				
<ul><li>(instead of German)</li><li>English</li></ul>	B11	1	1	1
• French	B12	1	1	1
Spanish	B13	✓	✓	✓
• Italian	B14	✓	✓	✓
<b>English rating plate</b> Pressure units in inH <sub>2</sub> 0 and/or psi	B21	✓	✓	✓
Quality inspection certificate (factory calibration) to IEC 60770-2 <sup>1)</sup>	C11	✓	✓	✓
Inspection certificate <sup>2)</sup> Acc. to EN 10204-3.1	C12	✓	✓	✓
Factory certificate Acc. to EN 10204-2.2	C14	✓	✓	✓
"Functional safety (SIL2)" certificate	C20	1		
PROFIsafe certificate and protocol	C21		1	
"Functional safety (SIL2/3)" certificate	C23	1		
Setting of upper limit of	D05	✓		
output signal to 22.0 mA				
<b>Manufacturer's declaration acc. to NACE</b> (only together with seal diaphragm made of Hastelloy and stainless steel)	D07	<b>√</b>	✓	<b>✓</b>
<b>Degree of protection IP68</b> (only for M20 x 1.5 and ½-14 NPT)	D12	✓	✓	✓
<b>Supplied with oval flange</b> (1 item), PTFE packing and screws in thread of process flange	D37	✓	✓	✓
Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")	E01	✓	✓	✓
Oxygen application	E10	1	1	1
(In the case of oxygen measurement and inert liquid max. 120 bar a (1740 psi a) at 60°C (140 °F))				
Explosion-proof "Intrinsic safety" to INMETRO (Brazil)	E25	✓	✓	✓
(only for transmitter 7MF4B)				

Selection and Ordering data	Order code				
Further designs Add "-Z" to Order No. and specify Order Code.		HART	PA	FF	
Ex Approval IEC Ex (EEx id) (only for transmitter 7MF4	E46	✓	✓	✓	
Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)	E55	✓	✓	✓	
Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)	E56	✓	✓	✓	
<b>Explosion-proof "Zone 2" to NEPSI (China)</b> (only for transmitter 7MF4E)	E57	✓	✓	✓	
Two coats of lacquer on casing and cover (PU on epoxy)	G10	✓	✓	1	
Interchanging of process connection side	H01	✓	✓	✓	
Vent on side for gas measurements	H02	✓	✓	✓	
Process flange  • Hastelloy  • Monel  • Stainless steel with PVDF insert max. PN 10 (MWP 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	K01 <sup>F)</sup> K02 <sup>F)</sup> K04 <sup>F)</sup>	* * * *	<b>✓ ✓</b>	√ √ √	

## **Pressure Measurement** Transmitters for general requirements

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

Selection and Ordering data	Order code					
Additional data		HART	PA	FF		
Please add "-Z" to Order 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	✓				
Stainless steel tag plate (measuring point description) Max. 16 characters, specify in plain text: Y15:	Y15	✓	✓	✓		
Measuring point text 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 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*), inH <sub>2</sub> O*), ftH <sub>2</sub> O*), mmHG, inHG, psi, Pa, kPa, MPa, g/cm², kg/cm², Torr, ATM or %						
*) ref. temperature 20 °C	V00 ·	,				
Setting of pressure indication in non-pressure units <sup>3)</sup> 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)	Y22 + Y01	·				
Preset bus address	Y25		✓			
possible between 1 and 126 Specify in plain text: Y25:						

Factory mounting of valve manifolds, see accessories.

Only "Y01", "Y21", "Y22", "Y25" and "D05" can be factory preset

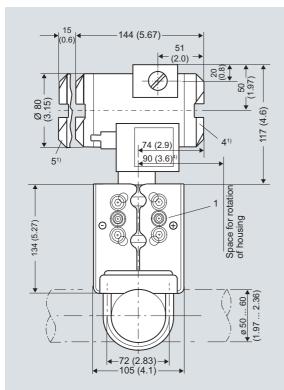
#### ✓ = available

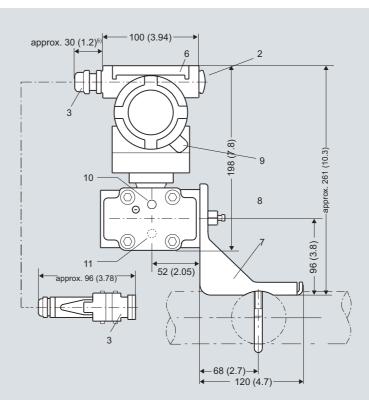
- 1) When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.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





- Process connection: 1/4-18 NPT (EN 61518)
- Blanking plug
- Electrical connection:
  - Screwed gland Pg 13,5 (adapter)<sup>2) 3)</sup>, only DS III HART,
  - Screwed gland M20x1,5 3
  - Screwed gland 1/2-14 NPT,
  - Han 7D/Han  $8D^{2)\,3)}$  plug, only DS III HART, or
  - M12 connector
- Terminal side
- Electronics side, digital display (longer overall length for cover with window)
- Protective cover over keys
- Mounting bracket (option)
- Sealing screw with valve (option)
- Screw cover safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)

  10 Lateral venting for liquid measurement (Standard)
- 11 Lateral venting for gas measurement (suffix H02)

- 1) Allow approx. 20 mm (0.79 inch) thread length to permit
- 2) Not with type of protection "explosion-proof enclosure"
- 3) Not with type of protection "FM + CSA [is + xp]"
- 92 mm (3.62 inch) for minimum distance to permit rotation 4) with indicator
- 5) 45 mm (1.8 inch) for Pg 13,5 with adapter

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

# Pressure Measurement Transmitters for general requirements SITRANS P DS III for differential pressure and flow

### Technical specifications

SITRANS P, DS III for differential pressure and	d flow			
	HART		PROFIBUS PA and F	OUNDATION Fieldbus
nput				
Measured variable	Differential pressure an	1		
Spans (infinitely adjustable) or nominal measuring range and max. permissible operating pressure	Span	Maximum operating pressure	Nominal measuring range	Maximum operating pressure
	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 psi)
	1 60 mbar (0.4 24 inH <sub>2</sub> O)	160 bar (2320 psi)	60 mbar (24 inH <sub>2</sub> O)	160 bar (2320 psi)
	2.5 250 mbar (1 100 inH <sub>2</sub> O)		250 mbar (100 inH <sub>2</sub> O)	
	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) 2.5 250 mbar	420 bar	30 bar (435 psi) 250 mbar	420 bar
	(1 100 inH <sub>2</sub> O) 6 600 mbar	(6091 psi)	(100 inH <sub>2</sub> O) 600 mbar	(6091 psi)
	(2.4 240 inH <sub>2</sub> O) 16 1600 mbar		(240 inH <sub>2</sub> O) 1600 mbar	
	(6.4 642 inH <sub>2</sub> O)		(642 inH <sub>2</sub> O)	
	50 5000 mbar (20 2000 inH <sub>2</sub> O) 0.3 30 bar		5 bar (2000 inH <sub>2</sub> O) 30 bar	
Posts	(4.35 435 psi)		(435 psi)	
ower measuring limit  Measuring cell with silicone oil filling	100 % of may and	on ( 22 % with 20 hor (4)	35 psi) measuring cell o	20 mbor a (0.44 poi))
Jpper measuring limit	·		I inert filling liquid; max.	
Output	100 % of max. span	(101 0xygerr version and	rinert illing liquid, max.	100 bai g (2020 psi g))
Dutput signal	4 20 mA		Digital PROFIBUS PA FOUNDATION Fieldbu	
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	-	
oad Without HART communication	$R_{\rm B} \le (U_{\rm H} - 10.5  \text{V})/0.02$	$23~ ext{A}$ in $\Omega_{ ext{,}}$	-	
With HART communication	$U_{\rm H}$ : Power supply in V $R_{\rm B} = 230 \dots 500 \Omega$ (SIM	MATIC PDM) or		
Physical bus	$R_{\rm B} = 230 \dots 1100 \Omega  ({\rm Hz})$		IEC 61158-2	
Protection against polarity reversal	Protected against short		ersal. Each connection a voltage.	gainst the other with ma
Measuring accuracy		Acc. to I	EN 60770-1	
Reference conditions All error data refer always refer to the set span)	Increasing characteristi	ic, start-of-scale value 0	bar, stainless steel seal r: Span ratio (r = max. s	diaphragm, silicone oil t span / set span)
Error in measurement and fixed-point setting including hysteresis and repeatability)				
Linear characteristic	z (0.0000		≤ 0.075 %	
- r≤10	$\leq$ (0.0029 · r + 0.071) % $\leq$ (0.0045 · r + 0.071) %			
-10 < r < 30	= (0.0070 1 7 0.011) /	,		
- 10 < r ≤ 30 - 30 < r ≤ 100	$\leq$ (0.005 · r + 0.05) %			
- 30 < r ≤ 100	≤ (0.005 · r + 0.05) %		≤ 0,1 %	
	$\leq (0.005 \cdot r + 0.05) \%$ $\leq 0.1 \%$ $\leq 0.2 \%$		≤ 0,1 %	

Pressure Measurement
Transmitters for general requirements
SITRANS P DS III
for differential pressure and flow

SITRANS P, DS III for differential pressure and flow					
orribate 1, 20 iii for amoreman procedure and	HART	PROFIBUS PA and FOUNDATION Fieldbus			
Square-rooted characteristic		≤ 0.2			
(flow > 25 50 %)					
- r≤10	≤ 0.2 %				
- 10 < r ≤ 30	≤ 0.4 %				
Long-term drift (temperature change $\pm$ 30 °C ( $\pm$ 5 4 °F))	≤ (0.25 · r)% every 5 years static pressure max. 70 bar g (1015 psi g)	≤ 0.25 % every 5 years static pressure max. 70 bar g (1015 psi g)			
• 20 mbar (0.29 psi)-measuring cell	≤ (0.2 · r) per year	≤ 0.2 per year			
<ul> <li>250, 600, 1600 and 5000 mbar (0.29, 0.87, 2.32 and 7.25 psi) -measuring cell</li> </ul>	≤ (0.125 · r) per year	≤ 0.125 per year			
Influence of ambient temperature					
• at -10 +60 °C (14 140 °F)	$\leq$ (0.08 · r + 0.1) %	≤ 0.3 %			
• at -4010 °C and 60 85 °C (-40 +14 °F and 140 185 °F)	$\leq$ (0.1 · r + 0.15)%/10 K (Twice the value with 20-mbar (0.29 psi) measuring cell)	≤ 0.25 %/10 K			
Influence of static pressure					
on the zero point (PKN)	≤ (0.15 · r)% per 70 bar (1015 psi)	≤ 0.15 % per 70 bar (1015 psi)			
- 20 mbar (0.29 psi)-measuring cell	≤ (0.15 · r)% per 32 bar (464 psi)	≤ 0.15 % per 32 bar (464 psi)			
<ul><li>on the span (PKS)</li></ul>	≤ 0.2 % per 70 bar (1015 psi)	-			
- 20 mbar (0.29 psi)-measuring cell	≤ 0.2 % per 32 bar (464 psi)	-			
Measured Value Resolution	-	3 · 10 <sup>-5</sup> of nominal measuring range			
Rated conditions					
Degree of protection (to EN 60529)	IP	65			
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	(-4 +212 °F)			
• In conjunction with dust explosion protection	-20 +60 °C	(-4 +140 °F)			
Ambient conditions					
Ambient temperature					
- Digital indicator	-30 +85 °C (	-22 +185 °F)			
Storage temperature	-50 +85 °C (	-58 +185 °F)			
Climatic class					
- Condensation		dity 0 100 %			
Electromagnetic Compatibility	Condensation permissible, s	suitable for use in the tropics			
Emitted interference and interference immunity	Acc. to EN 61326 a	and NAMUR NE 21			
Design					
Weight (without options)	≈ 4.5 ka (	(≈ 9.9 (lb)			
Enclosure material	<u> </u>	tainless steel precision casting, mat. no. 1.4408			
Wetted parts materials	3.7. 3.7. 3.7.	,			
Seal diaphragm	Stainless steel, mat. no. 1.4404/316L or Hastelloy tantalum	y C276, mat. no. 2.4819, Monel, mat. no. 2.4360, n or gold			
Measuring cell filling		e with oxigen measurement pressure 120 bar a)			
Process connection		on with mounting thread M10 to DIN 19213 or to EN 61518			
Material of mounting bracket					
• Steel	Sheet-steel, Mat. No.	1.0330, chrome-plated			
• Stainless steel	Sheet stainless steel, m	nat. no. 1.4301 (SS 304)			
Power supply $m{U}_{ ext{H}}$		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			
<ul> <li>With intrinsically-safe operation</li> </ul>	-	9 24 V			

# Pressure Measurement Transmitters for general requirements SITRANS P DS III for differential pressure and flow

SITRANS P, DS III for differential pressure and	d flow	
	HART	PROFIBUS PA and FOUNDATION Fieldbus
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 (MWP 464/2320 psi)		group 1; complies with requirements of article 3, engineering practice)
PN 420 (MWP 6092 psi)	Article 3, paragraph 1 (appendix 1); assigned to	oup 1; complies with basic safety requirements of o category III, conformity evaluation module H by JV Nord.
Explosion protection		
• Intrinsic safety "i"	PTB 99 /	ATEX 2122
- Marking	Ex II 1/2 G EE	x ia/ib IIB/IIC T6
- 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:	FISCO supply unit: $U_0 = 17.5 \text{ V}$ , $I_0 = 380 \text{ mA}$ , $P_0 = 5.32 \text{ W}$
	$U_{\rm i} = 30 \text{ V}, I_{\rm i} = 100 \text{ mA}, P_{\rm i} = 750 \text{ mW}; R_{\rm i} = 300 \Omega$	Linear barrier: $U_0 = 24 \text{ V}$ , $I_0 = 250 \text{ mA}$ , $P_0 = 1.2 \text{ W}$
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4$ mH, $C_{\rm i} = 6$ nF	$L_{i} = 7 \mu H, C_{i} = 1.1 \text{ nF}$
• Explosion-proof "d"	PTB 99 /	ATEX 1160
- Marking		Ex d IIC T4/T6
- Permissible ambient temperature	-40 +85 °C (-40 +18 -40 +60 °C (-40 +14	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 /	ATEX 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: $U_0 = 17.5 \text{ V}$ , $I_0 = 380 \text{ mA}$ , $P_0 = 5.32 \text{ W}$
	$U_{\rm i} = 30 \text{ V, } I_{\rm i} = 100 \text{ mA,}$ $P_{\rm i} = 750 \text{ mW, } R_{\rm i} = 300 \Omega$	Linear barrier: $U_0 = 24 \text{ V}, I_0 = 250 \text{ mA}, P_0 = 1.2 \text{ W}$
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4  {\rm mH},  C_{\rm i} = 6  {\rm nF}$	$L_i = 7 \mu H, C_i = 1.1 nF$
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; $P_{\rm max}$ = 1.2 W
• Type of protection "n" (zone 2)	TÜV 01 ATEX 1696 X	Planned
- Marking	Ex II 3 G EEx nA L IIC T4/T5/T6	-
• Explosion protection acc. to FM	Certificate of Co	mpliance 3008490
- Identification (XP/DIP) or (IS); (NI)		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	Certificate of Co	mpliance 1153651
- Identification (XP/DIP) or (IS)		FG; CL III; Ex ia IIC T4T6; CL I, DIV 2, GP ABCD V 2, GP FG; CL III

## Transmitters for general requirements

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

ior differential pressure al	nd now	
HART communication		FOUNDATION Fieldbus
HART communication	230 1100 Ω	
Protocol	HART Version 5.x	Function blocks
PROFIBUS PA communication		<ul> <li>Analog input</li> </ul>
Simultaneous communication with master class 2 (max.)	4	- Adaptation to customer- specific process variables
The address can be set using	Configuration tool or local operation (standard setting address 126)	<ul> <li>Electrical damping T<sub>63</sub>, adjustable</li> </ul>
Cyclic data usage	add1000 120)	- Simulation function
Output byte	5 (one measured value) or 10 (two measured values)	- Failure mode
• Input byte	0, 1, or 2 (register operating mode and reset function for metering)	- Limit monitoring
Internal preprocessing		
Device profile	PROFIBUS PA Profile for Process Control Devices Version 3.0, Class B	- Square-rooted characteristi for flow measurement
Function blocks	2.	• PID
Analog input	2	<ul> <li>Physical block</li> </ul>
Adaptation to customer-specific process variables	Yes, linearly rising or falling characteristic	Transducer blocks
- Electrical damping T <sub>63</sub> , adjust-	0 100 s	Pressure transducer block
able	o 100 o	- Can be calibrated by apply
- 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: Measu</li></ul>
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respectively	pressure value, sensor tem ature and electronics tempo 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	
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	
- Gradual volume suppression and implementation point of square-root extraction	Parameterizable	

Constant value or over parame-

terizable ramp function

- stic
- lying
- ured nperpera-

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

Standard FF function block

1 resource block

1 transducer block Pressure with calibration, 1 transducer block

Yes

Yes

Constant value or over parameterizable ramp function

square-root extraction Simulation function for mea-

sor temperature

sured pressure value and sen-

## **Pressure Measurement** Transmitters for general requirements

SITRANS P DS III for differential pressure and flow

OITDANO P PO III	ring data		Ord				
SITRANS P DS III HA for differential press	ART pressure transmitter sure and flow.	S				3 -	
PN 32/160 (MWP 46							
Measuring cell fillin	g Measuring cell clean- ing						
Silicone oil	normal	•	1				
Inert liquid <sup>1)</sup>	Grease-free		3				
Measuring span							
PN 32 (MWP 464 psi							
1 20 mbar <sup>2)</sup>	(0.4015 8.03 inH <sub>2</sub> O)	•	В				
PN 160 (MWP 2320 p	osi)						
1 60 mbar	(0.4015 24.09 inH <sub>2</sub> C		С				
2,5 250 mbar	(1.004 100.4 inH <sub>2</sub> O)		D				
6 600 mbar	(2.409 240.9 inH <sub>2</sub> O)		E				
16 1600 mbar	(6.424 642.4 inH <sub>2</sub> O)		F				
50 5000 mbar	(20.08 2008 inH <sub>2</sub> O)		G				
0,3 30 bar	(4.35 435 psi)		Н				
Wetted parts materi							
(stainless steel proce	- ·	ı					
Seal diaphragm	Parts of measuring cel	I —					
Stainless steel	Stainless steel			Α			
Hastelloy	Stainless steel			В			
Hastelloy Tantalum <sup>3)</sup>	Hastelloy			C			
Tantalum <sup>o)</sup> Monel <sup>3)</sup>	Tantalum			E			
Monei <sup>s)</sup> Gold <sup>3)</sup>	Monel			H			
Gold <sup>57</sup> Version for diaphragr	Gold			L Y			
Process connection				•			
<ul><li>Mounting thread I (only for replacen</li><li>Vent on side of pro-</li></ul>	nent requirement) cess flange <sup>2)</sup> 7 <sub>/16</sub> -20 UNF to EN 61518 M10 to DIN 19213			2 0 6 4			
•							
•							
process flange screv Stainless steel	vs Electronics housing  Die-cast aluminum	<b>•</b>			2		
process flange screv Stainless steel	vs Electronics housing  Die-cast aluminum  Stainless steel precision	 on			2 3		
process flange screv Stainless steel Stainless steel	vs Electronics housing  Die-cast aluminum	 ⊳n					
process flange screv Stainless steel Stainless steel Version	vs Electronics housing  Die-cast aluminum  Stainless steel precision	on					
process flange screv Stainless steel Stainless steel Version Standard versions	Die-cast aluminum Stainless steel precisio casting <sup>6)</sup>					1 2	
process flange screv Stainless steel Stainless steel Version Standard versions	Us Electronics housing  Die-cast aluminum  Stainless steel precision casting (6)  n, English label inscriptions					1 2	
process flange screv Stainless steel Stainless steel  Version  Standard versions International versio documentation in 5	Die-cast aluminum Stainless steel precisio casting <sup>6</sup> )  n, English label inscriptions languages on CD						
process flange screv Stainless steel Stainless steel  Version  • Standard versions • International versio documentation in 5  Explosion protectio	Die-cast aluminum Stainless steel precisio casting <sup>6</sup> )  n, English label inscriptions languages on CD						
process flange screv Stainless steel Stainless steel Version • Standard versions • International versio documentation in 5 Explosion protectio • None • With ATEX, Type of	Die-cast aluminum Stainless steel precisio casting <sup>6</sup> )  n, English label inscriptions languages on CD  n protection:					2	
process flange screv Stainless steel Stainless steel Version • Standard versions • International versio documentation in 5 Explosion protectio • None • With ATEX, Type of - "Intrinsic safety (E	Die-cast aluminum Stainless steel precisio casting <sup>6</sup> )  n, English label inscriptions languages on CD  protection: Ex ia)"					2 A B	
documentation in 5  Explosion protectio None With ATEX, Type of Intrinsic safety (E Explosion-proof (	Die-cast aluminum Stainless steel precisio casting <sup>6</sup> )  n, English label inscriptions languages on CD  protection: EEx ia)"  EEx d)" <sup>7</sup> )					2 A B D	
process flange screv Stainless steel Stainless steel Version Standard versions International versio documentation in 5 Explosion protectio None With ATEX, Type of "Intrinsic safety (E "Explosion-proof ( "Intrinsic safety ar	Die-cast aluminum Stainless steel precisio casting <sup>6</sup> )  n, English label inscriptions languages on CD  protection: Ex ia)" EEx d)" <sup>7)</sup> nd flameproof enclosure"					2 A B	
process flange screv Stainless steel Stainless steel Stainless steel  Version Standard versions International versio documentation in 5  Explosion protectio None With ATEX, Type of "Intrinsic safety (E "Explosion-proof ( "Intrinsic safety ar (EEx ia + EEx d)"	Die-cast aluminum Stainless steel precisio casting <sup>6</sup> )  n, English label inscriptions languages on CD  protection: Ex ia)" EEx d)" <sup>7)</sup> nd flameproof enclosure"					A B D P	
process flange screv Stainless steel Stainless steel Stainless steel Version • Standard versions • International versio documentation in 5 Explosion protectio • None • With ATEX, Type of - "Intrinsic safety (E - "Explosion-proof ( - "Intrinsic safety are (EEx ia + EEx d)" - "Ex nA/nL (Zone 2	Die-cast aluminum Stainless steel precisio casting <sup>6)</sup> n, English label inscriptions languages on CD  protection: Ex ia)" EEx d)" <sup>7)</sup> nd flameproof enclosure" (2)"	S, <b>&gt;</b>				A B D P	
process flange screv Stainless steel Stainless steel Version Standard versions International version documentation in 5 Explosion protectio None With ATEX, Type of Intrinsic safety (E Explosion-proof ( Intrinsic safety at (EEx ia + EEx d) ""Ex nA/nL (Zone 2 "Intrinsic safety, e:	Die-cast aluminum Stainless steel precisio casting <sup>6</sup> )  n, English label inscriptions languages on CD  protection: Ex ia)" EEx d)" <sup>7)</sup> nd flameproof enclosure"	S, <b>&gt;</b>				A B D P	
process flange screv Stainless steel Stainless steel Stainless steel  Version Standard versions International version documentation in 5  Explosion protectio None With ATEX, Type of "Intrinsic safety (E "Explosion-proof ( "Intrinsic safety ar (Eex ia + EEx d)" "Ex nA/nL (Zone 2 "Intrinsic safety, or zone 1D/2D)" With FM + CSA, Tyl  With FM + CSA, Tyl	Die-cast aluminum Stainless steel precisio casting <sup>6</sup> )  n, English label inscriptions languages on CD  protection: Ex ia)" EEx d)" <sup>7</sup> ) nd flameproof enclosure" splosion-proof enclosure ar otection (EEx ia + EEx d +	s, ▶				A B D P	

Selection and Ordering data	Order No.	
SITRANS P DS III HART pressure transmitters	7MF4433-	
for differential pressure and flow, PN 32/160 (MWP 464/2320 psi)		
Electrical connection / cable entry  • Screwed gland Pg 13.5 <sup>9)</sup> • Screwed gland M20 x 1.5  • Screwed gland ½-14 NPT  • Han 7D plug (plastic housing) incl. mating connector <sup>9)10)</sup> • M12 connectors (metal) <sup>11)</sup>	A B C D	
Display  • Without indicator  • Without visible digital indicator(digital indicator ► concealed, setting: mA)  • With visible digital indication  • with customer-specific digital indicator (setting as specified, Order Code "Y21" or "Y22" required)		0 1 6 7

Available ex stock

Power supply units see Chap. 8 "Supplementary Components".

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) For oxygen application, add Order code E10.
- $^{2)}$  Not suitable for connection of remote seal. Position of the top vent valve in the process flange (see dimensional drawing).
- $^{3)}$  Not in conjunction with max. span 20 and 60 mbar (8.03 und 24.09 inH $_2$ O))
- 4) 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.
- 5) 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>6)</sup> Not in conjunction with Electrical connection "Screwed gland Pg 13.5" and "Han7D plug".
- 7) Without cable gland, with blanking plug
- 8) With enclosed cable gland EEx ia and blanking plug
- 9) Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".
- $^{\rm 10)} \mbox{Permissible}$  only for crimp-contact of conductor cross-section 1  $\mbox{mm}^2$
- <sup>11)</sup>M12 delivered without cable socket

## Transmitters for general requirements

SITRANS P DS III for differential pressure and flow

ior differential pr	essure-and now			
Selection and Ordering	g data	Orde	er No	· · · · · · · · · · · · · · · · · · ·
I	for differential pressure	0.00	,,,,,,	
SITRANS P DS III PA (I	• •	7 M F	44:	3.4.
•	•			-
SITRANS P DS III FF (F	FOUNDATION Fieldbus)		44:	3 5 - - <b></b>
Measuring cell filling	Measuring cell			
	cleaning			
Silicone oil	normal	1		
Inert liquid <sup>1)</sup>	Grease-free	3		
Nominal measuring ra	nge			
PN 32 (MWP 464 psi)				
20 mbar <sup>2)</sup>	(8.03 inH <sub>2</sub> O)	В		
PN 160 (MWP 2320 psi)				
60 mbar	(24.09 inH <sub>2</sub> O)	С		
250 mbar	(100.4 inH <sub>2</sub> O)	D		
600 mbar	(240.9 inH <sub>2</sub> O)	E		
1600 mbar	(642.4 inH <sub>2</sub> O)	F		
5 bar	(2008 inH <sub>2</sub> O)	G		
30 bar	(435 psi)	Н		
Wetted parts materials				
(stainless steel process	flanges)			
Seal diaphragm	Parts of measuring cell			
Stainless steel	Stainless steel	A		
Hastelloy	Stainless steel	E	3	
Hastelloy	Hastelloy	C	;	
Tantalum 3)	Tantalum	E		
Monel <sup>3)</sup>	Monel	H	1	
Gold <sup>3)</sup>	Gold	L		
Version as diaphragm s	eal <sup>4)5)</sup>	١		
Process connection				
Female thread 1/4-18 NP	T with flange connection			
<ul> <li>Sealing screw opposit</li> </ul>	te process connection			
<ul> <li>Mounting thread <sup>7</sup>/<sub>16</sub></li> </ul>	<sub>3</sub> -20 UNF to EN 61518		2	
<ul> <li>Mounting thread M1</li> </ul>			0	
(only for replacemen				
• Venting on side of pro	cess flanges <sup>2</sup> /			
- Mounting thread <sup>7</sup> / <sub>16</sub>			6	
<ul> <li>Mounting thread M1 (only for replacement</li> </ul>			4	
Non-wetted parts mate	erials			
process flange screws	Electronics housing			
Stainless steel	Die-cast aluminum		2	
Stainless steel	Stainless steel precision casting		3	
Version				
<ul> <li>Standard versions</li> </ul>				1
<ul> <li>International version, I documentation in 5 la</li> </ul>	English label inscriptions, > nguages on CD			2
Explosion protection				
• None				Α
• With ATEX, Type of pro				
- "Intrinsic safety (EEx				В
- "Explosion-proof (EE	(x d)"b)			D
- "Intrinsic safety and	flameproof enclosure"			P
(EEx ia + EEx d)" <sup>7)</sup>	•			
<ul> <li>"Ex nA/nL (Zone 2)"</li> </ul>				E
- "Intrinsic safety, expl	osion-proof enclosure and			R
aust explosion prote	ction (EEx ia + EEx d + for DS III FF)			
• With FM + CSA, Type				
	xplosion Proof (is + xp)"6)			NO
	1			NC

Selection and Ordering data	Order No.	
Pressure transmitters for differential pressure and flow PN 32/160 (MWP 464/2320 psi)		
SITRANS P DS III PA (PROFIBUS PA)	7 M F 4 4 3 4 -	
SITRANS P DS III FF (FOUNDATION Fieldbus)	7 M F 4 4 3 5 -	
Electrical connection / cable entry		
<ul> <li>Screwed gland M20 x 1.5</li> </ul>	В	
<ul> <li>Screwed gland ½-14 NPT</li> </ul>	С	
M12 connectors (metal) <sup>8)</sup>	F	
Display		
Without indicator	0	
<ul> <li>Without visible digital indicator(digital indicator concealed, setting: mA)</li> </ul>	1	
<ul> <li>With visible digital indication</li> </ul>	6	
<ul> <li>With customer-specific digital indication (setting as specified, Order Code "Y21" required)</li> </ul>	7	

Available ex stock

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) For oxygen application, add Order code E10.
- <sup>2)</sup> Not suitable for connection of remote seal. Position of the top vent valve in the process flange (see dimensional drawing).
- $^{3)}$  Not in conjunction with max. span 20 and 60 mbar (8.03 und 24.09 inH $_2$ O))
- 4) 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
- 5) 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.
- 6) Without cable gland, with blanking plug.
- 7) With enclosed cable gland EEx ia and blanking plug.
- 8) M12 delivered without cable socket

## Pressure Measurement Transmitters for general requirements

SITRANS P DS III for differential pressure and flow

Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "-Z" to Order No. and				
specify Order Code.				
Pressure transmitter with mounting bracket (2 shackles, 4 nuts, 4 U-plates,				
1 angle) made of:				
• Steel	A01	✓	✓	✓
Stainless steel	A02	✓	✓	✓
O-rings for process flanges				
(instead of FPM (Viton))  • PTFE (Teflon)	A20	./	./	./
• FEP (with silicone core, approved for food)	A21	1	<b>V</b>	<i>'</i>
• FFPM (Kalrez, compound 4079)	A22	1	1	1
• NBR (Buna N)	A23	1	✓	✓
plug				
Han 7D (metal, gray)	A30	✓		
Han 8U (instead of Han 7D)	A31	<b>V</b>		
• Angled	A32 A33	<b>√</b>		
Han 8D (metal, gray)		<b>*</b>	,	,
Sealing screws (2 unit(s) 1/4-18 NPT, with valve in mat. of process	A40	<b>V</b>	•	•
flanges				
Cable sockets for M12 connectors (metal)	A50	✓	✓	✓
Rating plate inscription				
(instead of German)				
• English	B11	<b>V</b>	<b>V</b>	✓,
<ul><li>French</li><li>Spanish</li></ul>	B12 B13	1	<b>√</b>	1
• Italian	B14	1	<b>*</b>	· /
English rating plate	B21	1	1	1
Pressure units in inH <sub>2</sub> O and/or psi				
Quality inspection certificate (factory calibration) to IEC 60770-2 <sup>1)</sup>	C11	✓	1	✓
Inspection certificate <sup>2)</sup> to EN 10204-3.1	C12	✓	✓	1
Factory certificate to EN 10204-2.2	C14	1	1	1
"Functional safety (SIL2)" certificate	C20	1		
PROFIsafe certificate and protocol	C21		1	
"Functional safety (SIL2/3)" certificate	C23	1		
Setting of upper limit of	D05	1		
output signal to 22.0 mA				
Manufacturer's declaration acc. to NACE	D07	✓	✓	✓
(only together with seal diaphragm made of Hastelloy and stainless steel)				
<b>Degree of protection IP68</b> (only for M20 x 1.5 and ½-14 NPT)	D12	✓	✓	✓
Process flange screws made of Monel (max. nominal pressure PN20)	D34	✓	✓	✓
Supplied with oval flange set (2 items), PTFE packings and screws in thread of process flanges	D37	✓	✓	✓
Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")	E01	✓	✓	✓
TÜV approval to AD/TRD  (only together with type of protection "Intrinsic safety (EEx ia)")	E06	1		

Selection and Ordering data	Order	code			
Further designs		HART	PA	FF	
Add "-Z" to Order No. and specify Order Code.					
Overfilling safety device for flammable and non-flammable liquids	E08	✓	✓	✓	
(max. PN 32 (MVWP 464 psi), basic device with type of protection "Intrinsic safety (EEx ia)", to WHG and VbF, not together with measuring cell filling "inert liquid")					
Oxygen application	E10	✓	✓	✓	
(In the case of oxygen measurement and inert liquid max. 120 bar a (1740 psi a) at 60°C (140 °F))					
Explosion-proof "Intrinsic safety" to INMETRO (Brazil)	E25	✓	✓	✓	
(only for transmitter 7MF4					
Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)	E45	✓	✓	✓	
Ex Approval IEC Ex (EEx id)	E46	1	1	1	
(only for transmitter 7MF4D)					
Explosion-proof "Intrinsic safety" to NEPSI (China)	E55	✓	✓	✓	
(only for transmitter 7MF4B)					
Explosion protection "Explosion-proof" to NEPSI (China)	E56	✓	✓	✓	
(only for transmitter 7MF4)					
Explosion-proof "Zone 2" to NEPSI (China)	E57	✓	✓	✓	
(only for transmitter 7MF4E)					
Two coats of lacquer on casing and cover (PU on epoxy)	G10	✓	1	1	
Interchanging of process connection side	H01	✓	✓	✓	
Vent on side for gas measurements	H02	✓	✓	✓	
Stainless steel process flanges for vertical differential pressure lines (not together with K01, K02 and K04) <sup>3)</sup>	H03	✓	✓	✓	
Process flange					
Hastelloy	K01	1	1	1	
• Monel	K02	✓	✓	1	
<ul> <li>Stainless steel with PVDF insert max. PN 10 (MWP 145 psi), max. temperature of medium 90 °C (194 °F)</li> </ul>	K04	<b>√</b>	✓	✓	

Factory mounting of valve manifolds, see accessories.

Supplementary electronics for 4-wire connection, see accessories.

- ✓ = available
- 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) Not suitable for connection of remote seal

## Transmitters for general requirements

SITRANS P DS III for differential pressure and flow

Selection and Ordering data	Order	code		
Additional data Please add "-Z" to Order No. and specify Order code(s) and plain text.		HART	PA	FF
Measuring range to be set				
Specify in plain text:  • in the case of linear characteristic curve (max. 5 characters):	Y01	✓		
Y01: up to mbar, bar, kPa, MPa, psi • in the case of square rooted characteristic (max. 5 characters):	Y02	✓		
Y02: up to mbar, bar, kPa, MPa, psi				
Stainless steel tag plate (measuring point description)	Y15	✓	✓	✓
Max. 16 char., specify in plain text: Y15:				
Measuring point text Max. 27 char., specify in plain text: Y16:	Y16	✓	✓	✓
Entry of HART address (TAG)	Y17	1		
Max. 8 char., specify in plain text: Y17:				
Setting of pressure indicator in	Y21	✓	✓	✓
pressure units 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*), inH <sub>2</sub> O*), ftH <sub>2</sub> O*), mmHG, inHG, psi, Pa, kPa, MPa, g/cm², kg/cm², Torr, ATM or % *) ref. temperature 20 °C				
Setting of pressure indicator in non-pressure units <sup>1)</sup> Specify in plain text: Y22: up to I/min, m³/h, m, USgpm, (specification of measuring range in pressure units "Y01" or "Y02" is essential, unit with max. 5 characters)	Y22 2) <sub>+</sub> Y01 Or Y02			
Preset bus address possible between 1 and 126 Specify in plain text: Y25:	Y25		✓	

Factory mounting of valve manifolds, see accessories.

Only "Y01", "Y21", "Y22", "Y25" and "D05" can be factory preset

✓ = available

<sup>1)</sup> Preset values can only be changed over SIMATIC PDM.

<sup>2)</sup> Not in conjunction with over-filling safety device for flammable and non-flammable liquids (Order Code "E08")

## Pressure Measurement Transmitters for general requirements

SITRANS P DS III for differential pressure and flow

Selection and Orderin	•		)rde	_	_			
	T pressure transmitters	7	M F	4	5 3	3 3	•	
for differential pressui PN 420 (MWP 6092 psi							۱	
Measuring cell filling	Measuring cell cleaning		ı					
Silicone oil	normal	1						
Measuring span								
2.5 250 mbar	(1.004 100.4 inH <sub>2</sub> O)		D					
6 600 mbar	(2.409 240.9 inH <sub>2</sub> O)		E					
16 1600 mbar	(6.424 642.4 inH <sub>2</sub> O)		F					
50 5000 mbar	(20.08 2008 inH <sub>2</sub> O)		G					
0.3 30 bar	(4.35 435 psi)		Н					
Wetted parts materials								
(stainless steel process								
Seal diaphragm	Parts of measuring cell							
Stainless steel	Stainless steel		F	1				
Hastelloy	Stainless steel		E	1				
Gold <sup>1)</sup>	Gold		L	•				
Connection of remote s	eal possible on request							
Process connection								
	T with flange connection							
• Sealing screw opposit								
	<sub>3</sub> -20 UNF to EN 61518			3				
- Mounting thread M1				1				
(only for replacemen	'							
<ul> <li>venting on side of provent valve at top of pro</li> </ul>	cess flanges, location of ocess flanges (see dimen-							
sional drawing)	ocess hanges (see diffieri-							
	<sub>3</sub> -20 UNF to EN 61518			7				
- Mounting thread M1				5				
(only for replacemen								
Non-wetted parts mate	erials							
process flange screws								
Stainless steel	Die-cast aluminum				2			
Stainless steel	Stainless steel precision				3			
	casting <sup>2)</sup>							
Version								
<ul> <li>Standard versions</li> </ul>						1		
	English label inscriptions,	-				2		
documentation in 5 la	nguages on CD							
Explosion protection								
<ul><li>None</li></ul>							A	
<ul> <li>With ATEX, Type of pre-</li> </ul>								
- "Intrinsic safety (EEx						ı	В	
- "Explosion-proof (EE	x d)" <sup>3)</sup>						D	
- "Intrinsic safety and	flameproof enclosure"						Р	
(EEx ia + EEx d)"4)								
- "Ex nA/nL (Zone 2)"							E	
- "Intrinsic safety, expl	osion-proof enclosure and						R	
Zone 1D/2D)"4)	ection (EEx ia+ EEx d +							
• With FM + CSA, Type	of protection:							
- "Intrinsic safety and	explosion-proof						N C	
(is + xp)" 3), max PN	360					ľ	NC	
Electrical connection								
<ul> <li>Screwed gland Pg 13</li> </ul>	_;						Α	
<ul> <li>Screwed gland M20x</li> </ul>							В	
Screwed gland 1/2-14							С	
- Obiowod glaria /2 141								
<ul> <li>Han 7D plug (plastic l</li> </ul>	nousing) incl. mating						D	
<ul> <li>Han 7D plug (plastic h connector<sup>5)6)</sup></li> <li>M12 connectors (meta)</li> </ul>							D	

Selection and Ordering data	Order No.
SITRANS P DS III HART pressure transmitters for differential pressure and flow, PN 420 (MWP 6092 psi)	7 M F 4 5 3 3 -
Display  ■ Without indicator  Without visible digital indicator(digital indicator    Without visible digital indicator(digital indicator	0
<ul><li>concealed, setting: mA)</li><li>With visible digital indication</li></ul>	6
<ul> <li>with customer-specific digital indicator (setting as specified, Order Code "Y21" or "Y22" required)</li> </ul>	7

Available ex stock

Power supply units see Chap. 8 "Supplementary Components".

Scope of delivery: Pressure transmitter as ordered (Instruction Manual is extra ordering item)

- 1) Not in conjunction with max. span 600 mbar (240.9 inH<sub>2</sub>O)
- 2) Not in conjunction with Electrical connection "Screwed gland Pg 13.5" and "Han7D plug".
- 3) Without cable gland, with blanking plug
- 4) With enclosed cable gland EEx ia and blanking plug
- 5) Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".
- $^{6)}_{-\!-\!-}$  Permissible only for crimp-contact of conductor cross-section 1  $\text{mm}^2$
- 7) M12 delivered without cable socket

## Transmitters for general requirements

SITRANS P DS III for differential pressure and flow

Selection and Orderin	g data	Ord	er N	١٥.		
Pressure transmitters and flow, PN 420 (MW	for differential pressure P 6092 psi)					
SITRANS P DS III PA (	PROFIBUS PA)	7 M I	<b>=</b> 4	5 3	4 -	
SITRANS P DS III FF (I	FOUNDATION Fieldbus)	7 M I	= 4	53	5 -	
N!			Н			
Nominal measuring ra 250 mbar	(100.4 inH <sub>2</sub> O)	D				
600 mbar	(240.9 inH <sub>2</sub> O)	E				
1600 mbar	(642.4 inH <sub>2</sub> O)	F				
5 bar	(2008 inH <sub>2</sub> O)	G				
30 bar	(435 psi)	Н				
Wetted parts materials						
(stainless steel process						
Seal diaphragm	Parts of measuring cell					
Stainless steel	Stainless steel		4			
Hastelloy	Stainless steel	ı	3			
Gold 1)	Gold					
Connection of remote s	eal possible on request					
Process connection						
Female thread 1/4-18 NF	T with flange connection					
<ul> <li>Sealing screw opposit</li> </ul>						
	<sub>3</sub> -20 UNF to EN 61518		3			
- Mounting thread M1			1			
(only for replacemen						
	cess flanges, location of ocess flanges (see dimen-					
sional drawing).	occss hanges (see dimen-					
	<sub>3</sub> -20 UNF to EN 61518		7			
- Mounting thread M1	-		5			
(only for replacemen						
Non-wetted parts mate	erials					
Process flange screws	Electronics housing					
Stainless steel	Die-cast aluminum			2		
Stainless steel	Stainless steel precision			3		
	casting					
Version						
<ul> <li>Standard versions</li> </ul>					1	
	English label inscriptions,				2	
documentation in 5 la	nguages on CD					
Explosion protection						
None  None  None	otootion.				4	١
<ul> <li>With ATEX, Type of pre- "Intrinsic safety (EEx</li> </ul>	otection.				E	,
- "Explosion-proof (EE						
	flameproof enclosure"				Ē	
(EEx ia + EEx d)"3)	namepreer energeare					
- "Ex nA/nL (Zone 2)"					E	
- "Intrinsic safety, expl	osion-proof enclosure and				F	1
dust explosion prote	ection (EEx ia + EEx d + for DS III FF)					
• With FM + CSA, Type						
- "Intrinsic safety and	·				N	ıc
(is + xp) <sup>2)</sup> , max PN	360				ľ	. •
Electrical connection						
<ul> <li>Screwed gland M20 x</li> </ul>	•					В
• Screwed gland ½-14						C
• M12 connectors (meta	* )					F
· IVITZ COTITIECTORS (MET	ai) '					

Selection and Ordering data	Order No.	
Pressure transmitters for differential pressure and flow, PN 420 (MWP 6092 psi)		
SITRANS P DS III PA (PROFIBUS PA)	7 M F 4 5 3 4 -	
SITRANS P DS III FF (FOUNDATION Fieldbus)	7 M F 4 5 3 5 -	
	1===	
Display		
<ul> <li>Without (digital display hidden)</li> </ul>		0
<ul> <li>Without visible digital indicator(digital indicator concealed, setting: mA)</li> </ul>		1
<ul> <li>With visible digital indicator</li> </ul>		6
<ul> <li>With customer-specific digital indicator (setting as specified, Order Code "Y21" required)</li> </ul>		7

Available ex stock

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)
- $^{1)}$  Not in conjunction with max. span 600 mbar (240.9 inH $_2$ O)
- <sup>2)</sup> Without cable gland, with blanking plug.
- $^{
  m 3)}$  With enclosed cable gland EEx ia and blanking plug.
- 4) M12 delivered without cable socket

for differential pressure and flow

Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "-Z" to Order No. and				
specify Order Code.				
Pressure transmitter with mounting bracket (2 shackles, 4 nuts, 4 U-plates, 1 angle) made of:				
• Steel	A01	1	1	1
Stainless steel	A02	1	✓	1
O-rings for process flanges (instead of FPM (Viton)) • PTFE (Teflon) • FEP (with silicone core, approved for food) • FFPM (Kalrez, compound 4079) • NBR (Buna N)	A20 A21 A22 A23	* * * * * * * * * * * * * * * * * * *	<b>* * * *</b>	<b>*</b> * * *
plug • Han 7D (metal, gray) • Han 8U (instead of Han 7D) • Angled • Han 8D (metal, gray)	A30 A31 A32 A33	* * * * * * * * * * * * * * * * * * *		
Sealing screws (2 unit(s) 1/4-18 NPT, with valve in mat. of process flanges	A40	✓	✓	✓
Cable sockets for M12 connectors (metal)	A50	✓	✓	✓
Rating plate inscription (instead of German)				
• English	B11	1	✓	✓
• French	B12	1	✓	✓
• Spanish	B13	✓	✓	✓
• Italian	B14	✓	✓	✓
English rating plate	B21	1	1	1
Pressure units in inH <sub>2</sub> O and/or psi				
Quality inspection certificate (factory calibration) to IEC 60770-2	C11	✓	✓	✓
Inspection certificate Acc. to EN 10204-3.1	C12	✓	✓	✓
Factory certificate Acc. to EN 10204-2.2	C14	✓	✓	✓
"Functional safety (SIL2)" certificate	C20	1		
PROFIsafe certificate and protocol	C21		1	
"Functional safety (SIL2/3)" certificate	C23	1		
Setting of upper limit of	D05	1		
output signal to 22.0 mA				
Manufacturer's declaration acc. to NACE (only together with seal diaphragm made of Hastelloy and stainless steel)	D07	✓	✓	✓
Degree of protection IP68 (only for M20 x 1.5 and ½-14 NPT)	D12	✓	✓	✓
(OIII) IOI IVIZO X 1.0 dila /2 14 IVI 1)	E01	✓	✓	✓
Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")				
Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")  Explosion-proof "Intrinsic safety" to INMETRO (Brazil)	E25	✓	<b>✓</b>	✓
Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")  Explosion-proof "Intrinsic safety"	E25	✓	<ul><li></li></ul>	4

Selection and Ordering data  Further designs Add '-Z' to Order No. and specify Order Code.  Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4					
Add "-Z" to Order No. and specify Order Code.  Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B.)  Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D.)  Explosion-proof "Zone 2" to NEPSI (China) (only for transmitter 7MF4E.)  Two coats of lacquer on casing and cover (PU on epoxy)  Interchanging of process connection side (PU on epoxy)  Stainless steel process flanges for vertical differential pressure lines  Additional data  Please add "-Z" to Order 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: up to mbar, bar, kPa, MPa, psi • in the case of square rooted characteristic (max. 5 characters): Y02: up to mbar, bar, kPa, MPa, psi  Stainless steel tag plate (measuring point description)  Max. 16 characters, specify in plain text: Y15:	Selection and Ordering data	Order			
Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)  Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4B)  Explosion-proof "Zone 2" to NEPSI (China) E57			HART	PA	FF
to NEPSI (China) (only for transmitter 7MF4B.)  Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4B.)  Explosion-proof "Zone 2" to NEPSI (China) (only for transmitter 7MF4B.)  Two coats of lacquer on casing and cover (Pu on epoxy)  Interchanging of process connection side H01					
NEPSI (China) (only for transmitter 7MF4D)  Explosion-proof "Zone 2" to NEPSI (China) (only for transmitter 7MF4D)  Two coats of lacquer on casing and cover (PU on epoxy)  Interchanging of process connection side Stainless steel process flanges for vertical differential pressure lines  Additional data  Please add "-Z" to Order 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: up to mbar, bar, kPa, MPa, psi  in the case of square rooted characteristic (max. 5 characters): Y02: up to mbar, bar, kPa, MPa, psi  Stainless steel tag plate (measuring point description) Max. 16 characters, specify in plain text: Y16:	to NEPSI (China)	E55	✓	✓	✓
Explosion-proof "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)  Two coats of lacquer on casing and cover (PU on epoxy)  Interchanging of process connection side Stainless steel process flanges for vertical differential pressure lines  Additional data  Please add "-Z" to Order 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: up to mbar, bar, kPa, MPa, psi • in the case of square rooted characteristic (max. 5 characters): Y02: up to mbar, bar, kPa, MPa, psi  Stainless steel tag plate (measuring point description) Max. 16 characters, specify in plain text: Y15:  Messuring point text  Max. 27 characters, specify in plain text: Y16:  Entry of HART address (TAG) Max. 8 characters, specify in plain text: Y17: Setting of pressure indication in pressure units 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", inH <sub>2</sub> O", ftH <sub>2</sub> O", mmHG, inHG, psi, Pa, kPa, MPa, g/cm², kg/cm², Torr, ATM or % ") ref. temperature 20 °C  Setting of pressure indication in non-pressure units" Y22: up to  /min, m³/h, m, USgpm, (specification of measuring range in pressure units "Y02"  Y25   V    Y   Y   Y   Y   Y   Y   Y   Y	NEPSI (China)	E56	✓	✓	✓
(only for transmitter 7MF4E)  Two coats of lacquer on casing and cover (PU on epoxy)  Interchanging of process connection side  Stainless steel process flanges for vertical differential pressure lines  Additional data  Please add *-Z* to Order 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):				,	,
Interchanging of process connection side   H01		E57	•	•	•
Stainless steel process flanges for vertical differential pressure lines  Additional data  Please add "-Z" to Order 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: up to mbar, bar, kPa, MPa, psi • in the case of square rooted characteristic (max. 5 characters): Y02: up to mbar, bar, kPa, MPa, psi  Stainless steel tag plate (measuring point description)  Max. 16 characters, specify in plain text: Y15:		G10	✓	✓	✓
Additional data  Please add "-Z" to Order 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: up to mbar, bar, kPa, MPa, psi • in the case of square rooted characteristic (max. 5 characters): Y02: up to mbar, bar, kPa, MPa, psi  Stainless steel tag plate (measuring point description)  Max. 16 characters, specify in plain text: Y15:	Interchanging of process connection side	H01	✓	✓	✓
Please add "-Z" to Order 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: up to mbar, bar, kPa, MPa, psi • in the case of square rooted characteristic (max. 5 characters): Y02: up to mbar, bar, kPa, MPa, psi  • in the case of square rooted characteristic (max. 5 characters): Y02: up to mbar, bar, kPa, MPa, psi  Stainless steel tag plate (measuring point description) Max. 16 characters, specify in plain text: Y15:  Measuring point text Max. 27 characters, specify in plain text: Y16:		H03	✓	✓	✓
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: up to mbar, bar, kPa, MPa, psi • in the case of square rooted characteristic (max. 5 characters): Y02: up to mbar, bar, kPa, MPa, psi  Stainless steel tag plate (measuring point description) Max. 16 characters, specify in plain text: Y15:	Additional data				
Specify in plain text:  • in the case of linear characteristic curve (max. 5 characters): Y01: up to mbar, bar, kPa, MPa, psi • in the case of square rooted characteristic (max. 5 characters): Y02: up to mbar, bar, kPa, MPa, psi  Stainless steel tag plate (measuring point description)  Max. 16 characters, specify in plain text: Y15:					
<ul> <li>in the case of linear characteristic curve (max. 5 characters):     Y01: up to mbar, bar, kPa, MPa, psi</li> <li>in the case of square rooted characteristic (max. 5 characters):     Y02: up to mbar, bar, kPa, MPa, psi</li> <li>Stainless steel tag plate (measuring point description)     Max. 16 characters, specify in plain text:     Y15:</li></ul>					
(max. 5 characters): Y01: up to mbar, bar, kPa, MPa, psi  • in the case of square rooted characteristic (max. 5 characters): Y02: up to mbar, bar, kPa, MPa, psi  Stainless steel tag plate (measuring point description)  Max. 16 characters, specify in plain text: Y15:		V01	1		
<ul> <li>in the case of square rooted characteristic (max. 5 characters): Y02: up to mbar, bar, kPa, MPa, psi</li> <li>Stainless steel tag plate (measuring point description)</li> <li>Max. 16 characters, specify in plain text: Y15:</li> <li>Measuring point text</li> <li>Max. 27 characters, specify in plain text: Y16:</li> <li>Entry of HART address (TAG)</li> <li>Max. 8 characters, specify in plain text: Y17:</li> <li>Setting of pressure indication in pressure units</li> <li>Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi,</li> <li>Note: The following pressure units can be selected: bar, mbar, mm H₂0¹, inH₂0¹, thH₂0¹, thH₂0¹, mmHG, inHG, psi, Pa, kPa, MPa, g/cm², kg/cm², Torr, ATM or % *¹ ref. temperature 20 °C</li> <li>Setting of pressure indication in non-pressure units¹)</li> <li>Specify in plain text: Y22: up to l/min, m³/h, m, USgpm, (specification of measuring range in pressure units "Y01" or "Y02" is essential, unit with max. 5 characters)</li> <li>Preset bus address</li> </ul>	(max. 5 characters):	101	ľ		
Y02: up to mbar, bar, kPa, MPa, psi  Stainless steel tag plate (measuring point description)  Max. 16 characters, specify in plain text: Y15:	• in the case of square rooted characteristic	Y02	✓		
(measuring point description)  Max. 16 characters, specify in plain text: Y15:  Measuring point text  Max. 27 characters, specify in plain text: Y16:  Entry of HART address (TAG)  Max. 8 characters, specify in plain text: Y17:  Setting of pressure indication in pressure units Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi, Note: The following pressure units can be selected: bar, mbar, mm H₂O³, inH₂O³, ftH₂O³, mmHG, inHG, psi, Pa, kPa, MPa, g/cm², kg/cm², Torr, ATM or % *) reft. temperature 20 °C  Setting of pressure indication in non-pressure units¹) Specify in plain text: Y22: up to l/min, m³/h, m, USgpm, (specification of measuring range in pressure units "Y01" or "Y02" is essential, unit with max. 5 characters)  Preset bus address  Y16  ✓ ✓  ✓ ✓  Y17  ✓ ✓  Y21  ✓ ✓  ✓ ✓  ✓ ✓  Y21  ✓ ✓  ✓ ✓  ✓ ✓  ✓ ✓  Y22  ✓ ✓  Y22 + ✓  Y01 or Y02  Y22 + ✓  Y01 or Y02  Y22 + ✓  Y01 or Y02  Y23  ✓ ✓  Y24  Y25  ✓ ✓  Y25					
Max. 16 characters, specify in plain text: Y15:		Y15	✓	✓	✓
Max. 27 characters, specify in plain text:  Y16:  Entry of HART address (TAG)  Max. 8 characters, specify in plain text:  Y17:  Setting of pressure indication in pressure units  Specify in plain text (standard setting: bar):  Y21: mbar, bar, kPa, MPa, psi,  Note:  The following pressure units can be selected:  bar, mbar, mm H₂O¹), inH₂O¹), ftH₂O¹), mmHG, inHG, psi, Pa, kPa, MPa, g/cm², kg/cm², Torr, ATM or %  *) ref. temperature 20 °C  Setting of pressure indication in non-pressure units¹)  Specify in plain text: Y22: up to  /min, m³/h, m, USgpm, (specification of measuring range in pressure units "Y01" or "Y02" is essential, unit with max. 5 characters)  Preset bus address  Y17  Y21  ✓ ✓  Y22  Y31  ✓ ✓  Y22  Y31  ✓ ✓  Y22  Y32  Y32  ✓  Y33  Y425  ✓	Max. 16 characters, specify in plain text:				
Max. 27 characters, specify in plain text:  Y16:  Entry of HART address (TAG)  Max. 8 characters, specify in plain text:  Y17:  Setting of pressure indication in pressure units  Specify in plain text (standard setting: bar):  Y21: mbar, bar, kPa, MPa, psi,  Note:  The following pressure units can be selected:  bar, mbar, mm H₂O¹), inH₂O¹), ftH₂O¹), mmHG, inHG, psi, Pa, kPa, MPa, g/cm², kg/cm², Torr, ATM or %  *) ref. temperature 20 °C  Setting of pressure indication in non-pressure units¹)  Specify in plain text: Y22: up to  /min, m³/h, m, USgpm, (specification of measuring range in pressure units "Y01" or "Y02" is essential, unit with max. 5 characters)  Preset bus address  Y17  Y21  ✓ ✓  Y22  Y31  ✓ ✓  Y22  Y31  ✓ ✓  Y22  Y32  Y32  ✓  Y33  Y425  ✓	Measuring point text	Y16	1	1	1
Max. 8 characters, specify in plain text:  Y17:	Max. 27 characters, specify in plain text:				
Setting of pressure indication in pressure units  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*), inH <sub>2</sub> O*), ftH <sub>2</sub> O*), mmHG, inHG, psi, Pa, kPa, MPa, g/cm², kg/cm², Torr, ATM or % *) ref. temperature 20 °C  Setting of pressure indication in non-pressure units¹) Specify in plain text: Y22: up to  /min, m³/h, m, USgpm, (specification of measuring range in pressure units "Y01" or "Y02" is essential, unit with max. 5 characters)  Preset bus address  Y21  ✓  ✓  ✓  ✓  ✓  ✓  ✓  ✓  ✓  ✓  ✓  ✓  ✓		Y17	✓		
units  Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi, Note: The following pressure units can be selected: bar, mbar, mm H₂O¹, inH₂O¹, ftH₂O¹, mmHG, inHG, psi, Pa, kPa, MPa, g/cm², kg/cm², Torr, ATM or % *) ref. temperature 20 °C  Setting of pressure indication in non-pressure units¹) Specify in plain text: Y22: up to l/min, m³/h, m, USgpm, (specification of measuring range in pressure units "Y01" or "Y02" is essential, unit with max. 5 characters)  Preset bus address  Y25  ✓	Max. 8 characters, specify in plain text:				
Y21: mbar, bar, kPa, MPa, psi,  Note: The following pressure units can be selected: bar, mbar, mm H₂O¹), inH₂O¹), ftH₂O¹), mmHG, inHG, psi, Pa, kPa, MPa, g/cm², kg/cm², Torr, ATM or % *) ref. temperature 20 °C  Setting of pressure indication in non-pressure units¹) Specify in plain text: Y22: up to l/min, m³/h, m, USgpm, (specification of measuring range in pressure units "Y01" or "Y02" is essential, unit with max. 5 characters)  Preset bus address  Y25  ✓		Y21	✓	✓	✓
The following pressure units can be selected: bar, mbar, mm H₂O*), inH₂O*), ftH₂O*), mmHG, inHG, psi, Pa, kPa, MPa, g/cm², kg/cm², Torr, ATM or % *) ref. temperature 20 °C  Setting of pressure indication in non-pressure units¹) Specify in plain text: Y22: up to l/min, m³/h, m, USgpm, (specification of measuring range in pressure units "Y01" or "Y02" is essential, unit with max. 5 characters)  Preset bus address  Y25  ✓	Y21: mbar, bar, kPa, MPa, psi,				
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>1</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" or "Y02" is essential, unit with max. 5 characters)  Preset bus address  Y25					
*) ref. temperature 20 °C  Setting of pressure indication in non-pressure units <sup>1)</sup> Specify in plain text: Y22: up to  /min, m³/h, m, USgpm, (specification of measuring range in pressure units "Y01" or "Y02" is essential, unit with max. 5 characters)  Preset bus address  Y22 + Y01 or Y02 vises	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> ,				
non-pressure units¹)  Specify in plain text: Y22: up to  /min, m³/h, m, USgpm, (specification of measuring range in pressure units "Y01" or "Y02" is essential, unit with max. 5 characters)  Preset bus address  Y01 or Y02  Y25  ✓					
non-pressure units¹)  Specify in plain text: Y22: up to  /min, m³/h, m, USgpm, (specification of measuring range in pressure units "Y01" or "Y02" is essential, unit with max. 5 characters)  Preset bus address  Y01 or Y02  Y25  ✓	Setting of pressure indication in		1		
Specify in plant text.  Y22: up to  /min, m³/h, m, USgpm, (specification of measuring range in pressure units "Y01" or "Y02" is essential, unit with max. 5 characters)  Preset bus address  Y25  ✓	non-pressure units <sup>1)</sup>				
	Y22: up to I/min, m <sup>3</sup> /h, m, USgpm, (specification of measuring range in pressure units "Y01" or "Y02" is essential, unit with				
possible between 1 and 126	Preset bus address	Y25		✓	
Specify in plain text: Y25:	Specify in plain text:				
Factory mounting of valve manifolds, see accessories.		aggorios	2		

Only "Y01", "Y21", "Y22", "Y25" and "D05" can be factory preset.

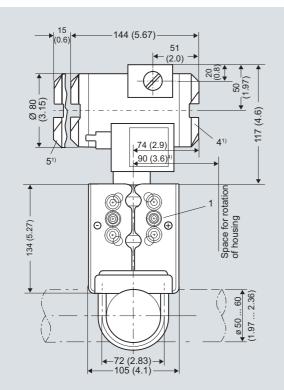
<sup>✓ =</sup> available

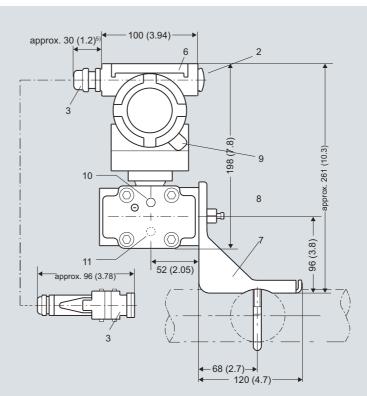
<sup>1)</sup> Preset values can only be changed over SIMATIC PDM.

## Transmitters for general requirements

SITRANS P DS III for differential pressure and flow

#### Dimensional drawings





- Process connection: 1/4-18 NPT (EN 61518)
- Blanking plug
- Electrical connection:
  - Screwed gland Pg 13,5 (adapter)  $^{\!\!2)\,3)}\!,$  only DS III HART,
  - Screwed gland M20x1,5 3
  - Screwed gland 1/2-14 NPT,
  - Han 7D/Han  $8D^{2)\,3)}$  plug, only DS III HART, or
  - M12 connector
- Terminal side
- Electronics side, digital display (longer overall length for cover with window)
- Protective cover over keys
- Mounting bracket (option)
- Sealing screw with valve (option)
- Screw cover safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)

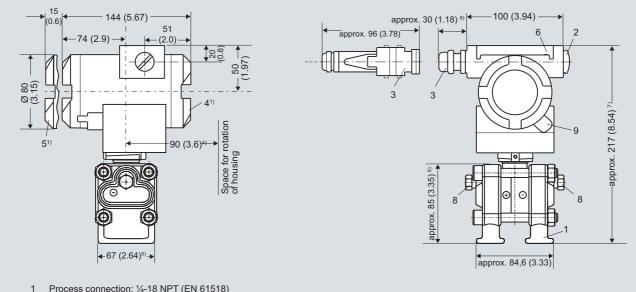
  10 Lateral venting for liquid measurement (Standard)
- 11 Lateral venting for gas measurement (suffix H02)

- 1) Allow approx. 20 mm (0.79 inch) thread length to permit
- Not with type of protection "explosion-proof enclosure"
- 3) Not with type of protection "FM + CSA [is + xp]"
- 92 mm (3.62 inch) for minimum distance to permit rotation with indicator
- 5) 45 mm (1.8 inch) for Pg 13,5 with adapter

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



- Process connection: 1/4-18 NPT (EN 61518)
- 2 Blanking plug
- Electrical connection:
  - Screwed gland Pg 13,5 (adapter)2)3), only DS III HART,
    - Screwed gland M20x1,5 3),
  - Screwed gland 1/2-14 NPT,
  - Han 7D/Han  $8D^{2)\,3)}$  plug, only DS III HART, or
  - M12 connector
- Terminal side
- Electronics side, digital display (longer overall length for cover with window)
- Protective cover over keys
- Mounting bracket (option)
- Sealing screw with valve (option)
- Screw cover safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)

- Allow approx. 20 mm (0.79 inch) thread length to permit unscrewing
- Not with type of protection "explosion-proof enclosure"
- 3) Not with type of protection "FM + CSA [is + xp]"
- 92 mm (3.6 inch) for minimum distance to permit rotation with indicator
- 74 mm (2.9 inch) for PN  $\leq$  420 (MWP  $\leq$  6092 psi)
- 91 mm (3.6 inch) for PN ≤ 420 (MWP ≤ 6092 psi)
- 219 mm (8.62 inch) for PN  $\leq$  420 (MWP  $\leq$  6092 psi)
- 45 mm (1.8 inch) for Pg 13,5 with adapter

SITRANS PDS Illpressure 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

#### Technical specifications

SITRANS P DS III for level					
STITIANS F DS III IOI IEVEI	HART		PROFIBUS PA or FOU	NDATION Fieldbus	
Input					
Measured variable		Le	evel		
Spans (infinitely adjustable) or nominal measuring range and max. permissible operating pressure	Span	Maximum operating pressure	Nominal measuring range	Maximum operating pressure	
	25 250 mbar (0.36 3.63 psi)	See "Mounting flange"	250 mbar (3.63 psi)	See "Mounting flange	
	25 600 mbar (0.36 8.7 psi)	See "Mounting flange"	600 mbar (8.7 psi)	See "Mounting flange	
	53 1600 mbar (0.77 23.2 psi)	See "Mounting flange"	1600 mbar (23.2 psi)	See "Mounting flange	
	160 5000 mbar (2.32 72.5 psi)	See "Mounting flange"	5000 mbar (72.5 psi)	See "Mounting flange	
Lower measuring limit					
<ul> <li>Measuring cell with silicone oil filling</li> </ul>	-100 % of max	x. span or 30 mbar (0.43	5 psi a), depending on m	nounting flange	
Upper measuring limit	100 % of max. span		100 % of the max. nom	inal measuring range	
Output					
Output signal	4 20 mA		Digital PROFIBUS PA a FOUNDATION Fieldbus		
<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 communication	$R_B \le (U_H - 10.5 \text{ V})/0.02$ $U_H$ : Power supply in V	3 A in Ω,	-		
With HART communication	$R_{\rm B}$ = 230 500 $\Omega$ (SIMATIC PDM) or $R_{\rm B}$ = 230 1100 $\Omega$ (HART Communicator)				
Physical bus	-		IEC 61158-2		
Protection against polarity reversal	Protected against short	-circuit and polarity rever supply	rsal. Each connection ag voltage.	ainst the other with ma	
Measuring accuracy		Acc. to E	N 60770-1		
Reference conditions (All error data refer always refer to the set span)		c, start-of-scale value 0 k nperature 25 °C (77 °F))			
Error in measurement and fixed-point setting (including hysteresis and repeatability)					
Linear characteristic					
			≤ 0.15 %		
- r≤10	≤ 0.15 %		≤ 0.15 %		
- r ≤ 10 - 10 < r ≤ 30	≤ 0.15 % ≤ 0.3 %		≤ 0.15 %		
			≤ 0.15 %		
- 10 < r ≤ 30 - 30 < r ≤ 100 Long-term drift (temperature change ± 30 °C (± 54 °F))	≤ 0.3 %	ars	≤ 0.15 % ≤ 0.25 % every 5 years static pressure max. 70	bar g (1015 psi g)	
- 10 < r ≤ 30 - 30 < r ≤ 100 Long-term drift (temperature change ± 30 °C (± 54 °F)) Influence of ambient temperature	$\leq 0.3 \%$ $\leq (0.0075 \cdot r + 0.075) \%$ $\leq (0.25 \cdot r)\%$ every 5 years	ars	≤ 0.25 % every 5 years	bar g (1015 psi g)	
- 10 < r ≤ 30 - 30 < r ≤ 100 Long-term drift (temperature change ± 30 °C (± 54 °F)) Influence of ambient temperature • at -10 +60 °C (14 140 °F)	$\leq$ 0.3 % $\leq$ (0.0075 · r + 0.075) % $\leq$ (0.25 · r)% every 5 yes static pressure max. 70	ars	≤ 0.25 % every 5 years static pressure max. 70	bar g (1015 psi g)	
- 10 < r ≤ 30 - 30 < r ≤ 100 Long-term drift (temperature change ± 30 °C (± 54 °F)) Influence of ambient temperature • at -10 +60 °C (14 140 °F) - 250-mbar (3.63 psi) measuring cell	$\leq$ 0.3 % $\leq$ (0.0075 · r + 0.075) % $\leq$ (0.25 · r)% every 5 yes static pressure max. 70 $\leq$ (0.5 · r + 0.2) % (0.4 in place of 0.2 at 10	ars bar g (1015 psi g)	≤ 0.25 % every 5 years static pressure max. 70	bar g (1015 psi g)	
- 10 < r ≤ 30 - 30 < r ≤ 100 Long-term drift (temperature change ± 30 °C (± 54 °F)) Influence of ambient temperature • at -10 +60 °C (14 140 °F) - 250-mbar (3.63 psi) measuring cell - 600-mbar (8.7 psi) measuring cell	$\leq$ 0.3 % $\leq$ (0.0075 · r + 0.075) % $\leq$ (0.25 · r)% every 5 yes static pressure max. 70 $\leq$ (0.5 · r + 0.2) % (0.4 in place of 0.2 at 10 $\leq$ (0.3 · r + 0.2) % (0.4 in place of 0.2 at 10 $\leq$ (0.4 in place of 0.2 at 10 $\leq$ 0.4 in place of 0.2 at 10 $\leq$ (0.4 in place of 0.2 at 10 $\leq$ (0.4 in place of 0.2 at 10 $\leq$ 0.3 · r + 0.2) %	ars barg (1015 psig) 0 < r ≤ 30) 0 < r ≤ 30)	≤ 0.25 % every 5 years static pressure max. 70 ≤ 0.7 % ≤ 0.5 %	bar g (1015 psi g)	
- 10 < r ≤ 30 - 30 < r ≤ 100  Long-term drift (temperature change ± 30 °C (± 54 °F))  Influence of ambient temperature  • at -10 +60 °C (14 140 °F) - 250-mbar (3.63 psi) measuring cell  - 600-mbar (8.7 psi) measuring cell  - 1600 and 5000 mbar (23.2 and 72.5 psi) measuring cells	$\leq$ 0.3 % $\leq$ (0.0075 · r + 0.075) % $\leq$ (0.25 · r)% every 5 yes static pressure max. 70 $\leq$ (0.5 · r + 0.2) % (0.4 in place of 0.2 at 10 $\leq$ (0.3 · r + 0.2) %	ars barg (1015 psig) 0 < r ≤ 30) 0 < r ≤ 30)	≤ 0.25 % every 5 years static pressure max. 70	bar g (1015 psi g)	
- 10 < r ≤ 30 - 30 < r ≤ 100  Long-term drift (temperature change ± 30 °C (± 54 °F))  Influence of ambient temperature  • at -10 +60 °C (14 140 °F)  - 250-mbar (3.63 psi) measuring cell  - 600-mbar (8.7 psi) measuring cell  - 1600 and 5000 mbar (23.2 and 72.5 psi)	$\leq$ 0.3 % $\leq$ (0.0075 · r + 0.075) % $\leq$ (0.25 · r)% every 5 yes static pressure max. 70 $\leq$ (0.5 · r + 0.2) % (0.4 in place of 0.2 at 10 $\leq$ (0.3 · r + 0.2) % (0.4 in place of 0.2 at 10 $\leq$ (0.25 · r + 0.2) % (0.4	ars barg (1015 psig) 0 < r ≤ 30) 0 < r ≤ 30)	≤ 0.25 % every 5 years static pressure max. 70 ≤ 0.7 % ≤ 0.5 %	bar g (1015 psi g)	
- 10 < r ≤ 30 - 30 < r ≤ 100  Long-term drift (temperature change ± 30 °C (± 54 °F))  Influence of ambient temperature  • at -10 +60 °C (14 140 °F) - 250-mbar (3.63 psi) measuring cell  - 600-mbar (8.7 psi) measuring cell  - 1600 and 5000 mbar (23.2 and 72.5 psi) measuring cells  • at -4010 °C and 60 85 °C	$\leq$ 0.3 % $\leq$ (0.0075 · r + 0.075) % $\leq$ (0.25 · r)% every 5 yes static pressure max. 70 $\leq$ (0.5 · r + 0.2) % (0.4 in place of 0.2 at 10 $\leq$ (0.3 · r + 0.2) % (0.4 in place of 0.2 at 10 $\leq$ (0.25 · r + 0.2) % (0.4	ars bar g (1015 psi g)  0 < r ≤ 30)  0 < r ≤ 30) in place of 0.2 at	≤ 0.25 % every 5 years static pressure max. 70 ≤ 0.7 % ≤ 0.5 %	bar g (1015 psi g)	
- 10 < r ≤ 30 - 30 < r ≤ 100  Long-term drift (temperature change ± 30 °C (± 54 °F))  Influence of ambient temperature  • at -10 +60 °C (14 140 °F) - 250-mbar (3.63 psi) measuring cell  - 600-mbar (8.7 psi) measuring cell  - 1600 and 5000 mbar (23.2 and 72.5 psi) measuring cells  • at -4010 °C and 60 85 °C (-40 +14 °F and 140 185 °F)	$\leq$ 0.3 % $\leq$ (0.0075 · r + 0.075) % $\leq$ (0.25 · r)% every 5 yes static pressure max. 70 $\leq$ (0.5 · r + 0.2) % (0.4 in place of 0.2 at 10 $\leq$ (0.3 · r + 0.2) % (0.4 in place of 0.2 at 10 $\leq$ (0.25 · r + 0.2) % (0.4 10 $<$ r $\leq$ 30)	ars bar g (1015 psi g)  0 < r ≤ 30)  0 < r ≤ 30) in place of 0.2 at  K r ≤ 30 K	≤ 0.25 % every 5 years static pressure max. 70 ≤ 0.7 % ≤ 0.5 % ≤ 0.45 %	bar g (1015 psi g)	

SITRANS P DS III for level			
	HART	PROFIBUS PA or FOUNDATION Fieldbus	
Influence of static pressure			
on the zero point			
- 250-mbar (3.63 psi) measuring cell	$\leq$ (0.3 · r) % per nominal pressure	≤ 0.3 % per nominal pressure	
- 600-mbar (8.7 psi) measuring cell	$\leq$ (0.15 · r) % per nominal pressure	≤ 0.15 % per nominal pressure	
<ul> <li>1600 and 5000 mbar (23.2 and 72.5 psi) measuring cells</li> </ul>	$\leq$ (0.1 · r) % per nominal pressure	≤ 0.1 % per nominal pressure	
• on the span	≤ (0.1 · r) % per nominal pressure	≤ 0.1 % per nominal pressure	
Measured Value Resolution	-	3 · 10 <sup>-5</sup> of nominal measuring range	
Rated conditions			
Degree of protection (to EN 60529)	IF	P65	
Temperature of medium		max. permissible operating temperature to max. f the respective flange connection!	
Measuring cell with silicone oil filling	-40 +100 °C	(-40 +212 °F)	
- High-pressure side	p <sub>abs</sub> ≥ 1 bar: -40 +	175 °C (-40 +347 °F)	
	p <sub>abs</sub> < 1 bar: -40 +	-80 °C (-40 +176 °F)	
- Low-pressure side	-40 +100 °C	(-40 +212 °F)	
	-20 +60 °C (-4 +140 °F) in conj	unction with dust explosion protection	
Ambient conditions			
Ambient temperature			
- Digital indicator	-30 +85 °C	(-22 +185 °F)	
Storage temperature	-50 +85 °C	(-58 +185 °F)	
Climatic class			
- Condensation		idity 0 100 % suitable for use in the tropics	
Electromagnetic Compatibility			
- Emitted interference and interference immunity	Acc. to EN 61326 and NAMUR NE 21		
Design			
Weight (without options)			
To EN (pressure transmitter with mounting flange, without tube)	≈ 11 13 kg (≈	= 24.2 28.7 (lb)	
To ASME (pressure transmitter with mounting flange, without tube)	≈ 11 18 kg (a	≈ 24.2 39.7 lb)	
Enclosure material	Low-copper die-cast aluminum, GD-AlSi12 or s	stainless steel precision casting, mat. no. 1.4408	
Wetted parts materials			
High-pressure side			
Seal diaphragm of mounting flange		at. no. 2.4360, Hastelloy B2, mat. no. 2.4617, Ha: 4, mat. no. 2.4610, tantalum, PTFE, ETCFE	
Measuring cell filling	Silico	one oil	
Process connection			
High-pressure side	Flange to E	N and ASME	
Low-pressure side		tion with mounting thread M10 to DIN 19213 or To EN 61518	
Power supply $m{U}_{H}$		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	-	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 ≤ basic current	_	Yes	
Max. current in event of fault	_	15.5 mA	
Fault disconnection electronics (FDE) available		Yes	
i adit discominection electronics (FDE) available		100	

SITRANS P DS III for level		
	HART	PROFIBUS PA or FOUNDATION Fieldbus
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 99 A	ATEX 2122
- Marking	Ex II 1/2 G EEx	x ia/ib IIB/IIC T6
- Permissible ambient temperature	-40 +70 °C (-40 +158	5 °F) temperature class T4; 8 °F) temperature class T5; 0 °F) temperature class T6
- Connection	To certified intrinsically-safe circuits with peak values: $U_{\rm i} = 30 \text{ V}, I_{\rm i} = 100 \text{ mA}, P_{\rm i} = 750 \text{ mW}; P_{\rm i} = 300 \Omega$	FISCO supply unit: $U_0 = 17.5 \text{ V}$ , $I_0 = 380 \text{ mA}$ , $P_0 = 5.32 \text{ W}$ Linear barrier:
Effective internal industry as /acceptance		$U_0 = 24 \text{ V}, I_0 = 250 \text{ mA}, P_0 = 1.2 \text{ W}$
- 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"  Marking:		
- Marking		Ex d IIC T4/T6
- Permissible ambient temperature	-40 +60 °C (-40 +140	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
<ul> <li>Dust explosion protection for zone 20</li> </ul>	PTB 01 A	ATEX 2055
- Marking		<sup>965</sup> 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: $U_{\rm i}$ = 30 V, $I_{\rm i}$ = 100 mA, $P_{\rm i}$ = 750 mW, $P_{\rm i}$ = 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	$L_{i} = 0.4 \text{ mH}, C_{i} = 6 \text{ nF}$	$L_{i} = 7 \mu H, C_{i} = 1.1 nF$
• Dust explosion protection for zone 21/22	PTB 01 A	ATEX 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; $P_{\rm max}$ = 1.2 W
• Type of protection "n" (zone 2)	TÜV 01 ATEX 1696 X	TÜV 01 ATEX 1696 X
- Marking	Ex II 3 G EEx nA L IIC T4/T5/T6	Ex II 3 G EEx nA L IIC T4/T5/T6
• Explosion protection acc. to FM	Certificate of Cor	mpliance 3008490
- Identification (XP/DIP) or (IS); (NI)	CL I, DIV 1, GP ABCD T4T6; CL II, DIV 1, G CL I, DIV 2, GP ABCD T4T	GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4T6; 6; CL II, DIV 2, GP FG; CL III
• Explosion protection to CSA	Certificate of Cor	mpliance 1153651
- Identification (XP/DIP) or (IS)		FG; CL III; Ex ia IIC T4T6; CL I, DIV 2, GP ABCD V 2, GP FG; CL III

HART communication	
HART communication	230 1100 Ω
Protocol	HART Version 5.x
Software for computer	SIMATIC PDM
PROFIBUS PA communication	
Simultaneous communication with master class 2 (max.)	4
The address can be set using	Configuration tool or local operation (standard setting address 126)
Cyclic data usage	
Output byte	5 (one measured value) or 10 (two measured values)
• Input byte	0, 1, or 2 (register operating 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	
<ul> <li>Adaptation to customer-specific process variables</li> </ul>	Yes, linearly rising or falling characteristic
<ul> <li>Electrical damping T<sub>63</sub>, adjustable</li> </ul>	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)
- 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 parameterizable ramp function

	ioi ieve
FOUNDATION Fieldbus communication	
Function blocks	3 function blocks analog input, 1 function block PID
Analog input	
- Adaptation to customer-specific process variables	Yes, linearly rising or falling characteristic
<ul> <li>Electrical damping T<sub>63</sub>, adjustable</li> </ul>	0 100 s
- Simulation function	Output/input (can be locked within the device with a bridge)
- Failure mode	parameterizable (last good value, substitute value, incorrect value)
- Limit monitoring	Yes, one upper and lower warn- ing limit and one alarm limit respectively
- Square-rooted characteristic for flow measurement	Yes
• PID	Standard FF function block
Physical block	1 resource block
Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block LCD
Pressure transducer block	
- Can be calibrated by applying two pressures	Yes
- Monitoring of sensor limits	Yes
- Simulation function: Measured pressure value, sensor temperature and electronics temperature	Constant value or over parameterizable ramp function
Mounting flange	
Nominal diameter	Nominal pressure
• Acc. to EN 1092-1	
- DN 80	PN 40
DNI100	DN16 DN40

- DN100 • To ASME B16.5

- 3 inch

- 4 inch

PN16, PN40

Class 150, class 300 Class 150, class 300

## Transmitters for general requirements

## SITRANS P DS III for level

Selection and Orderin	g data	Orde				
Pressure transmitter			4 6			
SITRANS P DS III RAF	11		_	- 1		þ
Measuring cell filling	Measuring cell					
Silicone oil	<b>cleaning</b> normal	1				
		-11				
<b>Measuring span</b> 25 250 mbar	(0.363 3.63 psi)	D				
25 600 mbar	(0.363 8.70 psi)	E				
53 1600 mbar	(0.77 23.2 psi)	F				
0.16 5 bar	(2.32 72.5 psi)	G				
	1 /					
Process connection of	PT with flange connection					
<ul> <li>Mounting thread <sup>7</sup>/<sub>16</sub>-</li> </ul>			2			
<ul> <li>Mounting thread M10</li> </ul>			0			
(only for replacemen			Ů			
Non-wetted parts mat	<u> </u>	-				
process flange screws						
Stainless steel	Die-cast aluminum		2			
Stainless steel			3			
Stairliess steer	Stainless steel precision casting <sup>1)</sup>		3			
Version		_				
Standard versions				1		
	English label inscriptions,			2		
documentation in 5 la						
Explosion protection		_				
• None					Α	
<ul> <li>With ATEX, Type of presented and presented are also as a few presented are a few presented are also as a few presented are a few</li></ul>	rotection:					
- "Intrinsic safety (EE:					В	
- "Explosion-proof (El					D	
- "Intrinsic safety and	flameproof enclosure"				Р	
(EEx ia + EEx d) <sup>(3)</sup>					-	
- "Ex nA/nL (Zone 2)"	losion-proof enclosure and				E R	
dust explosion prote	ection (EEx ia+ EEx d +				n	
• With FM + CSA, Type						
	Explosion Proof (is + xp)"1)				NC	
Electrical connection		_			-	
<ul> <li>Screwed gland Pg 13</li> </ul>					Α	
<ul> <li>Screwed gland M20x</li> </ul>					В	
<ul> <li>Screwed gland ½-14</li> </ul>					C	
Han 7D plug (plastic)					D	
connector <sup>4)</sup>						
<ul> <li>M12 connectors (met</li> </ul>	al) <sup>5)</sup>				F	
Display						
						C
<ul> <li>Without indicator</li> </ul>		-				1
<ul><li>Without indicator</li><li>Without visible digital</li></ul>	indicator(digital indicator					
<ul> <li>Without visible digital concealed, setting: m</li> </ul>	nA)					
<ul> <li>Without visible digital concealed, setting: m</li> <li>With visible digital inc</li> </ul>	nA) dication					6
<ul> <li>Without visible digital concealed, setting: m</li> <li>With visible digital inc</li> <li>With customer-specif</li> </ul>	nA)					7

Available ex stock

#### **Ordering information**

1st order item: Pressure transmitter 7MF4633-... 2nd order item: Mounting flange 7MF4912-3...

#### ordering example

Item line 1: 7MF4633-1EY20-1AA1-Z

B line: Y01

C line: Y01: 80 to 143 mbar (1.16 to 2.1 psi)

Item line 2: 7MF4912-3GE01

Power supply units see Chap. 8 "Supplementary Components".

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)

- Not in conjunction with electrical connection "Screwed gland Pg 13.5" and "Han7D plug".
- <sup>2)</sup> Without cable gland, with blanking plug.
- 3) With enclosed cable gland EEx ia and blanking plug.
- 4) Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".
- 5) M12 delivered without cable socket

## **Pressure Measurement** Transmitters for general requirements

SITRANS P DS III for level

Selection and Ordering		Orde	er No.		
Pressure transmitters SITRANS P DS III PA (I SITRANS P DS III FF (F		7 M F	463	5 -	
Nominal measuring ra 250 mbar 600 mbar 1600 mbar 5 bar  Process connection of Female thread ¼-18 NP  • Mounting thread M10 (only for replacement	(3.63 psi) (8.70 psi) (23.2 psi) (72.5 psi) Flow-pressure side T with flange connection 20 UNF to EN 61518 to DIN 19213	D E F G	2 0		
Non-wetted parts mate process flange screws Stainless steel Stainless steel	Prials Electronics housing Die-cast aluminum Stainless steel precision casting		2 3		
Version • Standard versions • International version, I documentation in 5 lar	English label inscriptions, nguages on CD			1 2	
dust explosion prote Zone 1D/2D)" <sup>2)</sup> (not • With FM + CSA, Type	ia)" x <sup>1)</sup> d)" flameproof enclosure"  osion-proof enclosure and ction (EEx ia + EEx d + for DS III FF)			A B D P E R	
• Screwed gland M20 x • Screwed gland ½-14 I • M12 connectors (meta	1.5 NPT			B C F	
<ul><li>concealed, setting: m.</li><li>With visible digital ind</li></ul>	ication c digital indication (setting				0 1 6 7

Available ex stock

#### **Ordering information**

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

#### ordering example

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

- 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 EEx ia and blanking plug.
- 3) M12 delivered without cable socket

	o .			
Selection and Ordering data	Order			
Further designs		HART	PA	FF
Add "-Z" to Order No. and specify Order Code.				
O-rings for process flanges on				
low-pressure side (instead of FPM (Viton))				
PTFE (Teflon)	A20	1	1	1
• FEP (with silicone core, approved for food)	A21	✓	✓	✓
• FFPM (Kalrez, compound 4079)	A22	✓	✓	✓
NBR (Buna N)	A23	✓	✓	✓
Plug				
Han 7D (metal, gray)      Han 7D (instead of Han 7D)	A30 A31	1		
<ul><li>Han 8U (instead of Han 7D)</li><li>Angled</li></ul>	A32	1		
Han 8D (metal, gray)	A33	1		
Sealing screw				
1/4-18 NPT, with valve in mat. of process flanges	A40	✓	✓	✓
Cable sockets for M12 connectors (metal)	A50	✓	✓	✓
Rating plate inscription				
(instead of German)				
English     French	B11 B12	1	<b>✓</b>	1
Spanish	B13	<b>V</b>	<b>V</b>	<b>V</b>
• Italian	B14	1	1	1
English rating plate	B21	1	1	1
Pressure units in inH <sub>2</sub> 0 and/or psi				
Quality inspection certificate	C11	✓	✓	✓
(factory calibration) to IEC 60770-2			,	
Inspection certificate Acc. to EN 10204-3.1	C12	1	✓	<b>V</b>
Factory certificate	C14	1	/	1
Acc. to EN 10204-2.2	014	Ť	Ť	·
"Functional safety (SIL2)" certificate	C20	✓		
PROFIsafe certificate and protocol	C21		✓	
"Functional safety (SIL2/3)" certificate	C23	✓		
Setting of upper limit of output signal to 22.0 mA	D05	✓		
Degree of protection IP68	D12	1	1	1
(only for M20x1.5 and ½-14 NPT)				
Supplied with oval flange	D37	✓	✓	✓
(1 item), PTFE packing and screws in thread				
of process flange	E01	1		
Use on zone 1D / 2D (only together with type of protection "Intrinsic	EUI		•	•
safety (EEx ia)")				
Overfilling safety device for flammable and	E08	✓	✓	
non-flammable liquids (max. PN 32 (MVWP 464 psi), basic device				
with type of protection "Intrinsic safety (EEx ia)")				
Explosion-proof "Intrinsic safety"	E25	✓	✓	✓
to INMETRO (Brazil)				
(only for transmitter 7MF4B)	E45	.,	1	
Ex Approval IEC Ex (EEx ia) (only for transmitter 7MF4B)	E45	•	•	•
Ex Approval IEC Ex (EEx id)	E46	1	1	1
(only for transmitter 7MF4)	L40		V	v
,				

Selection and Ordering data Order code				
Further designs		HART	PA	FF
Add "-Z" to Order No. and specify Order Code.				
Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)	E55	<b>*</b>	✓	✓
Explosion protection "Explosion-proof" to NEPSI (China)	E56	✓	✓	✓
(only for transmitter 7MF4				
Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)	E57	✓	✓	✓
Two coats of lacquer on casing and cover (PU on epoxy)	G10	<b>√</b>	✓	✓
Replacement of process connection side	H01	✓	✓	✓
Additional data				
Please add "-Z" to Order 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	✓		
Stainless steel tag plate (measuring point	Y15	✓	✓	✓
description) Max. 16 characters, specify in plain text: Y15:				
Measuring point text 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 <sub>2</sub> O*), inH <sub>2</sub> O*), ftH <sub>2</sub> O*), mmHG, inHG, psi, Pa, kPa, MPa, g/cm², kg/cm², Torr, ATM or % *) ref. temperature 20 °C				
Setting of pressure indicator in	Y22 <sup>1)</sup>	✓		
non-pressure units <sup>2)</sup> Specify in plain text: Y22: up to I/min, m³/h, m, USgpm, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	+ Y01			
Preset bus address	Y25		✓	
possible between 1 and 126 Specify in plain text Y25:				

Only "Y01", "Y21", "Y22", "Y25" and "D05" can be factory preset

<sup>✓ =</sup> available

<sup>1)</sup> Not in conjunction with over-filling safety device for flammable and non-flammable liquids (Order Code "E08")

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

Directly mounted on the SITRANS P pressure transmitter (converter part) for level, for DS III series  Connection to EN 1092-1  Nominal diameter Nominal pressure DN 80 PN 40 D DN 100 PN 16 G PN 40 H  Connection to ASME B16.5  Nominal diameter Nominal pressure 3 inch Class 150 D Class 300 R 4 inch Class 150 T Class 300 U  Other version, add Order Code and plain text: Nominal diameter; Nominal press.:  Wetted parts materials  Stainless steel 316L Coated with PFA Coated with PFFE Coated with PFFE Foatelloy B2, mat. no. 2.4617 Hastelloy C276, mat. no. 2.4610 Hastelloy C276, mat. no. 2.4610 Hastelloy C4, mat. no. 2.4610 Hastelloy C576, mat. no. 2.4610 Hastelloy C676, mat. no. 2.4610 Hastelloy C776, mat. no. 2.4610 Hastello	Selection and Or	dering data		Order N	lo.		
transmitter (converter part) for level, for DS III series  Connection to EN 1092-1  Nominal diameter Nominal pressure  DN 80 PN 40 D  DN 100 PN 16 G PN 40 H  Connection to ASME B16.5  Nominal diameter Nominal pressure  3 inch Class 150 Q Class 300 R  4 inch Class 150 T Class 300 U  Other version, add Order Code and plain text: Nominal diameter:; Nominal press.:  Wetted parts materials  • Stainless steel 316L - Coated with PFA - Coated with PFFE • Coated with PFFE • Coated with ECTFE¹¹  • Monel 400, mat. no. 2.4360 • Hastelloy B2, mat. no. 2.4617 • Hastelloy C276, mat. no. 2.4610 • Tantalum  Other version, add Order Code and plain text: material of parts in contact with the medium: sealing face, see "Technical specifications*  Tube length • None • 50 mm (1.97 inch) 1 • 100 mm (3.94 inch) 2 • 150 mm (5.90 inch) 3 • 200 mm (7.87 inch) 4  Other version: add Order Code and plain text: tube length:  Filling liquid • Silicone oil M50 • Food oil (FDA-listed)  Other version, add Order Code and plain text: ube length:	Mounting flange		D)	7 M F 4	9 1	2	
Nominal diameter   Nominal pressure   DN 80	transmitter (conve			3	1		
DN 80	Connection to El	N 1092-1					
DN 100	Nominal diamete	er Nominal pressure					
PN 40  Connection to ASME B16.5  Nominal diameter	DN 80	PN 40		D			
Connection to ASME B16.5  Nominal diameter Nominal pressure  3 inch Class 150 Q Class 300 R 4 inch Class 150 T Class 300 U  Other version, add Order Code and plain text: Nominal diameter:; Nominal press.:  Wetted parts materials  • Stainless steel 316L  - Coated with PFA - Coated with PFA - Coated with PFE  • Coated with ECTFE¹)  • Monel 400, mat. no. 2.4360  • Hastelloy B2, mat. no. 2.4617  • Hastelloy C276, mat. no. 2.4819  • Hastelloy C4, mat. no. 2.4819  • Hastelloy C4, mat. no. 2.4610  • Tantalum  Other version, add Order Code and plain text: material of parts in contact with the medium: Sealing face, see "Technical specifications*  Tube length  • None  • 50 mm (1.97 inch) • 100 mm (3.94 inch) • 1200 mm (7.87 inch) Other version: add Order Code and plain text: tube length:  Filling liquid  • Silicone oil M5 • Silicone oil M5 • Silicone oil M5 • Halocarbon oil (for O <sub>2</sub> -measurement) • Glycerin/water² • Food oil (FDA-listed) Other version, add Order Code and plain text:	DN 100	PN 16		G			
Nominal diameter   Nominal pressure   3 inch		PN 40		Н			
3 inch Class 150 Class 300 R 4 inch Class 150 Class 300 R 4 inch Class 150 Class 300 U  Other version, add Order Code and plain text: Nominal diameter:; Nominal press.:  Wetted parts materials  • Stainless steel 316L A D Coated with PFA D D Coated with PFF E D D D D D D D D D D D D D D D D D D	Connection to A	SME B16.5					
Class 300	Nominal diamete	er Nominal pressure					
4 inch Class 150 Class 300  Other version, add Order Code and plain text: Nominal diameter:; Nominal press.:  Wetted parts materials • Stainless steel 316L - Coated with PFA - Coated with PFA - Coated with ECTFE¹) • Monel 400, mat. no. 2.4360 • Hastelloy B2, mat. no. 2.4617 • Hastelloy C276, mat. no. 2.4819 • Hastelloy C4, mat. no. 2.4819 • Hastelloy C4, mat. no. 2.4610 • Tantalum  Other version, add Order Code and plain text: material of parts in contact with the medium: Sealing face, see "Technical specifications"  Tube length • None • 50 mm (1.97 inch) • 100 mm (3,94 inch) • 100 mm (5.90 inch) • 200 mm (7.87 inch) Other version: add Order Code and plain text: tube length:  Filling liquid • Silicone oil M50 • High-temperature oil • Halocarbon oil (for O <sub>2</sub> -measurement) • Glycerin/water²) • Food oil (FDA-listed) Other version, add Order Code and plain text:	3 inch	Class 150		Q			
Class 300   U   Z   J 1 Y		Class 300		R			
Other version, add Order Code and plain text: Nominal diameter:; Nominal press.:  Wetted parts materials  • Stainless steel 316L  - Coated with PFA  - Coated with PFF  • Coated with ECTFE¹)  • Monel 400, mat. no. 2.4360  • Hastelloy B2, mat. no. 2.4617  • Hastelloy C276, mat. no. 2.4819  • Hastelloy C4, mat. no. 2.4610  • Tantalum  Other version, add Order Code and plain text: material of parts in contact with the medium: Sealing face, see "Technical specifications"  Tube length  • None  • 50 mm  (1.97 inch) • 100 mm  (3,94 inch) • 150 mm  (1.97 inch) • 200 mm  (7.87 inch)  Other version: add Order Code and plain text: tube length:  Filling liquid  • Silicone oil M5  • Silicone oil M50  • High-temperature oil • Halocarbon oil (for O <sub>2</sub> -measurement) • Glycerin/water²  • Food oil (FDA-listed)  Other version, add Order Code and plain text:	4 inch	Class 150		T			
Order Code and plain text: Nominal diameter:; Nominal press.:  Wetted parts materials  • Stainless steel 316L  - Coated with PFA  - Coated with PFE  • Coated with ECTFE <sup>1)</sup> • Monel 400, mat. no. 2.4360  • Hastelloy B2, mat. no. 2.4617  • Hastelloy C276, mat. no. 2.4819  • Hastelloy C4, mat. no. 2.4610  • Tantalum  Other version, add Order Code and plain text: material of parts in contact with the medium: Sealing face, see "Technical specifications"  Tube length  • None  • 50 mm  (1.97 inch) • 100 mm  (3,94 inch) • 150 mm  (5.90 inch) • 200 mm  Other version: add Order Code and plain text: tube length:  Filling liquid  • Silicone oil M5  • Silicone oil M50  • High-temperature oil • Halocarbon oil (for O <sub>2</sub> -measurement) • Glycerin/water <sup>2)</sup> • Food oil (FDA-listed)  Other version, add Order Code and plain text:		Class 300		U			
Nominal diameter:; Nominal press.:  Wetted parts materials  Stainless steel 316L  - Coated with PFA  - Coated with PFFE  • Monel 400, mat. no. 2.4360  • Hastelloy B2, mat. no. 2.4617  • Hastelloy C276, mat. no. 2.4819  • Hastelloy C4, mat. no. 2.4610  • Tantalum  Other version, add Order Code and plain text: material of parts in contact with the medium: Sealing face, see "Technical specifications"  Tube length  • None  • 50 mm  (1.97 inch)  • 100 mm  (3,94 inch)  • 150 mm  (5.90 inch)  • 200 mm  (7.87 inch)  Other version: add Order Code and plain text: tube length:  Filling liquid  • Silicone oil M50  • High-temperature oil  • Halocarbon oil (for O <sub>2</sub> -measurement)  • Glycerin/water <sup>2)</sup> • Food oil (FDA-listed)  Other version, add Order Code and plain text:				Z		J	1 Y
Wetted parts materials  Stainless steel 316L  Coated with PFA Coated with PFFE Coated with PTFE  Monel 400, mat. no. 2.4360 Hastelloy B2, mat. no. 2.4617 Hastelloy C276, mat. no. 2.4819 Hastelloy C4, mat. no. 2.4610 Tantalum  Other version, add Order Code and plain text: material of parts in contact with the medium: Sealing face, see "Technical specifications"  Tube length None  So mm  1.97 inch) 100 mm  3.94 inch) 100 mm  150 mm  17.87 inch) 100 mm  17.87 inch) 11  Corder Code and plain text: tube length:  Filling liquid Silicone oil M50 High-temperature oil Halocarbon oil (for O <sub>2</sub> -measurement) Gilycerin/water <sup>2</sup> Food oil (FDA-listed) Other version, add Order Code and plain text:  Halocarbon, add Order Code and plain text:  Halocarbon oil (for O <sub>2</sub> -measurement)  Gilycerin/water <sup>2</sup> Food oil (FDA-listed) Other version, add Order Code and plain text:							
• Stainless steel 316L - Coated with PFA - Coated with PFFE • Coated with ECTFE <sup>1)</sup> • Monel 400, mat. no. 2.4360 • Hastelloy B2, mat. no. 2.4617 • Hastelloy C276, mat. no. 2.4819 • Hastelloy C4, mat. no. 2.4610 • Tantalum  Other version, add Order Code and plain text: material of parts in contact with the medium: Sealing face, see "Technical specifications"  Tube length • None • 50 mm (1.97 inch) • 100 mm (3,94 inch) • 150 mm (5.90 inch) • 200 mm (7.87 inch) Other version: add Order Code and plain text: tube length:  Filling liquid • Silicone oil M50 • High-temperature oil • Halocarbon oil (for O <sub>2</sub> -measurement) • Glycerin/water <sup>2)</sup> • Food oil (FDA-listed) Other version, add Order Code and plain text:		<u> </u>					
- Coated with PFA - Coated with PTFE - Coated with ECTFE <sup>1)</sup> • Monel 400, mat. no. 2.4360 • Hastelloy B2, mat. no. 2.4617 • Hastelloy C276, mat. no. 2.4819 • Hastelloy C4, mat. no. 2.4610 • Tantalum  Other version, add Order Code and plain text: material of parts in contact with the medium: Sealing face, see "Technical specifications"  Tube length • None • 50 mm (1.97 inch) • 150 mm (3.94 inch) • 150 mm (5.90 inch) • 200 mm (7.87 inch) Other version: add Order Code and plain text: tube length:  Filling liquid • Silicone oil M50 • High-temperature oil • Halocarbon oil (for O <sub>2</sub> -measurement) • Glycerin/water <sup>2)</sup> • Food oil (FDA-listed) Other version, add Order Code and plain text:	•						
- Coated with PTFE  • Coated with ECTFE <sup>1)</sup> • Monel 400, mat. no. 2.4360  • Hastelloy B2, mat. no. 2.4617  • Hastelloy C276, mat. no. 2.4819  • Hastelloy C4, mat. no. 2.4610  • Tantalum  Other version, add Order Code and plain text: material of parts in contact with the medium: Sealing face, see "Technical specifications"  Tube length  • None  • 50 mm (1.97 inch) • 100 mm (3,94 inch) • 150 mm (5.90 inch) • 200 mm (7.87 inch) Other version: add Order Code and plain text: tube length:  Filling liquid  • Silicone oil M50 • High-temperature oil • Halocarbon oil (for O <sub>2</sub> -measurement) • Glycerin/water <sup>2)</sup> • Food oil (FDA-listed) Other version, add Order Code and plain text:							
• Coated with ECTFE <sup>1)</sup> • Monel 400, mat. no. 2.4360 • Hastelloy B2, mat. no. 2.4617 • Hastelloy C276, mat. no. 2.4819 • Hastelloy C4, mat. no. 2.4610 • Tantalum  Other version, add Order Code and plain text: material of parts in contact with the medium: Sealing face, see "Technical specifications"  Tube length • None • 50 mm (1.97 inch) • 100 mm (3,94 inch) • 150 mm (5.90 inch) • 150 mm (7.87 inch) Other version: add Order Code and plain text: tube length:  Filling liquid • Silicone oil M5 • Silicone oil M50 • High-temperature oil • Halocarbon oil (for O <sub>2</sub> -measurement) • Glycerin/water <sup>2)</sup> • Food oil (FDA-listed) Other version, add Order Code and plain text:				_			
• Monel 400, mat. no. 2.4360 • Hastelloy B2, mat. no. 2.4617 • Hastelloy C276, mat. no. 2.4819 • Hastelloy C4, mat. no. 2.4610 • Tantalum  Other version, add Order Code and plain text: material of parts in contact with the medium: Sealing face, see "Technical specifications"  Tube length • None • 50 mm (1.97 inch) • 100 mm (3.94 inch) • 150 mm (5.90 inch) • 200 mm (7.87 inch) Other version: add Order Code and plain text: tube length:  Filling liquid • Silicone oil M50 • High-temperature oil • Halocarbon oil (for O <sub>2</sub> -measurement) • Glycerin/water²) • Food oil (FDA-listed) Other version, add Order Code and plain text:							
<ul> <li>Hastelloy B2, mat. no. 2.4617</li> <li>Hastelloy C276, mat. no. 2.4819</li> <li>Hastelloy C4, mat. no. 2.4610</li> <li>Tantalum</li> <li>Other version, add</li> <li>Order Code and plain text: material of parts in contact with the medium: Sealing face, see "Technical specifications"</li> <li>Tube length</li> <li>None</li> <li>50 mm (1.97 inch)</li> <li>100 mm (3,94 inch)</li> <li>200 mm (7.87 inch)</li> <li>200 mm (7.87 inch)</li> <li>Other version: add</li> <li>Order Code and plain text: tube length:</li> <li>Filling liquid</li> <li>Silicone oil M5</li> <li>Silicone oil M50</li> <li>Halocarbon oil (for O<sub>2</sub>-measurement)</li> <li>Glycerin/water<sup>2</sup></li> <li>Food oil (FDA-listed)</li> <li>Other version, add</li> </ul>				-			
<ul> <li>Hastelloy C276, mat. no. 2.4819</li> <li>Hastelloy C4, mat. no. 2.4610</li> <li>Tantalum</li> <li>Other version, add</li> <li>Order Code and plain text: material of parts in contact with the medium: Sealing face, see "Technical specifications"</li> <li>Tube length</li> <li>None</li> <li>50 mm (1.97 inch)</li> <li>100 mm (3,94 inch)</li> <li>200 mm (7.87 inch)</li> <li>200 mm (7.87 inch)</li> <li>Other version: add</li> <li>Order Code and plain text: tube length:</li> <li>Filling liquid</li> <li>Silicone oil M5</li> <li>Silicone oil M50</li> <li>Halocarbon oil (for O<sub>2</sub>-measurement)</li> <li>Glycerin/water<sup>2</sup>)</li> <li>Food oil (FDA-listed)</li> <li>Other version, add</li> <li>Other Code and plain text:</li> </ul>				-			
<ul> <li>Hastelloy C4, mat. no. 2.4610</li> <li>Tantalum</li> <li>Other version, add</li> <li>Order Code and plain text: material of parts in contact with the medium: Sealing face, see "Technical specifications"</li> <li>Tube length</li> <li>None</li> <li>50 mm (1.97 inch)</li> <li>100 mm (3,94 inch)</li> <li>200 mm (7.87 inch)</li> <li>200 mm (7.87 inch)</li> <li>Other version: add</li> <li>Order Code and plain text: tube length:</li> <li>Filling liquid</li> <li>Silicone oil M5</li> <li>Silicone oil M50</li> <li>Halocarbon oil (for O<sub>2</sub>-measurement)</li> <li>Glycerin/water<sup>2</sup>)</li> <li>Food oil (FDA-listed)</li> <li>Other version, add</li> <li>Other Code and plain text:</li> </ul>							
• Tantalum  Other version, add Order Code and plain text: material of parts in contact with the medium: Sealing face, see "Technical specifications"  Tube length • None • 50 mm (1.97 inch) 1 • 100 mm (3.94 inch) 2 • 150 mm (5.90 inch) 3 • 200 mm (7.87 inch) 4 Other version: add 9 Order Code and plain text: tube length:  Filling liquid • Silicone oil M5 • Silicone oil M50 • High-temperature oil • Halocarbon oil (for O <sub>2</sub> -measurement) • Glycerin/water²) • Food oil (FDA-listed) Other version, add Order Code and plain text:							
Other version, add Order Code and plain text: material of parts in contact with the medium: Sealing face, see "Technical specifications"  Tube length  None  100 mm  (1.97 inch) 100 mm  (3,94 inch) 200 mm  (7.87 inch)  Other version: add Order Code and plain text: tube length:  Filling liquid Silicone oil M5 Silicone oil M50 Halocarbon oil (for O <sub>2</sub> -measurement) Glycerin/water² Food oil (FDA-listed) Other version, add Order Code and plain text:	•	at. no. 2.4610		_			
Order Code and plain text: material of parts in contact with the medium: Sealing face, see "Technical specifications"  Tube length  None  100 mm (1.97 inch) 1100 mm (3,94 inch) 200 mm (5.90 inch) 300 200 mm (7.87 inch) 400 Code rode and plain text: tube length:  Filling liquid Silicone oil M5 Silicone oil M50 Halocarbon oil (for O <sub>2</sub> -measurement) Glycerin/water <sup>2</sup> Food oil (FDA-listed) Other version, add Order Code and plain text:							
material of parts in contact with the medium: Sealing face, see "Technical specifications"  Tube length  None  100 mm  100 mm  150 mm  150 mm  150 mm  17.87 inch)  190 mm  190 mm				Z		K	1 Y
Sealing face, see "Technical specifications"           Tube length         0           • None         0           • 50 mm         (1.97 inch)         1           • 100 mm         (3,94 inch)         2           • 150 mm         (5.90 inch)         3           • 200 mm         (7.87 inch)         4           Other version: add         9         L 1 Y           Order Code and plain text: tube length:         9         L 1 Y           Filling liquid         • Silicone oil M5         1         • Silicone oil M50         2           • High-temperature oil         3         • Halocarbon oil (for O₂-measurement)         4         • Glycerin/water²)         6           • Food oil (FDA-listed)         7         Other version, add         9         M 1 Y           Other Code and plain text:         9         M 1 Y							
Tube length       0         • None       0         • 50 mm       (1.97 inch)       1         • 100 mm       (3,94 inch)       2         • 150 mm       (5.90 inch)       3         • 200 mm       (7.87 inch)       4         Other version: add       9       L 1 Y         Order Code and plain text:       1       1         tube length:       5       1         Filling liquid       2       2         • Silicone oil M50       2       2         • High-temperature oil       3       3         • Halocarbon oil (for O₂-measurement)       4       4         • Glycerin/water²)       6       6         • Food oil (FDA-listed)       7       7         Other version, add       9       M1 Y         Order Code and plain text:       9       M1 Y							
• None • 50 mm (1.97 inch) 1 • 100 mm (3,94 inch) 2 • 150 mm (5.90 inch) 3 • 200 mm (7.87 inch) 4 Other version: add 9 Order Code and plain text: tube length:  Filling liquid • Silicone oil M5 1 • Silicone oil M50 2 • High-temperature oil 3 • Halocarbon oil (for O <sub>2</sub> -measurement) 4 • Glycerin/water²) 6 • Food oil (FDA-listed) 7 Other version, add Order Code and plain text:	<u> </u>	·					
• 50 mm (1.97 inch) 1 • 100 mm (3,94 inch) 2 • 150 mm (5.90 inch) 3 • 200 mm (7.87 inch) 4 Other version: add 9 Order Code and plain text: tube length:  Filling liquid • Silicone oil M5 1 • Silicone oil M50 2 • High-temperature oil 3 • Halocarbon oil (for O <sub>2</sub> -measurement) 4 • Glycerin/water <sup>2)</sup> 6 • Food oil (FDA-listed) 7 Other version, add 9 Order Code and plain text:	•			0			
• 100 mm (3,94 inch) 2 • 150 mm (5.90 inch) 3 • 200 mm (7.87 inch) 4 Other version: add 9 Order Code and plain text: tube length:  Filling liquid • Silicone oil M5 1 • Silicone oil M50 2 • High-temperature oil 3 • Halocarbon oil (for O <sub>2</sub> -measurement) 4 • Glycerin/water <sup>2)</sup> 6 • Food oil (FDA-listed) 7 Other version, add 9 Order Code and plain text:		(1.97 inch)					
• 150 mm (5.90 inch) 3 • 200 mm (7.87 inch) 4 Other version: add 9 Order Code and plain text: tube length:  Filling liquid • Silicone oil M5 1 • Silicone oil M50 2 • High-temperature oil 4 • Halocarbon oil (for O <sub>2</sub> -measurement) 4 • Glycerin/water <sup>2)</sup> 6 • Food oil (FDA-listed) 7 Other version, add 9 M1 Y							
200 mm (7.87 inch)  Other version: add Order Code and plain text: tube length:  Filling liquid  Silicone oil M5  Silicone oil M50  High-temperature oil Halocarbon oil (for O <sub>2</sub> -measurement)  Glycerin/water <sup>2)</sup> Food oil (FDA-listed)  Other version, add Order Code and plain text:		* * *					
Other version: add Order Code and plain text: tube length:  Filling liquid  Silicone oil M5 Silicone oil M50 High-temperature oil Halocarbon oil (for O <sub>2</sub> -measurement) Glycerin/water <sup>2)</sup> Food oil (FDA-listed) Other version, add Order Code and plain text:		'					
tube length:  Filling liquid  Silicone oil M5  Silicone oil M50  High-temperature oil Halocarbon oil (for O <sub>2</sub> -measurement) Glycerin/water <sup>2)</sup> Food oil (FDA-listed)  Other version, add Order Code and plain text:	Other version: add	,		9		L	1 Y
Filling liquid  Silicone oil M5  Silicone oil M50  High-temperature oil Halocarbon oil (for O <sub>2</sub> -measurement)  Glycerin/water <sup>2</sup> Food oil (FDA-listed)  Other version, add Order Code and plain text:		olain text:					
<ul> <li>Silicone oil M5</li> <li>Silicone oil M50</li> <li>High-temperature oil</li> <li>Halocarbon oil (for O<sub>2</sub>-measurement)</li> <li>Glycerin/water<sup>2)</sup></li> <li>Food oil (FDA-listed)</li> <li>Other version, add</li> <li>Order Code and plain text:</li> </ul>	tube length:						
<ul> <li>Silicone oil M50</li> <li>High-temperature oil</li> <li>Halocarbon oil (for O<sub>2</sub>-measurement)</li> <li>Glycerin/water<sup>2)</sup></li> <li>Food oil (FDA-listed)</li> <li>Other version, add</li> <li>Order Code and plain text:</li> </ul>	Filling liquid						
<ul> <li>High-temperature oil</li> <li>Halocarbon oil (for O<sub>2</sub>-measurement)</li> <li>Glycerin/water<sup>2</sup>)</li> <li>Food oil (FDA-listed)</li> <li>Other version, add</li> <li>Order Code and plain text:</li> </ul>					-		
<ul> <li>Halocarbon oil (for O<sub>2</sub>-measurement)</li> <li>Glycerin/water<sup>2)</sup></li> <li>Food oil (FDA-listed)</li> <li>Other version, add</li> <li>Order Code and plain text:</li> </ul>					2		
<ul> <li>Glycerin/water<sup>2)</sup></li> <li>Food oil (FDA-listed)</li> <li>Other version, add</li> <li>Order Code and plain text:</li> </ul>							
<ul> <li>Food oil (FDA-listed)</li> <li>Other version, add</li> <li>Order Code and plain text:</li> </ul>					-		
Other version, add Order Code and plain text:					6		
Order Code and plain text:	• Food oil (FDA-lis	sted)			7		
Order Code and plain text:					9	M	1 Y
filling liquid:	Order Code and p						
	tilling liquid:						

1)	For	vacuum	on	request	
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<sup>2)</sup> Not suitable for use in low-pressure range

Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add " <b>-Z</b> " to Order No. and specify Order Code.				
Spark arrester For mounting on zone 0 (including documentation)	A01	✓	✓	
Certificate to EN 10204-2.2 For certification of oil - and grease-free cleaned and packed version for oxygen and summer applications in which only inert filling liquid may be used. (Only in conjunction with halocarbon oil fill fluid)	C10			
Quality inspection certificate (factory calibration) to IEC 60770-2	C11	✓	✓	
Inspection certificate Acc. to EN 10204-3.1	C12	✓	✓	
Vacuum-proof design (for use in low-pressure range) Note: suffix "Y01" required with pressure transmitter!	V04	✓	✓	

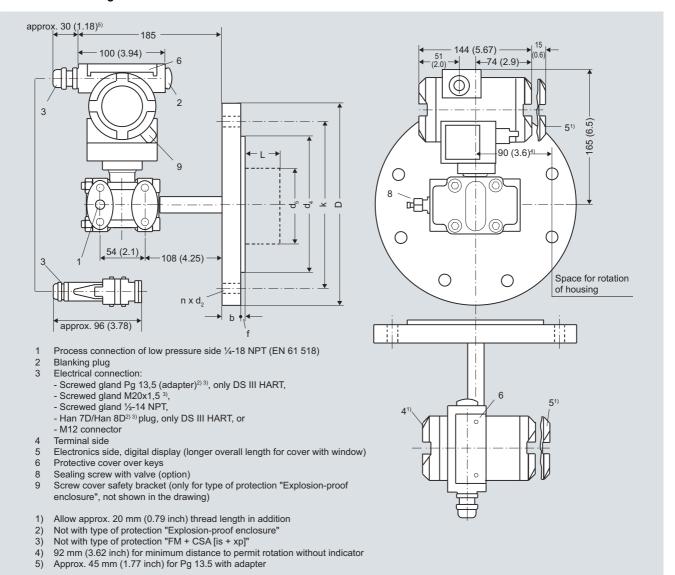
<sup>✓ =</sup> available

D) Subject to export regulations AL:N, ECCN:EAR99H

## Transmitters for general requirements

SITRANS P DS III for level

#### Dimensional drawings



SITRANS P DS III HART pressure transmitters for level, including mounting flange, dimensions in mm (inch)

#### Connection to EN 1092-1

001111001101	בור	<u> </u>										
Nominal diameter	Nominal pressure	L	D	h	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub>	j	k	n	L
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
DN 80	PN 40	24	200	90	18	138	76	72 <sup>1)</sup>	2	160	8	0, 50, 100,
DN 100	PN 40	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	L	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub>	j	k	n	L
		mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)		mm (inch)
3 inch	150	0.94 (24.3)	7.5 (190)	0.75 (19.0)	5 (127)	3 (76)	2.81 <sup>1)</sup> (72)	0.06 (2)	6 (152,4)	4	0, 2, 3.94,
	300	1.12 (29)	8.25 (210)	0.87 (22.2)	5 (127)	3 (76)	2.81 <sup>1)</sup> (72)	0.06 (2)	6.69 (168,3)	8	5.94 or 7.87
4 inch	150	0.94 (24.3)	9 (230)	0.75 (19.0)	6.19 (157.2)	3.69 (94)	3.5 (89)	0.06 (2)	7.5 (190,5)	8	(0, 50, 100,
	300	1.25 (32.2)	10 (255)	0.87 (22.2)	6.19 (157.2)	3.69 (94)	3.5 (89)	0.06 (2)	7.88 (200)	8	150 or 200)

d: Internal diameter of gasket to DIN 2690

 $\ensuremath{d_{M}}\xspace$  Effective diaphragm diameter

 $<sup>^{1}</sup>$ ) 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 HART pressure transmitter 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 can only be ordered as an optional accessory for the corresponding pressure transmitter.

#### Technical specifications

SITRANS P, supplementary electron	onics for 4-wire connection
Output	
Output signal	0 20 mA or 4 20 mA
Load	Max. 750 $\Omega$
Voltage measurement	Linear (square-rooting in transmitter if necessary)
Electrical isolation	Between power supply and input/ output
Measuring accuracy	acc. to EN 60770-1
Conformity error (in addition to transmitter)	≤ 0.15 % of set span
Influence of ambient temperature	≤ 0.1 % per 10 K
Power supply effect	≤ 0.1 % per 10 % change in voltage or frequency
Load effect	≤ 0.1 % per 100 % change
Rated conditions	
Ambient temperature	-20 +80 °C (-4 +176 °F)
Storage temperature	-50 +85 °C (-58 +185 °F)
Degree of protection	IP54 to EN 60529
Electromagnetic compatibility (EMC)	EN 50081, EN 50082

#### 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 8U plug

Power supply

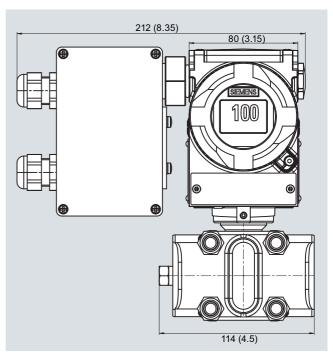
Supply voltage

230 V AC (-10 ... +6 %, 47 ... 63 Hz, approx. 6 VA) or 24 V AC/DC (24 V AC  $\pm$  10 %, 47 ... 63 Hz, approx. 3 VA)

Permissible ripple (within the specified limits)

Approx. 2.5 V pp

#### Dimensional drawings

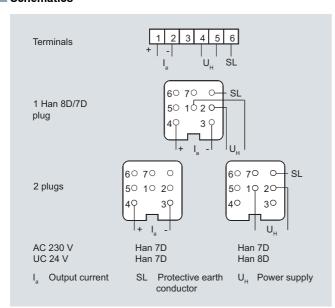


SITRANS P pressure transmitters with supplementary electronics for fourwire connection, dimension drawing, dimensions in mm

## Transmitters for general requirements

SITRANS P DS III
Supplementary electronics for 4-wire connection

#### Schematics



Supplementary electronics for 4-wire connection, connection diagram

Selection and	Ordering data	0	rd	er code
Connection Order No. of the	y electronics for 4-wire e transmitter AB. add "-Z" and Order code.	V		•
Power supply 24 V AC/DC	Electrical connection Terminals; 2 Pg screwed glands, to left		1	
	2 Han 7D/Han 8U plugs incl. mating connector, to left		3	
	1 Han 7D plug incl. mating connector, angled		5	
	Terminals; 1 Pg screwed gland, downwards 1 Han 8U plug incl. mating		9	
	connector, downwards (observe arrangement of plug and differential pressure line)		J	
230 V AC	Terminals; 2 Pg screwed glands, to left		7	
	2 Han 7D plugs incl. mating connector, to left		8	
Output current	1			
0 20 mA				0
4 20 mA				1

Selection and Ordering data	Order No.
Accessories	
Instruction Manual German/English	A5E00322799

# Pressure Measurement Transmitters for general requirements SITRANS P DS III Accessories/Spare Parts

Selection and Orde		Order No.
Replacement meas for SITRANS P, DS I	7MF4990-	
<b>Measuring cell filli</b> Silicone oil Inert liquid	ng Measuring cell cleaning Normal Grease-free	1
Measured span 0.01 1 bar g 0.04 4 bar g 0.16 16 bar g 0.63 63 bar g 1.6 160 bar g 4.0 400 bar g 7.0 700 bar g Wetted parts mate Seal diaphragm	(0.15 14.5 psi g) (0.6 58 psi g) (2.32 232 psi g) (9.14 914 psi g) (23.2 2320 psi g) (58.0 5802 psi g) (102.0 10153 psi g)	B C D E F G J
Stainless steel Hastelloy Hastelloy	Stainless steel Stainless steel Hastelloy	A B C
Process connection Connection shank Female thread ½- Oval flange made max. span 160 ba Mounting thread Mounting thread	0 1 2 3	
Further designs Please add "-Z" to C Order code.	Order No. and specify	Order code
Inspection certification to EN 10204-3.1	ate	C12

Selection and Orderi	ng data	Or	de	r No	٥.
Replacement measur pressure (from the property of SITRANS P, DS III,					92 - - 0 D C 0
Measuring cell filling Silicone oil Inert liquid	Measuring cell cleaning Normal Grease-free	1 3			
<b>Measured span</b> 8.3 250 mbar a 43 1300 mbar a 0.16 5 bar a 1 30 bar a	(0.12 3.63 psi a) (0.62 18.9 psi a) (2.32 72.5 psi a) (14.5 435 psi a)	i	) = 3 H		
Wetted parts materia Seal diaphragm	Is Process connection				
Stainless steel Hastelloy Hastelloy	Stainless steel Stainless steel Hastelloy		A B C		
Process connection Connection shank G Female thread ½-14 Oval flange made of max. span 160 bar (: Mounting thread 7/ Mounting thread M	NPT stainless steel, 2320 psi) <sub>16</sub> -20 UNF to EN 61518			0 1 2 3	
Further designs Please add "-Z" to Ord Order code.	er No. and specify	Or	de	r co	ode
Inspection certificate to EN 10204-3.1	•	C1	2		

## Transmitters for general requirements

SITRANS P DS III Accessories/Spare Parts

Selection and Orde	ring data		Ora	der	No
Spare parts / Acces			Oit	JOI	140.
Replacement meas sure (from the diffe	uring cell for absolute pres- rential pressure series) for S III PA and DS III FF series	F)			993-
Measuring cell filling	g Measuring cell cleaning				
Silicone oil	Normal		1		
Inert liquid	Grease-free		3		
Measured span					
8.3 250 mbar a	(0.12 3.63 psi a)	E)	D		
43 1300 mbar a	(0.62 18.9 psi a)	E)	F		
0.16 5 bar a	(2.32 72.5 psi a)	E)	G	ì	
1 30 bar a	(14.5 435 psi a)		Н	l	
5.3 100 bar a	(76.9 1450 psi a)		K	Ε	
Wetted parts mater	ials				
Seal diaphragm	Parts of measuring cell				
Stainless steel	Stainless steel	_		Α	
Hastelloy	Stainless steel			В	
Hastelloy	Hastelloy			C	
Tantalum	Tantalum			E	
Monel	Monel	E)		Н	
Gold	Gold	-,		L	
Process connection					
Non-wetted parts m • Stainless steel prod	7/ <sub>16</sub> -20 UNF to EN 61518 naterials			6	2
Further designs Please add "-Z" to O Order code.	der No. and specify		Ord	der	code
<ul><li>FFPM (Kalrez, com</li><li>NBR (Buna N)</li></ul>	core, approved for food) pound 4079)		A2 A2 A2 A2	1 2 3	
Inspection certifica to EN 10204-3.1	te		C1	2	
Process connection	ı G½B		D1	6	
Remote seal flange (not together with KC			D2	0	
Vent on side for gas	s measurements		но	2	
Process flanges					
• without			ΚO	0	
<ul> <li>with process flange</li> </ul>	e made of			_	
- Hastellov	made of		ΚO	1	
- Monel			KO		
- Stainless steel wi	th PVDF insert		K0		
max. PN 10 (MW)					
	e of medium 90 °C (194 °F)				
	. 100 bar (76.9 1450 psi)" ort regulations AL: 2B230, ECCN	I: N			

E) Subject to the export regulations AL: 2B230, ECCN: N.

Selection and Ord	ering data	Order	No.
Spare parts / Acce	essories suring cell for differential	7ME/	1994 -
pressure and PN 3	32/160 (MWP 464/2320 psi) for DS III PA and DS III FF series		- 0 D C (
	ing Measuring cell cleaning		
Silicone oil	Normal	1	
Inert liquid	Grease-free	3	
Measured span			
<u>PN 32 (MWP 464 p</u> 1 20 mbar <sup>1)</sup>	,		
	(0.4 8 inH <sub>2</sub> O)	В	
PN 160 (MWP 2320			
1 60 mbar	(0.4 24 inH <sub>2</sub> O)	C	
2.5 250 mbar 6 600 mbar	(1 100 inH <sub>2</sub> O) (2.4 240 inH <sub>2</sub> O)	D 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)	Н	
Wetted parts mate	· · · · · · · · · · · · · · · · · · ·	- "	
(stainless steel pro			
Seal diaphragm	Parts of measuring cell		
Stainless steel	Stainless steel	Α	
Hastelloy	Stainless steel	В	
Hastelloy	Hastelloy	C	
Tantalum <sup>2)</sup>	Tantalum	E	
Monel <sup>2)</sup>	Monel	H	
Gold <sup>2)</sup>	Gold	L	
<ul> <li>Vent on side of pr</li> <li>Mounting thread</li> </ul>	d M10 to DIN 19213 d <sup>7</sup> / <sub>16</sub> -20 UNF to EN 61518 <b>materials</b>		7
Further designs Please add "- <b>Z</b> " to 0	Order No. and specify Order code	Order	code
O-rings for proces	_		
(instead of FPM (Vi	ton))	A 20	
<ul> <li>PTFE (Teflon)</li> <li>FEP (with silicone</li> </ul>	e core, approved for food)	A20 A21	
<ul> <li>FFPM (Kalrez, co</li> </ul>		A22	
• NBR (Buna N)		A23	
Inspection certific	ate	C12	
to EN 10204-3.1		0.12	
Remote seal flang	es	D20	
(not together with k	(01, K02 and K04)		
Vent on side for g		H02	
differential pressu		H03	
(not together with k	(01, K02 and K04)		
Process flanges		VCC	
with process floor	go made of	K00	
<ul> <li>with process flang</li> <li>Hastelloy</li> </ul>	ge made or	K01	
- Monel		K02	
- Stainless steel	with PVDF insert	K04	
max. PN 10 (MV	WP 145 psi)		
max. PN 10 (MV		KU4	

<sup>1)</sup> Not suitable for connection of remote seal

F) Subject to export regulations AL: 91999, ECCN: N.

<sup>2)</sup> Only together with max. spans 250, 1600, 5000 and 30000 mbar (3.63, 23.2, 72.5 and 435 psi).

# Pressure Measurement Transmitters for general requirements SITRANS P DS III Accessories/Spare Parts

Selection and Ordering	g data	Order I	No.
Spare parts / Accesso	ries		
Replacement measuring cell for differential pressure and PN 420 (MWP 6092 psi) for SITRANS P, DS III, DS III PA and DS III FF series		7 M F 4 9 9 5 -	
Measuring cell filling Silicone oil	Measuring cell cleaning Normal	1	
Measured span 2.5 250 mbar 6 600 mbar 16 1600 mbar 50 5000 mbar 0.3 30 bar	(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	flanges)		
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 1/4-18 NP connection  • Sealing screw opposit	, and the second		
Sealing screw opposite process connection     Mounting thread M12 to DIN 19213		1	
- Mounting thread M12 to DIN 19213 - Mounting thread <sup>7</sup> / <sub>16</sub> -20 UNF to EN 61518		3	
<ul> <li>Vent on side of process flange</li> <li>Mounting thread M12 to DIN 19213</li> </ul>		5	
- Mounting thread <sup>7</sup> / <sub>16</sub>		7	
Non-wetted parts mate	erials		
<ul> <li>Stainless steel proces</li> </ul>	s flange screws	2	
Further designs		Order code	
Please add "-Z" to Orde code.	r No. and specify Order		
O-rings for process fla	_		
<ul><li>(instead of FPM (Viton))</li><li>PTFE (Teflon)</li></ul>		A20	
FIFE (lelion)     FEP (with silicone core, approved for food)		A21	
• FFPM (Kalrez, compound 4079) • NBR (Buna N)		A22 A23	
Inspection certificate		C12	
to EN 10204-3.1  Stainless steel process flanges for vertical		H03	
differential pressure li			
without process flange	es	K00	

1)	Not together	with max.	span 600	mbar	(240.9)	$inH_2O)$
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Selection and Ordering data		Order No.	
Spare parts / Accessor	ries		
Replacement measuring cell for level for SITRANS P, DS III, DS III PA and DS III FF series		7 M F 4 9 9 6 -	
Measuring cell filling Silicone oil	Measuring cell cleaning Normal	1	
Rated measuring range 250 mbar 600 mbar 1600 mbar 5 bar	(3.63 psi) (8.70 psi) (23.2 psi) (72.5 psi)	D E F G	
Wetted parts materials (stainless steel process	flanges)		
Seal diaphragm	Parts of measuring cell		
Stainless steel	Stainless steel	A	
Female thread ½-18 NP connection • Sealing screw opposit - Mounting thread M10 - Mounting thread <sup>7</sup> / <sub>16</sub>	e process connection O to DIN 19213	0 2	
Non-wetted parts materials  • Stainless steel process flange screws		2	
Further designs		Order code	
Please add "-Z" to Order code.	No. and specify Order		
O-rings for process flat (instead of FPM (Viton)) • PTFE (Teflon) • FEP (with silicone core • FFPM (Kalrez, compout • NBR (Buna N) Inspection certificate to EN 10204-3.1 without process flange	e, approved for food) and 4079)	A20 A21 A22 A23 C12	

# Pressure Measurement Transmitters for general requirements SITRANS P DS III Accessories/Spare Parts

Selection and Odering data	Order No.	Selection and Odering data	Order No.
Spare parts / Accessories		Mounting screws	
Mounting bracket and fastening parts for pressure transmitters SITRANS P DS III, DS III PA and DS III FF		For measuring point label, grounding and connection terminals or for digital indicator (50 units)	7MF4997-1CD
(7MF403C.) For absolute pressure transmitters SITRANS P DS III, DS III PA and DS III FF (7MF423C.) • made of steel	7MF4997-1AB	Sealing screws (1 set = 2 units) for process flange • made of stainless steel • made of Hastelloy	7MF4997-1CG 7MF4997-1CH
<ul> <li>made of stainless steel</li> <li>Mounting bracket and fastening parts for pressure transmitters</li> </ul>	7MF4997-1AH -	Sealing screws with vent valve Complete (1 set = 2 units)  • made of stainless steel  • made of Hastelloy	7MF4997-1CP 7MF4997-1CQ
SITRANS P DS III, DS III PA and DS III FF (7MF403A.,B.,D. andF.) For absolute pressure transmitters SITRANS P DS III, DS III PA and DS III FF (7MF423A.,B.,D. andF.) • made of steel	7MF4997-1AC	Electronics • for SITRANS P DS III • for SITRANS P DS III • for SITRANS P DS III	7MF4997-1DK 7MF4997-1DL 7MF4997-1DM
• made of stainless steel	7MF4997-1AJ	Connection board	
Mounting and fastening brackets		• for SITRANS P DS III	7MF4997-1DN
For differential pressure transmitters with flange thread M10 SITRANS P DS III, DS III PA and DS III FF (7MF433 and 7MF443)  • made of steel • made of stainless steel	7MF4997-1AD 7MF4997-1AK	for SITRANS P DS III PA and FF     O-rings for process flanges made of:         FPM (Viton) F)         PTFE (Teflon) F)         FEP (with silicone core, approved for food) F)         FFPM (Kalrez, compound 4079) F)	7MF4997-2DB 7MF4997-2DC
Mounting and fastening brackets For differential pressure transmitters with		• NBR (Buna N) F)	7MF4997-2DE
flange thread M12		Sealing ring for process connection	see "Fittings"
SITRANS P DS III, DS III PA and DS III FF (7MF453)		Weldable sockets for PMC connection • PMC Style Standard: Thread 1½"	7MF4997-2HA
made of steel	7MF4997-1AE	PMC Style Standard: Trilead 1/2     PMC Style Minibolt: front-flush 1"	7MF4997-2HB
made of stainless steel	7MF4997-1AL	Gaskets for PMC connection	
Mounting and fastening brackets For differential and absolute pressure transmitters with flange thread 7/16 -20 UNF SITRANS P DS III, DS III PA DS III FF		<ul> <li>(packing unit = 5 units)</li> <li>PTFE seal for PMC Style Standard: F) Thread 1½"</li> <li>Gasket made of Viton for PMC Style Minibolt: F)</li> </ul>	
(7MF433, 7MF443 and 7MF453)  • made of steel  • made of stainless steel	7MF4997-1AF 7MF4997-1AM	front-flush 1"  Weldable socket for TG52/50 and TG52/150 connection	
Cover made of die-cast aluminum, including gasket,		TG52/50 connection TG52/150 connection	7MF4997-2HE 7MF4997-2HF
for SITRANS DS III, DS III PA and DS III FF  • without window  F	7MF4997-1BB	Seals for TG 52/50 and TG 52/150 made of silicone	7MF4997-2HG
• with window	7MF4997-1BE	Seals for flange connection with front-flush	
Cover	_	diaphragm Material FPM (Viton), 10 units	
Cover made of stainless steel, including gasket, for SITRANS DS III, DS III PA and DS III FF  • without window  • with window  Figure 1.		• DN 25, PN 40 (M11) F) • DN 25, PN 100 (M21) F) • 1", class 150 (M40) F) • 1", class 300 (M45) F)	7MF4997-2HJ 7MF4997-2HK
Digital indicator	7MF4997-1BR	▶ available ex stock	
Including mounting material for SITRANS DS III, DS III PA and DS III FF		F) Subject to export regulations AL: 91999, ECCN: N	
Measuring point label • without inscription (5 units) • Printed (1 unit) Data according to Y01 or Y02, Y15 and Y16 (see "Pressure transmitters")	7MF4997-1CA 7MF4997-1CB-Z Y:		

# Pressure Measurement Transmitters for general requirements SITRANS P DS III

**Accessories/Spare Parts** 

Selection and Odering data	Order No.
Operating Instructions <sup>1)</sup>	
• for SITRANS DS III	
- German	A5E00047090
- English	A5E00047092
- French	A5E00053218
- Spanish	A5E00053219
- Italian	A5E00053220
for SITRANS DS III PA	
- German	A5E00053275
- English	A5E00053276
- French	A5E00053277
- Spanish	A5E00053278
- Italian	A5E00053279
• for SITRANS DS III FF	
- German	A5E00279629
- English	A5E00279627
- French (planned)	A5E00279630
- Spanish (planned)	A5E00279632
- Italian (planned)	A5E00279631
Brief instructions (Leporello)	
German, English	
• for SITRANS DS III series, German, English	A5E00047093
<ul> <li>for SITRANS DS III PA, German, English</li> </ul>	A5E00053274
<ul> <li>for SITRANS DS III FF (Available soon)</li> </ul>	A5E00282355
CD with documentation	
for SITRANS P, P300 series, DS III, DS III PA	
and DS III FF	
<ul> <li>German, English, French, Spanish, Italian</li> </ul>	A5E00090345
Certificates (order only via SAP)	
instead of Internet download	
• hard copy (to order)	A5E03252406
• on CD (to order)	A5E03252407
Operating Instructions	A5E00078060
for replacement of electronics, measuring cell and connection board (only available from the	
Internet) <sup>1)</sup>	
HART modem	
• with RS232 interface	7MF4997-1DA
D	
with USB interface	
D	
Supplementary electronics for 4-wire con-	See page 2/140

► available ex stock

Power supply units see Chap. 8 "Supplementary Components".

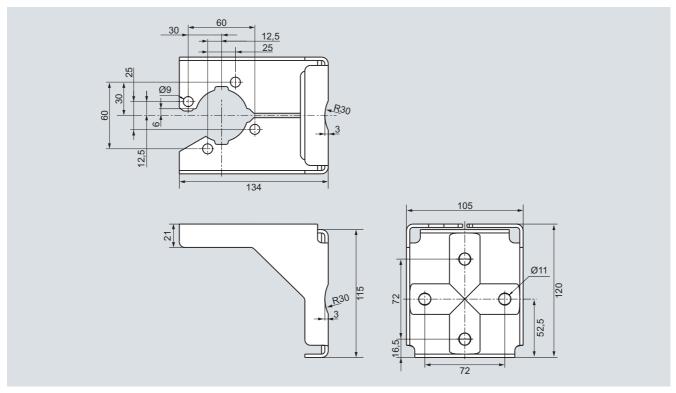
You can download these operating instructions free-of-charge from our Internet site at www.siemens.de/sitransp.

D) Subject to export regulations AL: N, ECCN: EAR99H.

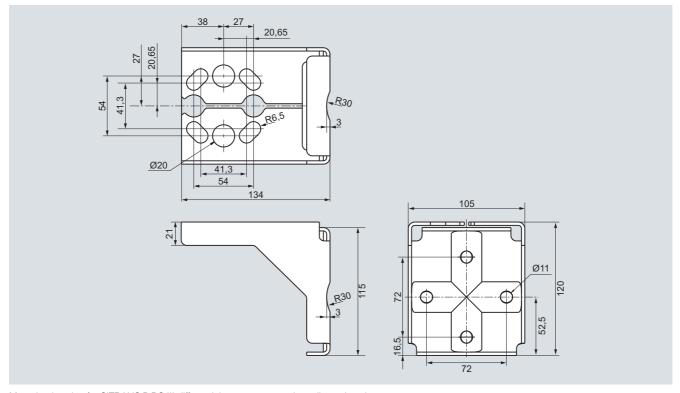
# Transmitters for general requirements

SITRANS P DS III Accessories/Spare Parts

### Dimensional drawings



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

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

#### 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.

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 g (87 psi g))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.

#### Selection and Ordering data

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



Add -Z to the Order No. of the transmitter and add order codes	Order code
SITRANS P DSIII 7MF4031, 7MF4231	T03
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

#### 7MF9011-4EA

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



Add <b>-Z</b> to the Order 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

# 7MF9411-5BA valve manifold on absolute and differential pressure transmitters



Add <b>-Z</b> to the Order No. of the transmitter and add order codes	Order code
SITRANS P DSIII 7MF433, 7MF443 and 7MF453 1) 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	U01 U02
Further designs:  Delivery includes mounting bracket and mounting clips made of  • Steel  • Stainless steel  (instead of the mounting bracket supplied	A01 A02
with the transmitter)  Supplied acceptance test certificate to EN 10204-3.1 for transmitters and mounted valve manifold	C12
	and add order codes  SITRANS P DSIII 7MF433, 7MF443 and 7MF453 1) 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  Further designs: 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

## 7MF9411-5CA valve manifold on differential pressure transmitters



ii uillerentiai pressure transmitters	
Add -Z to the Order No. of the transmitter and add order codes	Order code
SITRANS P DSIII 7MF443 and 7MF4531 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

<sup>1)</sup> 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

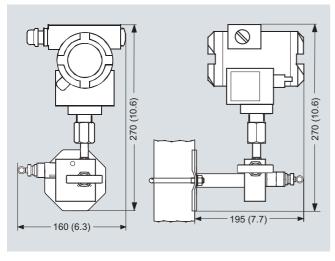
of valve manifolds on transmitters

### Dimensional drawings

Valve manifolds mounted on SITRANS P DS III



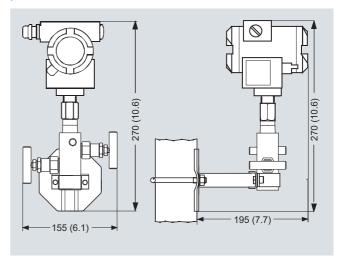
7MF9011-4EA valve manifold with mounted gauge pressure and absolute pressure transmitters



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)

# Pressure Measurement Transmitters for general requirements SITRANS P DS III Factory-mounting

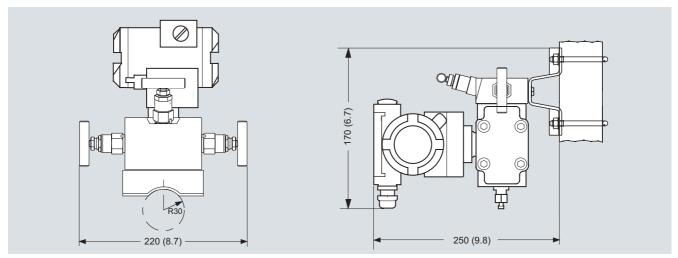
of valve manifolds on transmitters



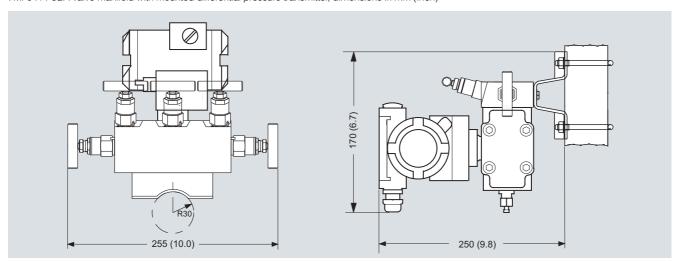
7MF9411-5BA valve manifold with mounted differential pressure trans-



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



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)

## 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, DS III PA, DS III FF)
- Absolute pressure (P300, DS III, DS III PA, DS III FF)
- Differential pressure and flow (DS III, DS III PA, DS III FF)

#### 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 necessary 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 RJT standard, clamp connection, etc.
- Miniature diaphragm seal with male thread for screwing into tapped holes
- Remote seals with customer-specific process connections

### Remote seals for transmitters and pressure gauges

**Technical description** 



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/RJT 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:

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).

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 Siemens Regional Office for more 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	Diaph diam	nragm eter			error of remote capillary		Temperature error of process flange/connec- tion spigot		Recommended min. spans (guid- ance values, observe temp. error)	
		mm	(inch)	mbar/ 10 K	(psi/ 10 K)	mbar/ (10 K ⋅ m <sub>Kap</sub> )	(psi/ (10 K · m <sub>Kap)</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	48	(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	2 inch with tube	48	(1.89)	5	(0.073)	10	(0.145)	10	(0.145)	500	(7.25)
lange to ASME B16.5	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)
vith union nut to DIN 11851	DN 32	32	(1.26)	8	(0.116)	25	(0.363)	25	(0.363)	4000	(58)
3.11.1.00.1	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)	1	(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	(0.98)	20	(0.290)	60	(0.870)	60	(0.870)	6000	(87)
vith threaded socket to	DN 32	32	(1.26)	8	(0.116)	25	(0.363)	25	(0.363)	4000	(58)
DIN 11851	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)	1	(0.015)	1	(0.015)	1	(0.015)	250	(3.63)
Clamp connec-	1½ inch	32	(1.26)	8	(0.116)	25	(0.363)	25	(0.363)	4000	(58)
ion	2 inch	40	(1.57)	4	(0.058)	10	(0.145)	10	(0.145)	2000	(29)
	2½ inch	59	(2.32)	3	(0.044)	5	(0.073)	5	(0.073)	500	(7.25)
	3 inch	72	(2.83)	1	(0.015)	1	(0.015)	1	(0.015)	250	(3.63)
Miniature dia-	G1B	25	(0.98)	20	(0.290)	60	(0.870)	60	(0.870)	6000	(87)
ohragm seal	G11/2B	40	(1.57)	4	(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)

### 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.

# 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	Diaphra diamete						Temperature error of process flange/connection spigot		Recommended min. spans (guidance val- ues, observe temperature error)	
		mm	(inch)	mbar/ 10 K	(psi/ 10 K)	mbar/ (10 K · m <sub>Kap</sub> )	(psi/ (10 K · m <sub>Kap</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	48	(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	48	(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	2½ 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)
- Half the values apply to glycerin/water mixture as the filling liquid
- 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 seal	of remote	Temperature error of capillary		Temperature error of pro- cess flange/connection spigot		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 seal	of remote	Temperature error of capillary		Temperature error of process flange/connection spigot		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:

$dp = (\vartheta_{RS} - \vartheta_{Cal})$	$\cdot$ f <sub>RS</sub> + ( $\vartheta$ <sub>Cap</sub> - $\vartheta$ <sub>Cal</sub> ) $\cdot$ I <sub>Cap</sub> ·f <sub>Cap</sub> + ( $\vartheta$ <sub>TR</sub> - $\vartheta$ <sub>Cal</sub> ) · f <sub>PF</sub>
dp	Additional temperature error (mbar)
$\vartheta_{RS}$	Temperature on remote seal diaphragm (generally corresponds to temperature of medium)
$\vartheta_{Cal}$	Calibration (reference) temperature (20 °C (68 °F))
f <sub>RS</sub>	Temperature error of remote seal
$\vartheta_{Cap}$	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
f <sub>PF</sub>	Temperature error of the oil filling in the process flanges of the pressure transmitter

#### **Example of temperature error calculation**

#### **Existing conditions:**

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> = 0.1 mbar/10 K (0.0014 psi/10 K)

steel, mat. No. 1.4404/316L	
Capillary length	$I_{Cap} = 6 \text{ m (19.7 ft)}$
Capillaries fitted on both sides	$f_{Cap} = 0.07 \text{ mbar/(10 K} \cdot m_{Cap})$ (0.001 psi/(10 K · m <sub>Cap</sub> ))
Filling liquid silicone M5	f <sub>PF</sub> = 0.07 mbar/10 K (0.001 psi/10 K)
Process temperature	ϑ <sub>RS</sub> = 100 °C (212 °F)
Temperature on the capillaries	$\vartheta_{\text{Cap}} = 50  ^{\circ}\text{C}  (122  ^{\circ}\text{F})$
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 dp remote seals

#### Calculation:

#### in mbar

 $dp = (100 \,^{\circ}\text{C} - 20 \,^{\circ}\text{C}) \cdot 0.1 \,\, \text{mbar/10 K} + (50 \,^{\circ}\text{C} - 20 \,^{\circ}\text{C}) \cdot 6 \,\, \text{m} \cdot 0.07 \,\, \text{mbar/(10 K} \cdot \text{m)} + (50 \,^{\circ}\text{C} - 20 \,^{\circ}\text{C}) \cdot 0.07 \,\, \text{mbar/10 K}$ 

dp = 0.8 mbar + 1.26 mbar + 0.21 mbar

#### in psi

 $dp = (212 \text{ °F} - 68 \text{ °F}) \cdot 0.0014 \text{ psi/10 K} + (112 \text{ °F} - 68 \text{ °F}) \cdot 19.7 \text{ ft} \cdot 0.001 \text{ psi/(10 K} \cdot 3.28 \text{ ft}) + (112 \text{ °F} - 68 \text{ °F}) \cdot (0.001 \text{ psi/10 K})$  dp = 0.012 psi + 0.018 psi + 0.003 psi

#### Result:

dp = 2.27 mbar (0.033 psi) (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 <u>added</u> to the error determined above from connection of the remote <u>seal</u>.

#### 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	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 %

#### Maximum temperature of medium

The following maximum temperatures of the medium apply depending on the material of the wetted parts:

Material	p <sub>abs</sub> < 1 l (14.5 psi)	oar	p <sub>abs</sub> > 1 bar (14.5 psi)		
	°C	(°F)	°C	(°F)	
Stainless steel, 316L	200	(392)	400	(662)	
PTFE coating	200	(392)	260	(500)	
ECTFE coating	100	(212)	150	(302)	
PFA coating	200	(392)	260	(500)	
Hastelloy C4, mat. No. 2.4610	200	(392)	260	(500)	
Hastelloy C276, mat. No. 2.4819	200	(392)	400	(662)	
Monel 400, mat. No. 2.4360	200	(392)	400	(662)	
Tantalum	200	(392)	300	(572)	

# Maximum capillary length for diaphragm seals (quidance values)

	,								
Nom. diar	n.	Max. le	Max. length of capillary						
		Diaphr	agm seal	Clamp	on seal				
		m	(ft)	m	(ft)				
DN 25	(1 inch)	2.5	(8.2)	2.5	(8.2)				
DN 32	(11/4 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)	10	(32.8)	10	(32.8)				
DN 100	(4 inch)	10	(32.8)	10	(32.8)				
DN 125	(5 inch)	10	(32.8)	-	-				

# Remote seals for transmitters and pressure gauges

**Technical description** 

#### 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 Temper on capi				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	(3.63 psi)	600 mbar	(8.7 psi)	1600 mbar	(23.2 psi)
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)
Glycerin/water	1.220	(0.044)	+60	(140)	0.13	(0.040)	0.05	(0.015)	0.02	(0.006)
			+20	(68)	0.76	(0.232)	0.32	(0.098)	0.12	(0.037)
			0	(32)	9.72	(2.963)	4.05	(1.234)	1.51	(0.460)

#### 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.

Filling liquid	Digit in Order No.	Permissible	temperature o	f medium				Viscosity 20 °C (68		Coefficien expansion	
		p <sub>abs</sub> < 1 bar	(p <sub>abs</sub> < 14.5 psi)	p <sub>abs</sub> > 1 bar	(p <sub>abs</sub> > 14.5 psi)						
		°C	(°F)	°C	(°F)	kg/dm <sup>3</sup>	(lb/in <sup>3</sup> )	$m^2\!/s\!\cdot\!10^6$	$(\mathrm{ft}^2/\mathrm{s}\!\cdot\!10^6)$	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)	-10 +350	(+14 +662)	1.07	(0.04)	39	(420)	0.00080	(0.00044)
Halocarbon oil	4	-40 +80	(-40 +176)	-40 +175	(-40 +347)	1.968	(0.07)	14	(151)	0.00086	(0.00048)
Glycerin/water	6	Not possi- ble	Not possible	-10 +120	(+14 +248)	1.22	(0.04)	88	(947)	0.00050	(0.00028)
Food oil (FDA listed)	7	-20 +160	(-4 +320)	-20 +200	(-4 +392)	0.92	(0.03)	10	(107)	0.00080	(0.00044)

Diaphragm seals of sandwich design with flexible capillary

### Overview



Diaphragm seals of sandwich design

### Technical specifications

Diaphragm seals of sandwich des	ign
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 2500
• 3 inch	Class 150 class 2500
• 4 inch	Class 150 class 2500
• 5 inch	Class 150 class 2500
Sealing face	
• For stainless steel, mat. No. 1.4404/316L	To EN 1092-1, form B1 or ASME B16.5 RF 125 250 AA
• For the other materials	To EN 1092-1, form B2 or ASME B16.5 RFSF
Materials	
Main body	Stainless steel mat. no. 1.4404/316L
Wetted parts	Stainless steel mat. no. 1.4404/316L
	<ul> <li>Without coating</li> </ul>
	<ul> <li>PTFE coating (for vacuum on request)</li> </ul>
	<ul> <li>ECTFE coating (for vacuum on request)</li> </ul>
	<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

Sealing material in the process flanges	
<ul> <li>For pressure transmitters, absolute pressure transmitters and low- pressure applications</li> </ul>	Copper
For other applications	Viton
Maximum pressure	See above and the technical data of the pressure transmitters
Tube length	Without tube as standard (tube available on request)
Capillary	
• Length	Max. 10 m (32.8 ft), longer lengths on request
Internal diameter	max. 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 O2)
	Food oil (FDA listed)
	Glycerine/water (not suitable for use in low-pressure range)
Permissible ambient temperature	Dependent on the pressure trans- 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 remote seals
Weight	Approx. 4 kg (8.82 lb)
Certificate 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 requirements of article 3, paragraph 3 (sound engineering practice)

# Remote seals for transmitters and pressure gauges

Diaphragm seals of sandwich design with flexible capillary

D: 1 1	ering data	С	rder I	Vo.	Orc	d.c	00	de
Diaphragm seal								
	gn, with flexible capillary RANS P transmitter							
	03 and 7MF423 code "V01" (vacuum-proof 2 <sup>1</sup> ); off)	D) <b>7</b>	MF4	900	) -			
for absolute pressu Scope of delivery (1	re 7MF433;	D) <b>7</b>	MF4	9 0 1	۱ -			
for differential presscope of delivery 2	sure and flow 7MF443;	; D) <b>7</b>	MF4	903	3 -			
,		1			В	Ē		
Nominal diameter a	and nominal pressure							
• DN 50	PN 16 100		Α					
	for pressure transmitters							
for pressure) • DN 80	PN 16 100		В					
• DN 100	PN 16 100 PN 16 100		C					
• DN 125	PN 16 100		D					
• 2 inch	Class 150 2500		E					
	for pressure transmitters		_					
• 3 inch	Class 150 2500		н					
4 inch	Class 150 2500		L					
● 5 inch	Class 150 2500		N					
Smooth sealing face to ASME B16.5 RF 1	e to EN 1092-1, form B1 or 25 250 AA							
Other version Add Order code and Nominal diameter: Sealing face: see "Te	.; Nominal pressure:		Z			J	1	Y
Wetted parts mater	rials							
<ul> <li>Stainless steel 316</li> </ul>								
- without coating			Α					
- with PTFE coatin	g		E 0					
- with ECTFE coat	ing <sup>2)</sup>		F					
- with PFA coating	-		D					
- M 1 400 + NI	o. 2.4360		G					
• Monei 400, mat. N			•					
<ul> <li>Hastelloy C276, m</li> </ul>			J					
<ul><li>Hastelloy C276, m</li><li>Hastelloy C4, mat.</li></ul>			U					
<ul><li>Hastelloy C276, m</li><li>Hastelloy C4, mat.</li><li>Tantalum</li></ul>			J U K					
<ul> <li>Hastelloy C276, m</li> <li>Hastelloy C4, mat.</li> <li>Tantalum</li> <li>Other version</li> </ul>	No. 2.4610		U			K	1	Y
<ul> <li>Hastelloy C276, m</li> <li>Hastelloy C4, mat.</li> <li>Tantalum</li> <li>Other version</li> <li>Add Order code and</li> </ul>	No. 2.4610 d plain text:		J U K			K	1	Y
<ul> <li>Hastelloy C276, m</li> <li>Hastelloy C4, mat.</li> <li>Tantalum</li> <li>Other version</li> <li>Add Order code and</li> <li>Wetted parts material</li> </ul>	No. 2.4610 d plain text:		J U K			K	1	Y
<ul> <li>Hastelloy C276, m</li> <li>Hastelloy C4, mat.</li> <li>Tantalum</li> <li>Other version</li> <li>Add Order code and</li> <li>Wetted parts materia</li> <li>Tube length</li> </ul>	No. 2.4610 d plain text:		J U K			K	1	Y
<ul> <li>Hastelloy C276, m</li> <li>Hastelloy C4, mat.</li> <li>Tantalum</li> <li>Other version</li> <li>Add Order code and Wetted parts materia</li> <li>Tube length</li> <li>without tube</li> <li>Other version:</li> </ul>	No. 2.4610 d plain text: als:		J U K Z			K		
<ul> <li>Hastelloy C276, m</li> <li>Hastelloy C4, mat.</li> <li>Tantalum</li> <li>Other version</li> <li>Add Order code and Wetted parts materia</li> <li>Tube length</li> <li>without tube</li> <li>Other version:</li> <li>Add Order code and</li> </ul>	No. 2.4610 d plain text: als:		J U K Z					-
<ul> <li>Hastelloy C276, m</li> <li>Hastelloy C4, mat.</li> <li>Tantalum</li> <li>Other version</li> <li>Add Order code and Wetted parts materia</li> <li>Tube length</li> <li>without tube</li> <li>Other version:</li> <li>Add Order code and Tube length:</li> </ul>	No. 2.4610 d plain text: als:		J U K Z					-
Hastelloy C276, m     Hastelloy C4, mat.     Tantalum     Other version     Add Order code and Wetted parts materia     Tube length     without tube     Other version:     Add Order code and Tube length:  Filling liquid	No. 2.4610 d plain text: als:		J U K Z					
Hastelloy C276, me Hastelloy C4, mat. Tantalum Other version Add Order code and Wetted parts materia Tube length without tube Other version: Add Order code and Tube length: Filling liquid Silicone oil M5	No. 2.4610 d plain text: als:		J U K Z	1 2				
Hastelloy C276, m Hastelloy C4, mat. Tantalum Other version Add Order code and Wetted parts materia Tube length without tube Other version: Add Order code and Tube length: Filling liquid Silicone oil M5 Silicone oil M50	No. 2.4610 d plain text: als: d plain text:		J U K Z	2				
Monel 400, mat. N Hastelloy C276, m Hastelloy C4, mat. Tantalum Other version Add Order code and Wetted parts materia  Tube length Without tube Other version: Add Order code and Tube length:  Sillicone oil M5 Sillicone oil M50 High-temperature Halocarbon oil (for	No. 2.4610 d plain text: als: d plain text:		J U K Z	2 3				
Hastelloy C276, m Hastelloy C4, mat. Tantalum Other version Add Order code and Wetted parts materia  Tube length without tube Other version: Add Order code and Tube length:  Filling liquid Silicone oil M5 Silicone oil M50 High-temperature Halocarbon oil (for	No. 2.4610 d plain text: als: d plain text:	_	J U K Z	2 3 4				
Hastelloy C276, m Hastelloy C4, mat. Tantalum Other version Add Order code and Wetted parts materia  Tube length without tube Other version: Add Order code and Tube length:  Filling liquid Silicone oil M5 Silicone oil M50 High-temperature Halocarbon oil (for Glycerin/water <sup>4)</sup>	No. 2.4610  d plain text: als:  d plain text:  oil  measuring O <sub>2</sub> ) <sup>3)</sup>	_	J U K Z	2 3 4 6				
Hastelloy C276, m Hastelloy C4, mat. Tantalum Other version Add Order code and Wetted parts materia  Tube length without tube Other version: Add Order code and Tube length:  Filling liquid Silicone oil M50 High-temperature Halocarbon oil (for Glycerin/water <sup>4)</sup> Food oil (FDA liste	No. 2.4610  d plain text: als:  d plain text:  oil  measuring O <sub>2</sub> ) <sup>3)</sup>		J U K Z	2 3 4 6 7		L	1	Y
Hastelloy C276, m Hastelloy C4, mat. Tantalum Other version Add Order code and Wetted parts materia  Tube length without tube Other version: Add Order code and Tube length:  Filling liquid Silicone oil M5 Silicone oil M50 High-temperature Halocarbon oil (for Glycerin/water <sup>4)</sup>	No. 2.4610  d plain text: als:  d plain text:  oil  measuring O <sub>2</sub> ) <sup>3)</sup> d)I		J U K Z	2 3 4 6			1	Y

Selection and Ord	lering data		Order I	No. C	rd.code
Diaphragm seal					
Sandwich-type des connected to a SIT separately):					
for pressure 7MF4 together with Orde design) and 7MF80 Scope of delivery (	7 M F 4	900-			
for absolute press Scope of delivery (		D)	7 M F 4	901-	
for differential pre scope of delivery 2	essure and flow 7MF443	; D)	7 M F 4	903-	•
			1	E	3
Length of capillar	y <sup>2)</sup>				
• 1.0 m	(3.28 ft)			2	
• 1.6 m	(5.25 ft)			3	
• 2.5 m	(8.20 ft)			4	
• 4.0 m	(13.1 ft)			5	
• 6.0 m	(19.7 ft)			6	
• 8.0 m	(26.25 ft)			7	
• 10.0 m	(32.8 ft)			8	
Other version Add Order code as Length of capillary				9	N 1 Y
1) With 7MF802 vacuum-tight ver 2) Max. capillary ler D) Subject to export	iption".	so orde	er the		
Selection and Ord	lering data			Orde	r code
Further designs					
Please add "-Z" to	Order No. and specify Orde	r co	de.		
Spark arrestor					

Selection and Ordering data	Order code
Further designs	
Please add "-Z" to Order No. and specify Order code.	
Spark arrestor With spark arrestor for mounting on zone 0 (including documentation)	
<ul><li>Pressure and absolute pressure</li><li>for differential pressure transmitters</li></ul>	A01 A02
Certificate to EN 10204-2.2  For certification of oil - and grease-free cleaned and packed version for oxygen and summer applications in which only inert filling liquid may be used. (Only in conjunction with halocarbon oil fill fluid)	C10
Quality inspection certificate (Factory calibration) to IEC 60770-2	C11
Inspection certificate to EN 10204, section 3.1	C12
Functional safety certificate ("SIL") to IEC 61508 (Only in conjunction with the order code "C20" in the case of SITRANS P DSIII transmitter)	C20
Vacuum-proof design for use in low-pressure range for transmitters for • Pressure • For differential pressure transmitters	V01 V03

 $<sup>^{1)}\,</sup>$  With 7MF802.-... and the measuring cells Q, S, T and U also order the vacuum-tight version.

<sup>2)</sup> For vacuum on request

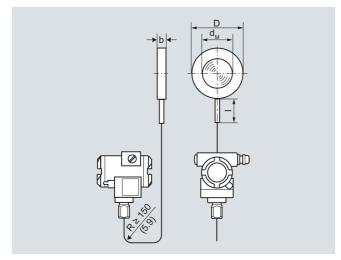
<sup>3)</sup> Oil- and grease- free cleaning to DIN 25410, level 2 and packaging included in the scope of delivery.

<sup>4)</sup> Not suitable for use in low-pressure range.

# Remote seals for transmitters and pressure gauges

Diaphragm seals of sandwich design with flexible capillary

#### Dimensional drawings



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

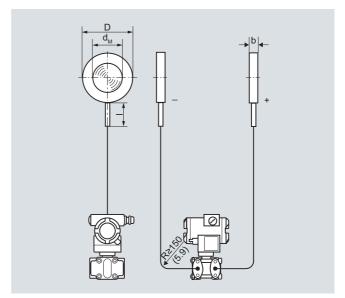
Nom. diam.	Nom. press.	b	D	d <sub>M</sub>	1
		mm	mm	mm	mm
DN 50	PN 16 PN 100	20	102	59	100
DN 80		20	138	89	100
DN 100		20	158	89	100
DN 125		22	188	124	100

#### Connection to ASME B16.5

Nom. diam.	Nom. press.	b	D	d <sub>M</sub>	ı
	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 100	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>	ı
	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 Diaphragm seals of flange design with flexible capillary

#### Overview



Diaphragm seals of flange design

Technical specifications					
Diaphragm seals of flange design	with flexible capillary	Sealing material in the process			
Nominal diameter	Nominal pressure	flanges			
<ul> <li>DN 50 (recommendable only for pressure transmitters for pressure)</li> </ul>	PN 10 PN 40, PN 100	<ul> <li>For pressure transmitters, absolute pressure transmitters and low- pressure applications</li> </ul>	Copper		
• DN 80	PN 10 PN 40, PN 100	For other applications	Viton		
• DN 100	PN 16, PN 40	Maximum pressure	See above and the technical data		
• DN 125	PN 16, PN 40	·	of the pressure transmitter		
<ul> <li>2 inch (recommendable only for pressure transmitters for pressure)</li> </ul>	Class 150, class 300, class 600, class 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	Internal diameter	lengths on request 2 mm (0.079 inch)		
Sealing face		Minimum bending radius	150 mm (5.9 inch)		
• For stainless steel, mat.	To EN 1092-1, form B1 or	Filling liquid	190 11111 (3.9 111611)		
No. 1.4404/316L	ASMR B16.5 RF 125 250 AA	(for remote seals of sandwich and	Silicone oil M5		
For the other materials	To EN 1092-1, form B2 or	flange design)	Silicone oil MS		
	ASME B16.5 RFSF		Silicone oil M50		
Materials	0		High-temperature oil		
Main body	Stainless steel mat. no. 1.4404/316L		Halocarbon oil (for measuring O <sub>2</sub> )		
Wetted parts	Stainless steel		Food oil (FDA listed)		
·	mat. no. 1.4404/316L		Glycerine/water (not for use in		
	Without coating		low-pressure range)		
	<ul> <li>PTFE coating (for vacuum on request)</li> </ul>	Permissible ambient temperature	Dependent on the pressure trans- mitter and the filling liquid of the remote seal		
	<ul> <li>ECTFE coating (for vacuum on request)</li> </ul>		More information can be found in the technical data of the pressure		
	<ul> <li>PFA coating (for vacuum on request)</li> </ul>		transmitters and in the section "Technical data of filling liquid" in		
	Monel 400, mat. No. 2.4360		the Technical description to the remote seals		
	Hastelloy C276, mat. No. 2.4819	Weight	Approx. 4 kg (8.82 lb)		
	Hastelloy C4, mat. No. 2.4610	Certificate and approvals			
	Tantalum	Classification according to pressure	For gases of fluid group 1 and liq-		
Capillary	Stainless steel, mat. No. 1.4571/316Ti	equipment directive (DRGL 97/23/EC)	uids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering		
Sheath	Spiral hose made of stainless steel, mat. No. 1.4404/316L		practice)		

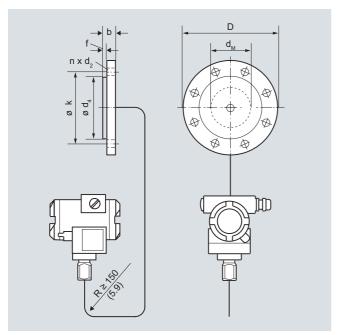
# Pressure Measurement Remote seals for transmitters and pressure gauges Diaphragm seals of flange design with flexible capillary

0.1 11 10		0 1 11 0			0 1 11 0 1
Selection and Ord	dering data	Order No. Or	d. code	Selection and Ordering data	Order No. Ord. code
Diaphragm seal	h flovible copillon:			Diaphragm seal	
to a pressure trans SITRANS P (order				Flange design, with flexible capillary, connected to a pressure transmitter SITRANS P (order separately):	
	er code "V01" (vacuum-proof 802 <sup>1)</sup> ;	7 M F 4 9 2 0 -		for pressure 7MF403 and 7MF423 D together with Order code "V01" (vacuum-proof design) and 7MF802 <sup>1)</sup> ; scope of delivery: 1 off	) 7 M F 4 9 2 0 -
for absolute presscope of delivery:		7MF4921-		<b>for absolute pressure</b> 7MF433; D scope of delivery: 1 off	7 M F 4 9 2 1 -
for differential prescope of delivery:	essure and flow 7MF443; D 2 off			for differential pressure and flow 7MF443; D scope of delivery: 2 off	
		1 - B			1 - B
	r and nominal pressure			Filling liquid	
• DN 50	PN 10 40 PN 100	A B		<ul><li>Silicone oil M5</li><li>Silicone oil M50</li></ul>	1 2
(DN 50 recommen	ided only for pressure			High-temperature oil	3
transmitters for pre				• Halocarbon oil (for measuring O <sub>2</sub> ) <sup>3)</sup>	4
• DN 80	PN 10 40	D		Glycerin/water <sup>4)</sup>	6
	PN 100	E		Food oil (FDA listed)	7
• DN 100	PN 16	G		Other version	9 M 1 Y
- DIV 100	PN 40	H		Add Order code and plain text: Filling liquid:	
• DN 125	PN 16	J			
- DIV 120	PN 40	ĸ		Length of capillary <sup>5)</sup> • 1.0 m (3.28 ft)	2
• 2 inch	Class 150	Ĺ		• 1.6 m (5.25 ft)	3
■ Z IIICH	Class 300	M		• 2.5 m (8.20 ft)	4
	Class 600	N		• 4.0 m (13.1 ft)	5
	Class 1500	P		• 6.0 m (19.7 ft)	6
(2 inch recommen	ded only for pressure			• 8.0 m (26.25 ft)	7
transmitters for pre				• 10.0 m (32.8 ft)	8
• 3 inch	Class 150	Q		Other version	9 N 1 Y
	Class 300	R		Add Order code and plain text: Length of capillary:	
	Class 600	S		Length of capillary	
• 4 inch	Class 150	Ţ		1) With 7MF802 and the measuring cells Q, S, T a	and U also order the
	Class 300	U		vacuum-tight version.  2) For vacuum on request.	
	Class 400	V		3) Oil- and grease- free cleaning to DIN 25410, level	2 and packaging
• 5 inch	Class 150	W		included in the scope of delivery.	
	Class 300	X		<ol> <li>Not suitable for use in low-pressure range.</li> <li>Max. capillary length, see section "Technical desc</li> </ol>	rintion"
0	Class 400	Y		D) Subject to export regulations AL: N, ECCN: EAR99	
to ASME B16.5 RF	ce to EN 1092-1, form B1 or			2) Gasjoot to export regulations / LETT, 2001 if 21 the	
	.20 200 / 0 .	z	J 1 Y	Selection and Ordering data	Order code
Other version  Add Order code a	nd plain text:		JII	Further designs	
Nominal diameter:	; Nominal pressure:			Please add "-Z" to Order No. and specify Order co	ode.
Sealing face: See	"Iechnical data"			Spark arrestor	
Wetted parts mat				With spark arrestor for mounting on zone 0 (included documentation) for transmitters for	ding
Stainless steel 3				pressure and absolute pressure	A01
- without coating	,	A		differential pressure	A02
- with PTFE coat	-1	E 0		Certificate to EN 10204-2.2	C10
- with ECTFE coa	•	F		For certification of oil - and grease-free cleaned a	
- with PFA coatin	0	D		packed version for oxygen and summer application	
<ul><li>Monel 400, mat.</li><li>Hastelloy C276,</li></ul>		G J		which only inert filling liquid may be used. (Only in	
<ul> <li>Hastelloy C4, ma</li> </ul>		U		junction with halocarbon oil fill fluid)	
Tantalum	20. 140. 2.4010	K		Quality inspection certificate (Factory calibrati	on) C11
Other version		Z	K 1 Y	to IEC 60770-2	
Add Order code a	nd plain text:			Inspection certificate	C12
Wetted parts mate	erials:			to EN 10204, section 3.1	
Tube length				Functional safety certificate ("SIL") to IEC 6150	
without tube		0		(Only in conjunction with the order code "C20" in t	he
Other version: Add Order code a	and plain toxt:	9	L 1 Y	case of SITRANS P DSIII transmitter)	
Tube length:	iliu pialii text.			Vacuum-proof design	
<b>3</b> ·				for use in low-pressure range for transmitters for • pressure	V01
				differential pressure	V01
				amoroniai producio	700

# Remote seals for transmitters and pressure gauges

Diaphragm seals of flange design with flexible capillary

### Dimensional drawings



Diaphragm seals of flange design with flexible capillary for connection to SITRANS P pressure transmitters for pressure, dimensions in mm (inch)

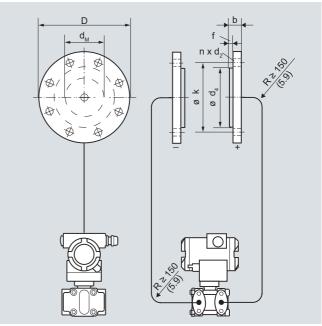
#### Connection to EN 1092-1

Nom. diam.	Nom. press.	b 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 40	20	165	18	102	59	2	125	4
	PN 100	28	195	26	102	59	2	145	4
DN 80	PN 40	24	200	18	138	89	2	160	8
	PN 100	32	230	26	138	89	2	180	8
DN 100	PN 16	20	220	18	158	89	2	180	8
	PN 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)	
	600	32,4	165	20	92	59	2	127	8
		(1.28)	(6.50)	(0.79)	(3.62)	(2.32)	(0.08)	(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)	
	400	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  $\rm d_{M^{\! :}}$  Effective diaphragm diameter



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 40	24	200	18	138	89	2	160	8
	PN 100	32	230	26	138	89	2	180	8
DN 100	PN 16	20	220	18	158	89	2	180	8
	PN 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. 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	
•								_
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
000	(1.14)	(8.27)	(0.87)	(5)	(3.50)	(0.08)	(6.63)	0
600	38,8	210	22	127	89	7	168.5	8
000	(1.52)	(8.27)	(0.87)	(5)	(3.50)	(0.28)	(6.63)	O
150	24,3	230	20	158	89	2	190.5	4
100	(0.96)	(9.06)	(0.79)	(6.22)	(3.50)	(0.08)	(7.5)	7
300	32,2	255	22	158	89	2	200	8
300	(1.27)	(10.04)	(0.87)	(6.22)	(3.50)	(0.08)	(7.87)	0
400	42	255	26	158	89	7	200	8
400	(1.65)	(10.04)	(1.02)	(6.22)	(3.50)	(0.28)	(7.87)	U
150	24,3	255	22	186	124	2	216	4
100	(0.96)	(10.04)	(0.87)	(7.32)	(4.88)	(0.08)	(8.50)	7
300	35,8	280	22	186	124	2	235	8
000	(1.41)	(11.02)	(0.87)	(7.32)	(4.88)	(0.08)	(9.25)	J
400	45,1	280	26	186	124	7	235	8
400						(0.28)	(9.25)	O
	press.	bysq.in         mm           150         24,3 (0.96)           300         29 (1.14)           600         38,8 (1.52)           150         24,3 	$ \begin{array}{llllllllllllllllllllllllllllllllllll$	Press.   Fig.   Press.   Fig.   Press.   Fig.   Press.   Fig.   Press.   Press.	Press.   Press   Pre	Press   Pres	Name	

d: Inside diameter of gasket according to EN 1092-1 / ASME B16.5  $\rm d_{M}$ : Effective diaphragm diameter

# Pressure Measurement Remote seals for transmitters and pressure gauges Diaphragm seals of flange design directly fitted on transmitter

### Overview



Diaphragm seals of flange design, d for pressure	irectly fitted on a pressure transmitter		
Technical specifications			
Diaphragm seals (flange design) sure, directly fitted on a transmitt		Maximum pressure	See above and the technical data of the transmitter
Nominal diameter  DN 50 DN 80 DN 100 2 inch  inch dinch sealing face For stainless steel, mat. No. 1.4404/316L	Nominal pressure PN 40, PN 100 PN 40, PN 100 PN 16, PN 40 Class 150, class 300, class 600, class 1500 Class 150, class 300, class 600 Class 150, class 300, class 400 To EN 1092-1, form B1 or ASME B16.5 RF 125 250 AA	Capillary • Length • Internal diameter • Minimum bending radius Filling liquid	<ul> <li>Without tube</li> <li>50 mm (1.97 inch)</li> <li>100 mm (3.94 inch)</li> <li>150 mm (5.91 inch)</li> <li>200 mm (7.87 inch)</li> </ul> Max. 10 m (32.8 ft), longer lengths on request 2 mm (0.079 inch) 150 mm (5.9 inch) Silicone oil M5
For the other materials  Materials     Main body  Mottad parts	Smooth to EN 1092-1, form B2 or ASME B16.5 RFSF  Stainless steel mat. no. 1.4404/316L  Stainless steel		<ul> <li>Silicone oil M50</li> <li>High-temperature oil</li> <li>Halocarbon oil (for measuring O<sub>2</sub>)</li> <li>Food oil (FDA listed)</li> <li>Glycerine/water (not suitable for</li> </ul>
Wetted parts	<ul> <li>Mat. no. 1.4404/316L</li> <li>Without coating</li> <li>PTFE coating (for vacuum on request)</li> <li>ECTFE coating (for vacuum on request)</li> <li>PFA coating (for vacuum on request)</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> </ul>	Max. recommended process temperature  Permissible ambient temperature  Weight  Certificate and approvals	use in low-pressure range) 170 °C (338 °F)  Dependent on the pressure transmitter 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 remote seals.  Approx. 4 kg (8.82 lb)
Capillary     Sealing material on the process connection	Stainless steel, 1.4571/316Ti Copper	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)

# Remote seals for transmitters and pressure gauges

Diaphragm seals of flange design directly fitted on transmitter

Diaphragm seal	ering data	Orde	r No. C	ord.code
		) 7MF	4910	-
7MF423 together	sure 7MF403 and r with Order code "V01" gn) and 7MF802 <sup>1)</sup> ; must			"
Process connectio	n			
Vertical (pressure)	transmitter upright)	0		
<ul> <li>Horizontal</li> </ul>		2		
Nominal diameter a	and nominal pressure			
• DN 50	PN 40 PN 100	A B		
• DN 80	PN 40 PN 100	D E		
• DN 100	PN 16 PN 40	G H		
• 2 inch	Class 150 Class 300 Class 600 Class 1500	L M N P		
• 3 inch	Class 150 Class 300 Class 600	Q R S		
• 4 inch	Class 150 Class 300 Class 400	T U V		
Smooth sealing face B2, or to ASME B16 Other version Add Order code and	e to DIN 1092-01, form B1 or .5 125 250 AA or RFSF	z		J 1 Y
	; Nominal pressure:			
Wetted parts mater				
<ul> <li>Stainless steel 316</li> </ul>	)L	А		
- without coating	α			
<ul><li>without coating</li><li>with PTFE coatin</li></ul>		E	0	
<ul><li>without coating</li><li>with PTFE coatin</li><li>with ECTFE coat</li></ul>	ing <sup>2)</sup>		0	
<ul><li>without coating</li><li>with PTFE coatin</li><li>with ECTFE coat</li><li>with PFA coating</li></ul>	ing <sup>2)</sup>	E F	0	
<ul> <li>without coating</li> <li>with PTFE coatin</li> <li>with ECTFE coat</li> <li>with PFA coating</li> <li>Monel 400, mat. N</li> </ul>	ing <sup>2)</sup>   o. 2.4360	E F D	0	
<ul> <li>without coating</li> <li>with PTFE coatin</li> <li>with ECTFE coat</li> <li>with PFA coating</li> <li>Monel 400, mat. N</li> <li>Hastelloy C276, m</li> <li>Hastelloy C4, mat.</li> </ul>	ing <sup>2)</sup> o. 2.4360 at. No. 2.4819	E F D G J	0	
<ul> <li>without coating</li> <li>with PTFE coatin</li> <li>with ECTFE coat</li> <li>with PFA coating</li> <li>Monel 400, mat. N</li> <li>Hastelloy C276, m</li> <li>Hastelloy C4, mat.</li> <li>Tantalum</li> </ul>	ing <sup>2)</sup> o. 2.4360 at. No. 2.4819	E F D G J U K	0	V1V
<ul> <li>without coating</li> <li>with PTFE coatin</li> <li>with ECTFE coat</li> <li>with PFA coating</li> <li>Monel 400, mat. N</li> <li>Hastelloy C276, m</li> <li>Hastelloy C4, mat.</li> </ul>	ing <sup>2)</sup> o. 2.4360 at. No. 2.4819 No. 2.4610 d plain text:	E F D G J	0	K1Y
<ul> <li>without coating</li> <li>with PTFE coatin</li> <li>with ECTFE coat</li> <li>with PFA coating</li> <li>Monel 400, mat. N</li> <li>Hastelloy C276, m</li> <li>Hastelloy C4, mat.</li> <li>Tantalum</li> <li>Other version</li> <li>Add Order code and Wetted parts materia</li> <li>Tube length</li> </ul>	ing <sup>2)</sup> o. 2.4360 at. No. 2.4819 No. 2.4610 d plain text:	E F D G J U K	0	K1Y
<ul> <li>without coating</li> <li>with PTFE coatin</li> <li>with ECTFE coat</li> <li>with PFA coating</li> <li>Monel 400, mat. N</li> <li>Hastelloy C276, m</li> <li>Hastelloy C4, mat.</li> <li>Tantalum</li> <li>Other version</li> <li>Add Order code and Wetted parts materia</li> <li>Tube length</li> <li>Without tube</li> </ul>	ing <sup>2)</sup> o. 2.4360 at. No. 2.4819 No. 2.4610 d plain text:	E F D G J U K	0	K 1 Y
<ul> <li>without coating</li> <li>with PTFE coatin</li> <li>with ECTFE coat</li> <li>with PFA coating</li> <li>Monel 400, mat. N</li> <li>Hastelloy C276, m</li> <li>Hastelloy C4, mat.</li> <li>Tantalum</li> <li>Other version</li> <li>Add Order code and Wetted parts materia</li> <li>Tube length</li> <li>Without tube</li> <li>50 mm</li> </ul>	ing <sup>2)</sup> o. 2.4360 at. No. 2.4819 No. 2.4610 d plain text: als:  • (1.97 inch)	E F D G J U K	0 1	K1Y
<ul> <li>without coating</li> <li>with PTFE coatin</li> <li>with ECTFE coat</li> <li>with PFA coating</li> <li>Monel 400, mat. N</li> <li>Hastelloy C276, m</li> <li>Hastelloy C4, mat.</li> <li>Tantalum</li> <li>Other version</li> <li>Add Order code and Wetted parts materia</li> <li>Tube length</li> <li>Without tube</li> <li>50 mm</li> <li>100 mm</li> </ul>	ing <sup>2)</sup> o. 2.4360 at. No. 2.4819 No. 2.4610 d plain text: als:  • (1.97 inch) • (3.94 inch)	E F D G J U K	0 1 2	K1Y
<ul> <li>without coating</li> <li>with PTFE coatin</li> <li>with ECTFE coat</li> <li>with PFA coating</li> <li>Monel 400, mat. N</li> <li>Hastelloy C276, m</li> <li>Hastelloy C4, mat.</li> <li>Tantalum</li> <li>Other version</li> <li>Add Order code and Wetted parts materia</li> <li>Tube length</li> <li>Without tube</li> <li>50 mm</li> <li>100 mm</li> <li>150 mm</li> </ul>	ing <sup>2)</sup> o. 2.4360 at. No. 2.4819 No. 2.4610 d plain text: als:  • (1.97 inch) • (3.94 inch) • (5.90 inch)	E F D G J U K	0 1 2 3	K1Y
<ul> <li>without coating</li> <li>with PTFE coatin</li> <li>with ECTFE coat</li> <li>with PFA coating</li> <li>Monel 400, mat. N</li> <li>Hastelloy C276, m</li> <li>Hastelloy C4, mat.</li> <li>Tantalum</li> <li>Other version</li> <li>Add Order code and Wetted parts materia</li> <li>Tube length</li> <li>Without tube</li> <li>50 mm</li> <li>100 mm</li> </ul>	ing <sup>2)</sup> o. 2.4360 at. No. 2.4819 No. 2.4610 d plain text: als:  • (1.97 inch) • (3.94 inch)	E F D G J U K	0 1 2	K1Y

Selection and Ordering data		Order No.	Ord.o	CO	de
Diaphragm seal	D)	7MF491	0 -		
Directly fitted to a pressure transmitter SITRANS P for pressure 7MF403 and 7MF423 together with Order code "V01" (vacuum-proof design) and 7MF802 1); must be ordered separately					
Filling liquid					
<ul><li>Silicone oil M5</li><li>Silicone oil M50</li></ul>		1			
High-temperature oil		3			
• Halocarbon oil (for measuring O <sub>2</sub> ) <sup>3)</sup>		4			
• Glycerin/water <sup>4)</sup>		6			
Food oil (FDA listed)		7			
Other version Add Order code and plain text: Filling liquid:		9	ı	M 1	Y
1)	_				

- $^{1)}\,$  With 7MF802.-... and the measuring cells Q, S, T and U also order the vacuum-tight version.

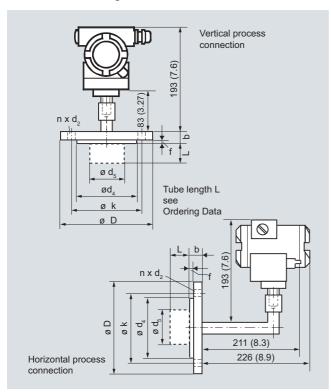
  2) For vacuum on request.
- 3) Oil- and grease- free cleaning to DIN 25410, level 2 and packaging included in the scope of delivery.
- 4) Not suitable for use in low-pressure range.
- D) Subject to export regulations AL: N, ECCN: EAR99H.

Selection and Ordering data	Order code
Further designs	
Please add "-Z" to Order No. and specify Order code.	
Spark arrestor With spark arrestor for mounting on zone 0 (including documentation) for transmitters for gauge pressure and absolute pressure	A01
Certificate to EN 10204-2.2  For certification of oil - and grease-free cleaned and packed version for oxygen and summer applications in which only inert filling liquid may be used. (Only in conjunction with halocarbon oil fill fluid)	C10
Quality inspection certificate (Factory calibration) to IEC 60770-2 to IEC 60770-2	C11
Inspection certificate to EN 10204, section 3.1	C12
Functional safety certificate ("SIL") to IEC 61508 (Only in conjunction with the order code "C20" in the case of SITRANS P DSIII transmitter)	C20
Vacuum-proof design for use in low-pressure range for transmitters for gauge pressure	V01

# Remote seals for transmitters and pressure gauges

Diaphragm seals of flange design directly fitted on transmitter

#### Dimensional drawings



Diaphragm seals of flange design, direct connection to a SITRANS P pressure transmitter (process connection vertical (top) and horizontal (bottom)), dimensions in mm (inch)

#### 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
		mm	mm	mm	mm	mm	mm	mm	mm	
DN 50	PN 40	20	165	18	102	48.3	59	2	125	4
	PN 100	28	195	26	102	48.3	59	2	145	4
DN 80	PN 40	24	200	18	138	76	89	2	160	8
	PN 100	32	230	26	138	76	89	2	180	8
DN 100	PN 16	20	220	18	158	94	89-2	2	180	8
	PN 40	24	235	22	162	94	89	2	190	8

#### Connection to ASME B16.5

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	59	2	120.5	4
		(0.77)	(5.91)	(0.79)	(3.62)	(1.9)	(2.32)	(0.08)	(4.74)	
	300	22,7	165	20	92	48.3	59	2	127	8
		(0.89)	(6.5)	(0.79)	(3.62)	(1.9)	(2.32)	(0.08)	(5)	
	600	32,4	165	20	92	48.3	59	7	127	8
		(1.28)	(6.5)	(0.79)	(3.62)	(1.9)	(2.32)	(0.28)	(5)	
	1500	45,1	215	26	92	48.3	59	7	165	8
		(1.78)	(8.46)	(1.02)	(3.62)	(1.9)	(2.32)	(0.28)	(6.5)	
3 inch	150	24,3	190	20	127	76	89	2	152.5	4
		(0.96)	(7.48)	(0.79)	(5)	(3)	(3.50)	(0.08)	(6)	
	300	29	210	22	127	76	89	2	168.5	8
		(1.14)	(8.27)	(0.87)	(5)	(3)	(3.50)	(0.08)	(6.63)	
	600	38,8	210	22	127	76	89	7	168.5	8
		(1.53)	(8.27)	(0.87)	(5)	(3)	(3.50)	(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)	(80.0)	(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

# 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

Maximum pressure

rechnical specifications	
Diaphragm seals of screwed desig differential pressure, fixed connect	
Nominal diameter	Nominal pressure
• DN 80	PN 40
• DN 100	PN 16, PN 40
• 3 inch	Class 150, class 300
• 4 inch	Class 150, class 300
Sealing face	
• For stainless steel, mat. No. 1.4404/316L	To EN 1092-1, form B1 or ASME B16.5 RF 125 250 AA
For the other materials	To EN 1092-1, form B2 or ASME B16.5 RFSF
Materials	
Main body	Stainless steel mat. no. 1.4404/316L
Wetted parts	Stainless steel mat. no. 1.4404/316L
	<ul> <li>Without coating</li> </ul>
	<ul> <li>PTFE coating (for vacuum on r quest)</li> </ul>
	<ul> <li>ECTFE coating (for vacuum or request)</li> </ul>
	<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
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

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
Internal diameter	2 mm (0.079 inch)
Minimum bending radius	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)
	Glycerine/water (not suitable for use in low-pressure range)
Max. recommended process temperature	170 °C (338 °F)
Permissible ambient temperature	Dependent on the pressure transmitter 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 remote seals
Weight	Approx. 4 kg (8.82 lb)
Certificate 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 requirements of article 3, paragraph 3 (sound engineering practice)

# Remote seals for transmitters and pressure gauges

Diaphragm seals of flange design fixed connection and with capillary

Selection and Ord	ering data	Or	der N	lo. Or	d.	СО	de
Diaphragm seal	D	71	1F4	913-			
direct mounting to lifted flanged remote se means of capillary	Mounting flange (with tube as option) for direct mounting to high-pressure side and flanged remote seal without tube, fitted by means of capillary to low-pressure side of SITRANS P for differential pressure, DS III series (7MF443)						
Flange, connectio	n to EN 1092-1		П				
Nom. diam.	Nom. press.						
• DN 80	PN 40		)				
• DN 100	PN 16	(					
	PN 40	ŀ	1				
Flange, connectio	n to ASME B16.5						
Nom. diam.	Nom. press.						
• 3 inch	Class 150	(	2				
	Class 300	F	₹ .				
• 4 inch	Class 150	1					
	Class 300	Ų	J				
Other version		7	<u>z</u>		,	J 1	Υ
Add Order code ar Flange:, Nomina pressure:	nd plain text: I diameter:; Nominal						
<u></u>		-					
Wetted parts mate	e to EN 1092-1, form B1 or						
	6.5 RF 125 250 AA or RFSF						
• Stainless steel 31	6L						
<ul> <li>without coating</li> </ul>			Α				
<ul> <li>with PTFE coating</li> </ul>	ng		E 0				
- with ECTFE coa	ting <sup>1)</sup>		F				
<ul> <li>with PFA coating</li> </ul>	g		D				
• Monel 400, mat. N	No. 2.4360		G				
• Hastelloy C276, n	nat. No. 2.4819		J				
<ul> <li>Hastelloy C4, mat</li> </ul>	t. No. 2.4610		U				
Tantalum			K				
Other version	al alabata da da		Z		ŀ	( 1	Υ
Add Order code ar Wetted parts mater							
Tube length	14.01	-					
•	biologopa						
Without tube	e on high-pressure side)		_				
• 50 mm	(1.97 inch)		0				
• 100 mm	(3.94 inch)		2				
• 150 mm	(5.90 inch)		3				
• 200 mm	(7.87 inch)		4				
Other version:	(7.57 11.611)		9		ı	L 1	Υ
Add Order code ar	nd plain text:						
Tube length:							
Filling liquid							
<ul> <li>Silicone oil M5</li> </ul>				1			
• Silicone oil M50				2			
High-temperature				3			
Halocarbon oil (fc	or measuring $O_2)^{2j}$			4			
Glycerin/water <sup>3)</sup> Fand all (FDA link)	٠, ١			6			
Food oil (FDA liste  Other corriginal	ea)			7			v
Other version Add Order code ar	nd plain text:			9	ı	<b>VI</b> 1	T
Filling liquid:	o plantione						
<u> </u>							

Selection and Or	dering data		Order N	o. Or	d. (	00	d	е
Diaphragm seal	]	D)	7MF49	13-				
Mounting flange direct mounting to flanged remote s means of capillary SITRANS P for diff (7MF443)		1	- <b>■</b> B					
Length of capilla	ry <sup>4)</sup>							
• 1.0 m	(3.28 ft)			2				
• 1.6 m	(5.25 ft)			3				
• 2.5 m	(8.20 ft)			4				
• 4.0 m	(13.1 ft)			5				
• 6.0 m	(19.7 ft)			6				
• 8.0 m	(26.25 ft)			7				
• 10.0 m	(32.8 ft)			8				
Other version Add Order code a Length of capillary				9	١	<b>V</b> 1	1	1

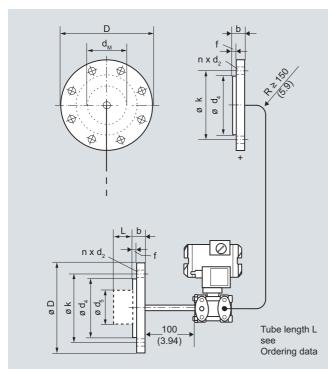
- 1) For vacuum on request.
- 2) Oil- and grease- free cleaning to DIN 25410, level 2 and packaging included in the scope of delivery.
- 3) Not suitable for use in low-pressure range.
- 4) Max. capillary length, see section "Technical description".
- D) Subject to export regulations AL: N, ECCN: EAR99H.

Selection and Ordering data	Order code
Further designs	
Please add "-Z" to Order No. and specify Order code.	
Spark arrestor With spark arrestor for mounting on zone 0 (including documentation)	A02
Certificate to EN 10204-2.2	C10
For certification of oil - and grease-free cleaned and packed version for oxygen and summer applications in which only inert filling liquid may be used. (Only in conjunction with halocarbon oil fill fluid)	
Quality inspection certificate (Factory calibration) to IEC 60770-2	C11
Inspection certificate to EN 10204, section 3.1	C12
Functional safety certificate ("SIL") to IEC 61508 (Only in conjunction with the order code "C20" in the case of SITRANS P DSIII transmitter)	C20
Vacuum-proof design for use in low-pressure range	V03

# 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)

#### Connection to EN 1092-1

Nom. diam.		b	D	d <sub>2</sub>	d <sub>4</sub>	d <sub>5</sub>	d <sub>M</sub>	f	k	n
		mm	mm	mm	mm	mm	mm	mm	mm	
DN 80	PN 40	24	200	18	138	76	89	2	160	8
DN 100	PN 16	20	200	18	158	94	89	2	180	8
	PN 40	24	235	22	162	94	89	2	190	8

#### Connection to ASME B16.5

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)	
3 inch	150	24,3	190	20	127	76	89	2	152,5	4
		(0.96)	(7.48)	(0.79)	(5)	(3)	(3.50)	(80.0)	(6)	
	300	29	210	22	127	76	89	2	168,5	8
		(1.14)	(8.27)	(0.87)	(5)	(3)	(3.50)	(80.0)	(6.63)	
4 inch	150	24,3	230	20	158	94	89	2	190,5	4
		(0.96)	(9.06)	(0.79)	(6.22)	(3.69)	(3.50)	(80.0)	(7)	
	300	32,2	255	22	158	94	89	2	200	8
		(1.27)	(10.04)	(0.87)	(6.22)	(3.69)	(3.50)	(80.0)	(7.87)	

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

Diaphragm seal, screwed design directly mounted or/and with capillary

#### Overview



Diaphragm seal, screwed gland design with inside diaphragm for gauge

Technical specifications					
Diaphragm seal, screwed gland w	ith inside diaphragm	Capillary			
Process connection	Nominal pressure	<ul><li>Length</li><li>Internal diameter</li></ul>	Max. 10 m (32.8 ft)		
<ul> <li>Male thread G½B to EN 837-1</li> <li>External thread ½-14" NPT-M</li> </ul>	PN 100, PN 250 PN 100, PN 250	<ul><li>Internal diameter</li><li>Minimum bending radius</li></ul>	2 mm (0.079 inch) 150 mm (5.9 inch)		
open measurement flange     DN 25     1 inch     Sealing face for open measurement flange     For stainless steel, mat. no. 1.4404/316L  Materials	PN 10 PN 40 class 150, class 300 To EN 1092-1, form B1 or ASME B16.5 RF 125 250 AA	Filling liquid  Max. recommended process temperature	<ul> <li>Silicone oil M5</li> <li>Silicone oil M50</li> <li>High-temperature oil</li> <li>Halocarbon oil (for measuring O<sub>2</sub>)</li> <li>Food oil (FDA listed)</li> <li>170 °C (338 °F)</li> </ul>		
Materials  Lower section (in the case of process connection thread)  Diaphragm	Stainless steel, Mat. no. 1.4404/316L Stainless steel, Mat. no. 1.4404/316L • No coating • With PTFE coating Monel 400, mat. no. 2.4360	Permissible ambient temperature  Weight	Dependent on the pressure transmitter and the filling liquid of the remote seal  More information can be found in the technical specifications of the pressure transmitters and in the section "Technical data of filling liquid" in the introduction to the remote seals  Approx. 1.5 kg (3.3 lb)		
Top section (process connection in the case of an open measure- ment flange)	Hastelloy C276, mat. no. 2.4819 Hastelloy C4, mat. no. 2.4610 Tantal Stainless steel, mat. no. 1.4404/316L	Certificates and approvals Classification according to pressure equipment directive (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)		

Stainless steel 1.4571/316Ti

Viton or copper (in the case of vacuum-free version)

Viton (FKM) (standard) Teflon (PTFE) metal spring ring (silver-coated)

Capillary

bottom section

• Sealing material on the process

• Sealing material between top and

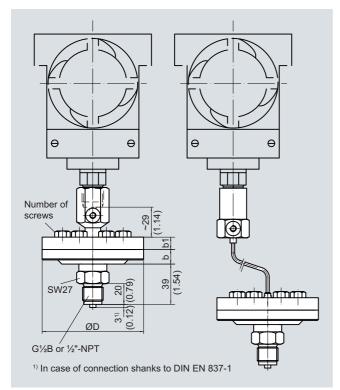
# Remote seals for transmitters and pressure gauges Diaphragm seal, screwed design directly mounted or/and with capillary

Selection and	Ordering data		Order N	No.Order Code	Selection and Ordering data	Order No.Orde	er Cod	
Remote seal, diaphragm	screwed gland	with inside			Remote seal, screwed gland with inside diaphragm			
	ITRANS P press	sure transmitter D	7 M F 4 9 3 0 -		Mounted on SITRANS P pressure transmitter D) for	7MF4930-	7 M F 4 9 3 0 -	
• gauge press 7MF403 a • absolute pre 7MF423 a	and SITRANS P3	00, 7MF802	• gauge pressure 7MF403 and SITRANS P300, 7MF802 • absolute pressure 7MF423 and SITRANS P300, 7MF802 In conjunction with order code "V01" (vacuu		• gauge pressure 7MF403 and SITRANS P300, 7MF802			
Mounted on e	ither side of SIT	<b>RANS P</b> D	7MF4	933-	Mounted on either side of SITRANS P	7MF4933-		
pressure trans	smitter for pressure 7MF44	3 -			pressure transmitter for • differential pressure 7MF443			
umoromaa p	71000410 71111 711	J		- B	·	- В		
Туре					Filling liquid			
	ole hole 1x 1/8 NPT connection 316l		1 2		<ul><li>Silicone oil M5</li><li>Silicone oil M50</li><li>High-temperature oil</li></ul>	1 2 3		
Other version, Order Code ar Version:			9	H 1 Y	<ul> <li>Halocarbon oil (for measuring O<sub>2</sub>)<sup>1)</sup></li> <li>Food oil (FDA-listed)</li> </ul>	4 7		
Process conn	ection version				Other version, add Order Code and plain text:	9	M 1 Y	
Lower flange material	Process con- nection	Nominal diameter and pressure level			filling liquid:  Capillary length			
316L/1.4404 316L/1.4404 316L/1.4404	Thread Thread Thread	G½B/PN100 G½B/PN250 ½NPT-M/PN100	B C E		<ul> <li>none, direct mounting</li> <li>none, direct mounting with cooling element (not in conjunction with transmitter for differential pressure)</li> </ul>	0 1		
316L/1.4404	Thread	½NPT-M/PN250	F		• 1 m	2		
316L/1.4404 316L/1.4404	Thread Thread	½NPT-F/PN100 ½NPT-F/PN250	H		• 1.6 m • 2.5 m • 4 m	3 4 5		
316L/1.4404	open measure- ment flange	DN 25/ PN 10 40	М		• 6 m	6		
316L/1.4404	open measure- ment flange		P		• 8 m • 10 m	7		
316L/1.4404	open measure- ment flange	1"/Class 300	Q		Other version, add Order Code and plain text:	9	N 1 Y	
PTFE PTFE PTFE	Thread open measure- ment flange open measure-	PN 10 40	T U V		Capillary length:  1) Oil- and grease- free cleaning to DIN 25410, level 2 included in the scope of delivery.	and packaging	g	
PTFE	ment flange open measure-		c					
	ment flange	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			Selection and Ordering data	Order	code	
Other version, Order Code ar Lower flange i	nd plain text:		Z	J 1 Y	Further designs Add "-Z" to Order No. and specify Order Code.			
Process conne		əl:			Certificate to EN 10204-2.2 For certification of oil - and grease-free cleaned and			
Diaphragm ma	aterial				packed version for oxygen and summer application which only inert filling liquid may be used. (Only in			
Stainless steel 316L stainless Hastelloy C276	steel with PTFE	film	A E J		junction with halocarbon oil fill fluid)  Quality inspection certificate (factory calibration to IEC 60770-2	n) C11		
Hastelloy C276 Hastelloy C4 Tantalum	,		U K		Inspection certificate to EN 10204, section 3.1	C12		
Other version, Order Code ar Diaphragm ma	nd plain text:		Z	K 1 Y	Functional safety certificate ("SIL") to IEC 61508 (Only in conjunction with the order code "C20" in the case of SITRANS P DSIII transmitter)			
	ial between top	and bottom			Vacuum-proof design for use in low-pressure range for transmitters for ga pressure	<b>V01</b> uge		
cess connection PTFE (standard 260 °C)	d with custom ma	aterial with max.	2		D) Subject to export regulations AL: N, ECCN: EAR99H	l.		
	o, silver coated four ure-resistant scre		3					

# Remote seals for transmitters and pressure gauges

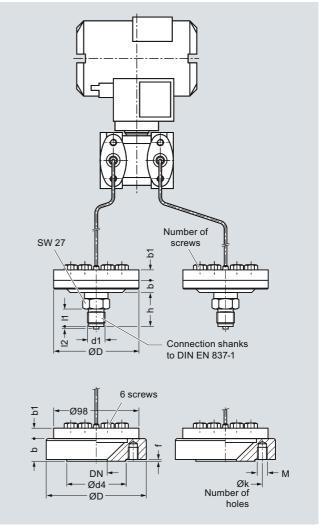
Diaphragm seal, screwed design directly mounted or/and with capillary

### 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 dia- meter	Nomi- nal pres- sure	D mm	d <sub>4</sub> mm	k mm	М	Number of holes	b mm	b <sub>1</sub> mm	f mm
DN 25	PN 10 40	115	68	85	M12	4	26	12	2
1 inch	150 lb/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

#### Quick-release diaphragm seals

#### Overview



Quick-release diaphragm seals, to DIN 11851 with slotted union nut



Quick-release diaphragm seals, with clamp connection Quick-release diaphragm seals are available for the following

• For pressure: P300, DS III, DS III PA, DS III FF

SITRANS P pressure transmitter series:

• For differential pressure and flow: DS III, DS III PA, DS III FF

The quick-release remote seals are common designs 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.

#### Technical specifications

Quick-release diaphragm seal	
Connection, nominal diameter	Nominal pressure
For pressure	
• To DIN 11851 with slotted union nu	ut
- DN 25	PN 40
- DN 32	PN 40
- DN 40	PN 40
- DN 50	PN 25
- DN 65	PN 25
- DN 80	PN 25
• To DIN 11851 with threaded socke	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

Quici	r-release diapriraç
Clamp connection	
- 1½ inch	PN 40
- 2 inch	PN 40
- 21/2 inch	PN 25
- 3 inch	PN 25
For differential pressure and flow	
To DIN 11851 with slotted union nu	t
- DN 50	PN 25
- DN 65	PN 25
- DN 80	PN 25
To DIN 11851 with threaded socket	
- DN 50	PN 25
- DN 65	PN 25
- DN 80	PN 25
Clamp connection	
- 2 inch	PN 40

#### - 3 inch Sealing face

- 21/2 inch

• For stainless steel, mat. No. 1.4404/316L

• For the other materials

#### Materials

• Main body

Wetted partsCapillary

Sheath

Maximum pressure

Tube length Capillary

Length

• Internal diameter

• Minimum bending radius

Filling liquid

Permissible ambient temperature

Weight

#### Certificates and approvals

Classification according to pressure equipment directive (DRGL 97/23/EC)

PN 25 PN 25 To EN 1092-1, form B1 or ASME B 16.5RF 125 ... 250 AA To EN 1092-1, form B2 or ASME B16.5 RFSF Stainless steel 316L Stainless steel 316L Stainless steel, mat. No. 1.4571/316Ti Spiral hose made of stainless steel, mat. No. 1.4301/316 See above and the technical data of the pressure transmitter Without tube Max. 10 m (32.8 ft), longer lengths on request 2 mm (0.079 inch) 150 mm (5.9 inch) Food oil (FDA listed) Glycerin/water (not suitable for use in low-pressure range)

Dependent on the pressure trans-

mitter and the filling liquid of the

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

remote seal

remote seals
Approx. 4 kg (8.82 lb)

practice)

### Quick-release diaphragm seals

Selection and Orderin	ıg data	0	rder	No	). O	rd.	CC	OC	le
Quick-release diaphra	D) <b>7</b>	MF	49	4 0	-				
for SITRANS P pressur pressure 7MF403 a with Order code "V01" and 7MF802 <sup>1)</sup> ; mus Filling liquid: Food oil (I Material: Stainless stee	nd 7MF423 together (vacuum-proof design) st be ordered separately FDA listed)	•	<b>A</b> (	0	-	В			
Nom. diam.	Nom. press.								
<ul> <li>Connection to DIN 11</li> <li>DN 25</li> <li>DN 32</li> <li>DN 40</li> <li>DN 50</li> <li>DN 65</li> <li>DN 80</li> <li>Connection to DIN 11</li> <li>DN 25</li> <li>DN 32</li> <li>DN 40</li> <li>DN 50</li> <li>DN 50</li> <li>DN 65</li> </ul>	851 with slotted union nut PN 40 PN 40 PN 40 PN 25 PN 25 PN 25 PN 25 RN 40 PN 40 PN 40 PN 25 PN 25	1 1 1 1 1 2 2 2 2	B C D E F G B C D E F						
- DN 80	PN 25		G						
Clamp connection  1½ inch  2 inch  2½ inch  3 inch  Other version	PN 40 PN 40 PN 40 PN 40	4	L M N P						
Add Order codes and Nominal diameter:	plain text:	9					н	1	v
Nominal pressure:		9	z				J		
<ul> <li>Filling liquid</li> <li>Glycerin/water<sup>2)</sup></li> <li>Food oil (FDA listed)</li> <li>Other version</li> <li>Add Order code and p</li> <li>Filling liquid:</li> </ul>	lain text:			6 7 9			M	1	Υ
Connection to pressu	re transmitter								
direct through capillary, lengt     1.0 m     1.6 m     2.5 m     4.0 m     6.0 m     8.0 m     10.0 m Other version Add Order code and p Length of capillary: Further designs	(3.28 ft) (5.25 ft) (8.20 ft) (13.1 ft) (19.7 ft) (26.25 ft) (32.8 ft)	0	rder	CO	0 2 3 4 5 6 7 8 9		N	1	Y
	er No. and specify Order		1001	00	uo				
code.  Quality inspection ce		C	11						
bration) to IEC 60770-	2	J							
Inspection certificate to EN 10204, section 3	.1	С	12						
Functional safety cert IEC 61508	tificate ("SIL") to the the order code "C20" in	С	20						
the case of SITRANS P  Vacuum-proof design	DSIII transmitter)	V	01						
for use in low-pressure									

- 1) With 7MF802.-.. and the measuring cells Q, S, T and U also order the vacuum-tight version.
- 2) Not suitable for use in low-pressure range.

  3) Max. capillary length, see section "Technical description"

  1-1-1-1-1 ALAN FOON EARONH

  1-1-1-1 ALAN FOON EARONH

  1-1-1 ALAN FOON EARONH

  1-1 ALAN FOON EA
- D) Subject to export regulations AL: N, ECCN: EAR99H.

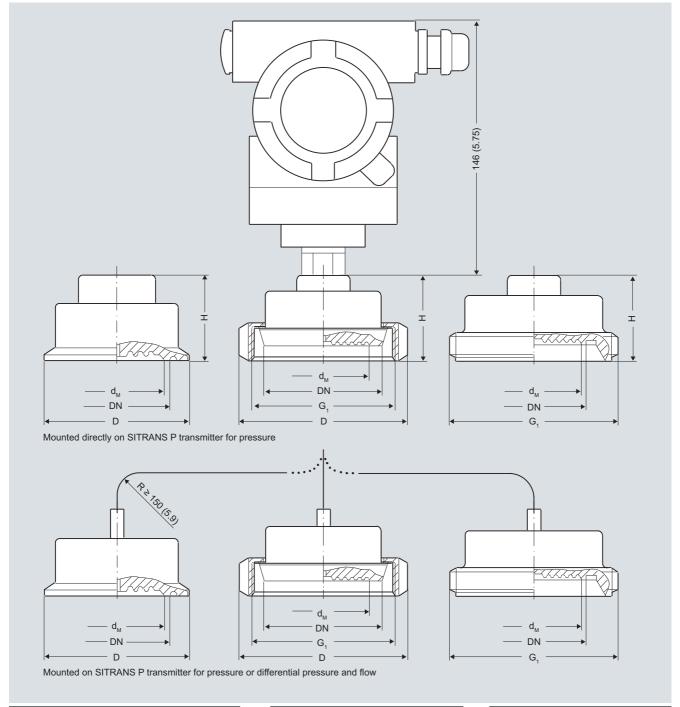
**Quick-release diaphragm seals** 

Selection and O	rdering data						Ord.	C	00	ek
, ,						4	3 -			
for SITRANS P pressure transmitters for pressure for differential pressure and flow, type 7MF443,; order separately Filling liquid: Food oil (FDA listed) Material: Stainless steel, mat. No. 1.4435 Delivery unit: 2 off						-	В			
Nom. diam.	Nom. press.									П
• Connection to D	IN 11851 with slotted union nu	ıt								
- DN 50	PN 25		E							
- DN 65	PN 25		F							
- DN 80	PN 25		I G	i						
socket	OIN 11851 with threaded									
- DN 50	PN 25		2 E							
- DN 65	PN 25		2 F							
- DN 80	PN 25	1	2 G	i						
• Clamp connecti	ion									
- 2 inch	PN 40	4	1 N							
- 21/2 inch	PN 40	4	Į N							
- 3 inch	PN 40	4	I P							
Other version										
Add Order codes	•									
Nominal diameter		9	) _					Н		
Nominal pressure	E		Z					J	1	Y
Filling liquid										
Glycerin/water <sup>1</sup>					6					
Food oil (FDA list     Other region	sted)				7					v
Other version Add Order code a	and plain text:				9	'		M	1	Y
Filling liquid:	and plain toxt.									
Connection to tr	ansmitter									
through capillary,	Length: <sup>2)</sup>									
• 1.0 m	(3.28 ft)						2			
• 1.6 m	(5.25 ft)						3			
• 2.5 m	(8.20 ft)						4			
• 4.0 m	(13.1 ft)						5			
• 6.0 m	(19.7 ft)						6			
• 8.0 m	(26.25 ft)						7			
• 10.0 m	(32.8 ft)						8			.,
Other version Add Order code							9	N	1	Y
Length of capillar	y:							L		
Further designs			Ord	der	C	bc	е			
Please add "-Z" to code.	Order No. and specify Order									
Quality inspection bration) to IEC 6	on certificate (Factory cali- 0770-2	(	21	1						
Inspection certif	icate	(	21	2						
to EN 10204, sec	tion 3.1									
Functional safet	y certificate ("SIL") to	C	2	0						
(Only in conjuncti	on with the order code "C20" in ANS P DSIII transmitter)	1								
Vacuum-proof de	•	,	<b>/</b> 0:	3						
for use in low-pre	-									
	<u> </u>									

Not suitable for use in low-pressure range.
 Max. capillary length, see section "Technical description"
 Subject to export regulations AL: N, ECCN: EAR99H.

Quick-release diaphragm seals

#### Dimensional drawings



Clamp connection (left)										
DN Ød <sub>M</sub> ØD H										
(1½ inch)	32	(1.26)	50,5	(2)	35	(1.38)				
(2 inch)	40	(1.57)	64	(2.52)	35	(1.38)				
(2½ inch)	52	(2.05)	77,5	(3.05)	35	(1.38)				
(3 inch)	72	(2.83)	91	(3.58)	35	(1.38)				

Connection to DIN 11851 with slotted union nut (center)									
DN	Ø d <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						

 $d_{\mathsf{M}}$  Effective diaphragm diameter

Quick-release diaphragm seal, dimensions in mm (inch)

# Remote seals for transmitters and pressure gauges

#### Miniature diaphragm seals

#### Overview



Miniature diaphragm seals

The miniature diaphragm seals are available for the following SITRANS P pressure transmitter series for pressure:

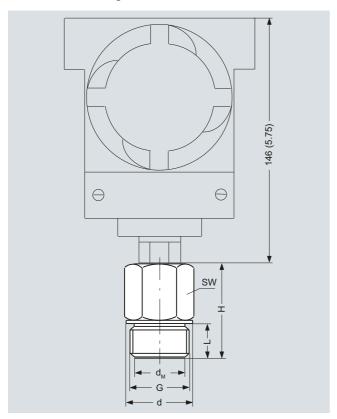
• P300, DS III, DS III PA, DS III FF

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	$Ø d_{M}$		sw		Ød		L		Н	
	mm	(inch)	mm	(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)

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

### Technical specifications

#### Miniature diaphragm seals

Span with

- G1B
- G11/2B
- G2B

Filling liquid

#### Material

- Main body
- Diaphragm

Maximum pressure

Temperature of use

Temperature range of medium

Max. recommended process temperature

#### Weight

- G1B
- G11/2B
- G2B

#### Certificate and approvals

Classification according to pressure equipment directive (DRGL 97/23/EC)

- > 6 bar (> 87 psi)
- > 2 bar (> 29 psi)
- > 600 mbar (> 8.7 psi)

Silicone oil M5 or food oil (FDA listed)

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)

Same as pressure transmitter Same as pressure transmitter

150 °C (302 °F)

Approx. 0.3 kg (approx. 0.66 lb) Approx. 0.5 kg (approx. 1.10 lb) Approx. 0.8 kg (approx. 1.76 lb)

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

### Miniature diaphragm seals

Selection and Ordering data	Orde	r No	o. Ord.	CC	de
Miniature diaphragm seals	7 M F	496	60-		
directly fitted to SITRANS P pressure transmitters for pressure; type, 7MF403 and 7MF423 together with Order code "VO1" (vacuum-proof design) and 7MF802 <sup>1</sup> ); must be ordered separately Material: Stainless steel, mat. No. 1.4404/316L Nominal pressure, see "Pressure transmitters"	1=1	0			
Process connection					
• G1B	C				
• G1½B • G2B	D E				
• 1" - NPT	K				
• 1½" - NPT	L				
• 2" - NPT	М				
Other version, add Order code and plain text: Process connection:	Z		,	J ·	1 Y
Wetted parts materials					
• Stainless steel 316L	A				
Other version, add Order code and plain text: Wetted parts materials:	Z			K ·	1 Y
Filling liquid					
• Silicone oil M5		1			
Food oil (FDA listed)  Other version, add Order and and plain texts.		7		NA -	1 Y
Other version, add Order code and plain text: Filling liquid:		9		IVI	I

<sup>1)</sup> With 7MF802.-... and the measuring cells Q, S, T and U also order the vacuum-tight version.

D) Subject to export regulations AL: N, ECCN: EAR99H.

0.1.11	0 1 1
Selection and Ordering data	Order code
Further designs	
Please add "-Z" to Order No. and specify Order code.	
Quality inspection certificate (Factory calibration) to IEC 60770-2	C11
Inspection certificate to EN 10204, section 3.1	C12
Functional safety certificate ("SIL") to IEC 61508 (Only in conjunction with the order code "C20" in the case of SITRANS P DSIII transmitter)	C20
Vacuum-proof design for use in low-pressure range	V01

# Remote seals for transmitters and pressure gauges

#### Flushing ring for diaphragm seals

#### Overview



#### Flushing ring

Flushing rings are required for flange-mounted and sandwichtype remote seals (Order 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.

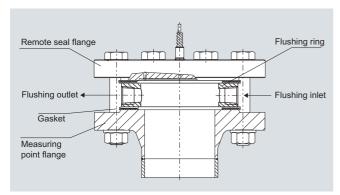
#### **Process connection**

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



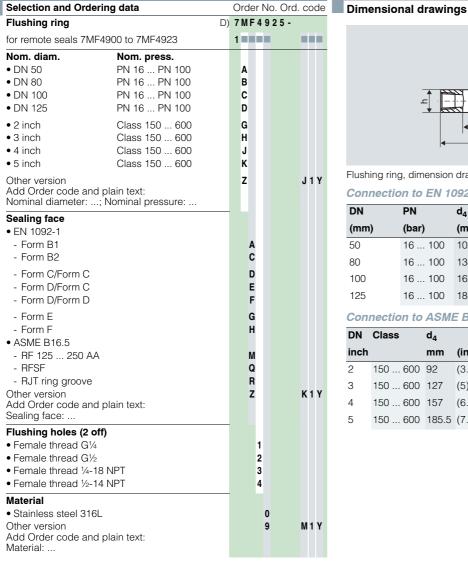
Installation example

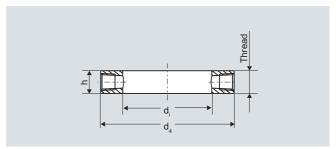
### Technical specifications

Flushing ring for remote seals of 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					
	RJT ring groove					
Flushing holes (2 off), female	• G1/4					
thread	• G½					
	• 1/4-18 NPT					
	• ½-14 NPT					
Material	Stainless steel 1.4404/316L					

# Remote seals for transmitters and pressure gauges

#### Flushing ring for diaphragm seals





Flushing ring, dimension drawing

#### Connection to EN 1092-1

DN	PN	d <sub>4</sub>	d <sub>i</sub>	h	Weight
(mm)	(bar)	(mm)	(mm)	(mm)	(kg)
50	16 100	102	62	30	1.10
80	16 100	138	92	30	1.90
100	16 100	162	92	30	3.15
125	16 100	188	126	30	3.50

#### Connection to ASME B 16.5

DN	Class	$d_4$		d <sub>i</sub>		h		Weight	
inch		mm	(in.)	mm	(in.)	mm	(in.)	kg	(lb)
2	150 600	92	(3.62)	62	(2.44)	30	(1.18)	0.60	(1.32)
3	150 600	127	(5)	92	(3.62)	30	(1.18)	1.05	(2.31)
4	150 600	157	(6.18)	92	(3.62)	30	(1.18)	2.85	(6.28)
5	150 600	185.5	(7.3)	126	(4.96)	30	(1.18)	3.30	(7.28)

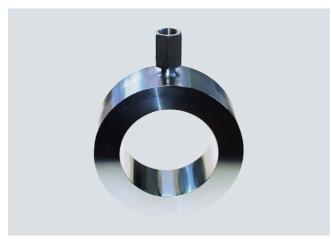
D) Subject to export regulations AL: N. ECCN: EAR99H

b) Subject to expert regulations (12.14, 2001).							
Selection and Ordering data	Order code						
Further designs Please add "-Z" to Order No. and specify Order code.							
Inspection certificate to EN 10204, section 3.1	C12						
to EN 10204, Section 3.1							

# Remote seals for transmitters and pressure gauges

Inline seals for flange-mounting

#### Overview



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, DS III PA and DS III FF series
  - For differential pressure and flow: DS III, DS III PA and DS III FF
- 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

recnnical 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
<ul> <li>Wetted parts</li> </ul>	Stainless steel 1.4404/316L
	Without coating
	<ul> <li>ECTFE coating</li> </ul>
	<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)
Internal diameter	2 mm (0.079 inch)
Minimum bending radius	150 mm (5.9 inch)
Filling liquid	Silicone oil M5
	Silicone oil M50
	High-temperature oil
	Halocarbon oil
	Food oil (FDA listed)
	Glycerin/water (not suitable for uses in low-pressure range)
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 liquids of fluid group 1; complies with the requirements of article 3, paragraph 1 (appendix 1); assigned to category III, conformity evaluation module H by the TÜV Nord

# Pressure Measurement Remote seals for transmitters and pressure gauges

#### Inline seals for flange-mounting

Calaatia:: -::-1 C	lavina data	0	NI -	O : 1	-	_	- ا
Selection and Ord		Orde	er No.	Ord.	C	)(	эе
Inline seal for flan SITRANS P press							
for gauge pressur 7MF403 and 7M code "V01" (vacuur 7MF802 <sup>1</sup> ); must scope of delivery:	for gauge pressure  7MF403 and 7MF423 together with Order code "V01" (vacuum-proof design) and 7MF8021); must be ordered separately,						
of delivery: 1 pair ( stainless steel, mat Process connection	134; order separately, scope set); Material: Completely of i. No. 1.4404/316L; in to EN 1092-1 or ASME to EN 1092-1, form B1,	O) <b>7MF</b>	498	3 -			
		1	0 -	В			
Nominal diameter	and nominal pressure						
• DN 25 • DN 40 • DN 50 • DN 80 • DN 100 • 1 inch • 1½ inch • 2 inch • 3 inch • 4 inch	PN 6 100 PN 6 100 PN 6 100 PN 6 100 PN 6 100 Class 150 2500 Class 150 2500 Class 150 2500 Class 150 2500 Class 150 2500	B D E G H L M N P					
	; Nominal pressure:	Z			J	1	Υ
Stainless steel 31     Without coating     With PFA coatin     With ECTFE coa     Monel 400, mat. I     Hastelloy C276, r     Hastelloy C4, ma     Tantalum     Other version     Add Order code ar     Wetted parts mater	6L  g ating <sup>2)</sup> No. 2.4360 nat. No. 2.4819 t. No. 2.4610  nd plain text:	A D F G J U K Z			K	1	Y
Filling liquid Silicone oil M5 Silicone oil M50 High-temperature Halocarbon oil (fc Glycerin/water <sup>4)</sup> Food oil (FDA list Other version Add Order code ar Filling liquid:	or measuring ${\rm O_2})^{3)}$		1 2 3 4 6 7 9		M	1	Y

Selection and Orderin	ng data	Order No.	Ord.	CC	C	de
Inline seal for flange- SITRANS P pressure						
for gauge pressure 7MF403 and 7MF42 code "V01" (vacuum-pr 7MF802¹); must be scope of delivery: 1 off	7MF498	0 -				
for differential pressum 7MF4433 or 7MF4434; of delivery: 1 pair (set) stainless steel, mat. No Process connection to B16.5; sealing face to or to ASME B16.5 RF 1	7MF498					
		1 0 -	В			
Connection to transm						
direct (only for 7MF4)     through applicant length			0			
through capillary, length 1.0 m	(3.28 ft)		2			
• 1.6 m	(5.25 ft)		3			
• 2.5 m	(8.20 ft)		4			
• 4.0 m	(13.1 ft)		5			
• 6.0 m	(19.7 ft)		6			
• 8.0 m	(26.25 ft)		7			
• 10.0 m	(32.8 ft)		8			
Other version Add Order code and p Length of capillary:	olain text:		9	N.	1 '	Y

- 1) With 7MF802.-.. and the measuring cells Q, S, T and U also order the vacuum-tight version.
- vacuum-riigin version.

  For vacuum on request.

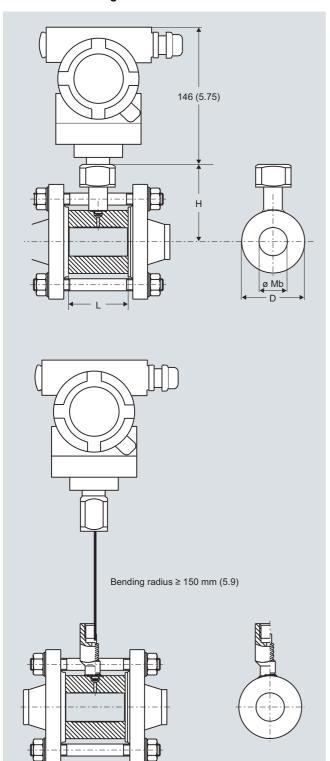
  Oil- and grease- free cleaning to DIN 25410, level 2 and packaging included in the scope of delivery.
- 4) Not suitable for use in low-pressure range.
- 5) Max. capillary length, see section "Technical description"
- D) Subject to export regulations AL: N, ECCN: EAR99H.

Selection and Ordering data	Order code
Further designs Please add "-Z" to Order 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
Certificate to EN 10204-2.2  For certification of oil - and grease-free cleaned and packed version for oxygen and summer applications in which only inert filling liquid may be used. (Only in conjunction with halocarbon oil fill fluid)	C10
Quality inspection certificate (Factory calibration) to IEC 60770-2	C11
Inspection certificate To EN 10204, section 3.1	C12
Functional safety certificate ("SIL") to IEC 61508 (Only in conjunction with the order code "C20" in the case of SITRANS P DSIII transmitter)	C20
Vacuum-proof design	
For use in low-pressure range	
<ul> <li>for transmitters for gauge pressure</li> </ul>	V01
<ul> <li>for transmitters for differential pressure</li> <li>Note:</li> <li>Suffix "Y01" required with pressure transmitter</li> </ul>	V03

# Remote seals for transmitters and pressure gauges

#### Inline seals for flange-mounting

#### Dimensional drawings



Inline seal for flange-mounting, connected to SITRANS P pressure transmitter, dimensions in mm (inch)

#### 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

#### Overview



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
- DS III PA
- DS III FF

#### 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 fill-

ing 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	gn for pressure				
Connection	Nominal diameter	Nominal 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			
	2½ inch	PN 40			
	3 inch	PN 40			
Material					
Main body	Stainless steel 1.4404/316L				
Diaphragm	Stainless steel 1.4404/316L				
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	• Food oil (FDA listed)				
	<ul> <li>Glycerin/water (not suitable for use in low-pressure range)</li> </ul>				
Permissible ambient temperature	mitter and the fill remote seal More information	a can be found in ta of the pressure in the section of filling liquid" in			
Weight	Approx. 4 kg (approx. 8.82 lb)				

#### 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 the requirements of article 3, paragraph 1 (appendix 1); assigned to category III, conformity evaluation module H by the TÜV Nord

# Remote seals for transmitters and pressure gauges

**Quick-release inline seals** 

Selection and Ordering data				der	No	. C	Ord.	C	ЭC	le
Quick-release inline seal					9	5 0	-			
for SITRANS P pressur pressure 7MF403 and 7MF42 code "V01" (vacuum-pi 7MF802); must be separately Filling liquid: Food oil ( Material: Stainless stee			A 0			В				
Nom. diam.	Nom. press.				П					ī
• Connection to DIN 1* - DN 25 - DN 40 - DN 50 - DN 65 - DN 80 - DN 100	1851 with screw necks PN 40 PN 40 PN 25 PN 25 PN 25 PN 25 PN 25 PN 25	2	2 B 2 D 2 E 2 F 2 G							
<ul> <li>Clamp connection</li> <li>1½ inch</li> <li>2 inch</li> <li>2½ inch</li> <li>3 inch</li> </ul>	PN 40 PN 40 PN 40 PN 40	4	4 L 4 M 4 N 4 P							
Other version Add Order codes and Nominal diameter: Nominal pressure:	plain text:	Ş	z					H J	1 1	
• Glycerin/water <sup>2)</sup> • Food oil (FDA listed) Other version Add Order code and p Filling liquid:	lain text:				6 7 9			M	1	Y
Connection to transm • Direct	nitter					0				
Through capillary, leng  1.0 m  1.6 m  2.5 m  4.0 m  6.0 m  8.0 m  10.0 m  Other version  Add Order code and p  Length of capillary:	(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 9		N	1	Y

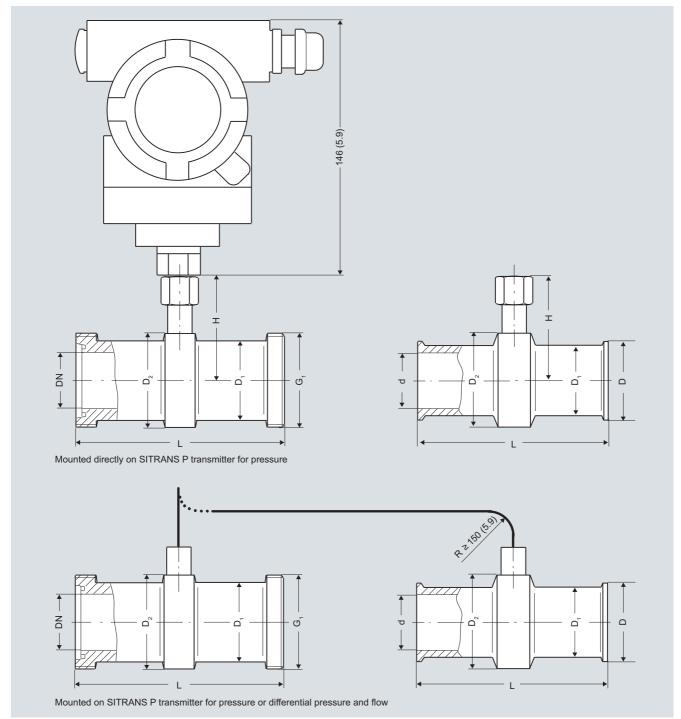
- 1) With 7MF802.-... and the measuring cells Q, S, T and U also order the vacuum-tight version.
- 2) Not suitable for use in low-pressure range.
- 3) Max. capillary length, see section "Technical description"
  D) Subject to export regulations AL: N, ECCN: EAR99H.

Selection and Ordering data	Order code
Further designs Please add "-Z" to Order No. and specify Order code.	
Quality inspection certificate (Factory calibration) to IEC 60770-2	C11
Inspection certificate to EN 10204, section 3.1	C12
Functional safety certificate ("SIL") to IEC 61508 (Only in conjunction with the order code "C20" in the case of SITRANS P DSIII transmitter)	C20
Vacuum-proof design for use in low-pressure range	V01

# Pressure Measurement Remote seals for transmitters and pressure gauges

**Quick-release inline seals** 

#### Dimensional drawings



Connection to DIN 11851 with screw necks										
DN	$ØD_1$	$ØD_2$	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					

0	to the end of the	although a section of		/! I- \
Quick-release	iniine seai,	aimensions	ın mm	(Incn)

Clam	Clamp connection for pipes to BS 4825/3 and o.D. tubes													
d		$Ø$ $D_1$		$Ø$ $D_2$		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

#### Measuring setups

#### 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

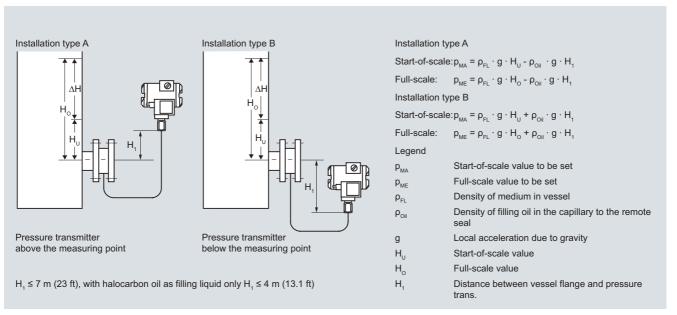
Type of installation	Pressure transmit- ters	Remote seals
A/B	7MF4033 7MF4034 7MF4035 7MF8023 7MF8024 7MF8025	7MF4900 7MF4910 7MF4920
C <sub>1</sub> and C <sub>2</sub>	7MF4233 7MF4234 7MF4235	7MF4900 7MF4910 7MF4920 (vacuum-proof design in each case)
	7MF4333 7MF4334 7MF4335	7MF4901 7MF4921
D	7MF4433 7MF4434 7MF4435	7MF4903 7MF4923
Е	7MF4433 7MF4434 7MF4435	7MF4913
G, H and J	7MF4433 7MF4434 7MF4435	7MF4903 7MF4923

# Remote seals for transmitters and pressure gauges

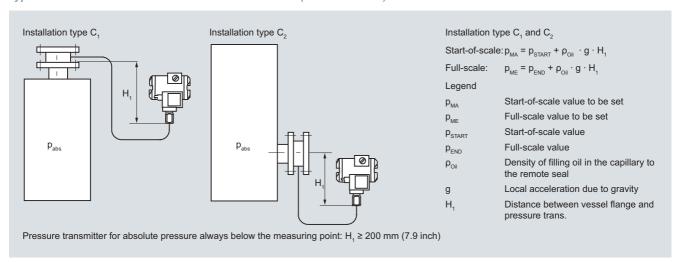
Measuring setups with remote seals

#### Dimensional drawings

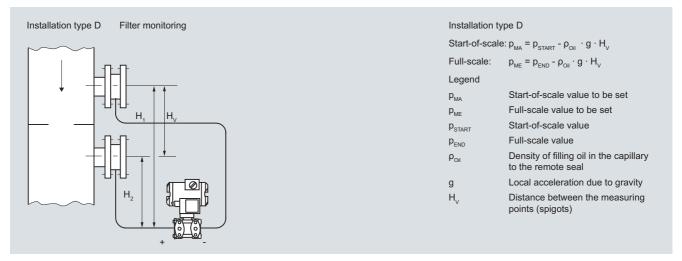
Types of installation for pressure and level measurements (open vessels)



Types of installation for absolute level measurements (closed vessels)



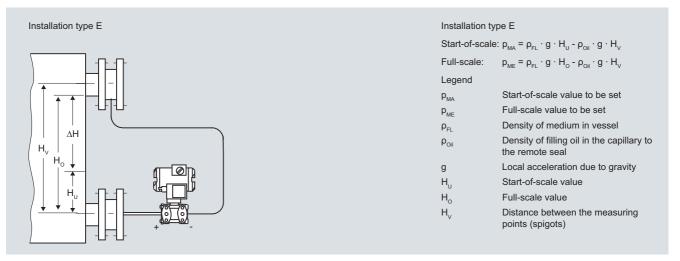
Type of installation for differential pressure and flow measurements

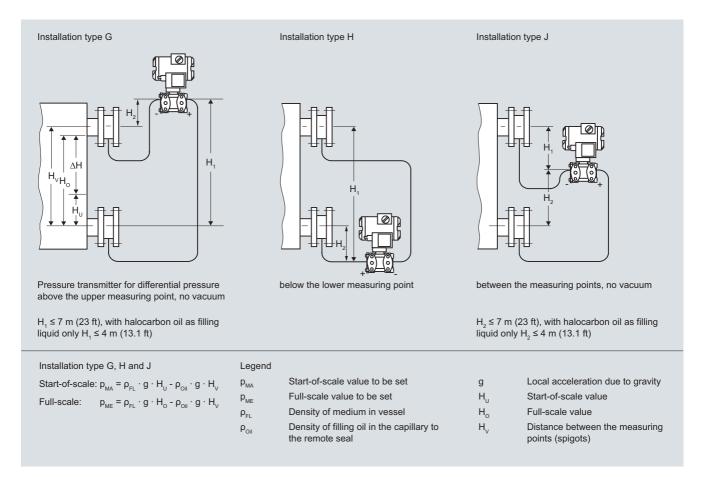


# Remote seals for transmitters and pressure gauges

Measuring setups with remote seals

#### Types of installation for level measurements (closed vessels)





# Remote seals for transmitters and pressure gauges

Measuring setups without remote seals

#### Overview

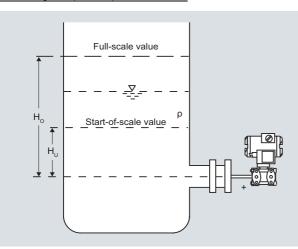
#### Notes

- 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

#### Dimensional drawings

Pressure transmitters for differential pressure, for flanging

Measuring setups for open containers



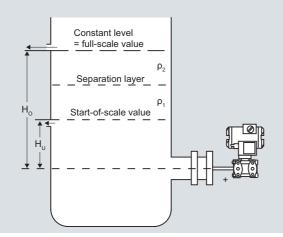
Level measurement

 $\begin{aligned} & \text{Start-of-scale: } p_{\text{MA}} = \rho \cdot g \cdot H_{\text{U}} \\ & \text{Full-scale: } p_{\text{ME}} = \rho \cdot g \cdot H_{\text{O}} \end{aligned}$ 

Legend

 $\begin{array}{ll} p_{\text{MA}} & \text{Start-of-scale value to be set} \\ p_{\text{ME}} & \text{Full-scale value to be set} \\ \rho & \text{Density of medium in vessel} \\ g & \text{Local acceleration due to gravity} \end{array}$ 

 $H_{_{\mathrm{U}}}$  Start-of-scale value  $H_{_{\mathrm{O}}}$  Full-scale value



Separation layer measurement

Start-of-scale:  $p_{MA} = g \cdot (H_U \cdot \rho_1 + (H_O - H_U) \cdot \rho_2)$ 

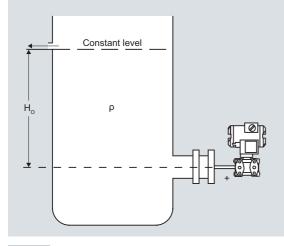
Full-scale:  $p_{ME} = \rho_1 \cdot g \cdot H_0$ 

Legend

 $\begin{array}{ll} p_{\text{MA}} & \text{Start-of-scale value to be set} \\ p_{\text{ME}} & \text{Full-scale value to be set} \\ \rho_{1} & \text{Density of heavier liquid} \\ \rho_{2} & \text{Density of lighter liquid} \end{array}$ 

g Local acceleration due to gravity

 $H_{_{\mathrm{U}}}$  Start-of-scale value  $H_{_{\mathrm{O}}}$  Full-scale value



Density measurement

$$\begin{split} \text{Start-of-scale:} & \ \, p_{\text{MA}} = \rho_{\text{MIN}} \cdot g \cdot H_{\text{O}} \\ \text{Full-scale:} & \ \, p_{\text{ME}} = \rho_{\text{MAX}} \cdot g \cdot H_{\text{O}} \end{split}$$

Legende

 $p_{MA}$  Start-of-scale value to be set  $p_{ME}$  Full-scale value to be set

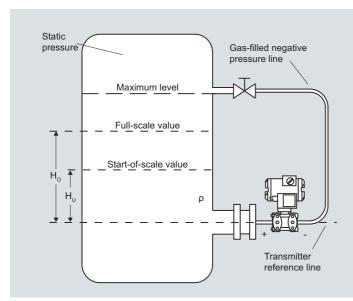
 $\begin{array}{ll} \rho_{\text{MIN}} & \text{Minimum density of medium in vessel} \\ \rho_{\text{MAX}} & \text{Maximum density of medium in vessel} \\ g & \text{Local acceleration due to gravity} \end{array}$ 

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



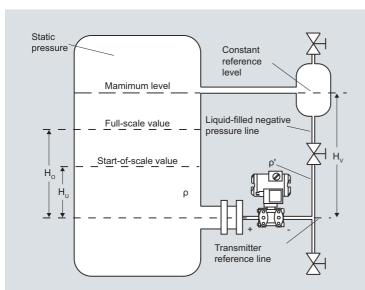
Level measurement, Version 1

Start-of-scale:  $\Delta p_{MA} = \rho \cdot g \cdot H_{U}$ Full-scale:  $\Delta pME = \rho \cdot g \cdot H_{O}$ 

Legend

 $\begin{array}{lll} \Delta p_{\text{MA}} & \text{Start-of-scale value to be set} \\ \Delta p_{\text{ME}} & \text{Full-scale value to be set} \\ \rho & \text{Density of medium in vessel} \\ g & \text{Local acceleration due to gravity} \end{array}$ 

 $H_{_{\mathrm{U}}}$  Start-of-scale value  $H_{_{\mathrm{O}}}$  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:  $\Delta p_{ME} = g \cdot (H_{O} \cdot \rho - H_{V} \cdot \rho')$ 

Legend

 $\begin{array}{lll} \Delta p_{\text{MA}} & \text{Start-of-scale value to be set} \\ \Delta p_{\text{ME}} & \text{Full-scale value to be set} \\ \rho & \text{Density of medium in vessel} \end{array}$ 

ρ' Density of liquid in the negative pressure line (corresponding to the temperature

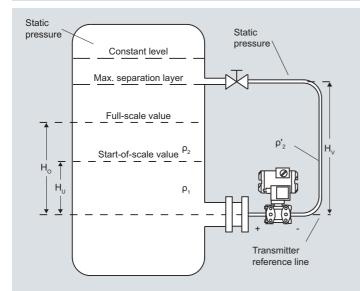
existing there)

g Local acceleration due to gravity

H<sub>u</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  $\Delta p_{MA}$  Full-scale value to be set

 $\Delta p_{\text{ME}}$  Full-scale value to be set  $\rho_{\text{\tiny 1}}$  Density of heavier liquid with separation layer

in vessel

 $\begin{array}{ll} \rho_2 & & \text{Density of lighter liquid with separation layer} \\ \rho'_2 & & \text{Density of liquid in the negative pressure line} \\ & & & & & & & & \\ \text{(corresponding to the temperature existing)} \end{array}$ 

there)

g Local acceleration due to gravity

 ${
m H_{U}}$  Start-of-scale value  ${
m H_{O}}$  Full-scale value

H<sub>v</sub> Distance between the measuring points

(spigots)

# **SIEMENS**

#### Questionnaire

## Checking of transmitter/remote seal combinations

_	ltem No.: Person responsible:	
* Ordering department:  * Transmitter Order No	Phone:	
	Order No. of transmitter known?	
Yes	No	
* Order No. of remote seal:  7MF 4 9	* Or without Order No.: Proces  * Standard:  * Nominal diameter:  * Nominal pressure:  * Constructional design:	Sandwich-type rem. seal Flanged remote seal Quick-release remote seal Clamp-on seal
	* Connection:  [   * Vacuum-proof design  * Wetted parts materials:	Other.:      Direct connection      Capillary on one side; connection to:
	* Tube:  * Filling liquid  * Miscellaneous	□ No □ Yes,mm long
Calculati	on of measuring range necessary?	
No	Yes	
* Range to be set: (without calculation)  Start-of-scale: mbar ( 4 mA) Full-scale: mbar (20 mA)  * Required measuring accuracy:  Error: < % of set span per 10 V change in temperature	* Temperature of medium:  Note: Mark Mark Mark Mark Mark Mark Mark Mark	g/m <sup>3</sup> ormal °C  inimum °C  aximum °C  ormal °C  aximum_ °C  ormal °C  inimum_ °C  aximum_ °C  aximum_ °C
Please fill in this questionnaire and enclose with every order!	* Operating pressure referred to absolute zero:  * Does a vacuum occur during startup?  If yes, associated temperature of medium:  * Installation type, see pages 2/188 and 2/189	bar a No ☐ Yes °C A B C₁ C₂ D E G H J
	* Measuring: With install. types A, B, C <sub>1</sub> , C <sub>2</sub> and D: With install. types A, B, G, H and J: H <sub>1</sub> * Dimensions: With install. types A, B, C <sub>1</sub> and C <sub>2</sub> : H With install. types D, G, H and J: H With install. types D, G, H and J: H With install. types D, G, H and J: H With install. types D, G, H and J: H With install. types D, G, H and J: H With install. types A, B, C <sub>1</sub> , C <sub>2</sub> and D: With install. types A, B, C <sub>1</sub> , A and D: H With install. types A, B, C <sub>1</sub> , A and C <sub>2</sub> : H With install. types A, B, C <sub>1</sub> , A and C <sub>2</sub> : H With install. types A, B, C <sub>1</sub> , A and C <sub>2</sub> : H With install. types A, B, C <sub>1</sub> , A and C <sub>2</sub> : H With install. types A, B, C <sub>1</sub> and C <sub>2</sub> : H With install. types A, B, C <sub>1</sub> and C <sub>2</sub> : H With install. types B, C <sub>1</sub> and C <sub>2</sub> : H With install. types B, C <sub>1</sub> and C <sub>2</sub> : H With install. types B, C <sub>1</sub> and C <sub>2</sub> : H With install. types B, C <sub>2</sub> and D: H With install. types B, C <sub>3</sub> and C <sub>4</sub> : H With install. types B, C <sub>3</sub> and C <sub>4</sub> : H With install. types B, C <sub>4</sub> and C <sub>5</sub> : H With install. types B, C <sub>5</sub> and C <sub>6</sub> : H With install. types B, C <sub>6</sub> and C <sub>7</sub> : H With install. types B, C <sub>7</sub> and C <sub>8</sub> : H With install. types B, C <sub>8</sub> and C <sub>8</sub> : H With install. types B, C <sub>8</sub> and C <sub>8</sub> : H With install. types B, C <sub>8</sub> and C <sub>8</sub> : H With install. types B, C <sub>8</sub> and C <sub>8</sub> : H With install. types B, C <sub>8</sub> and C <sub>8</sub> : H With install. types B, C <sub>8</sub> and C <sub>8</sub> : H With install. types B, C <sub>8</sub> and C <sub>8</sub> : H With install. types B, C <sub>8</sub> and C <sub>8</sub> : H With install. types B, C <sub>8</sub> and C <sub>8</sub> : H With install. types B, C <sub>8</sub> and C <sub>8</sub> : H With install. types B, C <sub>8</sub> and C <sub>8</sub> : H With install. types B, C <sub>8</sub> and C <sub>8</sub> : H With install. types B, C <sub>8</sub> and C <sub>8</sub> : H With install. types B, C <sub>8</sub> and C <sub>8</sub> : H With install. types B, C <sub>8</sub> and C <sub>8</sub> : H With install. types B, C <sub>8</sub> and C <sub>8</sub> : H With install. types B, C <sub>8</sub> and C <sub>8</sub> : H With install. types B, C <sub>8</sub> and C <sub>8</sub> : H With install. types B, C <sub>8</sub> and C <sub>8</sub> : H With install. types B, C <sub>8</sub> and C <sub>8</sub> : H With install. types B, C <sub>8</sub> and C <sub>8</sub> : H With install. types B, C <sub>8</sub> and C <sub>8</sub> : H With install. types B, C <sub>8</sub> and C <sub>8</sub> : H With install. types B, C <sub>8</sub> a	U = mm; H <sub>O</sub> = mm 1 = mm V = mm
Chagladi, Nam-	* Start-of-scale value following calculation: n Full-scale value following calculation: n Associated span: mbar	nbar (20 mA)
Checked: Name: Department: Date:	Error to be expected: < . % of set sp change  Values must be entered here!	oan per 10 K in temperature

## **SIEMENS**

# Questionnaire for hydrostatic level measurements

Order date:	The state of the s	±XH
Processing date:		
Ordering code (customer):	\ \ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	
Ordering code (supplier):		
Customer reference:	<del> </del>	
Measuring point:		***************************************
Position:		
Dimensions:		
Pressure:		\$ <i></i> **\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
Temperature: K C		X X
Measuring range:		
Order No. of transmitter 1):		L
7,M,F,4,,,,,-,,,-,,,,-Z		
Y01		KJ

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.

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:	Closed <sup>1)</sup>		
	Open or not under pres	ssure <sup>2)</sup>	
Medium			
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 (din	nension according to ske	etch) H <sub>V</sub> =	_ m
Measuring range <sup>4)</sup> = start-of-scale value	e to full-scale value		
	Start-of-scale value	H <sub>U</sub> =	_ m
	Full-scale value	H <sub>O</sub> =	_ m
Position of equalizing vessel above botto point if different from H <sub>V</sub>	om measuring		_ m
Please mark pressure correction of level	with a cross: No	<u> </u>	

Pressure correction means: the static pressure and the temperature are measured separately and calculated by a correction computer or measured-value computer.

<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).

# **SIEMENS**

# Questionnaire (suitable for US market) Checking of transmitter/remote seal combinations

* Ordering department:	Item No.: Person responsible:
	order No. of transmitter known?
* Order No. of remote seal:  7MF 4 9	* Or without Order No.: Process connection  * Standard:  * Nominal diameter:  * Nominal pressure:  * Constructional design:    Sandwich-type rem. seal   Flanged remote seal   Quick-release remote seal   Clamp-on seal   Other.:   * Connection:
Calculat	Capillary on one side; connection to:
* Range to be set: (without calculation)	Medium kg/m <sup>3</sup>
Start-of-scale: psi ( 4 mA) Full-scale: psi (20 mA)  * Required measuring accuracy: Error: < % of set span per	* Temperature of medium:  Normal
Please fill in this questionnaire and enclose with every order!	* Operating pressure referred to absolute zero:  * Does a vacuum occur during startup?  If yes, associated temperature of medium:  * Installation type, see pages 2/188 and 2/189  A B C C D  E G H J
	<ul> <li>* Measuring: With install. types A, B, C<sub>1</sub>, C<sub>2</sub> and D: from to psi range With install. types A, B, G, H and J: H<sub>U</sub> = inch; H<sub>O</sub> = inch</li> <li>* Dimensions: With install. types A, B, C<sub>1</sub> and C<sub>2</sub>: H<sub>1</sub> = inch With install. types D, G, H and J: H<sub>V</sub> = inch</li> <li>* Start-of-scale value following calculation: psi (4 mA)</li> <li>Full-scale value following calculation: psi (20 mA)</li> <li>Associated span: psi</li> </ul>
Checked: Name: Department: Date:	Error to be expected: <ul> <li>&lt; . % of set span per 18 °F change in temperature</li> </ul> <li>Values must be entered here!</li>

# 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 (DGRL 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 DIN EN 61518

The flange connection between transmitter and valve manifold was modified in the new standard DIN EN 61518. The only connection thread approved for use in the process flanges of the pressure transmitter is  $^7/_{16}$ -20 UNF.

The valve manifolds for M12 screws, including the accessory sets, have therefore been deleted.

#### Material 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 gauge pressure with double shut-off valve, SITRANS P pressure transmitter with multiway cock or 3-spindle valve manifold



SITRANS P pressure transmitter for differential pressure, mounted in protective box (available on request)



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 mounted on valve combination "Mono-flange" for direct connection to flanges (available on request)

# Fittings

### Selection aid

#### Selection of available shut-off valves

Transmitters	Shut-off valves for general applications	Page		Shut-off valves for special applications	Page	
Relative and absolute pressure transmitters with process connection G½" male thread e.g.	Shut-off valves/double shut- off valves to DIN 16270, DIN 16271 and DIN 16272	2/198		Double shut-off valve DN 5 for crossover ½-NPT-F to G½ nipple connection 7MF9011-4EA	2/201	
• SITRANS P, Z series 7MF1564A			1-1-1			
• SITRANS P300 7MF8020			•	2-spindle valve manifold	2/218	
• SITRANS P DS III series 7MF4030 and 7MF4230				DN 5 for installation in protective boxes 7MF9412-1B	2,210	
Relative and absolute pressure transmitter with 1/2"-14 NPT female thread	Double shut-off valve DN 5 7MF9011-4FA and 7MF9011-4GA	2/201		Double shut-off valve DN 5 for process connec- tion	2/201	
• e.g.			A STATE OF THE STA	½-NPT 7MF9011-4DA		Low of Cary
• SITRANS P Z series 7MF1564H				71VIF9011-4DA		100
• SITRANS P300 7MF8021						
• SITRANS P DS III series 7MF4031 and 7MF4231						
Absolute pressure transmitter with process connection to IEC 61518	2-spindle valve manifold DN 5 7MF9411-5A.	2/203		2-spindle valve manifold DN 5 for installation in protective boxes	2/218	
e.g. • SITRANS P DS III series 7MF433			4 6 6 G	7MF9412-1C.		

# Pressure Measurement Fittings

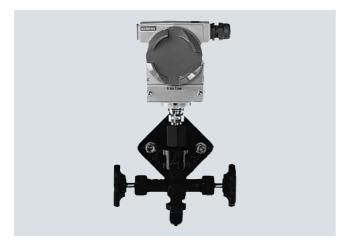
# Selection aid

						Selection aid
Transmitters	Shut-off valves for general applications	Page		Shut-off valves for special applications	Page	
Differential pressure transmitter with process connection to IEC 61518 e.g. • SITRANS P DS III series 7MF443 and 7MF453	For 3/5-spindle valve manifold DN 5 7MF9411-5B. and 7MF9411-5C.	2/203	The state of	3-way valve manifolds, DN 5, forged version 7MF9410-1	2/208	
			1	5-way valve manifolds, DN 5, forged version 7MF9410-3	2/208	1111
	PN 100 multiway cocks 7MF9004	2/206		3-way valve manifolds, DN 8, forged version 7MF9416-1 and 7MF9416-2	2/211	
				Valve manifold combination DN 5/DN 8 for vapor measurement 7MF9416-6	2/214	p.d.
				Valve manifold combination DN 8 for vapor measurement 7MF9416-4	2/216	
				3- and 5-spindle valve manifolds for DN 5 for installation in protective boxes 7MF9412-1D. and 7MF9412-1E.	2/218	
						A. C.
				3- and 5-spindle valve manifolds for vertical dif- ferential pressure lines 7MF9413-1	2/222	1-1
				Low-pressure multiway cock 7MF9004-4	2/225	

# Fittlings - Shut-off valves for gauge and absolute pressure transmitters

Shut-off valves to DIN 16270, DIN 16271 and DIN 16272

#### Overview



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 Ordering	ng data	Order No.
Shut-off valves, form	B, DIN 16270	
without test collar, con without certificate	nection shank,	
Material Valve housing	Maximum permissible working pressure	
CW614N (CuZn39Pb3 (mat. No. 2.0402)	)250 bar	7MF9401-7AA
P250GH (mat. No. 1.0460)	400 bar	7MF9401-7AB
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti		7MF9401-7AC
Shut-off valves, form	B, DIN 16271	
with test collar, connect without certificate	ction shank,	
Material Valve housing	Maximum permissible working pressure	
CW614N (CuZn39Pb3 (mat. No. 2.0402)	)250 bar	7MF9401-7BA
P250GH (mat. No. 1.0460)	400 bar	7MF9401-7BB
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti		7MF9401-7BC

Selection and Orderi	Order No.	
Shut-off valves, form	B, DIN 16270	
without test collar, pipe 12 S DIN EN ISO 8484	e union with ferrule 4-1, without certificate	
Material Valve housing	Maximum permissible working pressure	
P250GH (mat. No. 1.0460)	400 bar	7MF9401-8AB
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316T	400 bar i)	7MF9401-8AC
Shut-off valves, form	B, DIN 16271	
with test collar, pipe up 12 S DIN EN ISO 8484	nion with ferrule 1-1, without certificate	
Material Valve housing	Maximum permissible working pressure	
P250GH (mat. No. 1.0460)	400 bar	7MF9401-8BB
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316T	400 bar i)	7MF9401-8BC
Double shut-off valve	es, form B, DIN 16272	
with test collar, connect without certificate	ction shank,	
Material Valve housing	Maximum permissible working pressure	
CW614N (CuZn39Pb3 (mat. No. 2.0402)	s)250 bar	7MF9401-7DA
P250GH (mat. No. 1.0460)	400 bar	7MF9401-7DB
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316T	400 bar i)	7MF9401-7DC
Double shut-off valve	es, form B, DIN 16272	
with test collar, pipe up 12 S DIN EN ISO 8484		
Material Valve housing	Maximum permissible working pressure	
P250GH (mat. No. 1.0460)	400 bar	7MF9401-8DB
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316T	7MF9401-8DC	
Accessories		
Factory test certificate	EN 10204-2.2	7MF9000-8AB

7MF9000-8AD

Instrument bracket, see page 2/202.

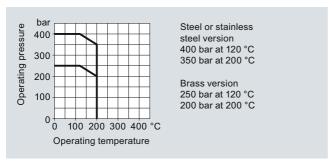
Material acceptance test certificate

EN 10204-3.1

# Fittlings - Shut-off valves for gauge and absolute pressure transmitters

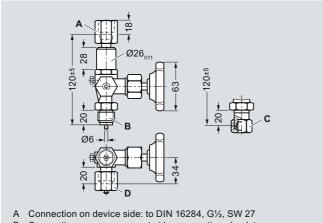
Shut-off valves to DIN 16270, DIN 16271 and DIN 16272

#### Characteristic curves



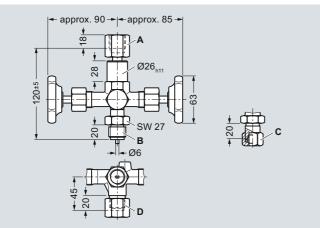
Permissible operating pressure as a function of the permissible operating temperature

#### Dimensional drawings



- B Connection on measurement side: connection shank to DIN EN 837-1,  $G\frac{1}{2}$
- C Connection on measurement side: pipe union with ferrule 12 mm diameter, S series, to DIN EN ISO 8434-1
- D Connection on test collar (with sealing cap): thread M20 x 1,5

Shut-off valve, form B, dimension drawing, dimensions in mm



- A Connection on device side: to DIN 16284, G1/2, SW 27
- B Connection on measurement side: connection shank to DIN EN 837-1, G1/2
- C Connection on measurement side: pipe union with ferrule 12 mm diameter, S series, to DIN EN ISO 8434-1
- D Connection on test collar (with sealing cap): thread M20 x 1,5  $\,$

Double shut-off valve, form B, dimension drawing, dimensions in mm

# Fittlings - Shut-off valves for gauge and absolute pressure transmitters

#### Angle adapter

#### Overview

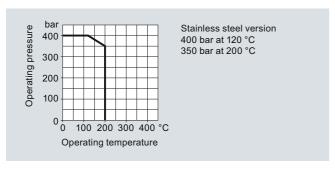


P300 pressure transmitter with shut-off valve and angle adapter

The angle adapter enables pressure transmitters with top displays to be read from the front.

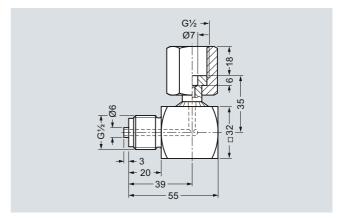
# Selection and Ordering data Order No. Angle adapters Material: X 12 CrNiMoTi 17 12 2 (mat. No. 1.45714/316Ti), max. permissible operating pressure 400 bar Accessories Factory test certificate EN 10204–2.2 Material acceptance test certificate EN 10204-3.1 Order No. 7MF9401-7WA 7MF9401-7WA 7MF9000-8AB 7MF9000-8AB

#### Characteristic curves



Permissible operating overpressure as a function of the permissible operating temperature

#### Dimensional drawings



Angle adapter, dimensions in mm

# Fittlings - Shut-off valves for gauge and absolute pressure transmitters

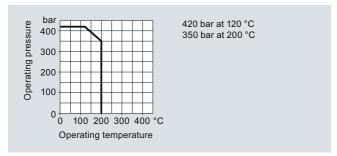
#### **Double shut-off valves**

#### Overview

The double shut-off valves DN 5 are suitable for pressure gauges and pressure transmitters and available in 4 versions:

- Sleeve-collar
- Sleeve-sleeve
- Sleeve-nipple
- · Collar-collar

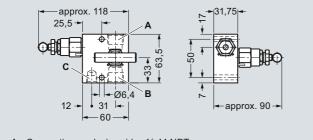
#### Characteristic curves



Permissible operating pressure as a function of the permissible operating temperature

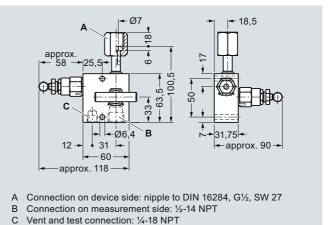
Selection and Ordering data	Order No.
Double shut-off valves DN 5	
Material: X 6 CrNiMoTi 17 13 2 (mat. No. 1.4404/316L), max. permissible working pressure 420 bar;	
• Sleeve-sleeve	7MF9011-4DA
Sleeve-nipple connection	7MF9011-4EA
• Sleeve-collar	7MF9011-4FA
Collar-collar	7MF9011-4GA
Accessories	
Factory 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 Order 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

#### Dimensional drawings

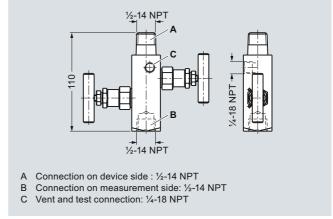


- A Connection on device side: 1/2-14 NPT
- B Connection on measurement side: 1/2-14 NPT
- C Vent and test connection: 1/4-18 NPT

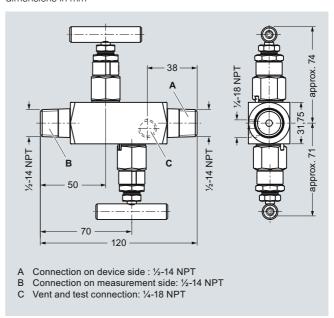
Double shut-off valve DN 5 (sleeve-sleeve) 7MF9011-4DA, dimensions in mm



Double shut-off valve DN 5 (sleeve-nipple) 7MF9011-4EA, dimensions in mm



Double shut-off valve DN 5 (sleeve-collar) 7MF9011-4FA, dimensions in mm



Double shut-off valve DN 5 (collar-collar) 7MF9011-4GA, dimensions in  $\mbox{mm}$ 

# Fittlings - Shut-off valves for gauge and absolute pressure transmitters

Accessories for shut-off valves / double shut-off valves

#### Overview

The mounting set is suitable for the double shut-off valves 7MF9011-4. A and for wall, rack and pipe mounting.

#### Selection and Ordering data Mounting set for shut-off valves

Order No

7MF9011-8AB

#### • 7MF9011-4DA und -4EA

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

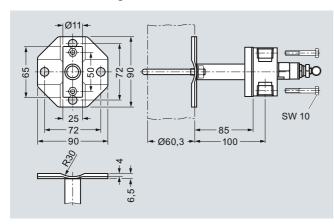
made of stainless steel, scope of delivery: 1x mounting bracket,

2x hexagon screws M6x10, 1x mounting clip,

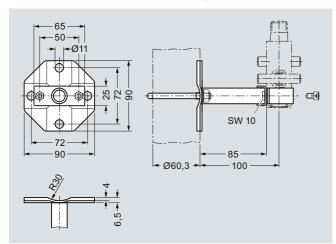
2x washers 8.4 to DIN 125; 2x hexagon nuts 8.4 to DIN EN 24032

#### 7MF9011-8AC

#### Dimensional drawings



Mounting bracket (7MF9011-8AB) for shut-off valves 7MF9011-4DA and 7MF9011-4EA for wall, rack or pipe mounting, dimensions in mm



Mounting bracket (7MF9011-8AC) for shut-off valves 7MF9011-4FA and 7MF9011-4GA for wall, rack or pipe mounting, dimensions in mm

#### 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..)

#### Selection and Ordering data Order No. Instrument bracket, form H, DIN 16281

(e.g. for gauge)

made of aluminium alloy, painted black, for wall mounting, screw-type bracket cover

- Projection length 60 mm
- Projection length 100 mm

#### Instrument bracket, form A, DIN 16281

(e.g. for transmitter) made of annealed cast iron, galvanized and primed for mounting on a wall or rack or or on a sectional rail (horizontal/vertical); Screw-type bracket cover

#### Instrument bracket, form A, DIN 16281

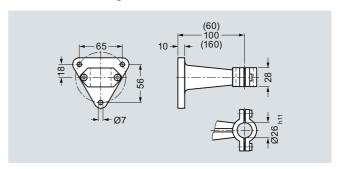
(e.g. for transmitter) made of annealed cast iron, galvanized and primed with pipe clamp for wall and pipe mounting (horizotal/vertical) Screw-type bracket cover

M56340-A0046 M56340-A0047

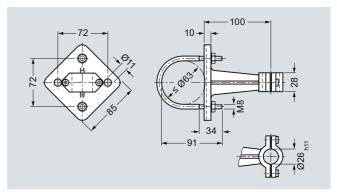
M56340-A0053

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

# Fittlings - Shut-off valves for differential pressure transmitters

#### 2-, 3- and 5-spindle valve manifolds DN 5

#### Overview



The 2-spindle, 3-spindle and 5-spindle valve manifolds 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

- Max. working pressure 420 bar
- Each available in version for oxygen

#### Application

The spindle valve manifolds DN 5 are designed for liquids and gases.

Each is available in a version for oxygen on request.

#### Design

All versions of the valve manifolds have a process connection  $\frac{1}{2}$ -14 NPT. The connection for the pressure transmitter is always designed as a flange connection to EN 61518, form B . The 2-spindle and the 5-spindle valve manifold have in addition a vent and test connection  $\frac{1}{4}$ -18 NPT.

The valves have an external spindle thread.

#### 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	Order No.
Valve manifolds DN 5	7MF9411-
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
• 3-spindle valve manifold	5 B
• 5-spindle valve manifold	5 C
Accessories	
Factory test certificate EN 10204–2.2	7MF9000-8AB
Material acceptance test certificate FN 10204-3.1 7MF9000-8AD	

Selection and Ordering data	Order code	Order No.
Further designs <sup>1)</sup>		
Please add "-Z" to Order No. and specify Order code.		
Accessory set to EN (connection between valve manifold and pressure transmitter)		
for valve manifold 7MF9411-5A.		
2x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 1¾ inch to ASME B18.2.1; chromized steel	K35	7MF9411-7DB
1x gasket made of PTFE, max. permissible 420 bar, 80 °C		
2x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 1¾ inch to ASME B18.2.1; stainless steel	K45	7MF9411-7DC
1x gasket made of PTFE, max. permissible 420 bar, 80 °C		
for valve manifold 7MF9411-5B, and		
<u>-5C.</u>		
4x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 1¾ inch to ASME B18.2.1; chromized steel	K36	7MF9411-5DB
2x flat gaskets made of PTFE, max. permissible 420 bar, 80 °C		
4x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 1¾ inch to ASME B18.2.1; stainless steel	K46	7MF9411-5DC
2x flat gaskets made of PTFE, max. permissible 420 bar, 80 °C		
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; chromized steel 2x washers Ø 10.5 mm to DIN 125; 1x gasket made of PTFE, max. permissible 420 bar, 80 °C	K15	7MF9411-7BB
2x screws M10x45 to DIN EN 24014; stainless steel 2x washers Ø 10.5 mm to DIN 125, stainless steel; 1x gasket made of PTFE, max. permissible 420 bar, 80 °C	K25	7MF9411-7BC

# Fitttings - Shut-off valves for differential pressure transmitters

#### 2-, 3- and 5-spindle valve manifolds DN 5

Selection and Ordering data	Order code	Order No.	Accessories
Further designs <sup>1)</sup>			
Please add "-Z" to Order No. and			Accessory set for 2-, 3- and 5-spindle va
specify Order code.			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 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 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, 80 °C Flange connection with M10 screws only permissible up to PN 160.			• K36: 4 screws <sup>7</sup> / <sub>16</sub> -20 UNF x 1 <sup>3</sup> / <sub>4</sub> inch to 2 flat gaskets
4x screws M10x45 to DIN EN 24014; stainless steel	K26	7MF9411-6BC	<ul> <li>K16: 4 screws M10x45 to DIN EN 24014 2 flat gaskets</li> </ul>
4x washers Ø 10.5 mm to DIN 125, stainless steel;			Washers Ø 10.5 to DIN 125
2x flat gaskets made of PTFE,			Flat gaskets made of PTFE, max. 420 bar,
max. permissible 420 bar, 80 °C Flange connection with M10 screws only permissible up to PN 160.			Note: Flange connection with M10 screws of PN 160!
Mounting plate			Mounting plate
• for valve manifold, made of			Made of electrogalvanized sheet-steel
electrogalvanized sheet-steel  - for wall mounting or for securing on rack (72 mm grid), weight 0.5 kg	M11	7MF9006-6EA	<ul> <li>M11: For wall mounting or for securing of Scope of delivery:</li> <li>1 mounting plate with bolts for mounting</li> </ul>
Scope of delivery: 1 mounting plate with bolts for mounting on valve manifold  - for pipe mounting, weight 0.7 kg Scope of delivery:	M12	7MF9006-6GA	<ul> <li>M12: For pipe mounting Scope of delivery:</li> <li>1 mounting plate M11</li> <li>2 pipe brackets with nuts and washers</li> </ul>
1x mounting plate M11, 2x pipe brackets with nuts and washers			Ø 60.3 mm  Valve manifold 100 bar, suitable for oxyg
(for pipe with max. Ø 60.3 mm)			S12: For 2-way valve manifold
<ul> <li>for valve manifold, made of stainless steel</li> </ul>			S13: For 3-way valve manifold
- for wall mounting or for securing on rack (72 mm grid), weight	M21	7MF9006-6EC	S14: For 5-way valve manifold
0.5 kg Scope of delivery: 1 mounting plate with bolts for			Characteristic curves
mounting on valve manifold  - for pipe mounting, weight 0.7 kg Scope of delivery:  1x mounting plate M11, 2x pipe brackets with nuts and washers (for pipe with max. Ø 60.3 mm)	M22	7MF9006-6GC	bar 400
Valve manifold 100 bar			- ara = 200
Oil- and grease-free cleaning for oxygen applications, max. pressure PN 100 (1450 psi) and max. temper- ature 60 °C (140 °F)			0 100 200 300 400
• for 7MF9411-5A.	S12		Operating temperatur
• for 7MF9411-5B.	S13		
	C44		

<sup>1)</sup> When ordering accessory set or mounting together with the valve manifolds, please use Order code; otherwise use Order No.

**S14** 

# valve manifolds

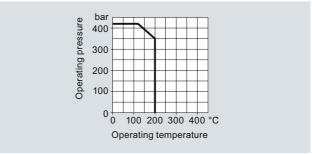
- o ASME B18.2.1,
- 4, 2 washers,
- o ASME B18.2.1,
- 4, 4 washers,

. 80 °C

only permissible up to

- on rack (72 mm grid)
- ing on valve manifold
- rs for pipes with max.

#### ygen



Valve manifolds PN 5 (7MF9411-5..), permissible working pressure as a function of the permissible working temperature  $\frac{1}{2}$ 

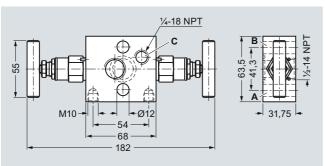
• for 7MF9411-5C.

<sup>2)</sup> Flange connections to DIN 19213 only permissible up to 160!

# Fitttings - Shut-off valves for differential pressure transmitters

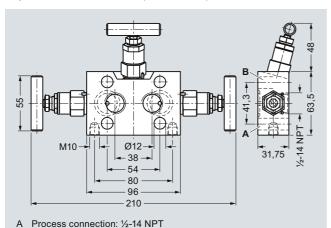
## 2-, 3- and 5-spindle valve manifolds DN 5

#### Dimensional drawings



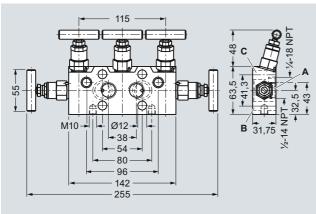
- A Process connection: 1/2-14 NPT
- Transmitter connection: Flange connection to EN 61518, form B
- Vent / test connection: 1/4-18 NPT Valve design: external spindle thread

2-spindle valve manifold DN 5 (7MF9411-5A.), dimensions in mm



- Valve design: external spindle thread
- B Transmitter connection: Flange connection to EN 61518, form B

3-spindle valve manifold DN 5 (7MF9411-5B.), dimensions in mm



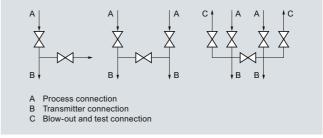
- A Process connection: 1/2-14 NPT
- Transmitter connection: Flange connection to EN 61518, form B
- C Vent / test connection: 1/4-18 NPT Valve design: external spindle thread

5-spindle valve manifold DN 5 (7MF9411-5C.), dimensions in mm

# 54 72

Mounting plate 7MF9006-6.. (M11, M12) for valve manifold, dimensions in mm

#### Schematics



2-spindle, 3-spindle and 5-spindle valve manifold DN 5, connections

# Fittlings - Shut-off valves for differential pressure transmitters

#### **Multiway cocks PN 100**

#### Overview



Multiway cock PN 100 (7MF9004-1P.) for differential pressure transmitters

The multiway cock PN 100 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 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.

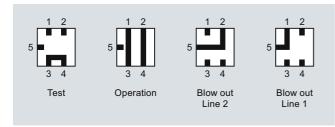
The PN 100 has 2 process connections and one blow-out connection. A steel version of the multiway cock is available for non-aggressive media, and a stainless steel version for aggressive media. The housing is forged in one piece. The switching lever is removable.

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 liquids and gases	Aggressive liquids, gases and vapors
Material	P250GH, mat. No.: 1.0460	X 6 CrNiMoTi 17 12 2, mat. No. 1.4571/316Ti
Connections	Steel, for pipe Ø 12 mm, L series	Stainless steel, for pipe Ø 12 mm, L series
• Process connection	2 bulkhea	ad glands
• Connection for blowing out	Pipe union	with ferrule
Max. permissible working temperature	200	)°C
Max. permissible working pressure	100 bar (up to max. 60 °C)	
Weight	2.5	i kg

Selection and Ordering data	Order No.
Multiway cock PN 100	7MF9004-
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	7MF9000-8AB
Material acceptance test certificate EN 10204-3.1	7MF9000-8AD

Selection and Ordering data	Order code	Order No.
Further designs <sup>1)</sup> Please add "-2" to Order 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	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		
Standard design	L11	7MF9004-6AD
<ul> <li>Version for oxygen (together with Order code S11</li> </ul>	L15	7MF9004-6AE
Multiway cock in oil-free and grease-free design  Oil- and grease-free cleaning for oxygen applications, max. pressure PN 100 (1450 psi) and max. temperature 60 °C (140 °F), BAM-tested lubricant, gasket suitable for oxygen measurement (only with Order 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

When ordering accessory set or mounting together with the multiway cock, please use Order code; otherwise use Order No.

# Fittlings - 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 °C

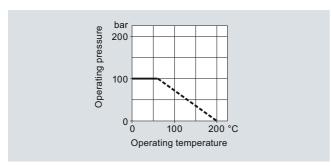
#### Multiway cock in oil-free and grease-free design

 S11 (only for aggressive liquids, gases and vapors (7MF9004-1Q.)): Max. PN 63 (instead of PN 100), BAM-tested lubricant, gasket suitable for oxygen

#### Mounting brackets

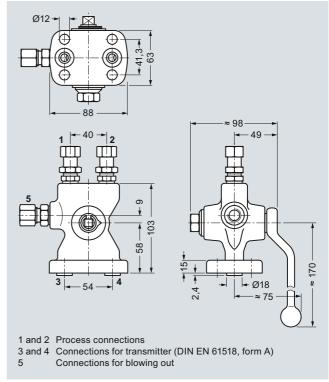
 M13: Required for wall mounting or for securing on rack (72 mm grid); made of electrogalvanized sheet-steel

#### Characteristic curves

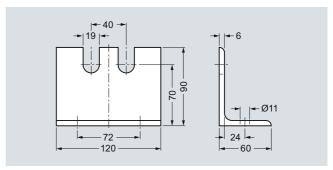


Multiway cock PN 100, permissible operating pressure as a function of the permissible operating temperature

#### Dimensional drawings



Multiway cock 7MF9004-1P. for flanging to pressure transmitters for differential pressure, dimensions in mm



Mounting bracket 7MF9004-6AA (M13), dimensions in mm

# Fittlings - 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, with version for oxygen max. 100 bar

#### 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 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 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	Order No.
3-way valve manifold DN 5 For flanging to pressure transmitters for differential pressure, process connection: Pipe union with ferrule, max. working pressure 420 bar, weight 2.9 kg (order accessory set and mounting plate with Order code), without certificate	7 M F 9 4 1 0 - ■■A
<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 For flanging to pressure transmitters for differential pressure, process connection: Pipe union with ferrule, max. working pressure 420 bar, 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

# Fittlings - Shut-off valves for differential pressure transmitters

3-way and 5-way valve manifolds DN 5

Selection and Ordering data	Order code	Order No.
Further designs <sup>1)</sup>		
Please add "-Z" to Order 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 2 <sup>1</sup> / <sub>8</sub> inch to ASME B18.2; chromized steel	<b>B31</b> F	7MF9010-5CC
2x flat gaskets made of PTFE, max. permissible 420 bar, 80 °C		
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 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar, 120 °C	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 flat gaskets made of PTFE, max. permissible 420 bar, 80 °C		
<ul> <li>Standard design</li> </ul>	B11	7MF9010-6AD
<ul> <li>Version for oxygen</li> </ul>	B15	7MF9010-6AE
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, 120 °C	B16	7MF9010-6CC
Mounting plate		
for valve manifold, made of electrogalvanized sheet-steel for wall mounting or for securing on rack (72 mm grid), weight 0.5 kg Scope of delivery:  1 mounting plate with bolts for mounting on valve manifold	M11	7MF9006-6EA
for pipe mounting, weight 0.7 kg	M12	7MF9006-6GA
Scope of delivery: 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	

- When ordering accessory set or mounting together with the valve manifolds, please use Order code; otherwise use Order No.
- <sup>2)</sup> Flange connections to DIN 19213 only permissible up to PN 160
- F) Subject to export regulations AL: 91999, ECCN: N

#### Accessories

Accessory set for 3-way and 5-way valve manifold DN 5 for flanging

- 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
- $\bullet$  B34: 4 screws  $^7\!/_{16}$ -20 UNF x  $2^1\!/_{8}$  inch to ASME B18.2.1, 2 O-rings (FPM 90)
- B11: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 flat gaskets
- B15 (suitable for oxygen): 4 screws M10x55 to DIN EN 24014, 4 washers, 2 flat gaskets
- B16: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 O-rings (FPM 90)

Washers Ø 10.5 to DIN 125

Flat gaskets made of PTFE, max. 420 bar, 80 °C

O-ring to DIN 3771, 20 x 2.65 - S - FPM90, max. 420 bar, 120 °C

Note: M10 screws only permissible up to PN 160!

#### Mounting plate

Made of electrogalvanized sheet-steel

- M11: For wall mounting or for securing on rack (72 mm grid) Scope of delivery:
  - 1 mounting plate 7MF9006-6EA with bolts for mounting on valve manifold
- M12: For pipe mounting Scope of delivery:
  - 1 mounting plate M11
  - 2 pipe brackets with nuts and washers for pipes with max.
     Ø 60.3 mm

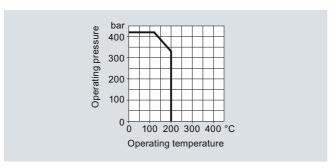
#### Valve manifold 100 bar, suitable for oxygen

S12: Only in combination with versions for aggressive liquids and gases

# Fittlings - Shut-off valves for differential pressure transmitters

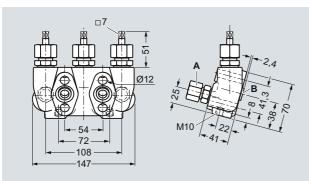
#### 3-way and 5-way valve manifolds DN 5

#### Characteristic curves



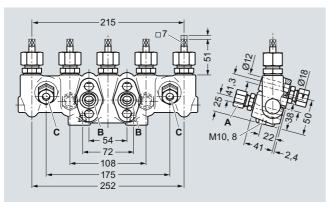
Permissible operating pressure as a function of the permissible operating temperature

#### 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

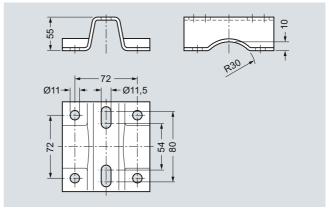
3-way valve manifold DN 5 (7MF9410-1..), dimensions in mm



- 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
- C Blow-out connection: Pipe union with ferrule, diameter 12 mm, S series to DIN 2353

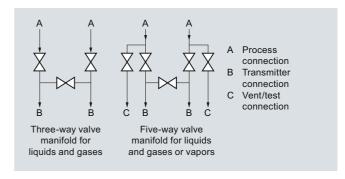
Valve design: internal spindle thread

5-way valve manifold DN 5 (7MF9410-3..), dimensions in mm



Mounting plate 7MF9006-6.. (M11, M12) for valve manifold, dimensions in mm

#### Schematics



3-way and 5-way valve manifolds, connections

# Fittlings - Shut-off valves for differential pressure transmitters

#### 3-way valve manifold DN 8

#### Overview



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.

#### 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

Both versions are available optionally with a test connection M20x1.5.

The valves have an internal spindle thread.

#### Materials used

	For non-aggressive liquids and 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	Order No.
3-way valve manifold DN 8	7MF9416-
For flanging to pressure transmitters for differential pressure, max. working pressure 420 bar, (order accessory set and mounting plate with Order code), without certificate	
For non-aggressive liquids and gases procedss connection: Pipe union with ferrule Ø 12 mm	
• without test connection	1 B
• with test connection	1 C
For non-aggressive liquids and gases procedss connection: Welding pin Ø 14 x 2.5	
• without test connection	2 C
• with test connection	2 D
For aggressive liquids and gases process connection: Pipe union with ferrule Ø 12 mm	
• without test connection	1 D
• with test connection	1 E
Accessories	
Factory test certificate EN 10204–2.2	7MF9000-8AB
Material acceptance test certificate EN 10204-3.1	7MF9000-8AD

# Fittlings - Shut-off valves for differential pressure transmitters

#### 3-way valve manifold DN 8

Selection and Ordering data	Order code	Order No.	
Further designs <sup>1)</sup>	Graci coac	01401140.	^
Please add "-Z" to Order 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 2 <sup>1</sup> / <sub>8</sub> inch to ASME B18.2; chromized steel 2x flat gaskets made of PTFE, max. permissible 420 bar, 80 °C	<b>B31</b> F	) 7MF9010-5CC	•
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 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar, 120 °C	B34	7MF9410-5CA	W F C
Accessory set to DIN <sup>2</sup> )			IV
(required for flanging, weight 0.2 kg)	<b>5</b> 44	-1150040 040	N
4x screws M10x55 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, 80 °C	B11	7MF9010-6AD	•
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. permiss- ble 420 bar, 120 °C	B16	7MF9010-6CC	•
Mounting plate			С
For valve manifold, made of electrogalvanized sheet-steel			
for wall mounting or for securing on rack (72 mm grid), weight 0.5 kg Scope of delivery: 1 mounting plate with bolts for mounting on valve manifold	M11	7MF9006-6EA	
for pipe mounting, weight 0.7 kg Scope of delivery: 1x mounting plate M11, 2x pipe brackets with nuts and washers (for pipe with max. Ø 60.3 mm)	M12	7MF9006-6GA	

When ordering accessory set or mounting together with the valve manifold, please use Order code; otherwise use Order No.

#### Accessories

#### Accessory set for 3-way valve manifold DN 8 for flanging

- 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
- 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)
- B11: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 flat gaskets
- B16: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 O-rings (FPM 90)

Washers Ø 10.5 to DIN 125

Flat gaskets made of PTFE, max. 420 bar, 80 °C

O-ring to DIN 3771, 20 x 2.65 - S - FPM90, max. 420 bar, 120 °C

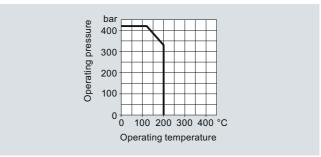
Note: M10 screws only permissible up to PN 160!

#### Mounting plate

Made of electrogalvanized sheet-steel

- M11: For wall mounting or for securing on rack (72 mm grid)
   Scope of delivery:
  - 1 mounting plate with bolts for mounting on valve manifold
- M12: For pipe mounting Scope of delivery:
- 1 mounting plate M11
- 2 pipe brackets with nuts and washers for pipes with max.
   Ø 60.3 mm

#### Characteristic curves



3-way valve manifold DN 8, permissible working pressure as a function of the permissible working temperature

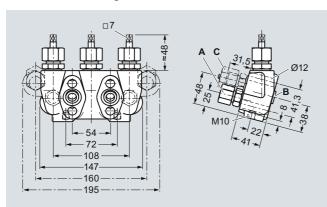
<sup>&</sup>lt;sup>2)</sup> Flange connections to DIN 19213 only permissible up to PN 160!

F) Subject to export regulations AL: 91999, ECCN: N.

# Fittlings - Shut-off valves for differential pressure transmitters

3-way valve manifold DN 8

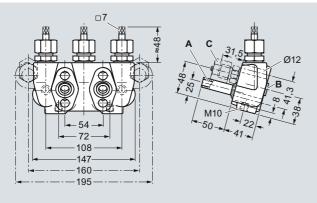
#### Dimensional drawings



- 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
- C Test connection: M20 x 1,5

Valve design: internal spindle thread

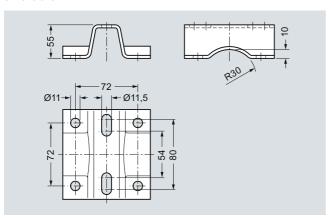
3-way valve manifold DN 8 (7MF9416-1..) with pipe union, dimensions in  $\ensuremath{\mathsf{mm}}$ 



- 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

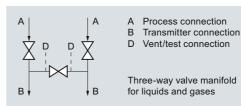
Valve design: internal spindle thread

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 mm

#### Schematics



3-way valve manifold DN 8, connections

# Fittlings - 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

#### 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 manifo	ld DN 5	Blow-out valves 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	Order No.	
Valve manifold combination DN 5/DN 8 for vapors	7MF9416-6 A	
For flanging to pressure transmitters for differential pressure, max. working pressure 420 bar, also available in stainless steel on request (order accessory set with Order code), without certificate		
• without test connection	С	
$\bullet$ with test connection M20 $ imes$ 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	Order No.
Further designs <sup>1)</sup>		
Please add "-Z" to Order 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 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, 120 °C	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, 120 °C 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 manifold combination, please use Order code; otherwise use Order No.

<sup>&</sup>lt;sup>2)</sup> Flange connections to DIN 19213 only permissible up to 160

# Fittlings - Shut-off valves for differential pressure transmitters

Valve manifold combination DN 5/DN 8

#### Accessories

# Accessory set for valve manifold combination DN 5/DN 8 for flanging

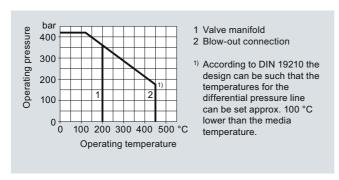
- $\bullet$  B34: 4 screws  $^7\!/_{16}$ -20 UNF x  $2^1\!/_{8}$  inch to ASME B18.2.1, 2 O-rings (FPM 90)
- B16: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 O-rings (FPM 90)

Washers Ø 10.5 to DIN 125

O-ring to DIN 3771, 20 x 2.65 - S - FPM90, max. 420 bar, 120 °C

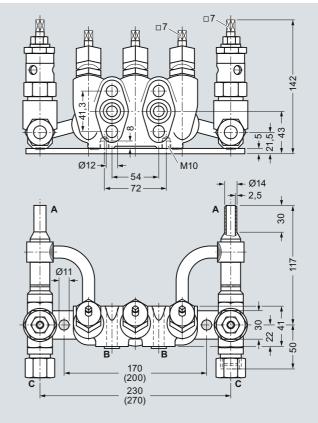
Note: M10 screws only permissible up to PN 160!

#### Characteristic curves



Permissible operating pressure as a function of the permissible operating temperature

#### Dimensional drawings



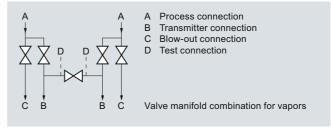
- A Process connection (e.g. on primary device): Welding pin
- B Transmitter connection: Flange connection to EN 61518, form A
- C Blow-out connection: Pipe union with ferrule, diameter 14 mm, S series to DIN 2353

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

# Fittlings - Shut-off valves for differential pressure transmitters

#### Valve manifold combination DN 8

#### 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

#### 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 valves	
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	Order No.	
Valve manifold combination DN 8 for vapors	7MF9416-	
for flanging to pressure transmitters for differential pressure, with mounting plate, max. working pressure 420 bar, also available in stainless steel on request (order accessory set with Order code), without certificate		
• without test connection	4 C	
$\bullet$ with test connection M20 $ imes$ 1.5	4 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	Order No.
Further designs <sup>1)</sup>		
Please add "-Z" to Order 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 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, 120 °C	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, 120 °C 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 Order No.
- 2) Flange connections to DIN 19213 only permissible up to 160

#### Accessories

Accessory set for valve manifold combination DN 8 for flanging

- $\bullet$  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

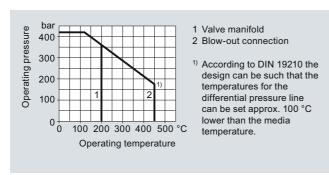
O-ring to DIN 3771, 20 x 2.65 - S - FPM90, max. 420 bar, 120 °C

Note: M10 screws only permissible up to PN 160!

# Fitttings - Shut-off valves for differential pressure transmitters

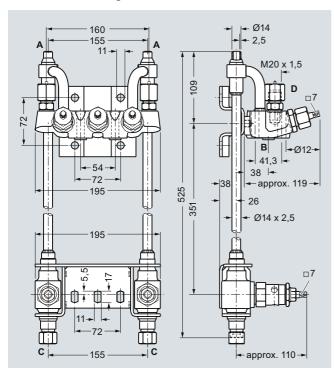
### Valve manifold combination DN 8

#### Characteristic curves



Permissible operating pressure as a function of the permissible operating temperature

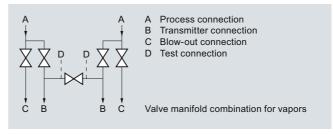
#### Dimensional drawings



- A Process connection (e.g. on primary device): Welding pin
- B Transmitter connection: Flange connection to EN 61518, form A
- C Blow-out connection: Pipe union with ferrule, diameter 14 mm, S series to DIN 2353
- D Test connection (only with Order 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

### Schematics



Valve manifold combination DN 8, connections

# Fittlings - 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  $\frac{1}{2}$ -14 NPT.

The connection for the pressure transmitter is always designed as a flange connection to EN 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	Order No.
Valve manifolds DN 5 for mounting in protective boxes	7MF9412-
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 (order accessory set with Order code), without certificate	
<ul> <li>2-spindle valve manifold with rotating sleeve G½</li> </ul>	1 B
<ul> <li>2-spindle valve manifold with flange connection</li> </ul>	1 C
• 3-spindle valve manifold	1 D
• 5-spindle valve manifold	1 E
Accessories	
Factory test certificate EN 10204–2.2 <b>7MF9000-8AB</b>	
Material acceptance test certificate EN 10204-3.1	7MF9000-8AD

Selection and Ordering data	Order code	Order No.
Further designs <sup>1)</sup>		
Please add "-Z" to Order 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, 120 °C	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, 80 °C <sup>2)</sup>	F35	7MF9412-6DA
for valve manifold 7MF9412–1D and -1E.		
4x screws $^{7}$ / <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, 120 °C <sup>2)</sup>	F34	7MF9412-6GA
4x screws <sup>7</sup> / <sub>16</sub> -20 UNF x 2 inch to ASME B18.2.1; chromized steel 2x flat gaskets made of PTFE, max. permissible 420 bar, 80 °C <sup>2)</sup>	F36	7MF9412-6HA

# Fittlings - 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	Order No.
Further designs <sup>1)</sup>		
Please add "-Z" to Order No. and specify Order code.		
Accessory set to DIN		
(connection between valve manifold and pressure transmitter)  For valve manifold 7MF9412–1C.		
2x screws M10x50 to DIN EN 24014;	F12	7MF9412-6AA
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, 120 °C <sup>2)</sup>		7111 3412 000
2x screws M10x50 to DIN EN 24014;	F15	7MF9412-6BA
chromized steel 2x washers Ø 10.5 mm to DIN 125; 1x gasket made of PTFE, max. permissible 420 bar, 80 °C <sup>2)</sup> For valve manifold 7MF9412–1D and -1E.		
4x screws M10x50 to DIN EN 24014;	F14	7MF9412-6EA
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, 120 °C²)		
4x screws M10x50 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, 80 °C <sup>2)</sup>	F16	7MF9412-6FA
Mounting bracket		
required for wall mounting or for securing to mounting rack, with bolts for mounting on valve manifold		
<ul> <li>for valve manifolds 7MF9412-1B. and -1C.</li> </ul>	M14	7MF9006-6LA
• for valve manifold 7MF9412-1D.	M17	7MF9006-6NA
• for valve manifold 7MF9412-1E.	M18	7MF9006-6PA
Mounting clip		
2 off, to secure mounting bracket to pipe	M16	7MF9006-6KA
Valve manifold 100 bar		
Oil- and grease-free cleaning for oxygen applications, max. pressure PN 100 (1450 psi) and max. temper- ature 60 °C (140 °F)		
<ul> <li>for valve manifolds 7MF9412-1B. and -1C.</li> </ul>	S12	
• for valve manifold 7MF9412-1D.	S13	
• for valve manifold 7MF9412-1E.	S14	

When ordering accessory set or mounting together with the valve manifolds, please use Order code; otherwise use Order No.

#### Accessories

Accessory set for 2-, 3- and 5-spindle valve manifolds (Connection between manifold and transmitter)

#### 2-spindle valve manifold DN 5 with flange connection

- F32: 2 screws 7/16 20 UNF x 2 inch to ASME B 18.2.1, 1 O Ring (FPM90)
- F35: 2 screws 7/16 20 UNF x 2 inch to ASME B 18.2.1, 1 flat-gasket
- F12: 2 screws M10x50 to DIN EN 24014, 2 washers, 1 O-ring (FPM90)
- F15: 2 screws M10x50 to DIN EN 24014, 2 washers, 1 flat gasket

### 3-spindle and 5-way valve manifold DN 5

- F34: 4 screws 7/16 20 UNF x 2 inch toASME B 18.2.1, 2 O-rings (FPM90)
- F36: 4 screws 7/16 20 UNF x 2 inch toASME B 18.2.1, 2 flat-gaskets
- F14: 4 screws M10x50 to DIN EN 24014, 4 washers, 2 O-rings (FPM90)
- F16: 4 screws M10x50 to DIN EN 24014, 4 washers, 2 flat-gaskets

Washers Ø 10,5 to DIN 125

Flat-gaskets made of PTFE, max. 420 bar, 80 °C

O-ring to DIN 3771, 20 x 2,65 - S - FPM90; max.420 bar, 120 °C

#### Note

Flange connections with M10 screws only permissible up to PN 160!

# Mounting bracket for wall mounting or for securing to mounting rack

With bolds for mounting on valve manifold

- M14: For 2-spindle valve manifold DN 5
- M17: For 3-spindle valve manifold DN 5
- M18: For 5-spindle valve manifold DN 5

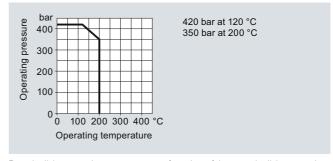
#### Mounting clips (2 off)

 M16: For securing the mounting brackets M14, M17 and M18 to pipe

#### Valve manifold 100 bar, suitable for oxygen

- S12: For 2-spindle valve manifold DN 5
- S13: For 3-spindle valve manifold DN 5
- S14: For 5-spindle valve manifold DN 5

### Characteristic curves



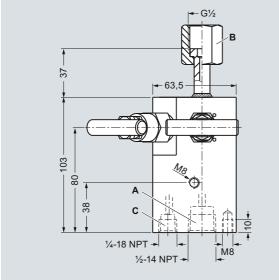
Permissible operating pressure as a function of the permissible operating temperature

<sup>&</sup>lt;sup>2)</sup> Flange connections with M10 screws only permissible up to PN 160!

# Fittlings - Shut-off valves for differential pressure transmitters

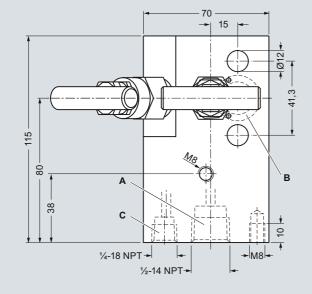
2-, 3- and 5-spindle valve manifolds for installing in protective boxes

### Dimensional drawings



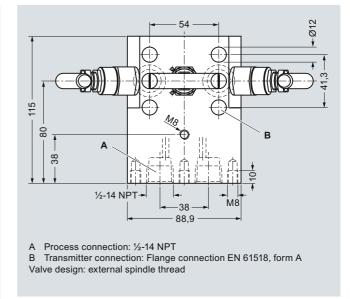
- A Process connection: 1/2-14 NPT
- B Transmitter connection: Nipple to DIN 16284, G1/2, SW 27
- C Vent / test connection: 1/4-18 NPT

2-spindle valve manifold DN 5 (7MF9412-1B..) with rotating sleeve, dimensions in mm

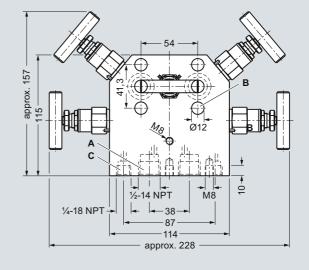


- A Process connection: 1/2-14 NPT
- B Transmitter connection: Flange connection to EN 61518, form A
- C Vent / test connection: 1/4-18 NPT Valve design: external spindle thread

2-spindle valve manifold DN 5 (7MF9412-1C..), dimensions in  $\mbox{mm}$ 



3-spindle valve manifold DN 5 (7MF9412-1D..), dimensions in mm

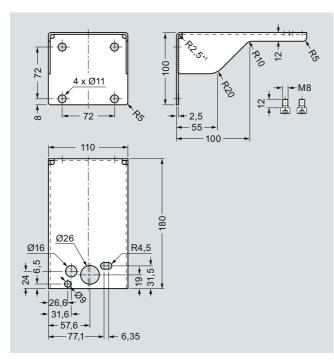


- A Process connection: 1/2-14 NPT
- 3 Transmitter connection: Flange connection to EN 61518, form A
- C Vent / test connection: 1/4-18 NPT Valve design: external spindle thread

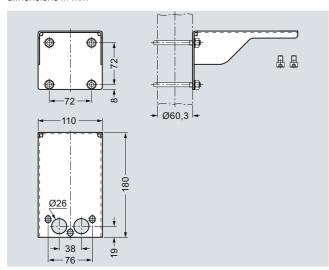
5-spindle valve manifold DN 5 (7MF9412-1E..), dimensions in mm

# Fittlings - Shut-off valves for differential pressure transmitters

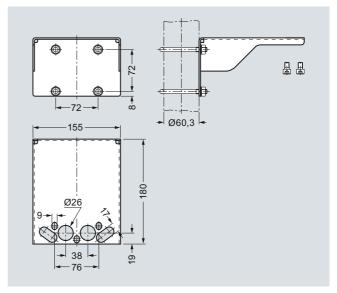
2-, 3- and 5-spindle valve manifolds for installing in protective boxes



Mounting bracket (7MF9006-6LA)/(M14) for 2-spindle valve manifolds, dimensions in mm  $\,$ 

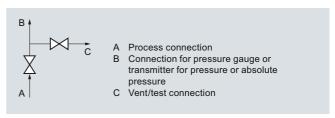


Mounting bracket (7MF9006-6NA)/(M17) for 3-spindle valve manifolds, dimensions in mm  $\,$ 

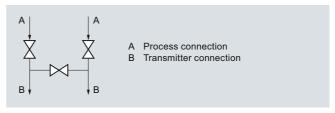


Mounting bracket (7MF9006-6PA)/(M18) for 5-spindle valve manifolds, dimensions in mm

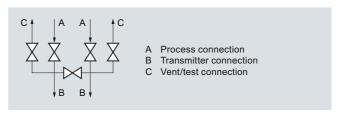
#### Schematics



2-spindle valve manifold DN 5 (with rotating sleeve  $G \ensuremath{\mathbb{Z}}_2$  or flange connection), connections



3-spindle valve manifold DN 5, connections



5-spindle valve manifold DN 5, connections

# Fittlings - 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
- 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  $\frac{1}{2}$ -14 NPT.

The connection for the pressure transmitter is always designed as a flange connection to EN 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	Order No.
Valve manifolds for vertical differential pressure lines	7 M F 9 4 1 3 -
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 (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 code	Order No.
Further designs <sup>1)</sup>		
Please add "-Z" to Order 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 1¾ inch to ASME B18.2.1; chro- mized steel 2x flat gaskets made of PTFE, max. permissible 420 bar, 80 °C	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, 80 °C Flange connection with M10 screws only permissible up to PN 160.	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-</b> <b>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		
suitable for oxygen		
• for valve manifold 7MF9413-1D.	S13	
• for valve manifold 7MF9413-1E.	S14	

<sup>1)</sup> When ordering accessory set or mounting together with the multiway cock, please use Order code; otherwise use Order No.

<sup>2)</sup> Flange connections to DIN 19213 only permissible up to 160!

# Fittlings - 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 <sup>7</sup>/<sub>16</sub>-20 UNF x 1¾ 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, 80 °C

**Note**: Flange connection with M10 screws only permissible up to PN 160!

# 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

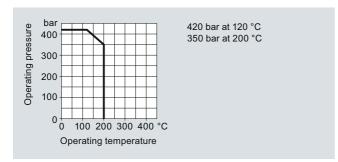
#### Mounting clips (2 off)

For securing the mounting brackets M17, M18 and M19 to pipe

#### Valve manifold 100 bar, suitable for oxygen

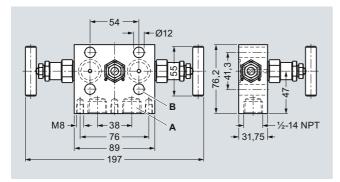
- For 3-spindle valve manifold
- For 5-spindle valve manifold

#### Characteristic curves

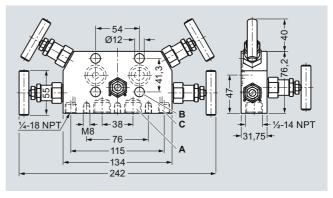


Permissible operating pressure as a function of the permissible operating temperature

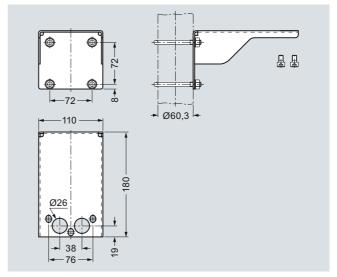
#### Dimensional drawings



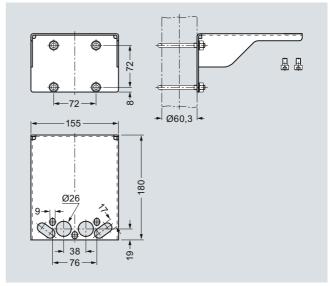
3-spindle valve manifold 7MF9413-1D. for vertical differential pressure lines, dimensions in mm



5-spindle valve manifold 7MF9413-1E. for vertical differential pressure lines, dimensions in mm



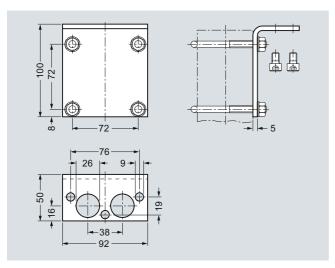
Mounting bracket (7MF9006-6NA)/(M17) for 3-spindle valve manifolds, dimensions in mm



Mounting bracket (7MF9006-6PA)/(M18) for 5-spindle valve manifolds,

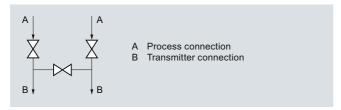
# Fittlings - Shut-off valves for differential pressure transmitters

3- and 5-spindle valve manifolds for vertical angular differential pressure lines

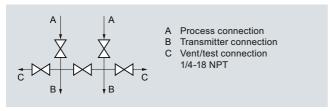


Mounting bracket (7MF9006-6QA)/(M19) for 3-spindle valve manifolds, dimensions in  $\mbox{mm}$ 

### Schematics



3-spindle valve manifold for vertical differential pressure lines, connections



5-spindle valve manifold for vertical differential pressure lines, connections

# Fittlings - Shut-off valves for differential pressure transmitters

### Low-pressure multiway cock

#### Overview



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

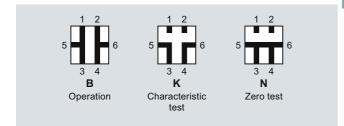
#### Design

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	Order No.
Low-pressure multiway cock for liquids and gases, for flanging to pressure transmitters, max. working pressure 25 bar, max. working temperature 60 °C (up to 80 °C for a short time), weight 1.75 kg (without accessory set)	
Test connections	_
2x sealing screws G <sup>3</sup> / <sub>8</sub>	7MF9004-4CA
2x quick-release couplings	7MF9004-4DA

Selection and Ordering data	Order code	Order No.
Further designs <sup>1)</sup>		
Please add "-Z" to Order 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	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		
Standard design	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	S11	
Mounting bracket		
required <b>for wall mounting</b> 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 Order No

### 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 gas-
- 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

#### 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

# **Pressure Measurement** Fittlings - Shut-off valves for differential pressure transmitters

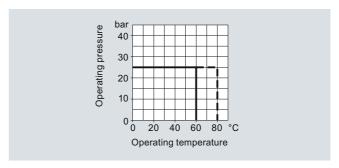
### Low-pressure multiway cock

### Options

Test connections

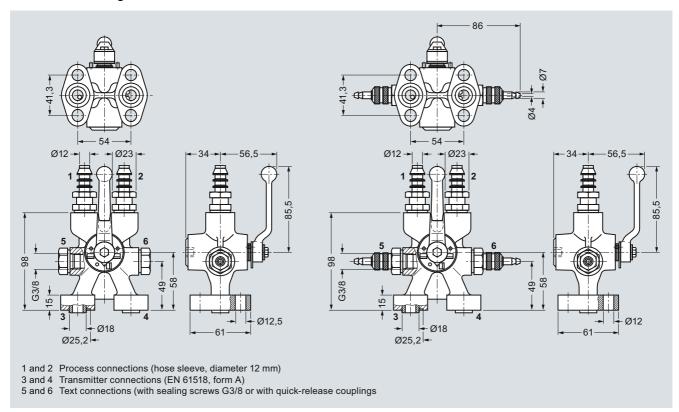
- 2 sealing screws G<sup>3</sup>/<sub>8</sub>
- 2 quick-release couplings

### Characteristic curves

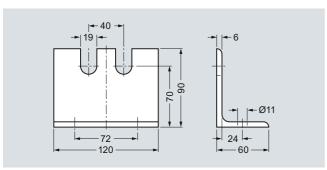


Low-pressure multiway cock, permissible operating pressure as a function of the permissible operating temperature

### Dimensional drawings



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

# Fittings - Accessories

### **Oval flange**

#### Overview



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.

#### Accessories

#### Accessory set for oval flange

- E36: 2 screws <sup>7</sup>/<sub>16</sub>-20 UNF x 1½ inch to ASME B18.2.1, 1 flat gasket
- $\bullet$  E34: 2 screws  $^7\!/_{16}\text{-}20$  UNF x 1½ 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, 80 °C

O-ring to DIN 3771, 20 x 2.65 – S – FPM90, max. 420 bar, 120 °C

Note: M10 screws only permissible up to PN 160!

### Selection and Ordering data

Order No.

#### **Oval flange**

with female thread ½-14 NPT, max. working pressure 420 bar, flange connection to DIN EN 61518, form A

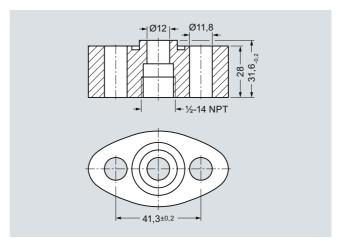
#### Material

P250GH, mat. No.: 1.0460 X 2 CrNiMo 17 13 2, mat. No. 1.4404/316L 7MF9408-2CE 7MF9408-2CL

Selection and Ordering data	Order code	Order No.
Further designs <sup>1)</sup>		
Please add "-Z" to Order 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, 80 °C	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, 120 °C	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, 120 °C <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, 80 °C <sup>2</sup> )	E16	7MF9408-6BA

- When ordering accessory set together with the oval flange, please use Order code; otherwise use Order No.
- <sup>2)</sup> Flange connections with M10 screws only permissible up to PN 160

### Dimensional drawings



Oval flange 7MF9408-2C., dimensions in mm

# Fittings - Accessories

### Adapters, connection glands

#### Overview

Adapters enable e.g. a transition from medium connections with NPT thread to shut-off valves to DIN 16270  $\dots$  16272 or pipes in conjunction with a connection gland (e.g. 7MF9008).

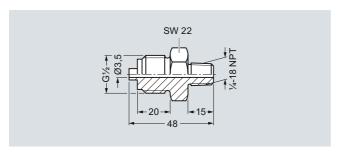
### Design

The connection pieces are made of X 6 CrNiMoTi 17 12 2, mat. No. 1.4571 and available in 3 versions

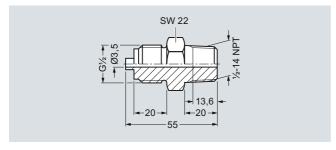
- Thread 1/4-18 NPT and connection shank G1/2 to DIN EN 837-1
- Thread ½-14 NPT and connection shank G½ to DIN EN 837-1
- Thread ½-14 NPT and thread ½-14 NPT

Selection and Ordering data	Order No.
Adapter	
(weight 0.2 kg)	
with thread 1/4-18 NPT - G1/2	7MF9001-1AA
with thread ½-14 NPT - G½	7MF9001-1CA
with thread ½-14 NPT – ½-14 NPT	7MF9001-1DA
with thread ½-14 NPT - M20 x 1.5	7MF9001-1EA
with pipe union with ferrule 12 S, $\varnothing$ 12 mm – ½-14 NPT	
• 9 SMnPb 28, mat. No. 1.0718	7MF9008-1CA
• X 6 CrNiMoTi 17 122, mat. No. 1.4571	7MF9008-1CB
with pipe union with ferrule 14 S, $\varnothing$ 14 mm – ½-14 NPT	
• 9 SMnPb 28, mat. No. 1.0718	7MF9008-1CC
• X 6 CrNiMoTi 17 122, mat. No. 1.4571	7MF9008-1CD

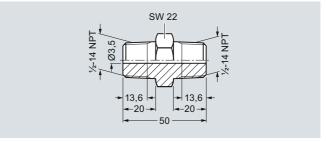
#### Dimensional drawings



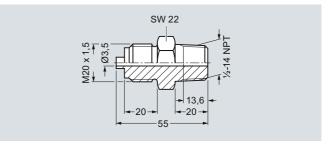
Connection piece with thread  $1\!\!4\text{--}18$  NPT and connection shank  $G1\!\!/\!\!2$  7MF9001-1AA, dimensions in mm



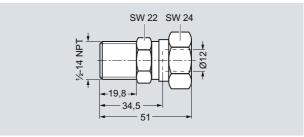
Connection piece with thread  $\frac{1}{2}$ --14 NPT and connection shank G $\frac{1}{2}$  7MF9001-1CA, dimensions in mm



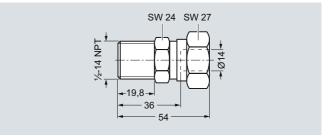
Connection piece with thread  $\frac{1}{2}$ -14 NPT and thread  $\frac{1}{2}$ -14 NPT 7MF9001-1DA, dimensions in mm



Connection piece with thread  $1\!\!/\!\!_2\text{-}14$  NPT and thread M20 x 1.5 7MF9001-1EA, dimensions in mm



Connection piece with pipe union with ferrul 12 S, Ø 12 mm and thread ½-14 NPT 7MF9001-1FA, dimensions in mm



Connection piece with pipe union with ferrul 14 S,  $\varnothing$  14 mm and thread ½-14 NPT 7MF9001-1GA, dimensions in mm

Fittings - Accessories

Connection pieces, connection gland

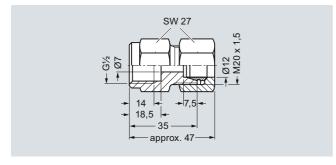
### Overview

Connection glands to connect medium or differential pressure lines to collars G% to DIN EN 837-1

- For rated pressures up to PN 630
- For oxygen only up to PN 250

	Selection and Ordering data		Order No.
Connection screwed gland for pipelines (weight 0.2 kg)			
	Material	Design	
	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**

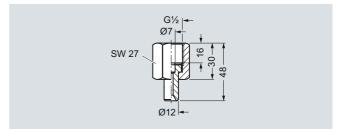
#### Overview

Connection parts 6% for pressure gauges and shut-off fittings are available in 3 versions:

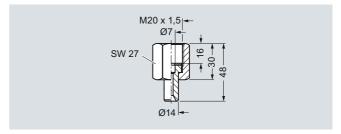
- Nipple connection
- Clamping sleeve
- Collar connection piece

Selection and Orderi	ng data	Order No.		
Adapters G½ for pressure gauges a				
Nipple connection G½ to DIN 16284 (uni gasket); max. working weight 0.1 kg; connection: G½ to DII 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			
and gasket); max. work weight 0.1 kg; connection: G½ to DII Female thread G½	king pressure 400 bar; N EN 837-1;			
Material	Mat. No.			
Union nut X 8 CrNiS 18 9 Nipple: X 6 CrNiMoTi 17 12 2	1.4305 1.4571/316Ti	M56340-A0008		
Clamping sleeve	_			
G½ to DIN 16283; ma 400 bar; weight 0.1 kg Connections: G½ to D Female thread: G½ rig				
Material	Mat. No.			
CuZn39Pb3	CW614N	M56340-A0004		
9 SMn 28 k	9 SMn 28 k 1.0715			
Collar-adapter				
max. working pressure Connections: G½ to D Male thread: G½, G½				
Material				
CuZn39Pb3	CW614N	M56340-A0006		
9 SMn 28 k	9 SMn 28 k 1.0715			

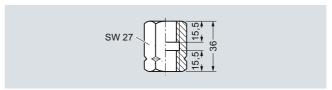
### Dimensional drawings



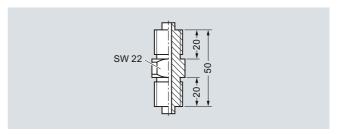
Nipple connection (G) M56340-A0001 to -A0003, dimensions in mm



Nipple connection (M20  $\times$  1.5) M56340-A0008, dimensions in mm



Clamping sleeve M56340-A0004/-A0005, dimensions in mm



Collar connection piece M56340-A0006/-A0007, dimensions in mm

# 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 at 100 bar, 300 °C at 80 bar or 400 °C at 63 bar. 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  $\times$  2.6 mm on the measurement side. The connection on the device side is a clamping sleeve  $G\frac{1}{2}$  to DIN 16283.

The water traps are made of steel (P250GH) or stainless steel (X 6 CrNiMoTi 17 12 2)

Water traps are designed as standard for max. operating temperature 120 °C at max. operating pressure 100 bar (300 °C at 80 bar, 400 °C at 63 bar). Water traps for higher operating pressures and temperatures are available on request.

# Selection and Ordering data Order No. Water traps

for pressure gauges and pressure transmitters, max. working temperature 120 °C, max. working pressure 100 bar (or 300 °C at 80 bar, or 400 °C at 63 bar), weight 0.7 kg

#### Water trap B to DIN 16282

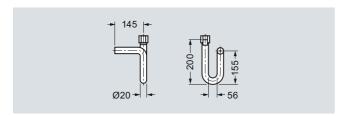
Material	Mat. No.	
P235GH	1.0345	M56340-A0043
X 6 CrNiMoTi 17 12 2	1.4571/316Ti	M56340-A0061

### Water trap D to DIN 16282

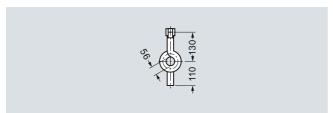
Material	Mat. No.		
P235GH	1.0345		
X 6 CrNiMoTi 17 12 2	1 4571/31		

M56340-A0045 M56340-A0063

### Dimensional drawings



Water traps, type B, M56340-A0043/-A0061, dimensions in mm

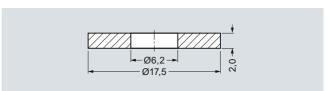


Water traps, type D, M56340-A0045/-A0063, dimensions in mm

#### Overview

The sealing rings to EN 837-1 are required to seal measuring instruments for pressure with the process connection  $G\frac{1}{2}B$ .

### Dimensional drawings



Sealing ring 7MF9007-7A. to EN 837-1, dimensions in mm

Selection and Ordering data		Order No.
Sealing ring to EN 837-1 for thread G½ made of (packing unit 100 pcs)		
• Copper	F)	7MF9007-7AA
• Soft iron	F)	7MF9007-7AB
• Stainless steel, matNo. 1.4571	F)	7MF9007-7AC
• PTFE	F)	7MF9007-7AD

F) Subject to export regulations AL: 91999, ECCN: N.

# 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

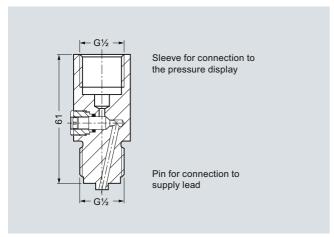
The pressure reducer is used when pulsations occur in the measured medium (e.g. in slow-running vapor engines, piston pumps and compressors), or if drastic fluctuations are likely to occur in the measured medium (e.g. in hydraulic presses and tensile testing machines).

### 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 and	Order No.		
Pressure sur Weight appro			
Material	Full-scale value	Weight approx. in kg	
Brass	250 bar	0.21	M56340-A54
Stainless steel	600 bar	0.21	M56340-A59

### Dimensional drawings



Pressure surge reducer, dimensions in mm

# Fittings - Accessories

### **Primary shut-off valves**

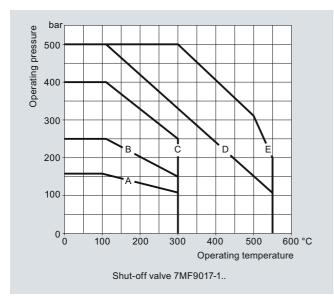
#### Overview

Primary shut-off valves are available in the following versions:

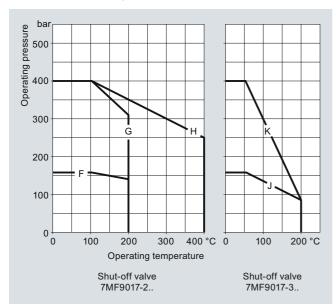
- For non-corrosive liquids, gases and vapors
- For corrosive liquids and gases
- Grease-free for oxygen

The shut-off valves are available in various materials and with various connections (see Selection and Ordering data)

#### Characteristic curves

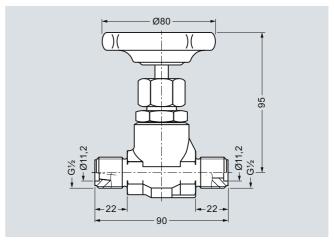


Shut-off valve 7MF9017-1..., permissible working pressure as a function of the permissible working temperature

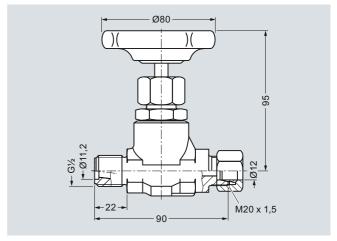


Shut-off valve 7MF9017-2.. and -3.., permissible working pressure as a function of the permissible working temperature

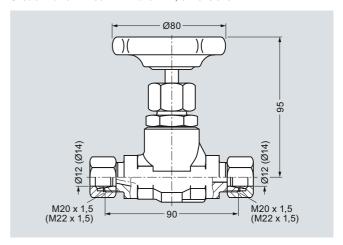
### Dimensional drawings



Shut-off valve 7MF9017-1A., dimensions in mm



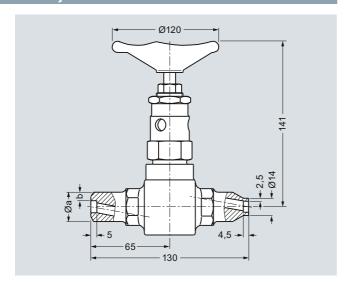
Shut-off valve 7MF9017-1B. and -2B., dimensions in mm



Shut-off valves 7MF9017-1C., -1D. and -2C., dimensions in mm

# Pressure Measurement Fittings - Accessories

### **Primary shut-off valves**



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.

•		Ives, without certificate					
Max. working pressure	Charac- teristic <sup>1)</sup>	Material	Mat. No.	Spindle thread	Connections	Approx. weight kg	Order No.
Shut-off v	valve for n	on-aggressive liquids	gases and	d vapors			7MF9017-1■A
160 bar	Α	P250GH	1.0460	Internal	Threaded socket G½ form R, DIN 19207	0.8	Α
160 bar	Α	P250GH			0.8	В	
400 bar	С	P250GH	1.0460	Internal	Pipe union with ferrule for pipe $\varnothing$ 12 mm, S series	1	С
400 bar	С	P250GH	1.0460	Internal	Pipe union with ferrule for pipe Ø 14 mm, S series	1	D
500 bar	D	16 Mo 3	1.5415	External	Welding sleeves $\varnothing$ 14 mm $\times$ 2.5 mm	1.6	F
500 bar	E	11 CrMo 9 10	1.7383	External	Welding sleeves Ø 14 mm × 2.5 mm	1.6	G
500 bar	D	16 Mo 3	1.5415	External	Welding sleeves $\varnothing$ 21.3 mm $\times$ 6.3 mm and $\varnothing$ 14 mm $\times$ 2.5 mm	1.6	Н
500 bar	D	16 Mo 3	1.5415	External	Welding sleeves $\varnothing$ 24 mm $\times$ 7.1 mm and $\varnothing$ 14 mm $\times$ 2.5 mm	1.6	J
500 bar	E	11 CrMo 9 10	1.7383	External	Welding sleeves $\varnothing$ 24 mm $\times$ 7.1 mm and $\varnothing$ 14 mm $\times$ 2.5 mm	1.6	K
Shut-off v	valve for a	ggressive liquids and	gases				7MF9017-2
160 bar	F	X 6 CrNiMoTi 17 12 2	1.4571/ 316Ti	Internal	Threaded socket G½ form R, DIN 19207 DIN 19207 and pipe union with ferrule for pipe Ø 12 mm, S series	0.8	В
400 bar	G	X 6 CrNiMoTi 17 12 2	1.4571/ 316Ti	Internal	Pipe union with ferrule for pipe $\varnothing$ 12 mm, S series	1	С
400 bar	Н	X 6 CrNiMoTi 17 12 2	1.4571/ 316Ti	External	Welding sleeves $\varnothing$ 21.3 mm $\times$ 6.3 mm and $\varnothing$ 14 mm $\times$ 2.5 mm	1.6	Н
400 bar	Н	X 6 CrNiMoTi 17 12 2	1.4571/ 316Ti	External	Welding sleeves $\varnothing$ 24 mm $\times$ 7.1 mm and $\varnothing$ 14 mm $\times$ 2.5 mm	1.6	J
Accessor	ries						
,		te EN 10204-2.2 test certificate EN 102	04-3.1				7MF9000-8AB 7MF9000-8AD

<sup>1)</sup> See Figure "Permissible working pressure as a function of the permissible working temperature"

# Fittings - Accessories

**Compensation vessels** 

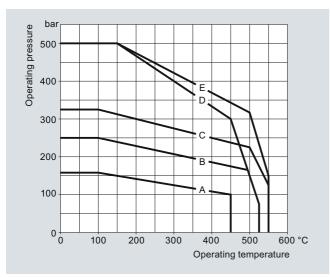
#### Overview

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.

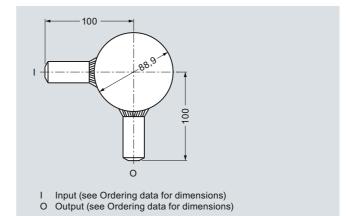
A material acceptance test certificate A to EN 10204-3.1 is available for the materials from which the compensation vessels are

#### Characteristic curves

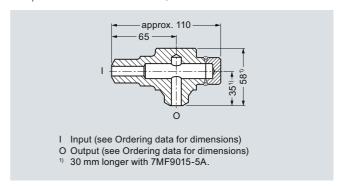


Permissible operating pressure as a function of the permissible operating temperature

### Dimensional drawings



Compensation vessel 7MF9015-1.., dimensions in mm



Compensation vessel 7MF9015-5.., dimensions in  $\mbox{mm}$ 

#### Selection and Ordering data

Compensation vessel, without certificate								
Max. working pressure	Characteri	stic <sup>1)</sup> Material	Mat. No.	Connections Input	Output	Approx. contents cm <sup>3</sup>	Approx. weight kg	Order No.
								7MF9015-
160 bar	Α	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	В	16 Mo 3	1.5415	Welding sleeve Ø 21.3 mm × 6.3 mm	Welding sleeve $\emptyset$ 21.3 mm $\times$ 6.3 mm	250	0.8	1 B
250 bar	В	16 Mo 3	1.5415	Welding sleeve Ø 24 mm × 7.1 mm	Welding sleeve $\emptyset$ 24 mm $\times$ 7.1 mm	250	1	1 C
250 bar	В	11 CrMo 9 10	1.7383	Welding sleeve Ø 24 mm × 7.1 mm	Welding sleeve Ø 24 mm × 7.1 mm	250	1	1 D
250 bar	В	16 Mo 3	1.5415	Welding sleeve Ø 33.7 mm × 4.5 mm	Welding sleeve Ø 24 mm × 7.1 mm	250	0.7	1 E
160 bar	Α	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	D	16 Mo 3	1.5415	Welding sleeve Ø 21.3 mm × 6.3 mm	Welding sleeve Ø 21.3 mm × 6.3 mm	20	1.6	5 B
500 bar	D	16 Mo 3	1.5415	Welding sleeve Ø 24 mm × 7.1 mm	Welding sleeve Ø 24 mm x 7.1 mm	20	1.6	5 C
500 bar	Е	11 CrMo 9 10	1.7383	Welding sleeve Ø 24 mm × 7.1 mm	Welding sleeve Ø 24 mm x 7.1 mm	20	1.6	5 D

Factory test certificate EN 10204-2.2

Accessories

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

### **Connection parts**

#### Overview

Connection parts are available in the following versions:

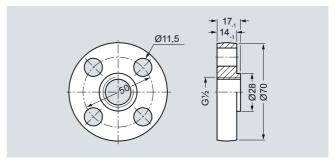
- $\bullet\,$  Threaded flange pair G½ with stainless steel gasket
- Nipple G1/2 form V to DIN 19207
- Union nut G½ made of C 35 to DIN 16284
- Gasket B½ (grooved) to DIN 19207

All connection parts are also available grease-free for oxygen.

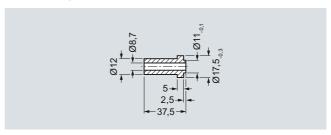
Selection and Ordering data	Order No.
Threaded flange pair G½	
<ul> <li>with stainless steel gasket</li> </ul>	7MF9007-4CA
<ul> <li>grease-free for oxygen, with stainless steel gasket</li> </ul>	7MF9007-4DA
Scope of delivery:	
2x threaded flanges G½ to DIN 19207; material: P250GH (mat. No. 1.0460)	
4x 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
<ul> <li>grease-free for oxygen, Material: X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)</li> </ul>	7MF9007-4LA
Union nut G½	
to DIN 16284	
• Material: C35E (mat. No. 1.1181)	7MF9007-4MA
<ul> <li>grease-free for oxygen, Material: X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)</li> </ul>	7MF9007-4NA
Gasket G½	
to DIN 19207, grooved	
• Material: X 6 CrNiMoTi 17 12 2 F) (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

F) Subject to export regulations AL: 91999, ECCN: N.

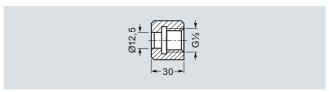
### Dimensional drawings



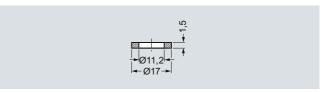
Threaded flange 7MF9007-4CA/-4DA, dimensions in mm



Nipple G½ 7MF9007-4KA/-4LA, dimensions in mm



Union nut G½ 7MF9007-4MA/-4NA, dimensions in mm



Gasket 7MF9007-6BA/-6CA, dimensions in mm