Pressure Measurement



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1/146 1/157 1/159 1/165 1/168 1/173 1/173 1/180	 for differential pressure and flow for level SITRANS P DS III Supplementary electronics for 4-wire connection SITRANS P DS III Accessories/Spare parts SITRANS P DS III - Factory-mounting of valve manifolds on transmitters Transmitters for High Performance requirements SITRANS P500 Technical description Technical specifications, ordering data, dimensional drawings for differential pressure and flow for level
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205	- with flexible capillary
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256	- 3-way and 5-way valve manifolds DN 5
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204	- valve manifold combination DN 8
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070	2 and 5 anindle value manifolds for
270	- 3- and 5-spindle valve manifolds for
סדר	
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075	Accessories Oval flance
275	Adaptors
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278	- Connection parts G ¹ / ₂
270	- Water trans Sealing rings to FN 837-1
280	- Pressure surge reducers
281	- Primary shut-off valves
283	- Compensation vessels
284	- Connection parts
	You can download all instructions,
	catalogs and certificates for SITRANS P
	addross: www.siomons.com/sitransp
	address. www.siemens.com/sitransp

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Pressure Measurement Product overview

Overview				
	Application	Description		Software for parameteriza- tion
SITRANS P · Transmitters for ba	sic requirements			
	Two or three-wire transmitters for measuring gauge and absolute pressure	 SITRANS P200 Single-range transmitters for gauge and absolute pressure Ceramic measuring cell For general applications 	1/5	-
		SITRANS P210 Single-range transmitters for gauge pressure Stainless steal measuring cell For low-pressure applications 	1/11	-
		SITRANS P220 • Single-range transmitters for gauge pressure • Stainless steel measuring cell, fully welded • For high-pressure applications and refrigeration technology	1/16	-
1 10-11	Two or three-wire transmitter for	SITRANS P250	1/22	-
123 SZ (1)	measuring differential pressure	 Compact single-range transmitters 		
0.00		Analog electronicsAvailable ex stock		
	Two-wire transmitter for mea-	SITRANS P MPS (submersible sensor)	1/27	-
	suring hydrostatic levels	• For measuring liquid levels in wells, tanks, channels, dams etc.		
	Transmitters for gauge and absolute pressure for food, pharmaceuticals and biotech- nology	 SITRANS P Compact Single-range transmitters in two-wire system Hygiene-based design with various aseptic connections according to EHEDG, FDA and GMP recommendations. 	1/32	-
SITRANS P · Transmitters with V	VirelessHART communication			
	Wireless transmitter with Wire- less 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	1/41	SIMATIC PDM
SITRANS P · Transmitters for for	od, pharmaceuticals and bioted	hnology		
	Two-wire transmitters for mea- suring gauge and absolute pressure CENERGIE	 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 G¹/₂", ¹/₂-NPT and front-flush process connections available Range adjustment 100 : 1 	1/46	SIMATIC PDM
		Factory-mounting of valve manifolds on SITRANS P300 transmitters • Simplified assembly • With pressure test • Stainless steel valve manifolds	1/67	-

Pressure Measurement Product overview

	Application	Description	Software for parameteriza-	
SITRANS P · Transmitter for gau	ge pressure for the paper indu	stry		
	Two-wire transmitters for mea- suring gauge 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 	1/69	SIMATIC PDM
SITRANS P · Transmitter for gen	eral requirements			
	Two-wire transmitters for measuring: • Gauge pressure, • Absolute pressure, • Differential pressure and • Flow or • Level	SITRANS P DS III Range adjustment: 100 : 1 Parameterization using: • 3 buttons and HART for SITRANS P DS III HART • 3 buttons and PROFIBUS PA for SITRANS P DS III PA series • 3 buttons and FOUNDATION Fieldbus for SITRANS P DS III FF series • Available ex stock	1/86	SIMATIC PDM
	Supplementary electronics for adaptation of two-wire transmit- ters for four-wire connections	Output: 0/4 20 mA Power supply: 24 V AC/DC, 230 V AC	1/157	-
		Factory mounting of valve manifolds on gauge, absolute or differential pressure transmitters SITRANS P DS III • Simplified assembly • With pressure test • Stainless steel valve manifolds	1/165	-
SITRANS P - Transmitters for Hi	ah Performance requirements			
	Two-wire transmitters for measuring: • Differential pressure • Volume flow • Mass flow • Level • Volume • Mass	SITRANS P500 • Range adjustment: 200 :1 • High measuring accuracy • Very fast response time • Extremely good long-term stability Parameterization: • 3 buttons or HART	1/168	SIMATIC PDM
	Supplementary electronics for adaptation of two-wire transmit- ters for four-wire connections	Output: 0/4 20 mA Power supply: 24 V AC/DC, 230 V AC	1/189	
		Factory-mounting of manifolds on differential pres- sure transmitters SITRANS P500 • Simplified assembly • With pressure test • Stainless steel valve manifolds	1/194	

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Pressure Measurement Product overview

	Application	Description		Software for parameteriza- tion
Remote seals for transmitters an	nd pressure gauges			
E.	Remote seals for measuring viscous, corrosive or fibrous media (as well as media at extreme temperatures)	Remote seals in sandwich and flange designs Quick-release remote seals for the food industry Wide range of diaphragm materials and fill fluid avail- able	1/197	-
Fittings				
	Shutting off the lines for the medium and differential pres- sure Mounting of transmitter on valve manifold or shut-off fitting	Shut-off fittings and valve manifolds available in steel, brass or stainless steel Valve manifolds available for the various process connections of the SITRANS P transmitters	1/243	-

SITRANS P200 for gauge and absolute pressure

Overview



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

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

Benefits

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

Application

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

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

Design

Device structure without explosion protection

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

Device structure with explosion protection

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

Function

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

Mode of operation



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

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

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

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

SITRANS P200

for gauge and absolute pressure

Technical specifications

lechnical specifications	
Application	
Gauge and absolute pressure measurement	Liquids, gases and vapors
Mode of operation	
Measuring principle	Piezo-resistive measuring cell (ceramic diaphragm)
Measured variable	Gauge and absolute pressure
Inputs	
Measuring range	
• Gauge pressure - Metric - US measuring range	1 60 bar (15 870 psi) 15 1000 psi
 Absolute pressure Metric US measuring range 	0.6 16 bar a (10 232 psia) 10 300 psia
Output	
Current signal	4 20 mA
• Load	(U _B - 10 V) / 0.02 A
 Auxiliary power U_B 	DC 7 33 V (10 30 V for Ex)
Voltage signal	0 10 V DC
• Load	\geq 10 k Ω
 Auxiliary power U_B 	12 33 V DC
 Power consumption 	< 7 mA at 10 k Ω
Characteristic curve	Linear rising
Measuring accuracy	
Error in measurement at limit setting incl. hysteresis and reproducibility	 Typical: 0.25 % of full-scale value Maximum: 0.5 % of full-scale
	value
Step response time T ₉₉	< 5 ms
Long-term stability	
Lower range value and measuring span	0.25 % of full-scale value/year
Influence of ambient temperature	
 Lower range value and measuring span 	0.25 %/10 K of full-scale value
 Influence of power supply 	0.005 %/V
Conditions of use	
Process temperature with gasket made of:	
• FPM (Standard)	-15 +125 °C (+5 +257 °F)
Neoprene	-35 +100 °C (-31 +212 °F)
• Perbunan	-20 +100 °C (-4 +212 °F)
• EPDM	-40 +145 °C (-40 +293 °F), usable for drinking water
Ambient temperature	-25 +85 °C (-13 +185 °F)
Storage temperature	-50 +100 °C (-58 +212 °F)
Degree of protection (to EN 60529)	• IP 65 with connector per

 IP 65 with connector per
EN 175301-803-A
• IP 67 with M12 connector

- IP 67 with cable • IP 67 with cable quick screw connection
- acc. EN 61326-1/-2/-3
- acc. NAMUR NE21, only for ATEX versions and with a max. measuring deviation ≤ 1 %

Design	
Weight	Approx. 0.090 kg (0.198 lb)
Process connections	See dimension drawings
Electrical connections	 Connector per EN 175301-803-A Form A with cable inlet M16x1.5 or ½-14 NPT or Pg 11
	M12 connector
	 2 or 3-wire (0.5 mm²) cable (Ø ± 5.4 mm)
	 Quickon cable quick screw con- nection
Wetted parts materials	
Measuring cell	Al ₂ O ₃ - 96 %
Process connection	Stainless steel, mat. No. 1.4404 (SST 316 L)
• Gasket	 FPM (Standard)
	Neoprene
	• Perbunan
	• EPDM
Non-wetted parts materials	
Enclosure	Stainless steel, mat. No. 1.4404 (SST 316 L)
• Rack	Plastic
• Cables	PVC
Certificates and approvals	
Classification according to pressure equipment directive (PED 97/23/EC)	For gases of fluid group 1 and liq- uids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)
Lloyd's Register of Shipping (LR)	12/20010
Germanischer Lloyd (GL)	GL19740 11 HH00
American Bureau of Shipping (ABS)	ABS_11_HG 789392_PDA
Bureau Veritas (BV)	BV 271007A0 BV
Det Norske Veritas (DNV)	A 12553
Drinking water approval (ACS)	ACS 11 ACC NY 055
GOST	GOST-B
Underwriters Laboratories (UL)	
for USA and Canada	LII 20110217 - E34453
Explosion protection	
Intrinsic safety "i" (only with current	Ex II 1/2 G Ex ia IIC T4 Ga/Gb
output)	Ex II 1/2 D Ex ia IIIC T125 °C Da/Db
EC type-examination certificate	SEV 10 ATEX 0146
Connection to certified intrinsically-	$U_i \le 30 \text{ V DC}; I_i \le 100 \text{ mA};$
safe resistive circuits with maxi- mum values:	$P_i \le 0.75 \text{ W}$
Effective internal inductance and capacity for versions with plugs per EN 175301-803-A and M12	$L_i = 0 \text{ nH}; C_i = 0 \text{ nF}$

Electromagnetic compatibility

for gauge and absolute pressure

Selection an	d ordering data							0	rder No.	Order code
SITRANS P 2	200 pressure tran	smitters	for pressure	and abso	lute pressure	ofor general	applications	7	MF1565-	
Unaracteristic	curve deviation	iyp. U.25 %			atorial					
vvetted parts	materials: Cerami	c and stai	Iniess steel +	sealing m	ateriai					
Non-wetted p	arts materials: sta	ainiess ste	el			1_				
Measuring ra	ange	Overloa	ad limit			Burst pres	sure			
		Min.		Max.						
For gauge pi	ressure									
0 1 bar	(0 14.5 psi)	-0.4 bar	(-5.8 psi)	2.5 bar	(36.26 psi)	> 2.5 bar	(> 36.3 psi)		3 B A	
0 1.6 bar	(0 23.2 psi)	-0.4 bar	(-5.8 psi)	4 bar	(58.02 psi)	> 4 bar	(> 58.0 psi)		3 B B	
0 2.5 bar	(0 36.3 psi)	-0.8 bar	(-11.6 psi)	6.25 bar	(90.65 psi)	> 6.25 bar	(> 90.7 psi)		3 B D	
0 4 bar	(0 58.0 psi)	-0.8 bar	(-11.6 psi)	10 bar	(145 psi)	> 10 bar	(> 145 psi)		3 B E	
0 6 bar	(0 87.0 psi)	-1 bar	(-14.5 psi)	15 bar	(217 psi)	> 15 bar	(> 217 psi)		3 B G	
0 10 bar	(0 145 psi)	-1 bar	(-14.5 psi)	25 bar	(362 psi)	> 25 bar	(> 362 psi)		3 C A	
0 16 bar	(0 232 psi)	-1 bar	(-14.5 psi)	40 bar	(580 psi)	> 40 bar	(> 580 psi)		3 C B	
0 25 bar	(U 363 psi)	-1 bar	(-14.5 psi)	62.5 bar	(906 psi)	> 62.5 bar	(> 906 psi)		300	
0 40 bai 0 60 bar	(0 360 psi) (0 870 psi)	-1 bar	(-14.5 psi) (-14.5 psi)	150 bar	(1450 psi) (2175 psi)	> 150 bar	(> 2175 psi)		300	
					(2170 p31)		(> 2110 p3i)		0.0.0	114.9
	, add order code	and plain	text: measur	ing range:	up to bar	(psi)		_	9 A A	піт
For absolute	(0 8 7 point)	10 bar a	(0 psia)	13 bar a	(42 51 psia)	Is 25 bar a	(> 26 2 pcia)		5 A G	
00.00.0ara 0.1.hara	(0 0.7 psia) (0 14.5 nsia)	0 bar a	(0 psia) (0 psia)	2.5 har a	(43.31 psia)	> 2.5 bar a	(> 36.3 psia)		584	
0 1.6 bar a	(0 23.2 psia)	0 bar a	(0 psia) (0 psia)	4 bar a	(58.02 psia)	> 4 bar a	(> 58.0 psia)		5 B B	
0 2.5 bar a	(0 36.3 psia)	0 bar a	(0 psia)	6.25 bar a	a (90.65 psia)	> 6.25 bar a	(> 90.7 psia)		5 B D	
0 4 bara	(0 58.0 psia)	0 bar a	(0 psia)	10 bar a	(145 psia)	> 10 bar a	(> 145 nsia)		5 B F	
0 6 bar a	(0 87.0 psia)	0 bar a	(0 psia) (0 psia)	15 bar a	(217 psia)	> 15 bar a	(> 217 psia)		5 B G	
0 10 bar a	(0 145 psi)	0 bar a	(0 psia)	25 bar a	(362 psia)	> 25 bar a	(> 362 psia)	►	5 C A	
0 16 bar a	(0 232 psi)	0 bar a	(0 psia)	40 bar a	(580 psia)	> 40 bar a	(> 580 psia)		5 C B	
Other version	, add order code	and plain	text: Measur	ing range:	up to mb	oar a (psia)			9 A A	H1Y
Measuring ra	anges for gauge	pressure	(only for US	market)						
	(0 15 psi)		(-5.8 psi)		(35 psi)	1	(> 35 psi)		4 B B	
	(3 15 psi)		(-5.8 psi)		(35 psi)		(> 35 psi)		4 B C	
	(0 20 psi)		(-5.8 psi)		(50 psi)		(> 50 psi)		4 B D	
	(0 30 psi)		(-5.8 psi)		(80 psi)		(> 80 psi)		4 B E	
	(0 60 psi)		(-11.5 psi)		(140 psi)		(> 140 psi)		4 B F	
	(0 100 psi)		(-14.5 psi)		(200 psi)		(> 200 psi)		4 B G	
	(0 150 psi)		(-14.5 psi)		(550 psi)		(> 550 psi)		4CA 4CB	
	(0 200 poi)		(14 5 poi)		(800 pei)		(> 800 poi)		405	
	(0 300 psi) (0 500 psi)		(-14.5 psi) (-14.5 psi)		(800 psi)		(> 1400 psi)		400	
	(0 750 psi)		(-14.5 psi)		(2000 psi)		(> 2000 psi)		4 C F	
	(0 1000 psi)		(-14.5 psi)		(2000 psi)		(> 2000 psi)		4 C G	
Other version	add order code	and plain	text: Measur	ing range:	up to psi				9 A A	H1Y
Measuring ra	anges for absolut	te nressu	re (only for l	IS market	<u>)</u>					
	(0 10 psia)		(0 psia)		(35 psia)	1	(> 35 psia)		6 A G	
	(0 15 psia)		(0 psia)		(35 psia)		(> 35 psia)		6 B A	
	(0 20 psia)		(0 psia)		(50 psia)		(> 50 psia)		6 B B	
	(0 30 psia)		(0 psia)		(80 psia)		(> 80 psia)		6 B D	
	(0 60 psia)		(0 psia)		(140 psia)		(> 140 psia)		6 B E	
	(0 100 psia)		(0 psia)		(200 psia)		(> 200 psia)		6 B G	
	(0 150 psia)		(0 psia)		(350 psia)		(> 350 psia)		6 C A	
	(0 200 psia)		(0 psia)		(550 psia)		(> 550 psia)		6 C B	
	(0 300 psia)		(U psia)		(800 psia)		(> 800 psia)		6 C C	
Other version	, add order code	and plain	text: Measur	ing range:	up to psi	а			9 A A	H 1 Y

Available ex stock

SITRANS P200 for gauge and absolute pressure

Selection and ordering data		Order No.		Orde	er code
SITRANS P 200 pressure transmitters for pressure and absolute pressure for general applications Accuracy typ. 0.25 %	6	7MF1565-		-	
Wetted parts materials: Ceramic and stainless steel + sealing material					
Non-wetted parts materials: stainless steel					
Output signal					
4 20 mA; two-wire system; power supply 7 33 V DC (10 30 V DC for ATEX versions) 0 10 V; three-wire system; power supply 12 33 V DC			0 1 0		
Explosion protection (only 4 20 mA)		-			
None			0		
With explosion protection Ex ia IIC T4			1		
Electrical connection		-			
Connector per DIN EN 175301-803-A, stuffing box thread M16 (with coupling) Round connector M12 per DIN EN 60139-9 (not for gauge pressure ranges ≤ 16 bar) Connection via fixed mounted cable, 2m (not for type of protection "Intrinsic safety i") Quickon cable quick screw connection PG9 (not for type of protection "Intrinsic safety i") Connector per DIN EN 175301-803-A, stuffing box thread 1/2"-14 NPT (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Special version			0 0	1 2 3 4 5 6 9	N1Y
Process connection		-			
G½" male per EN 837-1 (½" BSP male) (standard for metric pressure ranges mbar, bar) G½" male thread and G1/8" female thread G¼" male per EN 837-1 (¼" BSP male) 7/16"-20 UNF male	•			A B C D	
 ¼"-18 NPT male (standard for pressure ranges inH₂O and psi) ¼"-18 NPT female ½"-14 NPT male ½"-14 NPT female 7/16"-20 UNF female M20x1.5 male 				E F H J P	
Special version				z	P 1 Y
Sealing material between sensor and enclosure		-			
Viton (FPM, standard) Neoprene (CR) Perbunan (NBR) EPDM Special version	•			A B C D Z	Q1Y
Version		-			
Standard version				1	
Further designs					
Supplement the order no. with "-Z" and add order code.					
Manufacturer's test certificate M per IEC 60770-2 (calibration certificate) supplied		C11			
Oxygen application, oil and grease-free cleaning (only in conjunction with the sealing material Viton between sensor and enclosure and not with explosion portection version)	٦	E10			
Noilable av staak					

Available ex stock

SITRANS P200 for gauge and absolute pressure

Dimensional drawings



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



🕓 max. 20 Nm

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

SITRANS P200 for gauge and absolute pressure

Schematics



Connection with current output and connector per EN 175301



Connection with current output and connector M12x1



Connection with current output and cable



Connection with current output and Quickon cable quick screw connection

Version with explosion protection: 4 ... 20 mA

The grounding connection is conductively bonded to the transmitter enclosure



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



Connection with voltage output and connector per EN 175301



Connection with voltage output and connector M12x1



Connection with voltage output and cable



Connection with voltage output and Quickon cable quick screw connection



Connection with current output and connector M12x1 (Ex)

SITRANS P210 for gauge pressure

Overview



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

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

Benefits

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

Application

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

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

Design

Device structure without explosion protection

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

Device structure with explosion protection

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

Function

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

Mode of operation



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

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

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

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

SITRANS P210 for gauge pressure

Technical specifications	
Application	
Gauge measurement	Liquids, gases and vapors
Mode of operation	
Measuring principle	Piezoresistive measuring cell (stainless steel diaphragm)
Measured variable	Gauge pressure
Inputs	
Measuring range	
Gauge pressure	100 600 mbar (1.5 8.7 psi)
Output	
Current signal	4 20 mA
• Load	(U _B - 10 V) / 0.02 A
Auxiliary power U _B	DC 7 33 V (10 30 V for Ex)
Voltage signal	0 10 V DC
• Load	\geq 10 k Ω
• Auxiliary power U _B	12 33 V DC
Power consumption	< 7 mA at 10 k Ω
Characteristic curve	Linear rising
Measuring accuracy	
Error in measurement at limit setting incl. hysteresis and reproducibility	• Typical: 0.25 % of full-scale value
	Maximum: 0.5 % of full-scale value
Step response time T ₉₉	< 5 ms
Long-term stability	
• Lower range value and measuring span	0.25 % of full-scale value/year
Influence of ambient temperature	
Lower range value and measuring span	 0.25 %/10 K of full-scale value 0.5 %/10K of full-scale value for a measuring range 100 400 mbar
 Influence of power supply 	0.005 %/V
Conditions of use	
Process temperature with gasket made of:	
 FPM (Standard) 	-15 +125 °C (+5 +257 °F)
Neoprene	-35 +100 °C (-31 +212 °F)
• Perbunan	-20 +100 °C (-4 +212 °F)
• EPDM	-40 +145 °C (-40 +293 °F), usable for drinking water
Ambient temperature	-25 +85 °C (-13 +185 °F)
Storage temperature	-50 +100 °C (-58 +212 °F)
Degree of protection (to EN 60529)	 IP 65 with connector per EN 175301-803-A
	 IP 67 with M12 connector IP 67 with cable IP 67 with cable quick screw connection
Electromagnetic compatibility	 acc. EN 61326-1/-2/-3 acc. NAMUR NE21, only for ATEX versions and with a max. measuring deviation ≤ 1 %
Mounting position	upright

esign	
/eight	Approx. 0.090 kg (0.198 lb)
rocess connections	See dimension drawings
lectrical connections	• Connector per EN 175301-803-A Form A with cable inlet M16x1.5 or ½-14 NPT or Pg 11
	M12 connector
	 2 or 3-wire (0.5 mm²) cable (Ø ± 5.4 mm)
	 Quickon cable quick screw con- nection
letted parts materials	
Measuring cell	Stainless steel, matNo. 1.4435
Process connection	Stainless steel, mat. No. 1.4404 (SST 316 L)
Gasket	 FPM (Standard)
	Neoprene
	Perbunan
	• EPDM
on-wetted parts materials	
Enclosure	Stainless steel, mat. No. 1.4404 (SST 316 L)
Rack	Plastic
cables	PVC
ertificates and approvals	
lassification according to pressure quipment directive PED 97/23/EC)	For gases of fluid group 1 and liq- uids of fluid group 1; meets requirements as per article 3, paragraph 3 (good engineering practice)
loud's Pagistar of Shipping (LP)	12/20010
ermaniaabar Llovd (GL)	
mariaan Buraau of Shinning (ABS)	
uracu Varitas (BV)	AB5_11_RG / 09392_FDA
	A 10552
et Norske veritas (DNV)	A 12003
rinking water approval (ACS)	ACS TT ACC NY 055
	GOST-R
nderwriters Laboratories (UL)	
for USA and Canada	UL 20110217 - E34453
worldwide	IEC UL DK 21845
xplosion protection	
<pre>itrinsic safety "i" (only with current utput)</pre>	Ex II 1/2 G Ex ia IIC T4 Ga/Gb Ex II 1/2 D Ex ia IIIC T125 °C Da/Db
C type-examination certificate	SEV 10 ATEX 0146
onnection to certified intrinsically- afe resistive circuits with maxi- num values:	$U_i \leq$ 30 V DC; $I_i \leq$ 100 mA; $P_i \leq$ 0.75 W
ffective internal inductance and apacity for versions with plugs per N 175301-803-A and M12	$L_i = 0 \text{ nH}; C_i = 0 \text{ nF}$

Pressure Measurement Transmitters for basic requirements SITRANS P210 for gauge pressure

Selection and ordering data							Order No.			r code		
SITRANS P 21 Accuracy typ. (0 pressure tra 0.25 %	nsmitters for gauge pres	sure for low p	ressure app	lications	6		7MF1566-		-		
Wetted parts m	aterials: Stainle	ess steel + sealing materia	al									
Non-wetted par	rts materials: st	ainless steel										
Measuring ran	ige	Overload limit			Burst	pressure						
		min.	max.									
For gauge pre	ssure	I	L									
0100 mbar 0160 mbar 0250 mbar 0400 mbar 0600 mbar Other version, a	(1.45 psi) (2.32 psi) (3.63 psi) (5.8 psi) (8.7 psi) add order code	-400 mbar (-5.8 psi) -400 mbar (-5.8 psi) -800 mbar (-11.6 psi) -800 mbar (-11.6 psi) -1000 mbar (-14.5 psi) and plain text:	400 mbar 400 mbar 1000 mbar 1000 mbar 2000 mbar	(5.8 psi) (5.8 psi) (14.5 psi) (14.5 psi) (29.0 psi)	1 bar 1 bar 2 bar 2 bar 3 bar	(14.5 psi) (14.5 psi) (29.0 psi) (29.0 psi) (43.5 psi)			3 A A 3 A B 3 A C 3 A D 3 A G 9 A A			H1Y
Measuring rang	ge: up to n	nbar (psi)					_					
4 20 mA; two 0 10 V; three	o-wire system; p -wire system; p	bower supply 7 33 V D0 bower supply 12 33 V D	C (10 30 V DC C	C for ATEX ve	ersions)		•		0 1	0		
Explosion pro	tection (only 4	20 mA)										
None With explosion	protection Ex ia	a IIC T4								0 1		
Electrical con	nection											
Connection via fixed mounted cable, 2 m (not for type of protection "Intrinsic safety i") Quickon cable quick screw connection PG9 (not for type of protection "Intrinsic safety i") Connector per DIN EN 175301-803-A, stuffing box thread 1/2"-14 NPT (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling) Special version									0 4 5 6 9		N1Y	
Process conne	ection											
G½" male per E G½" male threa G¼" male per E 7/16"-20 UNF n	EN 837-1 (½" B ad and G1/8" fe EN 837-1 (¼" B nale	SP male) (standard for me male thread SP male)	etric pressure ra	inges mbar, l	bar)		•				A B C D	
1/4"-18 NPT mal 1/4"-18 NPT fem 1/2"-14 NPT mal 1/2"-14 NPT fem 7/16"-20 UNF fe M20x1.5 male	e (standard for ale e ale emale	pressure ranges inH ₂ O a	nd psi)								E F G H J P	
Special version	1										z	P 1 Y
Sealing materi	ial between se	nsor and enclosure										
Viton (FPM, sta Neoprene (CR) Perbunan (NBF EPDM Special version	ndard) R)						•				A B C D Z	Q1Y
Version												
Standard versio	on										1	
rurtner desigi	15	I The sector of										
Supplement the	e order no. with	A part IEO 00770 0 (a l'i		ا - ا - مراجع				011				
ivianutacturer's	test certificate	IVI per IEC 60/70-2 (calib	ration certificate	e) supplied			1	011				

Available ex stock

SITRANS P210 for gauge pressure

Dimensional drawings



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





1/2"-18 NPT

23

7/16"-20 UNF

1/2"-14 NPT

🕓 max. 20 Nm

30

SITRANS P210 for gauge pressure

Schematics



Connection with current output and connector per EN 175301



Connection with current output and connector M12x1



Connection with current output and cable



Connection with current output and Quickon cable quick screw connection

Version with explosion protection: 4 ... 20 mA

The grounding connection is conductively bonded to the transmitter enclosure



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



Connection with voltage output and connector per EN 175301



Connection with voltage output and connector M12x1



Connection with voltage output and cable



Connection with voltage output and Quickon cable quick screw connection



Connection with current output and connector M12x1 (Ex)

SITRANS P220 for gauge pressure

Overview



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

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

Benefits

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

Application

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

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

Design

Device structure without explosion protection

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

Device structure with explosion protection

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

Function

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

Mode of operation



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

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

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

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

Pressure Measurement Transmitters for basic requirements SITRANS P220 for gauge pressure

Technical specifications			
Application		Design	
Gauge pressure measurement	Liquids, gases and vapors	Weight	Approx. 0.090 kg (0.198 lb)
Mode of operation		Process connections	See dimension drawings
Measuring principle	Piezoresistive measuring cell (stainless steel diaphragm)	Electrical connections	Connector per EN 175301-803-A Form A with cable inlet M16v1 5 or 16 14 NPT
Measured variable	Gauge pressure		or Pg 11
Inputs			M12 connector
Measuring range			• 2 or 3-wire (0.5 mm ²)
Gauge pressure			• Quickon cable quick screw con-
- Metric	2.5 600 bar (36 8700 psi)		nection
- US measuring range	30 8700 psi	Wetted parts materials	
Output	· · ·	Measuring cell	Stainless steel, matNo. 1.4016
Current signal	4 20 mA	 Process connection 	Stainless steel, mat. No. 1.4404
• Load	(U _B - 10 V) / 0.02 A	N	(SSI 316 L)
 Auxiliary power U_B 	DC 7 33 V (10 30 V for Ex)	Non-wetted parts materials	
Voltage signal	0 10 V DC	• Enclosure	Stainless steel, mat. No. 1.4404
• Load	\geq 10 k Ω	• Back	Plastic
 Auxiliary power U_B 	12 33 V DC	• cables	PVC
Power consumption	< 7 mA at 10 kΩ	Certificates and approvals	
Characteristic curve	Linear rising	Classification according to pressure	For cases of fluid group 1 and lig-
Measuring accuracy		equipment directive	uids of fluid group 1; complies
Error in measurement at limit setting incl. hysteresis and reproducibility	• Typical: 0.25 % of full-scale value	(PED 97/23/EC)	paragraph 3 (sound engineering practice)
	Maximum: 0.5 % of full-scale	Lloyd's Register of Shipping (LR)	12/20010
Stop roopopo timo T		Germanischer Lloyd (GL)	GL19740 11 HH00
Long torm stability	< 5 ms	American Bureau of Shipping (ABS)	ABS_11_HG 789392_PDA
Lower range value and measuring	0.05 % of full coole velue/veer	Bureau Veritas (BV)	BV 271007A0 BV
span	0.25 % of full-scale value/year	Det Norske Veritas (DNV)	A 12553
Influence of ambient temperature		Drinking water approval (ACS)	ACS 11 ACC NY 055
• Lower range value and measuring	0.25 %/10 K of full-scale value	GOST	GOST-R
span		Underwriters Laboratories (UL)	
Influence of power supply	0.005 %/V	 for USA and Canada 	UL 20110217 - E34453
Conditions of use		• worldwide	IEC UL DK 21845
 Process temperature 	-30 +120 °C (-22 +248 °F)	Explosion protection	
Ambient temperature	-25 +85 °C (-13 +185 °F)	Intrinsic safety "i" (only with current	Ex II 1/2 G Ex ia IIC T4 Ga/Gb
Storage temperature	-50 +100 °C (-58 +212 °F)	output)	Ex II 1/2 D Ex ia IIIC T125 °C Da/Db
Degree of protection (to EN 60529)	 IP 65 with connector per EN 175301-803-A 	EC type-examination certificate	SEV 10 ATEX 0146
	IP 67 with M12 connector	Connection to certified intrinsically-	$U_i \le 30 \text{ V DC}; I_i \le 100 \text{ mA};$
	IP 67 with cable	safe resistive circuits with maxi-	$P_{i} \le 0.75 \text{ W}$
	 IP 67 with cable quick screw connection 	Effective internal inductance and	$L_i = 0 \text{ nH}; C_i = 0 \text{ nF}$
Electromagnetic compatibility	• acc. EN 61326-1/-2/-3	EN 175301-803-A and M12	
	 acc. NAMUR NE21, only for ATEX versions and with a max. measuring deviation ≤ 1 % 		

SITRANS P220 for gauge pressure

Selection an	d ordering data								Order No.	Orde	er code
SITRANS P 2 applications Accuracy typ	220 pressure trans , fully-welded vers . 0.25 %	mitters fo ion	r gauge pres	ssure, higł	n-pressure an	d refrigera	tion		7MF1567-	- A	
Wetted parts	materials: stainless	steel									
Non-wetted p	arts materials: stair	nless steel									
Measuring ra	ange	Overloa	ad limit			Burst pr	essure				
		Mini- mum		Max.							
For gauge p	ressure			_							
0 2.5 bar 0 4 bar 0 6 bar 0 10 bar 0 16 bar	(0 36.3 psi) (0 58 psi) (0 87 psi) (0 145 psi) (0 232 psi)	-0.8 bar -0.8 bar -1 bar -1 bar -1 bar	(-11.6 psi) (-11.6 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi)	6.25 bar 10 bar 15 bar 25 bar 40 bar	(90.7 psi) (145 psi) (217 psi) (362 psi) (580 psi)	25 bar 40 bar 60 bar 60 bar 96 bar	(363 psi) (870 psi) (522 psi) (870 psi) (1392 psi)		3 B D 3 B E 3 B G 3 C A 3 C B		
0 25 bar 0 40 bar 0 60 bar	(0 363 psi) (0 580 psi) (0 870 psi)	-1 bar -1 bar -1 bar	(-14.5 psi) (-14.5 psi) (-14.5 psi)	62.5 bar 100 bar 150 bar	(906 psi) (1450 psi) (2175 psi)	150 bar 240 bar 360 bar	(2176 psi) (3481 psi) (5221 psi)		3 C D 3 C E 3 C G		
0 100 bar 0 160 bar 0 250 bar 0 400 bar 0 600 bar	(0 1450 psi) (0 2320 psi) (0 3625 psi) (0 5801 psi) (0 8702 psi)	-1 bar -1 bar -1 bar -1 bar -1 bar	(-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi)	250 bar 400 bar 625 bar 1000 bar 1500 bar	(3625 psi) (5801 psi) (9064 psi) (14503 psi) (21755 psi)	600 bar 960 bar 1500 bar 2400 bar 2500 bar	(8702 psi) (13924 psi) (21756 psi) (34809 psi) (36260 psi)		3 D A 3 D B 3 D D 3 D E 3 D G		
Other version Measuring ra	n, add order code ar nge: up to bar	nd plain te (psi)	ext:						9 A A		H 1 Y
Measuring ra	anges for gauge pr (0 30 psi) (0 60 psi) (0 100 psi) (0 150 psi)	essure (o	nly for US m (-5.8 psi) (-11.5 psi) (-14.5 psi) (-14.5 psi)	narket)	(75 psi) (150 psi) (250 psi) (375 psi)		(360 psi) (580 psi) (580 psi) (870 psi)		4 B E 4 B F 4 B G 4 C A		
	(0 200 psi) (0 300 psi) (0 500 psi) (0 750 psi) (0 1000 psi) (0 1500 psi)		(-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi)		(500 psi) (750 psi) (1250 psi) (1875 psi) (2500 psi) (3750 psi)		(1390 psi) (2170 psi) (3480 psi) (5220 psi) (5220 psi) (8700 psi)		4 C B 4 C D 4 C E 4 C F 4 C G 4 D A		
Other version	(0 2000 psi) (0 3000 psi) (0 5000 psi) (0 6000 psi (0 8700 psi)		(-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi) (-14.5 psi)		(5000 psi) (7500 psi) (12500 psi) (15000 psi) (21000 psi)		(13920 psi) (21750 psi) (34800 psi) (34800 psi) (52200 psi)		4 D B 4 D D 4 D E 4 D F 4 D G 8 A A		U 1 V
		iu piairi te		g lange	up to psi				JAA		
4 20 mA; tv 0 10 V; thre	wo-wire system; pov ee-wire system; pow	ver supply	7 33 V DO 12 33 V D	C (10 30 C	V DC for ATE	(versions)		A A	0 1 (D	
None With explosio	rotection (only 4 on protection Ex ia II	20 mA) C T4						•	9	D 1	
Electrical co	nnection										
Connector per DIN EN 175301-803-A, stuffing box thread M16 (with coupling) Round connector M12 per DIN EN 60139-9 (not for gauge pressure ranges ≤ 16 bar) Connection via fixed mounted cable, 2 m (not for type of protection "Intrinsic safety i") Quickon cable quick screw connection PG9 (not for type of protection "Intrinsic safety i") Connector per DIN EN 175301-803-A, stuffing box thread 1/2"-14 NPT (with coupling) Connector per DIN EN 175301-803-A, stuffing box thread PG11 (with coupling)							1 2 0 3 0 4 5 6				
Special version	on Ny stock									9	N 1 Y

Available ex stock

Pressure Measurement Transmitters for basic requirements SITRANS P220 for gauge pressure

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

Available ex stock

SITRANS P220 for gauge pressure

Dimensional drawings



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







🖒 max. 20 Nm



🖎 max. 20 Nm



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

1

SITRANS P220 for gauge pressure

Schematics



Connection with current output and connector per EN 175301



Connection with current output and connector M12x1



Connection with current output and cable



Connection with current output and cable quick screw connection Quickon

Version with explosion protection: 4 ... 20 mA

The grounding connection is conductively bonded to the transmitter enclosure



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



Connection with voltage output and connector per EN 175301



Connection with voltage output and connector M12x1



Connection with voltage output and cable



Connection with voltage output and cable quick screw connection Quickon



Connection with current output and connector M12x1 (Ex)

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

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

SITRANS P250 for differential pressure

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

Measuri	ng range	Max. perm. oper- ating pres- sure (on either side)	lax. Burst erm. oper-pressure ting pres- ure (on ither side)		Accu- racy
[bar]	[inH ₂ O]				
0 0.1	0 40.18	25 bar (363 psi)	37.5 bar (544 psi)	0.6 bar (241 inH ₂ O)	≤ 1.0 %
0 0.2	0 80.37	25 bar (363 psi)	37.5 bar (544 psi)	0.6 bar (241 inH ₂ O)	≤ 0.8 %
0 0.25	0 100.46	25 bar (363 psi)	37.5 bar (544 psi)	0.6 bar (241 inH ₂ O)	≤ 0.5 %
0 0.3	0 120.56	25 bar (363 psi)	37.5 bar (544 psi)	0.6 bar (241 inH ₂ O)	≤ 0.5 %
0 0.4	0 160.74	25 bar (363 psi)	37.5 bar (544 psi)	1.2 bar (482 inH ₂ O)	≤ 0.8 %
0 0.5	0 200.9	25 bar (363 psi)	37.5 bar (544 psi)	1.2 bar (482 inH ₂ O)	≤ 0.5 %
0 0.6	0 241.0	25 bar (363 psi)	37.5 bar (544 psi)	1.2 bar (482 inH ₂ O)	≤ 0.5 %
0 1.0	0 402.0	25 bar (363 psi)	37.5 bar (544 psi)	2 bar (804 inH ₂ O)	≤ 0.5 %
0 1.6	0 643.0	25 bar (363 psi)	37.5 bar (544 psi)	3.2 bar (1286 inH ₂ O)	≤ 0.5 %
0 2.5	0 1005	25 bar (363 psi)	37.5 bar (544 psi)	5 bar (2009 H ₂ O)	≤ 0.5 %
0 4	0 1607	25 bar (363 psi)	37.5 bar (544 psi)	8 bar (3215 inH ₂ O)	≤ 0.5 %
06	0 2411	25 bar (363 psi)	37.5 bar (544 psi)	12 bar (4822 inH ₂ O)	≤ 0.5 %
0 10	0 4019	50 bar (725 psi)	75 bar (1088 psi)	20 bar (8037 inH ₂ O)	≤ 0.5 %
0 16	0 6430	50 bar (725 psi)	75 bar (1088 psi)	32 bar (464 psi)	≤ 0.5 %
0 25	0 10046	50 bar (725 psi)	75 bar (1088 psi)	50 bar (725 psi)	≤ 0.5 %

Schematics



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



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



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

SITRANS P250 for differential pressure



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



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



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

Dimensional drawings



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



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



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

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
	plated)	6	0.24	a = 10	25	0.99	66	2.60
L J	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
		8	0.32	a = 12 b = 14	25	0.99	66	2.60
L_	Pipe union with screw-in nipple for outer pipe (stainless steel 1.4305/AISI 303)	6	0.24	a = 10 b = 12	24	0.95	65	2.56
		8	0.32	a = 12 b = 14	26	1	67	2.64
7/16-20 UNF	Male thread G1/8 7/16-20 UNF (CuZn nickel-plated)	-	-	a = 14	18	0.71	59	2.32
G1/8	Female thread G1/8 (stainless steel 1.4305/AISI 303)	-	-	a = 14	12	0.47	53	2
	Male thread G1/8 (CuZn nickel-plated)	-	-	a = 10 b = 12	20	0.79	61	2.40

SITRANS P250 for differential pressure

		Order No. Or	rder co
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 protection		7 M F 1 6 4 1 - 0 -	0
Measuring range	_		
00.1 bar (0 40.19 inH ₂ O)		3 A A	
$0 \dots 0.2$ bar $(0 \dots 80.37 \text{ inH}_2 \text{O})$		3 A C	
$0 - 0.25 \text{ bar} = (0 - 100.46 \text{ in H}_{2}\text{O})$		3 A D	
0 = 0.3 bar (0 120.56 inH ₂ O)		3 A E	
$0 0 4 \text{ bar} (0 160 \ 74 \text{ in H}_{2})$		3 A F	
0.05 bar $(0.2010 \text{ inH}_2\text{O})$		346	
0 = 0.6 bar (0 = 241 0 inH ₂ O)		344	
$ 10 \text{ bar} (0.402 \text{ mH}_2\text{C}) $		384	
$(0.16 \text{ bar}) = (0.63.0 \text{ inH}_{2}\text{O})$		388	
$2.5 \text{ bar} = (0.10060 \text{ m}^{-2} \text{ bar})$		380	
$2.5 \text{ bar} = (0.1607.0 \text{ inH}_2^2)$		385	
$3 \dots 4.0$ bar $(0 \dots 1007.0 \text{ in } 1207)$		300	
$D_{11} = 0.0 \text{ bar} = (0 \dots 2411.0 \text{ in } H_2 \text{ O})$		300	
5 10.0 bat (0 40.9.0 inlt20)		3 C A	
D 10.0 Dat $(0 \dots 6430.0 \Pi \Pi_2 0)$		308	
123.0 bal $(010046 \ln n_2 0)$		300	
Other version, add Order Code and plain text (Note: smallest possible span 100 mbar (40.19 inH ₂ O)			
Output signal			
4 20 mA		0	
05 V DC		1	
0 10 V DC		2	
Electrical connection			
Electrical connection		1	
Round connector acc to EN 60130.0			
Cable 1.5 m with cable aland		2	
		5	
Process connection			
Without connections, temale thread 1/8-27 NP1		А	
Hose connection			
• 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		E	
• 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 		н	
Male thread, 7/16-20 UNF (CuZn nickel-plated)		L	
Adapter			
 Inner, G1/8 (stainless steel), for pipe Ø 6 mm 		M	
 Outer, G1/8 (CuZn nickel-plated), with union nut, for pipe Ø 6 mm 		N	
ealing material			
Fluoro rubber (Viton/FPM)			A
Ethylene propylene diene monomer rubber (EPDM)			В
Nitrile butadiene rubber (NBR)			С
Silicone rubber (MVQ)			D
			E
Neoprene (CR)			
Neoprene (CR) Further designs		Order Code	
Neoprene (CR) <i>Further designs</i> Please add "- Z " to Order No. and specify Order code(s).		Order Code	

Available ex stock

SITRANS P MPS (submersible sensor) Transmitter for hydrostatic level

Function

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 IP68

Application

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

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

Design

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

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

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

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

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



SITRANS P MPS pressure transmitters are for measuring the lig-

uid 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

SITRANS P MPS pressure measure (submersible sensor)	ement transmitter
Mode of operation	
Measuring principle	piezo-resistive
Input	
Measured variable	Hydrostatic level
Measuring range	Maximum operating pressure
• 0 2 mH ₂ O (0 6 ftH ₂ O)	 1.4 bar (20.3 psi) (corresponds to 14 mH₂O (42 ftH₂O))
• 0 4 mH ₂ O (0 12 ftH ₂ O)	 1.4 bar (20.3 psi) (corresponds to 14 mH₂O (42 ftH₂O))
• 0 5 mH ₂ O (0 15 ftH ₂ O)	 1.4 bar (20.3 psi) (corresponds to 14 mH₂O (42 ftH₂O))
• 0 6 mH ₂ O (0 18 ftH ₂ O)	 3.0 bar (43.5 psi) (corresponds to 30 mH₂O (90 ftH₂O))
• 0 10 mH ₂ O (0 30 ftH ₂ O)	 3.0 bar (43.5 psi) (corresponds to 30 mH₂O (90 ftH₂O))
• 0 20 mH ₂ O (0 60 ftH ₂ O)	 5.0 bar (72.5 psi) (corresponds to 50 mH₂O (150 ftH₂O))
Output	
Output signal	4 20 mA
Measuring accuracy	Acc. to IEC 60770-1
Error in measurement at limit setting incl. hysteresis and reproducibility	0.3 % of full-scale value (typical)
Influence of ambient temperature	
Zero and span	
• 1 6 mH ₂ O (3 18 ftH ₂ O)	0.45 %/10 K of full-scale value
• \geq 6 mH ₂ O (\geq 18 ftH ₂ O)	0.3 %/10 K of full-scale value

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

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

Selection and Ordering data	Order No. Orde	er code	Selection and Ordering data	Order No.	r code	
SITRANS P MPS pressure transmit- ter for gauge pressure (submersible sensor)	7 M F 1 5 7 0 - A 0		SITRANS P MPS pressure transmit- ter for gauge pressure (submersible sensor)	7 M F 1 5 7 0 -	A 0	
2-wire system			2-wire system			
Note: Junction box and cable hanger included in delivery			Note: Junction box and cable hanger included in delivery			
With PE cable			With FEP cable	-		
Measuring range Cable length L			Measuring range Cable length L			
0 2 mH ₂ O 10 m	1 C		02 mH ₂ O 10 m ►		5 C	
04 mH ₂ O 10 m ►	1 D		04 mH ₂ O 10 m ►		5 D	
05 mH ₂ O 25 m ►	1 B		05 mH ₂ O 25 m ►		5 B	
06 mH ₂ O 25 m ►	16		$0 \dots 6 \text{ mH}_2 \text{O}$ 25 m		5 E	
$0 \dots 10 \text{ mH}_2 0 25 \text{ m}$	16		$0 \dots 10 \text{ mH}_2 \text{O} 25 \text{ m}$		5 G	
	14					
$0 12 \text{ ftH}_{2} 0 32 \text{ ft}$	11		$0 \dots 0 \ \text{fit}_{2} 0 \qquad 32 \ \text{ft}$		51	
$0 \dots 18 \text{ ftH}_2\text{O}$ 82 ft	1 M		0 18 ftH ₂ O 82 ft		5 M	
0 30 ftH ₂ O 82 ft	1 N		0 30 ftH ₂ O 82 ft		5 N	
0 60 ftH ₂ O 82 ft	1 P		0 60 ftH ₂ O 82 ft		5 P	
Special cable lenght/Special measuring	9 A	н	Special cable lenght/Special measuring		9 A	н
range ¹⁾		+	range ¹⁾			+
Order code and plain text.		101	Order code and plain text.			101
Note: Indication of measuring range Y01			Note: Indication of measuring range Y01			
is always necessary.			is always necessary.			
3 m		H1A	3 m			H 5 A
5 m 7 m		HIB	5 m 7 m			HSC
10 m		H1D	10 m			HSD
15 m		HIE	15 m			H 5 E
20 m		H1F	20 m			H 5 F
25 m		H1G	25 m			H 5 G
30 m		H1H	30 m			H 5 H
40 m		H1J	40 m			H 5 J
50 m		H1K	50 m			H 5 K
60 m		H1L	60 m			H5L
70 m			70 m 80 m			
90 m		HIP	90 m			H5P
100 m		H1Q	100 m			H 5 Q
125 m		H1B	125 m			H 5 R
150 m		H1S	150 m			H 5 S
175 m		H1T	175 m			H 5 T
200 m		H1U	200 m			H 5 U
225 m		HIV	225 m			H 5 V
250 m		H1W	250 m			H 5 W
275 m 300 m		HIX	275 m 300 m			HSX
350 m		H2B	350 m			H6B
400 m		H 2 C	400 m			H6C
450 m		H 2 D	450 m			H 6 D
500 m		H 2 E	500 m			H 6 E
550 m		H 2 F	550 m			H 6 F
600 m		H 2 G	600 m			H6G
050 M		H2H	000 M			H6H
700 m		H 2 J	700 m			HGJ
7 SU M 800 m		H2K	7 DU M 800 m			HEL
850 m		H 2 M	850 m			H6M
900 m		H 2 N	900 m			H 6 N
950 m		H 2 P	950 m			H 6 P
1000 m		H 2 Q	1000 m			H 6 Q

SITRANS P MPS (submersible sensor) Transmitter for hydrostatic level

Selection and Ordering data	Order No. Order code
SITRANS P MPS pressure transmit- ter for gauge pressure (submersible sensor)	7 M F 1 5 7 0 - A 0
2-wire system	
Note: Junction box and cable hanger included in delivery	
Explosion protection	
• None	1
 with type of protection "intrinsic safety" (Ex II 1 G Ex ia IIC T4) 	2
Approvals	
 with drinking water approval to WRAS and ACS 	6
Further designs	Order code
Quality inspection certificate (factory calibration) to IEC 60770-2, add "-Z" to order no. and add order code.	C11
Indication of measuring range (only at special cable lengths) in " to mH_2O° or " to ftH_2O°	Y01
Accessories (as spare part)	Order No.
Junction box	7MF1570-8AA
for connecting the transmitter cable	
Cable hanger for attachment of transmitter	7MF1570-8AB
Available ex stock	

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

 $^{1)}$ Special measuring ranges of between 0 ... 1 mH_2O (0 ... 3 ftH_2O) and 0 ... 200 mH_2O (0 ... 656 ftH_2O) and special cable lengths of up to 1000 m (3281 ft) are possible. 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).

Note: Due to mounting reasons it has to be considered that the cable always must be longer than the height of the liquid column to be measured.

Dimensional drawings



Cable sheath 8.3 (0.33) diam. (black or blue, PE/HFFR) Flexible cable with 0.5 mm² (0.00078 inch²) cross-section Vent pipe 1 (0.04) diam. (inner diameter) Protective cap with 4 x 3 diam. (4 x 0.12 diam.) holes (black, PA)

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



Junction box, dimensions in mm (inch)



Cable hanger, dimensions in mm (inch)

SITRANS P MPS (submersible sensor) Transmitter for hydrostatic level

More information

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



Calculation of the measuring range:

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

with:

- ρ = 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/s² Start-of-scale: 0 m Maximum level: 6.2 m Cable length: 7 m, FEP cable

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: 7MF1570-9AA02-Z, H5C + Y01 Y01: 0 ... 517 mbar

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 μm (1.57 \cdot 10⁻⁵ inch) in the wetted area (welded seam area R_a < 0.8 μm (3.15 \cdot 10⁻⁵ 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 Ex [ib] IIC T6 to ATEX
- Easy and safe to clean

Application

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

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

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

Design

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

Notes on operating the pressure transmitter

Compensation of internal atmospheric pressure

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

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

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

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

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

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

CE marking

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

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

Hazardous areas

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

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

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

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 IEC 60770-1					
Error in measurement at limit setting incl. hysteresis and reproducibility	\leq 0.2 % of full-scale value					
Adjustment accuracy	\leq \pm 0.2 % of full-scale value					
Step response time	< 20 ms					
Influence of ambient temperature						
On the enclosure						
• Zero point	< 0.2 %/10 K of full-scale value					
 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 (0.069 psi/10 K)					
- DN 32 / 1¼"	2.3 mbar/10 K (0.033 psi/10 K)					
- DN 40 / 11⁄2"	1.6 mbar/10 K (0.023 psi/10 K)					
- DN 50 / 2"	0.6 mbar/10 K (0.009 psi/10 K)					
Clamp-on seal						
- DN 25 / 1"	9.5 mbar/10 K (0.14 psi/10 K)					
- DN 32 / 1¼"	4.1 mbar/10 K (0.06 psi/10 K)					
- DN 40 / 11⁄2"	3.9 mbar/10 K (0.05 psi/10 K)					
- DN 50 / 2"	3.9 mbar/10 K (0.05 psi/10 K)					

The 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	Field housing IP65 or IP67, with screwed gland Angled plus DIN 42650, IP65
	Cable connection IP67
	Round plug connector M12, IP65
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 con- nection 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 liq- uids of fluid group 1; complies with the requirements of article 3, paragraph 1 (appendix 1); assigned to category III, confor- mity evaluation module H by the TÜV Nord
Explosion protection	
 Intrinsic safety "i" 	TÜV 03 ATEX 2099 X
- Marking	Ex II 2G Ex 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. code
SITRANS P Compact pressure trans- mitters for pressure and absolute	7 M F 8 0 1 0 -		SITRANS P Compact pressure trans- mitters for pressure and absolute	7 M F 8 0 1 0 -	
pressure with diaphragm flush at front			pressure with diaphragm flush at front		
2-wire system Process temperature up to 140 °C (284 °F)	1		2-wire system Process temperature up to 140 °C (284 °F)	1	
Accuracy: 0.2 % of full-scale value Output 4 20 mA			Accuracy: 0.2 % of full-scale value Output 4 20 mA		
Diaphragm seal with quick-release clamp			Diaphragm seal with asentic connection		
Milk pipe union to DIN 11851 with			Aseptic screwed gland to DIN 11864-1,		
slotted union nut			form A, with slotted union nut		
• DN 25	AD		• 1 inch	PM	
• DN 32	AE		• 1½ inch	PN	
• DN 40	AF		• 2 Incn • 2 ¹ / ₂ inch		
• DN 65			Asentic screwed gland to	FQ	
Milk pipe union to DIN 11851 with	~"		DIN 11864-1, form A		
threaded socket			with threaded socket		
• DN 25	B D		• 1 inch	QM	
• DN 32	BE		• 1½ INCh	QN	
• DN 40	BF		• 2 Incn		
• DN 50	BG		 272 INCH Asentic screwed NELIMO 	QQ	
DIN 65 Clamp connection to DIN 22676	вн		with slotted union nut ¹⁾		
DN 25	CD		• DN 25	RD	
• DN 40	C F		• DN 32	RE	
• DN 50	CG		• DN 40	RF	
Clamp connection to ISO 2852			• DN 50	RG	
• 1 inch	DM		Aseptic screwed NEUMO		
• 1½ inch	DN			e 0	
• 2 inch	D P		• DN 23	SE	
• 2½ inch	DQ		• DN 40	SE	
IDF standard with slotted union nut			• DN 50	SG	
• 1 inch	EM		Aseptic screwed NEUMO		
• 1½ inch	EN		with clamp connection, form R ¹⁾		
• 2 Incn	EP		• DN 25	TD	
 1 inch 	EM		• DN 32	TE	
• 11/2 inch	FN		• DN 40	TF	
• 2 inch	FP		• DN 50	TG	
SMS standard with slotted union nut			Aseptic screwed NEUMO with clamp connection form V ¹⁾		
• 1 inch	GM		• DN 25	UD	
• 1½ inch	GN		• DN 32	UE	
• 2 inch	G P		• DN 40	UF	
SMS standard with threaded socket			• DN 50	UG	
• 1 inch	НМ		Male thread DIN 3852 Form A		
• 1½ inch	HN		• G ¹ / ₂ ", min. meas. span 1.6 bar (23.2 psi)	ХА	
• 2 Inch DRD flange, without welding type flange	нр		• G¾", min. meas. span 1 bar (14.5 psi)	ХВ	
DN 50 PN 40	14		• G1", min. meas. span 0.4 bar (5.8 psi)	XC	
Varivent connection (Tuchenhagen)	511		 G I ½, min. meas. span 0.25 bar (3 63 psi) 	XU	
 D = 50, for Varivent housing DN 25 and 1 inch 	K F		• G2", min. meas. span 0.16 bar (2.32 psi)	XE	
• D = 68, for Varivent housing DN 40 DN 125 and 1½ 6 inch	KL		Special version (add Order code and plain text)	ZA	J 1 Y
Special version	ZA	J 1 Y	Filling liquid		
(add Order code and plain text)			Vegetable oil	1	
Filling liquid			Medicinal white oil	2	
Vegetable oil	1		Food oil, FDA-listed	3	
ivieaicinal white oil	2		Special version	9	LIY
Food oil, FDA-listed Special version	3	117	Output signal		
	5	L 1 1	4 20 mĀ	1	
Output signal			Special version	9	M1Y
4 20 mA	1		(add Order code and plain text)		
Special version (add Order code and plain text)	9	M 1 Y	 Please specify as well: Connections for pipes: R01, R02 or R03, see 	e table "Further de	sians" on next

r pipes: R01, R02 or R03, se page

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

Selection and Ord	lering data	Order No.	Ord. code		Selection and Ordering data		Order No.	(Ord.	code		
SITRANS P Comp	SITRANS P Compact pressure trans-		7 M F 8 0 1 0 -		SITRANS P Compact pressure trans-		7 M F 8 0 1 0	-				
mitters for pressu pressure with diar	re and absolute				mitters for pressure and absolute		mitters for pressure and absolute					
2 wire system	singin nuon at none	1					1					
Process temperatur	e up to 140 °C (284 °F)				Process temperature up to 140 °C (284 °F)							
Accuracy: 0.2 % of	f full-scale value				Accuracy: 0.2 % of fu	II-scale value						
	tainlaga ataal mat							-				
No. 1.4404/316L) /	electr. connection				measured range	sure						
Housing with angle	ed plug to DIN 43650,	1			(continued)							
IP65					-1 +9 bar	30 bar		GA				
Housing with round	d plug M12, IP65, polvamide	2			(-14.5 +130.5 psi)	(435 psi)		с в				
Housing with round	h nlug M12 IP65	3			(-14.5 +217.6 psi)	(725 psi)		uв				
union nut made of	stainless steel	Ŭ			0 1 bar a	10 bar a		на				
Stainless steel field	housing (small) with	4			(0 14.5 psia)	(145 psia)						
cable gland, IP65					0 1.6 bar a (0 23.2 psia)	10 bar a (145 psia)		нв				
Stainless steel field	I housing (small) with	5			0 2.5 bar a	16 bar a		нс				
Internal ventilation	for measuring ranges				(0 36.3 psia)	(232 psia)		u n				
< 10 bar (< 145 ps	i)	_			(0 58 psia)	(232 psia)						
Measured range	Overload pressure				0 6 bar a	30 bar a		HE				
(0 2.32 psi)	∠ pai (29 psi)	ВВ			$(0 \dots 0)$ psia)	(400 psia)						
0 250 mbar	2 bar	BC			(0 145 psia)	(435 psia)		JA				
(0 3.63 psi) 0 400 mbar	(29 psi) 6 bar	BD			Special version			ZA	P 1	Y		
(0 5.8 psi)	(87 psi)				(add Order code and	plain text)						
0 600 mbar (0 8 7 psi)	6 bar (87 psi)	BE			Explosion protection	ו						
(0 0.7 psi) 0 1 bar	(07 psi) 10 bar	CA			without	2 G Ey ib IIC T6		1				
(0 14.5 psi)	(145 psi)				Further decigne	2 G, EX ID IIC 10	Ordor oodo					
0 1.6 bar	10 bar (145 psi)	СВ			Please add "- 7 " to Ore	for No. and specify	Older code					
0 2.5 bar	16 bar	cc			Order code	ter No. and specify						
(0 36.3 psi)	(232 psi)				Hygiene version		P01					
0 4 bar (0 58 psi)	16 bar (232 psi)	CD			Roughness of process	s connection:						
0 6 bar	30 bar	CE			Welded seams $R_a < 1$	l.5 μm						
(0 87 psi)	(435 psi)				(5.9·10 ⁻⁸ inch)							
0 10 bar (0 145 psi)	30 bar (435 psi)	DA			Integral cooling elen	nent	K01					
0 16 bar	50 bar	DB			(392 °F) instead of 14	max. 200 °C 0 °C (284 °F)						
(0 232 psi)	(725 psi)				Connections for pipe	a						
0 25 bar (0 363 psi)	50 bar (725 psi)	DC			Pipes to DIN 11850	-	R01					
0 40 bar	70 bar	D D			ISO pipes to DIN 2463	3	R02					
(0 580 psi)	(1015 psi)				Pipes to O. D. Tubing	"BS 4825 Part 1"	R03					
-160 0 mbar (-2.32 0 psi)	2 bar (29 psi)	EB			Certificates	tificato	C11					
-250 0 bar	2 bar	EC			(Factory calibration) to	o IEC 60770-2	CII					
(-3.73 0 psi)	(29 psi)				Inspection certificate	to EN 10204-3.1	C12					
-400 0 bar (-5.8 0 psi)	6 bar (87 psi)	ED			Use of FDA-listed rem	note seal filling	C17					
-600 0 bar	6 bar	EE			EN 10204-2.2	st report to						
(-8.7 0 psi) -1 0 bar	(87 psi) 10 bar	FA			Roughness depth me	asurement R _a	C18					
(-14.5 0 psi)	(145 psi)	· ·			certified by test report	t to EN 10204-3.1						
-10.6 bar	10 bar (145 psi)	F B			Certification to EHEDO	G for clamp-on	C19					
-1 1.5 bar	16 bar	FC			to DIN 11864	eweu yianu						
(-14.5 21.8 psi)	(232 psi)											
-1 3 bar (-14.5 43.5 psi)	16 bar (232 psi)	F D										
-1 5 bar	30 bar	FE										
(-14.5 72.5 psi)	(435 psi)											

SITRANS P Compact for gauge and absolute pressure

Selection and Ordering data	Order No.	Ord. code	Selection and Ordering data	Order No.	Ord. code
SITRANS P Compact pressure trans- mitters for pressure and absolute pressure with clamp-on remote seal	7 M F 8 0 1 0 -		SITRANS P Compact pressure trans- mitters for pressure and absolute pressure with clamp-on remote seal	7MF8010-	
2-wire system Process temperature up to 140 °C (284 °F) Accuracy: 0.2 % of full-scale value Output 4 20 mA	2		2-wire system Process temperature up to 140 °C (284 °F) Accuracy: 0.2 % of full-scale value Output 4 20 mA	2	
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 50 • DN 50 • DN 65 Clamp connection to ISO 2852 ¹⁾ • 1 inch • 1½ inch • 2 inch • 2½ inch \$ 2½ inch	AD AE AF AG AH CD CE CF CG CH DM DN DP DQ ZA	J1Y	Clamp-on seal with aseptic connection Aseptic screwed gland to DIN 11864-1, form A with threaded socket • 1 inch • 1½ inch • 2 inch Aseptic screwed NEUMO with threaded socket ¹) • DN 25 • DN 32 • DN 40 • DN 50 Aseptic screwed NEUMO with clamp connection, form R ¹) • DN 25 • DN 32 • DN 40 • DN 50 • DN 32 • DN 40 • DN 50 • DN 50 • DN 50	QM QN QP SD SE SF SG SH TD TE TF TG	
(add Order code and plain text) Filling liquid Vegetable oil Medicinal white oil Food oil, FDA-listed Special version (add Order code and plain text) Output signal 4 20 mA	1 2 3 9	L1Y	with threaded socket W 501 • 1 inch • 1½ inch • 2 inch Aseptic screwed gland SÜDMO with clamp connection W 601 • 1 inch • 1½ inch • 2 inch • 2 inch • Special version	VM VN VP WM WN WP 7 A	.11 Y
 4 20 IIIA Special version (add Order code and plain text) ¹⁾ Please note the internal diameter of the pip (see "Further designs") 	9 e. Please specify p	M 1 Y	Special version (add Order code and plain text) Filling liquid Vegetable oil Medicinal white oil Food oil, FDA-listed Special version	1 2 3	

Special version (add Order code and plain text) Output signal 4 ... 20 mA 1 9

Special version (add Order code and plain text)

1)

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

M 1 Y
Pressure Measurement Transmitters for basic requirements SITRANS P Compact for gauge and absolute pressure

Selection and Ord	ion and Ordering data Order No. Ord. code		Ord. code	Selection and Ordering data	Order No.	Ord. code
SITRANS P Comp mitters for pressu pressure with clar	act pressure trans- ire and absolute mp-on remote seal	7 M F 8 0 1 0 -		SITRANS P Compact pressure trans- mitters for pressure and absolute pressure with clamo-on remote seal	7 M F 8 0 1 0 -	
2-wire system Process temperatur Accuracy: 0.2 % of Output 4 20 mA	re up to 140 °C (284 °F) full-scale value	2 -		2-wire system Process temperature up to 140 °C (284 °F) Accuracy: 0.2 % of full-scale value Output 4 20 mA	2	•
Housing design (s No. 1.4404/316L) / Housing with angle IP65, union nut ma Housing with round union nut made of Housing with round union nut made of Stainless steel field cable gland, IP65 Stainless steel field cable gland, IP67	stainless steel mat. Velectr. connection ed plug to DIN 43650, de of polyamide d plug M12, IP65, polyamide d plug M12, IP65, stainless steel d housing (small) with	1 2 3 4 5		Measured range (continued) Overload pressure -1 9 bar 30 bar (-14.5 130.5 psi) (435 psi) -1 15 bar 50 bar (-14.5 217.6 psi) (725 psi) 0 1 bar a 10 bar a (0 14.5 psia) (145 psia) 0 1.6 bar a 10 bar a (0 23.2 psia) (145 psia) 0 2.5 bar a 16 bar a (0 36.3 psia) (232 psia)	G A G B H A H B H C	
Internal ventilation < 10 bar (< 145 ps	for measuring ranges ii)	_		0 4 bar a 16 bar a (0 58 psia) (232 psia)	HD	
Measured range 0 160 mbar (0 2.32 psi) 0 250 mbar (0 3.63 psi) 0 400 mbar	2 bar (29 psi) 2 bar (29 psi) 6 bar	BB BC BD		0 6 bar a 30 bar a (0 87 psia) (435 psia) 0 10 bar a 30 bar a (0 145 psia) (435 psia) Special version	H E J A Z A	. Р1Y
(0 5.8 psi) 0 600 mbar (0 8.7 psi) 01 bar	(87 psi) 6 bar (87 psi) 10 bar	BE		Explosion protection without with, to ATEX 100a, II 2 G, Ex ib IIC T6	-	1 2
(0 14.5 psi) 0 1.6 bar (0 23.2 psi)	(145 psi) 10 bar (145 psi)	СВ		<i>Further designs</i> Please add " -2 " to Order No. and specify Order code	Order code	
0 2.5 bar (0 36.3 psi) 0 4 bar (0 58 psi) 0 6 bar (0 87 psi)	16 bar (232 psi) 16 bar (232 psi) 30 bar (435 psi)	CC CD CE		Hygiene version Roughness of process connection: Foil $R_a < 0.8 \mu m (3.15 \cdot 10^{-8} inch);$ Welded seams $R_a < 1.5 \mu m$ (5.9 · 10 ⁻⁸ inch)	P01	
0 10 bar (0 145 psi) 0 16 bar (0 232 psi)	30 bar (435 psi) 50 bar (725 psi)	D A D B		Integral cooling element Process temperature max. 200 °C (392 °F) instead of 140 °C (284 °F)	K01	
0 25 bar (0 363 psi) 0 40 bar (0 580 psi)	50 bar (725 psi) 70 bar (1015 psi)	D C D D		Pipes to DIN 11850 ISO pipes to ISO 2463 Pipes to O. D. Tubing "BS 4825 Part 1"	R01 R02 R03	
-160 0 mbar (-2.32 0 psi) -250 0 bar (-3.73 0 psi) 400 0 psr	2 bar (29 psi) 2 bar (29 psi) 6 bar	EB		Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11	
(-5.8 0 psi) -600 0 psi) (-8.7 0 psi) -1 0 psr	(87 psi) 6 bar (87 psi) 10 bar	E E F A		Use of FDA-listed remote seal filling liquids certified by test report to EN 10204-2.2	C17	
(-14.5 0 psi) -1 0.6 bar (-14.5 8.7 psi) -1 1.5 bar	(145 psi) 10 bar (145 psi) 16 bar	FB		certified by test report to EN 10204-3.1 Certification to EHEDG for clamp-on	C19	
(-14.5 21.8 psi) -1 3 bar (-14.5 43.5 psi) -1 5 bar (-14.5 72.5 psi)	(232 psi) 16 bar (232 psi) 30 bar (435 psi)	F D F E		seals with aseptic screwed gland to DIN 11864		

Pressure Measurement Transmitters for basic requirements

SITRANS P Compact for gauge and absolute pressure

Dimensional drawings

Housing



SITRANS P Compact, dimensions in mm (inch)

Process connections

Diaphragm seal with quick-release clamp

Milk pipe unior	to DIN 11851 v	vith slotted union nut
-----------------	----------------	------------------------

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

Milk pipe union to DIN 11851 with threaded socket

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

Clamp connection to DIN 32676

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

Clamp connection to ISO 2852

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

IDF standard with slotted union nut

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

IDF standard with threaded socket

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

SMS standard with slotted union nut

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

SMS standard with threaded socket					
a	DN	PN	H mm (inch)		

$\alpha / / / \chi / / h - 1$			x - 7	
	1"	40	16 (0.63)	Rd 40 x 1.6"
∢ G ►	1½"	40	20 (0.79)	Rd 60 x 1.6"
	2"	25	20 (0.79)	Rd 70 x 1.6"

G

DRD flange, without welding-type flange

σ±τ	 ttn ↓	DN	PN	mm (inch)	mm (inch)
	<u> </u>	50	40	16.7 (0.66)	65.5 (2.58)

Pressure Measurement Transmitters for basic requirements

SITRANS P Compact for gauge and absolute pressure

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

Diaphragm seal with aseptic connection

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

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

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

<i>S</i> /////> +1	DN	PN	H mm (inch)	G
	1"	40	15 (0.59)	Rd 52 x 1/6"
G ►	1½"	40	15 (0.59)	Rd 58 x 1/6"
	2"	25	15 (0.59)	Rd 65 x 1/6"
	21/2"	25	15 (0.59)	Rd 78 x 1/6"

Aseptic screwed NEUMO BioConnect with slotted union nut

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

Aseptic screwed NEUMO BioConnect with threaded socket

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

Aseptic screwed NEUMO BioConnect with clamp connection, form R

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

Aseptic screwed NEUMO BioConnect with clamp connection, form V

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

Male thread DIN 3852, form A						
sw	G	d mm (inch)	d _M mm (inch)	h ₁ mm (inch)	h ₂ mm (inch)	SW mm (inch)
	G½A	26 (1.02)	17.5 (0.69)	27 (1.06)	14 (0.55)	27 (1.06)
	G¾A	32 (1.26)	22.6 (0.89)	31 (1.22)	16 (0.63)	32 (1.26)
d -	G1A	39 (1.54)	27 (1.06)	33 (1.30)	18 (0.71)	51 (2.01)
	G11⁄2A	55 (2.17)	40 (1.57)	40 (1.57)	22 (0.87)	55 (2.17)
	G2A	68 (2.68)	51 (2.00)	42 (1.65)	24 (0.94)	70 (2.76)

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

Milk pipe union to DIN 11851 with threaded socket

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

Clamp connection to DIN 32676

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

Clamp connection to ISO 2852

DN	PN	L mm (inch)	D mm (inch)
1"	16	110 (4.33)	50.5 (2)
1½"	16	110 (4.33)	50.5 (2)
2"	16	110 (4.33)	64 (2.52)
21/2"	16	110 (4.33)	91 (3.58)

Clamp-on seal with aseptic connection

Aseptic screwed gland to DIN 11864-1, form A, with threaded socket					
	DN	PN	L mm (inch)	G	
	1"	40	110 (4.33)	Rd 52 x 1/6"	
	1½"	40	110 (4.33)	Rd 65 x 1/6"	
	2"	25	110 (4.33)	Rd 78 x 1/6"	

Aseptic screwed NEUMO BioConnect with threaded socket

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

Pressure Measurement Transmitters for basic requirements

SITRANS P Compact for gauge and absolute pressure

Aseptic screwed NEUMO BioConnect with clamp connection, form R				
	DN	PN	L mm (inch)	D mm (inch)
	25	16	110 (4.33)	50.4 (2)
[← L →	32	16	110 (4.33)	50.4 (2)
	40	16	110 (4.33)	64 (2.52)
	50	16	110 (4.33)	77.4 (3.05)

Aseptic screwed gland SÜDMO with threaded socket W 501

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

Aseptic screwed gland SÜDMO with threaded socket W 601

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

Schematics



SITRANS P Compact, connection diagram

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 1.6, 10, 50, 200 and 320 bar (0 to 23, 145, 725, 2900 and 4641 psi).

The sensor is integrated into the transmitter housing.

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

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

Design

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

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

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

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

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

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

Function

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

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

Detailed information on IE/WSN-PA can be found in the FI 01 catalogue, section 8 or http://www.siemens.com/wirelesshart.

SITRANS P280

for gauge and absolute pressure

Integration

Connecting to SIMATIC PCS 7

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

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



Integration of a meshed network in SIMATIC PCS7

Configuration

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

- Initial comissioning for the SITRANS P280 with SIMATIC PDM is generally carried out via a HART modem or the integrated local user interface, since the network ID and join key must be set up on the device before it can be accepted and integrated into the WirelessHART network.
- Once it is integrated into the network, the device can be conveniently operated with the WirelessHART network, the onsite HART modem or via the local user interface.
- Siemens WirelessHART devices operate with optimum coexis-٠ tence to SCALANCE W family products.

Technical specifications

SITRANS P280 WirelessHART pres	ssure transmitter
Mode of operation	
Measuring principle	piezo-resistive
Measured variable	Gauge and absolute pressure
Gauge pressure input	
Measuring range 0 1.6 bar (0 23 psi) 0 10 bar (0 145 psi) 0 50 bar (0 725 psi) 0 200 bar (0 2900 psi) 0 320 bar (0 4641 psi)	Overload limit/Bursting pressure 4 bar (58 psi) 20 bar (290 psi) 100 bar (1450 psi) 400 bar (5801 psi) 640 bar (9282 psi) mbar bar m4L Q i4L Q atm
	Torr, gcm ² , kgcm ² , Pa, kPa, Mpa, psi, mmHG, mmH ₂ O, ftH ₂ O, inHG, inH ₂ O
Absolute pressure input	
Measuring range 0 1.6 bar a (0 23 psia) 0 10 bar a (0 145 psia) 0 50 bar a (0 725 psia) 0 200 bar a (0 2900 psia) 0 320 bar a (0 4641 psia)	Overload limit/Bursting pressure 4 bar a (58 psia) 20 bar a (290 psia) 100 bar a (1450 psia) 400 bar a (5801 psia) 640 bar a (9282 psia)
Units	mbar, bar, m4H ₂ O, i4H ₂ O, atm, Torr, gcm ² , kgcm ² , Pa, kPa, MPa, psi, mmHG, mmH ₂ O, ftH ₂ O, inHG, inH ₂ O
Output	
Output signal	2.4 GHz Wireless signal with TSMP (Time Synchronized Mesh Protocol)
Measuring accuracy	as per IEC 60770-1
Error in measurement at limit setting incl. hysteresis and reproducibility	typ. 0.17 % of sensor's span max. 0.25 % of sensor's span
Long-term stability	max. \pm 0.25 % of sensor/year span
Influence of ambient temperature	typ. 0.07 %/10K, max. 0.2 %/10 K of sensor's span
Rated conditions	
Ambient conditions	
Ambient temperature	-40 +80 °C (-40 +176 °F) (in ambient temperatures below - 20 °C (-4 °F) and above +70 °C (158 °F), readability of the display is limited.)
Storage temperature	-40 +85 °C (-40 +185 °F)
Relative humidity	< 95 %
Climatic class	4K4H in accordance with EN 60721-3-4(stationary use at loca- tions not protected against weather)
Degree of protection	IP65/NEMA 4
Allowable media temperature	-40 85 °C (-40 +185 °F)

-40 ... 85 °C (-40 ... +185 °F)

1

SITRANS P280 for gauge and absolute pressure

•		s
Enclosure material	low-copper die-cast aluminum, GD-AISi12	s p
Shock resistance	in accordance with DIN EN 60068-2-29 / 03.95	(I a
Resistance to vibration	in accordance with DIN EN 60068-2-6/ 12.07 $20 \le f \le 2000 \text{ Hz}$ 0.01 g ² /Hz	N - N (-
Weight	C .	0
without battery	1.5 kg (3.31 lb)	0
With battery	1.6 kg (3.53 lb)	0
Dimensions (W x H x D)	See Dimensional drawing	0
Process connection	• G1/2B male thread as per EN837-1 • 1/2-14 NPT	A 0 0
Sensor break	ls recognized	0
Displays and controls	3	0
Display (with illumination)		
Size of display	104 x 80 pixels	v
Number of digits	adjustable	
Number of spaces after comma	adjustable	L L
Setting options	 on site with 3 buttons with SIMATIC PDM or HART- Communicator 	E
Power supply		P
Battery	3.6 V DC	0
Communication		7
Radio	WirelessHART V7.1 conforming	
Transmission frequency band	2.4 GHz (ISM-Band)	V
Transmission range under reference conditions	Up to 250 m (line of sight) in out- side areas	V
	Up to 50 m (greatly dependent on obstacles) in inside areas	F
Communication interfaces	HART communication with HART modem	S
<u> </u>	WirelessHARI	d
Certificates and approvals	DATT	Ŷ
Wireless communication approvals	R&TTE FCC	N n
Classification according to pressure equipment directive	Gases: Fluid group 1 Liquids: Fluid group 1;	
(PED 97/23/EC)	meets requirements as per Sec- tion 3, Subsection 3 (sound engi- neering practice)	L

Selection and Ordering data		Order No.
SITRANS P280 WirelessHART pressure transmitter		7 M P 1 1 2 0 -
(Required battery not included with delivery, see accessories)		0
Measuring cell filling Dry measuring cell		0
Measuring span	-	
Gauge pressure 0 1.6 bar (0 23 psi) 0 10 bar (0 145 psi) 0 50 bar (0 725 psi) 0 200 bar (0 2900 psi) 0 320 bar (0 4641 psi)		D E F G H
Absolute pressure 0 1.6 bar a (0 3 psia) 0 10 bar a (0 145 psia) 0 50 bar a (0 725 psia) 0 200 bar a (0 2900 psia) 0 320 bar a (0 4641 psia)		M N P Q R
Wetted parts		
Ceramic		к
Display		
Display, visible		1
Enclosure		
Die-cast aluminum		1
Process connection		
G½ as per EN 837-1 ½-14 NPT		0 1
Explosion protection		
Without		Α
Antenna		
Variable, attached to device		Α
Further designs Please add "-Z" to Order No. and specify Order code(s) and plain text.		Order code
Stainless steel tag plate (measuring point description) 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		7MP1990-0AA00
Mounting bracket, steel		7MF4997-1AC
Mounting bracket, stainless steel		7MF4997-1AJ
Cover, die-cast aluminum, without window		7MF4997-1BB
Cover, die-cast aluminum, with window		7MF4997-1BE
IE/WSN-PA LINK		see Sec. 7
HART modem with RS232 interface		7MF4997-1DA
HART modem with USB interface		7MF4997-1DB
SIMATIC PDM		see Sec. 8
Available ex stock		

SITRANS P280 for gauge and absolute pressure

Dimensional drawings



SITRANS P280 WirelessHART pressure transmitter, process connection G½", dimensions in mm (inch) The dimensional drawing of the mounting bracket see on page 1/164.

SITRANS P280 for gauge and absolute pressure



SITRANS P280 WirelessHART pressure transmitter, process connection $\frac{1}{2}$ - 14 NPT, dimensions in mm (inch) The dimensional drawing of the mounting bracket see on page 1/164.

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Pressure Measurement Transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressure



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

The output signal is a load-independent direct current from 4 to 20 mA or a PROFIBUS PA or FOUNDATION signal, which is linearly proportional to the input pressure. Communication is via HART protocol or PROFIBUS PA interface. Convenient buttons for easy local operation of the basic settings of the pressure transmitter.

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

Benefits

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

Application

The pressure transmitter is available in versions for gauge pressure and for absolute pressure. The output signal is always a load-independent direct current from 4 to 20 mA or a PROFIBUS PA or FOUNDATION Fieldbussignal, which is linearly proportional to the input pressure. The pressure transmitter measures aggressive, non-aggressive and hazardous gases, as well as vapors and liquids. It can be used for the following measurement types:

- · Gauge pressure
- Absolute pressure

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

- Level
- Volume
- Mass

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

Gauge pressure

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

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

Level

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

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

Absolute pressure

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

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

Function

Pressure Measurement

Operation of electronics with HART communication

Transmitters for food, pharmaceuticals and biotechnology SITRANS P300

for gauge and absolute pressure

Desian

The device comprises:

- Electronics
- Housing
- Measuring cell



Perspective view of SITRANS P300

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

Example of attached measuring points sign





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

Function diagram of electronics

The input pressure is converted into an electrical signal by the sensor (1). This signal is amplified by the measuring amplifier (2) and digitalized in an analog-to-digital converter (3). The digital signal is analyzed in a microcontroller (4) and corrected according to linearity and thermal characteristics. In a digital-to-analog converter (5) it is then converted into the output current of 4 to 20 mA. A diode circuit provides reverse polarity protection. You can make an uninterrupted current measurement with a low-ohm ammeter at the connection (10). The data specific to the measuring cell, the electronic data and parameter settings are stored in two non-volatile memories (6). The first memory is linked to the measuring cell, the second to the electronics.

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

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 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 display (9).

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

Mode of operation of the measuring cells

The process connections available include the following:

- G1⁄2
- 1/2-14 NPT
- Flush-mounted diaphragm:
- Flanges to EN
- Flanges to ASME
- NuG and pharmaceutical connections

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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 ≤ 63 bar (≤ 926.1 psi) measure the input pressure compared to atmospheric, transmitters with spans of ≥ 160 bar (≥ 2352 psi) compared to a vacuum.

Measuring cell for absolute pressure, front-flush diaphragm



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

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

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

¹⁾ Cancel apart from write protection

Diagnostic functions for SITRANS P300 with HART communication

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

Available physical units of display for SITRANS P300 with HART communication

Table style: Technical specifications 2

Physical variable	Physical dimensions
Pressure (setting can also be made in the factory)	Pa, MPa, kPa, bar, mbar, torr, atm, psi, g/cm ² , kg/cm ² , inH ₂ O, inH ₂ O (4 °C), mmH ₂ O, ftH ₂ O (20 °C), inHg, mmHg
Level (height data)	m, cm, mm, ft, in
Volume	m ³ , dm ³ , hl, yd ³ , ft ³ , in ³ , US gallon, Imp. 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 SITRANS P300 PA to a process control system, e.g. SIMATIC PSC 7. Communication is possible even in a potentially explosive environment.

For parameterization through PROFIBUS you need suitable software, e.g. SIMATIC PDM (Process Device Manager).

Parameterization through FOUNDATION Fieldbus interface

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

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

Adjustable parameters for SITRANS P300 with PROFIBUS PA and FOUNDATION Fieldbus

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

Diagnostic functions for SITRANS P300 with PROFIBUS PA and

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

SITRANS P300 for gauge and absolute pressure

Physical variable	Physical dimensions
Pressure (setting can also be made in the factory)	Mpa, kPa, Pa, bar, mbar, torr, atm, psi, g/cm ² , kg/cm ² , 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
Mass	g, kg, t, lb, Ston, Lton, oz
Volume	m ³ , dm ³ , hl, yd ³ , ft ³ , in ³ , US gallon, Imp. gallon, bushel, barrel, barrel liquid
volume flow	$m^3/s,m^3/min,m^3/h,m^3/d,l/s,l/min,l/h,l/d,Ml/d,ft^3/s,ft^3/min,ft^3/h,ft^3/d,US gallon/s,US gallon/min,US gallon/h,US gallon/d,bbl/s,bbl/min,bbl/h,bbl/d$
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.

Pressure Measurement

Transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressure

Technical specifications

SITRANS P300 for gauge and absolute pressure

	HARI		PROFIBUS PA and FOU	JNDATION Fieldbus		
Gauge pressure input						
Measured variable		Gauge	pressure			
Spans (infinitely adjustable) or nominal mea- suring range and max. permissible test pressure	Span (min max.)	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure		
	0.01 1 bar (0.15 14.5 psi)	6 bar (87 psi)	1 bar (14.5 psi)	6 bar (87 psi)		
	0.04 4 bar (0.58 58 psi)	10 bar (145 psi)	4 bar (58 psi)	10 bar (145 psi)		
	0.16 16 bar (2.3 232 psi)	32 bar (464 psi)	16 bar (232 psi)	32 bar (464 psi)		
	0.6 63 bar (9.1 914 psi)	100 bar (1450 psi)	63 bar (914 psi)	100 bar (1450 psi)		
	1.6 160 bar (23.2 2321 psi)	250 bar (3626 psi)	160 bar (2321 psi)	250 bar (3626 psi)		
	4.0 400 bar (58 5802 psi)	600 bar (8700 psi)	400 bar (5802 psi)	600 bar (8700 psi)		
	Depending on the proce may differ from these val	ess connection, the span lues	Depending on the proce nal measuring range ma	ess connection, the nomi- ay differ from these values		
Lower measuring limit						
 Measuring cell with silicone oil 	30 mbar a (0.44 psia)					
Upper measuring limit						
 Measuring cell with silicone oil 	100% of max. span 100 % of the max. nominal measuring					
Absolute pressure input						
Measured variable	Absolute pressure					
Spans (infinitely adjustable) or nominal mea- suring range and max. permissible test pressure	Span (min max.)	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure		
	8 250 mbar a (0.123.63 psia)	6 bar a (87 psia)	250 mbar a (3.63 psia)	6 bar a (87 psia)		
	43 1300 mbar a (0.6218.9 psia)	10 bar a (145 psia)	1.30 bar a (19 psia)	10 bar a (145 psia)		
	0.16 5 bar a (2.3 73 psia)	30 bar a (435 psia)	5 bar a (73 psia)	30 bar a (435 psia)		
	1 30 bar a (14.5 435 psia)	100 bar a (1450 psia)	30 bar a (435 psia)	100 bar a (1450 psia)		
Lower measuring limit						
 Measuring cell with silicone oil 		0 mbar a	a (0 psia)			
Upper measuring limit						
Measuring cell with silicone oil	100 % of max. span		100 % of the max. nomin	nal measuring range		
Input of gauge pressure, with front-flush diaphragm						
Measured variable		Gauge press	ure front-flush			
Spans (infinitely adjustable) or nominal mea- suring range and max. permissible test pres- sure	Span (min max.)	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure		
	0.01 1 bar (0.15 14.5 psi)	6 bar (87 psi)	1 bar (14.5 psi)	6 bar (87 psi)		
	0.04 4 bar (0.58 58 psi)	10 bar (145 psi)	4 bar (58 psi)	10 bar (145 psi)		
	0.16 16 bar (2.32 232 psi)	32 bar (464 psi)	16 bar (232 psi)	32 bar (464 psi)		
	0.6 63 bar (9.14 914 psi)	100 bar (1450 psi)	63 bar (914 psi)	100 bar (1450 psi)		
Lower measuring limit		100 mbar a	a (1.45 psia)			
Upper measuring limit						
 Measuring cell with silicone oil 	100% of max. span		100 % of the max. nomin	nal measuring range		

for gauge and absolute pressure

SITRANS P300 for gauge and absolute pre-	ssure					
	HART			PROFIBUS PA and FO	UNDATION F	ieldbus
Input of absolute pressure, with front-flush diaphragm						
Measured variable			Absolute pres	sure, front-flush		
Spans (infinitely adjustable) or nominal mea- suring range and max. permissible test pressure	Span (min max.)	Span (min max.) Max. perm. test pressure		Nominal measuring range	Max. perm. pressure	. test
	43 1300 mbar a (0.62 18.85 psia)	10 bar a (145 psia)		1300 mbar a (18.85 psia)	10 bar a (145 psia)	
	0.16 5 bar a (2.32 72.5 psi a)	30 bar a (435 psia)		5 bar a (72.5 psia)	30 bar a (435 psia)	
	1 30 bar a (14.5 435 psia)	100 bar a (1450 psia	ı)	30 bar a (435 psia)	100 bar a (1450 psia))
	Depending on the proce may differ from these val	ess connecti lues	ion, the span	Depending on the procenal measuring range ma	ess connectio ay differ from	on, the nomi- these value
Lower measuring limit			0 bar a	(0 psia)		
Upper measuring limit						
 Measuring cell with silicone oil 	100% of max. span			100 % of the max. nomi	inal measurin	g range
Output						
Output signal	4 20 mA	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.					
Electrical damping T_{63} (step width 0.1 s)			Set to 2 s	(0 100 s)		
Measuring accuracy			According to	DIEC 60770-1		
Reference conditions (All error data refer always refer to the set span)	Rising characteristic cur with silicone oil, r	ve, start-of- room tempe	scale value 0 rature 25 °C (bar, stainless steel seal d 77 °F), span ratio (r = ma	liaphragm, m ıx. span / set	easuring cel span)
Error in measurement at limit setting incl. hysteresis and reproducibility						
	Gauge pressure	Absolute pressure	Absolute pressure, front-flush	Gauge pressure	Absolute pressure	Absolute pressure, front-flush
Linear characteristic				≤ 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 %			
• 30 < r ≤ 100	\leq (0.005 \cdot r + 0.05) %	-	-			
Step response time T ₆₃			appro	x. 0.2 s		
Long-term stability at \pm 30 °C (\pm 54 °F)	≤ (0.25 · r) %/5 years	≤ (0.1 · r) 9	%/year	≤ 0.25 %/5 years	≤ 0.1 %/yea	ar
Influence of ambient temperature						
• at -10 +60 °C (14 140 °F)	$\leq (0.08 \cdot r + 0.1) \%^{1}$		≤ (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
Influence of the medium temperature (only with front-flush diaphragm)						
• Temperature difference between medium			3 mbar/10 K	(0.04 psi/10 K)		

• Temperature difference between medium temperature and ambient temperature

SITRANS P300 for gauge and absolute pressure

erre i voo ior gaage and assonate presst	
Pated conditions	HAR I PROFIBUS PA and FOUNDATION FIEldbu
	Observe the temperature class in grass subject to evolution bezard
Measuring cell with silicone oil	
Measuring cell with Neobee oil (EDA-compli-	-40 +85 °C (-40 + 185 °F)
ant, with flush-mounted diaphragm)	-10 +85 °C (14 +185 °F)
Measuring cell with inert liquid (not with front- flush diaphragm)	-20 +85 °C (-4 +185 °F)
Display readable	-30 +85 °C (-22 +185 °F)
Storage temperature	-50 +85 °C (-58 +185 °F) (for Neobee: -20 +85 °C (-4 +185 °F))
Climatic class	
Condensation	Relative humidity 0 100 % Condensation permissible, suitable for use in the tropics
Degree of protection acc. to EN 60529	IP65, IP68, NEMA X, enclosure cleaning, resistant to lyes, steam to 150 °C (302 °F)
Electromagnetic Compatibility	
• Emitted interference and interference immunity	Acc. to EN 61326 and NAMUR NE 21
Medium conditions	
Temperature of medium	
 Measuring cell with silicone oil 	-40 +100 °C (-40 +212 °F)
• Measuring cell with silicone oil (FDA-compliant, with fluch mounted diaphragm)	-40 +150 °C (-40 +302 °F)
Measuring cell with Neobee oil "Measuring cell with Neobee oil (FDA-compliant, with flush-	-10 +150 °C (-14 +302 °F)
 Measuring cell with silicone oil, with tempera- ture decoupler (only for gauge pressure ver- sion with flush mounted diaphragm) 	-40 +200 °C (-40 +392 °F)
Measuring cell with inert liquid	20 100 °C (4 1212 °E)
Measuring cell with high-temperature oil (only for gauge pressure version with flush-mounted diaphragm)	-10 +250 °C (14 482 °F)
Design (standard version)	
Weight (without options)	Approx 800 a (1.8 lb)
Enclosure material	Stainless steel mat no. 1.4301/304
Material of parts in contact with the modium	
Connection shank	Staiplage steel mat be 1 4404/216L or Hestellov C276 mat be 2 4910
Oval flange	Stainless steel, mat. no. 1.4404/3 TOL of masterioy C270, mat. no. 2.4619
Seal diaphragm	Stainless steel, mat. no. 1.4404/316L or Hestelley C276, mat. no. 2.4810
Measuring cell filling	•Silicone oil
	 Inert filling liquid
Process connection	•G½B to EN 837-1
	•Female thread 1/2-14 NPT
	•Oval flange PN 160 (MAWP 2320 psi) with fastening thread:
	-′/ ₁₆ -20 UNF to IEC 61518 -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 dianhradm	Stainless steel, mat. no. 1.4404/316L
	Stainless steel, mat. no. 1.4404/316L
• weasuring ceir illing	
	•ment ining inquia •FDA compliant fill fluid (Neobee oil)
Process connection	•Flandes as har FN and ASME
	•F&B and pharmaceutical flanges

$$\label{eq:Ravalues} \begin{split} R_a\mbox{-values} &\leq 0.8\ \mu\mbox{m}\ (32\ \mu\mbox{-inch})\mbox{/welds}\ R_a\mbox{/} \leq 1.6\ \mu\mbox{m}\ (64\ \mu\mbox{-inch})\mbox{(Process connections acc. to 3A;}\ R_a\mbox{-values} &\leq 0.8\ \mu\mbox{m}\ (32\ \mu\mbox{-inch})\mbox{/welds}\ R_a\mbox{<} \leq 0.8\ \mu\mbox{m}\ (32\ \mu\mbox{-inch})\mbox{/welds}\ R_a\mbox{<} < 0.8\ \mu\mbox{/m}\ (32\ \mu\mbox{-inch})\mbox{/welds}\ R_a\mbox{<} < 0.8\ \mu\mbox{/m}\ (32\ \mu\mbox{-inch})\mbox{/m}\ (32\ \mu\mbox{-inch})\mbox{/m}\ (32\ \mu\mbox{-inch})\mbox{/m}\ (32\ \mu\mbox{-inch})\mbox{/m}\ (32\ \mu\mbox{-inch})\mbox{/m}\ (32\ \mu\mbox{/m}\ (32\ \mu\m$$

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for gauge and absolute pressure

SITRANS P300 for gauge and absolute pressure					
	HART	PROFIBUS PA and FOUNDATION Fieldbus			
Power supply U _H					
Terminal voltage on transmitter	10.5 42 V DC for intrinsically safe operation: 10.5 30 V DC	Supplied through bus			
Separate power supply	-	Not necessary			
Bus voltage					
• Without Ex	-	9 32 V			
 With intrinsically-safe operation 	-	9 24 V			
Current consumption					
Max. basic current	-	12.5 mA			
 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	For gases of fluid group 1 and liquids of fluid g paragraph 3 (sound	roup 1; complies with requirements of Article 3, engineering practice)			
Water, waste water	In prep	paration			
Explosion protection					
Intrinsic safety "i"	PTB 05 A	TEX 2048			
• Marking	Ex II 1/2 G Ex ia/il	b IIB/IIC T4, T5, T6			
Permissible ambient temperature					
- Temperature class T4	-40 +85 °C ((-40 +185 °F)			
- Temperature class T5	-40 +70 °C ((-40 +158 °F)			
- Temperature class T6	-40 +60 °C ((-40 +140 °F)			
Connection	To certified intrinsically-safe circuits with peak	To certified intrinsically-safe circuits with peak			
	values: U_i = 30 V, I_i = 100 mA, P_i = 750 mW, R_i = 300 Ω	values: <u>FISCO supply unit:</u> $U_i = 17.5 V, I_i = 380 mA,$ $P_i = 5.32 W$ <u>Linear barrier:</u> $U_i = 24 V, I_i = 250 mA, P_i = 1.2 W$			
Effective inner capacitance:	$C_i = 6 \text{ nF}$	$C_{i} = 1.1 \text{ nF}$			
Effective internal inductance:	L = 0.4 mH	l:<7 uH			
Explosion protection to FM for USA and Canada (cFM_{US})		- , , , , , , , , , , , , , , , , , , ,			
Identification (DIP) or (IS); (NI)	Certificate of Cor CL I, DIV 1, GP ABCD T4 T6; CL II, DIV 1, GP DIV 2, GP ABCD T4 T6;	npliance 3025099 EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4 T6; CL I, CL II, DIV 2, GP FG; CL III			
Identification (DIP) or (IS)	Certificate of Corr CL I, DIV 1, GP ABCD T4 T6; CL II, DIV 1, GP ABCD T4 T6; CL	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	NTEX 2048			
• Marking	Ex II 1D Ex ia Ex II 2D Ex ib Ex II 3D Ex ib	D 20 T 120 °C D 21 T 120 °C D 21 T 120 °C			
Permissible ambient temperature					
- Temperature class T4	-40 +85 °C (-40 +185 °F) (in the case of miner	al glass windows only -20 +85 °C (-4 +185 °F))			
- Temperature class T5	-40 +70 °C (-40 +158 °F) (in the case of miner	ral glass windows only-20 +70 °C (-4 +158 °F))			
- Temperature class T6	-40 +60 °C (-40 +140 °F) (in the case of miner	al glass windows only -20 +60 °C (-4 +140 °F))			
Connection	To certified intrinsically-safe circuits with peak values:	To certified intrinsically-safe circuits with peak values:			
	$U_i = 30 \text{ V}, I_i = 100 \text{ mA}, P_i = 750 \text{ mW}$	$U_i = 24 \text{ V}, I_i = 380 \text{ mA}, P_i = 5.32 \text{ mW}$			
Effective inner capacitance:	C _i = 6 nF	C _i = 5 nF			
 Effective internal inductance: 	$L_i = 0.4 \ \mu H$	$L_i = 10 \ \mu H$			

SITRANS P300 for gauge and absolute pressure

SITRANS P300 for gauge and absolute pressure							
	HART	PROFIBUS PA and FOUNDATION Fieldbus					
Type of protection Ex nA/nL/ic (Zone 2)	PTB 05 /	ATEX 2048					
Marking	II 2/3 G Ex nA T4/T5/T6						
	II 2/3 G Ex nL	IIB/IIC T4/T5/T6					
 Permissible ambient temperature 							
- Temperature class T4	-40 +85 °C (-40 +185 °F) (in the case of mine	-40 +85 °C (-40 +185 °F) (in the case of mineral glass windows only -20 +85 °C (-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 +60 °C (-40 +140 °F) (in the case of mine	ral glass windows only -20 +60 °C (-4 +140 °F))					
• Ex nA/nL connection	To certified intrinsically-safe circuits with peak values:	To certified intrinsically-safe circuits with peak values:					
	U _m = 45 V	U _m = 32 V					
• Ex ic connection	To certified intrinsically-safe circuits with	To certified intrinsically-safe circuits with					
	peak values:	peak values:					
	$U_i = 45 V$	U _i = 32 V					
Effective inner capacitance:	$C_i = 6 \text{ nF}$	$C_i = 5 \text{ nF}$					
 Effective internal inductance: 	$L_i = 0.4 \text{ mH}$	$L_i = 20 \ \mu H$					

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

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		for gau	ge and absolute pressur
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	4	- Adaptation to customer-specif- ic process variables	Yes, linearly rising or falling characteristic
master class 2 (max.)		- Electrical damping, adjustable	0 100 s
The address can be set using	Configuration tool or local operation	- Simulation function	Output/input (can be locked within the device with a bridge)
Cyclic data usage	(standard setting Address 126)	- Failure mode	parameterizable (last good value, substitute value, incorrec
Output byte	5 (one measured value) or		value)
	10 (two measured values)	- Limit monitoring	Yes, one upper and lower warn- ing limit and one alarm limit
Input byte	0.1 or 2 (totalizer mode and reset function for dosing)	- Square-rooted characteristic	respectively
 Internal preprocessing 		for flow measurement	100
Device profile	PROFIBUS PA Profile for Pro- cess Control Devices Version	• PID	Standard FOUNDATION Field- bus function block
Eurotion blocks	3.0, Class B	 Physical block 	1 resource block
Analog input	2	Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block
 Adaptation to customer-specif- ic process variables 	Yes, linearly rising or falling characteristic	Pressure transducer block	LCD
- Electrical damping adjustable	0 100 s	- Can be calibrated by applying	Yes
- Simulation function	Input /Output	two pressures	
- Failure function	parameterizable (last good value, substitute value, incorrect value)	 Monitoring of sensor limits Simulation function: Measured pressure value, sensor temper- 	Yes Constant value or over parame- terizable ramp function
- Limit monitoring	Yes, one upper and lower warn- ing limit and one alarm limit respectively	ature and electronics tempera- ture	
Register (totalizer)	Can be reset, preset, optional direction of counting, simulation function of register output		
- Failure mode	parameterizable (summation with last good value, continuous summation, summation with incorrect value)		
- Limit monitoring	One upper and lower warning limit and one alarm limit respec- tively		
 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		
 Simulation function for mea- sured pressure value and sen- sor temperature 	Constant value or over parame- terizable ramp function		

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SITRANS P300 for gauge and absolute pressure

Selection and Ordering	data	Orc	lor	NIC		
Selection and Ordering data SITRANS P300 pressure transmitters for rela- tive and absolute pressure, single-chamber mea- suring housing, rating plate inscription in English			Jer	INC		
4 20 mΔ/HΔRT		7 M	FS	0	2 3	_
		7 10			23	•
PROFIBUS PA		7 N	1 - 8	0	24	-
FOUNDATION Fieldbus	(FF)	7 M	F 8	0	25	-
Measuring cell filling	Measuring cell cleaning					
Silicone oil	normal	1				
Inert liquid	Cleanliness level 2 to DIN 25410	3				
max. span (min max.)					
0.01 1 bar	(0.145 14.5 psi)	В				
0.04 4 bar	(0.58 58 psi)	С				
0.1616 bar	(2.32 232 psi)	D				
0.63 63 bar	(9.14 914 psi)	E				
1.6 160 bar	(23.2 2320 psi)	F				
4 400 bar	(58 5802 psi)	G				
2.5 250 mbar a	(0.04 3.63 psia)	Q				
13 1300 mbar a	(0.19 18.86 psia)	N				
0.05 5 bar a 0.3 30 bar a	(0.7 72.5 psia) (4.35 435 psia)	T U				
Wetted parts materials						
Seal diaphragm	Measuring cell					
Stainless steel	Stainless steel		Δ			
Hastellov	Stainless steel		B			
Hastellov	Hastellov		c			
Version for diaphrage se	(1) 2) 3) 4) 5)		v			
			-			
Process connection						
Connection shank G/2B to EN 837-1			0			
Female thread 1/2-14 NF	21		1			
 Stainless steel oval flan tion female thread 1/4-18 						
Mounting thread 7/ 20 LINE to EN 61518			2			
- Mounting thread M10	to DIN 19213		3			
- Mounting thread M12	to DIN 19213		4			
Mounting thead M12 to Div 19215			5			
Male thread ½ -14 NPT			6			
Non watted parts mater	iala					
Stainloss stool doop di	ials			л		
polished	awit and electrolytically			7		
Version						
Standard versions					1	
Explosion protection					-	
None						Δ
With ATEX. Type of prot	ection:					^
- "Intrinsic safety (Ex ia))"					в
• Zone 20/21/22 ⁷⁾						c
• Ex nA/nL (Zone 2) ⁸⁾						Ē
 with FM "intrinsic safety" (cFM_{LIS}) 						М
Flectrical connection / cable entry						
 Screwed gland M20x1.5 (polyamide)⁹⁾ 						Δ
 Screwed gland M20x1.5 (polyamide)** Screwed gland M20x1.5 (metal) 						B
Screwed gland M20v1	5 (stainless steel)					C
M12 connectors (motal) without cable socket)					F
M12 connectors (steinle	ss steel) without cable					G
Screwed aland 1/2-1/ N	PT metal thread ¹⁰⁾					н
Screwed gland 1/2-14 N	PT stainless steel thread					
5515W66 giana 72-14 N						v

SITRANS P300 pressure transmitters for relative and absolute pressure, single-chamber measuring housing, rating plate inscription in English 7MF 8 0 2 3 4 20 mA/HART 7MF 8 0 2 4 PROFIBUS PA 7MF 8 0 2 4 FOUNDATION Fieldbus (FF) 7MF 8 0 2 4 Display Without display, with keys, closed lid 7MF 8 0 2 5 With display and keys, losed lid ¹¹¹ With display and keys, closed lid ¹¹¹ 7MF 8 0 2 5 With display and keys, closed lid ¹¹¹ With display and keys, closed lid ¹¹¹ 7MF 8 0 2 5 With display and keys, closed lid ¹¹¹ With display and keys, closed lid ¹¹¹ 7MF 8 0 2 5 With display and keys, setting acc. to specifications, Order Code "Y21" or "Y22" required), lid with Makrolon pane ¹¹¹ 7MF 8 0 2 4 With display and keys (setting acc. to specifications, Order Code "Y21" or "Y22" required), lid with glass pane (setting on HART devices: mA, with PROFIBUS and FOUNDATION Fieldbus equipment: pressure units) ¹¹¹ With display and keys (setting acc. to specifications, Cher Code "Y21" or "Y22" required), lid with glass pane ¹¹¹ Power supply units see Chap. 7 "Supplementary Components". Included in delivery of the device: Brief instructions (Leporello) CD-6077 is recommended only to order this certificate exclusively with the dia phragm seals. The measuring accuracy of the total combination is o fied here. 11 When the manufacture's certificate		
4 20 mA/HART 7MF 8 0 2 3 PROFIBUS PA 7MF 8 0 2 4 FOUNDATION Fieldbus (FF) 7MF 8 0 2 4 Display Without display, with keys, closed lid With display and keys, closed lid Image: Closed lid With display and keys, closed lid Image: Closed lid With display and keys, lid with Makrolon pane (setting on HART devices: mA, with PROFIBUS PA and FOUNDATION Fieldbus equipment: pressure units) ¹¹¹ With display and keys (setting acc. to specifications, Order Code "Y21" or 'Y22" required), lid with Makrolon pane ¹¹¹ With display and keys (setting acc. to specifications, Order Code "Y21" or 'Y22" required), lid with glass pane (setting on HART devices: mA, with PROFIBUS and FOUNDATION Fieldbus equipment: pressure units) ¹¹¹ With display and keys (setting acc. to specifications, Order Code "Y21" or "Y22" required), lid with glass pane ¹¹ Power supply units see Chap. 7 "Supplementary Components". Included in delivery of the device: Brief instructions (Leporello) CD-ROM with detailed documentation 1 ¹⁰ When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 607. 1 ¹⁰ He acceptance test certificate 3.1 is ordered for the transmitter wit mounted diaphragm seals this certificate must also be ordered with respective remote seals. 1 ¹⁰ The diaphragm seal is to be specified with a separate order number musper times wi		
 PROFIBUS PA FOUNDATION Fieldbus (FF) The 8 0 2 4 TWF 8 0 2 5 The 8 0 2 4 The 9 2 2 Th	3 -	
 FOUNDATION Fieldbus (FF) TMF 8 0 2 5 Display Without display, with keys, closed lid With display and keys, closed lid¹¹) With display and keys, lid with Makrolon pane (setting on HART devices: mA, with PROFIBUS PA and FOUNDATION Fieldbus equipment: pressure units)¹¹) With display and keys (setting acc. to specifications, Order Code "Y21" or "Y22" required), lid with Makrolon pane¹¹) With display and keys (setting acc. to specifications, Order Code "Y21" or "Y22" required), lid with glass pane (setting on HART devices: mA, with PROFIBUS and FOUNDATION Fieldbus equipment: pressure units)¹¹) With display and keys (setting acc. to specifications, Order Code "Y21" or "Y22" required), lid with glass pane¹¹) With display and keys (setting acc. to specifications, Order Code "Y21" or "Y22" required), lid with glass pane¹¹) With display and keys (setting acc. to specifications, Order Code "Y21" or "Y22" required), lid with glass pane¹¹) With display and keys (setting acc. to specifications, Order Code "Y21" or "Y22" required), lid with glass pane¹¹) With display and keys (setting acc. to specifications. Order Code "Y21" or "Y22" required), lid with glass pane¹¹) With display and keys (setting acc. to specification certificate: Brief instructions (Leporello) CD-ROM with detailed documentation When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 6077 is recommended only to order this certificate exclusively with the dia phragm seals. The measuring accuracy of the total combination is c field here. If the acceptance test certificate 3.1 is ordered for the transmitter wit mounted diaphragm seals this certificate must also be ordered with respective remote seals. The standard measuring cell filling for configurations with remote seat is silicone oil. Remote sea	Ļ -	
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 Only available together with electrical connection option A Only available together with electrical connection options B. C. F. or I 	si)	
⁸⁾ Only available together with electrical connection options B C E or $($		
	G.	
³⁷ Only together with HART electronics.		
¹¹ Display cappot be turned		

Pressure Measurement Transmitters for food, pharmaceuticals and biotechnology SITRANS P300 for gauge and absolute pressure

Selection and Orderin	g data	Order No.	Selection and Ordering data	Order No.
SITRANS P300 pressu and absolute pressure brane, single-chamber plate inscription in Engl	re transmitters for relative with front-flush mem- measuring housing, rating ish		SITRANS P300 pressure transmitters for relative and absolute pressure with front-flush mem- brane, single-chamber measuring housing, rating plate inscription in English	
4 20 mA/HART		7 M F 8 1 2 3 -	4 20 mA/HART	7 M F 8 1 2 3 -
PROFIBUS PA		7 M F 8 1 2 4 -	PROFIBUS PA	7 M F 8 1 2 4 -
FOUNDATION Fieldbu	s (FF)	7 M F 8 1 2 5 -	FOUNDATION Fieldbus (FF)	7 M F 8 1 2 5 -
Measuring cell filling Silicone oil	Measuring cell cleaning normal	1	Display • Without display, with keys, closed lid	1
Inert liquid	Cleanliness level 2 to DIN 25410	3	 With display and keys, closed lid⁷⁾ 	2
FDA compliant fill fluid • Neobee oil	normal	4	 With display and keys, lid with Makrolon pane (setting on HART devices: mA, with PROFIBUS PA and FOUNDATION Fieldbus equipment; pressure 	4
max. span			units) ⁷⁾	
0.01 1 bar 0.04 4 bar 0.16 16 bar	(0.15 14.5 psi) (0.58 58 psi) (2.32 232 psi)	B C D	 With display and keys (setting acc. to specifica- tions, Order Code "Y21" or "Y22" required), lid with Makrolon pane⁷⁾ 	5
0.63 63 bar 13 1300 mbar a ¹⁾ 0.05 5 bar a ¹⁾	(9.14 914 psi) (0.19 18.9 psia) ¹⁾ (0.7 72.5 psia) ¹⁾ (4.25 4.35 psia) ¹⁾	E S T	 With display and keys, lid with glass pane (setting on HART devices: mA, with PROFIBUS PA and FOUNDATION Fieldbus equipment: pressure units)⁷⁾ 	6
	(4.55 455 psia) /		With display and keys (setting acc. to specifica-	7
Seal diaphragm	Measuring cell		tions, Order Code "Y21" or "Y22" required), lid with glass pane ⁷⁾	
Stainless steel	Stainless steel	A	Power supply units see Chap. 7 "Supplementary Cor	nponents"
Process connection • Flange version with O	rder Code M, N, R or Q	B 7	Included in delivery of the device: • Brief instruction (Leporello) • CD-ROM with detailed documentation	
Non-wetted parts mate • Stainless steel, deep- polished) erials drawn and electrolytically	4	 Not with temperature decoupler P00 and P10, not for R01, R02, R04, R10 and R11, and can only be ordere silicone oil. Only available for flances with options M. N. and O. 	process connections d in conjunction with
Version		-	³⁾ Only together with electrical connection option A.	
Standard versions		1	⁴⁾ Only available together with electrical connection opti	ons B, C, F or G.
Explosion protection		-	⁵⁾ Only together with HART electronics.	
 None With ATEX, Type of pr - "Intrinsic safety (Ex i Zone 20/21/22³⁾ Ex nA/nL (Zone 2)⁴⁾ with FM "intrinsic safe 	otection: ja)" tv" (cEMuc)	A B C E M	 ⁶⁾ Without cable gland. ⁷⁾ Display cannot be turned. 	
Electrical connection	/ cable entry			
 Screwed gland M20x Screwed gland M20x Screwed gland M20x 	1.5 (polyamide) ⁵⁾ 1.5 (metal) 1.5 (stainless steel)	A B C		
 M12 connectors (with M12 connectors (stair socket) 	out cable socket) nless steel), without cable	F G		
 Screwed gland ½-14 Screwed gland ½-14 	NPT metal thread ⁶⁾ NPT stainless steel thread ⁶⁾	H J		

1

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.				
Pressure transmitter with mounting	A02	✓	✓	✓
bracket (2 shackles, 4 nuts, 4 U-plates,				
made completely of stainless steel for wall or				
pipe mounting				
Cable socket for M12 plug				
• Metal	A50		✓	✓
Stainless steel	A51		✓	✓
Rating plate inscription				
(instead of English)				
• German	B10	1	✓	✓
• French	B12	✓	✓	✓
• Spanish	B13	1	✓	✓
• Italian	B14	~	~	~
English rating plate	B21	✓	✓	✓
Pressure units in inH ₂ 0 and/or psi				
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2 ¹⁾	C11	1	1	1
Inspection certificate ²⁾	C12	1	1	~
Acc. to EN 10204-3.1	0.2			
Factory cortificate	C14	1	1	1
Acc. to FN 10204-2.2	014	•	•	•
	D10	1		1
(only for M20x1.5 and ½-14 NPT)	DIZ	•	v	v
Degree of protection IP6k9k (only for M20x1.5)	D46	~	~	~
Ex Approval IEC Ex (Ex ia)	E45	✓	✓	✓
(only for transmitter 7MF8B)				
Ex Approval Ex ja/jb NEPSI	E55	1	~	~
Only for SITBANS P300 with front-flush				
diaphragm (7MF81)				
Flange to FN 1092-1 Form b1				
• DN 25. PN 40 ³⁾	M11	1	1	1
• DN 25, PN 100 ⁴⁾	M21	1	✓	✓
• DN 40, PN 40	M13	1	✓	✓
• DN 40, PN 100	M23	1	✓	✓
• DN 50, PN 16	M04	✓	✓	✓
• DN 50, PN 40	M14	1	✓	✓
• DN 80, PN 16	M06	1	1	1
• DN 80, PN 40	M16	~	~	~
Flanges to ASME B16.5				
• 1", class 150 ⁴⁾	M40	✓	~	✓
• 1½", class 150	M41	v	1	1
• 2", class 150	M42	1	1	1
• 3", class 150	M43	*	1	1
• 4", class 150 • 1", class 200 ⁴)	M44	*	* ./	*
• 1, class 300 ⁻⁷ • 1 ¹ / ₄ " class 300	M45 M46	¥ √	*	×
• 2" class 300	M47	1	1	· /
• 3", class 300	M48	1	1	1
• 4", class 300	M49	1	~	✓
Threaded connector to DIN 3852-2, form A				
thread to ISO 228				
• G ¾"-A, front-flush ⁴⁾	R01	✓	1	✓
• G 1"-A, front-flush ⁴⁾	R02	✓	1	1
• G 2"-A, front-flush ⁴⁾	R04	~	1	~
Tank connection ⁵⁾				
Sealing is included in delivery				
• TG 52/50, PN 40	R10	✓	√	1
• TG 52/150, PN 40	R11	1	~	~

Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "-Z" to Order No. and specify Order Code.				
Sanitary process connection according DIN 11851 (Dairy connection with slotted union nut)				
Certified to 3A ⁶⁾				
• DN 50, PN 25	N04	1	1	1
• DN 80, PN 25	N06	v	v	•
DIN 32676/ISO 2852 Certified to 3A ⁶⁾				
• DN 50/2", PN 16	N14	✓	✓	✓
• DN 65/3", PN 10	N15	~	~	~
Varivent connection Certified to 3A and EHEDG ⁶⁾		,	,	,
 Iype N = 68 for Varivent housing DN 40 125 und 1½" 6", PN 40 	N28	~	~	~
Temperature decoupler up to 200 °C ⁷⁾	P00	1	~	1
for front-flush diaphragm version				
Temperature decoupler up to 250 °C Measuring cell filling: High-temperature oil (Silicone oil)	P10	*	1	1
Bio-Control sanitary process connection				
• DN 50, PN 16	Q53	1	1	1
• DN 65, PN 16	Q54	✓	✓	✓
Sanitary process connection to DRD • DN 50, PN 40	M32	~	~	~
SMS socket with union nut				
• 2"	M67	1	1	1
• 272 • 3"	M69	↓	¥.	¥
SMS threaded socket				
• 2"	M73	✓	✓	1
• 21/2"	M74	✓	✓	✓
• 3"	M75	1	~	~
IDF socket with union nut ISO 2853		,	,	,
• 2" • 21⁄2"	M82 M83	4	* -	×
• 3"	M84			1
IDF threaded socket ISO 2853				
• 2"	M92	✓	✓	1
• 21/2"	M93	1	1	1
• 3*	M94	~	~	~
Sanitary process connection to NEUMO Bio-Connect screw connection				
• DN 50, PN 16	Q05	1	1	1
• DN 65, PN 16	Q06	✓	✓	1
• DN 80, PN 16	Q07	✓	✓	1
• DN 100, PN 16	Q08	1	1	1
• DN 2", PN 16 • DN 214" PN 16	Q13	× ./	* -	×
• DN 3". PN 16	Q15	1	· •	
• DN 4", PN 16	Q16	✓	✓	✓
Sanitary process connection to NEUMO Bio-Connect flange connection				
• DN 50 PN 16	Q23	1	1	1
• DN 65, PN 16	Q24	1	1	1
• DN 80, PN 16	Q25	✓	1	1
• DN 100, PN 16	Q26	1	1	✓.
• DN 2", PN 16	Q31	1	1	1
• DN 2 ⁷ 2, PN 10 • DN 3" PN 16	Q32	¥ ✓	~	~
• DN 4", PN 16	Q34	1	1	1

SITRANS P300 for gauge and absolute pressure

Selection and Ordering data	Order	code			
Further designs		HART	PA	FF	
Add "- 7 " to Order Ne, and					
specify Order Code					
Sanitary process connection to NEUMO Bio-Connect clamp connection					
	020				
• DIN 50, PIN 16	Q39	*	*	*	
• DN 65, PN 10	Q40	*	*	*	
• DN 80, PN10	Q41	*	×.	×.	
• DN 100, PN 10	Q42	√	V	v	
• DN 2½", PN 16	Q48	~	~	~	
• DN 3", PN 10	Q49	✓	✓	✓	
• DN 4", PN 10	Q50	1	✓	✓	
Sanitary process connection to NEUMO					
Bio-Connect S flange connection					
Certified to 3A and EHEDG					
• DN 50, PN 16	Q63	1	✓	✓	
• DN 65, PN 10	Q64	✓	✓	✓	
• DN 80, PN 10	Q65	✓	✓	1	
• DN 100, PN 10	Q66	1	1	1	
• DN 2" PN 16	072	1	1	1	
• DN 21/3" PN 10	Q73	1	1	1	
• DN 3" PN 10	074	1	1	1	
• DN 4" PN 10	075	1	1	1	
	G/15	•	•	•	
Aseptic threaded socket to DIN 11864-1 Form A					
Certified to 3A and EHEDG					
• DN 50, PN 25	N33	~	~	~	
• 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	
• DN 65, PN 16	N44	1	1	~	
• DN 80, PN 16	N45	✓	1	~	
• DN 100 PN 16	N46	1	1	1	
Aseptic flange with groove to DIN 11864-2					
Form A					
Certified to 3A and EHEDG					
• DN 50, PN 16	N43 +	~	~	~	
	P11				
• DN 65, PN 16	N44 +	~	~	~	
	PII	,		,	
• DN 80, PN 16	N45 +	•	•	~	
- DN 100 DN 10		1		1	
• DN 100, PN 16	N46 + P11	v	v	v	
Aseptic clamp with groove to DIN 11864-3					
Certified to 3A and EHEDG					
	N53	1	1	1	
• DN 65 DN 25	N54	1	1	1	
- DN 90, FN 20 - DN 90, PN 16	N54	1	1	1	
- DN 100, FN 10	NEC	-	1		
VINTUU, FINTO	OCN	v	v	v	

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	1		
Stainless steel tag plate (measuring point description)	Y15	~	~	~
Max. 16 characters, specify in plain text: Y15:				
Measuring point text Max. 27 characters, specify in plain text: Y16:	Y16	1	1	1
Entry of HART TAG	Y17	✓		
Max. 8 characters, specify in plain text: Y17:				
Setting of the display in pressure units Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi, Note: The following pressure units can be selected:	Y21	~	•	*
bar, mbar, mm H_2O^{*}), in H_2O^{*}), ft H_2O^{*}), mmHG, inHG, psi, Pa, kPa, MPa, g/cm ² , kg/cm ² , Torr, ATM or % *) ref. temperature 20 °C				
Setting of the display in non- pressure units ⁸⁾ Specify in plain text: Y22: up to I, m ³ , m, USg, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	Y22 + Y01	•		
Preset bus address (possible between 1 126) Specify in plain text: Y25:	Y25		•	

Factory mounting of valve manifolds, see accessories.

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

✓ = available

Ordering example

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

- 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 <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⁾ Special seal in Viton included in the scope of delivery
- ⁴⁾ Cannot be combined with order codes P00 and P10. Can only be ordered with silicone oil measuring cell filling.
- ⁵⁾ The weldable socket can be ordered under accessories.
- ⁶⁾ 3A certification only if used in conjunction with 3A-compliant sealing rings.
 ⁷⁾ Certified to 3A.
- The maximum permissible temperatures of the medium depend on the respective cell fillings.
- ⁸⁾ Preset values can only be changed over SIMATIC PDM.

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Pressure Measurement 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 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.

SITRANS P300 for gauge and absolute pressure

Flanges as per EN and ASME

Flange to EN

EN 1092-1

IN 1052-1					
	Order code	DN	PN	ØD	H ₂
	M11	25	40	115 mm (4.5")	Approx.
	M21	25	100	140 mm (5.5")	52 mm (2")
b	M13	40	40	150 mm (5.9")	
	M23	40	100	170 mm (6.7")	
	M04	50	16	165 mm (6.5")	
	M14	50	40	165 mm (6.5")	
	M06	80	16	200 mm (7.9")	
	M16	80	40	200 mm (7.9")	

Flanges to ASME

ASME B16.5

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

NuG and pharmaceutical connections

Connections to DIN

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

Tri-Clamp nach DIN 32676

··· •·····p ····· • ··· ·					
	Order code	DN	PN	ØD	H ₂
	N14 N15	50 65	16 10	64 mm (2.5") 91 mm (3.6")	Approx. 52 mm (2")

Other connections

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

Biocontrol connection

Order code	DN	PN	ØD	H ₂
Q53	50	16	90 mm (3.5")	Approx.
Q54	65	16	120 mm (4.7")	52 mm (2")

Sanitary process connection to DRD							
	Order code	DN	PN	ØD	H ₂		
	M32	50	40	105 mm (4.1")	Approx. 52 mm (2"		
Sanitary process so	rew con	nectio	on to	NEUMO Bio-Cor	nnect		
	Order	DN	PN	ØD	H ₂		
i contrary	coue						
	Q05	50	16	82 mm (3.2")	Approx.		
	Q05 Q06	50 65	16 16	82 mm (3.2") 105 mm (4.1")	Approx. 52 mm (2"		
	Q05 Q06 Q07	50 65 80	16 16 16	82 mm (3.2") 105 mm (4.1") 115 mm (4.5")	Approx. 52 mm (2"		
	Q05 Q06 Q07 Q08	50 65 80 100	16 16 16 16	82 mm (3.2") 105 mm (4.1") 115 mm (4.5") 145 mm (5.7")	Approx. 52 mm (2"		
	Q05 Q06 Q07 Q08 Q13	50 65 80 100 2"	16 16 16 16 16	82 mm (3.2") 105 mm (4.1") 115 mm (4.5") 145 mm (5.7") 82 mm (3.2")	Approx. 52 mm (2"		
	Q05 Q06 Q07 Q08 Q13 Q14	50 65 80 100 2" 2 ¹ / ₂ "	16 16 16 16 16 16	82 mm (3.2") 105 mm (4.1") 115 mm (4.5") 145 mm (5.7") 82 mm (3.2") 105 mm (4.1")	Approx. 52 mm (2"		

Sanitary process connection to NEUMO Bio-Connect flange connection

Q16 4"

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

16 145 mm (5.7")

Sanitary process connection to NEUMO Bio-Connect clamp connection

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

Sanitary process connection to NEUMO Bio-Connect S flange connection

I

	Order code	DN	PN	ØD	H ₂
	Q63	50	16	125 mm (4.9")	Approx.
	Q64	65	10	145 mm (5.7")	52 mm (2")
D	Q65	80	10	155 mm (6.1")	
	Q66	100	10	180 mm (7.1")	
	Q72	2"	16	125 mm (4.9")	
	Q73	21⁄2"	10	135 mm (5.3")	
	Q74	3"	10	145 mm (5.7")	
	Q75	4"	10	180 mm (7.1")	

SITRANS P300 for gauge and absolute pressure

Threaded connection G ³ / ₄ ", G1" and G2" acc. to DIN 3852							
	Order code	DN	PN	ØD	H ₂		
	R01	3⁄4"	60	37 mm (1.5")	Approx. 45 mm (1.8")		
D	R02	1"	60	48 mm (1.9")	Approx. 47 mm (1.9")		
	R04	2"	60	78 mm (3.1")	Approx. 52 mm (2")		

Tank connection TG 52/50 and TG52/150

Order code	DN	PN	ØD	H ₂
R10	25	40	63 mm (2.5")	Approx. 63 mm (2.5")
R11	25	40	63 mm (2.5")	Approx. 170 mm (6.7")

SMS socket with union nut

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

SMS threaded socket

Order code	DN	PN	ØD	H ₂
M73 M74	2" 2½"	25 25	70 x 1/6 mm 85 x 1/6 mm	Approx. 52 mm (2")
M75	3"	25	98 x 1/6 mm	

IDF socket with union nut

	Order code	DN	PN	ØD	H ₂
	M82 M83	2" 2½"	25 25	77 mm (3") 91 mm (3.6")	Approx. 52 mm (2")
	M84	3"	25	106 mm (4.2")	

IDF threaded socket

т

Order code	DN	PN	ØD	H ₂
M92 M93 M94	2" 2½" 3"	25 25 25	64 mm (2.5") 77.5 mm (3.1") 91 mm (3.6")	Approx. 52 mm (2"



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

Aseptic flange with groove to DIN 11864-2 Form A



Aseptic clamp with groove to DIN 11864-3 Form A

	Order code	DN	PN	ØD	H ₂
	N53	50	25	77.5	Approx.
- I	N54	65	25	91	52 mm (2")
	N55	80	16	106	
	N56	100	16	130	

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
Lid without window gasket not included	7MF8997-1BA
Lid with glass window gasket not included	7MF8997-1BD
NBR enclosure sealing	7MF8997-1BG
Measuring point label unlabeled	7MF8997-1CA
Cable gland • metal • plastic (blue)	7MF8997-1EA 7MF8997-1EB
 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:	7MF4997-2HC
Gasket made of Viton for PMC Style Minibolt: front-flush 1"	7MF4997-2HD
Weldable socket for TG52/50 and TG52/150	
TG52/50 connection TG52/150 connection02	7MF4997-2HE 7MF4997-2HF
Seals for TG 52/50 and TG 52/150 made of silicone	7MF4997-2HG
Seals for flange connection with front-flush diaphragm Material FPM (Viton). 10 units	-
• DN 25, PN 40 (M11)	7MF4997-2HH
• DN 25, PN 100 (M21)	7MF4997-2HJ
 I, class 150 (M40) 1", class 300 (M45) 	7MF4997-2HK 7MF4997-2HL
,	

Selection and Odering data	Order No.
Operating Instructions ¹⁾	
 for SITRANS P300 series with HART German English French Spanish Italian Leporello German/English for SITRANS P300 series with PROFIBUS PA German English French Spanish 	A5E00359580 A5E00359579 A5E00359578 A5E00359576 A5E00359577 A5E00359581 A5E00414587 A5E00414588 A5E00414589 A5E00414590
- Italian	A5E00414591
able in 21 EU languages on the product CD supplied with each transmitter. They can also be downloaded from the SITRANS P web page.	
 Brief instructions (Leporello) for SITRANS P300 with HART German/English for SITRANS P300 with PROFIBUS PA German/English for SITRANS P300 with FOUNDATION Field- 	A5E00359581 A5E00414592
bus - German/English	A5E01176733
CD with SITRANS P documentation	
 German, English, French, Spanish, Italian including compact operating instructions in 21 EU languages 	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	7MF4997-1DA
with USB interface	7MF4997-1DB
available ex stock	

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

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

SITRANS P300 - Factory-mounting of valve manifolds on transmitters

Overview

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

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

Design

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

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

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

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

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

If you order an acceptance test certificate 3.1 to EN 10204 when choosing the option "Factory mounting of valve manifolds", a separate certificate is provided for the transmitters and the valve manifolds respectively.

Selection and Ordering data

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



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

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

Add -Z to the Order No. of the transmitter and add order codes	Order code
SITRANS P300 7MF8020	T02
with process connection collar G½ 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

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)



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)

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 11/2" and 1" flush at the front, the SITRANS P300 and DS III transmitters can be used for all processes in the paper industry.

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

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

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

Various versions of the pressure transmitters are available for measuring:

- Gauge pressure
- Level
- Mass level
- Volume level

Benefits

- · High guality 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 to 16 bar (0.43 psi to 232 psi) for DS III with HART interface
- Nominal measuring range from 1 bar to 16 bar (14.5 psi to 232 psi) for DS III with PROFIBUS PA and FOUNDATION Fieldbus interface
- Infinitely adjustable span from 0.03 bar to 16 bar (0.43 psi to 232 psi) for SITRANS P300 with HART interface
- Nominal measuring range from 1 bar to 16 bar (14.5 psi to 232 psi) for SITRANS P300 with PROFIBUS PA interface
- High measuring accuracy
- Parameterization over control keys and HART Communica-• tion, or over PROFIBUS PA or FOUNDATION Fieldbus interface (DS III only).

Application

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

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

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

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

The pressure transmitter can be operated locally over 3 control keys or programmed externally over HART or over PROFIBUS-PA or FOUNDATION Fieldbus interface (only DS III).

SITRANS P, DS III series

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

Span (infinitely adjustable)

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

Nominal measuring range

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

SITRANS P300

Span (infinitely adjustable)

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

Nominal measuring range

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

SITRANS P DS III and P300 with PMC connection Technical description

1

SITRANS P DS III

Design



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 display. The inlet (8) for the electrical connection is located either on the left or right side. The unused opening on the opposite side is sealed by a blanking plug. The protective earth connection is located on the rear of the housing.

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

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

Example for an attached measuring point label



SITRANS P300

The device comprises:

- Electronics
- Housing
- Measuring cell



Perspective view of the SITRANS P300

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

SITRANS P DS III and P300 with PMC connection Technical description

Function

Operation of electronics with HART communication



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

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

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

Operation of electronics with PROFIBUS PA communication



Function diagram of electronics

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

The data specific to the measuring cell, the electronics data, and the parameter data are stored in the two non-volatile memories (6). The first memory is linked with the measuring cell, the second with the electronics. This modular design means that the electronics and the measuring cell can be replaced separately from one another.

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

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

SITRANS P DS III and P300 with PMC connection Technical description

Operation of electronics with FOUNDATION Fieldbus communication



Function diagram of electronics

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

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

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

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

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

Mode of operation of the measuring cell

Measuring cell for gauge pressure with front-flush diaphragm



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

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

Parameterization

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

Parameterization using the input buttons (local operation)

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

Parameterization using HART

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



Communication between a HART Communicator and a pressure transmitter When parameterizing with the HART Communicator, the connection is made directly to the 2-wire cable.



HART communication between a PC communicator and a pressure transmitter
Pressure Measurement Transmitters for gauge pressure for the paper industry

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

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

Adjustable parameter DS III with HART and P300 with HART

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

1) Cancel apart from write protection

Diagnostic functions for DS III with HART and P300 with HART

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

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

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

SITRANS P DS III and P300 with PMC connection Technical description

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 with FOUNDATION Fieldbus is connected to a process control system. Communication is possible even in a potentially explosive environment.

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

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

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

- Diagnostic functions for DS III with PROFIBUS PA and FOUNDATION Fieldbus, and P300 with PROFIBUS PA and FOUNDATION Fieldbus
- Event counter
- Slave pointer
- Maintenance timer
- Simulation functions
- Display of zero correction
- Limit transmitter
- Saturation alarm

Physical dimensions available for the display

Physical variable	Physical dimensions
Pressure (setting can also be made in the factory)	$\begin{array}{l} \mbox{MPa, hPa, kPa, Pa, bar, mbar, torr,} \\ \mbox{atm, psi, g/cm^2, kg/cm^2, mmH_2O,} \\ \mbox{mmH}_2O \ (4 \ ^{\circ}C), inH_2O, inH_2O \ (} \\ \mbox{4 \ ^{\circ}C}), ftH_2O, mmHg, inHg \end{array}$
Level (height data)	m, cm, mm, ft, in, yd
Mass	g, kg, t, lb, Ston, Lton, oz
Volume	m ³ , dm ³ , hl, yd ³ , ft ³ , in ³ , 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

SITRANS P, DS III series for gauge pressure with PMC connection for the paper industry

	HART PROFIBUS P/			PA and FOUNDATION Fieldbus		
Input						
Measured variable	Gauge pressure					
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span (min max.)	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure		
	0.01 1 bar (0.15 14.5 psi)	6 bar (87 psi)	1 bar (14.5 psi)	6 bar (87 psi)		
	0.04 4 bar (0.58 58 psi)	10 bar (145 psi)	4 bar (58 psi)	10 bar (145 psi)		
	0.16 16 bar (2.32 232 psi)	32 bar (464 psi)	16 bar (232 psi)	32 bar (464 psi)		
Lower measuring limit						
 Measuring cell with silicone oil filling 		100 mbar	a(1.45 psia)			
Upper measuring limit		100% of	max. span			
Output						
Output signal	4 20 mA		Digital PROFIBUS PA an FOUNDATION Fieldbus	nd 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	-			
Load						
Without HART communication	$R_{\rm B} \le (U_{\rm H}$ - 10.5 V)/0.023 A in Ω , - $U_{\rm H}$: Power supply in V					
With HART communication	$R_{\rm B}$ = 230 500 Ω (SIMATIC PDM) or - $R_{\rm B}$ = 230 1100 Ω (HART Communicator)					
Physical bus	- IEC 61158-2					
Protection against polarity reversal	Protected against short-circuit and polarity reversal. Each connection against the other with max. supply voltage.					
Electrical damping T ₆₃ (step width 0.1 s)		Set to 2 s	(0 100 s)			
Measuring accuracy		Acc. to IE	EC 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	oar, stainless steel seal d 5 °C (77 °F)) r: Span ratio an / set span)	iaphragm, silicone oil fill- o		
Error in measurement at limit setting incl. hysteresis and reproducibility						
Linear characteristic			≤ 0.075 %			
- r ≤ 10	$\leq (0.0029 \cdot r + 0.071) \%$					
- 10 < r ≤ 30	\leq (0.0045 \cdot r + 0.071) %					
- 30 < r ≤ 100	\leq (0.005 · r + 0.05) %					
Long-term stability (temperature change \pm 30 °C (± 54 °F))						
1- to 4-bar measuring cell	\leq (0.25 \cdot r) % per 5 year	s	\leq 0.25 % per 5 years			
16-bar measuring cell	\leq (0.125 \cdot r) % per 5 yea	ars	\leq 0.125 % per 5 years			
Influence of ambient temperature						
• at -10 +60 °C (14 140 °F)	$\leq (0.08 \cdot r + 0.1) \%^{1)}$		≤ 0.3 %			
• at -4010 °C and +60 +85 °C (-40 +14 °F and 140 185 °F)	≤ (0.1 · r + 0.15) %/10 K		≤ 0.25 %/10 K			
Influence of the medium temperature (only with front-flush diaphragm)						
• Temperature difference between medium temperature and ambient temperature		3 mbar/10 K	(0.04 psi/10 K)			
Influence of mounting position		≤ 0.1 mbar (0.00145	psi) per 10° inclination			
Measured Value Resolution	-		3 · 10 ⁻⁵ of nominal meas	suring range		

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 w	ith PMC connection for the paper industry				
	HART	PROFIBUS PA and FOUNDATION Fieldbus			
Rated conditions					
Degree of protection to IEC 60529	IP65, IP68, NEMA 4X, enclosure cleaning	g, resistant to lyes, steam to 150 °C (302 °F)			
Temperature of medium	-40 +100 °C	C (-40 +212 °F)			
Ambient conditions					
Ambient temperature	-20 +85 °C	C (-4 +185 °F)			
Storage temperature	-50 +85 °C (-58 +185 °F)				
Climatic class					
- Condensation	Relative humidity 0 100 % Condensation permissible, suitable for use in the tropics				
Electromagnetic Compatibility					
- Emitted interference and interference immu- nity	Acc. to EN 61326	and NAMUR NE 21			
Design					
Weight (without options)	≈ 1.5 kg (≈ 3.3 lb)				
Enclosure material	Low-copper die-cast aluminum, GD-AlSi12 or stainless steel precision casting, mat. no. 1.4408				
Wetted parts materials					
 Gasket (standard) 	PTFE flat gasket				
• O-ring (minibolt)	FPM (Viton) or opti	ionally: FFPM or NBR			
Measuring cell filling	Silicone oil or	inert filling liquid			
Process connection (standard)	Flush-mounted, 11/2",	PMC Standard design			
Process connection (minibolt)	Flush-mounted,	1", minibolt design			
Power supply $U_{\!$		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	For gases of fluid group 1 and liquids of fluid paragraph 3 (sound	group 1; complies with requirements of article 3, engineering practice)			

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

Pressure Measurement Transmitters for gauge pressure for the paper industry SITRANS P DS III with PMC connection

HART communication		FOUNDATION Fieldbus	
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	Λ	 Adaptation to customer-specif- ic process variables 	Yes, linearly rising or falling characteristic
master class 2 (max.)	7	- Electrical damping, adjustable	0100 s
The address can be set using	Configuration tool or local opera- tion (standard setting	- Simulation function	Output/input (can be locked within the device with a bridge)
Cyclic data usage	address 126)	- Failure mode	parameterizable (last good value, substitute value, incorrect
Output byte	5 (one measured value) or 10 (two measured values)	- Limit monitoring	value) Yes, one upper and lower warn-
Input byte	0, 1, or 2 (register operating mode and reset function for metering)		ing limit and one alarm limit respectively
Internal preprocessing	metering)	- Square-rooted characteristic for flow measurement	Yes
Device profile	PROFIBUS PA Profile for Pro- cess Control Devices Version	• PID	Standard FOUNDATION Field- bus function block
	3.0, Class B	Physical block	1 resource block
Function blocks	2	Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block
- Adaptation to customer-specif-	Yes linearly rising or falling		LCD
ic process variables	characteristic	Pressure transducer block Open her cellbrated by combiner	
- Electrical damping, adjustable	0 100 s	two pressures	res
- Simulation function	Input /Output	- Monitoring of sensor limits	Yes
- Failure mode	parameterizable (last good value, substitute value, incorrect value)	- Simulation function: Measured pressure value, sensor temper-	Constant value or over parame- terizable ramp function
- Limit monitoring	Yes, one upper and lower warn- ing limit and one alarm limit respectively	ture	
Register (totalizer)	Can be reset, preset, optional direction of counting, simulation function of register output		
- Failure mode	parameterizable (summation with last good value, continuous summation, summation with incorrect value)		
- Limit monitoring	One upper and lower warning limit and one alarm limit respec- tively		
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		
 Gradual volume suppression and implementation point of square-root extraction 	Parameterizable		
 Simulation function for mea- sured pressure value and sen- sor temperature 	Constant value or over parame- terizable ramp function		

Pressure Measurement Transmitters for gauge pressure for the paper industry SITRANS P DS III

with PMC connection

Selection and Orderin	ig data	Ord	er N	N٥.			
SITRANS P pressure pressure, with PMC c series DS III with HAF	transmitters for gauge onnection IT	7 M	F 4	13	3		
Measuring cell filling	Measuring cell- cleaning						
Silicone oil	normal	1					
Inert liquid	grease-free to cleanliness level 2	3					
Measuring span (min.	max.)						
0.01 1 bar ¹⁾	(0.15 14.5 psi) ¹⁾	В					
0.04 4 bar	(0.58 58 psi)	С					
0.1.6 16 bar	(2.32 232 psi)	D					
Wetted parts material	S						
Seal diaphragm	Connection shank						
Hastelloy	Stainless steel		в				
 Process connection PMC Style Standard: PMC Style Minibolt: fr mum span: 500 mbai Non-wetted parts mathematic Housing made of die Housing stailage at a 	Thread 1½" ront-flush 1" (not with mini- · (7.25 psi) - version "B") erials -cast aluminium		2 3	0			
	er precision casting	-		3			
 Standard versions International version, documentation in 5 la (no order code select) 	English label inscriptions, Inguages on CD Iable)				1 2		
Explosion protection							
• None					1	4	
 Electrical connection Female thread M20 x Female thread ½-14 M12 connectors (stail 	/ cable entry 1.5 NPT nless steel) ²⁾					B C F	3
Display							
 Without display 							0
Without visible displa	y (display concealed,						1
 With visible display 							6
 With customer-specified, Order Code "Y2 	ic display (setting as spec- 1" required)						7

Available ex stock

Power supply units see Chap. 7 "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			r No	Э.		
SITRANS P pressure t pressure, with PMC co	ransmitter for gauge					
DS III with PROFIBUS	PA (PA)	7 M F	41	34	-	
DS III with FOUNDATIO	DN Fieldbus (FF)	7 M F	41	35	-	
				- 1		
Measuring cell filling	Measuring cell clean- ing					
Silicone oil	normal	1				
Inert liquid	grease-free to cleanliness level 2	3				
Nominal measuring ra	nge					
1 bar ¹⁾	(14.5 psi) ¹⁾	В				
4 bar	(58 psi)	С				
16 bar	(232 psi)	D				
Wetted parts materials	3					
Seal diaphragm	Connection shank					
Hastelloy	Stainless steel	В				
 Process connection²⁾ PMC Style Standard: Thread 1½" PMC Style Minibolt: front-flush 1" (minimum span: 500 mbar (7.25 psi), not available with 1-bar-measuring cell (Option B)) 			2 3			
 Non-wetted parts mate Housing made of die- Housing stainless stee 	e rials cast aluminium el precision casting		0 3			
Version						
 Standard versions 				1		
 International version, I documentation in 5 la (no order code selectation) 	English label inscriptions, nguages on CD able)			2		
Explosion protection		-				
None					A	
Electrical connection	cable entry					
Screwed gland M20x ⁻	1.5				В	
Screwed gland ½-14	NPT				С	
 M12 connectors (stair 	iless steel) ³⁾				F	
 Display Without display Without visible display ting: mA) With visible display 	(display concealed, set- ▶					0 1
With customer-specific fied, Order Code "Y2"	c display (setting as spec- I" required)					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

²⁾ Sealing is included in delivery.

³⁾ M12 delivered without cable socket

Pressure Measurement 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 "-Z" to Order No. and specify Order Code.				
Plug				
• Angled	A32	✓		
 Han 8D (metal, gray) 	A33	~		
M12 cable sockets (metal)	A50	✓	✓	✓
Rating plate inscription (instead of German)				
• English	B11	✓	✓	✓
• French	B12	✓	✓	✓
• Spanish	B13	√.	1	√
• Italian	B14	~	~	~
English rating plate	B21	1	1	~
Pressure units in inH ₂ 0 and/or psi				
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11	1	1	~
Inspection certificate	C12	✓	✓	✓
Acc. to EN 10204-3.1				
Factory certificate	C14	1	1	~
Acc. to EN 10204-2.2	•••			
"Functional safety (SIL2)" certificate acc. to IEC 61508	C20	~		
"Functional safety (SIL2/3)" certificate acc. to IEC 61508	C23	~		
Device passport Russia	C99	✓	1	~
(For price request please contact the technical				
www.siemens.com/automation/support-request)				
Output signal can be set to upper limit of 22.0mA	D05	~	•	~
Degree of protection IP65/IP68 (only for M20 x 1.5 and ½-14 NPT)	D12	*	~	~
Export approval Korea	E11	✓	✓	✓
Mounting				
Weldable sockets for standard 11/2"	P01	1	✓	✓
threaded connection	DOO			
(incl. screw 5/16-18 UNC-2B and washer)	P02	v	v	¥
,				

Selection and	Ordering data	Order	code		
Additional dat	la		HART	PA	FF
Please add " -Z Order code(s)	" to Order No. and specify and plain text.				
Measuring rar	nge to be set	Y01	✓		
Specify in plair Y01: up to	n text (max. 5 characters): . mbar, bar, kPa, MPa, psi				
Stainless stee	I tag plate (measuring point	Y15	~	✓	~
Max. 16 charac Y15:	cters, specify in plain text:				
Measuring po	int text	Y16	✓	✓	1
Max. 27 charac	cters, specify in plain text:				
Y16:			,		
May 8 charact	address (IAG)	¥17	•		
Y17:					
Setting of pres	ssure indication in pressure	Y21	~	✓	~
Specify in plair Y21: mbar, bar	n text (standard setting: bar): , kPa, MPa, psi,				
Note: The following r	pressure units can be selected.				
bar, mbar, mm	$H_2O^{*)}$, in $H_2O^{*)}$, ft $H_2O^{*)}$.				
mmHG, inHG,	psi, Pa, kPa, MPa, g/cm ² ,				
*) ref. temperat	ture 20 °C				
Setting of pres	ssure indication in non-	Y22 +	~		
pressure units	s ¹⁾	Y01			
Y22. up to	n text: I m ³ m USa				
(specification of	of measuring range in pressure				
acters)	essential, unit with max. 5 char-				
Preset bus ad	dress	Y25		1	1
possible betwe	en 1 and 126				
Max. 8 charact	ers, specify in plain text:				
0.000 "V01" and	"V21" cap be featory proper				
	f21 can be factory preset				
	an lo				
Item line:	7MF4133-1DB20-1AB7-7				
B line:	C11 + Y01 + Y21				
C line:	Y01: 1 10 bar (14.5 145	psi)			

¹⁾ Preset values can only be changed over SIMATIC PDM.

Y21: bar (psi)

C line:

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Pressure Measurement Transmitters for gauge pressure for the paper industry

SITRANS P DS III with PMC connection

Dimensional drawings



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

 ${\rm H_1}={\rm Height}$ of the SITRANS P DS III up to a defined cross-section

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

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



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

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

DN PN ØD H2 Image: Second second

PMC Style minibolt



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Pressure Measurement Transmitters for gauge pressure for the paper industry

SITRANS P300 with PMC connection

Technical specifications

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

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	HARI		PROFIBUS PA and FO	UNDATION Fleidbus	
Input		2			
Measured variable		Gauge pressu	ure (front-flush)		
Spans (infinitely adjustable) or nominal measuring range and max. pemissible test pressure	Span (min max.)	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure	
	0.01 1 bar (0.15 14.5 psi)	6 bar (87 psi)	1 bar (14.5 psi)	6 bar (87 psi)	
	0.04 4 bar (0.58 58 psi)	10 bar (145 psi)	4 bar (58 psi)	10 bar (145 psi)	
	0.16 16 bar (2.3 232 psi)	32 bar (464 psi)	16 bar (232 psi)	32 bar (464 psi)	
	Depending on the proce may differ from these va	Depending on the process connection, the span Depending on the process connection, nay differ from these values			
Lower measuring limit					
 Measuring cell with silicone oil 		100 mbar a	a (1.45 psia)		
Upper measuring limit					
 Measuring cell with silicone oil 	100 % of max. span		100 % of the max. nomi	inal measuring range	
Output					
Output signal	4 20 mA		Digital PROFIBUS PA si	gnal	
Physical bus	-		IEC 61158-2		
Protection against polarity reversal	Protected against sh	ort-circuit and polarity re max. supp	versal. Each connection bly voltage.	against the other with	
Electrical damping (step width 0.1 s)	Set to 2 s (0 100 s)				
Measuring accuracy	Acc. to IEC 60770-1				
Reference conditions (All error data always refer to the set span)	r Rising characteristic curve, start-of-scale value 0 bar, stainless steel seal diaphragm, measuring cell with silicone oil, room temperature 25 °C (77 °F), span ratio (r = max. span / set span)				
Error in measurement at limit setting incl. hysteresis and reproducibility					
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 · r + 0.05) %				
Step response time T ₆₃		appro	ox. 2 s		
Long-term stability at \pm 30 °C (\pm 54 °F)	≤ (0.25 · r) %/5 years		≤ 0.25 %/5 years		
Influence of ambient temperature					
• at -10 +60 °C (14 140 °F)	≤ (0.1 · r + 0.2) % ¹⁾		≤ 0.3 %		
• at -4010 °C and 60 85 °C (-40 14 °F and 140 185 °F)	≤ (0.1 · r + 0.15) %/10 K		≤ 0.25 %/10 K		
Influence of the medium temperature (only with front-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	the temperature class in	areas subject to explosion	on hazard.	
 Measuring cell with silicone oil 		-40 +85 °C ((-40 +185 °F)		
Display readable		-30 +85 °C ((-22 +185 °F)		
Storage temperature		-50 +85 °C ((-58 +185 °F)		
Climatic class					
Condensation	Co	Relative humi	dity 0 100 % suitable for use in the tro	pics	
Degree of protection acc. to EN 60520	IP65 IP68 NEM/	A 4X enclosure cleaning	resistant to lves steam	to 150 °C (302 °F)	
Electromagnetic Compatibility		t and the clear ling.		0000(0021)	
• 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 of	connection for the paper industry	
	HART	PROFIBUS PA and FOUNDATION Fieldbus
Medium conditions		
Temperature of medium		
 Measuring cell with silicone oil 	-40 +100 °C	(-40 +212 °F)
Design		
Weight (without options)	Approx. 1	kg (2.2 lb)
Enclosure material	Stainless steel, m	nat. no. 1.4301/304
Material of parts in contact with the medium		
Seal diaphragm	Hastelloy C276	, mat. no. 2.4819
Measuring cell filling	Silico	one oil
Surface quality touched-by-media	Ra-values \leq 0.8 µm (32 µ inch)/welds Ra ≤ 1.6 µm (64 µ inch)
Power supply U _H		
Terminal voltage on transmitter	10.5 42 V DC for intrinsically safe operation: 10.5 30 V DC	Supplied through bus
Separate power supply	-	Not necessary
Bus voltage		
• Without Ex	-	9 32 V
With intrinsically-safe operation	-	9 24 V
Current consumption		
Max. basic current	-	12.5 mA
 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	For gases of fluid group 1 and liquids of fluid g paragraph 3 (sound	group 1; complies with requirements of Article 3, engineering practice)
Explosion protection		
Intrinsic safety "i"	PTB 05 A	ATEX 2048
Marking	Ex II 1/2 G Ex ia/i	b IIB/IIC T4, T5, T6
Permissible ambient temperature		
Temperature class T4	-40 +85 °C	(-40 +185 °F)
Temperature class T5	-40 +70 °C	(-40 +158 °F)
Temperature class T6	-40 +60 °C	(-40 +140 °F)
Connection	To certified intrinsically-safe circuits with peak values:	To certified intrinsically-safe circuits with peak values:
	$\begin{array}{l} U_{i} = 30 \text{ V, } I_{i} = 100 \text{ mA}, \\ P_{i} = 750 \text{ mW}, \ R_{i} = 300 \ \Omega \end{array}$	
		$\overline{U_i} = 24 \text{ V}, I_i = 250 \text{ mA}, P_i = 1.2 \text{ W}$
Effective inner capacitance:	C _i = 6 nF	C _i = 1.1 nF
Effective internal inductance:	$L_i = 0.4 \text{ mH}$	$L_i \le 7 \ \mu H$
Explosion protection to FM for USA $\underline{\text{and}}$ 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, C CL I, DIV 2, GP ABCD T4	GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4 T6; T6; CL II, DIV 2, GP FG; CL III
 Identification (DIP) or (IS) 	Certificate of Com	npliance 3025099C
	CL I, DIV 1, GP ABCD T4 T6; CL II, DIV 1, GP ABCD T4 T6: CL	GP EFG; CL III; EX ia IIC 4 T6; CL I, DIV 2, II. DIV 2. GP FG: CL III

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

Pressure Measurement Transmitters for gauge pressure for the paper industry SITRANS P300 with PMC connection

		FOUNDATION Fishing		
	222 1122 0	COMPACTION FIELDUS		
HARI	230 1100 Ω	Function blocks	3 function blocks analog input.	
Protocol	HARI Version 5.x		1 function block PID	
Software for computer	SIMATIC PDM	 Analog input 		
PROFIBUS PA communication Simultaneous communication with	4	 Adaptation to customer- specific process variables 	Yes, linearly rising or falling characteristic	
master class 2 (max.)		- Electrical damping, adjustable	0 100 s	
The address can be set using	Configuration tool	- Simulation function	Output/input (can be locked	
	Local operation		within the device with a bridge)	
Cyclic data usage	(standard setting Address 126)	- Failure mode	parameterizable (last good value, substitute value, incorrect value)	
Output byte	One measured value: 5 bytes	- Limit monitoring	Yes, one upper and lower warn-	
	Two measured values: 10 bytes		ing limit and one alarm limit	
Input byte	Register operating mode:		respectively	
	Reset function due to metering	 Square-rooted characteristic for flow measurement 	Yes	
	1 bytes	• PID	Standard FOUNDATION Field-	
Device profile	PROFIBUS PA Profile for Pro-		bus function block	
	Version 3.0. Class B	 Physical block 	1 resource block	
Function blocks	2	Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block	
Analog input			LCD	
 Adaptation to customer-specif- ic process variables 	Linearly rising or falling charac- teristic	 Pressure transducer block Can be calibrated by applying 	Yes	
- Electrical damping	0 100 s adjustable	two pressures		
- Simulation function	Input /Output	- Monitoring of sensor limits	Yes	
- Limit monitoring	One upper and lower warning limit and one alarm limit respec- tively	 Simulation function: Measured pressure value, sensor temper- ature and electronics tempera- 	Constant value or over parame- terizable ramp function	
 Register (totalizer) 	Can be reset and preset	ture		
	Optional direction of counting			
	Simulation function of the regis- ter output			
- Limit monitoring	One upper and lower warning limit and one alarm limit respec- tively			
 Physical block 	1			
Transducer blocks	2			
Pressure transducer block				
- Monitoring of sensor limits	Yes			
 Specification of a container characteristic with 	Max. 31 nodes			
- Characteristic curve	Linear			
- Simulation function	Available			

• Transducer block "Electronic temperature"

Simulation function

Available

Pressure Measurement Transmitters for gauge pressure for the paper industry SITRANS P300 with PMC connection

Selection and Ordering	data	Ordor	No	-	election and Ordering	data	Ordor No
Selection and Ordening	y uala	Order	INO.			uala	Order No.
connection, single-char rating plate inscription ir	mber measuring housing, n English			c r	onnection, single-cham ating plate inscription in	ber measuring housing, English	
with 4 20 mA / HART		7 M F 8	123-	v	/ith 4 20 mA / HART		7 M F 8 1 2 3 -
with PROFIBUS PA		7 M F 8	124 -	v	ith PROFIBUS PA		7 M F 8 1 2 4 -
with FOUNDATION Fiel	ldbus (FF)	7 M F 8	125-	v	vith FOUNDATION Field	lbus (FF)	7 M F 8 1 2 5 -
				а. —			
Measuring cell filling Silicone oil Inert liquid	Measuring cell cleaning normal Cleanliness level 2 to DIN 25410	1 3			Vithout display, with key Without display, with key With display and keys, I With display and keys, I	ys, closed lid closed lid ⁶⁾ id with Makrolon pane	1 2 4
Measuring span 1 bar ¹⁾ 4 bar 16 bar	(14.5 psi) (58 psi) (232 psi)	B C D			(setting on HART device and FOUNDATION Field units) ⁶⁾ With display and keys (i	s: mA, with PHOFIBUS PA abus equipment: pressure setting acc. to specifica-	5
Wetted parts materials Seal diaphragm	Measuring cell				Makrolon pane ⁶⁾ With display and keys, li	or "Y22" required), lid with	6
Hastelloy	Stainless steel	в			on HART devices: mA,	with PROFIBUS PA and	
 PMC Style Standard: T PMC Style Minibolt: fro 500 mbar (7.25 psi), nd 1-bar-measuring cell (f 	Thread 1½" ont-flush 1" (minimum span: ot available with Option B))	2 3		F	With display (setting acc Code "Y21" or "Y22" req panel ⁶⁾ ower supply units see C	c. to specifications, Order uired), lid with glass hap. 7 "Supplementary Cor	7 nponents".
 Stainless steel, deep-c polished 	rials drawn and electrolytically		4	•	ncluded in delivery of the Brief instructions (Lepor CD-ROM with detailed of	e device: rello) documentation	
Version				•	sealing ring		
		-		1	Only with "Standard" pro	cess connection"	
 None With ATEX, Type of pro- "Intrinsic safety (Ex ia Zone 20/21/22²) Ex nA/nL (Zone 2)³) With FM + CSA, Type of - "Intrinsic Safe (is)" (p 	otection: a)" of protection: lanned)		A B C E M	3 4 5 6	 Not in conjunction with e Only available together v Only together with HART Without cable gland. Display cannot be turned 	lectrical connection option A. with electrical connection opti electronics.	ons B, C, F or G.
Electrical connection/c	able entry						
 Screwed gland M20 x Screwed gland M20 x Screwed gland M20 x M12 connectors (without the second seco	.5 (polyamide) ⁴⁾ 1.5 (metal) 1.5 (stainless steel) but cable socket) less steel), without cable d ⁵⁾ eel thread ⁵⁾		A B C F G H J				

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Selection and Ordering data	Order	code		
Further designs	Craci	HART	PA	FF
Add "- z " to Order No. and				
specify Order Code.				
Cable socket for M12 plug				
metal	A50		4	1
Stanness steel	ASI		•	•
Rating plate inscription				
German	B10	1	1	~
• French	B12	✓	✓	✓
• Spanish	B13	1	1	1
• Italian	B14	~	~	~
English rating plate Pressure units in inH ₂ 0 and/or psi	B21	~	1	1
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11	1	√	~
Inspection certificate Acc. to EN 10204-3.1	C12	~	~	~
Factory certificate Acc. to EN 10204-2.2	C14	~	1	~
Set output signal to upper limit of 22.0mA	D05	1	~	~
Degree of protection IP65/IP68	D12	1	~	~
(only for M20x1.5 and ½-14 NPT)				
Mounting • Weldable sockets for standard 11/2"	P01	~	~	~
 Weldable socket for minibolt connection 1" (incl. screw 5/16-18 UNC-28 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	1		
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 char., specify in plain text: Y15:				
Measuring point text Max_27 char_specify in plain text: Y16:	Y16	✓	~	~
Entry of HABT address (TAG)	V17	1		
Max 8 char, specify in plain taxt: V17:	•••			
Satting of pressure indication in	V21	1	1	1
pressure units	121	•	•	v
Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi, Note: The following pressure units can be selected:				
bar, mbar, mm H_2O^*), in H_2O^*), ft H_2O^*), mmHG, inHG, psi, Pa, kPa, MPa, g/cm ² , kg/cm ² , Torr, ATM or %				
Prei, temperature 20 °C	Vaa			
setting of pressure indication in non-pres-	Y01	v		
Specify in plain text:				
Y22: up to I, m ³ , m, USg, (specification of measuring range in pressure units "Y01" is essential unit with max 5 char-				
acters)				
Preset bus address	Y25		1	~
possible between 1 and 126				
Specity in plain text: Y25:				
Only "Y01" and "Y21" can be factory preset				

✓ = available

Pressure Measurement 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.

(33,4,1,31)

PMC Style Standard DN PN ØD H₂ 40.4 mm (1.6") Approx. 36.8 mm (1.4")

PMC Style Mini bolt



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

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

1

SITRANS P DS III Technical description

Overview



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

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

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

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

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

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

Benefits

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

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

Application

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

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

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

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

The pressure transmitter can be programmed locally using the 3 control buttons or externally via HART or PROFIBUS PA or FOUNDATION Fieldbus interface.

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

Span (infinitely adjustable)

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

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

Pressure transmitters for absolute pressure

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

Span (infinitely adjustable)

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

Nominal measuring range

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

There are two series:

- Gauge pressure series
- Differential pressure series

Pressure transmitters for differential pressure and flow

Measured variables:

- Differential pressure
- Small positive or negative pressure
- Flow q ~ √Δp (together with a primary differential pressure device (see Chap.ter "Flow Meters"))

Span (infinitely adjustable)

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

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

Pressure transmitters for level

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

Span (infinitely adjustable)

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

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

Nominal diameter of the mounting flange

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

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

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

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



Front view

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

The rating plate (7, Figure "Front view") with the 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 display. The inlet (8) for the electrical connection is located either on the left or right side. The unused opening on the opposite side is sealed by a blanking plug. The protective earth connection is located on the rear of the housing.

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

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

Example for an attached measuring point label



SITRANS P DS III **Technical description**

Function

Operation of electronics with HART communication



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

Function diagram of electronics

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

The diode circuit (10) protects against incorrect polarity.

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

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

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

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





- 7 **PROFIBUS-PA** interface
- p.

Function diagram of electronics

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

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

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

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

SITRANS P DS III Technical description

Operation of electronics with FOUNDATION Fieldbus communication



Function diagram of electronics

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

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

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

The results with status values and diagnostic values are transferred by cyclic data transmission on the 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 $_{p}e$ is applied through the process connection (2, Figure "Measuring cell for gauge pressure, with front-flush diaphragm for paper industry, function diagram") to the measuring cell (1). This pressure is subsequently transmitted further through the seal diaphragm (3) and the filling liquid (4) to the silicon pressure sensor (5) whose measuring diaphragm is then flexed. This changes the resistance of the four piezo-resistors fitted in the diaphragm in a bridge circuit. This change in resistance results in a bridge output voltage proportional to the absolute pressure.

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 pe is transmitted through the seal diaphragm (3, Figure "Measuring cell for absolute pressure from pressure series, gauge pressure, function diagram ") and the filling liquid (4) to the silicon absolute pressure sensor (5) whose measuring diaphragm is then flexed. This changes the resistance of the four piezo-resistors fitted in the diaphragm in a bridge circuit. This change in resistance results in a bridge output voltage proportional to the absolute pressure.

Measuring cell for absolute pressure from differential pressure series



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

The input pressure pe 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 pe 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



- 3 Seal diaphragm
- 4 Body of measuring cell
- Overload diaphragm 5
- Silicon pressure sensor
- Filling liquid 9
- 10 Capillary with filling liquid of mounting flange

Measuring cell for level, function diagram

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

This changes the resistance of the four piezo-resistors fitted in the diaphragm in a bridge circuit.

This change in resistance results in a bridge output voltage proportional to the differential pressure.

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

SITRANS P DS III Technical description

Parameterization DS III

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

Parameterization using the input buttons (local operation)

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

Parameterization using HART

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



Communication between a HART Communicator and a pressure transmitter

When parameterizing with the HART Communicator, the 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 with HART

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

²⁾ Only differential pressure

Diagnostic functions for DS III with HART

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

Available physical units of display for DS III with HART

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 ² , kg/cm ² , inH ₂ O, inH ₂ O (4 °C), mmH ₂ O, ftH ₂ O (20 °C), inHg, mmHg
Level (height data)	m, cm, mm, ft, in
Volume	m ³ , dm ³ , hl, yd ³ , ft ³ , in ³ , US gallon, Imp. gallon, bushel, barrel, barrel liquid
Mass	g, kg, t, lb, Ston, Lton, oz
volume flow	$\rm m^{3}/d,m^{3}/h,m^{3}/s,l/min,l/s,ft^{3}/d,ft^{3}/min,ft^{3}/s,US$ gallon/min, US gallon/s
Mass flow	t/d, t/h, t/min, kg/d, kg/h, kg/min, kg/s, g/d, g/h, g/min, g/s, lb/d, lb/h, lb/min, lb/s, LTon/d, LTon/h, STon/d, STon/h, STon/min
Temperature	K, °C, °F, °R
Miscellaneous	%, mA

Parameterization through PROFIBUS PA interface

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

For parameterization through PROFIBUS you need suitable software, e.g. SIMATIC PDM (Process Device Manager).

Parameterization through FOUNDATION Fieldbus interface

Fully digital communication through FOUNDATION Fieldbus is particularly user-friendly. Through the FOUNDATION Fieldbus the DS III with FOUNDATION Fieldbus is connected to a process control system. Communication is possible even in a potentially explosive environment.

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

Adjustable parameters for DS III with PROFIBUS PA and FOUNDATION Fieldbus

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

SITRANS P DS III Technical description

Diagnostic functions for DS III with PROFIBUS PA and FOUNDATION Fieldbus

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

Physical dimensions available for the display

Physical variable	Physical dimensions
Pressure (setting can also be made in the factory)	$\begin{array}{l} \mbox{MPa, kPa, Pa, bar, mbar, torr, atm, psi,} \\ \mbox{g/cm}^2, \mbox{kg/cm}^2, \mbox{mm}_20, \mbox{mm}_20 \mbox{ (4 °C),} \\ \mbox{inH}_20, \mbox{inH}_20 \mbox{ (4 °C), ftH}_20 \mbox{ (20 °C),} \\ \mbox{mmHg, inHg} \end{array}$
Level (height data)	m, cm, mm, ft, in, yd
Volume	m ³ , dm ³ , hl, yd ³ , ft ³ , in ³ , US gallon, Imp. gallon, bushel, barrel, barrel liquid
volume flow	$m^3/s,m^3/min,m^3/h,m^3/d,l/s,l/min,l/h,l/d,Ml/d,ft^3/s,ft^3/min,ft^3/h,ft^3/d,US gallon/s,US gallon/min,US gallon/h,US gallon/d,bbl/s,bbl/min,bbl/h,bbl/d$
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

orritation, bo in series for gauge pressure	SITRANS P	, DS III series	for gauge	pressure
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	HART		PROFIBUS PA and FOL	JNDATION Fieldbus
Input				
Measured variable		Gauge	oressure	
Spans (infinitely adjustable) or nominal measuring range and	Span (min max.)	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure
max. permissible test pressure	0.01 1 bar (0.15 14.5 psi)	6 bar (87 psi)	1 bar (14.5 psi)	6 bar (87 psi)
	0.04 4 bar (0.58 58 psi)	10 bar (145 psi)	4 bar (58 psi)	10 bar (145 psi)
	0.16 16 bar (2.32 232 psi)	32 bar (464 psi)	16 bar (232 psi)	32 bar (464 psi)
	0.6 63 bar (9.14 914 psi)	100 bar (1450 psi)	63 bar (914 psi)	100 bar (1450 psi)
	1.6 160 bar (23.2 2320 psi)	250 bar (3626 psi)	160 bar (2320 psi)	250 bar (3626 psi)
	4.0 400 bar (58 5802 psi)	600 bar (8700 psi)	400 bar (5802 psi)	600 bar (8700 psi)
	7.0 700 bar (102 10153 psi)	800 bar (11603 psi)	700 bar (10153 psi)	800 bar (11603 psi)
Lower measuring limit				
 Measuring cell with silicone oil filling 		30 mbar a	(0.44 psia)	
 Measuring cell with inert filling liquid 		30 mbar a	(0.44 psia)	
Upper measuring limit	100 % of max. spa	n (for oxygen version and	d inert filling liquid; max.	120 bar (1740 psi))
Output				
Output signal	4 20 mA		Digital PROFIBUS PA an bus signal	d FOUNDATION Field-
 Lower limit (infinitely adjustable) 	3.55 mA, factory preset	to 3.84 mA	-	
Upper limit (infinitely adjustable)	23 mA, factory preset to set to 22.0 mA	20.5 mA or optionally	-	
Load				
Without HART	$R_{\rm B} \le (U_{\rm H}$ - 10.5 V)/0.023 A in Ω, $U_{\rm H}$: Power supply in V		-	
With HART	$R_{\rm B}$ = 230 500 Ω (SIN $R_{\rm B}$ = 230 1100 Ω (HA	IATIC PDM) or RT Communicator)	-	
Physical bus	-		IEC 61158-2	
Protection against polarity reversal	Protected against short	-circuit and polarity rever supply	sal. Each connection aga voltage.	ainst the other with max.
Electrical damping (step width 0.1 s)		Set to 2 s (0 100 s)	
Measuring accuracy		Acc. to IE	C 60770-1	
Reference conditions (All error data refer always refer to the set span)	Increasing characteristic ing, room ten	c, start-of-scale value 0 b nperature 25 °C (77 °F)) r	ar, stainless steel seal di : Span ratio (r = max. spa	aphragm, silicone oil fill- an / set span)
Error in measurement at limit setting incl. hysteresis and reproducibility				
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	≤ (0.005 · r + 0.05) %			
Long-term stability (temperature change \pm 30 °C (± 54 °F))				
• 1 4-bar measuring cell	≤ (0.25 · r) % per 5 year	S	≤ 0.25 % per 5 years	
• 16 400-bar measuring cell	≤ (0.125 · r) % per 5 yea	Irs	\leq 0.125 % per 5 years	
Influence of ambient temperature				
• at -10 +60 °C (14 140 °F)	$\leq (0.08 \cdot r + 0.1) \%^{1}$ (at 700 bar: $\leq (0.1 \cdot r + 0.1)$).2) % ²⁾	≤ 0.3 %	
• at -4010 °C and +60 +85 °C (-40 +14 °F and 140 185 °F)	≤ (0.1 · r + 0.15) %/10 K		≤ 0.25 %/10 K	
Measured Value Resolution	-		3 · 10 ⁻⁵ of nominal meas	uring range

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© 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
Rated conditions		
Degree of protection (to EN 60529)	IP65 (option	al IP65/IP68)
Temperature of medium		
 Measuring cell with silicone oil filling 	-40 +100 °C	(-40 +212 °F)
 Measuring cell with inert filling liquid 	-20 +100 °C	C (-4 +212 °F)
 In conjunction with dust explosion protection 	-20 +60 °C	(-4 +140 °F)
Ambient conditions		
Ambient temperature		
- Display readable	-30 +85 °C ((-22 +185 °F)
Storage temperature	-50 +85 °C ((-58 +185 °F)
Climatic class		
- Condensation	Relative humi	dity 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 (≈ 3.3 lb)	
Enclosure material	Low-copper die-cast aluminum, GD-AISi 12 or stainless steel precision casting, mat. no. 1.4408	
Wetted parts materials		
 Connection shank 	Stainless steel, mat. no. 1.4404/316L or Hastelloy C4, mat. no. 2.4610	
• Oval flange	Stainless steel, mat. no. 1.4404/316L	
 Seal diaphragm 	Stainless steel, mat. no. 1.4404/316	L or Hastelloy C276, mat. no. 2.4819
Measuring cell filling	Silicone oil or i (maximum value with oxygen measurement p	nert filling liquid oressure 100 bar (1450 psi) at 60 °C (140 °F))
Process connection	Connection shank G½B to DIN EN 837- (PN 160 (MAWP 2320 psi)) to DIN 19213 with m	1, female thread ½ -14 NPT or oval flange nounting 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, n	nat. no. 1.4301 (SS 304)
Power supply $U_{\rm H}$		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

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 fluic paragraph 3 (soun	d group 1; complies with requirements of article 3, d engineering practice)		
Explosion protection				
Intrinsic safety "i"	PTB 11	PTB 11 ATEX 2011 X		
- Marking	Ex II 1/2 G Ex ia/	ib IIC T4/T5/T6 Ga/Gb		
- Permissible ambient temperature	-40 +85 °C (-40 +1 -40 +70 °C (-40 +1 -40 +60 °C (-40 +	85 °F) temperature class T4; 58 °F) temperature class T5; 140 °F) temperature class T6		
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}, \ l_i = 100 \text{ mA},$ $P_i = 750 \text{ mW}; \ P_i = 300 \Omega$	FISCO supply unit: $U_{o} = 17.5$ V, $I_{o} = 380$ mA, $P_{o} = 5.32$ W Linear barrier: $U_{o} = 24$ V, $I_{o} = 174$ mA, $P_{o} = 1$ W		
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 ~{\rm mH}, ~C_{\rm i} = 6 ~{\rm nF}$	$L_{\rm i} = 7 \ \mu {\rm H}, \ C_{\rm i} = 1.1 \ {\rm nF}$		
• Explosion-proof "d"	PTB 99	PTB 99 ATEX 1160		
- Marking	Ex II 1/2 G E	Ex II 1/2 G Ex d IIC T4/T6 Gb		
- Permissible ambient temperature	-40 +85 °C (-40 +1 -40 +60 °C (-40 +	85 °F) temperature class T4; 140 °F) temperature class T6		
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC	To circuits with values: $U_{\rm H}$ = 9 32 V DC		
Dust explosion protection for zone 20	PTB 01	ATEX 2055		
- Marking	Ex II 1 D IP65 T 120 ℃ Ex II 1/2 D IP65 T 120 ℃			
- Permissible ambient temperature	-40 +85 °C	C (-40 +185 °F)		
- Max. surface temperature	120 °	C (248 °F)		
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}, \ l_i = 100 \text{ mA},$	FISCO supply unit: $U_{o} = 17.5 \text{ V}$, $I_{o} = 380 \text{ mA}$, $P_{o} = 5.32 \text{ W}$ Linear barrier:		
	$P_{\rm i} = 750 \; {\rm mW}, \; R_{\rm i} = 300 \; {\Omega}$	$U_{\rm o} = 24$ V, $I_{\rm o} = 250$ mA, $P_{\rm o} = 1$ W		
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{\rm i} = 7 \ \mu {\rm H}, \ C_{\rm i} = 1.1 \ {\rm nF}$		
Dust explosion protection for zone 21/22	PTB 01	ATEX 2055		
- Marking	Ex II 2 D	IP65 T 120 °C		
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC; $P_{\rm max}$ = 1.2 W	To circuits with values: $U_{\rm H}$ = 9 32 V DC; $P_{\rm max}$ = 1 W		
 Type of protection "n" (zone 2) 	PTB 11	ATEX 2011 X		

Ex II 2/3 G Ex nA II T4/T5/T6 Gc Ex II 2/3 G Ex ic IIC T4/T5/T6 Gc

 $U_{\rm m} = 32 \text{ V}$

• Type of protection "n" (zone 2)

- Marking

- Connection (Ex nA)

- Connections (Ex ic)	To circuits with values: $U_{\rm i} = 45 {\rm V}$	FISCO supply unit ic: $U_0 = 17.5 \text{ V}, I_0 = 570 \text{ mA}$			
		Linear barrier: $U_0 = 32 \text{ V}, I_0 = 132 \text{ mA}, P_0 = 1 \text{ W}$			
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{\rm i} = 7 \ \mu {\rm H}, \ C_{\rm i} = 1,1 \ {\rm nF}$			
 Explosion protection acc. to FM 	Certificate of Compliance 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; DIV 2, GP ABCD T4T6; CL II, DIV 2, GP FG; CL III				
 Explosion protection to CSA 	Certificate of Compliance 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 AB				

T4...T6; CL II, DIV 2, GP FG; CL III

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

 $U_{\rm m} = 45 \text{ V}$

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

3 function blocks analog input, 1 function block PID

Yes, linearly rising or falling

Output/input (can be locked within the device with a bridge)

parameterizable (last good value, substitute value, incorrect

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

1 transducer block Pressure with calibration, 1 transducer block

Constant value or over parameterizable ramp function

Standard FOUNDATION Fieldbus function block

1 resource block

characteristic 0 ... 100 s

value)

Yes

LCD

Yes

Yes

respectively

Pressure Measurement Transmitters for general requirements

SITRANS P DS III for gauge pressure

HABT communication		
HART	230 1100 0	communication
Protocol	HABT Version 5 x	Function blocks
Software for computer	SIMATIC PDM	
PROFIBUS PA communication		Analog input
Simultaneous communication with	4	 Adaptation to customer-specif- ic process variables
The address can be actuained	Configuration tool or local oppra	- Electrical damping, adjustable
The address can be set using	tion (standard setting address 126)	- Simulation function
Cyclic data usage		- Failure mode
Output byte	5 (one measured value) or 10 (two measured values)	- Limit monitoring
Input byte	0, 1, or 2 (register operating mode and reset function for metering)	- Square-rooted characteristic
Internal preprocessing		for flow measurement
Device profile	PROFIBUS PA Profile for Pro- cess Control Devices Version	• PID
	3.0, Class B	 Physical block
Function blocks	2	Transducer blocks
Analog input		
 Adaptation to customer-specif- ic process variables 	Yes, linearly rising or falling characteristic	Pressure transducer block
- Electrical damping, adjustable	0 100 s	 Can be calibrated by applying two pressures
- Simulation function	Input /Output	- Monitoring of sensor limits
- Failure mode	parameterizable (last good value, substitute value, incorrect value)	 Simulation function: Measured pressure value, sensor temper-
- Limit monitoring	Yes, one upper and lower warn- ing limit and one alarm limit respectively	ature and electronics tempera- ture
Register (totalizer)	Can be reset, preset, optional direction of counting, simulation function of register output	
- Failure mode	parameterizable (summation with last good value, continuous summation, summation with incorrect value)	
- Limit monitoring	One upper and lower warning limit and one alarm limit respec- tively	
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	
 Gradual volume suppression and implementation point of square-root extraction 	Parameterizable	
- Simulation function for mea- sured pressure value and sen-	Constant value or over parame- terizable ramp function	

sor temperature

SITRANS P DS III for gauge pressure

Selection and Ordering		Order No.						
Pressure transmitter for gauge pressure,						33	-	
SITRANS P DS III WILLI HART						-		ы
Measuring cell filling	Measuring cell clean- ing							
Silicone oil	normal	►	1					
Inert liquid ¹⁾	grease-free to		3					
	cleanliness level 2							
Measuring span (min.	max.)							
0.01 1 bar	(0.15 14.5 psi)		E	3				
0.04 4 bar	(0.58 58 psi)		0	Ż				
0.16 16 Dar	(2.32 232 psi)		L	,				
1.6 160 bar	(9.14 914 psi) (23.2 2320 psi)		6					
4.0 400 bar	(58.0 5802 psi)		Ċ	ì				
7.0 700 bar	(102.0 10153 psi)		J	j				
Wetted narts materials								
Seal diaphragm	Process connection							
Stainless steel	Stainless steel			A				
Hastelloy	Stainless steel			в				
Hastelloy	Hastelloy			С				
Version as diaphragm s	eal ^{2) 3) 4) 5)}			Y				
Process connection								
Connection shank G ¹ /2	B to EN 837-1	►			0			
 Female thread ½-14 N 	IPT				1			
Stainless steel oval fla	nge with process connec	-						
- Mounting thread 7/	-20 LINE to IEC 61518				2			
- Mounting thread M1	D to DIN 19213				3			
 Mounting thread M1 	2 to DIN 19213				4			
Male thread M20 x 1.5			5					
Male thread 1/2 -14 NP	Т				6			
Non-wetted parts mate								
Housing made of die-	cast aluminium	►			0			
Housing stainless stee	el precision casting ⁶⁾				3			
Version								
 Standard versions 						1		
International version, I	English label inscriptions,	►				2		
documentation in 5 la	nguages on CD							
		_						
None							Δ	
With ATEX. Type of pro	ptection:						î	
- "Intrinsic safety (Ex i	a)"						в	
- "Explosion-proof (Ex	d)" ⁷⁾						D	
- "Intrinsic safety and	flameproof enclosure"						Ρ	
(Ex ia + Ex d) ^{#8)}							_	
- "Ex nA/ic (Zone 2)" ³⁾					E			
 Intrinsic safety, expl dust explosion prote Zone 1D/2D)^{*8)} 					к			
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX)							s	
• With FM + CSA, Type of protection:								
 "Intrinsic Safe und Explosion Proof (is + xp)"⁷⁾ 							NC	;
Electrical connection / cable entry								
 Screwed gland Pg 13.5 (adapter)¹⁰⁾ 							A	۱.
Screwed gland M20 x	1.5						B	3
Screwed gland ¹ / ₂ -14 I	NPT						C	
 Han /D plug (plastic h connector¹⁰⁾ 	nousing) incl. mating						D	1
 M12 connectors (stair 	less steel) ¹⁰⁾¹¹⁾						F	
	/							

Selection and Ordering data	Order No.	
Pressure transmitter for gauge pressure,	7 M F 4 0 3 3 -	
SITRANS P DS III WILLI HART		
Display		
 Without display 	0	
 Without visible display (display concealed, setting: mA) 	1	
 With visible display, setting: mA 	6	
with customer-specific display (setting as spec- ified, Order Code "Y21" or "Y22" required)	7	
Available ex stock		

Power supply units see Chap. 7 "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 total 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⁾ The diaphragm seal is to be specified with a separate order number and must be included with the transmitter order number, for example 7MF403.-..Y..-... and 7MF4900-1...-.B
- $^{\rm 5)}$ The standard measuring cell filling of configurations with remote seals (Y) is silicone oil
- 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 Ex ia and blanking plug
- ⁹⁾ Configurations with HAN and M12 connectors are only available in Ex ic.
- ¹⁰⁾Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".
- 11)M12 delivered without cable socket

Pressure Measurement Transmitters for general requirements

for gauge pressure

Selection and Orderin	g data	Order N	0.	Selection and Ordering data	Order No.
Pressure transmitter f	or gauge pressure			Pressure transmitter for gauge pressure	
SITRANS P DS III with	PROFIBUS PA (PA)	7 M F 4 0	34 -	SITRANS P DS III with PROFIBUS PA (PA)	7 M F 4 0 3 4 -
SITRANS P DS III with (FF)	FOUNDATION Fieldbus	7 M F 4 0	35-	5 - SITRANS P DS III with FOUNDATION Fieldbus 71 (FF)	
			-		
Measuring cell filling	Measuring cell clean-			Display	
Silicone oil Inert liquid ¹⁾	normal grease-free to cleanliness level 2	1 3		 Without display Without visible display (display concealed, setting: bar) With visible display 	0 1 6
Nominal measuring ra	inge (14 Fraci)			 with customer-specific display (setting as spec- ified, Order Code, "Y21" required) 	7
1 bar 4 bar	(14.5 psi) (58 psi)	В			
4 Dai 16 har	(30 psi) (232 nsi)	D		Available ex stock	
63 bar	(914 psi)	E		Included in delivery of the device: Brief instructions (Lenorello)	
160 bar	(2320 psi)	F		CD-ROM with detailed documentation	
400 bar	(5802 psi)	G			
700 bar	(10153 psi)	J		 '' For oxygen application, add Order code E10. When the manufacture's certificate (celibration certificate) 	(aata) haa ta ha
Wetted parts materials	6			ordered for transmitters with diaphragm seals accord	ding to IEC 60770-2, it
Seal diaphragm	Process connection			is recommended only to order this certificate exclusi phragm seals. The measuring accuracy of the <u>total</u> co	vely with the dia- ombination is certified
Hastellov	Stainless steel	B		nere. 3) If the account of the test south in the count of the sector of	
Hastellov	Hastellov	č		mounted diaphragm seals this certificate must also b	be ordered with the
Version as diaphragm s	seal 2) 3) 4) 5)	Y		respective remote seals.	
Process connection		-		4) The diaphragm seal is to be specified with a separat must be included with the transmitter order number	e order number and
 Connection shank G¹/₂ Female thread ¹/₂-14 N 	2B to EN 837-1 NPT	0 1		7MF403and 7MF4900-1B	with remote seals (V)
Stainless steel oval fla tion female thread 1/4-	ange with process connec- 18 NPT ⁶⁾			 ⁶⁾ M10 fastening thread: Max. span 160 bar (2320 psi) 	with remote seals (1)
 Mounting thread ⁷/₁₀ 	₆ -20 UNF to IEC 61518	2		7/16-20 UNF and M12 fastening thread: Max. span 4	00 bar (5802 psi)
 Mounting thread M1 	0 to DIN 19213	3		7) Without cable gland, with blanking plug.	
- Mounting thread M1	2 to DIN 19213	4		⁸⁾ With enclosed cable gland Ex ia and blanking plug.	
Male thread M20 x 1.5		5		⁹⁾ Configurations with HAN and M12 connectors are or	ly available in Ex ic.
• Male Infead /2 - 14 NP	· · ·	0		¹⁰⁾ M12 delivered without cable socket	
 Non-wetted parts mate Housing made of die- Housing stainless stee 	erials cast aluminium el precision casting	0		¹¹⁾ Not available with protection type "Ex d" bestellbar (¹²⁾ Not with protection types "Explosion-proof" and prote "Intrinsic safe" and "Explosion proof".	Options D, P, N and R) ection type "Ex nA",
Version		-			
 Standard versions International version, documentation in 5 la (no order code select) 	English label inscriptions, nguages on CD able)		1 2		
Explosion protection					
None			Α		
With ATEX, Type of prot	ection:				
"Intrinsic safety (Ex ia)"			в		
"Explosion-proof (Ex.d)"	7)		D		
"Intrinsic safety and flar (Ex ia + Ex d)" ⁸⁾	neproof enclosure"		Ρ		
"Ex nA/ic (Zone 2)" ⁹⁾			E		
"Intrinsic safety, explosi dust explosion protectio Zone 1D/2D)" ⁸⁾ (not for	on-proof enclosure and on (Ex ia + Ex d + DS III FF)		R		
FM + CSA (is + ep) + E	ix ia + Ex d (ATEX)		S		
With FM + CSA, Type of	f protection:				
"Intrinsic Safe und Expl	osion Proof (is + xp)" ⁷⁾		NC		
Electrical connection/	cable entry				
Screwed gland M20 x	(1.5		В		
Screwed gland ¹ / ₂ -14	NPT		С		
 M12 connectors (stair 	niess steel) (17, 17, 12)		F		

SITRANS P DS III for gauge pressure

Selection and Ordering data	Order	code			
Further designs		HART	PA	FF	
Add -2 to Order No. and specify Order Code.			_		
bracket (2 shackles, 4 nuts, 4 U-plates,					
1 angle) made of:		,	,	,	
Steel Stainloss steel	AU1	×	× -	×	
Plug	AUZ	•	•	•	
• Han 7D (metal, gray)	A30	✓			
Han 8U (instead of Han 7D)	A31	1			
Angled Han 8D (motal, grav)	A32	4			
Cable sockets for M12 connectors	A50	1	1	1	
(stainless steel)	AUU	·	•	•	
Rating plate inscription (instead of German)					
• English	B11	1	1	1	
French Spanish	B12	4	4	4	
Italian	B13	↓	1	1	
English rating plate	B21	1	1	~	
Pressure units in inH ₂ 0 and/or psi					
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2 ¹⁾	C11	1	✓	1	
Inspection certificate ²⁾	C12	~	~	~	
Factory certificate	C14	~	✓	✓	
Acc. to EN 10204-2.2		,			
"Functional safety (SIL2)" certificate to IEC 61508	C20	~	,		
"Functional safety" certificate (PROFIsate) and PROFIsate protocol	C21		~		
"Functional safety (SIL2/3)" certificate to IEC 61508	C23	1			
Device passport Russia (For price request please contact the technical support	C99	1	~	~	
www.siemens.com/automation/support-request)					
Setting of upper limit of output signal to 22.0 mA	D05	~			
Manufacturer's declaration acc. to NACE	D07	~	1	~	
Degree of protection IP65/IP68 (only for M20x1.5 and ½-14 NPT)	D12	~	✓	✓	
Supplied with oval flange	D37	1	1	~	
(1 item), PTFE packing and screws in thread of oval flange					
Use in or on zone 1D/2D	E01	✓	✓	✓	
(only together with type of protection					
(transmitter 7MF4B Ex ia)")					
Oxygen application	E10	~	~	~	
(In the case of oxygen measurement and inert liquid max. 100 bar (1450 psi) at 60 $^{\circ}C$ (140 $^{\circ}F))$					
Export approval Korea	E11	~	✓	✓	
Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil)	E25	1	*	✓	
	F 00	,	,	,	
ing to INMETRO (Brazil) (only for transmitter 7MF4D)	E20	¥	¥	v	
Explosion-proof "Intrinsic safety" (Ex ia +	E28	~	~		
(only for transmitter 7MF4P)					
Ex Approval IEC Ex (Ex ia)	E45	1	~	~	
(only for transmitter 7MF4B)					
Ex Approval IEC Ex (Ex id) (only for transmitter 7MF4D)	E46	~	~	~	

Selection and Ordering data	Order	code		
<i>Further designs</i> Add "- Z " to Order No. and specify Order Code.		HART	PA	FF
Explosion-proof "Intrinsic safety" to NEPSI (China)	E55	1	✓	1
Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)	E56	~	1	1
Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)	E57	~	~	~
"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (only for transmitter 7MF4[B, D]Z + E11)	E70	•	•	✓
Two coats of lacquer on casing and cover (PU on epoxy)	G10	1	✓	1

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SITRANS P DS III for gauge pressure

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 (max. 5 characters): Y01: up to mbar, bar, kPa, MPa, psi	Y01	1		
Stainless steel tag plate (measuring point description) Max. 16 characters, specify in plain text: Y15:	Y15	1	•	~
Measuring point text Max. 27 characters, specify in plain text: Y16:	Y16	*	1	~
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: mbar, bar, kPa, MPa, psi,	Y21	1	•	~
The following pressure units can be selected: bar, mbar, mm H_2O^*), in H_2O^*), ft H_2O^*), mmHG, inHG, psi, Pa, kPa, MPa, g/cm ² , kg/cm ² , Torr, ATM or % *) ref. temperature 20 °C				
Setting of pressure indication in non-pressure units ³) Specify in plain text: Y22: up to //min, m ³ /h, m, USgpm, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 char- acters)	Y22 + Y01	1		
Preset bus address	Y25		✓	✓
possible between 1 and 126 Specify in plain text: Y25:				

Factory mounting of valve manifolds, see accessories.

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

✓ = available

ordering example

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

- 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 <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⁾ Preset values can only be changed over SIMATIC PDM.

SITRANS P DS III for gauge pressure

Dimensional drawings



- (longer overall length for cover with window)¹⁾
- 2 Terminal side¹⁾
- 3 Electrical connection:
 - Screwed gland Pg 13,5 (adapter)(Adapter)^{2) 3)}, Screwed gland M20 x 1,5 or Screwed gland ½-14 NPT or Han 7D/Han 8D2) 3) plug
- (4) Harting adapter
- 1) Allow approx. 20 mm (0.79 inch) thread length to permit unscrewing
- Not with type of protection "Explosion-proof enclosure" Not with type of protection "FM + CSA" [IS + XP]" 2)
- 3)
- 4) For Pg 13,5 with adapter approx. 45 mm (1.77 inch)
- 5) Minimum distance for rotating

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



- 5 Protective cover over keys
- 6 Blanking plug
- (7)Screw cover - safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)
- (8) Process connection: Connection shank G½B or Oval flange
- (9) Mounting bracket (option)

Pressure Measurement

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

Technical specifications

SITRANS P DS III series for gauge and absolute pressure, with front-flush diaphragm							
	HART PROFIBUS PA and FOUNDATION Fieldbus						
Input of gauge pressure, with front-flush diaphragm							
Measured variable	Gauge pressure, front-flush						
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span (min max.)	Max. perm. test pres- sure	Nominal measuring range	Max. perm. test pres- sure			
	0.01 1 bar (0.15 14.5 psi)	6 bar (87 psi)	1 bar (14.5 psi)	6 bar (87 psi)			
	0.04 4 bar (0.58 58 psi)	10 bar (145 psi)	4 bar (58 psi)	10 bar (145 psi)			
	0.16 16 bar (2.32 232 psi)	32 bar (464 psi)	16 bar (232 psi)	32 bar (464 psi)			
	0.6 63 bar (9.14 914 psi)	100 bar (1450 psi)	63 bar (914 psi)	100 bar (1450 psi)			
Lower measuring limit		100 mbar a	a (1.45 psia)				
Upper measuring limit	100 % of max. span		100 % of the max. nomi	nal measuring range			
Input 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 (min max.)	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure			
	43 1300 mbar a (0.62 18.85 psia)	10 bar a (145 psia)	1300 mbar a (18.85 psia)	10 bar a (145 psia)			
	0.16 5 bar a (2.32 72.5 psia)	30 bar a (435 psia)	5 bar a (72.5 psia)	30 bar a (435 psia)			
	1 30 bar a (14.5 435 psia)	100 bar a (1450 psia)	30 bar a (435 psia)	100 bar a (1450 psia)			
Lower measuring limit		0 bar a	(0 psia)				
Upper measuring limit	100 % of max. span		100 % of the max. nomi	nal measuring range			
Output Output signal	4 20 mA		Digital PROFIBUS PA ar bus signal	nd FOUNDATION Field-			
 Lower limit (infinitely adjustable) 	3.55 mA, factory preset	to 3.84 mA	-				
Upper limit (infinitely adjustable)	23 mA, factory preset to set to 22.0 mA	20.5 mA or optionally	-				
Load							
Without HART	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.02$ $U_{\rm H}$: Power supply in V	3 A in Ω,	-				
• With HART	$R_{\rm B}$ = 230 500 Ω (SIM $R_{\rm B}$ = 230 1100 Ω (HA	IATIC PDM) or RT Communicator)	-				
Physical bus	-		IEC 61158-2				
Protection against polarity reversal	Protected against short	circuit and polarity reve- supply	sal. Each connection aga voltage.	ainst the other with max.			
Electrical damping (step width 0.1 s)		Set to 2 s	(0 100 s)				
Measuring accuracy		Acc. to IE	C 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	oar, stainless steel seal di 5 °C (77 °F)) r: Span ratic an / set span)	iaphragm, silicone oil fill-)			
Error in measurement at limit setting incl. hysteresis and reproducibility							
	Gauge pressure, front-flush	Absolute pressure, front-flush	Gauge pressure, front-flush	Absolute pressure, front-flush			
Linear characteristic			≤ 0.075 %	≤ 0.2 %			
- r ≤ 10	$\leq (0.0029 \cdot r + 0.071) \%$	≤ 0.2 %					
$-10 < r \le 30$	$\leq (0.0045 \cdot r + 0.071) \%$	≤ 0.4 %					
$-30 < r \le 100$	$\leq (0.005 \cdot r + 0.05) \%$						
(temperature change \pm 30 °C (\pm 54 °F))	≤ (0.25 · r) % per 5 years		≤ 0.25 % per 5 years				

1

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

SITRANS P DS III series for gauge and absolu	te pressure, with front-	flush diaphragm			
	HART		PROFIBUS PA and FO	OUNDATION Fieldbus	
	Gauge pressure, front-flush	Absolute pressure, front-flush	Gauge pressure, front-flush	Absolute pressure, front-flush	
Influence of ambient temperature					
• at -10 +60 °C (14 140 °F)	≤ (0.1 · r + 0.2) % ¹⁾	≤ (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	
Influence of mounting position		0.1 mbar (0.04 inH ₂ 0	O) per 10° inclination		
Measured Value Resolution	-		3 · 10 ⁻⁵ of nominal mea	asuring range	
Influence of the medium temperature					
Temperature difference between medium temperature and ambient temperature	3 mbar/10 K (0.04 psi/10 K)				
Rated conditions					
Installation conditions					
Ambient temperature	Observe	the temperature class in	areas subject to explos	ion hazard.	
 Measuring cell with silicone oil 		-40 +85 °C ((-40 +185 °F)		
Measuring cell with Neobee oil (with front-flush diaphragm)		-10 +85 ℃	(14 +185 °F)		
Measuring cell with inert liquid (not with front- flush diaphragm)		-20 +85 °C	(-4 +185 °F)		
Display readable		-30 +85 °C ((-22 +185 °F)		
Storage temperature	-50 +85 °C (-5	8 +185 °F) (in the case	e of Neobee: -20 +85	°C (-4 +185/°F))	
Climatic class					
- Condensation	Со	Relative humi ndensation permissible,	dity 0 100 % suitable for use in the tro	opics	
Degree of protection (to IEC 60529)	IP65, IP68, NEMA	A 4X, enclosure cleaning,	resistant to lyes, steam	to 150 ° C (302 °F)	
 Electromagnetic Compatibility 					
- Emitted interference and interference immunity	Acc. to EN 61326 and NAMUR NE 21				
Medium conditions	The max. medium temperature of the front-flush process connections is to be taken into account in accordance with the relevant connection standards (e. g. DIN 32676, DIN 11851 etc.).				
Temperature of medium					
 Measuring cell with silicone oil 		-40 +100 °C	(-40 +212 °F)		
 Measuring cell with silicone oil (with front-flush diaphragm) 		-40 +150 °C	(-40 +302 °F)		
 Measuring cell with Neobee oil (with front-flush diaphragm) 		-10 +150 °C	C (14 302 °F)		
 Measuring cell with silicone oil, with tempera- ture decoupler (only for gauge pressure ver- sion with front-flush diaphragm) 		-40 +200 °C	(-40 +392 °F)		
 Measuring cell with inert filling liquid 		-20 +100 °C	(-4 +212 °F)		
 Measuring cell with high-temperature oil (only for gauge pressure version with front-flush dia- phragm) 		-10 +250 °C	C (14 482 °F)		
Design					
Weight (without options)		≈ 1.5 kg	(≈ 3.3 lb)		
Enclosure material	Low-copper die-cast a	aluminum, GD-AlSi12 or s	tainless steel precision	casting, mat. no. 1.4408	
Wetted parts materials	Stainless s	teel, mat. no. 1.4404/316	L or Hastelloy C276, ma	at. no. 2.4819	
Measuring cell filling		Silicone oil or i	nert filling liquid		
Process connection		 Flanges as p 	er EN and ASME		
	_	F&B and pha	armaceutical flanges		
Surface quality touched-by-media	R _a -va (Process connections)	lues $\leq 0.8 \ \mu m$ (32 μ -inch) acc. to 3A; R _a -values ≤ 0	/welds $R_{a)} \le 1.6 \ \mu m (64)$.8 $\mu m (32 \ \mu - inch)/welds$	µ-ınch) R_a) ≤ 0.8 µm (32 µ-inch)	
rower supply U _H			Supplied through bus		
rerminal voltage on transmitter	10.5 45 V DC 10.5 30 V DC in intrin	sically-safe mode	-		
Separate 24 V power supply necessary	-		NO		
Not Ex			0 22 \/		
With intrinsically-safe operation	_		9 32 V 9 24 V		
maninanologing sale operation			0 L7 V		

Pressure Measurement

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

SITRANS P DS III series for gauge and absolu	te pressure, with front-flush diaphragm				
	HART	PROFIBUS PA and FOUNDATION Fieldbus			
Power supply U _H (continued)		Supplied through bus			
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	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" 	PTB 11 AT	EX 2011 X			
- Marking	Ex II 1/2 G Ex ia/ib	IIC T4/T5/T6 Ga/Gb			
- Permissible ambient temperature	-40 +85 °C (-40 +185 -40 +70 °C (-40 +155 -40 +60 °C (-40 +140	5 °F) temperature class T4; 3 °F) temperature class T5; J °F) temperature class T6			
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}, \ l_i = 100 \text{ mA},$ $P_i = 750 \text{ mW}; \ R_i = 300 \Omega$	FISCO supply unit: $U_0 = 17.5 \text{ V}$, $I_0 = 380 \text{ mA}$, $P_0 = 5.32 \text{ W}$ Linear barrier: $U_0 = 24 \text{ V}$, $I_0 = 250 \text{ mA}$, $P_0 = 1.2 \text{ W}$			
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 \rm mH, C_{\rm i} = 6 \rm nF$	$L_{i} = 7 \mu\text{H}, C_{i} = 1.1 \text{nF}$			
• Explosion-proof "d"	PTB 99 A	TEX 1160			
- Marking	Ex II 1/2 G Ex	d IIC T4/T6 Gb			
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperature class T4; -40 +60 °C (-40 +140 °F) temperature class T6				
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC	To circuits with values: $U_{\rm H}$ = 9 32 V DC			
Dust explosion protection for zone 20	PTB 01 A	TEX 2055			
- Marking	Ex II 1 D IP Ex II 1/2 D If	65 T 120 °C ?65 T 120 °C			
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F)			
- Max. surface temperature	120 °C	(248 °F)			
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}, \ l_i = 100 \text{ mA},$ $P_i = 750 \text{ mW}, \ R_i = 300 \Omega$	FISCO supply unit: $U_0 = 17.5 \text{ V}, I_0 = 380 \text{ mA}, P_0 = 5.32 \text{ W}$ Linear barrier: $U_0 = 24 \text{ V}, I_0 = 250 \text{ mA}, P_0 = 1 \text{ W}$			
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 \rm mH, C_{\rm i} = 6 \rm nF$	$L_{\rm i} = 7 \mu\text{H}, C_{\rm i} = 1.1 \text{nF}$			
Dust explosion protection for zone 21/22	PTB 01 A	TEX 2055			
- Marking	Ex II 2 D IP	65 T 120 °C			
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC; $P_{\rm max}$ = 1.2 W	To circuits with values: $U_{\rm H}$ = 9 32 V DC; $P_{\rm max}$ = 1 W			
 Type of protection "n" (zone 2) 	PTB 11 AT	EX 2011 X			
- Marking	Ex II 2/3 G Ex n Ex II 2/3 G Ex ic	A II T4/T5/T6 Gc IIC T4/T5/T6 Gc			
- Connection (Ex nA)	$U_{\rm m} = 45 \text{ V}$	$U_{\rm m}$ = 32 V			
- Connections (Ex ic)	To circuits with values: $(1 - 45)$	FISCO supply unit ic: U = 17.5 V L = 570 mA			
	$U_i = 45 \text{ V}$	Linear barrier: $U_0 = 32 \text{ V}, I_0 = 132 \text{ mA}, P_0 = 1 \text{ W}$			
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{\rm i} = 7 \ \mu {\rm H}, \ C_{\rm i} = 1,1 \ {\rm nF}$			
• Explosion protection acc. to FM	Certificate of Cor	npliance 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 Cor	npliance 1153651			
- Identification (XP/DIP) or (IS)	CL I, DIV 1, GP ABCD T4T6; CL II, DIV 1, GP EF T4T6; CL II, DIV	FG; CL III; Ex ia IIC T4T6; CL I, DIV 2, GP ABCD / 2. GP FG: CL III			

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

Hygiene version

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

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

HART communication		FOUNDATION Fieldbus	
HART	230 1100 Ω	Function blocks	3 function blocks analog input
Protocol	HART Version 5.x		1 function block PID
Software for computer	SIMATIC PDM	 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	characteristic
The address can be set using	Configuration tool or local	- Electrical damping, adjustable	0 100 s
	operation (standard setting address 126)	- Simulation function	within the device with a bridge)
Cyclic data usage		- Fallure mode	value, substitute value, incorrect
Output byte	5 (one measured value) or 10 (two measured values)	- Limit monitoring	value) Yes, one upper and lower warn-
Input byte	0, 1, or 2 (register operating mode and reset function for metering)		ing limit and one alarm limit respectively
Internal preprocessing	metering)	 Square-rooted characteristic for flow measurement 	Yes
Device profile	PROFIBUS PA Profile for Pro-	• PID	Standard FOUNDATION
	cess Control Devices Version		Fieldbus function block
	3.0, Class B	 Physical block 	1 resource block
Analog input	2	Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block
- Adaptation to customer-specif- ic process variables	Yes, linearly rising or falling characteristic	Pressure transducer block	LCD
- Electrical damping, adjustable	0 100 s	- Can be calibrated by applying	Yes
- Simulation function	Input /Output	two pressures	
- Failure mode	parameterizable (last good value, substitute value, incorrect value)	 Monitoring of sensor limits Simulation function: Measured pressure value, sensor temper- 	Yes Constant value or over parame- terizable ramp function
- Limit monitoring	Yes, one upper and lower warn- ing limit and one alarm limit respectively	ature and electronics tempera- ture	
Register (totalizer)	Can be reset, preset, optional direction of counting, simulation function of register output		
- Failure mode	parameterizable (summation with last good value, continuous summation, summation with incorrect value)		
- Limit monitoring	One upper and lower warning limit and one alarm limit respec- tively		
 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		
 Gradual volume suppression and implementation point of square-root extraction 	Parameterizable		
 Simulation function for mea- sured pressure value and sen- sor temperature 	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 Ordering	g data	Orde	r No			
Pressure transmitter for gauge and absolute pressure, front-flush diaphragm, SITRANS P DS III HART		7 M F	413	33		
Measuring cell filling Silicone oil Inert liquid FDA compliant fill fluid	Measuring cell cleaning normal grease-free to cleanliness level 2	1 3				
Neobee oil	normal	4				
Measuring span (min. 0.01 1 bar 0.04 4 bar 0.16 16 bar 0.63 63 bar 13 1300 mbar a ¹⁾ 0.05 5 bar a ¹⁾ 0.3 30 bar a ¹⁾	max.) (0.15 14.5 psi) (0.58 58 psi) (2.32 232 psi) (9.14 914 psi) (0.62 18.85 psia) ¹⁾ (0.7 72.5 psia) ¹⁾ (4.35 435 psia) ¹⁾	B C D E S T U				
Wetted parts materials						
Seal diaphragm	Connection shank					
Stainless steel Hastelloy ²⁾	Stainless steel Stainless steel	A B				
Process connection		-				
Flange version with Ord	ler Code M., N., R. or Q.	_	7			
 Non-wetted parts mate Housing made of die-of Housing stainless steet 	r ials cast aluminium I precision casting		0 3			
Version • Standard versions • International version, E documentation in 5 lar (no order code selecta	English label inscriptions, iguages on CD able)	-		1 2		
Explosion protection		-				
 None With ATEX, Type of pro- "Intrinsic safety (Ex ia - "Explosion-proof (Ex FM + CSA (is + ep) + 	otection: a)" d) ^{r 3)} Ex ia + Ex d (ATEX)				A B D S	
With FM + CSA, Type "Intrinsic Safe und Ex (Available soon)	of protection: kplosion Proof (is + xp) ^{"3)}	_		I	٩C	
Electrical connection/c • Inner thread M20 x 1.5 • Female thread ½-14 N • M12 connectors (stain	c able entry 5 PT less steel) ^{4) 5) 6)}				B C F	
Display • Without display • Without visible display		-				0 1
(display concealed, se	etting: mA)					6
with visible display, se	tting: mA					7
 with customer-specific (setting as specified, (required) 	: display Order Code "Y21" or "Y22"					'

Available ex stock

Power supply units see Chap. 7 "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 available for flanges with options M., N., and Q.,
- ³⁾ Without cable gland, with blanking plug
- 4) M12 delivered without cable socket
- $^{5)}$ Not available with protection type "Ex d" (options D and N)
- 6) Not with protection types "Explosion-proof" and "Ex nA", "Intrinsic safe" and "Explosion proof".

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

						_	_	_
Selection and Ordering data			rd	er	No.			
Pressure transmitter P for gauge and absolute pressure, front-flush diaphragm:								
SITRANS P DS III with	PROFIBUS PA (PA)	7 M F 4 1 3 4 -						
SITRANS P DS III with	FOUNDATION Fieldbus	7	MI	F 4	13	5	-	
(FF)								
				P	-			P
Measuring cell filling	Measuring cell clean- ing							
Silicone oil	normal	1						
Inert liquid	grease-free to cleanliness level 2	3						
FDA compliant fill fluid								
 Neobee oil 	normal	4						
Nominal measuring ra	inge							
1 bar	(14.5 psi)		в					
4 bar	(58 psi)		С					
16 bar	(232 psi)		D					
63 bar	(914 psi)		Е					
1300 mbar a ¹⁾	(18.85 psia) ¹⁾		S					
5 bar a''	(72.5 psia) ¹⁾		T					
30 bar a ''	(435 psia) ¹⁷	_	U					
Wetted parts materials	5							
Seal diaphragm	Connection shank							
Stainless steel Stainless steel			1	A				
Hastelloy ²⁾ Stainless steel			l	в				
Process connection								
 Flange version with O Q 	rder Code M., N., R. or			7				
Non-wetted parts mate	erials							
 Housing made of die- 	cast aluminium				0			
 Housing stainless step 	el precision casting				3			
Version								
 Standard versions 						1		
 International version, 	English label inscriptions,					2		
(no order code select	nguages on CD able)							
	abioy	-						
None							۸	
With ATEX Type of pr	otection:						^	
- "Intrinsic safety (Ex i	ia)"						в	
- "Explosion-proof (Ex	(d) ^{"3)}						D	
• FM + CSA (is + ep) +	Ex ia + Ex d (ATEX)						s	
• With FM + CSA, Type	of protection:							
- "Intrinsic Safe und E	xplosion Proof (is + xp) ^{"3)}						N	с
(Available soon)								
Electrical connection/	cable entry							
Screwed gland M20 x 1.5								B
Screwed gland ¹ / ₂ -14 NPT								C
 Han 7D plug (plastic housing) incl. mating connector⁴) 								ט
								_

• M12 connectors (stainless steel)^{5) 6) 7)}

with front-flu	ish diaphragm
Only the stand Ondering state	Ouslau Nie
Selection and Ordering data	Order No.
Pressure transmitter P for gauge and absolute pressure, front-flush diaphragm:	
SITRANS P DS III with PROFIBUS PA (PA)	7 M F 4 1 3 4 -
SITRANS P DS III with FOUNDATION Fieldbus (FF)	7 M F 4 1 3 5 -
Display	
 Without display 	0
Without visible display	1
(display concealed, setting: mA)	
 With visible display 	6
With customer-specific display (setting as specified, Order Code "Y21" required)	7

Available ex stock

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 R01, R02, R04, R10 and R11, and can only be ordered in conjunction with silicone oil.
- $^{2)}$ Only available for flanges with options M., N., and Q.,
- ³⁾ Without cable gland, with blanking plug
- ⁴⁾ Not in conjunction with types of protection "Explosion-proof" and "Ex ic", "Intrinsic safety" and "Explosion-proof".

5) M12 delivered without cable socket

- ⁶⁾ Not available with protection type "Ex d" (optionen D and N)
- ⁷⁾ Not with protection types "Explosion-proof" and "Ex nA", "Intrinsic safe" and "Explosion proof".

Pressure Measurement

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

Further designs Add *2 to Order No. and specify Order Code.HART PAPAFFPlug • AngledA32✓✓✓• AngledA32✓✓✓• Han 8D (metal, gray)A33✓✓✓Cable sockets for M12 connectors (stainless steel)B11✓✓✓Rating plate inscription (instead of German) • EnglishB11✓✓✓• FrenchB12✓✓✓✓• SpanishB13✓✓✓✓• ItalianB14✓✓✓✓Pressure units in inH ₂ 0 and/or psiC11✓✓✓Quality inspection certificate (Five-step factory calibration) to IEC 60770-2C11✓✓Inspection certificateC14✓✓✓Acc. to EN 10204-2.2"Functional safety (SIL2)" certificate to IEC 61508C21✓✓"Functional safety (SIL2/3)" certificate to IEC 61508C21✓✓Perce passport Russia (For price request please contact the technical supportD05✓✓vertige of upper limit of output signal to 2.0 mAD12✓✓✓Pegree of protection IP65/IP68 (roll y or M20x1.5 and ½-14 NPT)E11✓✓✓Oxygen application (only for transmitter 7MF4P.)E25✓✓✓Franceroof "larbitron (firstasteyt" (Exia) to ing to insmitter 7MF4P.)E26✓✓✓Pisport approval ICC Ex (Ex	Selection and Ordering data	Order code			
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Oxygen applicationE10✓✓✓(In the case of oxygen measurement and inert liquid max. 100 bar (1450 psi) at 60°C (140 °F))E11✓✓✓Export approval KoreaE11✓✓✓✓Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil) (only for transmitter 7MF4B)E25✓✓✓"Flameproof" explosion protection accord- ing to INMETRO (Brazil) (only for transmitter 7MF4D)E26✓✓✓Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil) (only for transmitter 7MF4P)E45✓✓Ex Approval IEC Ex (Ex ia) (only for transmitter 7MF4B)E46✓✓✓Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (only for transmitter (only for transmitter 7MF4D)E70✓✓	Degree of protection IP65/IP68 (only for M20x1.5 and ½-14 NPT)	D12	~	1	~
(In the case of oxygen measurement and inert liquid max. 100 bar (1450 psi) at 60°C (140 °F))E11✓✓✓Export approval KoreaE11✓✓✓✓Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil) (only for transmitter 7MF4B)E25✓✓✓"Flameproof" explosion protection accord- 	Oxygen application	E10	✓	1	✓
Export approval KoreaE11✓✓✓Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil) (only for transmitter 7MF4B)E25✓✓"Flameproof" explosion protection accord- ing to INMETRO (Brazil) (only for transmitter 7MF4D)E26✓✓✓Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil) (only for transmitter 7MF4P)E28✓✓✓Ex Approval IEC Ex (Ex ia) (only for transmitter 7MF4B)E45✓✓✓Ex Approval IEC Ex (Ex ia) (only for transmitter 7MF4D)E46✓✓✓Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (only for transmitter 7MF4D)Y✓✓	(In the case of oxygen measurement and inert liquid max. 100 bar (1450 psi) at 60°C (140 °F))				
Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil) (only for transmitter 7MF4B)E25✓✓✓"Flameproof" explosion protection accord- ing to INMETRO (Brazil) (only for transmitter 7MF4D)E26✓✓✓Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil) (only for transmitter 7MF4P)E28✓✓✓Ex Approval IEC Ex (Ex ia) (only for transmitter 7MF4B)E45✓✓✓Intrinsic safety" and "Explosion-proof" (only for transmitter 7MF4D)E46✓✓✓Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (only for transmitter 7MF4D)E70✓✓"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (only for transmitter 7MF4B)E70✓✓"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (only for transmitter 7MF4B)Image: Safety	Export approval Korea	E11	✓	✓	✓
(only for transmitter 7MF4B)E26 \checkmark \checkmark \checkmark "Flameproof" explosion protection according to INMETRO (Brazil) (only for transmitter 7MF4D)E28 \checkmark \checkmark \checkmark Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil) (only for transmitter 7MF4P)E28 \checkmark \checkmark \checkmark Ex Approval IEC Ex (Ex ia) (only for transmitter 7MF4B)E45 \checkmark \checkmark \checkmark Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (only for transmitter 7MF4D)E70 \checkmark \checkmark "Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (only for transmitter 7MF4B)E70 \checkmark \checkmark "Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (only for transmitter 7MF4B)E70 \checkmark \checkmark "Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (only for transmitter 7MF4B) \checkmark \checkmark "Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (only for transmitter 7MF4B) \checkmark \checkmark "Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (only for transmitter 7MF4B) \checkmark \checkmark "Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (only for transmitter 7MF4B) \checkmark \checkmark "Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (only for transmitter 7MF4B) \checkmark \checkmark "Intrinsic safety of	Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil)	E25	~	✓	~
"Flameproof" explosion protection according to INMETRO (Brazil) E26 ✓ ✓ ✓ (only for transmitter 7MF4D) Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil) E28 ✓ ✓ (only for transmitter 7MF4P) Ex Approval IEC Ex (Ex ia) E45 ✓ ✓ (only for transmitter 7MF4B) E46 ✓ ✓ ✓ Image: Construct of transmitter 7MF4D) E46 ✓ ✓ ✓ Image: Construct of transmitter 7MF4D) E46 ✓ ✓ ✓ "Intrinsic safety" and "Explosion-proof" E70 ✓ ✓ ✓ (only for transmitter 7MF4D) Two coats of lacquer on casing and cover G10 ✓ ✓	(only for transmitter 7MF4B)				
ConstructionConstructionConstructionConstructionExplosion-proof"Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil) (only for transmitter 7MF4P)E28 \checkmark \checkmark Ex Approval IEC Ex (Ex ia) (only for transmitter 7MF4B)E45 \checkmark \checkmark \checkmark Ex Approval IEC Ex (Ex ia) (only for transmitter 7MF4B)E46 \checkmark \checkmark \checkmark Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (only for transmitter 7MF4[B, D]Z + E11)E70 \checkmark \checkmark	"Flameproof" explosion protection accord- ing to INMETRO (Brazil)	E26	~	~	~
Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil) (only for transmitter 7MF4P)E28 \checkmark \checkmark Ex Approval IEC Ex (Ex ia) (only for transmitter 7MF4B)E45 \checkmark \checkmark \checkmark Ex Approval IEC Ex (Ex ia) 	(only for transmitter /MF4				
Ex Approval IEC Ex (Ex ia) (only for transmitter 7MF4B)E45 \checkmark \checkmark \checkmark Ex Approval IEC Ex (Ex ia) (only for transmitter 7MF4B)E46 \checkmark \checkmark \checkmark Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (only for transmitter 7MF4[B, D]Z + E11)E70 \checkmark \checkmark Two coats of lacguer on casing and coverG10 \checkmark \checkmark \checkmark	Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil)	E28	~	~	
Ex Approval IEC Ex (Ex ia)E45 \checkmark \checkmark (only for transmitter 7MF4B)Ex Approval IEC Ex (Ex id)E46 \checkmark \checkmark (only for transmitter 7MF4D)"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea)E70 \checkmark \checkmark (only for transmitter 7MF4[B, D]Z + E11)Two coats of lacquer on casing and coverG10 \checkmark \checkmark	(only for transmitter / MF4P)				
Ex Approval IEC Ex (Ex id) (only for transmitter 7MF4D)E46 \checkmark \checkmark "Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (only for transmitter 7MF4[B, D]Z + E11)E70 \checkmark \checkmark Two coats of lacquer on casing and coverG10 \checkmark \checkmark	Ex Approval IEC Ex (Ex ia) (only for transmitter 7MF4B)	E45	~	~	~
"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (only for transmitter 7MF4[B, D]Z + E11) E70 ✓ ✓ ✓ Two coats of lacguer on casing and cover G10 ✓ ✓ ✓	Ex Approval IEC Ex (Ex id) (only for transmitter 7MF4D)	E46	1	1	1
(only for transmitter 7MF4[B, D]Z + E11)	"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea)	E70	1	~	~
Two coats of lacquer on casing and cover G10 \checkmark \checkmark	(only for transmitter 7MF4[B, D]Z + E11)				
(PU on epoxy)	Two coats of lacquer on casing and cover (PU on epoxy)	G10	1	✓	~

Selection and Ordering data	Order code			
Flanges to EN 1092-1, Form b1				
• DN 25, PN 40 ¹⁾	M11	✓	✓	✓
• DN 25, PN 100 ¹⁾	M21	✓	✓	✓
• DN 40, PN 40	M13	✓	✓	✓
• DN 40, PN 100	M23	✓	✓	✓
• DN 50, PN 16	M04	✓	✓	~
• DN 50, PN 40	M14	✓	✓	✓
• DN 80, PN 16	M06	√	√	1
• DN 80, PN 40	M16	~	~	~
Flanges to ASME B16.5				
 Stainless steel flange 1" class 150¹⁾ 	M40	1	1	~
 Stainless steel flange 1½" class 150 	M41	✓	✓.	~
Stainless steel flange 2" class 150	M42	√	√	1
Stainless steel flange 3" class 150	M43	v	*	1
Stainless steel flange 4" class 150	M44	*	*	*
Stainless steel flange 1° class 300 % Steinless steel flange 11/# class 200	W45	*	*	*
Stainless steel flange 1/2 class 300	IVI40	*	*	*
Stainless steel flange 2" class 300 Stainless steel flange 2" class 300	WI47	*		*
Stainless steel flange 3 class 300 Stainless steel flange 4" class 300	M40	·	1	1
	111-13	•	•	•
Threaded connector to DIN 3852-2,				
• G $\frac{34^{"}}{4}$ A front fluch ²	D01	1	1	1
• G 1"-A front-flush ²)	R02	1	1	1
• G 2"-A front-flush ²)	R04		1	1
	1104	•		
	D10	1	1	1
• TG 52/30, FN 40 • TG 52/150, PN 40	D11	1	1	1
• 10 32/130, 110 40	nii	•	•	•
DIN 11851 (Dairy connection with slotted union nut)				
• DN 50, PN 25	N04	✓	✓	✓
• DN 80, PN 25	N06	✓	✓	✓
Tri-Clamp connection according				
DIN 32676/ISO 2852				
• DN 50/2", PN 16	N14	✓	✓	✓
• DN 65/3", PN 10	N15	✓	✓	✓
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 ⁴⁾ for version with front-flush diaphragm	P00	~	~	1
Temperature decoupler up to 250 °C	P10	✓	✓	✓
Measuring cell filling: High-temperature oil,				
silicope oil				
Certified to EHEDG				
• DN 50. PN 16	Q53	1	1	1
• DN 65, PN 16	Q54	✓	✓	1
Sanitary process connection to DBD				
• DN 50 PN 40	M32	1	1	1
CMC applied with which and		-		
	MEZ	1	1	1
• <u>2</u> • 21/2"	M69	1	1	1
• 3"	M69	1	1	1
			•	
SMS Inreaded socket	M70			
 ∠ 21/2" 	M73	1	1	1
• 3"	M75	~	1	1
	1075		·	
Pressure Measurement Transmitters for general requirements SITRANS P DS III for gauge/absolute pressure, with front-flush diaphragm

Onlanting and Ondering data	Onder			
Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add -Z" to Urder No. and specify Order Code.				
IDF socket with union nut ISO 2853				
• 2"	M82	✓	✓	~
• 21/2"	M83	1	✓	~
• 3"	M84	1	1	~
	ine i			
IDF threaded socket ISO 2853				
• 2"	M92	√	√	√
• 21/2"	M93	~	~	~
• 3"	M94	~	~	~
Sanitary process connection to				
NEUMO Bio-Connect screw connection				
Certified to EHEDG				
• DN 50, PN 16	Q05	✓	✓	✓
• DN 65, PN 16	Q06	✓	✓	1
• DN 80, PN 16	Q07	1	1	1
• DN 100 PN 16	Q08	1	1	1
• DN 2" DN 16	012		1	1
• DN 2, FN 10	013	•	•	
	014	•	•	•
• DN 3", PN 16	Q15	v	×,	
• DN 4", PN 16	Q16	~	✓	~
Sanitary process connection to NEUMO				
Bio-Connect flange connection				
Certified to EHEDG				
• DN 50, PN 16	Q23	1	✓	1
• DN 65, PN 16	Q24	1	✓	1
• DN 80, PN 16	Q25	✓	✓	1
• DN 100, PN 16	Q26	1	✓	1
• DN 2" PN 16	Q31	1	1	1
• DN 216" PN 16	032	1	1	1
• DN 2" DN 16	022			1
	Q33	•	•	*
• DN 4", PN 16	Q34	v	v	•
Sanitary process connection to				
NEUMO Bio-Connect clamp connection				
Certified to EHEDG			-	
• DN 50, PN 16	Q39	~	✓	~
 DN 65, PN 10 	Q40	✓	✓	✓
• DN 80, PN 10	Q41	✓	✓	✓
• DN 100, PN 10	Q42	✓	✓	✓
• DN 21/2", PN 16	Q48	✓	✓	1
• DN 3". PN 10	Q49	✓	✓	1
• DN 4" PN 10	Q50	1	1	1
	000			
Sanitary process connection to				
Certified to EHEDG				
	062	1	1	1
- DN CE DN 10	003		1	
- DN 60, PN 10	0.04	*	*	
• UN 80, PN 10	Q65	v	×.	×.
• UN 100, PN 10	Q66	V	~	~
• DN 2", PN 16	Q72	1	~	1
• DN 21/2", PN 10	Q73	1	✓	1
• DN 3", PN 10	Q74	1	✓	1
• DN 4", PN 10	Q75	✓	✓	1
Asentic threaded socket to DIN 1186/ 1				
Form A				
approved according to EHEDG				
• DN 50 PN 25	N33	1	1	1
	N24	1	1	
- DN 00, MN 20	N34			
• DIN 80, PIN 25	N35	v	× .	v
• DN 100, PN 25	N36	~	~	~
Aseptic flange with notch to DIN 11864-2				
Form A				
approved according to EHEDG				
• DN 50, PN 16	N43	1	1	1
• DN 65, PN 16	N44	1	1	1
• DN 80 PN 16	N45	1	1	1
• DN 100 PN 16	N/6	1	1	1
- DIN TUU, FIN TU	1140	v	v	v

Selection and Ordering data	Order	code		
<i>Further designs</i> Add "- Z " to Order No. and specify Order Code.		HART	PA	FF
Aseptic flange with groove to DIN 11864-2 Form A approved according to EHEDG				
• DN 50, PN 16	N43 + P11	~	~	~
• DN 65, PN 16	N44 + P11	1	~	*
• DN 80, PN 16	N45 + P11	1	~	~
• DN 100, PN 16	N46 + P11	~	~	~
Aseptic clamp with groove to DIN 11864-3 FormA				
approved according to EHEDG				
• DN 50, PN 25	N53	1	1	1
• DN 65, PN 25	N54	1	1	1
• DN 80, PN 16	N55	1	1	1
• DN 100, PN 16	N56	✓	1	1

¹⁾ Special seal in Viton included in the scope of delivery.

²⁾ Lower measuring limit -100 mbar (1.45 psi).

³⁾ The weldable socket can be ordered under accessories.

⁴⁾ The maximum permissible temperatures of the medium depend on the respective cell fillings.

Pressure Measurement

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

Selection and Ordering data	Order	code		
Additional data		HART	PA	FF
Please add "-Z" to 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	1	✓	~
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 address (TAG)	Y17	~		
Max. 8 characters, specify in plain text: Y17:				
Setting of pressure indicator in pressure	Y21	✓	✓	✓
units				
Y21: mbar, bar, kPa, MPa, psi, Note:				
The following pressure units can be selected:				
bar, mbar, mm H_2O^{*}), in H_2O^{*}), ft H_2O^{*}), mmHG, inHG, psi, Pa, kPa, MPa, g/cm ² , kg/cm ² , Torr, ATM or % *) ref. temperature 20 °C				
Setting of pressure indication in	Y22 +	✓		
non-pressure units ¹⁾	Y01			
Specify in plain text:				
(specification of measuring range in pressure				
units "Y01" is essential, unit with max. 5				
characters)				
Preset bus address	Y25		1	1
possible between 1 and 126				
Specify in plain text:				
Only "Y01" and "Y21" can be factory preset				

✓ = available

ordering example

Item line:	7MF4133-1DB20-1AB7-Z
B line:	A22 + Y01 + Y21
C line:	Y01: 1 10 bar (14.5 145 psi)
C line:	Y21: bar (psi)

¹⁾ Preset values can only be changed over SIMATIC PDM.

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

Dimensional drawings



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

The diagram shows a SITRANS P DS III with an example of a flange. In this drawing the height is subdivided into H₁ and H₂.

H₁ = 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.

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Pressure Measurement Transmitters for general requirements

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

Flanges as per EN and ASME

Flange to EN

EN 1092-1

1032-1					
	Order code	DN	PN	ØD	H ₂
	M11	25	40	115 mm (4.5")	Approx.
	M21	25	100	140 mm (5.5")	52 mm (2")
b	M13	40	40	150 mm (5.9")	
	M23	40	100	170 mm (6.7")	
	M04	50	16	165 mm (6.5")	
	M14	50	40	165 mm (6.5")	
	M06	80	16	200 mm (7.9")	
	M16	80	40	200 mm (7.9")	

Flanges to ASME

ASME B16.5

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

NuG and pharmaceutical connections

Connections to DIN

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

Tri-Clamp nach DIN 32676

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

Other connections

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

Biocontrol connection

Order code	DN	PN	ØD	H ₂
Q53	50	16	90 mm (3.5")	Approx.
Q54	65	16	120 mm (4.7")	52 mm (2")

Sanitary process connection to DRD								
	Order code	DN	PN	ØD	H ₂			
	M32	50	40	105 mm (4.1")	Approx. 52 mm (2")			
• "								
Sanitary process sci	rew con	nectio	on to I	NEUMO Bio-Con	nect			
	Order code	DN	PN	ØD	H ₂			
	Q05	50	16	82 mm (3.2")	Approx.			
	Q06	65	16	105 mm (4.1")	52 mm (2")			
	Q07	80	16	115 mm (4.5")				
	Q08	100	16	145 mm (5.7")				
l ⊲ D	Q13	2"	16	82 mm (3.2")				
	Q14	21⁄2"	16	105 mm (4.1")				
	Q15	3"	16	105 mm (4.1")				
		4.11	10					

Sanitary process connection to NEUMO Bio-Connect flange connection

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

Sanitary process connection to NEUMO Bio-Connect clamp connection

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

Sanitary process connection to NEUMO Bio-Connect S flange connection

	Order code	DN	PN	ØD	H ₂
	Q63	50	16	125 mm (4.9")	Approx.
	Q64	65	10	145 mm (5.7")	52 mm (2")
D	Q65	80	10	155 mm (6.1")	
	Q66	100	10	180 mm (7.1")	
	Q72	2"	16	125 mm (4.9")	
	Q73	21⁄2"	10	135 mm (5.3")	
	Q74	3"	10	145 mm (5.7")	
	Q75	4"	10	180 mm (7.1")	

Pressure Measurement 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									
	Order code	DN	PN	ØD	H ₂				
جامعته والمستلج	N33	50	25	78 x 1/6"	Approx.				
т III	N34	65	25	95 x 1/6"	52 mm (2")				
	N35	80	25	110 x ¼"					
	N36	100	25	130 x ¼"					

Aseptic flange with notch to DIN 11864-2 Form A									
	Order code	DN	PN	ØD	H ₂				
I III	N43	50	16	94	Approx.				
	N44	65	16	113	52 mm (2")				
	N45	80	16	133					
I D I	N46	100	16	159					

Aseptic flange with groove to DIN 11864-2 Form A



Aseptic clamp with groove to DIN 11864-3 Form A

	Order code	DN	PN	ØD	H ₂
	N53	50	25	77.5	Approx.
I	N54	65	25	91	52 mm (2")
	N55	80	16	106	
+ [N56	100	16	130	
l ≺ D →					

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

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

Tank connection TG 52/50 and TG52/150

Order code	DN	PN	ØD	H ₂
R10	25	40	63 mm (2.5")	Approx. 63 mm (2.5")
R11	25	40	63 mm (2.5")	Approx. 170 mm (6.7")

SMS socket with union nut

Order code	DN	PN	ØD	H ₂
M67 M68	2" 2½"	25 25	84 mm (3.3") 100 mm (3.9")	Approx. 52 mm (2")
M69	3"	25	114 mm (4.5")	

SMS threaded socket

Order code	DN	PN	ØD	H ₂
M73 M74	2" 2½"	25 25	70 x 1/6 mm 85 x 1/6 mm	Approx. 52 mm (2")
M75	3"	25	98 x 1/6 mm	

IDF socket with union nut

Order code	DN	PN	ØD	H ₂
M82 M83 M84	2" 2½" 3"	25 25 25	77 mm (3") 91 mm (3.6") 106 mm (4.2")	Approx. 52 mm (2")

IDF threaded socket

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Order code	DN	PN	ØD	H ₂
M92 M93 M94	2" 2½" 3"	25 25 25	64 mm (2.5") 77.5 mm (3.1") 91 mm (3.6")	Approx. 52 mm (2")

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

Technical specifications

1

	HART		PROFIBUS PA and FOUNDATION Fieldbus			
Input						
Measured variable	Absolute pressure					
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span (min max.)	Span (min max.) Max. perm. test pres- sure		Max. perm. test pres- sure		
	8.3 250 mbar a (0.12 3.62 psia)	6 bar a (87 psia)	250 mbar a (3.6 psia)	6 bar a (87 psia)		
	43 1300 mbar a (0.62 18.85 psi a)	10 bar a (145 psia)	1300 mbar a (18.9 psi a)	10 bar a (145 psia)		
	160 5000 mbar a (2.32 72.5 psia)	30 bar a (435 psia)	5 bar a (72.5 psia)	30 bar a (435 psia)		
	1 30 bar a (14.5 435 psia)	100 bar a (1450 psia)	30 bar a (435 psia)	100 bar a (1450 psia)		
Lower measuring limit		1				
 Measuring cell with silicone oil filling 		0 mbar	a (0 psia)			
Upper measuring limit		100 % of	max. span			
Output						
Output signal	4 20 mA		Digital PROFIBUS PA and FOUNDATION Fieldbus signal			
 Lower limit (infinitely adjustable) 	3.55 mA, factory preset	to 3.84 mA	-			
Upper limit (infinitely adjustable)	23 mA, factory preset to set to 22.0 mA	20.5 mA or optionally	-			
Load						
Without HART	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.02$ $U_{\rm H}$: Power supply in V	3 A in Ω,	-			
With HART	$\begin{array}{l} R_{\rm B} = 230 \ \ 500 \ \Omega \ ({\rm SIN} \\ R_{\rm B} = 230 \ \ 1100 \ \Omega \ ({\rm HA} \end{array}$	NATIC PDM) or ART Communicator)	-			
Physical bus	-		IEC 61158-2			
Protection against polarity reversal	Protected against shor	t-circuit and polarity reve supply	ersal. Each connection ag voltage.	ainst the other with max.		
Electrical damping (step width 0.1 s)		Set to 2 s	(0 100 s)			
Measuring accuracy		Acc. to If	EC 60770-1			
Reference conditions (All error data refer always refer to the set span)	Increasing characterist	ic, start-of-scale value 0 ing, room temperature 2 (r = max. sp	bar, stainless steel seal d 25 °C (77 °F)) r: Span ratio an / set span)	liaphragm, silicone oil fill- o		
Error in measurement at limit setting incl. hysteresis and reproducibility						
Linear characteristic			≤ 0.1 %			
- r ≤ 10	≤ 0.1 %					
- 10 < r ≤ 30	≤ 0.2 %					
Long-term stability (temperature change ± 30 °C (± 54 °F))	≤ (0.1 · r) %/year		≤0.1 %/year			
Influence of ambient temperature						
• at -10 +60 °C (14 140 °F)	$\leq (0.1 \cdot r + 0.2) \%^{1)}$		≤ 0.3 %			
• at -4010 °C and 60 85 °C (-40 +14 °F and 140 185 °F)	≤ (0.1 · r + 0.15) %/10 k	< colored and set of the set of t	≤ 0.25 %/10 K			
Measured Value Resolution	-		3 · 10 ⁻⁵ of nominal measuring 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 IEC 60529)	IP65 (optional IP65/IP68)			
Temperature of medium				
 Measuring cell with silicone oil filling 	-40 +100 °C	(-40 +212 °F)		
 Measuring cell with inert filling liquid 	-20 +100 °C	C (-4 +212 °F)		
 In conjunction with dust explosion protection 	-20 +60 °C	(-4 +140 °F)		
Ambient conditions				
Ambient temperature				
- Display readable	-30 +85 °C	(-22 +185 °F)		
Storage temperature	-50 +85 °C	(-58 +185 °F)		
Climatic class				
- Condensation	Relative humi	idity 0 100 %		
	Condensation permissible,	suitable for use in the tropics		
Electromagnetic Compatibility				
- Emitted interference and interference immu- nity	Acc. to EN 61326 and NAMUR NE 21			
Design				
Weight (without options)	≈ 1.5 kg (≈ 3.3 lb)			
Enclosure material	Low-copper die-cast aluminum, GD-AISi 12 or stainless steel precision casting, mat. no. 1.4408			
Wetted parts materials				
Connection shank	Stainless steel, mat. no. 1.4404/31	6L or Hastelloy C4, mat. no. 2.4610		
Oval flange	Stainless steel, m	at. no. 1.4404/316L		
Seal diaphragm	Stainless steel, mat. no. 1.4404/316	SL or Hastelloy C276, mat. no. 2.4819		
Measuring cell filling	Silicone oil or i (maximum value with oxygen measurement	inert filling liquid pressure 100 bar (1450 psi) at 60 °C (140 °F))		
Process connection	Connection shank G½B to EN 837-1, (PN 160 (MAWP 2320 psia)) to DIN 19213 with r	female thread $\frac{1}{2}$ -14 NPT or oval flange nounting thread M10 or $\frac{7}{16}$ -20 UNF to IEC 61518		
Material of mounting bracket				
• Steel	Sheet-steel, Mat. No.	1.0330, chrome-plated		
Stainless steel	Sheet stainless steel, r	nat. no. 1.4301 (SS 304)		
Power supply $oldsymbol{U}_{ec}$		Supplied through bus		
Terminal voltage on transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically-safe mode			
Separate 24 V power supply necessary	-	No		
Bus voltage				
• Not Ex	-	9 32 V		
With intrinsically-safe operation	-	9 24 V		
Current consumption				
Basic current (max.)	-	12.5 mA		
• Start-up current \leq basic current	-	Yes		
Max. current in event of fault	-	15.5 mA		
Fault disconnection electronics (FDE) available	-	Yes		

1

Bressure 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		
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 11 A	TEX 2011 X		
- Marking	Ex II 1/2 G Ex ia/ib	IIC T4/T5/T6 Ga/Gb		
- Permissible ambient temperature	-40 +85 °C (-40 +18 -40 +70 °C (-40 +15 -40 +60 °C (-40 +14	5 °F) temperature class T4; 8 °F) temperature class T5; 0 °F) temperature class T6		
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}, \ l_i = 100 \text{ mA},$ $P_i = 750 \text{ mW}; \ R_i = 300 \Omega$	FISCO supply unit: $U_0 = 17.5$ V, $I_0 = 380$ mA, $P_0 = 5.32$ W Linear barrier: $U_0 = 24$ V, $I_0 = 250$ mA, $P_0 = 1.2$ W		
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{\rm i} = 7 \ \mu {\rm H}, \ C_{\rm i} = 1.1 \ {\rm nF}$		
 Explosion-proof "d" 	PTB 99 A	ATEX 1160		
- Marking	Ex II 1/2 G Ex	d IIC T4/T6 Gb		
- Permissible ambient temperature	-40 +85 °C (-40 +18 -40 +60 °C (-40 +14	5 °F) temperature class T4; 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	Ex II 1 D IP65 T 120 ℃ Ex II 1/2 D IP65 T 120 ℃			
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F)			
- Max. surface temperature	120 °C	(248 °F)		
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}, \ l_i = 100 \text{ mA},$ $P_i = 750 \text{ mW}, \ R_i = 300 \Omega$	FISCO supply unit: $U_0 = 17.5 \text{ V}$, $I_0 = 380 \text{ mA}$, $P_0 = 5.32 \text{ W}$ Linear barrier: $U_0 = 24 \text{ V}$, $I_0 = 250 \text{ mA}$, $P_0 = 1.2 \text{ W}$		
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 \rm mH, C_{\rm i} = 6 \rm nF$	$L_{\rm i} = 7 \mu{\rm H}, C_{\rm i} = 1.1 {\rm nF}$		
Dust explosion protection for zone 21/22	PTB 01 /	ATEX 2055		
- Marking	Ex II 2 D IF	265 T 120 °C		
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC; $P_{\rm max}$ = 1.2 W	To circuits with values: $U_{\rm H}$ = 9 32 V DC; $P_{\rm max}$ = 1 W		
 Type of protection "n" (zone 2) 	PTB 11 A	TEX 2011 X		
- Marking	Ex II 2/3 G Ex r Ex II 2/3 G Ex io	nA II T4/T5/T6 Gc c IIC T4/T5/T6 Gc		
- Connection (Ex nA)	<i>U</i> _m = 45 V	$U_{\rm m} = 32 \text{ V}$		
- Connection (Ex ic)	To circuits with values: $U_{\rm i} = 45 \text{ V}$	FISCO supply unit ic: $U_0 = 17.5 \text{ V}, I_0 = 570 \text{ mA}$		
		Linear barrier: $U_0 = 32$ V, $I_0 = 132$ mA, $P_0 = 1$ W		
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{\rm i} = 7 \ \mu {\rm H}, \ C_{\rm i} = 1,1 \ {\rm nF}$		
 Explosion protection acc. to FM 	Certificate of Con	mpliance 3008490		
- Identification (XP/DIP) or (IS); (NI)	CL I, DIV 1, GP ABCD T4T6; CL II, DIV 1, C CL I, DIV 2, GP ABCD T4T	GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4T6; F6; CL II, DIV 2, GP FG; CL III		
 Explosion protection to CSA 	Certificate of Con	mpliance 1153651		
- Identification (XP/DIP) or (IS)	CL I, DIV 1, GP ABCD T4T6; CL II, DIV 1, GP E T4T6; CL II, DI	FG; CL III; Ex ia IIC T4T6; CL I, DIV 2, GP ABCD V 2, GP FG; CL III		

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

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

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

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

Selection and Ordering	Selection and Ordering data			Nc).	
Pressure transmitters for absolute pressure aus series pressure, SITRANS P DS III with HART			F 4	2	33	•
Measuring cell filling	Measuring cell cleaning					
Silicone oil	normal	1				
Inert liquid ¹⁾	grease-free to cleanliness level 2	3				
Measuring span (min.	max.)					
8.3 250 mbar a	(0.12 3.62 psia)	D				
43 1300 mbar a	(0.62 18.85 psia)	F				
0.16 5 bar a	(2.32 72.5 psia)	G				
1 30 bar a	(14.5 435 psia)	н				
Wetted parts materials	1					
Seal diaphragm	Process connection					
Stainless steel	Stainlass staal		Δ			
Hastollov	Stainless steel		Ē			
Hastellov	Hastellov		c			
Version for diaphragms	eal ²⁾ 3) 4) 5) 6)		Ÿ			
Process connection		-				
Connection shank G ¹ / ₂	B to EN 837-1		0			
Eemale thread ½-14 N	IPT		1			
Stainless steel oval fla	nge with process connec-					
tion female thread 1/4-1	8 NPT					
- Mounting thread 7/16	-20 UNF to EN 61518		2			
- Mounting thread M1	0 to DIN 19213		3			
- Mounting thread M1	2 to DIN 19213		4			
Male thread M20 x 1.5	5		5			
• Male thread 1/2 -14 NP	Т		6			
Non-wetted parts mate	erials					
• Housing made of die-	cast aluminium			0		
Housing stainless stee	el precision casting ⁷⁾			3		
Version		-				
 Standard versions 					1	
International version, E	English label inscriptions,				2	
documentation in 5 lar	nguages on CD					
(no order code selecta	able)					
Explosion protection						
None						Α
With AIEX, Type of pro	otection:					_
- "Intrinsic safety (Ex i	a)"					В
- "Explosion-proof (Ex	d)" ³					D
- "Intrinsic safety and "	flameproof enclosure"					Р
$(Ex a + Ex u)^{-1}$)					-
 LX IIA/IC (2016 2) "Intrinsic safety explicit 	sion proof onclosure and					5
dust explosion prote Zone 1D/2D)" ⁹⁾	ction (Ex ia+ Ex d +					n
• FM + CSA (is + ep) +	Ex ia + Ex d (ATEX)					S
• With FM + CSA, Type	of protection:					
 "Intrinsic Safe und Ex 	xplosion Proof (is + xp)" ⁸⁾					NC
Electrical connection/o	cable entry					
 Screwed gland Pg 13. 	5 ¹¹⁾					A
 Screwed gland M20x1 	.5					В
 Screwed gland ½-14 I 	NPT					С
Han 7D plug (plastic h	nousing) incl. mating					D
• M12 connectors (stain	loss stool) 12) 13) 14)					
- witz connectors (stati	1000 SICCI) ' '' '					- r

Selection and Ordering data	Order No.
Pressure transmitters for absolute pressure aus series pressure, SITRANS P DS III with HART	7 M F 4 2 3 3 -
 Display Without display Without visible display (display concealed, setting: mA) With visible display with customer-specific display (setting as specified, Order Code "Y21" or "Y22" required) 	0 1 6 7
Available ex stock Power supply units see Chap. 7 "Supplementary Comparison of the section of the supplementary Comparison of the supplementary Comp	omponents".
Included in delivery of the device: • Brief instructions (Leporello) • CD-ROM with detailed documentation	
 For oxygen application, add Order code E10. Version 7MF4233-1DY only up to max. span 200 mt When the manufacture's certificate (calibration certificate for transmitters with diaphragm seals accomis recommended only to order this certificate excluse phragm seals. The measuring accuracy of the total or here. If the acceptance test certificate 3.1 is ordered mounted diaphragm seals this certificate must also recommended once the certificate must also 	bar a (80 inH ₂ O a). icate) has to be ding to IEC 60770-2, ively with the dia- ombination is certifie for the transmitter wi be ordered with the
 ⁴⁾ If the acceptance test certificate 3.1.is ordered for the mounted diaphragm seals this certificate must also respective remote seals. 	ne transmitter with be ordered with the
⁵⁾ The diaphragm seal is to be specified with a separa	te order number and

- must be included wiht the tranmitter order number, for example 7MF423.-..Y.-... and 7MF4900-1...-.B
- ⁶⁾ The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.
- ⁷⁾ Not in conjunction with Electrical connection "Screwed gland Pg 13.5" and "Han7D plug".
- 8) Without cable gland, with blanking plug.
- ⁹⁾ With enclosed cable gland Ex ia and blanking plug.
- $^{10)}\mbox{Configurations}$ with HAN and M12 connectors are only available in Ex ic.
- ¹¹⁾Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".
- 12)M12 delivered without cable socket
- ¹³⁾Not available with protection type "Ex d" (optiones D, P, N and R)
- ¹⁴)Not with protection types "Explosion-proof" and "Ex nA", "Intrinsic safe" and "Explosion proof".

Pressure Measurement Transmitters for general requirements SITRANS P DS III for absolute pressure

Selection and Orderin	g data	Orc	ler N	10.			
For absolute pressure sure series)	(from the gauge pres-						
SITRANS P DS III with PROFIBUS PA (PA)			7 M F 4 2 3 4 -				
SITRANS P DS III with	FOUNDATION Fieldbus	7 M	F 4 2	23	5.		
(FF)							
Macouring coll filling	Macouring coll			-		ł	F
measuring cen ming	cleaning						
Silicone oil	normal	1					
Inert liquid ¹⁾	grease-free to	3					
	cleanliness level 2						
Nominal measuring ra	nge						
250 mbar a	(3.62 psia)	D					
1300 mbar a	(18.85 psia)	F					
o Dar a 20 har a	(72.5 psia)	G 1					
	(400 psia)	. "					
Seal diaphragm	Process connection						
	Ctoiplage steel	-					
Stainless steel	Stainless steel		A				
Hastellov	Hastollov						
Version as diaphragm s	eal ^{2) 3) 4) 5) 6)}		Ŷ				
Process connection		-					
Connection shank G ¹	B to FN 837-1		0				
Female thread ½-14 N	JPT		1				
Stainless steel oval fla	inge with process connec-						
tion female thread 1/4-	18 NPT						
- Mounting thread '/10	₃ -20 UNF to IEC 61518		2				
 Mounting thread M1 	0 to DIN 19213		3				
- Mounting thread M12 to DIN 19213			4				
Male thread M20 x 1.5			5				
		-	0				
Non-wetted parts mate	erials						
Housing made of die-			ļ	2			
Housing stainless steel precision casting				,			
Standard varaiana					4		
Standard Versions	English label inseriations				1		
documentation in 5 la	nguages on CD				2		
(no order code select	able)						
Explosion protection							
None					ŀ	١	
With ATEX, Type of pr	otection:						
- "Intrinsic safety (Ex i	a)"				E	3	
- "Explosion-proof (Ex d)" ⁽⁾					L)	
 "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d)"⁸⁾ 					'	1	
- "Ex nA/ic (Zone 2)" ⁹⁾					E		
- "Intrinsic safety, explosion-proof enclosure and					F	R	
dust explosion protection (Ex ia + Ex d + Zone 1D/2D)" ⁸⁾ (not for DS III FF)							
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX)					S	3	
• With FM + CSA, Type of protection:							
- "Intrinsic Safe und E	xplosion Proof (is + xp)"				ľ	10	;
Electrical connection/	cable entry						
Screwed gland M20 x	1.5					B	5
Screwed gland 1/2-14 M12 connectors (stain	1071						
- INITE CONTROLOTS (Stall	11000 31001) ' '					1	1

sure series)	
SITRANS P DS III with PROFIBUS PA (PA)	7 M F 4 2 3 4 -
SITRANS P DS III with FOUNDATION Fieldbus	7 M F 4 2 3 5 -
Display	
Without display	
 Without Visible display (display concealed setting: mA) 	•
With visible display	
with customer-specific display	-
(setting as specified, Order Code "Y21" or "Y22" required)	
Included in delivery of the device:	
Brief instructions (Leporello)	
• CD-ROW with detailed documentation	
¹⁾ For oxygen application, add Order code E10.	
²⁾ Version 7MF4233-1DY only up to max. span 200 r	nbar a (2.9 psia).
³⁾ When the manufacture's certificate (calibration certificate for transmitters with diaphragm seals accoust is recommended only to order this certificate exclust phragm seals. The measuring accuracy of the total of here.	ficate) has to be rding to IEC 60770-2 sively with the dia- combination is certif
4) If the acceptance test certificate 3.1.is ordered for t mounted diaphragm seals this certificate must also respective remote seals.	he transmitter with be ordered with the
⁵⁾ The diaphragm seal is to be specified with a separa must be included wiht the tranmitter order number, 7MF423Y and 7MF4900-1B	ate order number ar for example
⁶⁾ The standard measuring cell filling for configuration is silicone oil.	s with remote seals
7) Without cable gland, with blanking plug.	
⁸⁾ With enclosed cable gland Ex ia and blanking plug	
⁹⁾ Configurations with HAN and M12 connectors are c	nly available in Ex i
¹⁰⁾ M12 delivered without cable socket	
¹¹⁾ Not with protection types "Explosion-proof" and "Ex and "Explosion proof".	nA", "Intrinsic safe

Pressure Measurement Transmitters for general requirements SITRANS P DS III for absolute pressure

(from gauge pressure series)

Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "-Z" to 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
Stainless steel	A02	✓	✓	✓
Plug				
• Han 7D (metal, gray)	A30	✓		
 Han 8U (instead of Han 7D) 	A31	✓		
Angled	A32	✓		
• Han 8D (metal, gray)	A33	~		
Cable sockets for M12 connectors (stainless steel)	A50	1	1	~
Rating plate inscription (instead of German)	B 44	,	,	,
• English	B11	1	1	1
French Spanish	B12	*	*	*
• Italian	B14		· /	1
English rating plate	B21	1	1	1
Pressure units in inH_{0} and/or psi	DZI	•	•	•
Quality inspection certificate (Five-step	C11	~	~	✓
factory calibration) to IEC 60770-2 ¹⁾	•			
Inspection certificate ²⁾ Acc. to EN 10204-3.1	C12	~	~	~
Factory certificate Acc. to EN 10204-2.2	C14	1	~	~
"Functional safety (SIL2)" certificate to IEC 61508	C20	~		
"Functional safety" certificate (PROFIsafe) and PROFIsafe protocol	C21		~	
"Functional safety (SIL2/3)" certificate to IEC 61508	C23	1		
Device passport Russia (For price request please contact the technical support	C99	~	~	*
www.siemens.com/automation/support-request)				
Setting of upper limit of output signal to 22.0 mA	D05	~		
Manufacturer's declaration acc. to NACE	D07	✓	✓	✓
Degree of protection IP65/IP68 (only for M20 x 1.5 and ½-14 NPT)	D12	~	~	~
Supplied with oval flange (1 item), PTFE packing and screws in thread of oval flange	D37	*	~	*
Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety"	E01	1	~	*
(transmitter 7MF4B Ex ia)")				
Oxygen application	E10	✓	✓	✓
(In the case of oxygen measurement and inert liquid max. 100 bar (1450 psi) at 60°C (140 °F))				
Export approval Korea	E11	~	~	1
Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil)	E25	~	1	~
(only for transmitter / MF4B)				
"Flameproof" explosion protection accord- ing to INMETRO (Brazil)	E26	~	~	~
	-			
Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil) (only for transmitter 7MF4 P)	E28	~	~	
Ex Approval IEC Ex (Ex ia) (only for transmitter 7MF4B)	E45	~	~	~

Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "-Z" to Order No. and specify Order Code.				
Ex Approval IEC Ex (Ex id) (only for transmitter 7MF4D)	E46	1	•	1
Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)	E55	1	1	~
Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)	E56	1	1	1
Explosion-proof "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)	E57	1	~	~
"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (only for transmitter 7MF4[B, D]Z + E11)	E70	1	*	*
Two coats of lacquer on casing and cover (PU on epoxy)	G10	1	✓	1

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 dia-phragm 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.

Pressure Measurement Transmitters for general requirements SITRANS P DS III for absolute pressure

(from gauge pressure series)

Selection and Ordering data		Order code			
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	1	1	~	
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	1			
Setting of pressure indication in pressure units	Y21	✓	~	~	
Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi, Note: The following pressure units can be selected: bar, mbar, mm H_2O^*), in H_2O^*), ft H_2O^*), mmHG, inHG, psi, Pa, kPa, MPa, g/cm ² , kg/cm ² , Torr, ATM or % *) ref. temperature 20 °C					
Setting of pressure indication in non-pressure units ¹⁾ Specify in plain text: Y22: up to //min, m ³ /h, m, USgpm, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	Y22 + Y01	•			
Preset bus address possible between 1 and 126	Y25		~	1	
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⁾ Preset values can only be changed over SIMATIC PDM.

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

Dimensional drawings



- 1 Electronic side, digital display (longer overall length for cover with window)¹⁾
- 2 Terminal side¹⁾
- 3 Electrical connection:
 - Screwed gland Pg 13,5 (adapter)(Adapter)^{2) 3)}, Screwed gland M20 x 1,5 or Screwed gland 1/2-14 NPT or Han 7D/Han 8D^{2) 3)} plug
- (4) Harting adapter
- 1) Allow approx. 20 mm (0.79 inch) thread length to permit unscrewing
- Not with type of protection "Explosion-proof enclosure" Not with type of protection "FM + CSA" [IS + XP]" 2)
- 3)
- 4) For Pg 13,5 with adapter approx. 45 mm (1.77 inch)
- 5) Minimum distance for rotating

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



- 5 Protective cover over keys
- 6 Blanking plug
- (7)Screw cover - safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)
- Process connection: Connection shank G1/2B or Oval flange (8)
- (9) Mounting bracket (option)

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

Technical specifications

SITRANS P, DS III for absolute pressure (from the differential pressure series)					
	HART		PROFIBUS PA and FO	UNDATION Fieldbus	
Input					
Measured variable	Absolute pressure				
Spans (infinitely adjustable) or nominal measuring range and max. permissible operating pressure	Span (min max.)	Maximum operating pressure	Nominal measuring range	Maximum operating pressure	
	8.3 250 mbar a (0.12 3.62 psia)	32 bar a (464 psia)	250 mbar a (3.62 psia)	32 bar a (464 psia)	
	43 1300 mbar a (0.62 18.85 psia)	32 bar a (464 psia)	1300 bar a (18.85 psia)	32 bar a (464 psia)	
	160 5000 mbar a (2.32 72.52 psia)	32 bar a (464 psia)	5 bar a (72.5 psia)	32 bar a (464 psia)	
	1 30 bar a (14.5 435 psia)	160 bar a (2320 psia)	30 bar a (435 psia)	160 bar a (2320 psia)	
	5.3 100 bar a (76.9 1450 psia)	160 bar a (2320 psia) (for connection thread M10 and 7/16-20 UNF in the process flanges)	100 bar a (1450 psia)	160 bar a (2320 psia) (for connection thread M10 and 7/16-20 UNF in the process flanges)	
Lower measuring limit		I			
 Measuring cell with silicone oil filling 		0 mbar a	a (0 psia)		
Upper measuring limit		100 % of	max. span		
Output					
Output signal	4 20 mA		Digital PROFIBUS PA and FOUNDATION Fieldbus signal		
 Lower limit (infinitely adjustable) 	3.55 mA, factory preset	to 3.84 mA	-		
Upper limit (infinitely adjustable)	23 mA, factory preset to set to 22.0 mA	20.5 mA or optionally	-		
Load					
Without HART	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.023$ $U_{\rm H}$: Power supply in V	3 A in Ω,	-		
With HART	$R_{\rm B}$ = 230 500 Ω (SIN $R_{\rm B}$ = 230 1100 Ω (HA	IATIC PDM) or .RT Communicator)	-		
Physical bus	-		IEC 61158-2	61158-2	
Protection against polarity reversal	Protected against short	-circuit and polarity rever supply	rsal. Each connection ag voltage.	ainst the other with max.	
Electrical damping (step width 0.1 s)		Set to 2 s	(0 100 s)		
Measuring accuracy		Acc. to IE	C 60770-1		
Reference conditions (All error data refer always refer to the set span)	Increasing characteristic ing, room ten	c, start-of-scale value 0 k nperature 25 °C (77 °F)) i	oar, stainless steel seal d r: Span ratio (r = max. sp	iaphragm, silicone oil fill- oan / set span)	
Error in measurement at limit setting incl. hysteresis and reproducibility					
Linear characteristic			≤0.1 %		
- r ≤ 10	≤ 0.1 %				
- 10 < r ≤ 30	≤ 0.2 %				
Long-term stability (temperature change ± 30 °C (± 54 °F))	≤ (0.1 · r) %/year		≤0.1 %/year		
Influence of ambient temperature					
• at -10 +60 °C (14 140 °F)	$\leq (0.1 \cdot r + 0.2) \%^{1)}$		≤ 0.3 %		
• at -4010 °C and 60 85 °C (-40 +14 °F and 140 185 °F)	≤ (0.1 · r + 0.15) %/10 K		≤ 0.25 %/10 K		
Measured Value Resolution	-		$3 \cdot 10^{-5}$ of nominal measuring range		

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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 the differential pressure series)

	HART PROFIBUS PA and FOUNDATION Fieldbus		
Rated conditions			
Degree of protection (to IEC 60529)	IP65 (optio	nal IP65/IP68)	
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	C (-4 +212 °F)	
• In conjunction with dust explosion protection	-20 +60 °C	C (-4 +140 °F)	
Ambient conditions			
Ambient temperature			
- Display readable	-30 +85 °C	(-22 +185 °F)	
Storage temperature	-50 +85 °C	(-58 +185 °F)	
Climatic class			
- Condensation	Relative hum Condensation permissible,	idity 0 100 % , suitable for use in the tropics	
Electromagnetic Compatibility			
- Emitted interference and interference immu- nity	Acc. to EN 61326 and NAMUR NE 21		
Design			
Weight (without options)	≈ 4.5 kg (≈ 9.9 (lb)		
Enclosure material	Low-copper die-cast aluminum, GD-AlSi12 or stainless steel precision casting, mat. no. 1.4408		
Wetted parts materials			
Seal diaphragm	Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819, Monel, mat. no. 2.4360, tantalum or gold		
 Process flanges and sealing screw 	Stainless steel, mat. no. 1.4408, Hastelloy 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	Silicone oil or (maximum value with oxigen measurement	inert filling liquid pressure 100 bar (1450 psi) at 60 °C (140 °F))	
Process connection	1/4-18 NPT and flange connection with mount to IEC	nting thread M10 to DIN 19213 or ⁷ / ₁₆ -20 UNF C 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 \leq 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 differential pressure series)

SITRANS P, DS III for absolute pressure (from	the differential pressure series)			
	HART	PROFIBUS PA and FOUNDATION Fieldbus		
Certificates and approvals				
Classification according to PED 97/23/EC	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article paragraph 3 (sound engineering practice)			
Explosion protection				
Intrinsic safety "i"	PTB 11 ATEX 2011 X			
- Marking	Ex II 1/2 G Ex ia/ib	IIC T4/T5/T6 Ga/Gb		
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperature class T4; -40 +70 °C (-40 +158 °F) temperature class T5; -40 +60 °C (-40 +140 °F) temperature class T6			
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}, I_i = 100 \text{ mA},$ $P_i = 750 \text{ mW}; R_i = 300 \Omega$	FISCO supply unit: $U_0 = 17.5 \text{ V}$, $I_0 = 380 \text{ mA}$, $P_0 = 5.32 \text{ W}$ Linear barrier: $U_0 = 24 \text{ V}$, $I_0 = 250 \text{ mA}$, $P_0 = 1.2 \text{ W}$		
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_i = 7 \mu\text{H}, C_i = 1.1 \text{nF}$		
Explosion-proof "d"	PTB 99 /	ATEX 1160		
- Marking	Ex II 1/2 G Ex	d IIC T4/T6 Gb		
- Permissible ambient temperature	-40 +85 °C (-40 +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	Ex II 1 D IP65 T 120 °C Ex II 1/2 D IP65 T 120 °C			
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F)			
- Max. surface temperature	120 °C	(248 °F)		
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}$, $I_i = 100 \text{ mA}$.	FISCO supply unit: $U_0 = 17.5 \text{ V}, I_0 = 380 \text{ mA}, P_0 = 5.32 \text{ W}$		
	$P_{\rm i} = 750 \text{ mW}, R_{\rm i} = 300 \Omega$	$U_0 = 24 \text{ V}, I_0 = 250 \text{ mA}, P_0 = 1.2 \text{ W}$		
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{\rm i}$ = 7 µH, $C_{\rm i}$ = 1.1 nF		
Dust explosion protection for zone 21/22	PTB 01 /	ATEX 2055		
- Marking	Ex II 2 D IF	265 T 120 °C		
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC; $P_{\rm max}$ = 1.2 W	To circuits with values: $U_{\rm H}$ = 9 32 V DC; $P_{\rm max}$ = 1 W		
 Type of protection "n" (zone 2) 	PTB 11 A	TEX 2011 X		
- Marking	Ex II 2/3 G Ex r Ex II 2/3 G Ex i	nA II T4/T5/T6 Gc c IIC T4/T5/T6 Gc		
- Connection (Ex nA)	<i>U</i> _m = 45 V	U _m = 32 V		
- Connection (Ex ic)	To circuits with values: $U_{\rm i} = 45 \text{ V}$	FISCO supply unit ic: $U_0 = 17.5 \text{ V}, I_0 = 570 \text{ mA}$		
		Linear barrier: $U_0 = 32 \text{ V}, I_0 = 132 \text{ mA}, P_0 = 1 \text{ W}$		
- Effective internal inductance/capacitance	$L_{\rm i}$ = 0.4 mH, $C_{\rm i}$ = 6 nF	$L_{i} = 7 \mu H, C_{i} = 1.1 nF$		
 Explosion protection acc. to FM 	Certificate of Co	mpliance 3008490		
- Identification (XP/DIP) or (IS); (NI)	CL I, DIV 1, GP ABCD T4T6; CL II, DIV 1, 0 CL I, DIV 2, GP ABCD T4	GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4T6; F6; 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			

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

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

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HART communication			
HART	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 Pro- cess Control Devices Version 3.0, Class B		
Function blocks Analog input 	2		
 Adaptation to customer-specif- ic process variables 	Yes, linearly rising or falling characteristic		
- Electrical damping, adjustable	0 100 s		
- Simulation function	Input /Output		
- Failure mode	parameterizable (last good value, substitute value, incorrect value)		
- Limit monitoring	Yes, one upper and lower 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 respectively		
 Physical block 	1		
Transducer blocks	2		
 Pressure transducer block 			
 Can be calibrated by applying two pressures 	Yes		
- Monitoring of sensor limits	Yes		
 Specification of a container characteristic with 	Max. 30 nodes		
- Square-rooted characteristic for flow measurement	Yes		
 Gradual volume suppression and implementation point of square-root extraction 	Parameterizable		
- Simulation function for mea- sured pressure value and sen-	Constant value or over parame- terizable ramp function		

FOUNDATION Fieldbus communication

Function blocks

Analog input

- Adaptation to customer-specific process variables
- Electrical damping, adjustable
- Simulation function
- Failure mode
- Limit monitoring
- Square-rooted characteristic for flow measurement
- PID
- Physical block
- Transducer blocks
- Pressure transducer block
- Can be calibrated by applying two pressures
- Monitoring of sensor limits
- Simulation function: Measured pressure value, sensor temper-ature 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

Yes

Standard FOUNDATION Fieldbus function block

1 resource block

1 transducer block Pressure with calibration, 1 transducer block LCD

Yes

Yes

Constant value or over parameterizable ramp function

sor temperature

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

Selection and Ordering data	Order No.	Selection and Ordering data Order No.
Pressure transmitters for absolute pressure from differential pressure series, SITRANS P DS III with HART	7 M F 4 3 3 3 -	Pressure transmitters for absolute pressure from differential pressure series, SITRANS P DS III with HART
Measuring cell filling Measuring cell clean- ing Silicone oil normal Inert liquid ¹⁾ grease-free to cleanliness level 2 Measuring span (min max.) 8.3 250 mbar a	1 3 D	Display 0 • Without display 0 • Without visible display 1 (display concealed, setting: mA) 1 • With visible display 6 • with customer-specific display 6 • setting as specified, Order Code "Y21" or "Y22" 7
Measuring span (min max.)8.3 250 mbar a $(0.12 3.62 \text{ psia})$ 43 1300 mbar a $(0.62 18.85 \text{ psia})$ 0.16 5 bar a $(2.32 72.5 \text{ psia})$ 1 30 bar a $(14.5 435 \text{ psia})$ 5.3 100 bar a $(76.9 1450 \text{ psia})$ Wetted parts materialsSeal diaphragmParts of measuring cellStainless steelStainless steelHastelloyTantalumTantalumMonelGold <td>D F G H K E A B C E H L Y 2 0 6 4 4 2 3 1 2 3 1 2 3 4 8 4 8 4 8 9 9</td> <td> With Customer-specified, Order Code "Y21" or "Y22" required) Available ex stock Power supply units see Chap. 7 "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 psia). 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⁾ The diaphragm seal is to be specified with a separate order number and must be included with the transiter order number, for example 7MF433,, und 7MF4900-1, B ⁶⁾ The standard measuring cell filling for configurations with remote seals (Y) is silicone oil. ⁷⁾ Not for span "5.3 100 bar a (76.9 1450 psia)". Position of the top vent valve in the process flange (see dimensional drawing). ⁸⁾ Not to conjunction with Electrical connection "Screwed gland Pg 13.5" and "Han7D plug". ⁹⁾ Without cable gland, with blanking plug ¹⁰Ontigurations with HAN and M12 connectors are only available in Ex ic. ¹²Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof". ¹³M12 delivered without cable socket </td>	D F G H K E A B C E H L Y 2 0 6 4 4 2 3 1 2 3 1 2 3 4 8 4 8 4 8 9 9	 With Customer-specified, Order Code "Y21" or "Y22" required) Available ex stock Power supply units see Chap. 7 "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 psia). 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⁾ The diaphragm seal is to be specified with a separate order number and must be included with the transiter order number, for example 7MF433,, und 7MF4900-1, B ⁶⁾ The standard measuring cell filling for configurations with remote seals (Y) is silicone oil. ⁷⁾ Not for span "5.3 100 bar a (76.9 1450 psia)". Position of the top vent valve in the process flange (see dimensional drawing). ⁸⁾ Not to conjunction with Electrical connection "Screwed gland Pg 13.5" and "Han7D plug". ⁹⁾ Without cable gland, with blanking plug ¹⁰Ontigurations with HAN and M12 connectors are only available in Ex ic. ¹²Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof". ¹³M12 delivered without cable socket
 (Ex ia + Ex d)^{* 10} "Ex nA/ic (Zone 2)^{*11}) "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia + Ex d + Zone 1D/2D)^{*10}) FM + CSA (is + ep) + Ex ia + Ex d (ATEX) With FM + CSA, Type of protection: "Intrinsic Safe und Explosion Proof (is + xp)"⁹) Electrical connection/cable entry Screwed gland Pg 13.5¹²) Screwed gland M20 x 1.5 Screwed gland ½-14 NPT Han 7D plug (plastic housing) incl. mating connector¹² 	E R NC A B C D	
• M12 connectors (stainless steel) ^{12) 13)}	F	

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Pressure Measurement Transmitters for general requirements

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

Selection and Ordering	g data	Orc	ler	No).	
Pressure transmitter for from differential press	or absolute pressure ure series					
SITRANS P DS III with	PROFIBUS PA (PA)	7 M	F 4	3	34	-
SITRANS P DS III with	FOUNDATION Fieldbus	7 M	F 4	3	35	-
(FF)						
			t,		-	
Measuring cell filling	Measuring cell clean-					
	ing					
Silicone oil	normal	1				
Inert liquid '	grease-free to cleanliness level 2	3				
Nominal measuring ra	nae					
250 mbar a	(3.62 psia)	D				
1300 mbar a	(18.85 psia)	F				
5 bar a	(72.5 psia)	G				
30 bar a	(435 psia)	н				
100 bar a	(1450 psia)	K	Е			
Wetted parts materials						
Seal diaphragm	Parts of measuring cell					
Stainless steel	Stainless steel		A			
Hastelloy	Stainless steel		в			
Hastelloy	Hastelloy		С			
Tantalum	Tantalum		Е			
Monel	Monel		Н			
Gold	Gold		L			
Version as diaphragm s	eal ^{2) 3) 4) 5) 6)}		Y			
 Female thread ¹/₄-18 NP Sealing screw opposit Mounting thread ⁷/₁₆ Mounting thread M1 (only for replacement Vent on side of process Mounting thread ⁷/₁₆ Mounting thread M1 (only for replacement Non-wetted parts mate 	T with flange connection e process connection -20 UNF to IEC 61518 0 to DIN 19213 t requirement) s flange ⁷⁾ -20 UNF to IEC 61518 0 to DIN 19213 t requirement) srials	_	2 0 6 4			
process flange screws	Electronics housing					
Stainless steel Stainless steel	Die-cast aluminum Stainless steel precision casting			2 3		
Version						
 Standard versions 					1	
 International version, E documentation in 5 lan (no order code selectar) 	English label inscriptions, nguages on CD able)				2	
Explosion protection						
None						Α
• With ATEX, Type of pro	otection:					
- "Intrinsic safety (Ex i	a)"					в
- "Explosion-proof (Ex d)" ⁸⁾						D
- "Intrinsic safety and flameproof enclosure"						Ρ
$(EX a + EX u)^{-\gamma}$ = "Ex nA/ic (Zone 2)" ¹⁰)						F
- "Intrinsic safety explosion-proof enclosure and						B
dust explosion protection (Ex ia $+$ Ex d $+$						
Zone 1D/2D)" ⁹⁾ (not	for DS III FF)					
• FM + CSA (is + ep) +	Ex ia + Ex d (ATEX)					S
• With FM + CSA, Type	of protection:					
- "Intrinsic Safe und E	xplosion Proot (is + xp)" 8)					NC
Electrical connection/	cable entry					
 Screwed gland M20 x 	1.5					B

	00101104	giaria	10120 /	· 1.0
•	Screwed	gland	1/2-14	NPT

• M12 connectors (stainless steel)^{11) 12) 13)}

Selection and Ordering data	Order No.
Pressure transmitter for absolute pressure from differential pressure series	
SITRANS P DS III with PROFIBUS PA (PA)	7 M F 4 3 3 4 -
SITRANS P DS III with FOUNDATION Fieldbus	7 M F 4 3 3 5 -
(,,)	
Display	
Without display	
Without visible display	
(display concealed, setting: mA)	
 With visible display 	
• With quatemar appaifia diaplay (astting as	

in di

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 (80 inH_2O 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.
- $^{\rm 5)}$ The diaphragm seal is to be specified with a separate order number and must be included wiht the tranmitter order number, for example 7MF433.-.Y.-... und 7MF4900-1...-.B
- ⁶⁾ The standard measuring cell filling for configurations with remote seals (Y) is silicone oil.
- ⁷⁾ Not for nominal measuring range 100 bar a (1450 psia). Position of the top vent valve in the process flange (see dimensional drawing).
- ⁸⁾ Without cable gland, with blanking plug
- ⁹⁾ With enclosed cable gland Ex ia and blanking plug
- ¹⁰⁾Configurations with HAN and M12 connectors are only available in Ex ic.
- ¹¹⁾M12 delivered without cable socket
- $^{12)}\mbox{Not}$ available with protection type "Ex d" (options D, P, N and R)
- ¹³⁾Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".

With customer-specific display (setting as specified, Order Code "Y21" required)

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

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,				
• Stool	A01	1	1	1
Stainless steel	A01 A02	1	¥	¥
O-rings for process flanges (instead of FPM (Viton))				
PTFE (Teflon)	A20	1	✓	✓
• FEP (with silicone core, approved for food)	A21	✓	✓	✓
 FFPM (Kalrez, compound 4079) NBR (Buna N) 	A22 A23	√ √	√ √	* *
plug				
• Han 7D (metal, gray)	A30	√		
Han 8U (instead of Han 7D)	A31	1		
Angled Hep 2D (motel, grav)	A32	4		
• Han 8D (metal, gray)	A33	•		
Sealing screw 1/4-18 NPT, with valve in mat. of process flanges	A40	~	~	~
Cable sockets for M12 connectors (stainless steel)	A50	1	~	~
Rating plate inscription				
(instead of German)				,
• English	B11	*	1	1
French Spanish	B12	4	*	4
Spanish Italian	B13 B14	*	*	*
	D14	•	•	*
English rating plate	B21	~	~	~
	011	./		
factory calibration) to IEC 60770-2 ¹⁾	611	•	•	•
Inspection certificate ²) Acc. to EN 10204-3.1	C12	~	~	~
Factory certificate Acc. to EN 10204-2.2	C14	~	✓	~
"Functional safety (SIL2)" certificate to IEC 61508	C20	~		
"Functional safety" certificate (PROFIsafe) and PROFIsafe protocol	C21		1	
"Functional safety (SIL2/3)" certificate to IEC 61508	C23	1		
Device passport Russia (For price request please contact the technical support	C99	1	~	~
www.siemens.com/automation/support-request)				
Setting of upper limit of output signal to 22.0 mA	D05	~		
(only together with seal diaphragm made of Hastellov and stainless steel)	D07	~	1	*
Degree of protection IP65/IP68 (only for M20 x 1.5 and ½-14 NPT)	D12	~	✓	✓
Supplied with oval flance	D37	1	1	1
(1 item), PTFE packing and screws in thread of process flange	037	·	•	•
Use in or on zone 1D/2D	E01	✓	✓	✓
(only together with type of protection "Intrinsic safety" (transmitter 7ME4 B Ex ia)")				
Overage application	E10	1	1	1
(In the case of oxygen measurement and inert liquid max. 100 bar (1450 psi) at 60°C (140 °F))	210	v	v	•
Export approval Korea	E11	✓	1	✓

Selection and Ordering data	Order	code		
<i>Further designs</i> Add " -Z " to Order No. and specify Order Code.		HART	PA	FF
Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil) (only for transmitter 7ME4 B)	E25	~	~	*
"Flameproof" explosion protection accord- ing to INMETRO (Brazil) (only for transmitter ZME4)	E26	~	1	~
Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil) (only for transmitter 7ME4 P)	E28	~	1	
Ex Approval IEC Ex (Ex ia) (only for transmitter 7MF4B)	E45	~	~	~
Ex Approval IEC Ex (Ex id) (only for transmitter 7MF4D)	E46	~	~	~
Explosion-proof "Intrinsic safety" to NEPSI (China)	E55	~	*	*
(only for transmitter /MF4B) Explosion protection "Explosion-proof" to NEPSI (China)	E56	✓	~	~
(only for transmitter 7MF4D)				
Explosion-proof "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)	E57	~	~	~
"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (only for transmitter 7MF4[B, D]Z + E11)	E70	~	~	*
Two coats of lacquer on casing and cover (PU on epoxy)	G10	~	✓	✓
Interchanging of process connection side	H01	~	✓	✓
Vent on side for gas measurements	H02	✓	1	✓
Process flange • Hastelloy • Monel • Stainless steel with PVDF insert max. PN 10 (MAWP 145 psi), max. temperature of medium 90 °C (194 °F) For ½-14 NPT inner process connection on the side in the middle of the process flange, vent valve not possible	K01 K02 K04	* * *	\$ \$	* * *

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 dia-phragm 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.

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

Coloction and Ordering data	Order	ممطم		
Selection and Ordering data	Urder	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) Max. 16 characters, specify in plain text: Y15:	Y15	1	•	•
Measuring point text Max. 27 characters, specify in plain text: Y16:	Y16	1	1	•
Entry of HART address (TAG)	V17	1		
Max. 8 characters, specify in plain text: Y17:	117	·		
Setting of pressure indication in pressure units	Y21	1	1	*
Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi,				
Note: The following pressure units can be selected:				
bar, mbar, mm H ₂ O ^{*)} , inH ₂ O ^{*)} , ftH ₂ O ^{*)} , mmHG, inHG, psi, Pa, kPa, MPa, g/cm ² , kg/cm ² , Torr, ATM or % *) ref. temperature 20 °C				
Setting of pressure indication in	Y22 +	✓		
non-pressure units ¹⁾	Y01			
Specify in plain text: Y22: up to //min, m ³ /h, m, USgpm, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 char- acters)				
Preset bus address	Y25		~	~
possible between 1 and 126				
Specify in plain text: Y25:				

Factory mounting of valve manifolds, see accessories.

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

✓ = available

¹⁾ Preset values can only be changed over SIMATIC PDM.

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

Dimensional drawings



- Not with type of protection "Explosion-proof enclosure" 2)
- Not with type of protection "FM + CSA" [IS + XP]" 3)
- 4) 92 mm (3.62 inch) for minimum distance to permit rotation with indicator
- 5) For Pg 13,5 with adapter approx. 45 mm (1.77 inch)

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

(6.54)

166 (

(3.8)

96

Π

262 (10.3)

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 flow

	HART		PROFIBUS PA and FO	UNDATION Fieldbus	
Input					
Measured variable	Differential pressure and flow				
Spans (infinitely adjustable) or nominal measuring range and max. permissible operating pressure	Span (min max.)	Maximum operating pressure	Nominal measuring range	Maximum operating pressure	
	1 20 mbar (0.4 8 inH ₂ O)	32 bar (464 psi)	20 mbar (8 inH ₂ O)	32 bar (464 psi)	
	1 60 mbar (0.4 24 inH ₂ O)	160 bar (2320 psi)	60 mbar (24 inH ₂ O)	160 bar (2320 psi)	
	2.5 250 mbar (1 100 inH ₂ O)		250 mbar (100 inH ₂ O)		
	6 600 mbar (2.4 240 inH ₂ O)		600 mbar (240 inH ₂ O)		
	16 1600 mbar (6.4 642 inH ₂ O)		1600 mbar (642 inH ₂ O)		
	50 5000 mbar (20 2000 inH ₂ O)		5 bar (2000 inH ₂ O)		
	0.3 30 bar (4.35 435 psi)		30 bar (435 psi)		
	2.5 250 mbar (1 100 inH ₂ O)	420 bar (6091 psi)	250 mbar (100 inH ₂ O)	420 bar (6091 psi)	
	6 600 mbar (2.4 240 inH ₂ O)		600 mbar (240 inH ₂ O)		
	16 1600 mbar (6.4 642 inH ₂ O)		1600 mbar (642 inH ₂ O)		
	50 5000 mbar (20 2000 inH ₂ O)		5 bar (2000 inH ₂ O)		
	0.3 30 bar (4.35 435 psi)		30 bar (435 psi)		
Lower measuring limit					
 Measuring cell with silicone oil filling 	-100 % of max. spar	n (-33 % with 30 bar (435	psi) measuring cell or 30	0 mbar a (0.44 psia))	
Upper measuring limit	100 % of max. spa	an (for oxygen version an	d inert filling liquid; max.	120 bar (1740 psi))	
Output					
Output signal	4 20 mA		Digital PROFIBUS PA and FOUNDATION Fieldbus 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	-		
Load					
Without HART	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.02$ $U_{\rm H}$: Power supply in V	3 A in Ω,	-		
With HART	$R_{\rm B}$ = 230 500 Ω (SIM $R_{\rm B}$ = 230 1100 Ω (HA	IATIC PDM) or ART Communicator)	-		
Physical bus	-		IEC 61158-2		
Protection against polarity reversal	Protected against short	circuit and polarity revei- supply	rsal. Each connection aga voltage.	ainst the other with max	
Electrical damping (step width 0.1 s)	Set to 2 s (0 100 s)				
Measuring accuracy		Acc. to IE	C 60770-1		
Reference conditions (All error data refer always refer to the set span)	Increasing characteristi ing, room ter	c, start-of-scale value 0 k nperature 25 °C (77 °F))	oar, stainless steel seal di r: Span ratio (r = max. sp	iaphragm, silicone oil fil an / set span)	
Error in measurement at limit setting incl. hysteresis and reproducibility					
Linear characteristic			≤ 0.075 %		
$-r \le 10$	$\leq (0.0029 \cdot r + 0.071) \%$				
- iu < r≤ 30 - 30 < r < 100	\geq (0.0045 · r + 0.071) % < (0.005 · r + 0.05) %				
• Square-rooted characteristic (flow > 50 %)	(≤ 0.1 %		
- r ≤ 10	≤ 0.1 %				
- 10 < r < 30	< 0.2 %				

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

SITRANS P, DS III for differential pressure and	flow		
	HART	PROFIBUS PA and FOUNDATION Fieldbus	
• Square-rooted characteristic (flow > 25 50 %)		≤ 0.2	
- r ≤ 10	≤ 0.2 %		
- 10 < r ≤ 30	≤ 0.4 %		
Long-term stability (temperature change ± 30 °C (± 54 °F))	≤ (0.25 · r)% every 5 years static pressure max. 70 bar (1015 psi)	≤ 0.25 % every 5 years static pressure max. 70 bar (1015 psi)	
• 20 mbar (0.29 psi)-measuring cell	$\leq (0.2 \cdot r)$ per year	≤ 0.2 per vear	
• 250, 600, 1600 and 5000 mbar (0.29, 0.87, 2.32 and 7.25 psi) -measuring cell	\leq (0.125 · r) per 5 years	≤ 0.125 per 5 years	
Influence of ambient temperature			
• at -10 +60 °C (14 140 °F)	$\leq (0.08 \cdot r + 0.1) \%^{1)}$	≤ 0.3 %	
• at -4010 °C and 60 85 °C (-40 +14 °F and 140 185 °F)	\leq (0.1 \cdot 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	\leq (0.15 · r)% per 32 bar (464 psi)	\leq 0.15 % per 32 bar (464 psi)	
 on the span (PKS) 	≤ 0.14 % per 70 bar (1015 psi)	-	
- 20 mbar (0.29 psi)-measuring cell	\leq 0.2 % per 32 bar (464 psi)	-	
Measured Value Resolution	-	$3 \cdot 10^{-5}$ of nominal measuring range	
Rated conditions			
Degree of protection (to EN 60529)	IP65 (option	nal IP65/IP68)	
Temperature of medium			
 Measuring cell with silicone oil filling 	-40 +100 °C	(-40 +212 °F)	
 Measuring cell with inert filling liquid 	-20 +100 °C	C (-4 +212 °F)	
 In conjunction with dust explosion protection 	-20 +60 °C	(-4 +140 °F)	
Ambient conditions			
Ambient temperature			
- Display readable	-30 +85 °C	(-22 +185 °F)	
Storage temperature	-50 +85 °C	(-58 +185 °F)	
Climatic class			
- Condensation	Relative humi	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)	≈ 4.5 kg	(≈ 9.9 (lb)	
Enclosure material	Low-copper die-cast aluminum, GD-AlSi12 or	stainless steel precision casting, mat. no. 1.4408	
Wetted parts materials			
Seal diaphragm	Stainless steel, mat. no. 1.4404/316L or Hastello tantalur	by C276, mat. no. 2.4819, Monel, mat. no. 2.4360, n or gold	
Measuring cell filling	Silicone oil or i (maximum value with oxygen measurement	inert filling liquid pressure 100 bar (1450 psi) at 60 °C (140 °F))	
Process connection	Female thread 1/4-18 NPT and flange connect 7 / ₁₆ -20 UNF	tion with mounting thread M10 to DIN 19213 or to IEC 61518	
Material of mounting bracket			
• Steel	Sheet-steel, Mat. No.	1.0330, chrome-plated	
Stainless steel	Sheet stainless steel, r	nat. no. 1.4301 (SS 304)	
Power supply 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	

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

SITRANS P, DS III for differential pressure and	flow		
	HART	PROFIBUS PA and FOUNDATION Fieldbus	
Power supply U _H (Continuation)			
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			
PN 32/160 (MAWP 464/2320 psi)	For gases of fluid group 1 and liquids of fluid group 1: complies with requirements of article 3.		
PN 420 (MAWP 6092 psi)	For gases of fluid group 1 and liquids of fluid group Article 3, paragraph 1 (appendix 1); assigned to	engineering practice) up 1; complies with basic safety requirements of category III, conformity evaluation module H by	
Evaluation protoction	the TU	v Nora.	
Intrinsic safety "i"	PIB 11 AI	EX 2011 X	
- Marking	Ex II 1/2 G Ex ia/ib	IIC 14/15/16 Ga/Gb	
- Permissible ambient temperature	-40 +85 °C (-40 +185 -40 +70 °C (-40 +156 -40 +60 °C (-40 +140	5 °F) temperature class T4; 3 °F) temperature class T5; 0 °F) temperature class T6	
- Connection	To certified intrinsically-safe circuits with peak	FISCO supply unit:	
	values: $U_{\rm i}$ = 30 V, $l_{\rm i}$ = 100 mA, $P_{\rm i}$ = 750 mW; $R_{\rm i}$ = 300 Ω	$U_0 = 17.5$ V, $\dot{l}_0 = 380$ mA, $P_0 = 5.32$ W Linear barrier: $U_0 = 24$ V, $l_0 = 250$ mA, $P_0 = 1.2$ W	
- Effective internal inductance/capacitance	$L_{i} = 0.4 \text{ mH}, C_{i} = 6 \text{ nF}$	$L_{i} = 7 \mu H. C_{i} = 1.1 n F$	
• Explosion-proof "d"	PTB 99 A	TEX 1160	
- Marking	Fx II 1/2 G Fx	d IIC T4/T6 Gb	
- Permissible ambient temperature	-40 +85 °C (-40 +185	5° F) temperature class T4:	
	-40 +60 °C (-40 +140	0 °F) temperature class T6	
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC	To circuits with values: $U_{\rm H}$ = 9 32 V DC	
Dust explosion protection for zone 20	PTB 01 A	TEX 2055	
- Marking	Ex II 1 D IP Ex II 1/2 D IF	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	FISCO supply unit:	
	values: $U_{i} = 30 V_{i} = 100 \text{ mA}$	$U_0 = 17.5 \text{ V}, I_0 = 380 \text{ mA}, P_0 = 5.32 \text{ W}$	
	$P_{\rm i} = 750 \text{ mW}, R_{\rm i} = 300 \Omega$	Linear barrier: $U_0 = 24 \text{ V}, I_0 = 250 \text{ mA}, P_0 = 1 \text{ W}$	
- 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	TEX 2055	
- Marking	Fx II 2 D IP	65 T 120 ℃	
Connection	To circuits with values: $L_{\rm b} = 10.5$	To circuite with values: $I_{L} = 9$ 32 V DC:	
	$P_{\text{max}} = 1.2 \text{ W}$	$P_{\text{max}} = 1 \text{ W}$	
 Type of protection "n" (zone 2) 	PTB 11 AT	EX 2011 X	
- Marking	Ex II 2/3 G Ex n	A II T4/T5/T6 Gc	
-	Ex II 2/3 G Ex ic	IIC T4/T5/T6 Gc	
- Connection (Ex nA)	$U_{\rm m} = 45 \text{ V}$	U _m = 32 V	
- Connection (Ex ic)	To circuits with values:	FISCO supply unit ic:	
	U _i = 45 V	$U_0 = 17.5 \text{ V}, I_0 = 570 \text{ mA}$ Linear barrier: $U_0 = 32 \text{ V}, I_0 = 132 \text{ mA}, P_0 = 1 \text{ W}$	
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 \rm mH, C_{\rm i} = 6 \rm nF$	$L_{i} = 7 \mu\text{H}, C_{i} = 1.1 \text{nF}$	
Explosion protection acc. to FM	Certificate of Con	npliance 3008490	
- Identification (XP/DIP) or (IS): (NII)	CLIDIV 1 GP ABCD T4 T6: CLILDIV 1 G	PEEG: CLIII: CLIII ZN 0/1 AEx ia IIC T4 T6	
	CL I, DIV 1, GF ABCD 1416; CL II, DIV 1, GF EFG, CL II, DIV 2, GP ABCD T416; CL II, DIV 2, GP ABCD T416; CL II, DIV 2, GP FG; CL III		
 Explosion protection to CSA 	Certificate of Con	npliance 1153651	
- Identification (XP/DIP) or (IS)	CL I, DIV 1, GP ABCD T4T6; CL II, DIV 1, GP EF T4T6; CL II, DIV	FG; CL III; Ex ia IIC T4T6; CL I, DIV 2, GP ABCD	

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

¹² Pressure Measurement Transmitters for general requirements SITRANS P DS III for differential pressure and flow

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

Pressure Measurement Transmitters for general requirements

SITRANS P DS III

for differential pressure and flow

Selection and Ordering data Order		Order No).		Selection and Ordering data	Order No.
SITRANS P DS III with	HART pressure trans-	7 M F 4 4 3 3 -			SITRANS P DS III with HART pressure trans-	7 M F 4 4 3 3 -
mitters for differential	pressure and flow,				mitters for differential pressure and flow,	
PN 32/160 (MAWP 464/	2320 psi)				PN 32/160 (MAWP 464/2320 psi)	
Measuring cell filling	Measuring cell clean-				Electrical connection/cable entry	
0	ing				 Screwed gland Pg 13.5¹²⁾ 	Α
Silicone oil	normal	1			 Screwed gland M20 x 1.5 	В
Inert liquid "	grease-free to	3			 Screwed gland ½-14 NPT 	С
	cleanliness level 2				 Han 7D plug (plastic housing) incl. mating 	D
Measuring span (min.	max.)				connector ^{12/13)}	
PN 32 (MAWP 464 psi)					 M12 connectors (stainless steel)^{12) 14)} 	F
1 20 mbar ²⁾	(0.4015 8.03 inH ₂ O) ►	В			Display	
PN 160 (MAWP 2320 ps	i)				Without display	0
1 60 mbar	(0.4015 24.09 inH₀O) ►	С			Without visible display	1
2.5 250 mbar	$(1.004 100.4 \text{ in H}_{2}\text{O})$	D			(display concealed, setting: mA)	
6 600 mbar	$(2.409 240.9 \text{ in H}_{-}0)$	F			 With visible display 	6
16 1600 mbar	(6.424 642.4 inH ₂ O)	5			 with customer-specific display 	7
50 5000 mbar	(0.424 042.4 III 120)	C			(setting as specified, Order Code "Y21" or "Y22"	
0.3 30 bar	(20.00 2000 III 1 ₂ O)	u u			required)	
Wetted parts materials	(4.35 435 psi)	. "			Available ex stock	
(stainless steel process	flances)				Power supply units see Chap. 7 "Supplementary Co	mponents".
Seal dianhranm	Parts of measuring cell				Included in delivery of the device	
					Brief instructions (Leporello)	
Stainless steel	Stainless steel	A			 CD-ROM with detailed documentation 	
Hastelloy	Stainless steel	В			 Sealing plug(s) or sealing screw(s) for the process 	flanges(s)
Hastelloy	Hastelloy	С			1) For every every institute and order and F10	
Tantalum ³⁾	Tantalum	E			² For oxygen application, add Order code E IU.	
Monel	Monel	н			27 Not suitable for connection of remote seal. Position of the process flange (see dimensional drawing).	t the top vent valve in
Gold ³⁾	Gold	L			3) Not in conjugation with may appen 20 and 60 mber (0	02 und 04 00 int L (0))
Version for diaphragm s	eal ^{4) 5) 6) 7)}	Y			4) with the second seco	
Process connection					ordered for transmitters with diaphragm seals accord	ing to IEC 60770-2 it
Female thread 1/4-18 NP	T with flange connection				is recommended only to order this certificate exclusiv	vely with the dia-
· Sealing screw opposit	e process connection				phragm seals. The measuring accuracy of the total co	ombination is certified
- Mounting thread 7/16	-20 UNF to IEC 61518	2			here.	
- Mounting thread M10) to DIN 19213	0			³⁾ If the acceptance test certificate 3.1 is ordered for the	e transmitter with
(only for replacemen	t requirement)				respective remote seals	e ordered with the
 Vent on side of proces 	s flange ²⁾				⁶) The diaphragm seal is to be specified with a separate	a order number and
 Mounting thread ⁷/₁₆ 	-20 UNF to IEC 61518	6			must be included with the tranmitter order number, fo	r example
 Mounting thread M10 	0 to DIN 19213	4			7MF443Y und 7MF4900-1B	
(only for replacemen	t requirement)				7) The standard measuring cell filling for configurations	with remote seals (Y)
Non-wetted parts mate	rials				8) Net is application with 51 bit is a straight "C	
process flange screws	Electronics housing				"Han7D plug".	d gland Pg 13.5" and
Stainless steel	Die-cast aluminum	2			⁹⁾ Without cable gland, with blanking plug	
Stainless steel	Stainless steel precision	3			¹⁰⁾ With enclosed cable gland Ex ia and blanking plug	
	casting				¹¹⁾ Configurations with HAN and M12 connectors are on	ly available in Ex ic
Version					$^{12)}$ Not in conjunction with types of protection "Explosion	-proof" and " $F_{Y} n \Delta$ "
 Standard versions 			1		"Intrinsic safety" and "Explosion-proof".	proof and Extint,
 International version, E 	English label inscriptions, 🕨		2		¹³⁾ Permissible only for crimp-contact of conductor cross	s-section 1 mm ²
documentation in 5 lar	iguages on CD				¹⁴⁾ M12 delivered without cable socket. Not available with	th protection type
		-			"Explosion-proof".	1
None						
	testion:		A			
 with ATEA, Type of pro "Intrincic cofety (Evidentical) 			P			
- mumble salety (EX la	a)"9)		D			
- Explosion-proof (EX	u) ' lamoproof onclosuro"		D			
$(Fx ia + Fx d)^{(10)}$	ameproor enclosure		٣			
- "Fx nA/ic (7one 2)" ¹¹)		F			
- "Intrinsic safaty aval	sion-proof enclosure and		R			
dust explosion prote	ction (Ex ia+ Ex d +					
Zone 1D/2D)"10)	x -					
• FM + CSA (is + ep) +	Ex ia + Ex d (ATEX)		S			
• With FM + CSA, Type	of protection:					
- "Intrinsic Safe und Ex	<plosion (is="" +="" proof="" xp)"<sup="">9)</plosion>		NC	C		

¹² Pressure Measurement Transmitters for general requirements SITRANS P DS III for differential pressure and flow

Selection and Ordering data			Order No			
Pressure transmitters f and flow PN 32/160 (M/	for differential pressure AWP 464/2320 psi)	order	10.			
		7 M F 4	434-			
		7 101 4	405			
(FF)	FOUNDATION Fleidbus	7 M F 4	4 3 5 -			
Measuring cell filling	Measuring cell cleaning					
Silicone oil	normal	1				
Inert liquid ¹⁾	grease-free to cleanliness level 2	3				
Nominal measuring ran	nge					
PN 32 (MAWP 464 psi) 20 mbar ²⁾	(8.03 inH ₂ O)	в				
PN 160 (MAW/P 2320 pc	i)					
60 mbar	$(24.09 \text{ in} \text{H}_{2}\text{O})$	c				
250 mbor	$(24.09 \text{ III I}_2 \text{O})$					
200 mbar	$(100.4 \text{ In H}_2\text{O})$	5				
1600 mbar	$(240.9 \text{ In } 1_2 \text{ O})$	2				
5 har	$(2008 \text{ in H}_{-}\Omega)$	Ġ				
30 bar	(435 psi)	H				
Wetted parts materials	(
(stainless steel process	flanges)					
Seal diaphragm	Parts of measuring cell					
Stainless steel	Stainless steel	A				
Hastelloy	Stainless steel	В				
Hastelloy	Hastelloy	c				
Iantalum ³⁾	Iantalum	E				
Monel ³⁾	Monel	н				
Gold ³	Gold	L				
Version as diaphragm se	eal 4/ 6/ 6/ 7/	Y				
Process connection						
Female thread 1/4-18 NP	T with flange connection					
 Sealing screw opposite 	e process connection					
 Mounting thread ⁷/16 	-20 UNF to IEC 61518 🛛 🕨	2				
 Mounting thread M10) to DIN 19213	0				
(only for replacement	t requirement)					
 venting on side of proc Mounting thread ⁷/ 	20 LINE to IEC 61518					
- Mounting thread /16		6				
(only for replacemen	t requirement)	4				
Non-wetted parts mate	rials					
process flange screws	Electronics housing					
Stainless steel	Die-cast aluminum		2			
Stamess steer	casting		3			
Version						
 Standard versions 			1			
International version, E	English label inscriptions,		2			
(no order code selecta	ible)					
Explosion protection						
• None			Α			
With ATEX, Type of pro	itection:		_			
- "Intrinsic safety (Ex ia	a)" 8)		В			
- "Explosion-proof (Ex			D			
 Intrinsic safety and f (Ex ia + Ex d)⁽⁹⁾ 	lameproot enclosure"		Р			
- "Fx nΔ/ic (7one 2)" ¹⁰))		F			
- "Intrinsic safaty aval	sion-proof enclosure and		R			
dust explosion protect	ction (Ex ia + Ex d +		n			
Zone 1D/2D)"9) (not f	or DS III FF)					
• FM + CSA (is + ep) +	Ex ia + Ex d (ATEX)		S			
• With FM + CSA, Type of	of protection:					

Selection and Ordering data	Order No.
Pressure transmitters for differential pressure and flow PN 32/160 (MAWP 464/2320 psi)	
SITRANS P DS III with PROFIBUS PA (PA)	7 M F 4 4 3 4 -
SITRANS P DS III with FOUNDATION Fieldhus	7ME4435-
(FF)	7 111 4 4 0 0
Electrical connection/cable entry	
Screwed gland M20 x 1.5 Screwed gland 1/2 14 NPT	В
M12 connectors (stainless steel) ¹¹⁾ ¹²⁾ ¹³⁾	F
Display	-
Without display	0
Without visible display	- 1
(display concealed, setting: mA)	
With visible display	6
 With customer-specific display (setting as specified, Order Code "Y21" re- 	1
quired)	
Available ex stock	
Included in delivery of the device:	
Brief instructions (Leporello)	
 CD-ROM with detailed documentation Scaling plug(s) or scaling scrow(s) for the process 	e flangos(s)
beaming plug(s) or seaming screw(s) for the proces	is nanges(s)
¹⁾ For oxygen application, add Order code E10.	
2) Not suitable for connection of remote seal. Position the process flange (see dimensional drawing)	of the top vent valve
³⁾ Not in conjunction with max, span 20 and 60 mbar (8 03 upd 24 09 ipH-(
⁴⁾ When the manufacture's certificate (calibration certificate)	ficate) has to be
ordered for transmitters with diaphragm seals accor	ding to IEC 60770-2,
is recommended only to order this certificate exclus	ively with the dia-
here.	
⁵⁾ If the acceptance test certificate 3.1.is ordered for t	ne transmitter with
mounted diaphragm seals this certificate must also respective remote seals.	be ordered with the
⁶⁾ The diaphragm seal is to be specified with a separa	te order number and
must be included wiht the tranmitter order number, t	or example
 7) The standard measuring cell filling for configuration 	with romoto coale ()
is silicone oil.	s with remote seals (
⁸⁾ Without cable gland, with blanking plug.	
⁹⁾ With enclosed cable gland Ex ia and blanking plug.	
¹⁰⁾ Configurations with HAN and M12 connectors are o	nly available in Ex ic
¹¹⁾ M12 delivered without cable socket	
¹² Not available with protection type "Ex d" (options D,	P, N and R)
"Intrinsic safety" and "Explosion-proof".	n-proof" and "Ex nA",

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	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	1	1	~
• FFPM (Kalrez, compound 4079)	A22	√.	1	√
• NBR (Buna N)	A23	✓	~	~
plug				
• Han 7D (metal, gray)	A30	1		
Han 8U (Instead of Han 7D)	A31	4		
Angled Han 8D (metal, gray)	A32	¥		
	A00		,	,
Sealing screws (2 unit(s)	A40	v	v	•
flanges				
- Cable sockets for M12 connectors	A50	1	1	1
(stainless steel)	1.00			
Rating plate inscription				
(instead of German)				
• English	B11	✓	✓	✓
• French	B12	√.	1	√
• Spanish	B13	1	1	1
• Italian	B14	√	✓	*
English rating plate	B21	~	~	~
Pressure units in InH ₂ O and/or psi				
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2 ¹⁾	C11	~	~	~
Inspection certificate ²⁾ to EN 10204-3.1	C12	~	~	~
Factory certificate to EN 10204-2.2	C14	✓	✓	✓
"Functional safety (SIL2)" certificate to IEC 61508	C20	~		
"Functional safety" certificate (PROFIsafe) and PROFIsafe protocol	C21		~	
"Functional safety (SIL2/3)" certificate to IEC 61508	C23	~		
Device passport Russia (For price request please contact the technical	C99	~	1	~
www.siemens.com/automation/support-request)				
Setting of upper limit of output signal to 22.0 mA	D05	1		
Manufacturer's declaration acc. to NACE	D07	✓	✓	✓
(only together with seal diaphragm made of Hastelloy and stainless steel)				
Degree of protection IP65/IP68 (only for M20 x 1.5 and ½-14 NPT)	D12	1	1	~
Process flange screws made of Monel (max. nominal pressure PN20)	D34	1	~	✓
Supplied with oval flange set	D37	✓	1	✓
(2 items), PTFE packings and screws in thread of process flanges				
Use in or on zone 1D/2D	E01	1	1	✓
(only together with type of protection "Intrinsic safety" (transmitter 7MF4B Ex ia)")				
TÜV approval to AD/TRD	EOG	1		
(only together with type of protection "Intrinsic safety (Ex ia)")	200	,		

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	1		
with type of protection "Intrinsic safety (Ex ia)", to WHG and VbF, not together with measuring cell filling "inert liquid")				
Oxygen application (In the case of oxygen measurement and inert liquid max. 100 bar (1450 psi) at 60°C (140 °F))	E10	*	1	1
Export approval Korea	E11	✓	✓	✓
Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil)	E25	✓	~	~
(only for transmitter 7MF4B)				
"Flameproof" explosion protection accord- ing to INMETRO (Brazil)	E26	*	~	*
Explosion-proof "Intrinsic safety" (Ex ia +	E28	~	✓	
(only for transmitter 7MF4P)				
Ex Approval IEC Ex (Ex ia) (only for transmitter 7MF4B)	E45	1	~	~
Ex Approval IEC Ex (Ex id)	E46	✓	~	~
		,	,	,
(China)	E55	•	•	•
(Only for transmitter / MF4B)				
Explosion protection "Explosion-proof" to NEPSI (China)	E56	~	~	~
(only for transmitter /MF4				
Explosion-proof "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)	E57	~	~	~
"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea)	E70	~	✓	•
(only for transmitter 7MF4[B, D]Z + E11)				
Two coats of lacquer on casing and cover (PU on epoxy)	G10	1	1	1
Interchanging of process connection side	H01	1	✓	1
Vent on side for gas measurements	H02	✓	✓	✓
Stainless steel process flanges for vertical differential pressure lines	H03	1	~	~
(not together with K01, K02 and K04) ³⁾				
Process flange				
Hastelloy	K01	√	1	1
• Monel	K02	V	√	√
 Stainless steel with PVDF insert max. PN 10 (MAWP 145 psi), max. temperature of medium 90 °C (194 °F) For ½-14 NPT inner process connection on the side in the middle of the process flange, wort wolve not possible. 	К04	~	•	•
Eastery mounting of value manifolds, and app	poporior	、 、		

Factory mounting of valve manifolds, see accessories.

Supplementary electronics for 4-wire connection, see accessories.

✓ = 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 <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

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: up to mbar, bar, kPa, MPa, psi 	Y01	~		
• in the case of square rooted characteristic (max. 5 characters): Y02: up to mbar, bar, kPa, MPa, psi	Y02	*		
Stainless steel tag plate (measuring point description) Max. 16 char., specify in plain text: Y15:	Y15	1	1	~
Measuring point text Max. 27 char., specify in plain text: Y16:	Y16	*	~	1
Entry of HART address (TAG) Max. 8 char., 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 ₂ O ^{*)} , inH ₂ O ^{*)} , ftH ₂ O ^{*)} , mmHG, inHG, psi, Pa, kPa, MPa, g/cm ² , kg/cm ² , Torr, ATM or % *) ref. temperature 20 °C				
Setting of pressure indicator in non-pres-	Y22 ²⁾	✓		
Specify in plain text: Y22: up to I/min, m ³ /h, m, USgpm, (specification of measuring range in pressure units "Y01" or "Y02" is essential, unit with max. 5 characters)	+ Y01 or Y02			
Preset bus address possible between 1 and 126	Y25		1	1

Specify in plain text: Y25:

Factory mounting of valve manifolds, see accessories.

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

 \checkmark = available

²⁾ Not in conjunction with over-filling safety device for flammable and nonflammable liquids (Order Code "E08")

¹⁾ Preset values can only be changed over SIMATIC PDM.

Pressure Measurement Transmitters for general requirements

SITRANS P D<u>S III</u>

for differential pressure and flow

Selection and Ordering data	and Ordering data Order No. Selection and Ordering data	
SITRANS P DS III with HART pressure trans- mitters for differential pressure and flow, PN 420 (MAWP 6092 psi)	7 M F 4 5 3 3 -	SITRANS P DS III with HART pressure trans- mitters for differential pressure and flow, PN 420 (MAWP 6092 psi)
Measuring cell filling Measuring cell cleaning Silicone oil normal	1	Display • Without display • Without visible display • Vithout visible display • I
Measuring span (min max.) 2.5 250 mbar (1.004 100.4 inH ₂ O) 6 600 mbar (2.409 240.9 inH ₂ O) 16 1600 mbar (6.424 642.4 inH ₂ O)	D E F	(display concealed, setting: mA) • With visible display • with customer-specific display (setting as specified, Order Code "Y21" or "Y22" required)
50 5000 mbar (20.08 2008 inH ₂ O) 0.3 30 bar (4.35 435 psi)	G H	Available ex stock Power supply units see Chap. 7 "Supplementary Components"
Wetted parts materials(stainless steel process flanges)Seal diaphragmParts of measuring cell		Scope of delivery: Pressure transmitter as ordered (Instruction Manual is extra ordering item)
Stainless steelStainless steelHastelloyStainless steelGold1)GoldAusführung als Membrandruckmittler 2) 3) 4) 5)	A B L Y	 Not in conjunction with max. span 600 mbar (240.9 inH₂O) 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 dia- phragm seals. The measuring accuracy of the total combination is certified
 Process connection Female thread ¼-18 NPT with flange connection Sealing screw opposite process connection Mounting thread ⁷/₁₆-20 UNF to IEC 61518 	3	 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⁾ The diaphragm seal is to be specified with a separate order number and
 Mounting thread M12 to DIN 19213 (only for replacement requirement) Venting on side of process flanges, location of yent value at top of process flanges (see dimen- 	1	 must be included wiht the tranmitter order number, for example 7MF453Y und 7MF4900-1B ⁵⁾ The standard measuring cell filling for configurations with remote seals (Y) is allocated with the search of the sea
 Mounting thread ⁷/₁₆-20 UNF to IEC 61518 Mounting thread M12 to DIN 19213 (only for replacement requirement) 	7 5	 ⁶⁾ Not in conjunction with Electrical connection "Screwed gland Pg 13.5" and "Han7D plug". ⁷⁾ Without cable gland, with blanking plug
Non-wetted parts materialsprocess flange screwsElectronics housingStainless steelDie-cast aluminum	2	 ⁹⁾ Configurations with HAN and M12 connectors are only available in Ex ic. ¹⁰⁾Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".
Stainless steel Stainless steel precision casting ⁶⁾	3	¹¹⁾ Permissible only for crimp-contact of conductor cross-section 1 mm ² ¹²⁾ M12 delivered without cable socket
 Version Standard versions International version, English label inscriptions, documentation in 5 languages on CD (no order code selectable) 	1 2	 ¹³⁾Not available with protection type "Ex d" (options D, P, N and R) ¹⁴⁾Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".
Explosion protection • None • With ATEX, Type of protection: - "Intrinsic safety (Ex ia)" - "Explosion-proof (Ex d)" ⁷⁾	A B D	
 "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d)"⁸⁾ "Ex nA/ic (Zone 2)"⁹⁾ "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia+ Ex d + Zone 1D/2D)"⁸⁾ 	P E R	
 FM + CSA (is + ep) + Ex ia + Ex d (ATEX) With FM + CSA, Type of protection: "Intrinsic safety and explosion-proof (is + xp)"⁷, max PN 360 	S N C	
Electrical connection/cable entry • Screwed gland Pg 13.5 ¹⁰⁾ • Screwed gland M20x1.5 • Screwed gland ½-14 NPT • Han 7D plug (plastic housing) incl. mating connector ¹⁰⁾¹¹ • M12 connectors (stainless steel) ^{12) 13) 14)}	A B C D F	

Pressure Measurement Transmitters for general requirements SITRANS P DS III

Selection and Orde	ring data	Order No.		Sele
Pressure transmitte and flow, PN 420 (M	ers for differential pressure IAWP 6092 psi)			Pres
SITRANS P DS III w	ith PROFIBUS PA (PA)	7 M F 4 5 3	4 -	SITE
SITRANS P DS III w	ith FOUNDATION Fieldbus	7 M F 4 5 3	5 -	SITF
(FF)				(FF)
		1 -		
Nominal measuring	range	_		Disp
250 mbar 600 mbar	$(100.4 \text{ inH}_2\text{O})$	D		 VVi VVi
1600 mbar	$(240.9 \text{ In H}_2\text{O})$ (642.4 in H ₂ O)	F		(di
5 bar	$(2008 \text{ inH}_{2}\text{O})$	G		• Wi
30 bar	(435 psi)	Н		• Wi
Wetted parts mater	ials			sp
(stainless steel proce	ess flanges)			► A
Seal diaphragm	Parts of measuring cell			Inclu
Stainless steel	Stainless steel	Δ		• Bri
Hastelloy	Stainless steel	В		• CL • So
Gold 1)	Gold	L		- 00
Ausführung als Mem	brandruckmittler ²⁾³⁾⁴⁾⁵⁾	Y		¹⁾ N
Process connection	1			²⁾ W
Female thread 1/4-18	NPT with flange connection			or
 Sealing screw opp 	osite process connection			pl
- Mounting thread	⁷ / ₁₆ -20 UNF to IEC 61518	3		h
- Mounting thread	M12 to DIN 19213	1		³⁾ If
(only for replacen	nent requirement)			re
 Venting on side of provide the state o	process flanges, location of			4) TI
sional drawing)	process hanges (see dimen-			m
- Mounting thread	⁷ / ₁₆ -20 UNF to IEC 61518	7		5) -
- Mounting thread	M12 to DIN 19213	5		is ^{(C}
(only for replacen	nent requirement)	5		6) W
Non-wetted parts m	naterials			7) W
Process flange screw	vs Electronics housing			⁸⁾ C
Stainless steel	Die-cast aluminum	2		⁹⁾ M
Stainless steel	Stainless steel precision	3		¹⁰⁾ N
	casting			¹¹⁾ N
Version				"Ir
 Standard versions 			1	
 International version 	n, English label inscriptions, 🕨		2	
documentation in 5	anguages on CD			
		<u>.</u>		
Nono	on		^	
With ATEX Type of	protection		^	
- "Intrinsic safety (F	=x ia)"		в	
- "Explosion-proof	$(Fx d)^{(6)}$		D	
- "Intrinsic safety a	nd flameproof enclosure"		P	
(Ex ia + Ex d)" ⁷⁾				
- "Ex nA/ic (Zone 2)" ⁸⁾		E	
- "Intrinsic safety, e	xplosion-proof enclosure and		R	
dust explosion pr	rotection (Ex ia + Ex d +			
Zone ID/2D)"" (r			c	
	j + EX id + EX U (AIEX)		3	
 with Five + CSA, Ty "Intrinsic safety of 	pe or protection: nd explosion-proof		NC	
(is + xp) ^{"6)} , max f	PN 360		NO	
Electrical connection	on/cable entry			
Screwed aland M2	0 x 1.5		в	
 Screwed gland ½- 	14 NPT		С	
• M12 connectors (s	tainless steel) ^{9) 10) 11)}		F	

and flow, PN 420 (MAWP 6092 psi)	
SITRANS P DS III with PROFIBUS PA (PA)	7 M F 4 5 3 4 -
(FF)	/MF4535-
	1
Display	
Without (display filddeff) Without visible display	
(display concealed, setting: mA)	
With visible display	
 With customer-specific display (setting as specified, Order Code "Y21" required) 	
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 	ss flanges(s)
¹⁾ Not in conjunction with max. span 600 mbar (240.9	inH ₂ O)
²⁷ When the manufacture's certificate (calibration cert ordered for transmitters with diaphragm seals acco is recommended only to order this certificate exclus phragm seals. The measuring accuracy of the total here.	ificate) has to be rding to IEC 60770 sively with the dia- combination is cert
³⁾ If the acceptance test certificate 3.1.is ordered for t mounted diaphragm seals this certificate must also respective remote seals.	he transmitter with be ordered with th
⁴⁾ The diaphragm seal is to be specified with a separ- must be included wiht the tranmitter order number, 7MF453Y und 7MF4900-1B	ate order number a for example
⁵⁾ The standard measuring cell filling for configuration is silicone oil.	s with remote seal
6) Without cable gland, with blanking plug.	
7) With enclosed cable gland Ex ia and blanking plug	
⁸⁾ Configurations with HAN and M12 connectors are c	only available in Ex
⁹⁾ M12 delivered without cable socket	
¹⁰ Not available with protection type "Ex d" (options D	, P, N and R)
"Intrinsic safety" and "Explosion-proof".	on-proof" and "Ex n

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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 Steinlage steel	A01	*	4	4		
	AUZ	v	v	•		
O-rings for process flanges						
(Instead of FPIVI (VITON))	A 20	1	1	1		
• FEP (with silicone core, approved for food)	Δ21	, ,		~		
• FFPM (Kalrez, compound 4079)	A22	1	1	1		
• NBR (Buna N)	A23	✓	✓	✓		
Plug						
• Han 7D (metal, gray)	A30	✓				
 Han 8U (instead of Han 7D) 	A31	✓				
Angled	A32	√.				
• Han 8D (metal, gray)	A33	~				
Sealing screws (2 unit(s)	A40	✓	1	1		
1/4-18 NPT, with valve in mat. of process flanges						
Cable sockets for M12 conn. (stainless steel)	A50	✓	1	1		
Rating plate inscription (instead of German)						
• English	B11	✓	1	1		
• French	B12	√	1	1		
Spanish	B13	1	1	1		
	B14	•	•	*		
English rating plate	B21	~	~	~		
Quality inspection certificate (Five-step	C11	✓	✓	✓		
	C12	1		1		
Acc. to EN 10204-3.1	012	v	v	v		
Factory certificate Acc. to EN 10204-2.2	C14	~	~	~		
"Functional safety (SIL2)" certificate to IEC 61508	C20	~				
"Functional safety" certificate (PROFIsafe) and PROFIsafe protocol	C21		1			
"Functional safety (SIL2/3)" certificate to IEC 61508	C23	~				
Device passport Russia (For price request please contact the technical support	C99	~	1	~		
Setting of upper limit of output signal to	D05	~				
	D07					
(only together with seal diaphragm made of Hastelloy and stainless steel)	007	·	•	•		
Degree of protection IP65/IP68 (only for M20 x 1.5 and ½-14 NPT)	D12	~	~	~		
Nom. press. rating PN 500 (MAWP 7250 psi) (Only for measuring cell 600 mbar 30 bar (240 inH ₂ O 435 psi), SIL- und Ex-options not possible)) ¹⁾	D56	1				
Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety" (transmitter 7MF4B Ex ia)")	E01	1	•	~		
Export approval Korea	E11	1	✓	~		
Explosion-proof "Intrinsic safety" (Ex ia) to	E25	✓	~	~		
INMETRO (Brazil) (only for transmitter 7MF4						
"Flameproof" explosion protection accord- ing to INMETRO (Brazil) (only for transmitter 7MF4D)	E26	*	1	1		

Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "-Z" to Order No. and specify Order Code.				
Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil) (only for transmitter 7MF4P)	E28	1	1	
Ex Approval IEC Ex (Ex ia) (only for transmitter 7MF4B)	E45	1	1	~
Ex Approval IEC Ex (Ex id) (only for transmitter 7MF4D)	E46	1	1	1
Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4B)	E55	1	~	~
Ex prot. "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)	E56	~	~	~
Explosion-proof "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)	E57	~	*	*
"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (only for transmitter 7MF4[B, D]Z + E11)	E70	1	*	*
Two coats of lacquer on casing and cover (PU on epoxy)	G10	~	1	1
Interchanging of process connection side	H01	✓	✓	1
Stainless steel process flanges for vertical differential pressure lines	H03	~	1	~

¹⁾ Tested according to IEC 61010. Only for measuring materials of the group of fluids 2 in accordance with DGRL permissible. Not for use with dangerous media suitable.

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.				
Measuring range to be set				
Specify in plain text:				
• in the case of linear characteristic curve (max. 5 characters):	Y01	~		
 in the case of square rooted characteristic (max, 5 characters): 	Y02	~		
Y02: up to mbar, bar, kPa, MPa, psi				
Stainless steel tag plate	Y15	✓	✓	✓
(measuring point description)				
Massuring point tout	VIC	,	,	,
Max 27 char specify in plain text: Y16	110	·	•	•
Entry of HART address (TAG)	Y17	1		
Max. 8 char., specify in plain text: Y17:	•••			
Setting of pressure indication in pressure	Y21	✓	✓	✓
Specify in plain text (standard setting: bar):				
Y21: mbar, bar, kPa, MPa, psi,				
Note:				
The following pressure units can be selected: bar, mbar, mm $H_2O^{(*)}$, in $H_2O^{(*)}$, ft $H_2O^{(*)}$, mmHG, inHG, psi, Pa, kPa, MPa, g/cm ² , kg/cm ² , Torr, ATM or % *) ref. temperature 20 °C				
Setting of pressure indication in	Y22 +	✓		
non-pressure units ¹⁾	Y01 or			
Y22: up to I/min, m ³ /h, m, USgpm,	102			
(specification of measuring range in pressure units "Y01" or "Y02" is essential, unit with max. 5 characters)				
Preset bus address	Y25		✓	~
possible between 1 and 126 Specify in plain text: Y25:				

Factory mounting of valve manifolds, see accessories.

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

✓ = available

¹⁾ Preset values can only be changed over SIMATIC PDM.

1

SITRANS P DS III for differential pressure and flow

Dimensional drawings



- Allow approx. 20 mm (0.79 inch) thread length to permit unscrewing 1)
- Not with type of protection "Explosion-proof enclosure" Not with type of protection "FM + CSA" [IS + XP]" 2)
- 3)
- 4) 92 mm (3.62 inch) for minimum distance to permit rotation with indicator
- 5) For Pg 13,5 with adapter approx. 45 mm (1.77 inch)

SITRANS P DS III pressure transmitters for differential pressure and flow, dimensions in mm (inch)
Pressure Measurement Transmitters for general requirements

SITRANS P DS III for differential pressure and flow



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

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



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

© Pressure Measurement Transmitters for general requirements SITRANS P DS III for level

Technical specifications

SITRANS P DS III for level						
	HART		PROFIBUS PA or FOU	NDATION Fieldbus		
Input						
Measured variable	Level					
Spans (infinitely adjustable) or nominal measuring range and max. permissible operating pressure	Span (min max.)	Maximum operating pressure	Nominal measuring range	Maximum operating pressure		
	25 250 mbar (10 100 inH ₂ O)	See "Mounting flange"	250 mbar (100 inH ₂ O)	See "Mounting flange"		
	25 600 mbar (10 240 inH ₂ O)	See "Mounting flange"	600 mbar (240 inH ₂ O)	See "Mounting flange"		
	53 1600 mbar (21 642 inH ₂ O)	See "Mounting flange"	1600 mbar (642 inH ₂ O)	See "Mounting flange"		
	160 5000 mbar (64 2000 inH ₂ O)	See "Mounting flange"	5 bar (2000 inH ₂ O)	See "Mounting flange"		
Lower measuring limit						
Measuring cell with silicone oil filling	Also ava	-100 % of max. span o ailable as vacuum-resistan	r 500 mbar a (7.25 psia) t remote seal: 30 mbar a (0).44 psi a)		
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	nd s 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	o 20.5 mA or optionally	-			
Load						
Without HART	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.02$ $U_{\rm H}$: Power supply in V	23 A in Ω,	-			
With HART	$R_{\rm B} = 230 \dots 500 \ \Omega \ ({\rm SIN} R_{\rm B} = 230 \dots 1100 \ \Omega \ ({\rm Hz})$	IATIC PDM) or ART Communicator)	-			
Physical bus	-		IEC 61158-2			
Protection against polarity reversal	Protected against short	t-circuit and polarity reve supply	rsal. Each connection ag voltage.	ainst the other with max.		
Electrical damping (step width 0.1 s)		Set to 2 s	(0 100 s)			
Measuring accuracy		Acc. to IE	EC 60770-1			
Reference conditions (All error data refer always refer to the set span)	Increasing characteristi ing, room ter	ic, start-of-scale value 0 l mperature 25 °C (77 °F))	oar, stainless steel seal d r: Span ratio (r = max. sp	liaphragm, silicone oil fill- oan / set span)		
Error in measurement at limit setting incl. hysteresis and reproducibility						
Linear characteristic			≤ 0.15 %			
- r ≤ 10	≤ 0.15 %					
- 10 < r ≤ 30	≤ 0.3 %					
- 30 < r ≤ 100	\leq (0.0075 · r + 0.075) %)				
Long-term stability (temperature change ± 30 °C (± 54 °F))	≤ (0.25 · r)% every 5 ye static pressure max. 70	ars bar (1015 psi)	≤ 0.25 % every 5 years static pressure max. 70) bar (1015 psi)		
Influence of ambient temperature						
• at -10 +60 °C (14 140 °F)						
- 250 mbar- (100 inH ₂ O)-measuring cell	$\leq (0.5 \cdot r + 0.2) \%^{(1) 4)}$		≤ 0.7 %			
- 600 mbar- (240 inH ₂ O)-measuring cell	$\leq (0.3 \cdot r + 0.2) \%^{2) 4}$		≤ 0.5 %			
 1600 and 5000 mbar- (642 and 2000 inH₂O)- measuring cell 	$\leq (0.25 \cdot r + 0.2) \%^{(3)(4)}$		≤ 0.45 %			
• at -4010 °C and 60 85 °C (-40 +14 °F and 140 185 °F)						
- 250 mbar- (100 inH ₂ O)-measuring cell	≤ (0.25 · r + 0.15) %/10 doubled values at 10 <	K r ≤ 30	≤ 0.4 %/10 K			
- 600 mbar- (240 inH ₂ O)-measuring cell	≤ (0.15 · r + 0.15) %/10 doubled values at 10 <	K r ≤ 30	≤ 0.3 %/10 K			
 1600 and 5000 mbar- (642 and 2000 inH₂O)- measuring cell 	≤ (0.12 · r + 0.15) %/10 double values at 10 < r	K ≤ 30	≤ 0.27 %/10 K			

¹² Pressure Measurement Transmitters for general requirements SITRANS P DS III for level

SITRANS P DS III for level				
	HART	PROFIBUS PA or FOUNDATION Fieldbus		
Influence of static pressure				
• on the zero point				
- 250 mbar- (100 inH ₂ O)-measuring cell	\leq (0.3 · r) % per nominal pressure	≤ 0.3 % per nominal pressure		
- 600 mbar- (240 inH ₂ O)-measuring cell	≤ (0.15 · r) % per nominal pressure	≤ 0.15 % per nominal pressure		
 1600 and 5000 mbar- (642 and 2000 inH₂O)- measuring cell 	\leq (0.1 \cdot r) % per nominal pressure	\leq 0.1 % per nominal pressure		
• on the span	\leq (0.1 \cdot r) % per nominal pressure	\leq 0.1 % per nominal pressure		
Measured Value Resolution	-	$3 \cdot 10^{-5}$ of nominal measuring range		
Rated conditions				
Degree of protection to IEC 60529	IP65 (option	nal IP65/IP68)		
Temperature of medium	Note: Always take into account assignment of permissible operating pressure or	max. permissible operating temperature to max. f the respective flange connection!		
 Measuring cell with silicone oil filling 	-40 +100 ⁵⁾ °C	(-40 +212 ⁵⁾ °F)		
- High-pressure side	p _{abs} ≥ 1 bar: -40 +175 °C (-40 +347 °F) p _{abs} < 1 bar: -40 +80 °C (-40 +176 °F)			
- Low-pressure side	-40 +100 °C (-40 +212 °F) -20 +60 °C (-4 +140 °F) in conjunction with dust explosion protection			
Ambient conditions				
Ambient temperature				
Display readable	-30 +85 °C	(-22 +185 °F)		
Storage temperature	-50 +85 °C (-58 +185 °F)			
Climatic class				
- Condensation	Relative humidity 0 100 % Condensation permissible, suitable for use in the tropics			
 Electromagnetic Compatibility 				
- Emitted interference and interference immu- nity	- Acc. to 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 (≈	≈ 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 	Stainless steel, mat. no. 1.4404/316L, Monel, Hastelloy C276, mat. no. 2.4819, Hastelloy stainless steel Dup	mat. no. 2.4360, Hastelloy B2, mat. no. 2.4617, C4, mat. no. 2.4610, tantalum, PTFE, ETCFE, plex, mat. no. 1.4462		
Measuring cell filling	Silico	one oil		
Process connection				
High-pressure side	Flange to E	N and ASME		
Low-pressure side	Female thread ¼-18 NPT and flange connect 7/ ₁₆ -20 UNF	tion with mounting thread M10 to DIN 19213 or 5 to EN 61518		
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 level

SITRANS P DS III for level			
	HART	PROFIBUS PA or FOUNDATION Fieldbus	
Certificates and approvals			
Classification according to PED 97/23/EC	For gases of fluid group 1 and liquids of fluid group 1 and liquids of fluid group 3 (sound	group 1; complies with requirements of article 3, engineering practice)	
Explosion protection			
 Intrinsic safety "i" 	PTB 11 A	TEX 2011 X	
- Marking	Ex II 1/2 G Ex ia/ib	IIC T4/T5/T6 Ga/Gb	
- Permissible ambient temperature	-40 +85 °C (-40 +18 -40 +70 °C (-40 +15 -40 +60 °C (-40 +14	5 °F) temperature class T4; 8 °F) temperature class T5; 40 °F) temperature class T6	
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}, \ l_i = 100 \text{ mA},$ $P_i = 750 \text{ mW}; \ R_i = 300 \Omega$	FISCO supply unit: $U_0 = 17.5$ V, $I_0 = 380$ mA, $P_0 = 5.32$ W Linear barrier: $U_0 = 24$ V, $I_0 = 250$ mA, $P_0 = 1.2$ W	
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 \text{ mH}, C_{\rm i} = 6 \text{ nF}$	$L_{\rm i} = 7 \ \mu {\rm H}, \ C_{\rm i} = 1.1 \ {\rm nF}$	
• Explosion-proof "d"	PTB 99 /	ATEX 1160	
- Marking	Ex II 1/2 G Ex d IIC T4/T6 Gb		
- Permissible ambient temperature	-40 +85 °C (-40 +18 -40 +60 °C (-40 +14	5 °F) temperature class T4; 10 °F) temperature class T6	
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC	To circuits with values: $U_{\rm H}$ = 9 32 V DC	
Dust explosion protection for zone 20	PTB 01 ATEX 2055		
- Marking	Ex II 1 D IP65 T 120 ℃ Ex II 1/2 D IP65 T 120 ℃		
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F)		
- Max. surface temperature	120 °C	с (248 °F)	
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}, \ l_i = 100 \text{ mA}, \ P_i = 750 \text{ mW}, \ R_i = 300 \Omega$	FISCO supply unit: $U_0 = 17.5 \text{ V}, I_0 = 380 \text{ mA}, P_0 = 5.32 \text{ W}$ Linear barrier: $U_0 = 24 \text{ V}, I_0 = 250 \text{ mA}, P_0 = 1.2 \text{ W}$	
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{\rm i} = 7 \ \mu {\rm H}, \ C_{\rm i} = 1.1 \ {\rm nF}$	
Dust explosion protection for zone 21/22	PTB 01 /	ATEX 2055	
- Marking	Ex II 2 D IF	P65 T 120 °C	
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC; $P_{\rm max}$ = 1.2 W	To circuits with values: $U_{\rm H}$ = 9 32 V DC; $P_{\rm max}$ = 1 W	
 Type of protection "n" (zone 2) 	PTB 11 A	TEX 2011 X	
- Marking	Ex II 2/3 G Ex r Ex II 2/3 G Ex id	nA II T4/T5/T6 Gc c IIC T4/T5/T6 Gc	
- Connection (Ex nA)	U _m = 45 V	$U_{\rm m} = 32 \text{ V}$	
- Connection (Ex ic)	To circuits with values: $U_{\rm i}$ = 45 V	FISCO supply unit ic: $U_0 = 17.5 \text{ V}, I_0 = 570 \text{ mA}$	
		Linear barrier: $U_0 = 32 \text{ V}, I_0 = 132 \text{ mA}, P_0 = 1 \text{ W}$	
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 \text{ mH}, C_{\rm i} = 6 \text{ nH}$	$L_{i} = 7 \mu\text{H}, C_{i} = 1,1 \text{nH}$	
Explosion protection acc. to FM			
- Identification (XP/DIP) or (IS); (NI)	CL I, DIV 1, GP ABCD 1416; CL II, DIV 1, C CL I, DIV 2, GP ABCD T4	GP EFG; CL III; CL I, ZN 0/1 AEX ia IIC 1416; T6; 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 E T4T6; CL II, DI	FG; CL III; Ex ia IIC T4T6; CL I, DIV 2, GP ABCD IV 2, GP FG; CL III	
1) Conversion of temperature error per 29 °C. Valid f	$r = 1000 \text{ m}^{-1}$	/ / 20 °C (EO °E)	

Conversion of temperature error per 28 °C. Valid for temperature range -3 ... +53 °C < (0.4 · r + 0.16) % / 28 °C (50 °F).

²⁾ Conversion of temperature error per 28 °C. Valid for temperature range -3 ... +53 °C < (0.24 \cdot r + 0.16) % / 28 °C (50 °F).

³⁾ Conversion of temperature error per 28 °C. Valid for temperature range -3 ... +53 °C < (0.2 · r + 0.16) % / 28 °C (50 °F).

⁴⁾ 0.32 instead of 0.16 at 10 < r < 30

⁵⁾ This value may be increased if the process connection is sufficiently insulated.

Pressure Measurement Transmitters for general requirements SITRANS P DS III

			for leve
	230 1100 0	communication	
Protocol	HART Version 5 x	Function blocks	3 function blocks analog input,
Software for computer			1 function block PID
		 Analog input 	
Simultaneous communication with	4	 Adaptation to customer-specif- ic process variables 	Yes, linearly rising or falling characteristic
The address can be actualing	Configuration tool or local	- Electrical damping, adjustable	0 100 s
The address can be set using	operation (standard setting address 126)	- Simulation function	Output/input (can be locked within the device with a bridge)
Cyclic data usage		- Failure mode	parameterizable (last good
Output byte	5 (one measured value) or 10 (two measured values)	- Limit monitoring	value)
Input byte	0, 1, or 2 (register operating mode and reset function for	- Linit monitoring	ing limit and one alarm limit respectively
Internal preprocessing	metering)	 Square-rooted characteristic for flow measurement 	Yes
Device profile	PROFIBUS PA Profile for Pro- cess Control Devices Version	• PID	Standard FOUNDATION Field- bus function block
	3.0, Class B	 Physical block 	1 resource block
Function blocks	2	Transducer blocks	1 transducer block Pressure with
 Analog input 			calibration, 1 transducer block
 Adaptation to customer-specif- ic process variables 	Yes, linearly rising or falling characteristic	Pressure transducer block	
- Electrical damping, adjustable	0 100 s	 Can be calibrated by applying two pressures 	Yes
- Simulation function	Input/Output	- Monitoring of sensor limits	Ves
- Failure mode	parameterizable (last good value, substitute value, incorrect value)	 Simulation function: Measured pressure value, sensor temper- ature and electronics temperature 	Constant value or over parame- terizable ramp function
- Limit monitoring	Yes, one upper and lower warn-	ture	
	respectively	Mounting flange	
Register (totalizer)	Can be reset, preset, optional	Nominal diameter	Nominal pressure
	direction of counting, simulation function of register output	• Acc. to EN 1092-1	
- Failure mode	parameterizable (summation	- DN 88	PN16 PN40
	summation, summation with incorrect value)	• To ASME B16.5	
- Limit monitoring	One upper and lower warning	- 3 inch	Class 150, class 300
	limit and one alarm limit respec- tively	- 4 inch	Class 150, class 300
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		
 Gradual volume suppression and implementation point of square-root extraction 	Parameterizable		
- Simulation function for mea- sured pressure value and sen- sor temperature	Constant value or over parame- terizable ramp function		

Pressure Measurement Transmitters for general requirements

SITRANS P DS III for level

Selection and Ordering data			Order No.							
Pressure transmitter fo	or level,	7	М	F	4	6 3	3 (3 -		
SITRANS P DS III WITH	MARI			Y			•	P	ł	
Measuring cell filling	Measuring cell cleaning									
Silicone oil	normal	1								
Measuring span (min.	max.)									
25 250 mbar	(10 100 inH ₂ O)		D							
25 600 mbar	(10 240 inH ₂ O)		E							
53 1600 mbar	(21 642 inH ₂ O)		F							
0.16 5 bar	(64.3 2000 INH ₂ O)		G							
Process connection of	low-pressure side									
Female thread 1/4-18 NP	I with flange connection				_					
 Mounting thread 1/16-2 Mounting thread M10 	20 UNF TO IEC 6 15 18				2					
(only for replacement	requirement)				U					
Non-wetted parts mate	rials									
process flange screws	Electronics housing									
Stainless steel	Die-cast aluminum				1	2				
Stainless steel	Stainless steel precision				1	3				
	casting ¹⁾									
Version										
 Standard versions 							1	1		
International version, E	English label inscriptions,						2	2		
(no order code selecta	able)									
Explosion protection										
None								A	١	
 With ATEX, Type of pro 	otection:									
- "Intrinsic safety (Ex i	a)"							E	3	
- "Explosion-proof (Ex	d)" ² /)	
 Intrinsic safety and (Ex ia + Ex d)^{"3)} 	nameproof enclosure							F	1	
- "Ex nA/ic (Zone 2)" ⁴)							E		
 "Intrinsic safety, explo dust explosion prote Zopo 1D/2D)"³⁾ 	osion-proof enclosure and ction (Ex ia+ Ex d +							F	2	
• FM + CSA (is + ep) +	Ex ia + Ex d (ATEX)							s	;	
• With FM + CSA, Type	of protection:									
- "Intrinsic Safe und E	xplosion Proof (is + xp)" ¹⁾							Ν	IC	
Electrical connection/d	able entry									
Screwed gland Pg 13.	5 ⁵⁾								A	
 Screwed gland M20x1 	.5								В	
Screwed gland ¹ / ₂ -14 I	NPT								С	
Han 7D plug (plastic h	nousing) incl. mating								D	
M12 connectors (stain	less steel) ^{5) 6) 7)}								F	
Display	,	-								
Without display										0
Without visible display	•									1
(display concealed, se	etting: mA)									
 With visible display 										6
 With customer-specific specified, Order Code 	c display (setting as e "Y21" or "Y22" required)									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. 7 "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⁾ Not in conjunction with electrical connection "Screwed gland Pg 13.5" and "Han7D plug".
- 2) Without cable gland, with blanking plug.
- ³⁾ With enclosed cable gland Ex ia and blanking plug.
- ⁴⁾ Configurations with HAN and M12 connectors are only available in Ex nL. ⁵⁾ Not in conjunction with types of protection "Explosion-proof" and "Ex nA",
 - "Intrinsic safety" and "Explosion-proof".
- 6) M12 delivered without cable socket
- 7) Not available with protection type "Ex d" (optiones D, P, N and R)

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Pressure Measurement Transmitters for general requirements

Selection and Orderin	ig data	0	rde	er N	٧o.			
Pressure transmitters	for level							
SITRANS P DS III with	PROFIBUS PA (PA)	7	ΜF	4	63	4 -		
SITRANS P DS III with	FOUNDATION Fieldbus	7	ΜF	4	63	5 -		
(FF)								
		1	Y		•			
Nominal measuring ra	ange							
250 mbar	(100 inH ₂ O)		D					
600 mbar	(240 inH ₂ O)		Е					
1600 mbar	(642 inH ₂ O)		F					
5 bar	(2000 inH ₂ O)		G					
Process connection of	of low-pressure side							
Female thread 1/4-18 NI	PT with flange connection							
 Mounting thread '/₁₆ 	20 UNF to IEC 61518			2				
 Mounting thread MTU (only for replacement 	t requirement)			U				
Non-wetted parts mat	erials							
process flange screws	Electronics housing							
Stainless steel	Die-cast aluminum				2			
Stainless steel	Stainless steel precision casting				3			
Version								
 Standard versions 						1		
International version,	English label inscriptions,					2		
(no order code selec	table)							
Explosion protection								
• None						Α		
With ATEX, Type of pr	rotection:							
- "Intrinsic safety (Ex	ia)"					В		
- "Explosion-proof (E:	(d)"''					D		
 Intrinsic safety and (Fx ia + Fx d)^{"2)} 	tiameproot enclosure					Ρ		
- "Ex nA/ic (Zone 2)"	3)					E		
- "Intrinsic safety, exp	losion-proof enclosure and					R		
dust explosion prot	ection (Ex ia + Ex d +							
• EM \pm CSA (is \pm ep) \pm	EVIDUTIN FRI (ATEX)					6		
• With FM + CSA Type	of protection:					0		
- "Intrinsic Safe und E	Explosion Proof (is + xp) ^{"1)}					N	С	
Electrical connection	cable entry							
Screwed gland M20	< 1.5						В	
Screwed gland ½-14	NP1						C	
• IVI 12 connectors (stai	niess steel) "						F	
Without display							0	
 Without visible display 	V						1	
(display concealed, s	setting: mA)							
 With visible display 	-						6	
 With customer-specifispecified, Order Cod 	ic display (setting as e "Y21" required)						7	

¹⁾ Without cable gland, with blanking plug.

- ²⁾ With enclosed cable gland Ex ia and blanking plug.
- ³⁾ Configurations with HAN and M12 connectors are only available in Ex nL.
- 4) M12 delivered without cable socket
- ⁵⁾ Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".

Ordering information

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

ordering example

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

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)

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	<u> </u>			
Selection and Ordering data	Order	code		
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	✓	✓	✓
• FEP (with silicone core, approved for food)	A21	✓	✓	✓
FFPM (Kalrez, compound 4079)	A22	1	✓	1
• NBR (Buna N)	A23	1	1	1
Plug	400	,		
• Han 7D (metal, gray)	A30	*		
Han 8U (Instead of Han 7D)	A31	V		
Angled	A32	v		
 Han 8D (metal, gray) 	A33	~		
Sealing screw				
1/4-18 NPT, with valve in mat. of process flanges	A40	✓	✓	✓
Cable applying for M12 comparison (stain	A E O			1
less steel)	A50	•	•	•
, Rating plate inscription				
(instead of Corman)				
	D11	1	1	1
 Englisti Eropoh 	DII			
• French	B12	*	*	*
• Spanish	B13	*	*	*
• Italian	B14	~	~	~
English rating plate	B21	✓	✓	✓
Pressure units in inH ₂ 0 and/or psi				
Quality inspection certificate (Five-step	C11	1	1	1
factory calibration) to IEC 60770-2	CII	•	•	•
Increation contificate	010			1
	CIZ	¥	v	v
ACC. 10 EN 10204-3.1				
Factory certificate	C14	✓	✓	~
Acc. to EN 10204-2.2				
"Functional safety (SIL2)" certificate to IEC 61508	C20	~		
"Functional safety" certificate (PROFIsafe) and PROFIsafe protocol	C21		~	
"Functional safety (SIL2/3)" certificate to IEC 61508	C23	✓		
Dovice perspert Russia	000	,	,	,
(For price request please contact the technical	C99	¥	v	v
support				
www.siemens.com/automation/support-request)				
Setting of upper limit of	D05	1		
output signal to 22.0 mA	200			
Degree of protection ID65/ID69	D12	1	1	1
(only for M20x1 5 and ½-14 NPT)	012	v	v	v
Complied with and 12 (Filler)	DOT	,	,	,
Supplied with oval flange	D37	*	•	~
(1 item), PTFE packing and screws in thread				
or process hange				
Use on zone 1D / 2D	E01	✓	✓	✓
(only together with type of protection				
"Intrinsic safety"				
(transmitter /MF4B Ex ia)")				
Overfilling safety device for flammable and	E08	1		
non-flammable liquids				
(max. PN 32 (MAWP 464 psi), basic device				
with type of protection "Intrinsic safety (Ex ia)",				
cell filling "inert liquid")				
Export approval Korea	E11	~	~	~
Explosion-proof "Intrinsic safety" (Ex ia) to	E25	✓	1	1
INMETRO (Brazil)				
(only for transmitter 7MF4B)				
"Flameproof" explosion protection accord-	E26	1	1	1
ing to INMETRO (Brazil)				
(only for transmitter 7MF4D)				

Selection and Ordering data	Order code			
Further designs		HART	PA	FF
Add "-Z" to Order No. and specify Order Code.				
Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil)	E28	1	1	
(only for transmitter 7MF4P)				
Ex Approval IEC Ex (Ex ia) (only for transmitter 7MF4B)	E45	~	1	*
Ex Approval IEC Ex (Ex id) (only for transmitter 7MF4D)	E46	~	1	~
Explosion-proof "Intrinsic safety" to NEPSI (China)	E55	~	~	*
(only for transmitter 7MF4B)				
Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4D)	E56	1	1	~
Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4E)	E57	~	✓	~
"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea)	E70	~	*	*
(only for transmitter 7MF4[B, D]Z + E11)				
Two coats of lacquer on casing and cover (PU on epoxy)	G10	1	1	~
Replacement of process connection side	H01	✓	✓	1

¹² Pressure Measurement Transmitters for general requirements SITRANS P DS III for level

Selection and Ordering data Order code				
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 description)	Y15	1	~	~
Max. 16 characters, specify in plain text: Y15:				
Measuring point text	Y16	✓	✓	~
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_2O^*), in H_2O^*), ft H_2O^*), mmHG, inHG, psi, Pa, kPa, MPa, g/cm ² , kg/cm ² , Torr, ATM or % ") ref. temperature 20 °C				
Setting of pressure indicator in	Y22 ¹⁾	✓		
non-pressure units ²⁾ Specify in plain text: Y22: up to l/min, m ³ /h, m, USgpm, (specification of measuring range in pressure units " Y01 " is essential, unit with max. 5 characters)	+ Y01			
Preset bus address	Y25		1	1
possible between 1 and 126 Specify in plain text: Y25:				

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

✓ = available

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

²⁾ Preset values can only be changed over SIMATIC PDM.

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Selection and Ordering	j data	Orde	r No.		
Mounting flange		7 M F	491	2	
Directly mounted on the transmitter (converter paseries	SITRANS P pressure art) for level, for DS III	3			
Connection to EN 1092	-1				
Nominal diameter	Nominal pressure				
DN 50	PN 40	Α			
	PN 100	В			
DN 80	PN 40	D			
DN 100	PN 16	G			
	PN 40	Н			
Connection to ASME B	16.5				
Nominal diameter	Nominal pressure				
2 inch	class 150	L			
	class 300	М			
	class 400/600	N			
	class 900/1500	Р			
3 inch	Class 150	Q			
	Class 300	R			
4 inch	Class 150	Т			
	Class 300	U			
Other version, add Orde	r Code and plain text:	7		.11	v
Nominal diameter:; No	ominal press.:	-			
Wetted parts materials					
 Stainless steel 316L 		A			
- Coated with PFA		D			
 Coated with PTFE 		E	0		
 Coated with ECTFE¹⁾ 		F			
• Monel 400 mat no 2	4360	G			
Hastellov B2 mat no	2 4617	H			
Hastellov C276 mat in	0 2 4819	J			
Hastellov C4. mat. no.	2.4610	Ŭ			
Tantalum		ĸ			
Duplex 2205. mat. no.	1.4462	Q			
 Duplex 2205, mat. no. 	1.4462. incl. main body	B			
Tube length					
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 Orde	r Code and plain text:	z	8	К 1	Y
material of parts in conta	act with medium:,				
tubus length:					
Filling liquid					
 Silicone oil M5 			1		
 Silicone oil M50 			2		
 High-temperature oil 			3		
 Halocarbon oil (for O₂- 	measurement)		4		
• Glycerin/water ²			6		
 Food oil (FDA-listed) 			7		
Other version, add			9	M 1	Y
Urder Code and plain te	ext:				
1) For vacuum on request					

²⁾ Not suitable for use in low-pressure range

Selection and Ordering data	Order code			
Further designs		HART	PA	FF
Add "-Z" to Order No. and specify Order Code.				
Spark arrester For mounting on zone 0 (including documen- tation)	A01	1	1	
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 (Five-step factory calibration) to IEC 60770-2	C11	~	1	
Inspection certificate Acc. to EN 10204-3.1	C12	~	~	
"Functional safety (SIL2)" certificate to IEC 61508	C20	~		
(only for conjunction with the order code "C20" in the case of SITRANS P DS III trans- mitter)				
"Functional safety (SIL2/3)" certificate to IEC 61508	C23	~		
(only for conjunction with the order code "C23" in the case of SITRANS P DS III trans- mitter)				
NACE MR-0175-certified	D07	✓	✓	
incl. acceptance test cerificate 3.1 to EN 10204				
Vacuum-proof design	V04	✓	1	
(for use in low-pressure range)				
suffix "Y01" required with pressure transmitter!				
·				

✓ = available

Pressure Measurement Transmitters for general requirements

SITRANS P DS III for level



Pressure Measurement Transmitters for general requirements SITRANS P DS III for level

Connection to EN 1092-1

Nominal diameter	Nominal pressure	b	D	d	d ₂	d ₄	d_5	d _M	f	k	n	L
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
DN 50	PN 40	20	165	90	18	102	48.3	45 ¹⁾	2	125	8	0, 50, 100, 150 oder 200
	PN 100	28	195	90	26	102	48.3	45 ¹⁾	2	145	8	
DN 80	PN 40	24	200	90	18	138	76	72 ²⁾	2	160	8	200
	PN 100	32	230	90	26	138	76	72 ²⁾	2	180	8	
DN 100	PN 10/16	20	220	115	18	158	94	89	2	180	8	-
	PN 25/40	24	235	115	22	162	94	89	2	190	8	

Connection to ASME B16.5

Nominal diameter	Nominal pressure	b	D	d ₂	d ₄	d_5	d _M	f	k	n	L
	lb./sq.in	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)		inch (mm)
2 inch	150	0.77 (19,5)	5.91 (150)	0.79 (20)	3.62 (92)	1.9 (48.3)	1.77 ¹⁾ (45)	0.08 (2)	4.74 (120.5)	4	0, 2, 3.94,
	300	0.89 (22.7)	6.5 (165)	0.79 (20)	3.62 (92)	1.9 (48.3)	1.77 ¹⁾ (45)	0.08 (2)	5 (127)	8	5.94 oder 7.87
	400/600	1.28 (32.4)	6.5 (165)	0.79 (20)	3.62 (92)	1.9 (48.3)	1.77 ¹⁾ (45)	0.28 (7)	5 (127)	8	(0, 50, 100,
	900/1500	1.78 (45.1)	8.46 (215)	1.02 (26)	5 (127)	1.9 (48.3)	1.77 ¹⁾ (45)	0.28 (7)	6.5 (165)	8	150 oder 200)
3 inch	150	0.96 (24.3)	7.48 (190)	0.79 (20)	5 (127)	3 (76)	2.83 ²⁾ (72)	0.08 (2)	6 (152.5)	4	Ī
	300	1.14 (29)	8.27 (210)	0.87 (22)	5 (127)	3 (76)	2.83 ²⁾ (72)	0.08 (2)	6.63 (168.5)	8	
	600	1.53 (38.8)	8.27 (210)	0.87 (22)	5 (127)	3 (76)	2.83 ²⁾ (72)	0.28 (7)	6.63 (168.5)	8	
4 inch	150	0.96 (24.3)	9.06 (230)	0.79 (20)	6.22 (158)	3.69 (94)	3.5 (89)	0.08 (2)	7.5 (190.5)	8	-
	300	1.27 (32.2)	10.04 (255)	0.87 (22)	6.22 (158)	3.69 (94)	3.5 (89)	0.08 (2)	7.87 (200)	8	
	400	1.65 (42)	10.04 (255)	1.02 (26)	6.22 (158)	3.69 (94)	3.5 (89)	0.28 (7)	7.87 (200)	8	

d: Internal diameter of gasket to DIN 2690

d_M: Effective diaphragm diameter

¹⁾ 59 mm = 2.32 inch with tube length L=0.

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

Pressure Measurement Transmitters for general requirements

SITRANS P DS III Supplementary electronics for 4-wire connection

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 ± 10 %, 47 63 Hz, approx. 3 VA)
Permissible ripple (within the speci- fied limits)	Approx. 2.5 V _{pp}

Dimensional drawings



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

Overview



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

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

Note on ordering:

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

Technical specifications				
SITRANS P, supplementary electro	onics for 4-wire connection			
Output				
Output signal	0 20 mA or 4 20 mA			
Load	Max. 750 Ω			
Voltage measurement	Linear (square-rooting in transmitter if necessary)			
Electrical isolation	Between power supply and input/ output			
Measuring accuracy	acc. to IEC 60770-1			
Measurement deviation (in addition to transmitter)	\leq 0.15 % of set span			
Influence of ambient temperature	≤ 0.1 % per 10 K			
Power supply effect	≤ 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 IEC 60529			
Electromagnetic compatibility (EMC)	EN 50081, EN 50082			

1

Pressure Measurement 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	Or	rder code		
Supplementary electronics for 4-wire connection Order No. of the transmitter 7MF4.33AB. add "-Z" and Order code.			••		
Power supply	Electrical connection				
24 V AC/DC	Terminals; 2 Pg screwed glands, to left	1	1		
	2 Han 7D/Han 8U plugs incl. mating connector, to left	3	3		
	1 Han 7D plug incl. mating connector, angled	5	5		
	Terminals; 1 Pg screwed gland, downwards	6	6		
	1 Han 8U plug incl. mating connector, downwards (observe arrangement of plug and differential pressure line)	9	9		
230 V AC	Terminals; 2 Pg screwed glands, to left	7	7		
	2 Han 7D plugs incl. mating connector, to left	8	8		
Output current	1				
0 20 mA 4 20 mA			0 1		
Accessories					
Instruction Ma German/English	nual າ	A5	5E00322799		

Selection and Orde	ering data	Order No.				
Replacement meas	suring cell for pressure	7 M F 4 9 9 0	7 M F 4 9 9 0 -			
for SITRANS P DS		0 - 0	DB			
Measuring cell filli	ng Measuring cell cleaning					
Silicone oil	Normal	1				
Inert liquid	grease-free to cleanliness level 2	3				
Measured span (m	in max.)	_				
0.01 1 bar	(0.15 14.5 psi)	В				
0.04 4 bar	(0.6 58 psi)	C				
0.16 16 bar	(2.32 232 psi)	D				
0.63 63 bar	(9.14 914 psi)	E				
1.6 160 bar	(23.2 2320 psi)	F				
4.0 400 bar	(58.0 5802 psi)	G				
7.0 700 bar	(102.0 10153 psi)	J				
Wetted parts mate	rials					
Seal diaphragm	Process connection					
Stainless steel	Stainless steel	A				
Hastelloy	Stainless steel	В				
Hastelloy	Hastelloy	С				
Process connection	n	_				
Connection shank	G1/2B to EN 837-1	0				
• Female thread 1/2-	14 NPT	1				
 Oval flange made 	of stainless steel,					
max. span 160 ba	r (2320 psi)					
 Mounting thread 	'/ ₁₆ -20 UNF to IEC 61518	2				
- Mounting thread	M10 to DIN 19213	3				
Further designs		Order code				
Please add "-Z" to C Order code.	Order No. and specify					
Inspection certific	ate	C12				
to FN 10204-3 1						

Selection and Ordering data				Order No.		
Replacement measuring cell for absolute pressure for SITRANS P DS III (from the pressure series)			- 4	992- 0-0DC0		
Measuring cell filling Silicone oil Inert liquid	Measuring cell cleaning Normal grease-free to cleanliness level 2	1 3				
Measured span (min. 8.3 250 mbar a 43 1300 mbar a 0.16 5 bar a 1 30 bar a	max.) (0.12 3.62 psia) (0.62 18.85 psia) (2.32 72.5 psia) (14.5 435 psia)	D F G H				
Seal diaphragm	s Process connection					
Stainless steel Hastelloy Hastelloy	Stainless steel Stainless steel Hastelloy	Д Е С	3			
Process connection Connection shank G Female thread ½-14 Oval flange made of max. span 160 bar (2 Mounting thread 7/ Mounting thread M	[/] ⁄ ₂ B to EN 837-1 NPT stainless steel, 2320 psi) ₁₆ -20 UNF to IEC 61518 10 to DIN 19213		0 1 2 3			
Further designs		Orde	er o	code		
Please add "-Z" to Orde Order code.	er No. and specify					
Inspection certificate to EN 10204-3.1		C12				

Selection and Orderi	Order No.			
Replacement measure sure (from the different SITRANS P DS III with PA and DS III with FOU	7 M F 4 9 9 3 -			
Measuring cell filling	Measuring cell cleaning			
Silicone oil	Normal	1		
Inert liquid	grease-free to	3		
mortingula	cleanliness level 2	U U		
Macoured onen (min	max	-		
	(0.12, 2.62 poid)	n		
0.3 230 MDar a	$(0.12 \dots 3.02 \text{ psia})$			
43 1300 mbara	$(0.02 \dots 10.05 \text{ psia})$	r C		
0.10	$(2.52 \dots 72.5 \text{ psia})$	u u		
T 30 Dara	$(14.5 \dots 435 \text{ psia})$			
5.3 100 bar a	(76.9 1450 psia)	NE.		
Wetted parts materia	ls			
Seal diaphragm	Parts of measuring cell			
Stainless steel	Stainless steel	A		
Hastellov	Stainless steel	в		
Hastellov	Hastellov	С		
Tantalum	Tantalum	E		
Monel	Monel	н		
Gold	Gold	Ë		
	dold			
Process connection				
Female thread 1/4-18 N	IPT with flange connection			
Sealing screw oppos	site process connection			
- Mounting thread M		U		
- Wounting thread '/	16^{-20} UNF to IEC 61518	2		
vent on side of proce	ess tiange "			
- Mounting thread M	10 to DIN 19213	4		
- Wounting thread '/	16-20 UNF to IEC 61518	0		
Non-wetted parts ma	terials			
 Stainless steel proce 	ess flange screws	2		
<i>Further designs</i> Please add " -Z " to Ord	er No. and specify	Order code		
Order code.				
O-rings for process f	langes			
(instead of FPM (Viton))			
• PTFE (Teflon)	,,	A20		
• FEP (with silicone co	ore, approved for food)	A21		
• FFPM (Kalrez, comp	ound 4079)	A22		
NBR (Buna N)		A23		
Increation cortificate		C12		
to EN 10204 3 1		012		
Dresses compaction	C1/ D	DIC		
Process connection	G/2D	D16		
(not together with K01	D20			
Vent on side for das	H02			
Process flanges		1102		
• without		K00		
• with process flange	mada of	KUU		
	liade of	K01		
- Manal		KOD		
- IVIUITEI Staiplass staal with		K04		
- Starniess steer with may PN 10 (MAN/	P 145 nei)	KU4		
max.temperature o	f medium 90 °C (194 °F)			
For ½-14 NPT inne	r process connection on the			
side in the middle	of the process flange, vent			
valve not possible				

Not for span "5.3 ... 100 bar (76.9 ... 1450 psi)"

Selection and Order	Order No.			
Replacement measu	7 M F 4 9 9 4 -			
SITRANS P DS III with	160 (MAWP 464/2320 psi) for D HART DS III with PROFIBUS	- 0 D C 0		
PA and DS III with FC	UNDATION Fieldbus series			
Measuring cell fillin	g Measuring cell cleaning			
Silicone oil	Normal	1		
Inert liquid	grease-free to cleanliness level 2	3		
Measured span (mir	n max.)			
PN 32 (MAWP 464 ps	<u>si)</u>			
1 20 mbar '/	(0.4 8 inH ₂ O)	в		
PN 160 (MAWP 2320	psi)			
1 60 mbar 2 5 250 mbar	$(0.4 \dots 24 \text{ InH}_2 \text{O})$ (1 100 inH O)			
6 600 mbar	$(2.4 \dots 240 \text{ in H}_2\text{O})$	E		
16 1600 mbar	(6.4 642 inH ₂ O)	F		
50 5000 mbar	(20 2000 inH ₂ O)	G		
0.3 30 bar	(4.35 435 psi)	н		
Wetted parts materi	als			
(stainless steel proce	ess flanges)			
Seal diaphragm	Parts of measuring cell			
Stainless steel Hastellov	Stainless steel Stainless steel	B		
Hastelloy	Hastelloy	č		
lantalum ²	Iantalum Monol	E		
Gold ²⁾	Gold	Ľ		
Process connection	I			
Female thread 1/4-18	NPT with flange connection			
Sealing screw opport	osite process connection			
- Mounting thread	$/_{1c}$ -20 UNF to IEC 61518	2		
Vent on side of prod	Vent on side of process flange			
 Mounting thread I Mounting thread I 	V10 to DIN 19213 /4c-20 UNE to JEC 61518	4		
Non-wetted parts m	aterials	. •		
Stainless steel proce	ss flange screws	2		
Further designs Please add "-Z" to Or	der No. and specify Order code.	Order code		
O-rings for process	flanges			
 Instead of FPIM (Vito PTEE (Teflon) 	n))	Δ20		
 FEP (with silicone c 	ore, approved for food)	A21		
FFPM (Kalrez, com	pound 4079)	A22		
• NBR (Buna N)		A23		
to EN 10204-3.1	e	C12		
Remote seal flanges	3	D20		
(not together with KU	1, KU2 and KU4)	H02		
Steinlage steel pres	1102			
differential pressure	Innes 1 K02 and K04)	поз		
Process flanges	., una no .,			
without		K00		
with process flange				
- Hastelloy	K01			
- IVIONEI	h P\/DE insort	K02		
max. PN 10 (MAV	/P 145 psi)	1.04		
max. temperature	of medium 90 °C (194 °F)			
side in the middle				

1) Not suitable for connection of remote seal

valve not possible

²⁾ Only together with max. spans 250, 1600, 5000 and 30000 mbar (100 inH₂O, 642 inH₂O, 2000 inH₂O und 435 psi).

Selection and Ordering data			Order No.			
Replacement measuring cell for differential pressure and PN 420 (MAWP 6092 psi) for SITRANS P DS III with HART, DS III with PROFIBUS			4995- - 0DC0			
Measuring cell filling Silicone oil	Measuring cell cleaning Normal	1				
Measured span (min 2.5 250 mbar 6 600 mbar 16 1600 mbar 50 5000 mbar 0.3 30 bar	. max.) (1 100 inH ₂ O) (2.4 240 inH ₂ O) (6.4 642 inH ₂ O) (20 2000 inH ₂ 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 ¹⁾	Stainless steel Stainless steel Gold	A B L	3			
Process connection Female thread ¼-18 NP connection • Sealing screw opposit - Mounting thread M12 - Mounting thread M12 - Nounting thread M12 - Mounting thread 7/ ₁₆ Non-wetted parts mate • Stainless steel process Further designs Please add "-2" to Order code.	T with flange e process connection 2 to DIN 19213 -20 UNF to IEC 61518 s flange 2 to DIN 19213 -20 UNF to IEC 61518 rials s flange screws	Orde	1 3 5 7 2 2			
 c-mgs for process hanges (instead of FPM (Viton)) PTFE (Teflon) FEP (with silicone core, approved for food) FFPM (Kalrez, compound 4079) NBR (Buna N) Inspection certificate to EN 10204 3 1 						
Stainless steel process flanges for vertical differential pressure lines						
without process flanges						

¹⁾ Not together with max. span 600 mbar (240.9 in H_2O)

Selection and Odering data	Order No.	Se
Spare parts/Accessories		Me
Mounting bracket and fastening parts		Fo
for pressure transmitters		ne
SITRANS P DS III with HART, DS III with		(5)
Fieldbus (7ME403 C)		(1
For absolute pressure transmitters		• r
SITRANS P DS III with HART, DS III with		• r
Fieldbus (7MF423C.)		Se
made of steel	7MF4997-1AB	Co
 made of stainless steel 	7MF4997-1AH	• r
Mounting bracket and fastening parts		• r
for pressure transmitters		El
PROFIBILS PA and DS III with FOUNDATION		• 1 • f
Fieldbus (7MF403A.,B.,D. andF.)		• I • f
For absolute pressure transmitters		F
PROFIBUS PA and DS III with FOUNDATION		Co
Fieldbus 7MF423A.,B.,D. andF.)		• f
made of steel	7MF4997-1AC	• f
made of stainless steel	7MF4997-1AJ	ł
Mounting and fastening brackets		0-
for differential pressure transmitters with flange thread M10		• •
SITRANS P DS III with HART, DS III with		• •
PROFIBUS PA and DS III with FOUNDATION		• F
made of steel	7ME4007-1AD	• 1
made of stainless steel	7MF4997-1AK	Se
Mounting and fastening brackets		W
For differential pressure transmitters with		• [
flange thread M12		• [
PROFIBILS PA and DS III with FOUNDATION		Ga
Fieldbus (7MF453)		(p
 made of steel 	7MF4997-1AE	• •
made of stainless steel	7MF4997-1AL	• (
Mounting and fastening brackets		f
For differential and absolute pressure transmit-		W
SITRANS P DS III with HART, DS III with		co
PROFIBUS PA and DS III with FOUNDATION		•
(7MF433, 7MF443 and 7MF453)		-
made of steel	7MF4997-1AF	Se
 made of stainless steel 	7MF4997-1AM	50
Cover		dia
made of die-cast aluminum, including gasket,		Ma
for SITRANS P DS III with HART, DS III with		• [
Fieldbus		• [
without window	7MF4997-1BB	•
• with window	7MF4997-1BE	
Cover		
made of stainless steel, including gasket,		
for SITRANS P DS III with HART, DS III with		
Fieldbus		
without window	7MF4997-1BC	
• with window	7MF4997-1BF	
Digital indicator	7MF4997-1BR	
Including mounting material for SITRANS P		
DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus		
Measuring point label		
without inscription (5 units)	7MF4997-1CA	
Printed (1 unit)	7MF4997-1CB-Z	
Data according to Y01 or Y02, Y15, Y16 and Y99 (see "Pressure transmitters")	Y:	

Selection and Odering data	Order No.
Mounting screws	
For measuring point label, grounding and con- nection terminals or for display (50 units)	7MF4997-1CD
Sealing screws (1 set = 2 units) for process flange • made of stainless steel • made of Hastelloy	7MF4997-1CG 7MF4997-1CH
Sealing screws with vent valve	
Complete (1 set = 2 units)	
made of stainless steel	7MF4997-1CP
made of Hastelloy	7MF4997-1CQ
Electronics	
• for SITRANS P DS III with HART	7MF4997-1DK
 for SITRANS P DS III with PROFIBUS PA for SITRANS P DS III with FOUNDATION Fieldbus 	7MF4997-1DL 7MF4997-1DM
Connection board	
• for SITRANS P DS III	7MF4997-1DN
• for SITRANS P DS III PROFIBUS PA and	7MF4997-1DP
FOUNDATION Fieldbus	
O-rings for process flanges made of:	
• FPM (Viton)	7MF4997-2DA
PTFE (Teflon)	7MF4997-2DB
• FEP (with silicone core, approved for food)	7MF4997-2DC
FFPM (Kalrez, compound 40/9)	7MF4997-2DD
	/MF499/-2DE
Sealing ring for process connection	see "Fittings"
Weldable sockets for PMC connection	
PMC Style Standard: Thread 1 ¹ / ₂ "	7MF4997-2HA
PMC Style Minibolt: front-flush 1*	/MF4997-2HB
Gaskets for PMC connection	
PTEF seal for PMC Style Standard:	7MF4997-2HC
Thread 11/2"	
 Gasket made of Viton for PMC Style Minibolt: front-flush 1" 	7MF4997-2HD
Weldable socket for TG52/50 and TG52/150	
TG52/50 connection	7ME/007-2HE
TG52/150 connection	7MF4997-2HE
Seels for TO 50/50 and TO 50/150 made of	7111 4007 0110
silicone	/MF499/-2NG
Seals for flange connection with front-flush	
Material FPM (Viton), 10 units	
• DN 25, PN 40 (M11)	7MF4997-2HH
• DN 25, PN 100 (M21)	7MF4997-2HJ
• 1", class 150 (M40)	7MF4997-2HK
• 1", class 300 (M45)	7MF4997-2HL
available ex stock	

Selection and Odering data	Order No.
Operating Instructions ¹⁾	
 for SITRANS DS III with HART German English French Spanish Italian 	A5E00047090 A5E00047092 A5E00053218 A5E00053219 A5E00053220
 for SITRANS DS III with PROFIBUS PA German English French Spanish Italian for SITRANS DS III with FOUNDATION Fieldbus 	A5E00053275 A5E00053276 A5E00053277 A5E00053278 A5E00053279
- German	A5E00279629
Compact operating instructions The compact operating instructions are avail- able in 21 EU languages on the product CD supplied with each transmitter. They can also be downloaded from the SITRANS P web page. Brief instruction (Leporello)	A3E00279027
German, English	
for STIRANS DS III with HART	A5E00047093
for SITRANS DS III with PROFIBUS PA Gorman, English	A5E00053274
 for SITRANS DS III with FOUNDATION Fieldbus German, English 	A5E00282355
CD with SITRANS P documentation	A5E00090345
German, English, French, Spanish, Italian incl. compact operating instructions in 21 EU languages	
Certificates (order only via SAP)	
instead of Internet downloadhard copy (to order)on CD (to order)	A5E03252406 A5E03252407
Operating Instructions for replacement of electronics, measuring cell and connection board (only available from the Internet) ¹⁾	A5E00078060
HART modem	
with RS232 interface	7MF4997-1DA
with USB interface	7MF4997-1DB
Supplementary electronics for 4-wire connection	See page 1/157
avallable ex stock	

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

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

Pressure Measurement 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)

7MF9411-5BA

Pressure Measurement Transmitters for general requirements

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

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

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

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

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

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

If you order an acceptance test certificate 3.1 to EN10204 when choosing the option "Factory mounting of valve manifolds", a separate certificate is provided for the transmitters and the valve manifolds respectively.

Overview

SITRANS P transmitters

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

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

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

Design

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

Selection and Ordering data

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
AND I' BO	SITRANS P DSIII 7MF4031, 7MF4231	Т03
	With process connection female thread ½-14 NPT in-sealed with PTFE sealing tape	
	Delivery incl. high-pressure test certified by test report to EN10204-2.2	
	Further designs:	
	Delivery includes mounting brackets and mounting clips made of stainless steel (instead of the mounting bracket supplied with the transmitter)	A02
	Supplied acceptance test certificate to EN 10204- 3.1 for transmitters and mounted valve manifold	C12
7MF9011-4EA		
valve manifold o	n relative and absolute pressure transmit	ters
	Add -Z to the Order No. of the transmitter	Order



 and add order codes
 code

 SITRANS P DSIII
 T02

 7MF403.-...0.-..., 7MF423.-...0.-...
 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
A02

 with the transmitter)
 Supplied acceptance test certificate to
 C12

 EN 10204- 3.1 for transmitters and mounted valve manifold
 C12

valve manifold on absolute and differential pressure transmitters Add -Z 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 Screws made of

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 with the transmitter)	A01 A02
Supplied acceptance test certificate to EN 10204-3.1 for transmitters and mounted valve manifold	C12

7MF9411-5CA valve manifold on differential pressure transmitters

F. A.	Add -Z to the Order No. of the transmitter and add order codes	Order code
. 6"	SITRANS P DSIII 7MF443 and 7MF4531 ¹⁾	
	mounted with gaskets made of PTFE and screws made of	
	chromized steelStainless steel	U03 U04
	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	A01
	Stainless steel	A02
	(instead of the mounting bracket supplied with the transmitter)	
	Supplied acceptance test certificate to EN 10204-3.1 for transmitters and mounted valve manifold	C12

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

Pressure Measurement 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 transmitter





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



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



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

SITRANS P500 Technical description

Overview



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

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

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

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

The SITRANS P500 pressure transmitters can be configured to measure:

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

Benefits

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



- Infinitely adjustable spans of 1.25 to 1250 mbar (0.018 to 18 psi)
- Extremely good total performance and conformity error values with no loss of performance up to a turndown of 10 guaranteed.
- Additional integrated sensor for static pressure
- · Parameterization via on-site control keys or HART
- Short process flanges nable space-saving installation.

Application

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

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

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

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

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

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

SITRANS P500 Technical description

Pressure transmitters for differential pressure and flow

- Measured variables:
 - Differential pressure
 - Small positive or negative pressure
 - Flow $q \sim \sqrt{\Delta p}$ (together with a primary element
 - (see Chapter "Flow Meters"))
- Span (freely adjustable) for SITRANS P500 HART: 1.25 to 1250 mbar (0.5 to 502 inH₂O)

Pressure transmitters for level

- Measured variable: Level of aggressive and non-aggressive liquids in open and closed vessels.
- Span (freely adjustable) for SITRANS P500: 1.25 to 1250 mbar (0.5 to 502 inH₂O)

- Nominal diameter of the mounting flange
 - DN 50 / PN 40
 - DN 80 / PN 40
 - DN 100/ PN 16, PN 40
 - 2 inch/class 150, class 300
 - 3 inch/class 150, class 300
 - 4 inch/ class 150, class 300 - customized special version
 - custornized special version

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

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

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

Design



8 Safety catch

View of transmitter

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

SITRANS P500 **Technical description**

Function

Operation of electronics with HART communication



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

Function diagram of electronics

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

Operation

- The three local pushbuttons enable you both to navigate and carry out configuration and to visually track messages and process values, provided a display is available.
- If you have a device without a display, you can carry out zero adjustment using the three local pushbuttons. It is possible to retrofit a display at any time.
- You can also carry out settings by computer via a HART mo-٠ dem.

Mode of operation of the measuring cells

Measuring cell for differential pressure and flow



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

Measuring cell for differential pressure and flow, function diagram

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

SITRANS P500 **Technical description**

Measuring cell for level



- Filling liquid of the measuring cell
- Capillary tube with filling liquid of the mounting flange 7 8 Flange with optional tube
- 9 Seal diaphragm for mounting flange

Measuring cell for level, function diagram

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

Configuration of SITRANS P500 HART

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

Configuration using the pushbuttons (local operation)

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

It is possible to retrofit a display. See accessories.

Configuration using HART

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



Communication between a HART Communicator and a pressure transmitter

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



HART communication between a PC communicator and a pressure transmitter

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

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

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

SITRANS P500 configuration options

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

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

SITRANS P500 diagnostic functions

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

SITRANS P500 Technical description

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

Pressure Measurement Transmitters for High Performance requirements SITRANS P500 for differential pressure and flow

Technical sp	pecifications
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Input		Square-rooted characteristic	
Measured variable	Differential pressure and flow	• Flow > 50%	
Span (infinitely adjustable)	Span (min max.) Maximum	- r ≤ 10	≤ 0.03 %
	operating pres-	- r > 10	≤ (0.003 [.] r) %
	pressure)	• Flow 25 % 50 %	
	1.25 250 mbar 160 bar	- r ≤ 10	≤ 0.06 %
	(0.5 100 inH ₂ O) (2320 psi)	- r > 10	≤ (0.006 [·] r) %
	6.25 1250 mbar (2.5 500 inH ₂ O)	Influence of ambient tempera- ture per 28° C	≤ (0.01 · r + 0.035) %/28 °C (50 °F)
Lower range limit		Influence of static pressure	
 Measuring cell with silicone oil filling 	-100 % of max. span and/or 30 mbar a (0.44 psia)	• On the zero point (PKN) ¹⁾	≤ 0.007 % per 70 bar
l Ipper range limit	100% of max span	• On the span (PKS)	≤ 0.03 % per 70 bar
Start of scale	Between measuring limits (freely adjustable)	Total accuracy (Total Perfor- mance) ²⁾	
Output		Linear characteristic	
Output current signal	4 20 mA	• r + 5	≤ 0.09 %
Lower current limit	3.55 mA. factory setting 3.8 mA	• 5 < r ≤ 10	≤ 0.14 %
(freely adjustable)		Square-rooted characteristic	
Upper current limit	23 mA, factory setting 20.5 mA	• Flow > 50 %	
(freely adjustable)		- r + 5	≤ 0.09 %
 Ripple (without HARI communication) 	$I_{pp} \le 0.4$ % of max. output current	- 5 < r ≤ 10	≤0.14 %
adjustable damping	0 100 s in steps of 0.1 s	• Flow 25 % 50 %	
adjustasis damping	factory-seting: 2 s	- r + 5	≤ 0.18 %
 current transmitter 	3.55 23 mA	- 5 < r ≤ 10	≤ 0.28 %
 Failure signal 	adjustable within limits:	Step response time T _{co} without	< 88 ms
	• Lower: 3.55 3.7 mA (factory set-	electrical damping	
	• Loper: 21.0 23 mA (factory set-	Long-term stability	\leq (0.05 \cdot r) % per 5 years
	ting 22.8 mA		≤ (0.08 · r) % per 10 years
Load		Influence of power supply	≤ 0.005 %/1 V
Without HART communication	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.023 \text{ A in } \Omega$,	Rated conditions	
	U _H : Power supply in V	Mounting position	Any
 With HART communication 		Ambient conditions	
- HART Communicator	<i>R</i> _B = 230 1100 Ω	Ambient temperature Ambient temperature	
- HART modem	$R_{\rm B} = 230 \dots 500 \Omega$	ture class in areas subject to	
Characteristic curve	Linearly rising, linearly falling, square	explosion hazard.)	
	tional square rooted characteristic	- lotal device Readable display	-40 +85 °C (-40 +185 °F)
	and user-specific	- Storage temperature	-50 +90 °C (-58 +194 °F)
Measuring accuracy		Climatic class	
Reference conditions (in accordance with IEC 60770-1)	Rising characteristic curve	 Condensation 	Relative humidity 0 100 %
	Start of scale 0 bar		(condensation permissible)
	Stainless steel seal diaphragm Measuring cell with silicope cil filling	Degree of protection	IP66/IP 68 and NEMA 4X (with corre-
	Boom temperature (25 °C (77 °F))	(to IEC 60529)	sponding cable gland)
Frror in measurement at limit		Electromagnetic Compatibility	
setting incl. hysteresis and reproducibility		Emitted interference and inter- ference immunity	Acc. to EN 61326 and NAMUR NE 21
r: Span ratio (r: Span ratio (r = max. span / set span))		Temporaturo of modium	equipment directive
Linear characteristic			-40 +125 °C (40 + 257 °E)
• r < 10	< 0.03 %	filling	-+0 + 120 C (-40 +207 F)
• r> 10	< (0,003; r) %		
	= (0.000 1) /0		

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for differential pressure	e and flow		
Design		Certificates and approvals	
Weight (without options)	Approx. 3.3 kg (7.3 lb)	Classification according to PED	
Material of parts in contact with		97/23/EC	
the medium • Seal diaphragm	Stainless steel, mat. no. 1.4404/316L, Hastelloy C276, Monel 400	• PN 160 (MAWP 2320 psi)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (cound organocring pragraph)
 Process connection and seal- ing screw 	PN 160: stainless steel, matNo. 1.4404/316L	Explosion protection	(sound engineering practice)
 Sealing material in the pro- cess connections 		Explosion protection for Europe (to ATEX)	
- O-Ring	Standard:	Intrinsic safety "i" Marking	PTB 09 ATEX 2004 X
	Viton (FKM (FPM))	- Permissible ambient tem-	-40 +85 °C (-40 +185 °F)
	Optional: NBR	perature	
	PTFE (virginal) PTFE (glass fiber-reinforced) FFPM (Kalrez) Graphite	- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}, I_i = 100 \text{ mA}, P_i = 750 \text{ mW};$ $R_i = 300 \Omega$
Material of parts not in contact	Graphito	 Effective internal induc- tance: 	$L_i = 400 \ \mu H$
	• Low coppor dia cast aluminum	- Effective inner capacitance:	C _i = 6 nF
Electronics housing	AC-AISi12 (Fe) or AC-AISi 10 Mg (Fe) to DIN EN 1706	 Explosion-proof "d" Marking 	BVS 09 ATEX E 027 Ex II 1/2 G Ex d IIC T4/T6
	• Lacquer on polyurethane base, op- tional epoxy-based primer	- Permissible ambient tem- perature	-40 +85 °C (-40 +185 °F) temperature class T4; -40 +60 °C (-40 +140 °F)
	Stainless steel name plates (mat. no. 1.4404/316L)		temperature class T6
Process connection screws	Stainless steel, mat. no. 1.4404/316L	- Connection	To circuits with values: $U_m = DC 10.5 \dots 45 V$
Mounting bracket	Steel or stainless steel mat. no. 1.4301	 Dust explosion protection for zone 20 	PTB 09 ATEX 2004 X
Measuring cell filling	Silicone oil	- Marking	Ex II 1 D Ex iaD 20 T 120 °C
Process connection	¹ / ₄ -18 NPT female thread and flange connection with M10 to DIN 19213 or 7/16 20 UNE mounting thread to JEC	 Permissible ambient tem- perature 	-40 +85 °C (-40 +185 °F)
	61518	- Max. surface temperature	To certified intrinsically-safe circuits
Electrical connection	 Screw terminals Cable entry via the following 		with peak values: $U_i = 30 \text{ V}, I_i = 100 \text{ mA},$ B = 750 mW, B = 300 O
	screwed glands: - M20 x 1 5	- Effective internal induc-	$L_i = 400 \mu\text{H}$
	- ½-14 NPT	tance: - Effective inner capacitance:	$C_i = 6 \text{ nF}$
Displays and controls	- M12 plug	Dust explosion protection for zone 21/22	BVS 09 ATEX E 027
	2 for local programming directly on	- Marking	Ex II 2 D Ex tD A21 IP68 T120 °C Ex ia
PUSHDULIONS	transmitter		D21
Display	With or without integrated display	- Connection	To circuits with values: $U_{\rm m}$ = 10.5 45 V DC; $P_{\rm max}$ = 1.2 W
A	Cover with or without window	• Type of protection "n" (zone 2)	PTB 09 ATEX 2004 X
Auxiliary power supply		- Marking	EX II 3 G EX NA II 14/16 EX II 2/3 G EX ib/nL IIC T4/T6
ierminal voltage on transmitter	With intrinsically-safe operation		Ex II 2/3 G Ex ib/ic IIC T4/T6
	DC 10.6 30 V	- "nA" connection	$U_m = 45 \text{ V DC}$
		 Effective internal induc- tance: 	$L_i = 400 \mu\text{H}$

- Effective inner capacitance: C_i = 6 nF

SITRANS P500 for differential pressure and flow

Explosion protection for USA		Explosion protection for China	
(to FM)		(acc. to NEPSI)	
Certificate of Compliance	No. 3033013	 Intrinsic safety "i" 	GYJ111111X
Identification (XP/DIP) or (IS)	XP CL I. DIV 1. GP ABCDEFG T4 / T6	- Marking	Ex ia/ib IIB/IIC T4
	DIP CL II, III, DIV1, GP EFG T4/T6	- Perm. ambient temperature	40 +85 °C (-40 +185 °F)
	IS CL I, II, III, DIV1, GP ABCDEFG 14 CL I, Zone 0, AEx ia IIC T4	- Connection	To certified intrinsically-safe circuits with maximum values:
			$U_i = 30 \text{ V} \text{ I}_i = 100 \text{ mA}, \text{ P}_i = 750 \text{ mW}$
 Permissible Ambient Tem- perature 	I _a = 14: -40 +85 °C (-40 +185 °F)	- Effective internal inductance	L _i = 400 mH
le e : e : e : e	T _a = T6: -40 +60 °C	- Effective inner capacitance	C _i = 6 nF
	(-40 +140 °F)	 Explosion-proof "d" 	GYJ111112
 Entity parameters 	According to "control drawing":	- Marking	Ex dia IIC T4/T6
	$U_m = 30 \text{ V}, I_m = 100 \text{ mA},$ $P_i = 750 \text{ mW}, L_i = 400 \mu\text{H}, \text{Ci} = 6 \text{ nF}$	 Permissible ambient tem- perature 	-40 +85 °C (-40 +185 °F) tem- perature class T4; -40 +60 °C (-40 +140 °F) tem-
 Marking (NI/NO) 	NI CL I, DIV 2, GP ABCD T4/T6		perature class T6
	S CL II, III, GPFG T4/T6 NI CL I, DIV 2, GP ABCD T4/T6, NIFW	- Connection	To circuits with values: $U_m = DC \ 10.5 \ \ 45 \ V$
	NI CL I, Zone 2, GP IIC T4/T6, NIFW NI CLII, III, DIV 2, GP FG T4/T6, NIFW	 Dust explosion protection for zone 21/22 	GYJ111112
 Permissible Ambient Tem- perature 	$T_a = T4: -40 \dots +85 \ ^{\circ}C$ (-40 +185 \ ^{o}E)	- Marking	DIP A21 TA,T120 °C IP68 D21
perature	$T_a = T6: -40 \dots +60 \text{ °C}$ (-40 \ldots +140 °F)	- Connection	To circuits with values: U _m = DC 10.5 45 V
- (NI/S) parameters	According to "control drawing":	• Type of protection "n" (zone 2)	GYJ111111X
	A5E02189134N U _m = 45 V, L _i = 400 μH, C _i = 6 nF,	- Marking	Ex nL IIB/IIC T4/T6 Ex nA II T4/T6
Explosion protection for		- Connection	U _i = 45 V DC
<u>Canada (lo c</u> CSA _{US})	N. 0000000	- Effective internal inductance	L _i = 400 mH
	No. 2280963	- Effective inner capacitance	C _i = 6 nF
• Marking (XP/DIP)	CL I, DIV 1, GP ABCD 14 /16; CL II, DIV 1, GP EFG T4/T6	 If the Type "D" measuring cell is factor of 5. This error can be reduced 	used, the error should be increased by a used to 0 by a means of a zero adjustment.
- Permissible ambient tem- perature	$I_a = 14: -40 \dots +85 °C (-40 \dots +185 °F)$ $T_a = T6: -40 \dots +60 °C (-40 \dots +140 °F)$	27 The total performance includes static pressure effects and conformer repeatability.	the errors caused by temperature effects, prmity error, including hysteresis and
- Entity parameters	According to "control drawing": A5E02189134N $U_m = 45 V$	HART communication	
 Marking (ia/ib) 	CL I. Ex ja/Ex jb IIC. T4	Load with connection of	
3 (4 4 7)	CL II, III, Ex ia/Ex ib, GP EFG, T4	 HART communicator 	<i>R</i> _B = 230 1100 Ω
	CL I, AEX IA/AEX ID IIC, 14 CL II. III. AEX ia/ AEX ib. GP EFG. T4	HART modem	$R_{\rm B}=230~~500~\Omega$
 Permissible ambient tem- perature 	T _a = T4: -40 +85 °C (-40 +185 °F)	Cable	2 wire shielded: \leq 3.0 km (1.86 miles), multiwire shielded: \leq 1.5 km
- Entity parameters	U_i = 30 V, I _i = 100 mA, P _i = 750 mW, R _i = 300 Ω , L _i = 400 μH, C _i = 6 nF	Dretess	(0.93 miles)
 Marking (NI/n) 	CL I, DIV 2, GP ABCD T4/T6		IDM serversible DAM - 00 MP to
	CL II, III, DIV 2, GP FG T4/T6 Ex nA IIC T4/T6 AEx nA IIC T4/T6 Ex nL IIC T4/T6 AEx nL IIC T4/T6	POnaptop requirements	new compatible, RAM > 32 MByte, hard disk > 70 MByte, depending on modem type: RS 232-interface or USB connection, VGA graphics
 Permissible ambient tem- perature 	$\begin{array}{l} T_a = T4: -40 \ \ +85 \ ^\circ C \ (-40 \ \ +185 \ ^\circ F) \\ T_a = T6: -40 \ \ +60 \ ^\circ C \ (-40 \ \ +140 \ ^\circ F) \end{array}$	Software for computer	SIMATIC PDM 6.0
- NI/nA parameters	According to "control drawing": A5E02189134N U _m = 45 V		
- nL parameters	According to "control drawing": A5E02189134N U _i = 45 V, I _i = 100 mA, L _i = 400 μ H, C _i = 6 nF		

SITRANS P500 for differential pressure and flow

Selection and Ordering data			Order No.	
Pressure transmitters for dif SITRANS P500 HART, PN 16	fferential pressure and flow, 0 (MAWP 2320 psi)		7 M F 5 4 -	0
Enclosure		Thread for cable gland		
Die-cast aluminum, dual comp	partment	M20x1.5	0	
Die-cast aluminum, dual comp	partment	1⁄2-14 NPT	1	
Output 4 20 mA, HART			3	
Measuring cell filling	Measuring cell cleaning			
Silicone oil	normal		1	
Measuring span		_		
1.25 250 mbar	(0.5 100.4 inH ₂ O)		D	
6.25 1250 mbar	(2.5 502 inH ₂ O)		E	
Wetted parts materials (stainless steel process flange	es)			
Seal diaphragm	Process connection			
Stainless steel 1.4404/316L	Stainless steel 1.4404/316L	_		A
Hastelloy C276	Stainless steel 1.4404/316L			В
Monel 400	Stainless steel 1.4404/316L			С
Process connection				
Female thread 1/4-18 NPT				
 Sealing screw opposite proc - Mounting thread 7/16 - 20 Mounting thread M10 to DI 	cess connection UNF according to EN 61518 IN 19213			0 1
 Vent on side of process flang Mounting thread 7/16 - 20 Mounting thread M10 to DI 	ge ¹⁾ UNF according to EN 61518 IN 19213			4 5

1) Not in conjunction with remote seals

Selection and Ordering data	Order code	
Further designs Add "- Z " to Order No. and specify Order Code.		
Attachments		
Mounting bracket made of steel	A01	
Mounting bracket made of stainless steel	A02	
Display (Standard: no display, cover closed)		
With display and blanking cover	A10	
With display and glass cover	A11	
Special casing / cover version		
Two coats of lacquer on casing, cover (PU on epoxy)	A20	
Electrical connection and cable entry (Standard: no cable gland, only dust protection caps)		
Cable gland made of plastic (IP66/68) ⁴⁾	A50	
Cable glands made of metal (IP66/68)	A51	
Cable glands made of stainless steel (IP66/68)	A52	
M12 connectors without cable socket (IP66/67) ⁴⁾	A60	
M12 connectors complete with cable socket (IP66/67) ⁴⁾	A61	
Han 7D connectors, plastic, straight (with cable socket) (IP65) ⁴⁾	A71	
Han 7D connectors, plastic, angled (with cable socket) (IP65) ⁴⁾	A72	
Han 7D connectors, metal enclosure, straight (with cable socket) (IP65) ⁴⁾	A73	
Han 7D connectors, metal enclosure, angled (with cable socket) (IP65) ⁴⁾	A74	
Han 8D connectors, plastic, straight (with cable socket) (IP65) ⁴⁾⁸⁾	A75	
Han 8D connectors, plastic, angled (with cable socket) (IP65) ⁴⁾⁸⁾	A76	
Han 8D connectors, metal enclosure, straight (with cable socket) (IP65) ⁴⁾⁸⁾	A77	
Han 8D connectors, metal enclosure, angled (with cable socket) (IP65) ⁴⁾⁸⁾	A78	
PG 13.5 adapters ⁴⁾	A82	
Language for labels, leporellos, menu language		
default ⁹⁾ (instead of English as standard)		
Gorman	R10	
French	B12	
Spanish	B13	
Italian	B14	
	B15	
Bussian	B16	
Jananese	B17	
English with units $psi/inH_{-}\Omega/^{2}E$	B21	
Special version: Supplementary menu languages (Standard: English German French Spanish Italian)	521	
Asia language package (in addition: Chinese, Japanese. Russian)	B80	
Certificates (available online for downloading) ¹⁾		
Quality inspection certificate (Five-step factory calibration) according to IEC 60770-2 ²⁾	C11	
Acceptance test certificate according to EN 10204-3.1 ³⁾	C12	

Selection and Ordering data	Order code
<i>Further designs</i> Add "- 2 " to Order No. and specify Order Code.	
Degree of protection approvals: Ex ja/ib (intrinsic safety)	
Ex ja/ib protection (ATEX) (T4)	E00
Ex IS protection (EM) (T4)	E01
Ex IS protection (CSA_{US}) (T4)	E02
Ex ja/jb protection (NEPSI) (T4)	E06
Degree of protection approvals: Ex.d (flameproof)	
Ex d explosion-proof (ATEX)(T4/T6)	F20
Ex XP explosion-proof and DIP (FM)(T4/T6)	E21
Ex XP explosion-proof and DIP $(_{CSA_{US}})(T4/T6)$	E22
Ex d explosion-proof (NEPSI)(T4/T6)	E26
Degree of protection approvals: n/NI	
Zone 2 (nA nL ic) (ATEX) (T4/T6)	F40
Div2 NL Div2 NL-field wiring (FM) (T4/T6)	E41
Zone 2 (nA, nL), Div2 NI ($_{\rm C}CSA_{\rm US}$) (T4/T6)	E42
Zone 2 (nA, nL) (NEPSI) (T4/T6)	E46
Degree of protection approvals: Dust Zone 20/21/22	
Use in Zone 21/22 (Ex tD) (ATEX)	F60
Use in Zone 20/21/22 (Ex ia) (AEX)	E61
Use in Zone 21/22 (Ex DIP) (NEPSI)	E66
Degree of protection approvals: Combinations	
IS protection and XP and DIP (FM)	E71
IS protection and XP and DIP (_C CSA _{US})	E72
IS protection and XP and DIP (FM/ $_{ m C}{ m CSA}_{ m US}$)	E73
Supplementary approvals/degree of protection	
Dual Seal approval ⁵⁾	E85
Special process connection versions (diff. pressure)	
Side vents for gas measurements ⁷⁾	L32
Swap process connection: high-pressure side at front	L33
Process flanges, O-rings, special material Standard: Viton (FKM (FPM)	
Process connection sealing rings made of PTFE (Teflon), virginal	L60
Process connection sealing rings made of PTFE (Teflon), glass fiber-reinforced	L61
Process connection sealing rings made of FFPM (Kalrez)	L62
Process connection sealing rings made of NBR	L63
Process connection sealing rings made of graphite	L64
Drain/Vent valve (1 set = 2 units)	
2 ventilation valves $^{1\!\!/_{4^{\!-}}}$ 18 NPT, in material of process flanges)	L80
Remote seals	
Transmitters with connection of remote seal ⁶⁾ (For premounted valve manifolds see page 1/194)	V00
 Enclosed in print or as CD: see page 1/192. When also ordering the quality inspection certificate (factory according to IEC 60770-2 for transmitters with mounted diapl Order this certificate only together with the remote seals. The accuracy of the total combination is certified here. When also ordering the acceptance test certificate according 3.1 for transmitters with mounted diaphragm seals: Order this well in addition to the respective remote seals. 	calibration) hragm seals: measuring to EN 10204 certificate as
 ⁴⁾ Not together with types of protection "Explosion-proof", "Ex n/ "Intrinsic safety and explosion-proof" ⁵⁾ Only in conjunction with FM and/or _CCSA_{US} ⁶⁾ Please select a remote scal page to the information of the second second	A" and
T rease select a remote sear separately also relet to the intorr	nanon under

- ıy 2). Remote seals see page 2/197.
- 7) Only in conjunction with process connection "Vent on side".
- ⁸⁾ The Han 8D plug is identical with the former Han 8U version.
 ⁹⁾ For option B15, B16 and B17 the menu language default is english. Otherwise the Option B80 (Asia language package) is necessary.

SITRANS P500 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.	
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 	Y01
 In the case of square rooted characteristic (max. 5 characters): Y02: up to mbar, bar, kPa, MPa, psi 	Y02
Measuring point number and measuring point identifier (only standard ASCII character set)	
Specify in plain text:	
Measuring point number (TAG No.), max. 16 characters	Y15
Y15:	
Measuring point text (max. 27 char.) Y16:	Y16
Entry of HART address (TAG), max. 32 characters Y17:	Y17
Setting of pressure indication in pressure units	Y21
Specify in plain text (standard setting: mbar) Y21: bar, kPa, MPa, psi,	
Note: The following pressure units are selectable: bar, mbar, mm H_2O^*), in H_2O^*), ft H_2O^*), mmHG, inHG, psi, Pa, kPa, MPa, g/cm ² , kg/cm ² , Torr, ATM, % or mA	
*) Reference temperature 20 °C	
Setting of pressure indication in non-pressure units Specify in plain text:	Y22 + Y01 or Y02
Y22: up to I/min, m ³ /h, m, USgpm, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	
Customer-specific settings	
Damping setting (range: 0 100 s) (Standard setting: 2 s)	Y30

SITRANS P500 for differential pressure and flow

Dimensional drawings



SITRANS P pressure transmitter for differential pressure and flow, P500 series, measurements in mm (inch)

SITRANS P500 for level

Technical specifications

Input			
Measured variable	Level		
Span (infinitely adjustable)	Span (min max.)	Maximum operat- ing pressure	
	1.25 250 mbar (0.5 100 inH ₂ O)	See "Mounting flange"	
	6.25 1250 mbar (2.5 500 inH ₂ O)		
Lower range limit			
Measuring cell with silicone oil filling	-100 % of max. span (7.25 psia) vacuum r Also available as vac remote seal: 30 mba	or 500 mbar a esistance cuum-resistant r a (0.44 psia)	
Upper range limit	100% of max. span		
Start of scale	Between measuring able)	limits (freely adjust-	
Output			
Output current signal	4 20 mA		
 Lower current limit (freely adjustable) 	3.55 mA, factory sett	ing 3.8 mA	
 Upper current limit (freely adjustable) 	23 mA, factory settin	g 20.5 mA	
Ripple (without HART com- munication)	$I_{pp} \le 0.4$ of max. out	out current	
 adjustable damping 	0 100 s in steps of ting 2 s	0.1 s, factory set-	
 current transmitter 	3.55 23 mA		
 Failure signal 	Adjustable within lim	its:	
	• Lower: 3.55 3.7 3.6 mA)	mA (factory setting	
	• Upper: 21.0 23 r 22.8 mA)	mA (factory setting	
Load			
Without HART communica- tion	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0.1$ $U_{\rm H}$: Power supply in	023 A in Ω, V	
With HART communication			
- HART Communicator	$R_{\rm B} = 230 \dots 1100 \ \Omega$		
- HART modem	$R_{\rm B} = 230 \dots 500 \ \Omega$		
Characteristic curve	Linearly rising or line user-specific	arly falling and	
Measuring accuracy			
Reference conditions (in accordance with	 Rising characteristi Start of scale 0 bar 	ic curve	
IEC 60770-1)	Stainless steel seal	diaphragm	
	Measuring cell with Room tomporature	silicone oil filling	
Error in measurement at limit	noon temperature		
setting incl. hysteresis and reproducibility			
r: Span ratio (r = max. span / set span)			
 Linear characteristic 			
- r ≤ 10	≤ 0.03 %		
- r > 10	≤ (0.003 [·] r) %		
Long-term stability	≤ (0.05 · r) % per 5 y	ears	
	≤ (0.08 · r) % per 10	years	
Influence of ambient temper- ature per 28 °C ¹⁾	≤ (0.01 · r + 0.035) %	o / 28 °C	

Influence of static pressure	
 On the zero point (PKN)²⁾ 	\leq (0.007 \cdot r) % per 70 bar
 on the span (PKS) 	≤ 0.03 % per 70 bar
Influence of power supply	≤ 0.005 %/1 V
Rated conditions	
Mounting position	Defined by flange
Ambient conditions	
 Ambient temperature (Note: Observe the temper- ature class in areas subject to explosion hazard.) total device Readable display Storage temperature 	-40 +85 °C (-40 +185 °F) -20 +85 °C (-4 +185 °F) -50 +90 °C (-58 +194 °F)
Climatic class	
Condensation	Relative humidity 0 100 % (condensation permissible)
Degree of protection to IEC 60529	IP66/IP68 and NEMA 4X (with corresponding cable gland)
Electromagnetic Compatibil- ity	
• Emitted interference and in- terference immunity	Acc. to EN 61326 and NAMUR NE 21
Permissible pressures	According to 97/23/EC pressure equip- ment directive
Medium temperature of high- pressure side	
 Measuring cell with silicone oil filling 	
- p _{abs} ≥1 bar	-40 +175 ³⁾ °C (-40 +347 ³⁾ °F)
- p _{abs} < 1 bar	-40 +80 °C (-40 +176 °F)
Design	
Weight	
 To EN (pressure transmitter with mounting flange, with- out tube) 	approx. 9.8 11.8 kg (21.6 26.0 (lb)
• To ASME (pressure trans- mitter with mounting flange, without tube)	approx. 9.8 16.8 kg (21.6 37.0 lb)
Material of wetted parts at the high-pressure side	
 Seal diaphragm of mount- ing flange 	Stainless steel 1.4404/316L, Hastelloy C276, mat. no. 2.4819, Monel 400, mat. no. 2.4360, Tantal, PFA auf Edelstahl 1.4404/316L, PTFE auf Edelstahl 1.4404/316L
Sealing face	Smooth to EN 1092-1, Form b1 and/or ASME B16.5 RF 125 250 AA for stain- less steel316L, EN1092-1 Form B2 and/or ASME B16.5 RFSF in the case of other materials
 Sealing material in the pro- cess connection 	
- O-Ring	 Standard: Viton (FKM (FPM)) Optional: NBR PTFE (virginal) PTFE (glas fiber-reinforced) FFPM (Kalrez) Graphite
mounting flange	oopper

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			for level
Material of wetted parts at		- Effective internal induc-	L _i = 400 μH
Seal diaphragm	Stainless steel, mat. no. 1.4404/316L, Hastelloy C276, Monel 400	 Effective inner capaci- tance: 	C _i = 6 nF
 Process connection and 	• Stainless steel, mat. no. 1.4404/316L	 Explosion-proof "d" 	BVS 09 ATEX E 027
sealing screw		- Marking	Ex II 1/2 G Ex d IIC T4/T6
 Sealing material in the process connection O-Ring 	• Standard: Viton (FKM (FPM))	- Permissible ambient tem- perature	-40 +85 °C (-40 +185 °F) temperature class T4; -40 +60 °C (-40 +140 °F) temperature class T6
	Optional: NBR DTEF (virginal)	- Connection	To circuits with values: $U_{\rm m}$ = DC 10.5 45 V
	PTFE (virginal) PTFE (glas fiber-reinforced) FFPM (Kalrez)	 Dust explosion protection for zone 20 	PTB 09 ATEX 2004 X
	Graphite	- Marking	Ex II 1 D Ex iaD 20 T 120 °C
Material of parts not in con- tact with media		 Permissible ambient tem- perature 	-40 +85 °C (-40 +185 °F)
Electronics housing	Low copper die-cast aluminum AC- AlSi12 (Fe) or AC-AlSi 10 Mg (Fe) to	- Max. surface temperature	120 °C (248 °F)
	DIN EN 1706 • Lacquer on polyurethane base, option- al epoxy-based primer • Stainless steel serial plate	- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}, I_i = 100 \text{ mA},$ $P_i = 750 \text{ mW}, R_i = 300 \Omega$
Process connection screws	Stainless steel	 Effective internal induc- tance: 	L _i = 400 μH
Measuring cell filling	Silicone oil	- Effective inner capaci-	$C_i = 6 \text{ nF}$
Liquid mounting flange	Silicone oil or other material	Dust explosion protection	
Process connection		for zone 21/22	503 03 ATEX E 027
High-pressure side	Flange to EN and ASME	- Marking	Ex II 2 D Ex tD A21 IP68 T120 °C Ex ia D21
Low-pressure side	4-18 NP1 female thread and flange con- nection with M10 to DIN 19213 or 7/16- 20 UNF mounting thread to IEC 61518	- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC; $P_{\rm max}$ = 1.2 W
Electrical connection	Screw terminals Cable entry via the following screwed	 Type of protection "n" (zone 2) 	PTB 09 ATEX 2004 X
	glands: - M20 x 1.5 - ½-14 NPT	- Marking	Ex II 3 G Ex nA II T4/T6 Ex II 2/3 G Ex ib/nL IIC T4/T6 Ex II 2/3 G Ex ib/ic IIC T4/T6
	- Han 7D/Han 8D connector - M12 plug	- "nA" connection	$U_m = 45 \text{ V DC}$
Displays and controls		- "nL, ic" connection	U _i = 45 V
Push buttons	3; for operation directly on the device	 Effective internal induc- tanco 	L _i = 400 μH
Display	 With or without integrated display Cover with or without window 	- Effective inner capaci- tance	C _i = 6 nF
Auxiliary power supply		Explosion protection for USA	
Terminal voltage on transmit-	• DC 10.6 44 V	(to FM)	
ter	• With intrinsically-safe operation	Certificate of Compliance	No. 3033013
Certificates and approvals	DC 10.6 30 V	 Identification (XP/DIP) or (IS) 	XP CL I, DIV 1, GP ABCDEFG T4 / T6 DIP CL II, III, DIV1, GP EFG T4/T6 IS CL I, II, III, DIV1, GP ABCDEFG T4
Classification according to PED 97/23/EC			CL I, Zone 0, AEx ia IIC T4 CL I, Zone 1, AEX ib IIC T4
• PN 160 (MAWP 2320 psi)	For gases of fluid group 1 and liquids of fluid group 1; complies with require- ments of article 3, paragraph 3 (sound	 Permissible Ambient Tem- perature 	$\begin{array}{l} T_a = T4: \ -40 \ \dots \ +85 \ ^\circ C \ (-40 \ \dots \ +185 \ ^\circ F) \\ T_a = T6: \ -40 \ \dots \ +60 \ ^\circ C \ (-40 \ \dots \ +140 \ ^\circ F) \end{array}$
Explosion protection	engineering practice)	- Entity parameters	According to "control drawing": A5E02189134N $U_{1} = 30 V L_{2} = 100 \text{ mA}$
Explosion protection for			$P_i = 750 \text{ mW}, L_i = 400 \mu\text{H}$, $C_i = 6 n\text{F}$
Europe (to ALEX)		 Marking (NI/NO) 	NI CL I, DIV 2, GP ABCD T4/T6
Intrinsic safety 1			S CL II, III, GPFG T4/T6
 Warking Permissible ambient temperature 	-40 +85 °C (-40 +185 °F)		NI CL I, DIV 2, GP ABCD T4/T6, NIFW NI CL I, Zone 2, GP IIC T4/T6, NIFW NI CLII, III, DIV 2, GP FG T4/T6, NIFW
- Connection	To certified intrinsically-safe circuits with peak values:	 Permissible Ambient Tem- perature 	$\begin{array}{l} T_a = \text{T4: -40 } \ldots \ +85 \ ^\circ\text{C} \ (\text{-40} \ \ldots \ +185 \ ^\circ\text{F}) \\ T_a = \text{T6: -40 } \ldots \ +60 \ ^\circ\text{C} \ (\text{-40} \ \ldots \ +140 \ ^\circ\text{F}) \end{array}$
	$U_{\rm i}$ = 30 V, $l_{\rm i}$ = 100 mA, $P_{\rm i}$ = 750 mW; $R_{\rm i}$ = 300 Ω	- (NI/S) parameters	According to "control drawing": A5E02189134N $U_{\rm m}$ = 45 V, L _i = 400 µH, Ci = 6 nF

SITRANS P500 for level

Explosion protection for

Canada	
(to _C CSA _{US})	
Certificate of Compliance	No. 2280963
 Marking (XP/DIP) 	CL I, DIV 1, GP ABCD T4 /T6; CL II, DIV 1, GP EFG T4/T6
 Permissible Ambient Tem- perature 	$\begin{array}{l} T_a = T4: -40 \ \ +85 \ ^\circ C \ (-40 \ \ +185 \ ^\circ F) \\ T_a = T6: \ -40 \ \ +60 \ ^\circ C \ (-40 \ \ +140 \ ^\circ F) \end{array}$
- Entity parameters	According to "control drawing": A5E02189134N, $U_m = 45 V$
• Marking (ia/ib)	CL I, Ex ia/Ex ib IIC, T4 CL II, III, Ex ia/Ex ib, GP EFG, T4 CL I, AEx ia/AEx ib IIC, T4 CL II, III, AEx ia/ AEx ib, GP EFG, T4
- Permissible Ambient Tem- perature	$T_a = T4: -40 \dots +85 \text{ °C} (-40 \dots +185 \text{ °F})$
- Entity parameters	$\begin{array}{l} U_i = 30 \; \text{V}, \; \text{I}_i = 100 \; \text{mA}, \; \text{P}_i = 750 \; \text{mW}, \\ \text{R}_i = 300 \; \Omega \; , \; \text{L}_i = 400 \; \mu\text{H}, \; \text{C}_i = 6 \; \text{nF} \end{array}$
• Marking (NI/n)	CL I, DIV2, GP ABCD T4/T6 CL II, III, DIV2, GP FG T4/T6 Ex nA IIC T4/T6 AEx nA IIC T4/T6 Ex nL IIC T4/T6 AEx nL IIC T4/T6
- Permissible Ambient Tem- perature	$\begin{array}{l} T_a = T4: \ -40 \ \dots \ +85 \ ^\circ C \ (-40 \ \dots \ +185 \ ^\circ F) \\ T_a = T6: \ -40 \ \dots \ +60 \ ^\circ C \ (-40 \ \dots \ +140 \ ^\circ F) \end{array}$
- NI/nA parameters	According to "control drawing": A5E02189134N, U _m = 45 V
- nL parameters	According to "control drawing": A5E02189134N, U_i = 45 V, I_i = 100 mA, L_i = 400 $\mu H,$ C_i = 6 nF
Explosion protection for China (acc. to NEPSI)	
 Intrinsic safety "i" 	GYJ111111X
- Marking	Ex ia/ib IIB/IIC T4
 Permissible ambient tem- perature 	40 +85 °C (-40 +185 °F)
- Connection	To certified intrinsically-safe circuits with maximum values:
	$U_i = 30 \text{ V} \text{ I}_i = 100 \text{ mA}, \text{ P}_i = 750 \text{ mW}$
- Effective internal induc-	L _i = 400 mH
- Effective inner capaci-	C _i = 6 nF
 Explosion-proof "d" 	GYJ111112
- Marking	Ex dia IIC T4/T6

-40 ... +85 °C (-40 ... +185 °F) tempera-

-40 ... +60 °C (-40 ... +140 °F) tempera-

ture class T4;

ture class T6

To circuits with values: $U_m = DC \ 10.5 \dots 45 \ V$

Dust explosion protection for zone 21/22	GYJ111112
- Marking	DIP A21 TA,T120 °C IP68 D21
- Connection	To circuits with values: $U_m = DC 10.5 \dots 45 V$
• Type of protection "n" (zone	GYJ111111X
- Marking	Ex nL IIB/IIC T4/T6 Ex nA II T4/T6
- Connection	$U_i = 45 \text{ V DC}$
- Effective internal induc-	L _i = 400 mH
- Effective inner capaci-	$C_i = 6 \text{ nF}$
1) Only relevant for the pressure	transmitter. The temperature error of the

remote seal must calculated separately.

²⁾ If the Type "D" measuring cell is used, the error should be increased by a factor of 5. This error can be reduced to 0 by a means of a zero adjustment

³ This value may be increased if the process connection is sufficiently insulated.

HART communication	
Load with connection of	
 HART Communicator 	$R_{\rm B} = 230 \dots 1100 \Omega$
HART modem	$R_{\sf B}=230\ldots 500~\Omega$
Cable	2 wire shielded: ≤ 3.0 km (1.86 miles), multiwire shielded: ≤ 1.5 km (0.93 miles)
Protocol	HART Version 6.0
PC/laptop requirements	IBM compatible, RAM > 32 MByte, hard disk > 70 MByte, depending on modem type: RS 232-interface or USB connection, VGA graphics
Software for computer	SIMATIC PDM 6.0

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- Permissible ambient tem-

perature

- Connection

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Selection and Ordering data			Order No.	Orc	der code
Pressure transmitters for lev	vel, SITRANS P500 HART		7 M F 5 6	0 -	
Enclosure		Thread for cable gland			
Die-cast aluminum, dual comp	partment	M20x1.5	0		
Die-cast aluminum, dual comp	partment	1⁄2-14 NPT	1		
Output					
4 20 mA, HART			3		
Measuring cell filling	Measuring cell cleaning	I			
Silicone oil	normal		1		
Measuring span (min max	x.)				
1.25 250 mbar	(0.5 100.4 inH ₂ O)		D		
6.25 1250 mbar	(2.5 502 inH ₂ O)		E		
(stainless steel process flange	s sure side es)				
Seal diaphragm	Process connection				
Stainless steel 1.4404/316L	Stainless steel 1.4404/31	6L	A		
Hastelloy C276	Stainless steel 1.4404/31	6L	E	1	
Monel 400	Stainless steel 1.4404/31	6L	0	:	
Process connection of low-p	pressure side				
Female thread 1/4-18 NPT					
Sealing screw opposite proc Mounting thread 7/16 - 20	cess connection UNF according to IEC 61518	}		0	
 Mounting thread M10 to D 	IN 19213			1	
 Vent on side of process flang Mounting thread 7/16 - 20 Mounting thread M10 to D 	ge UNF according to IEC 61518 IN 19213	3		4	
Wetted parts materials (high	-pressure side)				
Chainless sheet 1 4404/2101				0	
Stainless steel 1.4404/316L	0			0	
Hastelloy C276 mat. no. 2.481	9			1	
Monel 400 mat. no. 2.4360				2	
Iantaium				3	
PFA coaled on stainless steel	1/01CL (not in combination w	ith an automaion)		4	
Other version	4/3 IOL (NOLIN COMDINATION W	iin an extension)		6 A 0 V	N 1 V
Add order code and plain text	t.			91	NIY
Material: ; Extension length:	L. 				
Process connection on high	-pressure side: Extension	length			
None				А	
50 mm (1.97 inch)				В	
100 mm (3.94 inch)				С	
150 mm (5.90 inch)				D	
200 mm (7.87 inch)				Е	
Other version: See option "9" f	or "Wetted parts materials"				
Process connection on high	-pressure side: Nominal di	ameter/Nominal pressure			
DN 50 PN 40 ⁶⁾				в	
DN 80 PN 40				D	
DN 100 PN 16				G	
DN 100 PN 40				н	
$2"$ class 150^{6}				ï	
$2"$ class 300^{6}				M	
3", class 150				0	
3". class 300				B	
4". class 150				Т	
4" class 300					
Other version add				7	017
Order Code and plain text:				-	
Nominal diameter: ; Nomina	al pressure:				

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Selection and Ordering data	Order No.	Orde	er co	de
Pressure transmitters for level, SITRANS P500 HART	7 M F 5 6 - 0 -			
Process connection on high-pressure side: Filling liquid				
Silicone oil M5		0		
Silicone oil M50		1		
High-temperature oil		2		
Halocarbon (for oxygen measurement)		3		
FDA compliant oil		4		
Glycerin/water		5		
Other version, add		9	R	1 Y
Order Code and plain text:				
Filing liquia:				

Selection and Ordering data	Order code
<i>Further designs</i> Add "- Z " to Order No. and specify Order Code.	
Display (Standard: no display, cover closed)	
With display and blanking cover	A10
With display and glass cover	A11
Special version: cover/casing	
Two coats of lacquer on casing, cover (PU on epoxy)	A20
Electrical connection and cable entry (Standard: no cable gland, only dust protection caps)	
Cable gland made of plastic (IP66/68) ⁴⁾	A50
Cable glands made of metal (IP66/68)	A51
Cable glands made of stainless steel (IP66/68)	A52
M12 connectors without cable socket (IP66/67) ⁴⁾	A60
M12 connectors, cable socket (IP66/67) ⁴⁾	A61
Han 7D connectors, plastic, straight (with cable socket) (IP65) ⁴⁾	A71
Han 7D connectors, plastic, angled (with cable socket) (IP65) ⁴⁾	A72
Han 7D connectors, metal enclosure, straight (with cable socket) (IP65) ⁴⁾	A73
Han 7D connectors, metal enclosure, angled (with cable socket) (IP65) ⁴⁾	A74
Han 8D connectors, plastic, straight (with cable socket) (IP65) ⁴⁾⁷⁾	A75
Han 8D connectors, plastic, angled (with cable socket) (IP65) ⁴⁾⁷⁾	A76
Han 8D connectors, metal enclosure, straight (with cable socket) (IP65) ⁴⁾⁷⁾	A77
Han 8D connectors, metal enclosure, angled (with cable socket) (IP65) ⁴⁾⁷⁾	A78
PG 13.5 adapters ⁴⁾	A82
Language for labels, leporellos and menu language default ⁸⁾ (instead of English as standard)	
German	B10
French	B12
Spanish	B13
Italian	B14
Chinese	B15
Russian	B16
Japanese	B17
English with units: psi/inH ₂ O	B21
Special version: Supplementary menu languages (Standard: English, German, French, Spanish, Italian)	
Asia language package (in addition: Chinese, Japanese, Russian)	B80
Certificates (available online for downloading) ¹⁾	
Quality inspection certificate (Five-step factory calibration) according to IEC 60770- $2^{2)}$	C11
Acceptance test certificate according to EN 10204-3.1 ³⁾	C12
Degree of protection approvals: Ex ia/ib (intrinsic safety)	
Ex ia/ib protection (ATEX) (T4)	E00
Ex IS protection (FM) (T4)	E01
Ex IS protection (_C CSA _{US}) (T4) Ex ia/ib protection (NEPSI) (T4)	E02 E06

Selection and Ordering data	Order code
Further designs Add "-2" to Order No. and specify Order Code.	
Degree of protection approvals: Ex d (flameproof)	
Ex d explosion-proof (ATEX)(T4/T6)	E20
Ex XP explosion-proof and DIP (FM)(T4/T6)	E21
Ex XP explosion-proof and DIP (_C CSA _{US})(T4/T6)	E22
Ex d explosion-proof (NEPSI)(T4/T6)	E26
Degree of protection approvals: n/NI	
Zone 2 (nA, nL, ic) (ATEX) (T4/T6)	E40
Div2 NI, Div2 NI-field wiring (FM) (T4/T6)	E41
Zone 2 (nA, nL), Div2 NI (_C CSA _{US}) (T4/T6) Zone 2 (nA, nL) (NEPSI) (T4/T6)	E42 E46
Degree of protection approvals: Zone 20/21/22	
Use in Zone 21/22 (Ex tD) (ATEX)	E60
Use in Zone 20/21/22 (Ex iaD) (ATEX)	E61
Use in Zone (Ex DIP) (ATEX)	E66
Degree of protection approvals: Combinations	
IS protection and XP and DIP (FM)	E71
IS protection and XP and DIP ($_{C}CSA_{US}$)	E72
IS protection and XP and DIP ($FM/_CCSA_{US}$)	E73
Supplementary approvals / degree of protection	
Dual Seal approval ⁵⁾	E85
Special process connection versions (diff. pressure)	
Swap process connection: high-pressure side at front	L33
Process flanges, O-rings, special material Standard: Viton (FKM (FPM)	
Process connection sealing rings made of PTFE (Teflon), virginal	L60
Process connection sealing rings made of PTFE (Teflon), glass fiber-reinforced	L61
Process connection sealing rings made of FFPM (Kalrez)	L62
Process connection sealing rings made of NBR	L63
Process connection sealing rings made of graphite	L64
Drain/Vent valve (1 set = 2 units)	
2 ventilation valves ¼- 18 NPT, in material of process flange)	L80
Vacuum-proof design	
Vacuum service	V04
Spark arrester For mounting on zone 0 (including documentation)	V05
 Enclosed in print or as CD: see page 1/192. When also ordering the quality inspection certificate (factory) 	calibration)

² when also ordering the quality inspection certificate (factory calibration) according to IEC 60770-2 for transmitters with mounted diaphragm seals: Order this certificate only together with the remote seals. The measuring accuracy of the total combination is certified here.

³⁾ When also ordering the acceptance test certificate according to EN 10204-3.1 for transmitters with mounted diaphragm seals. Order this certificate as well in addition to the respective remote seals.

- ⁴⁾ Not together with types of protection "Explosion-proof", "Ex nA" and "Intrinsic safety and explosion-proof"
- $^{\rm 5)}$ Only in conjunction with FM and/or $_{\rm C}{\rm CSA}_{\rm US}$
- 6) Not recommended for Measuring span "D"
- ⁷⁾ The Han 8D plug is identical with the former Han 8U version.
- ⁸⁾ For option B15, B16 and B17 the menu language default is english. Otherwise the Option B80 (Asia language package) is necessary.

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Selection and ordering data	Order code
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:	
Linear characteristic curve (max. 5 characters): Y01: up to mbar, kPa, MPa, psi	Y01
Measuring point number and measuring point identifier (only standard ASCII character set)	
Speciry in plain text:	
Measuring point number (TAG No.), max. 16 characters Y15:	Y15
Measuring point text (max. 27 char.) Y16:	Y16
Entry of HART address (TAG), max. 32 characters Y17:	Y17
Setting of pressure indication in pressure units	Y21
Specify in plain text (standard setting: mbar) Y21: bar, kPa, MPa, psi,	
Note: The following pressure units are selectable: bar, mbar, mm H ₂ O [*]), in H ₂ O [*]), ftH ₂ O [*]), mmHG, inHG, psi, Pa, kPa, MPa, g/cm ² , kg/cm ² , Torr, ATM, % or mA	
*) Reference temperature 20 °C	
Setting of pressure indication in non-pressure units Specify in plain text: Y22: up to I/min, m ³ /h, m, USgpm, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	Y22 + Y01
Customer-specific settings	
Damping setting (range: 0 100 s) (Standard setting: 2 s)	Y30

SITRANS P500 for level

Dimensional drawings



SITRANS P pressure transmitter for filling level, P500 series, measurements in mm (inch)

SITRANS P500 for level

Connection to EN 1092-1

Nominal diameter	Nominal pressure	b	D	d	d ₂	d ₄	d ₅	d _M	f	k	n	L
		mm	mm	mm	mm	mm	mm	mm	mm	mm		mm
DN50	PN 40	20	165	61	18	102	48.3	45 ¹⁾	2	125	4	
DN 80	PN 40	24	200	90	18	138	76	72 ²⁾	2	160	8	0, 50, 100,
DN 100	PN 16	20	220	115	18	158	94	89	2	180	8	- 150 or 200
	PN 40	24	235	115	22	162	94	89	2	190	8	

Connection to ASME B16.5

Nominal diameter	Nominal pressure	b	D	d ₂	d ₄	d ₅	d _M	f	k	n	L
	lb/sq.in.	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)		inch (mm)
2 inch	Class 150	0.77 (19.5)	5.91 (150)	0.75(19.0)	3.62(92)	1.9(48.3)	1.77 (45) ¹⁾	0.079 (2.0)	4.75 (120.7)	4	0, 2, 3.94,
	Class 300	0.89 (22.7)	6.49(165)	0.75(19.0)	3.62(92)	1.9(48.3)	1.77 (45) ¹⁾	0.079 (2.0)	5.0 (127)	8	5.94 or 7.87
3 inch	Class 150	0.96 (24.3)	7.5 (190.5)	0.75 (19.0)	5 (127)	3.0 (76)	2.83 (72) ²⁾	0.079 (2.0)	6 (152.4)	4	(0, 50,
	Class 300	1.14 (29.0)	8.27 (210)	0.87 (22.2)	5 (127)	3.0 (76)	2.83 (72) ²⁾	0.079 (2.0)	6.69 (168.3)	8	or 200)
4 inch	Class 150	0.96 (24.3)	9.06 (230)	0.75 (19.0)	6.19 (157.2)	3.69 (94)	3.5 (89)	0.079 (2.0)	7.5 (190.5)	8	
	Class 300	1.27 (32.2)	10.04 (255)	0.87 (22.2)	6.19 (157.2)	3.69 (94)	3.5 (89)	0.079 (2.0)	7.88 (200)	8	

Explanations of tables:

d: Internal diameter of gasket to DIN 2690

d_M: Effective diaphragm diameter

d₅: Diameter of extension

f: Milling edge

L: Extension length

 $^{1)}$ 59 mm = 2.32 inch with tube length L=0..

 $^{2)}$ 89 mm = 31/2 inch with tube length L=0.

SITRANS P500 Supplementary electronics for 4-wire connection

Dimensional drawings



SITRANS P pressure transmitter with supplementary electronics for 4-wire connection

Direct connection of the supplementary electronics to a SITRANS P pressure transmitter from the P500 series produces a transmitter for four-wire connection.

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

Note on ordering:

Overview

The supplementary electronics has to be be ordered through the **supplementary options** of the pressure transmitter in question.

Technical specifications Output 0 ... 20 mA or 4 ... 20 mA Output signal Max. 750 Ω Load Linear (square-rooting in transmit-Voltage measurement ter if necessary) Electrical isolation Between power supply and input/ output Measuring accuracy According to IEC 60770-1 Conformity error (in addition to ≤ 0.15 % of set span transmitter) ≤ 0.1 % per 10 K Influence of ambient temperature 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) -50 ... +85 °C (-58 ... +185 °F) Storage temperature Degree of protection IP54 to IEC 60529 Electromagnetic compatibility EN 50081, EN 50082 (EMC) Structural design Dimensions (W x H x D) in mm 80 x 120 x 60 (3.15 x 4.72 x 2.36) (inch) Electrical connection Screw terminals (Pg 13.5 cable inlet) or Han 7D / Han 8D plug Power supply 230 V AC (-10 ... +6 % Supply voltage 47 ... 63 Hz, approx. 6 VA) or 24 V AC/DC (24 V AC ± 10 %, 47 ... 63 Hz, approx. 3 VA) Approx. 2.5 V pp Permissible ripple (within the specified limits)



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

Schematics



Supplementary electronics for 4-wire connection, connection diagram (the HAN 8D conector is identical to the previous version of the HAN 8U)

SITRANS P500 Supplementary electronics for 4-wire connection

Selection and	Ordering data	Order code	
Supplementary connection Order No. of the 7MF54and Order code	/ electronics for 4-wire e transmitter or 7MF56 add "-Z" e.	V	
Power supply 24 V AC/DC	Electrical connection Terminals; 2 Pg screwed glands, to left	1	
	2 Han 7D/Han 80 plugs incl. mating connector, to left 1 Han 7D plug incl. mating connector, angled	5	
	Terminals; 1 Pg screwed gland, downwards	6	
	1 Han 8U plug incl. mating connector, downwards (observe arrangement of plug and differential pressure line)	9	
230 V AC	Terminals; 2 Pg screwed glands, to left	7	
	2 Han 7D plugs incl. mating connector, to left	8	
Output current			
0 20 mA 4 20 mA		0 1	
Accessories		Order No.	
Instruction Ma	nual	A5E00322799	

German/English

Pressure Measurement Transmitters for High Performance requirements SITRANS P500 Accessories/Spare parts

Selection and ordering	Order No.			
Replacement measurin	7 M F 5 9 9 4 -			
pressure SITRANS P pressure tran pressure and flow, P500 (MAWP 2320 psi)			1	
Measuring cell filling Silicone oil	Measuring cell cleaning normal	1		
Measuring span (min 1.25 250 mbar 6.25 1250 mbar	max.) (0.5 100.4 inH ₂ O) (2.5 502 inH ₂ O)	DE		
Wetted parts materials (stainless steel process f	langes)			
Seal diaphragm	Parts of measuring cell			
Stainless steel 1.4404/316L	Stainless steel 1.4404/316L	4	١	
Hastelloy C276	Stainless steel1.4404/316L	E	}	
Monel 400	Stainless steel1.4404/316L	c	;	
Female thread ¹ / ₄ -18 NPT • Sealing screw opposite - Mounting thread ⁷ / ₁₆ - - Mounting thread M10 • Vent on side of process - Mounting thread ⁷ / ₁₆ - - Mounting thread M10		0 1 4 5		
Further designs		Orde	er o	code
Add "-Z" to Order No. and	d specify Order Code.			
Acceptance test certific Acc. to EN 10204-3.1 Without process flanges	C12 K00			
Vent on side for gas mea	L32			
Process flanges, O-ring Standard: Viton (FKM (I				
Process connection seal (Teflon), virginal	L60			
Process connection seal (Teflon), glass fiber-reinfo	L61			
Process connection seal (Kalrez)	L62			
Process flanges, O-rings	L63			
Process flanges, O-rings	L64			

¹⁾ Only in conjunction with process connection code 4 or 5.

SITRANS P500 Accessories/Spare parts

Selection and Ordering data	
	Order No.
Mounting brackets For differential pressure transmitters with flange thread M10 (7MF5410 and 7MF5450) • Made of steel • Made of stainless steel	7MF5987-1AA 7MF5987-1AD
Mounting brackets	
for differential pressure transmitter with flange thread 7/16-20 UNF (7MF5400 and 7MF5440) • Made of steel • Made of stainless steel	7MF5987-1AC 7MF5987-1AF
Cover	
Made of die-cast aluminum, including O-ring • Without window • With window • Digital indicator	7MF5987-1BE 7MF5987-1BF 7MF5987-1BB
Including mounting material	
TAG plate (incl. fastening material) Without inscription (5 pcs.) Printed (1 pc.) Data according to Y01 or Y02, Y15 and Y16 (see "SITRANS P transmitters")	7MF5987-1CA 7MF5987-1CB-Z Y.:
Mounting screws	
For TAG plate, grounding and connection terminals and securing and locking screws (30 units)	7MF5987-1CC
Sealing plugs for process flange	
Made of stainless steel Made of Hastelloy	7MF4997-1CG 7MF4997-1CH
Vent valve Complete (1 set = 2 units) ● Made of stainless steel ● Made of Hastelloy	7MF4997-1CP 7MF4997-1CQ
Electronics module HART, intrinsically safe Ex ia for installation in transmitter casing (observe warranty conditions)	7MF5987-1DC
Connection board (incl. fastening mate-	
HART, intrinsically safe Ex ia for installation in transmitter casing (observe warranty conditions)	7MF5987-1DM
 O-rings for process flanges made of: Viton (FKM (FPM)) (10 pcs.) NBR (Buna N) (10 pcs.) 	7MF5987-2DA 7MF5987-2DE
Push buttons assembly (incl. fastening material)	7MF5987-2AF
For replacement of operating keys for on- site operation of the transmitter	
Sealing ring for • Process connection	See catalog Fl01, "Fittings"
 NBR sealing ring for screw cover (10 pcs.) NBR sealing ring for interface measuring cell/housing (10 pcs.) 	7MF4997-2EA 7MF5987-2EB

Selection and Ordering data

	Order No.
Operating Instructions ¹⁾	
German	A5E02344527
English	A5E02344528
French	A5E02344529
Italian	A5E02344530
Spanish	A5E02344531
Compact operating instructions ¹⁾	
English, German, Spanish, French, Italian, Dutch	A5E02344532
English, Estonian, Latviaan, Lithuanian, Polish, Romanian	A5E02307339
English, Bulgarian, Czech, Finnish, Slovakian, Slovenian	A5E02307340
English, Danish, Greek, Portuguese, Swedish, Hungarian	A5E02307341
Russian	A5E02307338
Brief instructions (Leporello)	
German, English	A5E02344536
French, English	A5E02344537
Italian, English	A5E02344538
Spanish, English	A5E02344539
Chinese, English	A5E02344540
Russian, English	A5E02556625
CD withSITRANS Pdocumentation	
German, English, French, Spanish, Italian Compact operating instructions in 21 EU languages	A5E02344535
Service Instructions ¹⁾ for replacement of electronics, measuring cell and terminal board	
• German	A5E02822443
• English	A5E02344534
HART modem	
With RS232 interface	7MF4997-1DA
With USB interface	7MF4997-1DB
Operating instruction ¹⁾ Supplementary electronics for 4-wire connection	A5E00322799
German, English	
Certificates (order only via SAP) addi- tional to internet download	
Hard copy (to order)	A5E03252406
• On CD (to order)	A5E03252407

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

Available ex stock.

For power supply units, see catalog FI01 "Supplementary Compontents".

SITRANS P500 Accessories/Spare parts

Dimensional drawings



Mounting bracket for SITRANS P pressure transmitter, P500 series, measurements in mm (inch) Mounting bracket material: Sheet-steel Mat. No. 1.0330, chrome-plated, or stainless steel Mat. No. 1.4301 (304)

SITRANS P500 Factory-mounting of valve manifolds on transmitters

Overview

The SITRANS P500 transmitter can be delivered factory-fitted with the following manifolds:

- Valve manifolds 7MF9411-5BA: Three valve manifold for differential pressure transmitter
- Valve manifolds 7MF9411-5CA: Three valve manifold for differential pressure transmitter

Design

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

Once installed, the complete unit is checked under pressure for leaks (compressed air 6 bar (2411 inH₂O)) and is certified leak-proof with a test report to EN 10204 - 2.2.

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

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

If you order an acceptance test certificate 3.1 to EN10204 when choosing the option "Factory mounting of manifolds", a separate certificate is provided for the transmitters and the manifolds respectively.

Selection and ordering Data

Manifold 7MF9411-5BA on SITRANS P pressure transmitter P500 for differential pressure and flow



Order Code
U01
U02
A01
A02
010
-

Manifold 7MF9411-5CA on SITRANS P500 pressure transmitter for differential pressure and flow

in the	Add -Z to the Order No. of the transmitter and add order codes	Order Code
.6	SITRANS P500 7MF54	
	mounted with gaskets made of PTFE and screws made of	
	Chromized steel	U03
	Stainless steel	U04
	Delivery incl. high-pressure test certified by factory certificate to EN10204-2.2	
	Further designs:	
	Delivery includes mounting bracket and mounting clips made of	
	Steel	A01
	Stainless steel	A02
	(instead of the mounting bracket supplied with the transmitter)	
	Supplied acceptance test certificate to EN10204-3.1 for transmitters and mounted valve manifold	C12

1

SITRANS P500 Factory-mounting of valve manifolds on transmitters

Dimensional drawings



Manifold 7MF9411-5BA with attached SITRANS P500 pressure transmitter for differential pressure and flow (incl. mounting bracket)



Manifold 7MF9411-5BA with attached SITRANS P500 pressure transmitter for differential pressure and flow, measurements in mm (inch)

Pressure Measurement Transmitters for High Performance requirements SITRANS P500 Factory-mounting of valve manifolds on transmitters



Manifold 7MF9411-5CA with attached SITRANS P500 pressure transmit-ter for differential pressure and flow (incl. mounting bracket)



Manifold 7MF9411-5CA with attached SITRANS P500 pressure transmitter for differential pressure and flow, measurements in mm (inch)

Technical description

Overview

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

The remote seals can be used with the following SITRANS P pressure transmitter series:

- Pressure (P300, DS III with HART, DS III with PROFIBUS PA, DS III with FOUNDATION Fieldbus)
- Absolute pressure (P300, DS III with HART, DS III with PROFI-BUS PA, DS III with FOUNDATION Fieldbus)
- Differential pressure and flow (P500, DS III with HART, DS III with PROFIBUS PA, DS III with FOUNDATION Fieldbus)

Note

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

Benefits

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

Application

Remote seal systems should be used if a separation between the measured medium and the measuring instrument is essential or appropriate.

Examples of such cases:

- The temperature of the medium is outside the limits specified for the pressure transmitter.
- The medium is corrosive and requires diaphragm materials which are not available for the pressure transmitter.
- The medium is highly viscous or contains solids which would block the measuring chambers of the pressure transmitter.
- The medium may freeze in the measuring chambers or pulse line.
- The medium is heterogeneous or fibrous.
- The medium tends towards polymerization or crystallization.
- The process requires quick-release remote seals, as 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

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:

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

An example of a temperature error calculation can be found in the section "Technical Specifications".

Technical description

Response time

The response time is dependent on the following factors:

- Internal diameter of the capillary: The bigger the internal diameter, the shorter the response time
- Viscosity of the filling liquid The greater the viscosity, the longer the response time
- Length of the capillary: The longer the capillary, the longer the response time
- Pressure in the pressure measuring system: The higher the pressure, the shorter the response time

Recommendations

The following should be observed to obtain an optimum combination of transmitter and remote seal:

- Choose the biggest possible diameter for the remote seal. The effective diameter of the seal diaphragm is then bigger and the temperature error smaller.
- Choose the shortest possible capillary. The response time is then shorter and the temperature error smaller
- Choose the filling liquid with the least viscosity and the smallest coefficient of expansion. Make sure, however, that the filling liquid meets the process requirements with regard to pressure, vacuum and temperature. And ensure that the filling liquid and the medium are compatible with one another.
- Note the following points for use in the vacuum range:
- The pressure transmitter must always be positioned below the lowest spigot.
- The operating range of some filling liquids is very limited with regard to the permissible temperature of the medium.
- A vacuum-proof seal is necessary for continuous operation in the low-pressure range.
- Recommendations for the minimum span can be found in the section "Technical data".

Note

The remote seals listed here are a selection of the most common designs. On account of the large variety of process connections, certain remote seals which are not listed here may be available nevertheless.

Other versions can be:

- Other process connections, standards
- Aseptic or sterile connections
- Other dimensions
- Other nominal pressures
- Special diaphragm materials, including coatings
- Other sealing faces
- Other filling liquids
- Other capillary lengths
- · Sheathing of capillaries with protective hose
- Calibration at higher/lower temperatures etc.

Please contact your local Siemens office for further information.

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	Diaphragm diameter		Temperature error of remote seal		Temperature error of 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 _{Kap})	(psi/ (10 K ⋅ m _{Kap)})	mbar/ 10 K	(psi/ 10 K)	mbar	(psi)
Sandwich	DN 50 without tube	59	(2.32)	1.5	(0.022)	2	(0.029)	2	(0.029)	200	(2.90)
design or with flange to	DN 50 with tube	45	(1.89)	5	(0.073)	10	(0.145)	10	(0.145)	500	(7.25)
EN 1092-1	DN 80 without tube	89	(3.50)	0.2	(0.003)	0.2	(0.003)	0.2	(0.003)	100	(1.45)
	DN 80 with tube	72	(2.83)	1	(0.015)	1	(1.015)	1	(1.015)	250	(3.63)
	DN 100 without tube	89	(3.50)	0.2	(0.003)	0.4	(0.006)	0.4	(0.006)	100	(1.45)
	DN 100 with tube	89	(3.50)	0.4	(0.006)	0.4	(0.006)	0.4	(0.006)	100	(1.45)
	DN 125 without tube	124	(4.88)	0.2	(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	45	(1.89)	5	(0.073)	10	(0.145)	10	(0.145)	500	(7.25)
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)
DIN 11851	DN 32	32	(1.26)	8	(0.116)	25	(0.363)	25	(0.363)	4000	(58)
	DN 40	40	(1.57)	4	(0.058)	10	(0.145)	10	(0.145)	2000	(29)
	DN 50	52	(2.05)	4	(0.058)	5	(0.073)	5	(0.073)	500	(7.25)
	DN 65	59	(2.32)	3	(0.044)	4	(0.058)	4	(0.058)	500	(7.25)
<u> </u>	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)
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)
lion	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)
pillayili seal	G1½B	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.

Technical description

Iemperature errors of diaphragm seals with connection to differential pressure transmitters (double-sided)											
	Nominal diameter/ design	Diaphra diamete	agm er	Temperature error of remote seal		Temperature error of cap- illary		Temperature error of process flange/connec- tion spigot		Recommended min. spans (guidance val- ues, observe temperature error)	
		mm	(inch)	mbar/ 10 K	(psi/ 10 K)	mbar/ (10 K ⋅ m _{Kap})	(psi/ (10 K · m _{Kap}))	mbar/ 10 K	(psi/ 10 K)	mbar	(psi)
Sandwich	DN 50 without tube	59	(2.32)	0.3	(0.0043)	0.3	(0.0045)	0.3	(0.0045)	250	(3.626)
design or with flange to	DN 50 with tube	45	(1.89)	1.26	(0.018)	1.7	(0.025)	1.7	(0.025)	250	(3.626)
EN 1092-1	DN 80 without tube	89	(3.50)	0.05	(0.001)	0.05	(0.001)	0.05	(0.0007)	50	(0.725)
	DN 80 with tube	72	(2.83)	0.24	(0.004)	0.17	(0.003)	0.17	(0.003)	100	(1.45)
	DN 100 without tube	89	(3.50)	0.05	(0.001)	0.07	(0.001)	0.07	(0.001)	50	(0.725)
	DN 100 with tube	89	(3.50)	0.1	(0.002)	0.07	(0.001)	0.07	(0.001)	50	(0.725)
	DN 125 without tube	124	(4.88)	0.05	(0.001)	0.03	(0.0004)	0.03	(0.0004)	20	(0.29)
	DN 125 with tube	124	(4.88)	0.05	(0.001)	0.03	(0.0004)	0.03	(0.0004)	20	(0.29)
Sandwich	2 inch without tube	59	(2.32)	0.3	(0.0043)	0.3	(0.0043)	0.3	(0.0045)	250	(3.626)
design with flange to	2 inch with tube	45	(1.89)	1.26	(0.018)	1.7	(0.025)	1.7	(0.025)	250	(3.626)
ASME B16.5	3 inch without tube	89	(3.50)	0.05	(0.001)	0.05	(0.0007)	0.05	(0.0007)	50	(0.725)
	3 inch with tube	72	(2.83)	0.24	(0.004)	0.17	(0.003)	0.17	(0.003)	100	(1.45)
	4 inch without tube	89	(3.50)	0.05	(0.001)	0.07	(0.001)	0.07	(0.001)	50	(0.725)
	4 inch with tube	89	(3.50)	0.1	(0.002)	0.07	(0.001)	0.07	(0.001)	50	(0.725)
	5 inch without tube	124	(4.88)	0.05	(0.001)	0.03	(0.0004)	0.03	(0.0004)	20	(0.29)
	5 inch with tube	124	(4.88)	0.05	(0.001)	0.03	(0.0004)	0.03	(0.0004)	20	(0.29)
Remote seal, screwed gland design	DN 50	52	(2.05)	1	(0.015)	0.83	(0.012)	0.83	(0.012)	250	(3.626)
Remote seal	DN 50	52	(2.05)	1	(0.015)	0.83	(0.012)	0.83	(0.012)	250	(3.626)
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)
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)
1011	21/2 inch	59	(2.32)	0.7	(0.010)	0.67	(0.010)	0.67	(0.010)	250	(3.626)
	3 inch	72	(2.83)	0.24	(0.004)	0.17	(0.003)	0.17	(0.003)	100	(1.450)

Remarks:

• Values apply for the filling liquids silicone oil M5, silicone oil M50, high-temperature oil, halocarbon oil and food oil (FDA listed)

• Half the values apply to glycerin/water mixture as the filling liquid

• Values apply to stainless steel as the diaphragm material.

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	erature error 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 of remote seal		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)	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

Calculation of the temperature error

The following equation is used to calculate the temperature error:

$dp = (\vartheta_{RS} - \vartheta_{Cal}) \cdot f_{RS} + (\vartheta_{Cap} - \vartheta_{Cal}) \cdot I_{Cap} \cdot f_{Cap} + (\vartheta_{TR} - \vartheta_{Cal}) \cdot f_{PF}$

dp	Additional temperature error (mbar)
9 _{RS}	Temperature on remote seal diaphragm (generally corresponds to temperature of medium)
ϑ_{Cal}	Calibration (reference) temperature (20 °C (68 °F))
f _{RS}	Temperature error of remote seal
ϑ_{Cap}	Ambient temperature on the capillaries
I _{Cap}	Capillary length
f _{Cap}	Temperature error of capillaries
ϑ_{TR}	Ambient temperature on pressure transmitter
f _{PF}	Temperature error of the oil filling in the process flanges of the pressure transmitter

Example of temperature error calculation

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 _{RS} = 0.05 mbar/10 K (0.039 inH ₂ O/10 K)
Capillary length	I _{Cap} = 6 m (19.7 ft)
Capillaries fitted on both sides	$f_{Cap} = 0.07 \text{ mbar/(10 K \cdot m_{Cap})}$ (0.028 inH ₂ O/(10 K · m _{Cap}))
Filling liquid silicone M5	f _{PF} = 0.07 mbar/10 K (0.028 inH ₂ O/10 K)
Process temperature	θ _{RS} = 100 °C (212 °F)
Temperature on the capillaries	θ _{Cap} = 50 °C (122 °F)
Temperature on pressure transmitter	θ _{TR} = 50 °C (122 °F)
Calibration temperature	$\vartheta_{Cal} = 20 \ ^{\circ}C \ (68 \ ^{\circ}F)$

Required:

Additional temperature error of remote seals: dp

Calculation:

in mbar

 $\label{eq:constraint} \begin{array}{l} dp = (100\ ^\circ C - 20\ ^\circ C) \cdot 0.05\ mbar/10\ K + (50\ ^\circ C - 20\ ^\circ C) \cdot 6\ m \cdot \\ 0.07\ mbar/(10\ K \cdot m) + (50\ ^\circ C - 20\ ^\circ C) \cdot 0.07\ mbar/10\ K \end{array}$

dp = 0.4 mbar + 1.26 mbar + 0.21 mbar

in inH₂O

 $\begin{array}{l} dp = (212\ ^\circ F - 68\ ^\circ F) \cdot 0.039\ inH_2O/10\ K + (112\ ^\circ F - 68\ ^\circ F) \cdot 19.7\ ft \cdot 0.028\ inH_2O/(10\ K \cdot 3.28\ ft) + (112\ ^\circ F - 68\ ^\circ F) \cdot (0.028\ inH_2O/10\ K) \\ dp = 0.16\ inH_2O + 0.51\ inH_2O + 0.08\ inH_2O \\ \end{array}$

Result:

dp = 1.87 mbar (0.75 inH₂O)

(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 $\underline{\text{not}}$ included in this consideration.

It must be calculated separately, and the resulting error added to the error determined above from connection of the remote seal.

Technical description

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 _{abs} < 1 bar (402 inH ₂ O)		p _{abs} > 1 bar (402 inH ₂ O)	
	°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 (guidance values)

Nom. diam.		Max. length of capillary					
		Diaphrag	m seal	Clamp-on	Clamp-on seal		
		m	(ft)	m	(ft)		
DN 25	(1 inch)	2.5	(8.2)	2.5	(8.2)		
DN 32	(1¼ inch)	2.5	(8.2)	2.5	(8.2)		
DN 40	(1½ inch)	4	(13.1)	6	(19.7)		
DN 50	(2 inch)	6	(19.7)	10	(32.8)		
DN 65	(2½ inch)	8	(26.2)	10	(32.8)		
DN 80	(3 inch)	10	(32.8)	10	(32.8)		
DN 100	(4 inch)	10	(32.8)	10	(32.8)		
DN 125	(5 inch)	10	(32.8)	-	-		

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		Tempe on cap	rature illary	Response time in s/m (s/ft) with max. span of pressure transmitter				Response time in s/m (s/ft) with max. span of pressure transmitter			
	kg/dm ³	(lb/in ³)	°C	(°F)	250 mbar	(101 inH ₂ O)	600 mbar	(241 inH ₂ O)	1600 mbar	(643 inH ₂ O)		
Silicone oil M5	0.914	(0.033)	+60	(140)	0.06	(0.018)	0.02	(0.006)	0.01	(0.003)		
			+20	(68)	0.11	(0.034)	0.02	(0.006)	0.02	(0.006)		
			- 20	(-4)	0.3	(0.091)	0.12	(0.037)	0.05	(0.015)		
Silicone oil M50	0.966	(0.035)	+60	(140)	0.6	(0.183)	0.25	(0.076)	0.09	(0.027)		
			+20	(68)	0.61	(0.186)	0.26	(0.079)	0.1	(0.030)		
			- 20	(-4)	1.69	(0.515)	0.71	(0.216)	0.27	(0.082)		
High-temperature oil	1.070	(0.039)	+60	(140)	0.14	(0.043)	0.06	(0.018)	0.02	(0.006)		
			+20	(68)	0.65	(0.198)	0.27	(0.082)	0.1	(0.030)		
			-10	(14)	3.96	(1.207)	1.65	(0.503)	0.62	(0.189)		
Halocarbon oil	1.968	(0.071)	+60	(140)	0.07	(0.021)	0.03	(0.009)	0.01	(0.003)		
			+20	(68)	0.29	(0.088)	0.12	(0.037)	0.05	(0.015)		
			- 20	(-4)	2.88	(0.878)	1.2	(0.366)	0.45	(0.137)		
Food oil (FDA listed)	0.920	(0.033)	+60	(140)	0.75	(0.229)	0.33	(0.101)	0.17	(0.052)		
			+20	(68)	4	(1.220)	1.75	(0.534)	0.67	(0.204)		
			- 20	(-4)	20	(6.100)	8.5	(2.593)	3.25	(0.991)		
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.

Halocarbon oil must be used as the fill fluid with the media oxygen and chlorine.

Filling liquid	Digit in Order No.	Permissible	ermissible temperature of medium			Density at Viscosit 20 °C (68 °F) 20 °C (66		cosity at Coefficient of C (68 °F) expansion		t of	
		p _{abs} < 1 bar	(p _{abs} < 402 inH ₂ O)	p _{abs} > 1 bar	(p _{abs} > 402 inH ₂ O)						
		°C	(°F)	°C	(°F)	kg/dm ³	(lb/in ³)	m²/s·10 ⁶	(ft ² /s·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)	-20 +400	(-4 +752)	1.07	(0.04)	57	(613)	0.00080	(0.00044)
Halocarbon oil	4 1)	-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)

¹⁾ Max. pressure and temperature for oxygen measurements: 160 bar (2031 psi) and 60° (140 °F).

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

Overview



Diaphragm seals of sandwich design

Technical specifications	
Diaphragm seals of sandwich de	esign
Nominal diameter	Nominal pressure
• DN 50	PN 16 PN 400
• DN 80	PN 16 PN 400
• DN 100	PN 16 PN 400
DN 125	PN 16 PN 400
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
	Without coating
	 PTFE coating (for vacuum on re- quest)
	 ECTFE coating (for vacuum on request)
	 PFA coating (for vacuum on re- quest)
	Monel 400, mat. No. 2.4360
	Hastelloy C276, mat. No. 2.4819
	Hastelloy C4, mat. No. 2.4610
	Tantalum
	Duplex 2205, mat. no. 1.4462
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
 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)
 Minimum bending radius 	150 mm (5.9 inch)
Filling liquid	Silicone oil M5
	Silicone oil M50
	High-temperature oil
	Halocarbon oil (for measuring O ₂)
	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)

Order No. Ord.code

7 M F 4 9 0 0 -

7MF4901-

7 M F 4 9 0 3 -

Order code

T and U also order the

1 - B

N 1 Y

Pressure Measurement Remote seals for transmitters and pressure gauges

Diaphragm seals of sandwich design with flexible capillary

Selection and Ordering data	Order No. Or	d.code	Selection and Ordering data	rder
Diaphragm seal			Diaphragm seal	
Sandwich-type design, with flexible capillary connected to a SITRANS P transmitter (order separately):			Sandwich-type design, with flexible capillary connected to a SITRANS P transmitter (order separately):	
for pressure 7MF403 and 7MF423 together with Order code "V01" (vacuum-proof design) and 7MF802 ¹⁾ ; Scope of delivery (1 off)	7 M F 4 9 0 0 -		for pressure 7MF403and 7MF423 71 together with Order code "V01" (vacuum-proof design) and 7MF802 ¹⁾ ;	MF
for absolute pressure 7MF433; Scope of delivery (1 off)	7 M F 4 9 0 1 -		Scope of delivery (1 off) for absolute pressure 7MF433; 71	MF
for differential pressure and flow 7MF443 and 7MF54; scope of delivery 2 off	7 M F 4 9 0 3 -		for differential pressure and flow 7MF443 71	MF
	1 - B		and 7MF54, scope of delivery 2 off	
Nominal diameter and nominal pressure			Length of conillow ²	
• DN 50 PN 16 400	A		• 1 0 m (3.28 ft)	
(recommended only for pressure transmitters for pressure)			• 1.6 m (5.25 ft)	
• DN 80 PN 16 400	в		• 2.5 m (8.20 ft)	
• DN 100 PN 16 400	c		• 4.0 m (13.1 ft)	
• DN 125 PN 16 400	D		• 6.0 m (19.7 ft)	
• 2 inch Class 150 2500	F		• 8.0 m (26.25 ft)	
(recommended only for pressure transmitters	-		• 10.0 m (32.8 ft)	
for pressure)			Other version	
• 3 inch Class 150 2500	н		Add Order code and plain text:	
• 4 inch Class 150 2500	L			
• 5 inch Class 150 2500	N		Further designs Or	rder
Smooth sealing face to EN 1092-1, form B1 or to ASME B16.5 RF 125 250 AA			Please add "-Z" to Order No. and specify Order code.	
Other version Add Order code and plain text:	Z	JIY	Spark arrestor	
Nominal diameter:; Nominal pressure: Sealing face: see "Technical data"			With spark arrestor for mounting on zone 0 (including documentation)	
Wetted parts materials			Pressure and absolute pressure for differential pressure transmitters	01
 Stainless steel 316L 				02
- without coating	A		Certificate to EN 10204-2.2 E1	10
 with PTFE coating²⁾ 	E 0		and packed version for oxygen and summer	
- with ECTFE coating ^{2) 3)}	F		applications in which only inert filling liquid may	
- with PFA coating ²⁾	D		be used. (Only in conjunction with halocarbon	
• Monel 400, mat. No. 2.4360	G			
 Hastelloy C276, mat. No. 2.4819 	J		Quality inspection certificate (Five-step C	11
 Hastelloy C4, mat. No. 2.4610 	U		factory calibration) to IEC 60770-2	
• Tantalum	к		Inspection certificate C1	12
• Duplex 2205, mat. no. 1.4462	Q		to EN 10204, section 3.1	
Duplex 2205, mat. no. 1.4462, incl. main body	R	K 4 V	Functional safety certificate ("SIL 2") to C2	20
Add Order code and plain text:	2	KIY	IEC 61508	
Wetted parts materials:			(Only in conjunction with the order code C20 in the case of SITRANS P DSIII transmitter)	
Tube length			Functional safety certificate ("SIL 2/3") to C2	23
• without tube	0		IEC 61508	
Other version: Add Order code and plain text: Tube length:	9	LIY	(Only in conjunction with the order code "C23" in the case of SITRANS P DSIII transmitter)	
	-		NACE MR-0175-certified DO	07
Filling liquid			incl. acceptance test certificate 3.1 to EN 10204	
	1			
High-temperature oil	2		vacuum-proot design	
• Halocarbon oil (for measuring Ω_{a}) ⁴⁾	4		or use in low-pressure range for transmitters for	01
• Glycerin/water ⁵⁾	6		Fiessure For differential pressure transmitters	02
Food oil (FDA listed)	7			03
Other version	9	M1Y	1) With 7MF802 and the measuring cells Q, S, T and	Ua
Add Order code and plain text:			vacuum-tight version.	
Filling liquid:			Max. capillary length, see section "lechnical description"	ion".
1)				

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

²⁾ Only possible up to max. PN 100.

3) For vacuum on request

4) Oil- and grease-free cleaning to DIN 25410, level 2 and packaging included in the scope of delivery.
 5) Not suitable for use in low-pressure range.

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 _M	I
		mm	mm	mm	mm
DN 50	PN 16 PN 400	20	102	59	100
DN 80	-	20	138	89	100
DN 100	-	20	158	89	100
DN 125	-	22	188	124	100

Connection to ASME B16.5

Nom. diam.	Nom. press.	b	D	d _M	I
	lb/sq.in.	mm	mm	mm	mm
		(inch)	(inch)	(inch)	(inch)
2 inch	150 2500	20	100	59	100
		(0.79)	(3.94)	(2.32)	(3.94)
3 inch	-	20	134	89	100
		(0.79)	(5.28)	(2.32)	(3.94)
4 inch	-	20	158	89	100
		(0.79)	(6.22)	(2.32)	(3.94)
5 inch	-	22	186	124	100
		(0.87)	(7.32)	(4.88)	(3.94)

d: Inside diameter of gasket according to EN 1092-1 / ASME B16.5

d_M: 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 _M	I
		mm	mm	mm	mm
DN 50	PN 16 PN 400	20	102	59	100
DN 80	-	20	138	89	100
DN 100	-	20	158	89	100
DN 125	-	22	188	124	100

Connection to ASME B16.5

Nom. diam.	Nom. press.	b	D	d _M	I
	lb/sq.in.	mm	mm	mm	mm
		(inch)	(inch)	(inch)	(inch)
2 inch	150 2500	20	100	59	100
		(0.79)	(3.94)	(2.32)	(3.94)
3 inch	-	20	134	89	100
		(0.79)	(5.28)	(2.32)	(3.94)
4 inch	-	20	158	89	100
		(0.79)	(6.22)	(2.32)	(3.94)
5 inch	-	22	186	124	100
		(0.87)	(7.32)	(4.88)	(3.94)

d: Inside diameter of gasket according to EN 1092-1 / ASME B16.5 $\,$

d_M: Effective diaphragm diameter

Diaphragm seals of flange design with flexible capillary

1



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	
• DN 50 (recommendable only for pressure transmitters for pressure)	PN 10 PN 40, PN 100	 For pressure transmitters, absolute pressure transmitters and low- pressure applications 	Copper
• DN 80	PN 10 PN 40, PN 100	For other applications	Viton
• DN 100	PN 10/16, PN 25/40	Maximum pressure	See above and the technical data
• DN 125	PN 16, PN 40		of the pressure transmitter
• 2 inch (recommendable only for pressure transmitters for pressure)	class 150, class 300, class 400/600, class 900/1500	Tube length	Without tube as standard (tube available on request)
• 3 inch	Class 150, class 300, class 600	Capillary	
• 4 inch	Class 150, class 300, class 400	• Length	Max. 10 m (32.8 ft), longer
• 5 inch	Class 150, class 300, class 400		lengths on request
Sealing face		Internal diameter	2 mm (0.079 inch)
 For stainless steel, mat. 	To EN 1092-1, form B1 or		150 mm (5.9 inch)
No. 1.4404/316L	ASMR B16.5 RF 125 250 AA		0.00
For the other materials	To EN 1092-1, form B2 or	(for remote seals of sandwich and flange design)	Silicone oil M5
Matariala	ASIVIE D 10.3 RESE		Silicone oil M50
	Chainless steel		High-temperature oil
• Main body	mat. no. 1.4404/316L		Halocarbon oil (for measuring O_2)
Wetted parts	Stainless steel		Food oil (FDA listed)
	mat. no. 1.4404/316L		Glycerine/water (not for use in low-pressure range)
	 PTFE coating (for vacuum on request) 	Permissible ambient temperature	Dependent on the pressure trans- mitter and the filling liquid of the remote seal
	 ECTFE coating (for vacuum on request) 		More information can be found in the technical data of the pressure
	 PFA coating (for vacuum on request) 		transmitters and in the section "Technical data of filling liquid" in
	Monel 400, mat. No. 2.4360		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 lig-
	Duplex 2205, mat. no. 1.4462	equipment directive	uids of fluid group 1; complies
Capillary	Stainless steel, mat. No. 1.4571/316Ti		paragraph 3 (sound engineering practice)
Sheath	Spiral hose made of stainless steel, mat. No. 1.4404/316L		

Pressure Measurement

Remote seals for transmitters and pressure gauges

Diaphragm seals of flange design with flexible capillary

Selection and Orderi	ng data	Order	No. Ord	. code
Diaphragm seal	0			
Flange design, with fle to a pressure transmitt SITRANS P (order sep	xible capillary, connected ter arately):			
for pressure 7MF403 together with Order cod design) and 7MF802	7 M F 4	920-		
for absolute pressure scope of delivery: 1 of	e 7MF433; f	7 M F 4	921-	
for differential press and 7MF54; scope	ure and flow 7MF443 e of delivery: 2 off	7 M F 4	923-	
		1	- B	
 Nominal diameter an DN 50 	d nominal pressure PN 10 40	A		
(DN 50 recommended	PN 100	в		
transmitters for pressu	ire)			
• DN 80	PN 10 40 PN 100	DE		
• DN 100	PN 10/16	G		
• DN 125	PN 25/40	н		
• DIN 125	PN 40	ĸ		
• 2 inch	Class 150 Class 300	L		
	class 400/600	N		
(2 inch recommended	class 900/1500 only for pressure	Р		
transmitters for pressu • 3 inch	re) Class 150	0		
	Class 300	R		
• 4 inch	Class 600 Class 150	ъ т		
	Class 300 Class 400	U V		
• 5 inch	Class 150 Class 300	W X		
	Class 400	Ŷ		
to ASME B16.5 RF 125	5 EN 1092-1, form B1 or 5 250 AA			
Other version Add Order code and p Nominal diameter:; Sealing face: See "Teo	plain text: Nominal pressure: hnical data"	z		J 1 Y
Wetted parts materia	ls			
- stamess steel 316L - without coating		A		
 with PTFE coating with ECTFE coating 	a ²⁾	E 0 F		
- with PFA coating	2 4260	D		
Hastelloy C276, mat	. No. 2.4819	J		
Hastelloy C4, mat. NTantalum	0. 2.4610	U K		
 Duplex 2205, mat. n Duplex 2205, mat. n 	o. 1.4462	Q		
Other version Add Order code and p Wetted parts materials	plain text:	Z		K 1 Y
Tube length				
Other version:		9		L 1 Y
Add Order code and p Tube length:	plain text:			

Selection and Ordering data	Order No. Ord. code
Diaphragm seal	
Flange design, with flexible capillary, connected to a pressure transmitter SITRANS P (order separately):	
for pressure 7MF403 and 7MF423 together with Order code "V01" (vacuum-proof design) and 7MF802 ¹⁾ ; scope of delivery: 1 off	7 M F 4 9 2 0 -
for absolute pressure 7MF433; scope of delivery: 1 off	7 M F 4 9 2 1 -
for differential pressure and flow 7MF443 and 7MF54; scope of delivery: 2 off	7 M F 4 9 2 3 -
	1 - B
Filling liquid • Silicone oil M5 • Silicone oil M50 • High-temperature oil • Halocarbon oil (for measuring O ₂) ³⁾ • Glycerin/water ⁴⁾ • Food oil (FDA listed) Other version Add Order code and plain text: Filling liquid:	1 2 3 4 6 7 9 M1Y
Length of capillary ⁵⁾	
• 1.0 m (3.28 ft) • 1.6 m (5.25 ft) • 2.5 m (8.20 ft) • 4.0 m (13.1 ft) • 6.0 m (19.7 ft)	2 3 4 5 6
• 8.0 m (26.25 ft)	7
• 10.0 m (32.8 ft) Other version: Add Order code and plain text: Length of capillary:	8 9 N 1 Y
Further designs Please add "-Z" to Order No. and specify Order code	Order code
Spark arrestor With spark arrestor for mounting on zone 0 (including documentation) for transmitters for • pressure and absolute pressure • differential pressure	A01 A02
Certificate to EN 10204-2.2	E10
For certification of oil - and grease-free cleaned and packed version for oxygen and summer appli- cations in which only inert filling liquid may be used. (Only in conjunction with halocarbon oil fill fluid)	
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11
Inspection certificate to EN 10204, section 3.1	C12
Functional safety certificate ("SIL 2") to IEC 61508	C20
(Only in conjunction with the order code "C20" in the case of SITRANS P DSIII transmitter)	
Functional safety certificate ("SIL 2/3") to IEC 61508 (Only in conjunction with the order code "C23" in the case of SITRANS P DSIII transmitter)	C23
NACE MR-0175-certified	D07
Vacuum-proof design	
for use in low-pressure range for transmitters for • pressure • differential pressure	V01 V03
 With 7MF802 and the measuring cells Q, S, T a vacuum tight version 	and U also order the

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.
⁵⁾ the use integrate accession "Tophical description".

⁵⁾ Max. capillary length, see section "Technical description".

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 ₂ mm	d ₄ mm	d _M 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 10/16	20	220	18	158	89	2	180	8
	PN 25/40	24	235	22	162	89	2	190	8
DN 125	PN 16	22	250	18	188	124	2	210	8
	PN 40	26	270	26	188	124	2	220	8

Connection to ASME B16.5

Nom. diam.	Nom. press.	b	D	d ₂	d ₄	d _M	f	k	n
	lb/sq.in.	mm	mm	mm	mm	mm	mm	mm	
		(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	
2 inch	150	19.5	150	20	92	59	2	120.5	4
		(0.77)	(5.80)	(0.79)	(3.62)	(2.32)	(0.08)	(4.74)	
	300	22.7	165	20	92	59	2	127	8
		(0.89)	(6.50)	(0.79)	(3.62)	(2.32)	(0.08)	(5)	
	400/600	32.4	165	20	92	59	2	127	8
		(1.28)	(6.50)	(0.79)	(3.62)	(2.32)	(0.08)	(5)	
	900/1500	45.1	215	26	92	59	7	165	8
		(1.78)	(8.46)	(1.02)	(3.62)	(2.32)	(0.28)	(6.5)	
3 inch	150	24.3	190	20	127	89	2	152.5	4
		(0.96)	(7.48)	(0.79)	(5)	(3.50)	(0.08)	(6)	
	300	29	210	22	127	89	2	168.5	8
		(1.14)	(8.27)	(0.87)	(5)	(3.50)	(0.08)	(6.63)	
	600	38.8	210	22	127	89	7	168.5	8
		(1.53)	(8.27)	(0.87)	(5)	(3.50)	(0.28)	(6.63)	
4 inch	150	24.3	230	20	158	89	2	190.5	4
		(0.96)	(9.06)	(0.79)	(6.22)	(3.50)	(0.08)	(7.5)	
	300	32.2	255	22	158	89	2	200	8
		(1.27)	(10.04)	(0.87)	(6.22)	(3.50)	(0.08)	(7.87)	
	400	42	255	26	158	89	7	200	8
		(1.65)	(10.04)	(1.02)	(6.22)	(3.50)	(0.28)	(7.87)	
5 inch	150	24.3	255	22	186	124	2	216	4
		(0.96)	(10.04)	(0.87)	(7.32)	(4.88)	(0.08)	(8.50)	
	300	35.8	280	22	186	124	2	235	8
		(1.41)	(11.02)	(0.87)	(7.32)	(4.88)	(0.08)	(9.25)	
	400	45.1	280	26	186	124	7	235	8
		(1.79)	(11.02)	(1.02)	(7.32)	(4.88)	(0.28)	(9.25)	

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

Pressure Measurement Remote seals for transmitters and pressure gauges Diaphragm seals of flange design

with flexible capillary



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

Connection to EN 1092-1

Nom. diam.	Nom. press.	b mm	D mm	d ₂ mm	d ₄ mm	d _M 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 10/16	20	220	18	158	89	2	180	8
	PN 25/40	24	235	22	162	89	2	190	8
DN 125	PN 16	22	250	18	188	124	2	210	8
	PN 40	26	270	26	188	124	2	220	8

Connection to ASME B16.5

Nom. diam.	Nom. press.	b	D	d ₂	d ₄	d _M	f	k	n
	lb/sq.in	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	
	150	24.3 (0.96)	190 (7.48)	20 (0.79)	127 (5)	89 (3.50)	2 (0.08)	152.5 (6)	4
3 inch	300	29 (1.14)	210 (8.27)	22 (0.87)	127 (5)	89 (3.50)	2 (0.08)	168.5 (6.63)	8
	600	38.8 (1.52)	210 (8.27)	22 (0.87)	127 (5)	89 (3.50)	7 (0.28)	168.5 (6.63)	8
	150	24.3 (0.96)	230 (9.06)	20 (0.79)	158 (6.22)	89 (3.50)	2 (0.08)	190.5 (7.5)	4
4 inch	300	32.2 (1.27)	255 (10.04)	22 (0.87)	158 (6.22)	89 (3.50)	2 (0.08)	200 (7.87)	8
	400	42 (1.65)	255 (10.04)	26 (1.02)	158 (6.22)	89 (3.50)	7 (0.28)	200 (7.87)	8
	150	24.3 (0.96)	255 (10.04)	22 (0.87)	186 (7.32)	124 (4.88)	2 (0.08)	216 (8.50)	4
5 inch	300	35.8 (1.41)	280 (11.02)	22 (0.87)	186 (7.32)	124 (4.88)	2 (0.08)	235 (9.25)	8
	400	45.1 (1.79)	280 (11.02)	26 (1.02)	186 (7.32)	124 (4.88)	7 (0.28)	235 (9.25)	8

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

Diaphragm seals of flange design directly fitted on transmitter

Overview



Diaphragm seals of flange design, directly fitted on a pressure transmitter for pressure

Technical specifications Diamb . . . - ! ---- \ .

Diaphragm seals (flange design) fo sure, directly fitted on a transmitte	or pressure and absolute pres- r	Maximum pressure	See above and the technical data of the transmitter		
Nominal diameter	Nominal pressure	Tube length	Without tube		
• DN 50	PN 40, PN 100		• 50 mm (1.97 inch)		
• DN 80	PN 40, PN 100		• 100 mm (3.94 inch)		
• DN 100	PN 10/16, PN 25/40		• 150 mm (5.91 inch)		
• 2 inch	class 150, class 300, class 400/600, class 900/1500	Capillary	• 200 mm (7.87 inch)		
• 3 inch	Class 150, class 300, class 600	• Length	Max. 10 m (32.8 ft), longer		
• 4 inch	Class 150, class 300, class 400				
Sealing face		Internal diameter	2 mm (0.079 mch)		
• For stainless steel, mat. No.	To EN 1092-1, form B1 or ASME	Minimum bending radius	150 mm (5.9 inch)		
1.4404/316L	B16.5 RF 125 250 AA	Filling liquid	Silicone oil M5		
 For the other materials 	Smooth to EN 1092-1, form B2 or		Silicone oli M50		
	ASME B16.5 RESE		High-temperature oil		
Materials			• Halocarbon on (for measuring O_2)		
Main body	Stainless steel		Food oil (FDA listed)		
Wetted parts	Stainless steel		 Glycerine/water (not suitable for use in low-pressure range) 		
	Without coating	Max. recommended process temperature	170 °C (338 °F)		
	 PTFE coating (for vacuum on request) 	Permissible ambient temperature	Dependent on the pressure trans- mitter and the filling liquid of the		
	 ECTFE coating (for vacuum on request) 		remote seal. More information can be found in		
	 PFA coating (for vacuum on request) 		the technical data of the pressure transmitters and in the section		
	Monel 400, mat. No. 2.4360		the Technical description to the		
	Hastelloy C276, mat. No. 2.4819		remote seals.		
	Hastellov C4, mat. No. 2,4610	Weight	Approx. 4 kg (8.82 lb)		
	Tantalum	Certificate and approvals			
	Duplex 2205 mat no 1 4462	Classification according to	For gases of fluid group 1 and liq-		
• Capillany	Stainless steel 1 /571/316Ti	pressure equipment directive (DRGL 97/23/EC)	with requirements of article 3.		
 Sealing material at the transmitter connection 	Copper		paragraph 3 (sound engineering practice)		

Pressure Measurement Remote seals for transmitters and pressure gauges Diaphragm seals of flange design

directly fitted on transmitter

Selection and Orderin	ng data	Orde	er No. O	rd.code	S
Diaphragm seal	0	7 M F	4910	-	D
Directly fitted to a pres SITRANS P for pressur 7MF423 together w (vacuum-proof design) be ordered separately	sure transmitter e 7MF403 and ith Order code "V01" and 7MF802 ¹⁾ ; must				D SI 71 (v
Process connection					Fi
Vertical (pressure trai	nsmitter upright)	0			•
Horizontal		2			•
Nominal diameter and • DN 50	d nominal pressure PN 40 PN 100	A B			•
• DN 80	PN 40 PN 100	D E			O Ac Fi
• DN 100	PN 10/16 PN 25/40	G H			F i
• 2 inch	Class 150 Class 300 class 400/600 class 900/1500	L M N P			CC SI W (ir
• 3 inch	Class 150 Class 300 Class 600	Q R S			G C Fo
• 4 inch	Class 150 Class 300 Class 400	T U V			ap be oi
Smooth sealing face to B2, or to ASME B16.5	DIN 1092-01, form B1 or 125 250 AA or RFSF				Q fa
Other version Add Order code and p Nominal diameter:; N	lain text: Nominal pressure:	z		J 1 Y	In to
Wetted parts material • Stainless steel 316L - without coating - with PTFE coating - with ECTFE coating • with PFA coating • Monel 400, mat. No. • Hastelloy C276, mat. • Hastelloy C4, mat. No • Tantalum • Duplex 2205, WNr. • Duplex 2205, WNr.	s 2.4360 No. 2.4819 5. 2.4610 1.4462 1.4462, incl. main body	A E D G J U K Q R	0		FIE (C th FIE (C th III) In Va fo ga
Tube length • Without tube • 50 mm • 100 mm • 150 mm • 200 mm Other version: Add Order code and p Wetted parts materials Tube length:	• (1.97 inch) • (3.94 inch) • (5.90 inch) • (7.87 inch) lain text:	Z	0 1 2 3 4 8	K 1 Y	1) 2) 3) 4)

Selection and Ordering data	Order No. Ord.code			
Diaphragm seal	7 M F 4 9	10-		
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				
 Silicone oil M5 Silicone oil M50 High-temperature oil Halocarbon oil (for measuring O₂)³⁾ Glycerin/water⁴⁾ Food oil (FDA listed) Other version Add Order code and plain text: Filling liquid: 	1 2 3 4 6 7 9	M1Y		
Further designs	Order co	ode		
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			
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)	EIU			
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11			
Inspection certificate to EN 10204, section 3.1	C12			
Functional safety certificate ("SIL 2") to IEC 61508	C20			
(Only in conjunction with the order code "C20" in the case of SITRANS P DSIII transmitter)				
Functional safety certificate ("SIL 2/3") to IEC 61508	C23			
(Only in conjunction with the order code "C23" in the case of SITRANS P DSIII transmitter)				
NACE MR-0175-certified	D07			
incl. acceptance test certificate 3.1 to EN 10204				
Vacuum-proof design for use in low-pressure range for transmitters for gauge pressure	V01			

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

For vacuum on request.

Oil- and grease- free cleaning to DIN 25410, level 2 and packaging included in the scope of delivery.

Not suitable for use in low-pressure range.

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 ₂	d ₄	d_5	d _M	f	k	n
		mm	mm	mm	mm	mm	mm	mm	mm	
DN 50	PN 40	20	165	18	102	48.3	45 ¹⁾	2	125	4
	PN 100	28	195	26	102	48.3	45 ¹⁾	2	145	4
DN 80	PN 40	24	200	18	138	76	72 ¹⁾	2	160	8
	PN 100	32	230	26	138	76	72 ¹⁾	2	180	8
DN 100	PN 10/16	20	220	18	158	94	89-2	2	180	8
	PN 25/40	24	235	22	162	94	89	2	190	8

Connection to ASME B16.5

Nom. diam.	Nom. press.	b	D	d ₂	d ₄	d_5	d _M	f	k	n
	lb/	mm	mm	mm	mm	mm	mm	mm	mm	
	sq.in.	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	
2 inch	150	19.5	150	20	92	48.3	45 ¹⁾	2	120.5	4
		(0.77)	(5.91)	(0.79)	(3.62)	(1.9)	(1.77) ¹⁾	(0.08)	(4.74)	
	300	22.7	165	20	92	48.3	45 ¹⁾	2	127	8
400/ 600		(0.89)	(6.5)	(0.79)	(3.62)	(1.9)	(1.77) ¹⁾	(0.08)	(5)	•
	32.4	165	20	92	48.3	45 ¹⁾	7	127	8	
	600	(1.28)	(6.5)	(0.79)	(3.62)	(1.9)	(1.77) ¹⁾	(0.28)	(5)	•
	900/ 1500	45.1	215	26	92	48.3	45 ¹⁾	7	165	8
		(1.78)	(8.46)	(1.02)	(3.62)	(1.9)	(1.77) ¹⁾	(0.28)	(6.5)	
3 inch	150	24.3	190	20	127	76	72 ²⁾	2	152.5	4
		(0.96)	(7.48)	(0.79)	(5)	(3)	(2.83) ²⁾	(0.08)	(6)	
	300	29	210	22	127	76	72 ²⁾	2	168.5	8
		(1.14)	(8.27)	(0.87)	(5)	(3)	(2.83) ²⁾	(0.08)	(6.63)	•
	600	38.8	210	22	127	76	72 ²⁾	7	168.5	8
		(1.53)	(8.27)	(0.87)	(5)	(3)	(2.83) ²⁾	(0.28)	(6.63)	
4 inch	150	24.3	230	20	158	94	89	2	190.5	8
		(0.96)	(9.06)	(0.79)	(6.22)	(3.69)	(3.50)	(0.08)	(7.5)	
	300	32.2	255	22	158	94	89	2	200	8
		(1.27)	(10.04)	(0.79)	(6.22)	(3.69)	(3.50)	(0.08)	(7.87)	
	400	42	255	26	158	94	89	7	200	8
		(1.65)	(10.04)	(1.02)	(6.22)	(3.69)	(3.50)	(0.28)	(7.87)	

d: Inside diameter of gasket according to EN 1092-1/ ASME B16.5

d_M: Effective diaphragm diameter

¹⁾ 59 mm = 2.32 inch with tube length L = 0

²⁾ 89 mm = $3\frac{1}{2}$ inch with tube length L = 0

Diaphragm seals of flange design fixed connection and with capillary

Overview



Diaphragm seals of screwed design for pressure transmitters for differential pressure, fixed connection and with flexible capillary

Technical specifications

Diaphragm seals of screwed design for pressure transmitters for differential pressure, fixed connection and with flexible capillary

Nominal diameter • DN 50 • DN 80

- DIVOU
- DN 100 • 2 inch
- _
- 3 inch

4 inch
 Sealing face

- For stainless steel, mat. No. 1.4404/316L
- For the other materials

Materials

- Main body
- Wetted parts

- Capillary
- Sheath

PN 10/16, PN 25/40
class 150, class 300, class 400/600, class 900/1500
Class 150, class 300
Class 150, class 300
To EN 1092-1, form B1 or
ASME B16.5 RF 125 250 AA
To EN 1092-1, form B2 or ASME B16.5 RFSF
Stainless steel mat. no. 1.4404/316L
Stainless steel mat. no. 1.4404/316L

Nominal pressure

PN 40, PN 100

PN 40

- Without coating
- PTFE coating (for vacuum on request)ECTFE coating (for vacuum on
- request)
- PFA coating (for vacuum on request)

Monel 400, mat. No. 2.4360

Hastelloy C276, mat. No. 2.4819 Hastelloy C4, mat. No. 2.4610

Tantalum Duplex 2205, mat. no. 1.4462

Stainless steel, mat. No. 1.4571/316Ti

Spiral hose made of stainless steel, mat. No. 1.4301/316

Sealing material in the process flanges	
• For pressure transmitters, absolute pressure transmitters and low-pressure applications	Copper
 For other applications 	Viton
Maximum pressure	See above and the technical data of the pressure transmitter
Tube length	Without tube
	50 mm (1.97 inch)
	100 mm (3.94 inch)
	150 mm (5.91 inch)
	200 mm (7.87 inch)
Capillary	
• Length	Max. 10 m (32.8 ft), longer lengths on request
 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_2)
	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 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)

Diaphragm seals of flange design fixed connection and with capillary

Selection and Orderin	ng data	Order No. Ord. code				Sele
Diaphragm seal		7	MF4	913.	•	Diap
Mounting flange (with	h tube as option) for	1		- E	3	Mou
direct mounting to high	h-pressure side and					direa
flanged remote seal v	without tube, fitted by					flang
SITRANS P for differen	ow-pressure side of					mea SITE
(7MF443 -) and SITE	ANS P500 (7ME54 -)					(7MF
	5 EN 1092-1					Lon
Nom diam	Nom press					
	PN 40		۸			• 1.0
CDN 50	PN 100		R			• 7.C
• DN 80	PN 40		D			• 4 (
• DN 100	PN 10/16		G			- 0.0
511100	PN 25/40		Ĥ			• 6.0
Flores connection t						• 8.0
Nom diam	Nom press					• 10
	Nom. press.					Add
• 2 inch	class 150		L			Leng
	class 300		M			Furt
	class 400/600		N			D
	class 900/1500		P			riea
• 3 inch	Class 150		Q			
	Class 300		R			Spa With
 4 inch 	Class 150		т			(incl
	Class 300		U			(
Other version			z		J 1 Y	Cert
Add Order code and p	plain text:					and
Flange:, Nominal dia	ameter:; Nominal					appl
	-	_				be u
Wetted parts materia	Is					oil fil
Smooth sealing face to	D EN 1092-1, form B1 or RE 125 250 AA or RESE					Qua
 Stainloss stool 316 	NF 125 230 AA 01 NF3F					facte
- without coating			Δ			Insp
- with PTFF coating			FO)		to El
with ECTEE coating	,1)			·		Fun
- with PEA coating			r D			IEC
			0			(Onl
Monel 400, mat. No.	2.4360		G			the c
Hastelloy C276, mat.	. No. 2.4819		J			Fund
 Hastelloy C4, mat. N 	0. 2.4610		U			IEC
Iantaium Durplay, mast ma 1.4	400		ĸ			(Onl
Duplex, mat. no. 1.44 Duplex, mat. no. 1.44	402 162 incl. main body					the c
• Duplex, mat. no. 1.44	402, ITCI: Main Douy		n			NAC
Tube length						incl.
(for mounting flange of	n high-pressure side)					Vacu
 Without tube 			0)		for u
• 50 mm	(1.97 inch)		1			1) -
• 100 mm	(3.94 inch)		2	2		2) C
• 150 mm	(5.90 inch)		3	3		-/ () in
• 200 mm	(7.87 inch)		4	Ļ		³⁾ N
Other version:			Z 8	3	K 1 Y	⁴⁾ M
Add Order code and p Wotted parts materials	plain text:					
Tube length:	,					
Filling liquid		-				
 Silicono oil M5 				1		
				2		
High tomporature ail				2		
Halocarbon oil (for m	(2)			4		
• Glycerin/wator ³)				6		
• Food oil (FDA listod)				7		
Other version				9	M 1 Y	
Add Order code and c	plain text:					
Filling liquid:						

Selection and Ordering data		Order No	Order No. Ord. code					
Diaphragm seal		7MF4913-						
Mounting flange (wi direct mounting to hig ilanged remote seal neans of capillary to SITRANS P for differe 7MF443) and SIT	th tube as option) for gh-pressure side and without tube, fitted by low-pressure side of ntial pressure, DS III series RANS P500 (7MF54)	1	- B					
_ength of capillary ⁴)							
• 1.0 m • 1.6 m • 2.5 m • 4.0 m	(3.28 ft) (5.25 ft) (8.20 ft) (13.1 ft) (19.7 ft)		2 3 4 5					
• 8.0 m	(26.25 ft)		7					
• 10.0 m Other version Add Order code and Length of capillary:	(32.8 ft) plain text:		8 9	N ·	1 Y			
Further designs		Order co	de					
Please add " -Z " to Ore code.	der No. and specify Order							
Spark arrestor With spark arrestor fo including documenta	or mounting on zone 0 ation)	A02						
Certificate to EN 102	204-2.2	E10						
For certification of oil and packed version f applications in which be used. (Only in cor bil fill fluid)	 and grease-free cleaned for oxygen and summer only inert filling liquid may njunction with halocarbon 							
Quality inspection c actory calibration)	ertificate (Five-step to IEC 60770-2	C11						
nspection certificat o EN 10204, section	e 3.1	C12						
Functional safety ce EC 61508	ertificate ("SIL 2") to	C20						
Only in conjunction v he case of SITRANS	vith the order code "C20" in P DSIII transmitter)							
Functional safety ce EC 61508	ertificate ("SIL 2/3") to	C23						
Only in conjunction v he case of SITRANS	vith the order code "C23" in P DSIII transmitter)							
NACE MR-0175-cert ncl. acceptance test	ified certificate 3.1 to EN 10204	D07						
/acuum-proof desig	jn re range	V03						

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".
Diaphragm seals of flange design fixed connection and with capillary

D d_M n x d 0 \oplus $R \ge 150$ (5.9) 100 \oplus \oplus (3.94)å å Ð Ð À Æ Ν ØD Å Ød₄ 6 Tube length L see Ordering Data n x d,

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.	Nom. press.	b	D	d ₂	d ₄	d ₅	d _M	f	k	n
		mm	mm	mm	mm	mm	mm	mm	mm	
DN 50	PN 40	20	165	18	102	48.3	45 ¹⁾	2	125	4
	PN 100	28	195	26	102	48.3	45 ¹⁾	2	145	4
DN 80	PN 40	24	200	18	138	76	72 ²⁾	2	160	8
	PN 100	32	230	26	138	76	72 ²⁾	2	180	8
DN 100	PN 10/16	20	220	18	158	94	89	2	180	8
	PN 25/40	24	235	22	162	94	89	2	190	8

Connection to ASME B16.5

Nom. diam.	Nom. press.	b	D	d ₂	d ₄	d_5	d _M	f	k	n
	lb/	mm	mm	mm	mm	mm	mm	mm	mm	
	sq.ın.	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	
2 inch	150	19.5	150	20	92	48.3	45 ¹⁾	2	120.5	4
		(0.77)	(5.91)	(0.79)	(3.62)	(1.9)	(1.77) ¹⁾	(0.08)	(4.74)	
	300	22.7	165	20	92	48.3	45 ¹⁾	2	127	8
		(0.89)	(6.5)	(0.79)	(3.62)	(1.9)	(1.77) ¹⁾	(0.08)	(5)	
	400/	32.4	165	20	92	48.3	45 ¹⁾	7	127	8
	600	(1.28)	(6.5)	(0.79)	(3.62)	(1.9)	(1.77) ¹⁾	(0.28)	(5)	
	900/	45.1	215	26	92	48.3	45 ¹⁾	7	165	8
	1500	(1.78)	(8.46)	(1.02)	(3.62)	(1.9)	(1.77) ¹⁾	(0.28)	(6.5)	
3 inch	150	24.3	190	20	127	76	72 ²⁾	2	152.5	4
		(0.96)	(7.48)	(0.79)	(5)	(3)	(2.83) ²⁾	(0.08)	(6)	
	300	29	210	22	127	76	72 ²⁾	2	168.5	8
		(1.14)	(8.27)	(0.87)	(5)	(3)	(2.83) ²⁾	(0.08)	(6.63)	
4 inch	150	24.3	230	20	158	94	89	2	190.5	8
		(0.96)	(9.06)	(0.79)	(6.22)	(3.69)	(3.50)	(0.08)	(7.5)	
	300	32.2	255	22	158	94	89	2	200	8
		(1.27)	(10.04)	(0.79)	(6.22)	(3.69)	(3.50)	(0.08)	(7.87)	

d: Inside diameter of gasket according to EN 1092-1 / ASME B16.5 $\,$

d_M: Effective diaphragm diameter

¹⁾ 59 mm = 2.32 inch with tube length L = 0

²⁾ 89 mm = $3\frac{1}{2}$ inch with tube length L = 0

1

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

1



Diaphragm seal, screwed gland design with inside diaphragm for gauge, absolute and differential pressure for direct mounting

Technical specifications			
Diaphragm seal, screwed gland wi	th inside diaphragm	Capillary	
Process connection	Nominal pressure	• Length	Max. 10 m (32.8 ft)
• Male thread G½B to EN 837-1	PN 100, PN 250	 Internal diameter 	2 mm (0.079 inch)
• External thread 1/2-14" NPT-M	PN 100, PN 250	 Minimum bending radius 	150 mm (5.9 inch)
• open measurement flange		Filling liquid	• Silicone oil M5
- DN 25	PN 10 PN 40		Silicone oil M50
- 1 inch	class 150, class 300		 High-temperature oil
Sealing face for open measurement flange			 Halocarbon oil (for measuring O₂)
 For stainless steel, mat. no. 	To EN 1092-1, form B1 or		 Food oil (FDA listed)
1.4404/316L	ASME B16.5 RF 125 250 AA	Max. recommended process tem-	170 °C (338 °F)
Materials		Permissible ambient temperature	Dependent on the pressure
• Lower section (in the case of pro- cess connection thread)	Stainless steel, Mat. no. 1.4404/316L		transmitter and the filling liquid of the remote seal
Diaphragm	Stainless steel, Mat. no. 1.4404/316L		More information can be found in the technical specifications of the
	No coating		pressure transmitters and in the section "Technical data of filling
	 With PTFE coating 		liquid" in the introduction to the remote seals
	Monel 400, mat. no. 2.4360	Weight	Approx $15 \text{ kg} (33 \text{ b})$
	Hastelloy C276, mat. no. 2.4819	Certificates and approvals	
	Hastelloy C4, mat. no. 2.4610	Classification according to	For gases of fluid group 1 and lig
	Tantal	pressure equipment directive	uids of fluid group 1; complies
• Top section (process connection in the case of an open measure- ment flange)	Stainless steel, mat. no. 1.4404/316L	(PED 97/23/EC)	with requirements of article 3, paragraph 3 (sound engineering practice)
Capillary	Stainless steel 1.4571/316Ti		
 Sealing material on the process connection 	Viton or copper (in the case of vacuum-free version)		
Sealing material between top and bottom section	Viton (FKM) (standard) Teflon (PTFE) metal spring ring (silver-coated)		

Pressure Measurement

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

Remote seal, screwed gland with inside diaphragm Mounted on SITRANS P pressure transmitter for • gauge pressure 7MF403 and SITRANS P300, 7MF802	7 M F 4 9 3 (0 -
Mounted on SITRANS P pressure transmitter for • gauge pressure 7MF403 and SITRANS P300, 7MF802	7 M F 4 9 3 (0 -
• gauge pressure 7MF403 and SITRANS P300, 7MF802		
absolute pressure 7MF423 and SITRANS P300, 7MF802 In conjunction with order code "V01" (vacuum- proof design)		
Mounted on either side of SITRANS P pressure transmitter for • differential pressure 7MF443 and	7 M F 4 9 3 3	3 -
/MF54		в
Type • no flushing hole • with flushing hole 1x 1/8 NPT unsealed (only with process connection 316L)	1 2	
Other version, add Order Code and plain text: Version:	9	H 1 Y
Process connection version		
Lower flange Process con- Nominal diam- material nection eter and pres- sure level		
316L/1.4404 Thread G½B/PN100 316L/1.4404 Thread G½B/PN250 316L/1.4404 Thread ½NPT-M/PN100	B C E	
316L/1.4404 Thread ½NPT-M/PN250 316L/1.4404 Thread ½NPT-F/PN100 316L/1.4404 Thread ½NPT-F/PN250	F H J	
316L/1.4404 open measure- DN 25/	N	
ment flange PN 10 40 316L/1.4404 open measure- 1"/Class 150 ment flange	Р	
316L/1.4404 open measure- 1"/Class 300 ment flange	Q	
PTFE Thread G½B/PN100	т	
PTFE open measure- DN 25/ ment flange PN 10 40	U	
PTFE open measure- 1"/Class 150 ment flange	v	
PTFE open measure- 1"/Class 300 ment flange	c	
Other version, add Order Code and plain text: Lower flange material:; Process connection:; Nominal diameter/pressure level:	z	J 1 Y
Diaphragm material		
Stainless steel 316L 316L stainless steel with PTFE film Hastelloy C276	A E J	
Hastelloy C4 Tantalum	U K	
Other version, add Order Code and plain text: Diaphragm material:	z	K 1 Y
Sealing material between top and bottom section		
FKM (standard with diaphragm and 316L pro- cess connection) PTFE (standard with custom material with max. 260 °C) Metal C- circlip, silver coated for >260 °C) incl.	1 2 3	

Selection and Ordering data	Order N	١o.	Or	dei	r C	0	de
Remote seal, screwed gland with inside diaphragm							
Mounted on SITRANS P pressure transmitter for	7 M F 4	93	0	-			
• gauge pressure 7MF403 and SITRANS P300, 7MF802 • absolute pressure 7MF423 and SITRANS P300, 7MF802 In conjunction with order code "V01" (vacuum- proof design)							
Mounted on either side of SITRANS P pressure transmitter for	7 M F 4	93	3	•			
• differential pressure 7MF443 and 7MF54 -							
				в			
Filling liquid • Silicone oil M5 • Silicone oil M50 • High-temperature oil • Halocarbon oil (for measuring O ₂) ¹⁾		1 2 3 4					
Food oil (FDA-listed)		7			м	1	v
Order Code and plain text: filling liquid:		J			141	'	•
Capillary length							
 none, direct mounting none, direct mounting with cooling element (not in conjunction with transmitter for differen- tial pressure) 1 m 			0 1 2				
• 1.6 m • 2.5 m • 4 m			3 4 5				
• 6 m			6				
• 8 m • 10 m			/ 8				
Other version, add Order Code and plain text: Capillary length:			9		N	1	Y
Further designs	Order	coc	de				
Add "-Z" to Order No. and specify Order Code.							
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)	E10						
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11						
Inspection certificate to EN 10204, section 3.1	C12						
Functional safety certificate ("SIL 2") to IEC 61508	C20						
(Only in conjunction with the order code "C20" in the case of SITRANS P DSIII transmitter)							
Functional safety certificate ("SIL 2/3") to IEC 61508	C23						
the case of SITRANS P DSIII transmitter)							
NACE MR-0175-certified incl. acceptance test certificate 3.1 to EN 10204	D07						
Vacuum-proof design for use in low-pressure range for tranmitters for • gauge pressure • differential pressure	V01 V03						

 $^{1)}\,$ Oil- and grease- free cleaning to DIN 25410, level 2 and packaging included in the scope of delivery.

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 ₁ 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	Nomi- nal	D	d ₄	k mm	М	Number of holes	b mm	b ₁	f
diam- eter	pres- sure								
DN 25	PN 10 40	115	68	85	M12	4	26	12	2
1 inch	150 Ib/sq.in	108	50.8	79.2	M12	4	22	12	1.6
1 inch	300 Ib/sq.in	124	50.8	88.9	M16	4	22	12	1.6

Pressure Measurement

Remote seals for transmitters and pressure gauges

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 SITRANS P pressure transmitter series:

- For pressure: P300, DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus
- For differential pressure and flow: P500, DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus
- 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 nut	
- 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 socket	
- 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 socket DN 25 DN 32 DN 40 DN 50 DN 65 DN 80 	PN 40 PN 40 PN 40 PN 25 PN 25 PN 25

Quick	-release diaphragm seals
Clamp connection	
116 inch	PN 16
- 2 inch	PN 16
- 21% inch	PN 16
3 inch	PN 10
For differential pressure and flow	FINIO
To DIN 11951 with clotted upion put	
	DNI 25
DN 65	DN 25
- DN 85	PN 25
To DIN 11951 with threaded applying	FIN 25
DN 50	DNI 25
- DN SO	
- DN 83	FIN 25
- DN 80	PIN 25
	PN 16
- 2½ Inch	PN 16
- 3 inch	PN 10
 For stainless steel, mat. No. 1.4404/316L 	IO EN 1092-1, form B1 or
• For the other materials	To EN 1002 1 form B2 or
	ASME B16.5 RFSF
Materials	
• Main body	Stainless steel 316L
Wetted parts	Stainless steel 316L
Capillary	Stainless steel, mat. No. 1.4571/316Ti
• Sheath	Spiral hose made of stainless steel, mat. No. 1.4301/316
Maximum pressure	See above and the technical data of the pressure transmitter
Tube length	Without tube
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	Food oil (FDA listed)
	Glycerin/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)
Certificates and approvals	
Classification according to pressure equipment directive (DRGL 97/23/EC)	For gases of fluid group 1 and liq- uids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)
EHEDG	Complies with EHEDG recom-

mendations

Quick-release diaphragm seals

Selection and Ordering data		0	rder	No	. Oi	d.	С	C	le
Quick-release diaphr	agm seal	7	MF	49	40	•			
for SITRANS P pressur pressure 7MF403a with Order code "V01" and 7MF802 ¹ ; mu Filling liquid: Food oil (Material: Stainless stee	e transmitters for ind 7MF423 together (vacuum-proof design) st be ordered separately FDA listed) el, mat. No. 1.4435	-	A	0	-	3			
Nom. diam.	Nom. press.								
Connection to DIN 1	1851 with slotted union nut								
- DN 25	PN 40	1	в						
- DN 32	PN 40	1	С						
- DN 40	PN 40	1	D						
- DN 50	PN 25	1	E						
- DN 65	PN 25	1	F						
- DN 80	PN 25	1	G						
 Connection to DIN 1 	1851 with screw necks								
- DN 25	PN 40	2	В						
- DN 32	PN 40	2	С						
- DN 40	PN 40	2	D						
- DN 50	PN 25	2	E						
- DN 65	PN 25	2	F						
- DN 80	PN 25	2	G						
 Tri-Clamp connection 	n to DIN 32676/ISO 2852								
- DN 40/11/2 inch	PN 16	4	L						
- DN 50/2 inch	PN 16	4	М						
- DN 65/21/2 inch	PN 16	4	N						
- DN 80/3 inch	PN 10	4	P						
Other version									
Add Order codes and	plain text:								
Process connection:	., Nominal diameter:;	9	A				н	1	Y
		_							
• Chupperin/water ²				~					
Giycerin/water ²				0					
FUOD OII (FDA IISTED)				(4	v
Add Order code and r	plain text:			9			IVI	1	Ŷ
Filling liquid:	Jain toxt.								
Connection to press	ure transmitter								
direct					0				
through capillary leng	th. ³⁾								
• 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					9		Ν	1	Y
Add Order code and p	plain text:						.,	1	
Length of capillary:									

Selection and Ordering data	Order No. Ord. code
Quick-release diaphragm seal	7 M F 4 9 4 0 -
for SITRANS P pressure transmitters for pressure 7MF403 and 7MF423 together with Order code "V01" (vacuum-proof design) and 7MF802 ¹⁾ ; must be ordered separately Filling liquid: Food oil (FDA listed) Material: Stainless steel, mat. No. 1.4435	A 0 - B
Further designs	Order code
Please add "-Z" to Order No. and specify Order code.	
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11
Inspection certificate	C12
to EN 10204, section 3.1	
Functional safety certificate ("SIL 2") to IEC 61508 (Only in conjunction with the order code "C20" in the case of SITRANS P DSIII transmitter)	C20
Functional safety certificate ("SIL 2/3") to IEC 61508	C23
(Only in conjunction with the order code "C23" in the case of SITRANS P DSIII transmitter)	
Vacuum-proof design for use in low-pressure range	V01

With 7MF802.-... and the measuring cells Q, S, T and U also order the vacuum-tight version.
 Not suitable for use in low-pressure range.
 Max. capillary length, see section "Technical description"

Quick-release diaphragm seals

Selection and Orderin	na data	Ord	lor I		Ord		0	٩b
Quick-release diaphra	agm seal	7 M	F 4	9.4	3 -	1. 0	.00	10
for SITRANS P pressur sure for differential pre 7MF443 and 7MF54 Filling liquid: Food oil (Material: Stainless stee Delivery unit: 2 off	e transmitters for pres- ssure and flow, type 4; order separately FDA listed) el, mat. No. 1.4435		A 0	-	B	1		
Nom. diam.	Nom. press.							
 Connection to DIN 11 DN 50 DN 65 DN 80 Connection to DIN 1[*] socket DN 50 DN 65 DN 80 Tri-Clamp connection DN 50/2 inch 	851 with slotted union nut PN 25 PN 25 I851 with threaded PN 25 PN	1 E 1 F 1 G 2 E 2 F 2 G 4 M						
- DN 65/2½ inch	PN 16 PN 10	4 N						
Other version Add Order codes and Process connection: Nominal pressure:	plain text: , Nominal diameter:;	4 P 9 A				н	1	Y
Filling liquid								
Glycerin/water ¹⁾ Food oil (FDA listed) Other version Add Order code and p Filling liquid:	lain text:			6 7 9		N	11	Y
Connection to transm	nitter	-						
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	Ŷ
Further designs		Ord	der o	coc	le			
Please add "-Z" to Orde code.	er No. and specify Order							
Quality inspection ce factory calibration) to	rtificate (Five-step IEC 60770-2	C1	1					
Inspection certificate to EN 10204, section 3	.1	C1:	2					
Functional safety cer IEC 61508	tificate ("SIL 2") to	C2	D					
(Only in conjunction with the case of SITRANS F	th the order code "C20" in ? DSIII transmitter)							
Functional safety cer IEC 61508	tificate ("SIL 2/3") to	C2	3					
(Only in conjunction with the case of SITRANS P	th the order code "C23" in PDSIII transmitter)							
Vacuum-proof design	I	V0	3					
for use in low-pressure	range							

Not suitable for use in low-pressure range.
 Max. capillary length, see section "Technical description"

Quick-release diaphragm seals









Mounted on SITRANS P transmitter for pressure or differential pressure and flow

Clamp connection (left)

DN	Ød	м	ØD		н	
40 (1½ inch)	32	(1.26)	50.5	(2)	35	(1.38)
50 (2 inch)	40	(1.57)	64	(2.52)	35	(1.38)
65 (2½ inch)	52	(2.05)	77.5	(3.05)	35	(1.38)
80 (3 inch)	72	(2.83)	91	(3.58)	35	(1.38)

Connection to DIN 11851 with slotted union nut (center)										
DN	Ød _M	ØD	н	G ₁						
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						

Connecti	on to	DIN 11	851 with
hreaded	sock	et (righ	t)

DN	Ød _M	н	G ₁
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_M Effective diaphragm diameter

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

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 with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus

Suitable for high pressures, contaminated, fibrous and viscous media in the chemical, paper, food and drink industries.

Design

- Flush-mounted diaphragm
- No dead spaces
- · Fixed threaded stems

Dimensional drawings



Miniature diaphragm seal, dimensions in mm (inch)

G	Ø d _M		ę	SW Ø		ðd	d 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)		
<u>^</u>		<u> </u>		CV	,					1		
G		øα _M		31			L			7		
	mm	(inch) n	וm (i	nch)	mm	(inc	h) m	im ((inch)		
1"-NPT	27	(1.06) 4	1 (1	.61)	25	(0.9	8) 40) C	(1.57)		
11/2"-NPT	34	(1.34) 5	5 (2	2.17)	26	(1.0	2) 4	5 ((1.77)		
2" NIPT	46	(1.81) 6	5 (2	56)	26	(1.0)	2) 4	5 (1 77)		

d_M: Effective diaphragm diameter

Technical specifications

Miniature diaphragm seals Span with • G1B and 1"-NPT > 6 bar (> 87 psi)

• G1B and 1"-NPT • G11/2B and 11/2"-NPT

G2B and 2"-NPT

Filling liquid

Material

Main body

Diaphragm

Maximum pressure

Temperature of use

Temperature range of medium Max. recommended process temperature

Weight

- G1B and 1"-NPT
- G11/2B and 11/2"-NPT
- G2B and 2"-NPT

Certificate and approvals

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

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)

Silicone oil M5 or food oil (FDA listed)

Same as pressure transmitter Same as pressure transmitter

150 °C (302 °F)

> 2 bar (> 29 psi)

> 600 mbar (> 8.7 psi)

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	Order No. Ord. code
Miniature diaphragm seals	7 M F 4 9 6 0 -
directly fitted to SITRANS P pressure transmitters for pressure; type, 7MF403 and 7MF423 together with Order code "V01" (vacuum-proof design) and 7MF802 ¹); must be ordered sepa- rately Material: Stainless steel, mat. No. 1.4404/316L Nominal pressure, see "Pressure transmitters"	1 0
Process connection	
• G1B	С
• G11⁄2B	D
• G2B	E
• 1" - NPT	К
• 1½" - NPT	L
• 2" - NPT	M
Other version, add Order code and plain text: Process connection:	Z J1Y
Wetted parts materials	
Stainless steel 316L	A
Other version, add Order code and plain text: Wetted parts materials:	Z K1Y
Filling liquid	
• Silicone oil M5	1
FOOD OII (FDA IISTED) Other wareign, and Order and a and plain tout.	/ 0 M4X
Filling liquid:	9 141 1
<i>Further designs</i> Please add "-Z" to Order No. and specify Order code.	Order code
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C11
Inspection certificate to EN 10204, section 3.1	C12
Functional safety certificate ("SIL 2") to IEC 61508	C20
(Only in conjunction with the order code "C20" in the case of SITRANS P DSIII transmitter)	
Functional safety certificate ("SIL 2/3") to IEC 61508	C23
(Only in conjunction with the order code "C23" in the case of SITRANS P DSIII transmitter)	
NACE MR-0175-certified	D07
incl. acceptance test certificate 3.1 to EN 10204	
Vacuum-proof design for use in low-pressure range	V01

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

Flushing rings 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	• G¼					
thread	• G1⁄2					
	• 1⁄4-18 NPT					
	• 1⁄2-14 NPT					
Material	Stainless steel 1.4404/316L					

Flushing rings for diaphragm seals

	• •	_			0.1		
Selection and Ordering data				r N	o. Ord	. C	od
Flushing ring				49	25-		
for remote seals 7MF49	00 to 7MF4923	1					
Nom. diam. • DN 50 • DN 80 • DN 100 • DN 125	Nom. press. PN 16 PN 100 PN 16 PN 100 PN 16 PN 100 PN 16 PN 100		A B C D				
 2 inch 3 inch 4 inch 5 inch 	Class 150 600 Class 150 600 Class 150 600 Class 150 600		G H J K				1 V
Add Order code and pl Nominal diameter:; N	ain text: Iominal pressure:		2			J	
Sealing face • EN 1092-1 - Form B1 - Form B2			AC				
- Form C/Form C - Form D/Form C - Form D/Form D			D E F				
- Form E - Form F • ASME B16 5			G H				
 RF 125 250 AA RFSF RJT ring groove Other version Add Order code and pl 	ain text:		M Q R Z			к	1 Y
Sealing face:		_					
Flushing holes (2 off) • Female thread G¼ • Female thread G½ • Female thread ¼-18 N • Female thread ½-14 N	IPT IPT			1 2 3 4			
Material							
• Stainless steel 316L Other version Add Order code and pl Material:	ain text:			0 9		М	1 Y
Further designs Please add "-Z" to Orde code.	r No. and specify Order	С	rde	r co	ode		
Inspection certificate		С	12				
to EN 10204, section 3.	1						

Dimensional drawings



Flushing ring, dimension drawing

Connection to EN 1092-1

DN	PN	d ₄	d _i	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 _i 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)

Inline seals for flange-mounting



Inline seals for flange-mounting

The inline seal is completely integrated in the process line. It is particularly suitable for flowing and highly viscous media.

The inline remote seal consists of a cylindrical jacket into which a thin-walled pipe is welded. It is clamped directly between two flanges in the pipeline.

Design

- Inline seals for flange-mounting (flange design) to EN/ASME for SITRANS P pressure transmitters
 - For pressure: P300, DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus
 - For differential pressure and flow: DS III with HART, DS III with PROFIBUS PA, DS III with FOUNDATION Fieldbus and P500
- Sealing face to EN 1092-1 or ASME B16.5
- Connection to the transmitter directly or by means of a flexible capillary (max. 10 m long)
- See Technical data for details of materials used for the wetted parts
- Material used for the capillary, the guard sleeve, the seal's main body and the measuring cell: Stainless steel, mat.-No. 1.4571
- Filling liquid: Silicone oil, high-temperature oil, halocarbon oil, food oil (FDA listed) or glycerin/water (not suitable for uses in low-pressure range)

Function

The measured pressure is transferred from the diaphragm to the filling liquid and passes either directly or through the capillary to the measuring chamber of the pressure transmitter. The interior of the diaphragm seal and of the capillary, as well as the measuring chamber of the pressure transmitter, are filled gas-free by the filling liquid.

Note:

When operating in the low-pressure range, also during commissioning, it is recommended to use a vacuum-proof remote seal (see Selection and Ordering data).

Technical specifications	
Inline seals for flange-mounting	
Nominal diameter	Nominal pressure
• DN 25	PN 6 PN 100
• DN 40	PN 6 PN 100
• DN 50	PN 6 PN 100
• DN 80	PN 6 PN 100
• DN 100	PN 6 PN 100
• 1 inch	Class 150 class 2500
• 1½ inch	Class 150 class 2500
• 2 inch	Class 150 class 2500
• 3 inch	Class 150 class 2500
• 4 inch	Class 150 class 2500
Process connection	Flange to EN 1092-1 or ASME B 16.5
Sealing face	To EN 1092-1, form B1 or to ASME B16.5 RF 125 250 A or RFSF
Materials	
• Main body	Stainless steel 1.4404/316L
• Diaphragm	Stainless steel 1.4404/316L
Wetted parts	Stainless steel 1.4404/316L
	Without coating
	ECTFE coating
	 PFA coating (for vacuum on request)
	Monel 400, mat. No. 2.4360
	Hastelloy C276, mat. No. 2.4819
	Hastelloy C4, mat. No. 2.4610
	Tantalum
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	For gases of fluid group 1 and liq- uids of fluid group 1; complies

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

(DRGL 97/23/EC)

Pressure Measurement Remote seals for transmitters and pressure gauges

Inline seals for flange-mounting

Selection and Ore	Orde	r No. O	rd. code			
Inline seal for flar SITRANS P press	nge-mounting for sure transmitters					
for gauge pressu 7MF403 and 7M code "V01" (vacuu 7MF8021); mus scope of delivery:	7 M F	7MF4980-				
for differential pro 7MF4433 or 7MF54 of delivery: 1 pair i stainless steel, ma Process connectio B16.5; sealing fac or to ASME B16.5	essure and flow 4; order separately, scope (set); Material: Completely of t. No. 1.4404/316L; on to EN 1092-1 or ASME e to EN 1092-1, form B1, RF 125 250 AA	7 M F	4983	-		
		1	0 - 1	в		
Nominal diameter	r 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 Q				
Other version Add Order code a Nominal diameter:	nd plain text: · Nominal pressure:	Z		J 1 Y		
Wetted parts mat • Stainless steel 3 - Without coating - With PFA coatin - With ECTFE co • Monel 400, mat. • Hastelloy C276, • Hastelloy C4, ma • Tantalum Other version Add Order code a Wetted parts mate	erials 16L 9 ng 1ating ²⁾ No. 2.4360 mat. No. 2.4819 at. No. 2.4610 nd plain text: rials:	A D F G J U K Z		K 1 Y		
Filling liquid						
 Silicone oil M5 Silicone oil M50 High-temperatur Halocarbon oil (f Glycerin/water⁴⁾ Food oil (FDA lis Other version Add Order code a 	e oil for measuring O ₂) ³⁾ ted) nd plain text:		1 2 3 4 6 7 9	M1Y		
Filling liquid:						

Selection and Ordering data	C	Order No.	Ord	. C	ode	2
Inline seal for flange-mounting for SITRANS P pressure transmitters						
for gauge pressure 7MF403 and 7MF423 together with Orde code "V01" (vacuum-proof design) and 7MF802 ¹ ; must be ordered separately, scope of delivery: 1 off	r 7	7 M F 4 9 8	0 -			
for differential pressure and flow 7MF4433 or 7MF54; order separately, scope of delivery: 1 pair (set); Material: Completely of stainless steel, mat. No. 1.4404/316L; Process connection to EN 1092-1 or ASME B16.5; sealing face to EN 1092-1, form B1, or to ASME B16.5 RF 125 250 AA	9 :	7 M F 4 9 8	3 -			
	1	0 -	B			
Connection to transmitter						
 direct (only for 7MF4980) 			0			
through capillary, length: ⁵⁾						
• 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 plain text: Length of capillary:			9	N	1 Y	
Further designs	C	Order coc	de			
Please add "-Z" to Order No. and specify Order code.	r					
Spark arrestor With spark arrestor for mounting on zone 0 (including documentation)						
 Pressure and absolute pressure for differential pressure transmitters 	A A	A01 A02				
Certificate to EN 10204-2.2	E	10				
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)	k V					
Quality inspection certificate (Five-step factory calibration) to IEC 60770-2	C	211				
Inspection certificate	C	212				
to EN 10204, section 3.1						
Functional safety certificate ("SIL 2") to IEC 61508	C	20				
(Only in conjunction with the order code "C20" in the case of SITRANS P DSIII transmitter)	1					
Functional safety certificate ("SIL 2/3") to IEC 61508	C	23				
the case of SITRANS P DSIII transmitter)						
INAGE MIK-U1/5-CERTITIEC		107				
Vacuum-proof design	4			_	_	
for use in low-pressure range		/01				
for transmitters for gauge pressure for transmitters for differential pressure Note:	V	/03				
Suttix "Y01" required with pressure transmitter						

- ¹⁾ With 7MF802.-... and the measuring cells Q, S, T and U also order the vacuum-tight version.
- 2) For vacuum on request.
- Oil- and grease-free cleaning to DIN 25410, level 2 and packaging included in the scope of delivery.
 Not suitable for use in low-pressure range.
- ⁵⁾ Max. capillary length, see section "Technical description"

DN

mm 25

40

50

80

Pressure Measurement

Mb

mm

28.5

54.5

82.5

43

Remote seals for transmitters and pressure gauges

D

mm

63

85

95

130

Connection to EN 1092-1

PN

bar

6 ... 100

6 ... 100

6 ... 100

6 ... 100

Dimensional drawings



100	6	5 100	150	107	60	122
Connec	ctio	n to ASM	E B16.5			
DN	Cla	ISS	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)
1½	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)



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

L

mm

60

60

60

60

н

mm

78.5

89.5

92.5

112

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 with HART
- DS III with PROFIBUS PA
- DS III with FOUNDATION Fieldbus

Application

The quick-release inline seal is a special design for flowing media and high-viscosity media. Since it is completely integrated in the process pipe, no turbulences, dead volumes or other obstructions to the flow occur. The measured medium flows unhindered through the inline seal and results in self-cleaning of the measuring chamber. Furthermore, the inline seal can be cleaned by a pig.

Design

The quick-release clamp is available in two versions:

- DIN 11851 with threaded socket
- Clamp connection

The inline seal is connected to the pressure transmitter either directly or by way of a capillary.

Function

The measured pressure is transferred from the diaphragm, mounted on the inner circumference of the inline seal, to the filling liquid and then passes through the capillary to the measuring chamber of the pressure transmitter. The interior of the inline seal and of the capillary, as well as the measuring chamber of the pressure transmitter, are filled gas-free by the filling liquid.

Note:

When operating in the low-pressure range, also during commissioning, it is recommended to use a vacuum-proof pressure transmitter (see Selection and Ordering data).

Technical specifications

Inline seals of quick-release design 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
 Clamp connection 	1½ inch	PN 40
	2 inch	PN 40
	21/2 inch	PN 40
	3 inch	PN 40
Material		I
• Main body	Stainless steel 1.4	1404/316L
• Diaphragm	Stainless steel 1.4	1404/316L
Capillary		
• Length	Max. 10 m (32.8 f	t)
 Internal diameter 	2 mm (0.079 inch)
 Minimum bending radius 	150 mm (5.9 inch)
Filling liquid	• Food oil (FDA lis	sted)
	Glycerin/water (use in low-press	not suitable for sure range)
Permissible ambient temperature	Dependent on the mitter and the fillii remote seal More information the technical data transmitters and i "Technical data of the Technical des remote seals	e pressure trans- ng liquid of the can be found in a of the pressure n the section f filling liquid" in cription to the
Weight	Approx. 4 kg (app	orox. 8.82 lb)
Certificate and approvals		
Classification according to pres- sure equipment directive (DRGL 97/23/EC)	For gases of fluid uids of fluid group the requirements paragraph 1 (app assigned to categ mity evaluation m TÜV Nord	group 1 and liq- 1; complies with of article 3, pendix 1); gory III, confor- odule H by the
EHEDG	Complies with EH dations	IEDG recommen-

Quick-release inline seals

Selection and Orderi	ng data	Orc	ler I	10.	Orc	1. C	00	le
Quick-release inline	seal	7 M F 4 9 5 0 -						
for SITRANS P pressu pressure 7MF403 and 7MF4 code "V01" (vacuum-p 7MF8021); must be concarately.	ľ	A 0	•	B	ľ			
Filling liquid: Food oil Material: Stainless ste	(FDA listed) el 316L							
Nom. diam.	Nom, press,							_
Connection to DIN 1	1851 with screw necks							
- DN 25	PN 40	2 B						
- DN 40	PN 40	2 D						
- DN 50	PN 25	2 E						
- DN 65	PN 25	2 F						
- DN 80	PN 25	2 G						
- DN 100	PN 25	2 H						
 Clamp connection 								
- 11/2 inch	PN 16	4 L						
- 2 inch	PN 16	4 M						
- 21/2 inch	PN 16	4 N						
- 3 inch	PN 10	4 P						
Other version Add Order codes and Process connection:	plain text: ., Nominal diameter:;	9 A				н	1	Y
Nominal pressure:		_						
Filling liquid								
 Glycerin/water² Faad all (FDA listed) 				6				
Food oil (FDA listed) Other version				/ 0		м	1	v
Add Order code and r	plain text.			9		IVI	1	T
Filling liquid:								
Connection to transr	nitter	-						
Direct					0			
Through capillary lend	nth.3)							
• 1 0 m	(3.28 ft)				2			
• 16 m	(5.25 ft)				3			
•25m	(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					9	Ν	1	Υ
Add Order code and p Length of capillary:	plain text:							
Further designs		Orc	der o	coc	le			
Please add "-Z" to Ord code.	er No. and specify Order							
Quality inspection ce factory calibration) to	ertificate (Five-step DIEC 60770-2	C1	1					
Inspection certificate to EN 10204, section 3.1			2					
Functional safety cer IEC 61508	tificate ("SIL 2") to	C2	D					
(Only in conjunction with the order code "C20" in the case of SITRANS P DSIII transmitter)								
Functional safety certificate ("SIL 2/3") to IEC 61508			C23					
(Only in conjunction w the case of SITRANS I	ith the order code "C23" in PDSIII transmitter)							
Vacuum-proof design for use in low-pressure	n e range	V0	1					

 $^{1)}\,$ 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"

Quick-release inline seals

Dimensional drawings

1





Mounted directly on SITRANS P transmitter for pressure





Mounted on SITRANS P transmitter for pressure or differential pressure and flow

Connection to DIN 11851 with screw necks					
DN	Ø D ₁	Ø D ₂	н	L	G ₁
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

Clam	Clamp connection for pipes to BS 4825/3 and o.D. tubes										
d		${\it Ø} D_1$		${\rm Ø}~{\rm D_2}$		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)

Possible combinations of pressure transmitters and remote

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.

30013		
Type of installation	Pressure transmit- ters	Remote seals
A/B	7MF4033 7MF4034 7MF4035 7MF8023 7MF8024 7MF8025	7MF4900 7MF4910 7MF4920
C_1 and C_2	7MF4233 7MF4234 7MF4235	7MF4900 7MF4910 7MF4920
		(vacuum-proof design in each case)
	7MF4333 7MF4334 7MF4335	7MF4901 7MF4921
D	7MF4433 7MF4434 7MF4435 7MF5403 7MF5413	7MF4903 7MF4923
E	7MF4433 7MF4434 7MF4435 7MF5403 7MF5413	7MF4913
G, H and J	7MF4433 7MF4434 7MF4435 7MF5403 7MF5413	7MF4903 7MF4923

Measuring setups with remote seals

Dimensional drawings

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





 $H_1 \le 7$ m (23 ft), with halocarbon oil as filling liquid only $H_1 \le 4$ m (13.1 ft)

Types of installation for absolute level measurements (closed vessels)



Pressure transmitter for absolute pressure always below the measuring point: H, ≥ 200 mm (7.9 inch)

Type of installation for differential pressure and flow measurements



Installation type	pe A
Start-of-scale	$: \mathbf{p}_{MA} = \mathbf{p}_{FL} \cdot \mathbf{g} \cdot \mathbf{H}_{U} - \mathbf{p}_{Oil} \cdot \mathbf{g} \cdot \mathbf{H}_{1}$
Full-scale:	$p_{\rm ME} = \rho_{\rm FL} \cdot g \cdot H_{\rm o} - \rho_{\rm oil} \cdot g \cdot H_{\rm 1}$
Installation type	pe B
Start-of-scale	$: \rho_{MA} = \rho_{FL} \cdot g \cdot H_{U} + \rho_{Oil} \cdot g \cdot H_{1}$
Full-scale:	$p_{\rm ME} = \rho_{\rm FL} \cdot g \cdot H_{\rm O} + \rho_{\rm Oil} \cdot g \cdot H_{\rm I}$
Legend	
p _{MA}	Start-of-scale value to be set
P _{ME}	Full-scale value to be set
ρ_{FL}	Density of medium in vessel
ρ_{Oil}	Density of filling oil in the capillary to the remote seal
g	Local acceleration due to gravity
Hu	Start-of-scale value
H _o	Full-scale value
H ₁	Distance between vessel flange and pressure trans.

Installation type C₁ and C₂

Start-of-scale:	$p_{MA} = p_{START} + p_{OII} \cdot g \cdot H_1$
Full-scale:	$p_{ME} = p_{END} + \rho_{Oil} \cdot g \cdot H_1$
Legend	
р _{ма}	Start-of-scale value to be set
р _{ме}	Full-scale value to be set
P _{START}	Start-of-scale value
P _{END}	Full-scale value
ρ _{oil}	Density of filling oil in the capillary to the remote seal
g	Local acceleration due to gravity
H ₁	Distance between vessel flange and pressure trans.

Installation type D $Start\text{-of-scale: } p_{_{MA}} = p_{_{START}} \text{-} \rho_{_{Oil}} \ \cdot \ g \cdot \ H_{_{V}}$ $\label{eq:Full-scale:} Full-scale: \quad p_{_{ME}} = p_{_{END}} - \rho_{_{Oil}} \cdot g \cdot H_{_{V}}$

Legend	
P _{MA}	Start-of-scale value to be set
P _{ME}	Full-scale value to be set
P _{START}	Start-of-scale value
P _{END}	Full-scale value
$ ho_{\text{Oil}}$	Density of filling oil in the capillary to the remote seal
g	Local acceleration due to gravity
H_v	Distance between the measuring points (spigots)

Installation type E

Measuring setups with remote seals

Types of installation for level measurements (closed vessels)



Installation type G



Pressure transmitter for differential pressure above the upper measuring point, no vacuum

 $H_1 \le 7 \text{ m}$ (23 ft), with halocarbon oil as filling liquid only $H_1 \leq 4 \text{ m} (13.1 \text{ ft})$

Installation type G, H and J

Start-of-scale	$p_{MA} = \rho_{FL} \cdot g \cdot H_{U} - \rho_{Oil} \cdot g \cdot H_{V}$
Full-scale:	$\boldsymbol{p}_{\text{ME}} = \boldsymbol{\rho}_{\text{FL}} \cdot \boldsymbol{g} \cdot \boldsymbol{H}_{\text{O}} - \boldsymbol{\rho}_{\text{Oil}} \cdot \boldsymbol{g} \cdot \boldsymbol{H}_{\text{V}}$

Legend	
Logona	

P_{ME}

 ρ_{FL}

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

- Density of medium in vessel ρ_{Oil}
 - Density of filling oil in the capillary to the remote seal

Start-of-scale:	$\boldsymbol{p}_{_{MA}} = \boldsymbol{\rho}_{_{FL}} \cdot \boldsymbol{g} \cdot \boldsymbol{H}_{_{U}} - \boldsymbol{\rho}_{_{Oil}} \cdot \boldsymbol{g} \cdot \boldsymbol{H}_{_{V}}$
Full-scale:	$\boldsymbol{p}_{\text{ME}} = \boldsymbol{\rho}_{\text{FL}} \cdot \boldsymbol{g} \cdot \boldsymbol{H}_{\text{O}} - \boldsymbol{\rho}_{\text{Oil}} \cdot \boldsymbol{g} \cdot \boldsymbol{H}_{\text{V}}$
Legend	
P _{MA}	Start-of-scale value to be set
P _{ME}	Full-scale value to be set
ρ_{FL}	Density of medium in vessel
ρ _{oil}	Density of filling oil in the capillary to the remote seal
g	Local acceleration due to gravity
Η _υ	Start-of-scale value
H _o	Full-scale value
H_v	Distance between the measuring points (spigots)

н

Installation type H

below the lower measuring point



Installation type J

between the measuring points, no vacuum

 $H_2 \le 7 \text{ m} (23 \text{ ft})$, with halocarbon oil as filling liquid only $H_2 \leq 4 \text{ m}$ (13.1 ft)

g	Local acceleration due to gravity
Η _υ	Start-of-scale value
H _o	Full-scale value
H _v	Distance between the measuring points (spigots)

Measuring setups without remote seals

Overview

Notes

• For the separation layer measurement, the separation layer has to be positioned between the two spigots.

Dimensional drawings

Pressure transmitters for differential pressure, for flanging

Measuring setups for open containers





Also you must make sure that the level in the container is al-

• When measuring density, make sure that the level of the medium remains constant. The level should be above the top

ways above the top spigot.

spigot





$$\begin{split} & \text{Separation layer measurement} \\ & \text{Start-of-scale: } \rho_{\text{MA}} = g \cdot (H_{\text{U}} \cdot \rho_{1} + (H_{\text{o}} - H_{\text{U}}) \cdot \rho_{2}) \\ & \text{Full-scale: } \rho_{\text{ME}} = \rho_{1} \cdot g \cdot H_{\text{o}} \end{split}$$

Legend	
P _{MA}	Start-of-scale value to be set
P _{ME}	Full-scale value to be set
ρ	Density of heavier liquid
ρ	Density of lighter liquid
g	Local acceleration due to gravity
Η _υ	Start-of-scale value
H _o	Full-scale value

Density measurement

Start-of-scale:	$p_{MA} = \rho_{MIN} \cdot g \cdot H_{O}$
Full-scale:	$p_{ME} = \rho_{MAX} \cdot g \cdot H_{O}$
Legende	
P _{MA}	Start-of-scale value to be set
P _{ME}	Full-scale value to be set
ρ _{MIN}	Minimum density of medium in vessel
ρ_{MAX}	Maximum density of medium in vessel
g	Local acceleration due to gravity
H _o	Full-scale value in m

Measuring setups without remote seals

Measuring setups for closed containers







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	
Δp _{MA}	Start-of-scale value to be set
Δp _{ME}	Full-scale value to be set
ρ	Density of medium in vessel
ρ'	Density of liquid in the negative pressure line (corresponding to the temperature existing there)
g	Local acceleration due to gravity
H _u	Start-of-scale value
H _o	Full-scale value
H _v	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	
Δр _{мА}	Start-of-scale value to be set
Δр _{ме}	Full-scale value to be set
D ₁	Density of heavier liquid with separation layer in vessel
D ₂	Density of lighter liquid with separation layer
D'2	Density of liquid in the negative pressure line
	(corresponding to the temperature existing there)
g	Local acceleration due to gravity
Η _U	Start-of-scale value
Ho	Full-scale value
H _v	Distance between the measuring points (spigots)

1

SIEMENS

Questionnaire

Checking of transmitter/remote seal combinations



SIEMENS

Questionnaire

for hydrostatic level measurements

Order date:			\ #)
Processing date:			аха /	
Ordering code (customer):				
Ordering code (supplier):	- <u>i</u>			
Customer reference:				
Measuring point:		_ :		
Position:		-		
Dimensions:		_		
Pressure: 🗌 bar				\$ <i>1</i> \\$
Temperature:] °C			X X
Measuring range: cm (please mark with cross)] m			
Order No. of transmitter SITRANS P	DS III/P300 ¹⁾ :			
7 M F 4	--Z			
Y01 Order No. of transmitter SITRANS P	500 ¹⁾ :			ki
7 M F 5	0			
The different pressures and tem- peratures (densities) in the vessel and in the reference column result	Please supply the following start-of-scale value, full-sca	characteristic o le value and ca	data so that we can ca libration data:	lculate the measuring range
and full-scale values.	Please mark type of boile	r with a cross:	Closed ¹⁾	
The calibration data are deter-			Open or not under p	ressure ²⁾
It is also checked whether – as a result of the range offset – the	Medium			
ordered transmitter is suitable for this measurement	Licensed boiler pressure	(absolute)		bar

Operating pressure (absolute)

point if different from H_V

measuring points.

Temperature of reference column (cold)

Measuring range⁴⁾ = start-of-scale value to full-scale value

Position of equalizing vessel above bottom measuring

Please mark pressure correction of level with a cross:

distance between the measuring points, and the transmitter is designed for the calculation pressure of 1 bar (absolute).

Lowest

Normal³⁾

Highest

Distance between measuring points (dimension according to sketch) $H_V =$ _____ m

Start-of-scale value

No

Yes⁴⁾

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Full-scale value

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

⁴⁾ If a pressure correction of the level is required, the measuring range must be the same as the

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

Reference line filled with condensation! Falling differential pressure with increasing level.
 Reference line without gas or filled with gas (air). Rising differential pressure with increasing level.
 If not specified otherwise, this value is assumed as the calculation pressure of the level meter.

bar

bar

bar

Κ

m

 $H_U = _$ m $H_O = _$ m © Siemens AG 2012



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



Pressure Measurement Fittings

Technical description

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 IEC 61518

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

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

Material acceptance test certificate to EN 10204-3.1

If a material acceptance test certificate to EN 10204-3.1 is reguired 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

All shut-off fittings can be secured onto walls, racks (72 mm grid)

This offers the advantage when assembling a plant that the shutoff fittings can be secured first and the lines for the medium and

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 fit-

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 follow-

tings right at the end when all piping has been completed.

differential pressure connected to them. It is then possible to

Overview

ing maintenance.

and vertical and horizontal pipes.

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 transmitter for differential pressure with 3-way valve manifold, 3-spindle valve manifold or valve manifold combination DN 5/DN 8

tective box (available on request)











SITRANS P pressure transmitter mounted on valve combination "Mono-

flange" for direct connection to flanges (available on request)

Pressure Measurement 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 pres- sure transmitters with process connection G½" male thread e.g. • SITRANS P200 7MF1565 • SITRANS P210	Shut-off valves/double shut- off valves to DIN 16270, DIN 16271 and DIN 16272	1/246		Double shut-off valve DN 5 for crossover ½-NPT-F to G½ nipple connection 7MF9011-4EA	1/249	
 7MF1566 SITRANS P220 7MF1567 SITRANS P300 7MF8020 SITRANS P DS III series 7MF4030 and 7MF4230 				2-spindle valve manifold DN 5 for installation in pro- tective boxes 7MF9412-1B	1/266	No.
Relative and absolute pres- sure transmitter with 1/2"-14 NPT female thread e.g. • SITRANS P200 7MF1565 • SITRANS P210 7MF1566 • SITRANS P220 7MF1567 • SITRANS P220 7MF1567 • SITRANS P300 7MF8021 • SITRANS P DS III series 7MF4031 and 7MF4231	Double shut-off valve DN 5 7MF9011-4FA and 7MF9011-4GA	1/249	7MF9011-4GA	Double shut-off valve DN 5 for process connection ½-NPT 7MF9011-4DA	1/249	
Absolute pressure transmitter with process connection to IEC 61518 e.g. • SITRANS P DS III series 7MF433	2-spindle valve manifold DN 5 7MF9411-5A.	1/251	HIEL ST C BA	2-spindle valve manifold DN 5 for installation in pro- tective boxes 7MF9412-1C.	1/266	

Pressure Measurement Fittings

Selection aid

Transmitters	Shut-off valves for general applications	Page		Shut-off valves for special applications	Page		
Differential pressure transmit- ter with process connection to IEC 61518 e.g. SITRANS P DS III series 7MF443 and 7MF453 SITRANS P500 7MF54	For 3/5-spindle valve manifold DN 5 7MF9411-5B. and 7MF9411-5C.	1/251	1	3-way valve manifolds, DN 5, forged version 7MF9410-1	1/256		
			1	5-way valve manifolds, DN 5, forged version 7MF9410-3	1/256		
	PN 100 multiway cocks 7MF9004	1/254		3-way valve manifolds, DN 8, forged version 7MF9416-1 and 7MF9416-2	1/259		
				ALL ALL	Valve manifold combina- tion DN 5/DN 8 for vapor measurement 7MF9416-6	1/262	pd
						Valve manifold combina- tion DN 8 for vapor mea- surement 7MF9416-4	1/264
				3- and 5-spindle valve manifolds for DN 5 for installation in protective boxes 7MF9412-1D. and 7MF9412-1E.	1/266		
						A C H	
				3- and 5-spindle valve manifolds for vertical dif- ferential pressure lines 7MF9413-1	1/270		
				Low-pressure multiway cock 7MF9004-4	1/273		

Pressure Measurement Fittings - Shut-off valves for gauge and absolute pressure transmitters

Shut-off valves to DIN 16270 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 Orderi	Order No.	
Shut-off valves, form		
without test collar, con without certificate		
Material Valve housing	Aterial Maximum permissible Valve housing working pressure	
CW614N (CuZn39Pb3 (mat. No. 2.0402)	7MF9401-7AA	
P250GH (mat. No. 1.0460)	400 bar (5800 psi)	7MF9401-7AB
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316T	7MF9401-7AC	
Shut-off valves, form	-	
with test collar, conne- without certificate		
Material Valve housing	Maximum permissible working pressure	
CW614N (CuZn39Pb3 (mat. No. 2.0402)	7MF9401-7BA	
P250GH (mat. No. 1.0460)	7MF9401-7BB	
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316T	7MF9401-7BC	

Selection and Ordering data		Order No.	
Shut-off valves, form			
without test collar, pipe 12 S DIN EN ISO 8434			
Material Valve housing	Maximum permissible working pressure		
P250GH (mat. No. 1.0460)	400 bar (5800 psi)	7MF9401-8AB	
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316T	400 bar (5800 psi))	7MF9401-8AC	
Shut-off valves, form	B, DIN 16271	-	
with test collar, pipe up 12 S DIN EN ISO 8434			
Material Valve housing	Maximum permissible working pressure		
P250GH (mat. No. 1.0460)	400 bar (5800 psi)	7MF9401-8BB	
X 6 CrNiMoTi 17 12 2 400 bar (5800 psi) (mat. No. 1.4571/316Ti)		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)	7MF9401-7DA		
P250GH (mat. No. 1.0460)	400 bar (5800 psi)	7MF9401-7DB	
X 6 CrNiMoTi 17 12 2 400 bar (5800 psi) (mat. No. 1.4571/316Ti)		7MF9401-7DC	
Double shut-off valve			
with test collar, pipe up 12 S DIN EN ISO 8434			
Material Valve housing	Maximum permissible working pressure		
P250GH 400 bar (5800 psi) (mat. No. 1.0460)		7MF9401-8DB	
X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316T	7MF9401-8DC		
Accessories			
Factory test certificate	7MF9000-8AB		
Material acceptance to EN 10204-3.1	7MF9000-8AD		

Instrument bracket, see page 1/250.

Pressure Measurement Fitttings - Shut-off valves for gauge and absolute pressure transmitters

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

Characteristic curves



Permissible operating pressure as a function of the permissible operating temperature

Dimensional drawings



- A Connection on device side: to DIN 16284, G¹/₂, SW 27
- B Connection on measurement side: connection shank to DIN EN 837-1, $G\prime_{\!2}$
- 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

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Pressure Measurement

Fitttings - Shut-off valves for gauge and absolute pressure transmitters

Overview

Angle adapter





Angle adapter, dimensions in mm

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	7MF9401-7WA
Material: X 12 CrNiMoTi 17 12 2 (mat. No. 1.45714/316Ti), max. permissible operating pressure 400 bar (5800 psi)	
Accessories	
Factory test certificate EN 10204-2.2	7MF9000-8AB
Material acceptance test certificate EN 10204-3.1	7MF9000-8AD

Characteristic curves



Permissible operating overpressure as a function of the permissible operating temperature

Pressure Measurement

Double shut-off valves

Fitttings - Shut-off valves for gauge and absolute pressure transmitters

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 (6092 psi);	
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
NACE MR-0175-certified	D07
incl. acceptance test certificate 3.1 to EN 10204	

Dimensional drawings



- 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



- A Connection on device side: nipple to DIN 16284, G¹/₂, SW 27
- B Connection on measurement side: ½-14 NPT
- C Vent and test connection: 1/4-18 NPT

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



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

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



- A Connection on device side : 1/2-14 NPT
- B Connection on measurement side: ½-14 NPT
- C Vent and test connection: 1/4-18 NPT

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

Pressure Measurement

Fitttings - 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	Order No.
Mounting set for shut-off valves	
• 7MF9011-4DA und -4EA	7MF9011-8AB
made of stainless steel, scope of delivery: 1x mounting bracket, 2x hexagon screws M6x40, 1x mounting clip, 2x washers 8.4 to DIN 125; 2x hexagon nuts 8.4 to DIN EN 24032	
• 7MF9011-4FA und -4GA	7MF9011-8AC
made of stainless steel, scope of delivery: 1x mounting bracket, 2x hexagon screws M6x10, 1x mounting clip,	

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

Dimensional drawings



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



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

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 	M56340-A0046 M56340-A0047
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	M56340-A0053
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-A0079

Dimensional drawings



Instrument bracket form H, for wall mounting, M56340-A0046/-A0047, dimensions in $\ensuremath{\mathsf{mm}}$



Instrument bracket form A, wall or pipe mounting, M56340-A0053/-A0079, dimensions in mm

1

Pressure Measurement Fitttings - 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 (6092 psi)
- 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 ½-14 NPT. The connection for the pressure transmitter is always designed as a flange connection to IEC 61518, form B . The 2-spindle and the 5-spindle valve manifold have in addition a vent and test connection ½-18 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 7 MF 9 4 1 1 - A

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			
 5-spindle valve manifold 	5 (С	
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 ¹⁾		
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 ⁷ / ₁₆ -20 UNF x 1¾ inch to ASME B18.2.1; chromized steel 1x gasket made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)	K35	7MF9411-7DB
2x screws ⁷ / ₁₆ -20 UNF x 1¾ inch to ASME B18.2.1:	K45	7MF9411-7DC
stainless steel 1x gasket made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)		
for valve manifold 7MF9411-5B. and <u>-5C.</u>		
4x screws ⁷ / ₁₆ -20 UNF x 1 ³ / ₄ inch to ASME B18.2.1; chromized steel 2x flat gaskets made of PTFE, max_permissible 420 bar (6092 psi)	K36	7MF9411-5DB
80 °C (176 °F)		
4x screws ⁷ / ₁₆ -20 UNF x 1¾ inch to ASME B18.2.1; stainless steel 2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)	K46	7MF9411-5DC
Accessory set to DIN ²⁾		
(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 (6092 psi), 80 °C (176 °F)	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 (6092 psi), 80 °C (176 °F)	K25	7MF9411-7BC

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Pressure Measurement Fitttings - Shut-off valves for differential pressure transmitters

Selection and Ordering data	Order code	Order No.	A
Further designs ¹⁾			Accessories
Please add "-Z" to Order No. and			Accessory set for 2-, 3- and 5-spindle valve manifolds
specify Order code.			2-spindle valve manifold DN 5
for valve manifolds 7MF9411-5B. and -5C.			 K35: 2 screws ⁷/₁₆-20 UNF x 1³/₄ inch to ASME B18.2.1, 1 flat gasket
4x screws M10x45 to DIN EN 24014; chromized steel	K16	7MF9411-6BB	 K15: 2 screws M10x45 to DIN EN 24014, 2 washers, 1 flat gasket
2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F) Flange connection with M10 screws only permissible up to PN 160			 3-spindle and 5-way valve manifold DN 5 K36: 4 screws ⁷/₁₆-20 UNF x 1³/₄ inch to ASME B18.2.1, 2 flat gaskets K16: 4 screws M10x45 to DIN EN 24014, 4 washers
4x screws M10x45 to DIN EN 24014;	K26	7MF9411-6BC	2 flat gaskets
4x washers Ø 10.5 mm to DIN 125.			Washers Ø 10.5 to DIN 125
stainless steel; 2x flat gaskets made of PTFE, max, permissible 420 bar (6092 psi).			Flat gaskets made of PTFE, max. 420 bar (6092 psi), 80 °C (176 °F)
80 °C (176 °F) Flange connection with M10 screws			Note : Flange connection with M10 screws only permissible up to PN 160!
			Mounting plate
• for volve manifold, made of			Made of electrogalvanized sheet-steel
electrogalvanized sheet-steel			M11: For wall mounting or for securing on rack (72 mm grid)
 for wall mounting or for securing on rack (72 mm grid), weight 0.5 kg Scope of delivery: 	M11	7MF9006-6EA	Scope of delivery: - 1 mounting plate with bolts for mounting on valve manifold • M12: For pipe mounting
1 mounting plate with bolts for			Scope of delivery:
 for pipe mounting, weight 0.7 kg Scope of delivery: 	M12	7MF9006-6GA	 2 pipe brackets with nuts and washers for pipes with max. Ø 60.3 mm
(for pipe with max. Ø 60.3 mm) and fastening screws for mount- ing on valve manifold			 Valve manifold 100 bar, suitable for oxygen S12: For 2-way valve manifold S13: For 3-way valve manifold
 for valve manifold, made of stainless steel 			S14: For 5-way valve manifold
 for wall mounting or for securing on rack (72 mm grid), weight 	M21	7MF9006-6EC	Characteristic curves
Scope of delivery: 1 mounting plate with bolts for 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	d 300 bit 200 d 100
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)			0 100 200 300 400 °C Operating temperature
• for 7MF9411-5A.	S12		Valve manifolds PN 5 (7MF9411-5), permissible working pressure as a function of the permissible working temperature
• for 7MF9411-5B.	S13		initiation of the permissible working temperature
• tor 7MF9411-5C.	S14		
NACE MR-0175-certified	D07		
Incal acceptance lest centilicate 3.1			

to EN 10204

When ordering accessory set or mounting together with the valve manifolds, please use Order code; otherwise use Order No.
 Flange connections to DIN 19213 only permissible up to PN 160 (2321 psi)!
Pressure Measurement

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

B Transmitter connection: Flange connection to EN 61518, form B

C Vent / test connection: 1/4-18 NPT

Valve design: external spindle thread

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



A Process connection: ½-14 NPT

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



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

- A Process connection: 1/2-14 NPT
- B 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



Mounting plate 7MF9006-6.. (M11, M12) for valve manifold, dimensions in $\ensuremath{\mathsf{mm}}$

Schematics



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

Overview



Multiway cock PN 100 (1450 psi) (7MF9004-1P.) for differential pressure transmitters

The multiway cock PN 100 (1450 psi) can be flanged to pressure transmitters for differential pressure.

Benefits

- · Version available for aggressive liquids, gases and vapors
- Robust design
- · Oil-free and grease-free version possible
- · One-hand operation

Application

The PN 100 (1450 psi) multiway cock is available in versions for aggressive and non-aggressive liquids, gases and vapors.

Design

The multiway cock can be flanged with four screws to pressure transmitters for differential pressure.

The PN 100 (1450 psi) has 2 process connections and one blowout connection. A steel version of the multiway cock is available for non-aggressive media, and a stainless steel version for aggressive media. The housing is forged in one piece. The switching lever is removable.

Sealing can be improved during operation.

Note: An accessory set is always required for flanging of the multiway cock to a differential pressure transmitter.

Function

- Shutting off the differential pressure lines
- · Blowing out the differential pressure lines
- Testing the pressure transmitter zero



Cock positions; the symbols are printed on the cock

Technical specifications

Multiway cocks PN 100				
Measured medium	Water, non-aggres- sive 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 Connection for blow- ing out 	2 bulkhead alands Pipe union with ferrule			
Max. permissible working temperature	200 °C (392 °F)			
Max. permissible 100 bar (1450 psi) (up to max. 60 °C (working pressure		to max. 60 °C (140 °F))		
Weight	2.5 kg			

Selection and Ordering data	Order No.
Multiway cock PN 100 (1450 psi)	7 M F 9 0 0 4 - A
for flanging to pressure transmitters, weight 2.5 kg (without accessory set), without certificate	
For water and non-aggressive gases and vapors 1	
For aggressive liquids, gases and vapors	1 Q
Accessories	
Factory test certificate EN 10204–2.2 Material acceptance test certificate EN 10204-3.1	7MF9000-8AB 7MF9000-8AD

Selection and Ordering data	Order code	Order No.
Further designs ¹⁾ Please add "-Z" to Order No. and specify Order code.		
Accessory set to EN (required for flanging, weight 0.2 kg) 4x screws ⁷ / ₁₆ -20 UNF x 1 inch to ASME B18.2.1; chromized steel 2x gaskets made of PTFE, max. permissible temperature 80 °C (176 °F)	L31	7MF9004-5CC
Accessory set to DIN (required for flanging, weight 0.2 kg) 4x screws M10x25 to DIN EN 24017; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x gaskets made of PTFE, max. permissible temperature 80 °C (176 °F)		
 Standard design Version for oxygen (together with Order code S11 	L11 L15	7MF9004-6AD 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. temper- ature 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
NACE MR-0175-certified	D07	
incl. acceptance test certificate 3.1 to EN 10204 (only available for ver- sion 7MF9004-1QA)		

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

Pressure Measurement

Fitttings - Shut-off valves for differential pressure transmitters

Dimensional drawings

Ø

3

Accessories

Accessory set for multiway cock PN 100

- L31: 4 screws ⁷/₁₆-20 UNF x 1 inch, 2 flat gaskets
- L11: 4 screws M10x25 to DIN EN 24017, 4 washers, 2 flat gaskets
- L15 (suitable for oxygen): 4 screws M10x25 to DIN EN 24017, 4 washers, 2 flat gaskets

Washers Ø 10.5 to DIN 125

Flat gaskets made of PTFE, max. permissible temperature 80 °C (176 °F)

Multiway cock in oil-free and grease-free design

 S11 (only for aggressive liquids, gases and vapors (7MF9004-1Q.)): Max. PN 63 (914 psi) (instead of PN 100 (1450 psi)), BAM-tested lubricant, gasket suitable for oxygen

Mounting brackets

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

Characteristic curves



Multiway cock PN 100 (1450 psi), permissible operating pressure as a function of the permissible operating temperature





Multiway cocks PN 100

1 and 2 Process connections

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54

3 and 4 Connections for transmitter (DIN EN 61518, form A)

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58

4

103

5 Connections for blowing out

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



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

3-way and 5-way valve manifolds DN 5

Overview



The three-spindle and five-spindle valve manifolds DN 5 (7MF9410-1../-3..) are used to shut off the differential pressure lines and to check the transmitter zero.

In addition, the five-way valve manifold permits blowing out of the differential pressure lines.

Benefits

- Available for aggressive and non-aggressive liquids and gases
- Max. working pressure 420 bar (6092 psi), with version for oxygen max. 100 bar (1450 psi)

Application

The 3-way and 5-way valve manifolds are available in versions for aggressive and non-aggressive liquids and gases.

Mounting plates are available for wall mounting, for securing to mounting racks or for pipe mounting.

Design

The process connection of the 3-way and 5-way valve manifolds is a pipe union with ferrule.

Both valve manifolds have 2 flange connections for connecting a pressure transmitter.

In addition, the five-way valve manifold has 2 blow-out connections.

Depending on the version the valve manifold has either 3 or 5 valves, each with an internal spindle thread.

Materials used

	For non-aggressive liquids gases	For aggre	essive nd gases	
Component	Material	Mat. No.	Material	Mat. No.
Housing	P250GH	1.0460	X 6	1.4571/
Head parts	C 35	1.0501	CrNiMo1i 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	7 M F 9 4 1 0 - 🖉 A
For flanging to pressure transmitters for differ- ential pressure, process connection: Pipe union with ferrule, max. working pressure 420 bar (6092 psi), weight 2.9 kg (order accessory set and mounting plate with Order code), without certificate	
 for non-aggressive liquids and gases 	1 E
 for aggressive liquids and gases 	1 F
5-way valve manifold DN 5	
For flanging to pressure transmitters for differ- ential pressure, process connection: Pipe union with ferrule, max. working pressure 420 bar (6092 psi), weight 4.4 kg (order accessory set and mounting plate with Order code), without certificate	
 for non-aggressive liquids and gases 	3 E
 for aggressive liquids and gases 	3 F
Accessories	
Factory test certificate EN 10204-2.2	7MF9000-8AB
Material acceptance test certificate EN 10204-3.1	7MF9000-8AD

Fittings - Shut-off valves for differential pressure transmitters

Selection and Ordering data	Order code	Order No.	Accessories
Further designs ¹⁾			Accessory set for 3-way and 5-way valve manifold DN 5 for
Please add "-Z" to Order No. and			flanging
Accessory set to EN			 B31: 4 screws ⁷/₁₆-20 UNF x 2¹/₈ inch to ASME B18.2.1, 2 flat gaskets
(required for flanging, weight 0.2 kg) 4x acrows $\frac{7}{2}$ 20 LINE x	D 21	7ME0010 5CC	 B34: 4 screws ⁷/₁₆-20 UNF x 2¹/₈ inch to ASME B18.2.1, 2 O-rings (FPM 90)
2 ¹ / ₈ inch to ASME B18.2; chromized steel	531	/WF9010-3CC	 B11: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 flat gaskets
2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)			 B15 (suitable for oxygen): 4 screws M10x55 to DIN EN 24014, 4 washers, 2 flat gaskets
4x screws 7 / ₁₆ -20 UNF x 2^{1} / ₈ inch to ASME B18.2; chromized	B34	7MF9410-5CA	 B16: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 O-rings (FPM 90)
steel 2x O-rings to DIN 3771.			Washers Ø 10.5 to DIN 125
20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F)			Flat gaskets made of PTFE, max. 420 bar (6092 psi), 80 °C (176 °F)
Accessory set to DIN ²⁾ (required for flanging, weight 0.2 kg)			O-ring to DIN 3771, 20 x 2.65 – S – FPM90, max. 420 bar (6092 psi), 120 °C (248 °F)
4x screws M10x55 to DIN EN 24014;			Note: M10 screws only permissible up to PN 160 (2320 psi)!
chromized steel 4x washers Ø 10.5 mm to DIN 125:			Mounting plate
2x flat gaskets made of PTFE,			Made of electrogalvanized sheet-steel
max. permissible 420 bar (6092 psi), 80 °C (176 °F)			M11: For wall mounting or for securing on rack (72 mm grid)
Standard design	B11	7MF9010-6AD	Scope of delivery:
Version for oxygen	B15	7MF9010-6AE	 1 mounting plate 7MF9006-6EA with bolts for mounting on valve manifold
4x screws M10x55 to DIN EN 24014;	B16	7MF9010-6CC	M12: For pipe mounting
chromized steel			Scope of delivery:
2x O-rings to DIN 3771,			- 1 mounting plate M11
20 x 2.65 - S - FPM90, max.			Ø 60.3 mm
120 °C (248 °F)			Value manifold 100 bar, suitable for exugen
Mounting plate			C10: Only in combination with versions for an expressive liquida
for valve manifold, made of			and dases
for wall mounting or for securing on	M11	7MF9006-6EA	
rack (72 mm grid), weight 0.5 kg			
1 mounting plate with bolts for			
mounting on valve manifold			
for pipe mounting, weight 0.7 kg	M12	7MF9006-6GA	
1x mounting plate M11. 2x pipe			
brackets with nuts and washers			
(for pipe with max. Ø 60.3 mm)		·	
suitable for oxygen			
for 7MF9410-1F	S13		
for 7MF9410-3F	S14		
NACE MR-0175-certified	D07		
incl. acceptance test certificate 3.1			
to EN 10204 (only available for version 7MF9410-1FA and -3FA)			

When ordering accessory set or mounting together with the valve manifolds, please use Order code; otherwise use Order No.
 Flange connections to DIN 19213 only permissible up to PN 160 (2321 psi)

3-way and 5-way valve manifolds DN 5

1



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 $\ensuremath{\mathsf{mm}}$





Pressure Measurement

Fitttings - Shut-off valves for differential pressure transmitters

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 (6092 psi).

Application

The 3-way valve manifold is available in versions for aggressive and non-aggressive liquids and gases.

Mounting plates are available for wall mounting, for securing to mounting racks or for pipe mounting.

Design

For the process connection on the version for non-aggressive media it is possible to choose between a pipe union with ferrule and welding pins.

The version for aggressive media always has a pipe union with ferrule.

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

The valves have an internal spindle thread.

Materials used

	For non-aggressive li gases	For aggre	essive nd gases	
Component	Material	Mat. No.	Material	Mat. No.
Housing	P250GH	1.0460	X 6	1.4571/
Head parts	C 35	1.0501	CrNiMo1i 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	-

3-way valve manifold DN 8

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	7 M F 9 4 1 6 - 🗖 A	
For flanging to pressure transmitters for differ- ential pressure, max. working pressure 420 bar (6092 psi), (order accessory set and mounting plate with Order code), without cer- tificate		
For non-aggressive liquids and gases procedss connection: Pipe union with ferrule Ø 12 mm		
 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	

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Pressure Measurement Fittings - Shut-off valves for differential pressure transmitters

3-way valve manifold DN 8

Selection and Ordering data	Order code	Order No.	Accessories
Further designs ¹⁾			Accessory set for 3-way valve manifold DN 8 for flanging
Please add " -Z " to Order No. and specify Order code.			 B31: 4 screws ⁷/₁₆-20 UNF x 2¹/₈ inch to ASME B18.2.1, 2 flat gaskets
Accessory set to EN (required for flanging, weight 0.2 kg)			 B34: 4 screws ⁷/₁₆-20 UNF x 2¹/₈ inch to ASME B18.2.1, 2 O-rings (FPM 90)
4x screws 7 / ₁₆ -20 UNF x 21 / ₈ inch to ASME B18.2;	B31	7MF9010-5CC	B11: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 flat gaskets
2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi),			 B16: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 O-rings (FPM 90)
50 - C (176 - F)	B 24	7ME0410 5CA	Washers Ø 10.5 to DIN 125
⁴ x screws 7 ₁₆ -20 ONF x 2 ¹ / ₈ inch to ASME B18.2; chromized steel	B34	/MF9410-5CA	Flat gaskets made of PTFE, max. 420 bar (6092 psi), 80 °C (176 °F)
2x O-rings to Din 3771, 20 x 2.65 - S - FPM90, max. permiss- ble 420 bar (6092 psi), 120 °C			O-ring to DIN 3771, 20 x 2.65 – S – FPM90, max. 420 bar (6092 psi), 120 °C (248 °F)
(248 °F)			Note: M10 screws only permissible up to PN 160 (2320 psi)!
Accessory set to DIN ⁻⁷			Mounting plate
4x screws M10x55 to DIN EN 24014.	B11	7MF9010-6AD	Made of electrogalvanized sheet-steel
A solution of the line of the	DIT		 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
30 °C (176 °F)			M12: For pipe mounting
4x screws M10x55 to DIN EN 24014; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permiss-	B16	7MF9010-6CC	 - 1 mounting plate M11 - 2 pipe brackets with nuts and washers for pipes with max Ø 60.3 mm
ble 420 bar (6092 psi), 120 °C (248 °F)			Characteristic curves
Mounting plate			
For valve manifold, made of electrogalvanized sheet-steel			and a second sec
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 prackets with nuts and washers (for pipe with max (6 60 3 mm)	M12	7MF9006-6GA	0 100 200 300 400 °C Operating temperature
NACE MB-0175-certified	D07		3-way valve manifold DN 8, permissible working pressure as a function
ncl. acceptance test certificate 3.1 to EN 10204 (only available for ver- sion 7MF9416-1DA and -1EA)	007		of the permissible working temperature

When ordering accessory set or mounting together with the valve manifold, please use Order code; otherwise use Order No.
 Flange connections to DIN 19213 only permissible up to PN 160 (2321 psi)!

Pressure Measurement

Fitttings - Shut-off valves for differential pressure transmitters

3-way valve manifold DN 8

Dimensional drawings

Schematics

В



A Process connection (e.g. on primary device): Pipe union with ferrule, diameter 12 mm, S series to DIN 2353

- Transmitter connection: Flange connection to EN 61518, form A в Test connection: M20 x 1,5
- С
- Valve design: internal spindle thread

3-way valve manifold DN 8 (7MF9416-1..) with pipe union, dimensions in mm



- Welding pin, diameter 14 x 2,5
- В Transmitter connection: Flange connection to EN 61518, form A Test connection: M20 x 1,5 С
- 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

Α



Three-way valve manifold for liquids and gases

3-way valve manifold DN 8, connections

В

Overview



The valve manifold combination DN 5/DN 8 (7MF9416-6..) is for pressure transmitters for differential pressure.

The combination is used to shut off and blow out differential pressure lines and to test the pressure transmitter zero.

In the designs with a test connection, a test device can be connected to test the pressure transmitter characteristic.

Benefits

• Max. working pressure 420 bar (6092 psi)

Application

The valve manifold combination DN 5/DN 8 is designed for vapors.

Design

The valve manifold combination DN 5/DN 8 has a process connection with welding pins.

The connection for the pressure transmitter is designed as as flange connection, while the blow-out connection is designed as a pipe union with ferrule.

The manifold valves have an internal spindle thread, while the blow-out valves have an external spindle thread.

The optional test connections are M20x1.5.

Materials used

	Valve manifold DN 5		Blow-out value	ves DN 8
Component	Material	Mat. No.	Material	Mat. No.
Housing	P250GH	1.0460	16 Mo 3	1.5415
Head parts	C 35	1.0501	21 CrMo V57	1.7709
Spindles	X 12 CrMoS 17	1.4104	X 20 Cr 13	1.4021
Cones	X 35 CrMo 17	1.4122	X 35 CrMo 17 hardened and tem- pered	1.4122
Valve seats	X 6 CrNiMoTi	1.4571/316Ti	X 20 Cr 13	1.4021
Packings	PTFE	-	Pure graphite	-
Welding pins	-	-	16 Mo 3	1.5415

Function

- Shutting off the differential pressure lines
- Blowing out the differential pressure lines
- Checking the pressure transmitter zero

As an option it is possible to order a version with a test connection, to which a test device for checking the transmitter characteristic can be connected.

Selection and Ordering data	Order No.	
Valve manifold combination DN 5/DN 8 for vapors	7 M F 9 4 1 6 - 6	A
For flanging to pressure transmitters for differ- ential pressure, max. working pressure 420 bar (6092 psi), also available in stainless steel on request (order accessory set with Order code), without certificate		
 without test connection 		с
• with test connection M20 \times 1.5		D
Accessories		
Factory test certificate EN 10204-2.2	7MF9000-8AB	
Material acceptance test certificate	7MF9000-8AD	

Selection and Ordering data	Order code	Order No.
Further designs ¹⁾		
Please add "-Z" to Order No. and specify Order code.		
Accessory set to EN (required for flanging, weight 0.2 kg)		
4x screws $^{7/}{\rm 16}{}^{-20}$ UNF x $^{21/}{\rm 8}$ inch to ASME B18.2; chromized steel 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permiss-ble 420 bar (6092 psi), 120 °C (248 °F)	B34	7MF9410-5CA
Accessory set to DIN ²⁾ (required for flanging, weight 0.2 kg)		
4x screws M10x55 to DIN EN 24014; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F);Flange connection to DIN 19213 only permissible up to PN 160!	B16	7MF9010-6CC

¹⁾ 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 PN 160 (2321 psi)

Valve manifold combination DN 5/DN 8

Accessories

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

- B34: 4 screws ⁷/₁₆-20 UNF x 2¹/₈ inch to ASME B18.2.1, 2 O-rings (FPM 90)
- B16: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 O-rings (FPM 90)

Washers Ø 10.5 to DIN 125

O-ring to DIN 3771, 20 x 2.65 - S – FPM90, max. 420 bar (6092 psi), 120 °C (248 °F)

Note: M10 screws only permissible up to PN 160 (2321 psi)!

Characteristic curves



Permissible operating pressure as a function of the permissible operating temperature



- A Process connection (e.g. on primary device): Welding pin
- 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

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 (6092 psi)

Application

The valve manifold combination DN 8 is designed for vapors.

Design

The valve manifold combination DN 8 has a process connection with welding pins.

The connection for the pressure transmitter is designed as as flange connection, while the blow-out connection is designed as a pipe union with ferrule.

The manifold valves have an internal spindle thread, while the blow-out valves have an external spindle thread.

The optional test connection is M20x1.5.

The valve manifold combination DN 8 is supplied with a mounting plate.

Materials used

	Valve manifold		Blow-out value	ves
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	7 M F 9 4 1 6 - A		
for flanging to pressure transmitters for differ- ential pressure, with mounting plate, max. working pressure 420 bar (6092 psi), also available in stainless steel on request (order accessory set with Order code), without certif- icate			
 without test connection 	4 C		
• with test connection M20 \times 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 ¹⁾		
Please add "-Z" to Order No. and specify Order code.		
Accessory set to EN (required for flanging, weight 0.2 kg)		
$4x$ screws 7 / ₁₆ -20 UNF x 2^{1} / ₈ inch to ASME B18.2; chromized steel	B34	7MF9410-5CA
2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F)		
Accessory set to DIN ²⁾		
(required for flanging, weight 0.2 kg)		
4x screws M10x55 to DIN EN 24014; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F) Flange connection to DIN 19 213 only permissible up to PN 160!	B16	7MF9010-6CC

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

²⁾ Flange connections to DIN 19213 only permissible up to PN 160 (2321 psi)

Accessories

Accessory set for valve manifold combination DN 8 for flanging

- B34: 4 screws ⁷/₁₆-20 UNF x 2¹/₈ inch to ASME B 18.2.1, 2 O-rings (FPM 90)
- B16: 4 screws M10x55 to DIN EN 24014, 4 washers, 2 O-rings (FPM 90)

Washers Ø 10.5 to DIN 125

O-ring to DIN 3771, 20 x 2.65 – S – FPM90, max. 420 bar (6092 psi), 120 $^{\circ}\mathrm{C}$ (248 $^{\circ}\mathrm{F})$

Note: M10 screws only permissible up to PN 160 (2321 psi)!

Pressure Measurement

Fitttings - Shut-off valves for differential pressure transmitters

Valve manifold combination DN 8



Permissible operating pressure as a function of the permissible operating temperature





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

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 IEC 61518, Form A.

The 2-spindle and the 5-spindle valve manifold have in addition a vent and test connection $14\mathchar`-18$ 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	7 M F 9 4 1 2 -	A
for liquids and gases for flanging to pressure transmitters for absolute and differential pressure Material: stainless steel, mat. No: 1.4404/316L max. working pressure 420 bar (6092 psi) (order accessory set with Order code), without certificate		
\bullet 2-spindle valve manifold with rotatng sleeve $G^{1\!\!/_2}$	1 B	
 2-spindle valve manifold with flange connection 	1 C	
3-spindle valve manifold	1 D	
 5-spindle valve manifold 	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 ¹⁾		
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 ⁷ / ₁₆ -20 UNF x 2 inch to ASME B18.2.1; chromized steel 1x O-ring to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F)	F32	7MF9412-6CA
2x screws ⁷ / ₁₆ -20 UNF x 2 inch to ASME B18.2.1; chromized steel 1x gasket made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F) ²⁾	F35	7MF9412-6DA
for valve manifold 7MF9412–1D and - -1E.		
4x screws ⁷ / ₁₆ -20 UNF x 2 inch to ASME B18.2.1; chromized steel	F34	7MF9412-6GA
2x O-rings to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F) ²⁾		
4x screws ⁷ / ₁₆ -20 UNF x 2 inch to ASME B18.2.1; chromized	F36	7MF9412-6HA
2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F) ²⁾		

Fittings - Shut-off valves for differential pressure transmitters 2-, 3- and 5-spindle valve manifolds

for installing in protective boxes

		<u> </u>	
Selection and Ordering data	Order code	Order No.	Accessories
Please add "-7" to Order No. and			Accessory set for 2-, 3- and 5-spindle valve manifolds
specify Order code.			(Connection between manifold and transmitter)
Accessory set to DIN			2-spindle valve manifold DN 5 with flange connection
(connection between valve manifold and pressure transmitter)			 F32: 2 screws 7/16 20 UNF x 2 inch to ASME B 18.2.1, 1 O Ring (FPM90)
<u>For valve manifold 7MF9412–1C.</u> 2x screws M10x50 to DIN EN 24014;	F12	7MF9412-6AA	 F35: 2 screws 7/16 20 UNF x 2 inch to ASME B 18.2.1, 1 flat-gasket
chromized steel 2x washers Ø 10.5 mm to DIN 125; 1x O-ring to DIN 3771			 F12: 2 screws M10x50 to DIN EN 24014, 2 washers, 1 O-ring (FPM90)
20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F) ²⁾			 F15: 2 screws M10x50 to DIN EN 24014, 2 washers, 1 flat gasket
2x scrows M10x50 to DIN EN 24014:	E15	7ME0/12-6BA	3-spindle and 5-way valve manifold DN 5
chromized steel 2x washers Ø 10.5 mm to DIN 125;	115	7WI 3412-0DA	 F34: 4 screws 7/16 20 UNF x 2 inch toASME B 18.2.1, 2 O-rings (FPM90)
1x gasket made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F) ²⁾			 F36: 4 screws 7/16 20 UNF x 2 inch toASME B 18.2.1, 2 flat-gaskets
For valve manifold 7MF9412–1D and -1E.			 F14: 4 screws M10x50 to DIN EN 24014, 4 washers, 2 O-rings (FPM90)
4x screws M10x50 to DIN EN 24014; chromized steel	F14	7MF9412-6EA	 F16: 4 screws M10x50 to DIN EN 24014, 4 washers, 2 flat-gaskets
4x washers Ø 10.5 mm to DIN 125; 2x O-rings to DIN 3771.			Washers Ø 10,5 to DIN 125
20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F) ²⁾			Flat-gaskets made of PTFE, max. 420 bar (6092 psi), 80 °C (176 °F)
4x screws M10x50 to DIN EN 24014; chromized steel	F16	7MF9412-6FA	O-ring to DIN 3771, 20 x 2,65 - S - FPM90; max.420 bar (6092 psi), 120 °C (248 °F)
2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F) ²⁾			Note: Flange connections with M10 screws only permissible up to PN 160 (2321 psi)!
Mounting bracket			Mounting bracket for wall mounting or for securing to
required for wall mounting or for securing to mounting rack, with bolts for mounting on value manifold			<i>mounting rack</i> With bolds for mounting on valve manifold
for valve manifolds 7MF9412-1B.	M14	7MF9006-6LA	M14: For 2-spindle valve manifold DN 5
and -1C.			 M17: For 3-spindle valve manifold DN 5
• for valve manifold 7MF9412-1D.	M17	7MF9006-6NA	 M18: For 5-spindle valve manifold DN 5
• for valve manifold 7MF9412-1E.	M18	7MF9006-6PA	Mounting clips (2 off)
Mounting clip	MIC		• M16: For securing the mounting brackets M14, M17 and M18
2 off, to secure mounting bracket to pipe	M16	7MF9006-6KA	to pipe
Valve manifold 100 bar			Valve manifold 100 bar, suitable for oxygen
Oil- and grease-free cleaning for			S12: For 2-spindle valve manifold DN 5
oxygen applications, max. pressure PN 100 (1450 psi) and max. temper- ature 60 °C (140 °F)			 S13: For 3-spindle valve manifold DN 5 S14: For 5-spindle valve manifold DN 5
• for valve manifolds 7MF9412-1B. and -1C.	S12		Characteristic curves
• for valve manifold 7MF9412-1D.	S13		har
• for valve manifold 7MF9412-1E.	S14		420 bar (6092 psi) at 120 °C
NACE MR-0175-certified	D07		350 bar (5076 psi) at 200 °C
incl. acceptance test certificate 3.1 to EN 10204			a 300 b (392 °F) t 200
 When ordering accessory set or moun manifolds, please use Order code; oth 	ting together with	n the valve r No.	

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

Flange connections with M10 screws only permissible up to PN 160 (2321 psi)!

Permissible operating pressure as a function of the permissible operating temperature

0 100 200 300 400 °C Operating temperature

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: ¼-18 NPT

Valve design: external spindle thread

2-spindle valve manifold DN 5 (7MF9412-1C..), dimensions in mm



A Process connection: 1/2-14 NPT

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

3-spindle valve manifold DN 5 (7MF9412-1D..), 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

5-spindle valve manifold DN 5 (7MF9412-1E..), dimensions in mm

2-, 3- and 5-spindle valve manifolds



Mounting bracket (7MF9006-6LA)/(M14) for 2-spindle valve manifolds, dimensions in $\rm mm$



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 ${\rm mm}$

Schematics



2-spindle valve manifold DN 5 (with rotating sleeve $G \ensuremath{\mathscr{V}}_2$ or flange connection), connections



3-spindle valve manifold DN 5, connections



5-spindle valve manifold DN 5, connections

3- and 5-spindle valve manifolds for vertical angular differential pressure lines

Overview



These 3-spindle and 5-spindle valve manifolds 7MF9413-1.. were developed specially for vertical differential pressure lines.

The valve manifolds are used to shut off the differential pressure lines and to check the pressure transmitter zero.

The 5-spindle valve manifold permits venting on the transmitter side and checking of the pressure transmitter characteristic.

Benefits

- · For vertical differential pressure lines
- Max. operating pressure 420 bar (6092 psi)
- Transmitters of the DS series can be operated and read from the front.

Application

The 3-spindle and 5-spindle valve manifolds for vertical differential pressure lines are for liquids and gases. The valve manifolds are flanged on the pressure transmitter.

Design

All versions of the spindle valve manifolds have a process connection $1/\!\!_{2}\text{-14}$ NPT.

The connection for the pressure transmitter is always designed as a flange connection to IEC 61518, form B .

The 2-spindle and the 5-spindle valve manifold have in addition a vent and test connection $14\mathchar`-18$ 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 differenti	al	7 M F 9 4 1 3 - 🖉 A		
pressure lines for liquids and gases for flanging to pressure transmitters for lute and differential pressure Material: stainless steel, mat. No: 1.440 max. working pressure 420 bar (6092 p (order concernent) order code)				
without certificate				
• 3-spindle valve manifold		1 D		
 5-spindle valve manifold 		1 E		
Accessories				
Factory test certificate EN 10204-2.2		7MF9000-8AB		
Material acceptance test certificate EN 10204-3.1		7MF9000-8AD		
Selection and Ordering data	Order co	ode Order No.		
Further designs ¹⁾				
Please add "-Z" to Order No. and specify Order code.				
Accessory set to EN (connection between valve manifold and pressure transmitter)				
4x screws ⁷ / ₁₆ -20 UNF x 1% inch to ASME B18.2.1; chro- mized steel 2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)	K36	7MF9411-5DB		
Accessory set to DIN ²⁾				
(connection between valve manifold and pressure transmitter)				
4x screws M10x45 to DIN EN 24014; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F); Flange connection with M10 screws only permissible up to PN 160 (2321 psi).	7MF9411-6BB			
Mounting bracket				
required for wall mounting 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 for mounting on 2" stand- pipe , with bolts for mounting on valve manifold				
 for valve manifold 7MF9413-1D. 	M19	7MF9006-6QA		
Mounting clip				
2 off, to secure mounting bracket to pipe	M16	7MF9006-6KA		
Valve manifold 100 bar (1450 psi) suitable for oxygen				
• for valve manifold 7MF9413-1D. S13				
• for valve manifold 7MF9413-1E.				
NACE MR-0175-certified incl. acceptance test certificate 3.1 to EN 10204	D07			

¹⁾ When ordering accessory set or mounting together with the multiway cock, please use Order code; otherwise use Order No.

²⁾ Flange connections to DIN 19213 only permissible up to PN 160 (2321 psi)!

3- and 5-spindle valve manifolds for vertical angular differential pressure lines

Accessories

Accessory set (connection between manifold and transmitter)

- K36: 4 screws $^7\!/_{16}\text{-}20$ UNF x 134 inch to ASME B18.2.1, 2 flat gaskets
- K16: 4 screws M10x45 to DIN EN 24014, 4 washers, 2 flat gaskets

Washers Ø 10.5 to DIN 125

Flat gaskets made of PTFE, max. 420 bar (6092 psi), 80 $^{\circ}\mathrm{C}$ (176 $^{\circ}\mathrm{F})$

Note: Flange connection with M10 screws only permissible up to PN 160 (2321 psi)!

Mounting bracket for wall mounting or for securing to mounting rack

With bolts for mounting on valve manifold

- M17: For 3-spindle valve manifold
- M18: For 5-spindle valve manifold

Mounting bracket for mounting on 2" standpipe

- With bolts for mounting on valve manifold
- M19: For 3-spindle valve manifold

Mounting clips (2 off)

For securing the mounting brackets M17, M18 and M19 to pipe

Valve manifold 100 bar, suitable for oxygen

- For 3-spindle valve manifold
- For 5-spindle valve manifold

Characteristic curves



Permissible operating pressure as a function of the permissible operating temperature

Dimensional drawings



3-spindle valve manifold 7MF9413-1D. for vertical differential pressure lines, dimensions in mm



 $\ensuremath{\mathsf{5}}\xspace$ 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, dimensions in mm

3- and 5-spindle valve manifolds for vertical angular differential pressure lines



Mounting bracket (7MF9006-6QA)/(M19) for 3-spindle valve manifolds, dimensions in mm

Schematics



3-spindle valve manifold for vertical differential pressure lines, connections



5-spindle valve manifold for vertical differential pressure lines, connections

Pressure Measurement

Low-pressure multiway cock

Fitttings - Shut-off valves for differential pressure transmitters

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		Orde	r No.	
Low-pressure multiway cock for liquids and gases, for flanging to pressure transmitters, max. working pressure 25 bar (363 psi), max. working temperature 60 °C (140 °F) (up to 80 °C (176 °F) for a short time), weight 1.75 kg (without accessory set)				
Test connections		-		
2x sealing screws G ³ / ₈		7MF9	004-4CA	
2x quick-release couplings		7MF9004-4DA		
Accessories		-		
Test report to EN 10204-3.1		7MF9	000-8AB	
Material acceptance test certificate to EN 10204-3.1		7MF9	000-8AD	
Selection and Ordering data	Order co	ode	Order No.	
Further designs ¹⁾				
Please add " -Z " to Order No. and specify Order code.				
Accessory set to EN				
(required for flanging, weight 0.2 kg)				
4x screws ⁷ / ₁₆ -20 UNF x 1 inch to ASME B18.2.1; chromized steel 2x gaskets made of PTFE, max. permissible temperature 80 °C (176 °F)	L31		7MF9004-5CC	
Accessory set to DIN				
(required for flanging, weight 0.2 kg)				
4x screws M10x25 to DIN EN 24017; chromized steel 4x washers Ø 10.5 mm to DIN 125; 2x gaskets made of PTFE, max. permissible temperature 80 °C (176 °F)				
 Standard design 	L11		7MF9004-6AD	
 Version for oxygen 	L15		7MF9004-6AE	
Multiway cock in oil-free and				
grease-tree design BAM-tested lubricant, gasket suitable for oxygen	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.

Low-pressure multiway cock

Accessories

Accessory set for low-pressure multiway cock

- L31: 4 screws ⁷/₁₆-20 UNF x 1 inch, 2 flat gaskets
- L11: 4 screws M10x25 to DIN EN 24017, 4 washers, 2 flat gaskets
- L15 (suitable for oxygen): 4 screws M10x25 to DIN EN 24017. 4 washers, 2 flat gaskets

Washers Ø 10.5 to DIN 125

Flat gaskets made of PTFE, max. permissible temperature 80 °C (176°F)

Multiway cock in oil-free and grease-free design

• S11: BAM-tested lubricant, gasket suitable for oxygen

Mounting brackets

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

Options

- Test connections
- 2 sealing screws G³/₈
- 2 quick-release couplings

Characteristic curves



Low-pressure multiway cock, permissible operating pressure as a function of the permissible operating temperature

Dimensional drawings



3 and 4 Transmitter connections (EN 61518, form A)

5 and 6 Text connections (with sealing screws G3/8 or with quick-release couplings

Low-pressure multiway cock 7MF9004-4CA/-4DA for direct flanging to pressure transmitters for differential pressure, dimensions in mm



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

Pressure Measurement Fittings - Accessories

Overview



The oval flange 7MF9408-2C. for pressure transmitters for absolute pressure and differential pressure has a 1/2-14 NPT female thread and is designed for max. operating pressure 400 bar (5800 psi).

Accessories

Accessory set for oval flange

- E36: 2 screws ⁷/₁₆-20 UNF x 1½ inch to ASME B18.2.1, 1 flat gasket
- 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 (6092 psi), 80 °Č (176 °F)

O-ring to DIN 3771, 20 x 2.65 - S - FPM90, max. 420 bar (6092 psi), 120 °C (248 °F)

Note: M10 screws only permissible up to PN 160 (2321 psi)!

			Oval flange
Selection and Ordering data		Orde	r No.
Oval flange with female thread ½-14 NPT, max. wor pressure 420 bar (6092 psi), flange con tion to IEC 61518, form A	king nnec-		
Material			
P250GH, mat. No.: 1.0460		7MF9408-2CE	
X 2 CrNiMo 17 13 2, mat. No. 1.4404/316L		7MF9	408-2CL
Selection and Ordering data	Order co	ode	Order No.
Further designs ¹⁾			
Please add "-Z" to Order No. and specify Order code.			
Accessory set to EN			
2x screws ⁷ / ₁₆ -20 UNF x 1½ inch to ASME B 18.2.3; chro- mized steel 1x flat gasket made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)	E36		7MF9408-5DA

1x flat gasket made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)		
2x screws ⁷ / ₁₆ -20 UNF x 1½ inch to ASME B 18.2.3; chro- mized steel 1x O-ring to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F)	E34	7MF9408-5CA
Accessory set to DIN		
2x screws M10x40 to DIN EN ISO 4762; chromized steel 2x washers Ø 10.5 mm to DIN 125; 1x O-ring to DIN 3771, 20 x 2.65 - S - FPM90, max. permissble 420 bar (6092 psi), 120 °C (248 °F) ²⁾	E13	7MF9408-6AA
2x screws M10x40 to DIN EN ISO 4762; chromized steel 2x washers Ø 10.5 mm to DIN 125; 1x flat gasket made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F) ²⁾	E16	7MF9408-6BA
NACE MR-0175-certified	D07	

incl. acceptance test certificate 3.1

to EN 10204

¹⁾ When ordering accessory set together with the oval flange, please use Order code; otherwise use Order No.

²⁾ Flange connections with M10 screws only permissible up to PN 160 (2321 psi)

Dimensional drawings



Oval flange 7MF9408-2C., dimensions in mm

Adapters

Overview

Adapters enable e.g. a transition from medium connections with NPT thread to shut-off valves to DIN 16270 ... 16272 or pipes in conjunction with a connection gland (e.g. 7MF9008).

Desian

The connection pieces are made of X 6 CrNiMoTi 17 12 2, mat. No. 1.4571 and available in 3 versions

- Thread ½-14 NPT and connection shank G½ to DIN EN 837-1
- Thread 1/2-14 NPT and thread 1/2-14 NPT

Selection and Ordering data	Order No.
Adapter	
(weight 0.2 kg)	
with thread 1/4-18 NPT – $G1/_2$	7MF9001-1AA
with thread $^{1\!\!/_2}\text{-}14$ NPT – $G^{1\!\!/_2}$	7MF9001-1CA
with thread 1/2-14 NPT - 1/2-14 NPT	7MF9001-1DA
with thread 1/2-14 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 1/2-14 NPT and connection shank G1/2 (7MF9001-1CA), dimensions in mm



Connection piece with thread $\frac{1}{2}\text{-}14$ NPT and thread $\frac{1}{2}\text{-}14$ NPT (7MF9001-1DA), dimensions in mm



Connection piece with thread $\frac{1}{2}$ -14 NPT and connection shank M20 x 1.5 (7MF9001-1EA), dimensions in mm



Connection piece with pipe union with ferrule 12 S, \varnothing 12 mm and thread $\rlap{le}{2}\mbox{-14}$ NPT (7MF9008-1CA and -1CB), dimensions in mm



Connection piece with pipe union with ferrule 14 S, Ø 14 mm and thread $\rlap{le}{2-14}$ NPT (7MF9008-1CC and -1CD), dimensions in mm

1

Overview

Connection glands to connect medium or differential pressure lines to collars $G^{1\!/_2}$ to DIN EN 837-1

- For rated pressures up to PN 630 (9137psi)
- For oxygen only up to PN 250 (3626 psi)

Selection and Ordering) data	Order No.
Connection screwed gl for pipelines (weight 0.2 kg)	and	
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

1

Connection parts G 1/2

Overview

Connection parts G1/2 for pressure gauges and shut-off fittings are available in 3 versions:

- Nipple connection
- Clamping sleeve
- Collar connection piece

Selection and Ordering data Order No. Adapters G¹/₂ for pressure gauges and shut-off fittings Nipple connection G1/2 to DIN 16284 (union nut with nipple and gasket); max. working pressure 400 bar (5802 psi); weight 0.1 kg; connection: G½ to DIN EN 837-1; Female thread G1/2 Material Mat. No. M56340-A0001 CuZn39Pb3 CW 614N

Union nut 9 SMn 28 k Nipple: RSt 37-2	1.0715 1.0037	M56340-A0002
Union nut X 8 CrNiS 18 9 Nipple: X 6 CrNiMoTi 17 12 2	1.4305 1.4571/316Ti	M56340-A0003

Nipple connection

M20 x 1.5 to DIN 16284 (union nut with nipple and gasket); max. working pressure 400 bar (5802 psi); weight 0.1 kg; connection: G¹/₂ to DIN EN 837-1; Female thread G1/2

Material Mat. No. Union nut X 8 CrNiS 18 9 1.4305 Nipple: X 6 CrNiMoTi 17 12 2 1.4571/316Ti

Clamping sleeve

G1/2 to DIN 16283; max. working pressure 400 bar (5802 psi); weight 0.1 kg; Connections: G1/2 to DIN EN 837-1; Female thread: G1/2 right-hand G1/2 left-hand

Material	Mat. No.	
CuZn39Pb3	CW614N	M56340-A0004
9 SMn 28 k	1.0715	M56340-A0005

M56340-A0008

Collar-adapter

max. working pressure; weight 0.1 kg; Connections: G1/2 to DIN EN 837-1; Male thread: G1/2, G1/2

Material	Mat. No.	
CuZn39Pb3	CW614N	M56340-A0006
9 SMn 28 k	1.0715	M56340-A0007

Dimensional drawings



Nipple connection G¹/₂ (M56340-A0001 to -A0003), dimensions in mm



Nipple connection M20 x 1,5 (M56340-A0008), dimensions in mm



Clamping sleeve (M56340-A0004/-A0005), dimensions in mm



Collar connection piece (M56340-A0006/-A0007), dimensions in mm

Water traps, Sealing rings to EN 837-1

Overview

The sealing rings to EN 837-1 are required to seal measuring instruments for pressure with the process connection $G^{1/2}B$.

Dimensional drawings



Sealing ring	7MF9007-7A.	to EN 837-1,	dimensions	in mm
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Selection and Ordering data	Order No.
Sealing ring to EN 837-1 for thread G ¹ / ₂ made of (packing unit 100 pcs)	
• Copper	7MF9007-7AA
Soft iron	7MF9007-7AB
Stainless steel, matNo. 1.4571	7MF9007-7AC
• PTFE	7MF9007-7AD
Accessories	
Test report to EN 10204-3.1	7MF9000-8AB
Material acceptance test certificate to EN 10204-3.1	7MF9000-8AD

Water traps protect pressure gauges and shut-off fittings from heating up (e.g. by steam) by the water column produced by the

The max. working temperature is 120 °C (248 °F) at 100 bar (1450 psi), 300 °C (572 °F) at 80 bar (1160 psi) or 400 °C (752 °F) at 63 bar (914 psi). If the temperature of the measured medium is higher, a sufficiently long line has to be connected upstream of the trap to enable heat dissipation.

Design

Overview

water trap.

The water traps are available in U shape (type B) or circular shape (type D) to DIN 16282. They have a weld-on end \emptyset 20 mm × 2.6 mm on the measurement side. The connection on the device side is a clamping sleeve G¹/₂ to DIN 16283.

The water traps are made of steel (P250GH) or stainless steel (X 6 CrNiMoTi 17 12 2)

Water traps are designed as standard for max. operating temperature 120 °C (248 °F) at max. operating pressure 100 bar (1450 psi) (300 °C (572 °F) at 80 bar (1160 psi), 400 °C (752 °F) at 63 bar (914 psi). Water traps for higher operating pressures and temperatures are available on request.

Selection and Orderi	Order No.	
Water traps for pressure gauges a ters, max. working term (248 °F), max. working (1450 psi) (or 300 °C ((1160 psi), or 400 °C ((914 psi)), weight 0.7 l		
Water trap B to DIN 1	6282	-
Material	Mat. No.	
P235GH	1.0345	M56340-A0043
X 6 CrNiMoTi 17 12 2	1.4571/316Ti	M56340-A0061
Water trap D to DIN 1	6282	-
Material	Mat. No.	
P235GH	1.0345	M56340-A0045
X 6 CrNiMoTi 17 12 2	1.4571/316Ti	M56340-A0063

Dimensional drawings



Water traps, type B, M56340-A0043/-A0061, dimensions in mm



Water traps, type D, M56340-A0045/-A0063, dimensions in mm

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	Selection and Ordering data Order No.						
Pressure sur Weight appro	r ge reducer x. 0.21 kg						
Material	Full-scale value	Weight approx. in kg					
Brass	250 bar (3626 psi)	0.21	M56340-A54				
Stainless steel	600 bar (8702 psi)	0.21	M56340-A59				

Dimensional drawings



Pressure surge reducer, dimensions in mm

1

Primary shut-off valves

Dimensional drawings

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

Overview

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



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

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.

Selection and Ordering data

0010011011 4114 010	ioning aa						
Primary shut-off	valves, wi	thout certificate					
Max. working pressure	Charac- teristic ¹⁾	Material	Mat. No.	Spindle thread	Connections	Approx. weight kg	Order No.
Shut-off valve for	non-aggi	ressive liquids, gases	and vapo	ors			7 M F 9 0 1 7 - 1 🗖 A
160 bar (2321 psi)	А	P250GH	1.0460	Internal	Threaded socket G½ form R, DIN 19207	0.8	Α
160 bar (2321 psi)	A	P250GH	1.0460	Internal	Threaded socket G $\frac{1}{2}$ form R, DIN 19207 DIN 19207 and pipe union with ferrule for pipe Ø 12 mm, S series	0.8	В
400 bar (5800 psi)	С	P250GH	1.0460	Internal	Pipe union with ferrule for pipe \emptyset 12 mm, S series	1	С
400 bar (5800 psi)	С	P250GH	1.0460	Internal	Pipe union with ferrule for pipe \emptyset 14 mm, S series	1	D
500 bar (7252 psi)	D	16 Mo 3	1.5415	External	Welding sleeves \varnothing 14 mm $ imes$ 2.5 mm	1.6	F
500 bar (7252 psi)	E	11 CrMo 9 10	1.7383	External	Welding sleeves \varnothing 14 mm $ imes$ 2.5 mm	1.6	G
500 bar (7252 psi)	D	16 Mo 3	1.5415	External	Welding sleeves Ø 21.3 mm \times 6.3 mm and Ø 14 mm \times 2.5 mm	1.6	н
500 bar (7252 psi)	D	16 Mo 3	1.5415	External	Welding sleeves Ø 24 mm \times 7.1 mm and Ø 14 mm \times 2.5 mm	1.6	J
500 bar (7252 psi)	E	11 CrMo 9 10	1.7383	External	Welding sleeves Ø 24 mm \times 7.1 mm and Ø 14 mm \times 2.5 mm	1.6	к
Shut-off valve for	aggressi	ve liquids and gases					7 M F 9 0 1 7 - 2 A
160 bar (2321psi)	F	X 6 CrNiMoTi 17 12 2	1.4571/ 316Ti	Internal	Threaded socket $G^{1/2}$ form R, DIN 19207 DIN 19207 and pipe union with ferrule for pipe Ø 12 mm, S series	0.8	В
400 bar (5800 psi)	G	X 6 CrNiMoTi 17 12 2	1.4571/ 316Ti	Internal	Pipe union with ferrule for pipe \emptyset 12 mm, S series	1	С
400 bar (5800 psi)	Н	X 6 CrNiMoTi 17 12 2	1.4571/ 316Ti	External	Welding sleeves Ø 21.3 mm \times 6.3 mm and Ø 14 mm \times 2.5 mm	1.6	н
400 bar (5800 psi)	Н	X 6 CrNiMoTi 17 12 2	1.4571/ 316Ti	External	Welding sleeves Ø 24 mm \times 7.1 mm and Ø 14 mm \times 2.5 mm	1.6	J
Accessories							
E 1 1 1 1 100							

Factory test certificate EN 10204-2.2

Material acceptance test certificate EN 10204-3.1

¹⁾ See Figure "Permissible working pressure as a function of the permissible working temperature"

7MF9000-8AB 7MF9000-8AD

Compensation vessels

Overview

The compensation vessels prevent the level difference which occurs with pressure changes in the pressure lines and which falsifies the measurement.

According to DIN 19211, the temperature in the compensation vessel must be assumed to be 50 K less than the steam temperature in the pipe when calculating the wall thicknesses. This is because the temperature in the compensation vessel during operation can only rise up to the saturated steam temperature.

A material acceptance test certificate A to EN 10204-3.1 is available for the materials from which the compensation vessels are made.

Characteristic curves



Permissible operating pressure as a function of the permissible operating temperature

Selection and Ord	ering data	3						
Compensation ves	ssel, witho	out certificate						
Max.	Charac-	Material	Mat. No.	Connections		Approx.	Approx.	Order No.
working pressure	teristic 1)			Input	Output	contents cm ³	weight kg	
								7 M F 9 0 1 5 - 🔳 A
160 bar (2321 psi)	А	16 Mo 3	1.5415	Threaded socket G½, form R, DIN 19207	Threaded socket G½, form V, DIN 19207	250	0.8	1 A
250 bar (3626 psi)	В	16 Mo 3	1.5415	Welding sleeve Ø 21.3 mm × 6.3 mm	Welding sleeve \emptyset 21.3 mm × 6.3 mm	250	0.8	1 B
250 bar (3626 psi)	В	16 Mo 3	1.5415	Welding sleeve Ø 24 mm × 7.1 mm	Welding sleeve \emptyset 24 mm × 7.1 mm	250	1	1 C
250 bar (3626 psi)	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 (3626 psi)	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 (2321 psi)	А	16 Mo 3	1.5415	Threaded socket G½, form R, DIN 19207	Threaded socket G½, form V, DIN 19207	20	1.6	5 A
500 bar (7252 psi)	D	16 Mo 3	1.5415	Welding sleeve Ø 21.3 mm × 6.3 mm	Welding sleeve \emptyset 21.3 mm × 6.3 mm	20	1.6	5 B
500 bar (7252 psi)	D	16 Mo 3	1.5415	Welding sleeve Ø 24 mm × 7.1 mm	Welding sleeve Ø 24 mm × 7.1 mm	20	1.6	5 C
500 bar (7252 psi)	E	11 CrMo 9 10	1.7383	Welding sleeve \emptyset 24 mm \times 7.1 mm	Welding sleeve \emptyset 24 mm × 7.1 mm	20	1.6	5 D

Accessories

Factory test certificate EN 10204-2.2

Material acceptance test certificate EN 10204-3.1

¹⁾ See Figure "Permissible working pressure as a function of the permissible working temperature"



Dimensional drawings

Input (see Ordering data for dimensions)

O Output (see Ordering data for dimensions)

Compensation vessel 7MF9015-1.., dimensions in mm



I Input (see Ordering data for dimensions) O Output (see Ordering data for dimensions) ¹⁾ 30 mm longer with 7MF9015-5A.

Compensation vessel 7MF9015-5.., dimensions in mm

7MF9000-8AB 7MF9000-8AD

Overview

Connection parts are available in the following versions:

- Threaded flange pair $G^{1\!\!/_2}$ with stainless steel gasket
- Nipple G1/2 form V to DIN 19207
- Union nut G1/2 made of C 35 to DIN 16284
- Gasket B1/2 (grooved) to DIN 19207

All connection parts are also available grease-free for oxygen.

Selection and Ordering data	Order No
Threaded flange pair G ¹ / ₂	
with stainless steel gasket	7MF9007-4CA
• grease-free for oxygen, with stainless steel gasket	7MF9007-4DA
Scope of delivery:	
2x threaded flanges $G^{1\!\!/_2}$ to DIN 19207; material: P250GH (mat. No. 1.0460)	
4x hexagon screws M10x45 to DIN EN 24014; Material: C35E (mat. No. 1.1181)	
4x hexagon screws M10x50 to DIN EN 24032	
1x gasket G½ (7MF9007-6BA) grooved, to DIN 19207; Material: X 6 CrNiMoTi 17 12 2 (mat. No. 14571/316Ti)	
Only for 7MF9007-4CA!	
1x gasket G ¹ / ₂ (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 G ¹ / ₂	
to DIN 19207	
• Material: 16 Mo 3 (mat. No. 1.5415)	7MF9007-4KA
• grease-free for oxygen, Material: X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)	7MF9007-4LA
Union nut G ¹ / ₂	
to DIN 16284	
• Material: C35E (mat. No. 1.1181)	7MF9007-4MA
• grease-free for oxygen, Material: X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)	7MF9007-4NA
Gasket G½	
to DIN 19207, grooved	
 Material: X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti) 	7MF9007-6BA
• grease-free for oxygen, Material: X 6 CrNiMoTi 17 12 2 (mat. No. 1.4571/316Ti)	7MF9007-6CA

Dimensional drawings



Threaded flange 7MF9007-4CA/-4DA, dimensions in mm



Nipple G1/2 7MF9007-4KA/-4LA, dimensions in mm



Union nut G1/2 7MF9007-4MA/-4NA, dimensions in mm



Gasket 7MF9007-6BA/-6CA, dimensions in mm

1