Pressure Measurement

Product overview

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

Pressure Measurement Product overview

	Application	Description		Software for parameterization
ITRANS P · Transmitters for	basic requirements			
NEW NEW	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	2/4	-
Û.		SITRANS P210 • Single-range transmitters for gauge pressure • Stainless steal measuring cell • For low-pressure applications	2/10	-
		SITRANS P220 • Single-range transmitters for gauge pressure • Stainless steel measuring cell, fully welded • For high-pressure applications and refrigeration technology	2/15	-
	Two or three-wire transmitter for measuring differential pressure	SITRANS P250 Compact single-range transmitters Analog electronics Available ex stock	2/21	-
	Two-wire transmitter for mea- suring hydrostatic levels	SITRANS P MPS (submersible sensor) For measuring liquid levels in wells, tanks, channels, dams etc.	2/26	-
TRANS P · Transmitters for	pressure with WirelessHART con	nmunication		
Ŷ	Wireless transmitter with WirelessHART for measuring gauge and absolute pressure	SITRANS P280 Wireless communication with WirelessHART Battery power supply Parameterization with SIMATIC PDM via WirelessHART or local with HARTmodem and using local pushbuttons	2/31	SIMATIC PD
TRANS P · Transmitters for	food, pharmaceuticals and bioted	chnology		
The state	Two-wire transmitters for mea- suring gauge and absolute pressure	 SITRANS P300 Sanitary design according to EHEDG, FDA and GMP Parameterization over 3 buttons or communication over HART, PROFIBUS PA or FOUNDATION Fieldbus Standard process connection G½", ½-NPT and flush-mounted process connections available Turn down 100 : 1 	2/36	SIMATIC PD
		 Factory-mounting of valve manifolds on SITRANS P300 transmitters Simplified assembly With pressure test Stainless steel valve manifolds 	2/57	-
TRANS P · Transmitters for	gauge pressure for the paper ind	lustry		
	Two-wire transmitters for mea- suring gauge pressure	 SITRANS P DS III and SITRANS P300 with PMC connection Turn down 100 : 1 Process connections for the paper industry Parameter assignment over 3 buttons and HART, PROFIBUS PA or FOUNDATION Fieldbus 	2/59	SIMATIC PDI

Pressure Measurement Product overview

	Application	Description		Software for parameteriza- tion
SITRANS P · Transmitters for ge	neral requirements			
	Two-wire transmitters for measuring: • Gauge pressure, • Absolute pressure, • Differential pressure and • Flow or • Level	SITRANS P DS III Turn down: 100 : 1 Parameterization using: • 3 pushbuttons and HART for DS III series • 3 pushbuttons and PROFIBUS-PA for DS III PA series • 3 buttons and FOUNDATION Fieldbus for DS III FF series • Available ex stock	2/76	SIMATIC PDM SIMATIC PDM
		Factory mounting of valve manifolds on gauge, absolute or differential pressure transmitters SITRANS P DS III • Simplified assembly • With pressure test • Stainless steel valve manifolds	2/148	-
SITRANS P - Transmitters for Hi	gh 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	2/151	SIMATIC PDM
		Factory-mounting of manifolds on differential pres- sure transmitters SITRANS P500 • Simplified assembly • With pressure test • Stainless steel valve manifolds	2/175	
Remote seals for transmitters a	nd pressure gauges			
	Remote seals for measuring viscous, corrosive or fibrous media (as well as media at extreme temperatures)	Remote seals in pancake and flange designs Quick-release remote seals for the food industry Wide range of diaphragm materials and filling liquids available	2/178	-
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	2/217	-

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 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

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
nputs	
Measuring range	
Gauge pressure Metric	1 60 bor (15 970 poi)
- 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 ncl. hysteresis and reproducibility	 Typical: 0.25 % of full-scale value Maximum: 0.5 % of full-scale value
	lue
Step response time T ₉₉	< 5 ms
ong-term stability	
Lower range value and measuring span	0.25 % of full-scale value/year
nfluence 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 EN 175301-803-A IP 67 with M12 connector
	 IP 67 with wh2 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

Design	
Weight	Approx. 0.090 kg (0.198 lb)
Process connections	See dimensional 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)
	Cable quick screw connection
Wetted parts materials	
 Measuring cell 	Al ₂ O ₃ - 96 %
Process connection	Stainless steel, mat. No. 1.4404 (SST 316 L)
• Gasket	FPM (Standard)NeoprenePerbunanEPDM
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 liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)
Lloyds Register of Shipping (LR)	Applied
Germanischer Lloyds Register of Shipping (GL)	Applied
American Bureau of Shipping (ABS)	Applied
Bureau Veritas (BV)	Applied
Det Norske Veritas (DNV)	Applied
Drinking water approval (ACS)	Applied
GOST	Applied
Explosion protection	
Intrinsic safety "i" (only with current output)	Ex II 1/2 G Ex ia IIC T4 Ga/Gb Ex II 1/2 D Ex ia IIIC T125 °C Da/Db
EC type-examination certificate	SEV 10 ATEX 0146
Connection to certified intrinsically- safe resistive circuits with maxi- mum values:	$U_i \leq 30$ V DC; $I_i \leq 100$ mA; $P_i \leq 0.75$ W
Effective internal inductance and capacity for versions with plugs per EN 175301-803-A and M12	$L_i = 0 \text{ nH}; C_i = 0 \text{ nF}$

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SITRANS P200 for gauge and absolute pressure

SITRANS P20	00 pressure tran	smitters f	or pressure	and absol	ute pressure	for general a	pplications	D) 7MF1565-		
Characteristic	c curve deviation	typ. 0.25 °	%			-				
Wetted parts	materials: Cerami	ic and stai	nless steel +	sealing ma	aterial					
Non-wetted p	arts materials: sta	ainless ste	el							
Measuring ra	nge	Overloa	d limit			Burst press	sure			
		Min.		Max.		_				
For gauge pr	ASSIIRA							_		
0 1 bar		0.4 hor	(5 0 moi)	0.5 hor	(20, 20, 20)	. 0 E hor	(> 36.3 psi)			
0 1 bar 0 1.6 bar	(0 14.5 psi)	-0.4 bar -0.4 bar	(-5.8 psi) (-5.8 psi)	2.5 bar 4 bar	(36.26 psi) (58.02 psi)	> 2,5 bar > 4 bar	(> 36.3 psi) (> 58.0 psi)		3 B A 3 B B	
0 1.6 bar 0 2.5 bar	(0 23.2 psi)		,	6.25 bar	(90.65 psi)	> 6,25 bar	(> 90.7 psi)			
	(0 36.3 psi)	-0.8 bar	(-11.6 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	(0 363 psi)	-1 bar	(-14.5 psi)	62.5 bar	(906 psi)	> 62,5 bar	(> 906 psi)		3 C D	
0 40 bar	(0 580 psi)	-1 bar	(-14.5 psi)	100 bar	(1450 psi)	> 100 bar	(> 1450 psi)		3 C E	
0 60 bar	(0 870 psi)	-1 bar	(-14.5 psi)	150 bar	(2175 psi)	> 150 bar	(> 2175 psi)		3 C G	
Other version	, add order code	and plain	text: Measuri	ing range:	up to bar	(psi)			9 A A	н
For absolute	pressure									
	(0 8.7 psia)	0 bar a	(0 psia)	3 bar a	(43.51 psia)	> 2,5 bar a	(> 36.3 psia)		5 A G	
0 1 bar a	(0 14.5 psia)	0 bar a	(0 psia)	2.5 bar a	(36.26 psia)	> 2,5 bar a	(> 36.3 psia)		5 B A	
0 1.6 bar a	(0 23.2 psia)	0 bar a	(0 psia)		(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)		a (90.65 psia)		(> 90.7 psia)		5 B D	
0 4 bar a		0 bar a			· · · /	> 10 bar a			5 B E	
	(0 58.0 psia)		(0 psia)		(145 psia)		(> 145 psia)			
0 6 bar a	(0 87.0 psia)	0 bar a	(0 psia)		(217 psia)	> 15 bar a	(> 217 psia)		5 B G	
0 10 bar a	(0 145 psi)	0 bar a	(0 psia)		(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	ar a (psia)			9 A A	н
Measuring ra	nges for gauge	pressure		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)		(140 psi) (200 psi)		(> 200 psi)		4 B G	
	(0 150 psi)		(-14.5 psi)		(200 psi) (350 psi)		(> 350 psi)		4 C A	
	(0 200 psi)		(-14.5 psi) (-14.5 psi)		(550 psi) (550 psi)		(> 550 psi)		4 C B	
	(0 300 psi)		(-14.5 psi)		(800 psi)		(> 800 psi)		4 C D	
	(0 500 psi)		(-14.5 psi)		(1400 psi)		(> 1400 psi)		4 C E	
	(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	н
Measuring ra	nges for absolu	te pressu		JS market)	•					
	(0 10 psia)		(0 psia)		(35 psia)		(> 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) (0 psia)		(550 psia)		(> 550 psia)		6 C B	
	(0 300 psia)		(0 psia) (0 psia)		(800 psia)		(> 800 psia)		6 C C	

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Pressure Measurement Transmitters for basic requirements SITRANS P200 for gauge and absolute pressure

Selection and Ordering data	Order No.	Ord	der code
SITRANS P200 pressure transmitters for pressure and absolute pressure for general applications Accuracy typ. 0.25 % Wetted parts materials: Ceramic and stainless steel + sealing material Non-wetted parts materials: stainless steel	D) 7MF1565-		
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 With explosion protection EEx ia IIC T4		0 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") 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		1 2 0 3 0 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	
1/4"-18 NPT male (standard for pressure ranges inH ₂ O and psi) 1/4"-18 NPT female 1/2"-14 NPT male 1/2"-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	
Version			
Standard version			1
Further designs			
Supplement the order no. with "-Z" and add order code.			
Manufacturer's test certificate M per DIN 55340, Part 18 and ISO 8402 (calibration certificate) supplied	C11		
Oxygen application, oil and grease-free cleaning (only in conjunction with the sealing material Viton between sensor and enclosure) D) Subject to export regulations AL: N, ECCN: EAR99H.	E10		

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

SITRANS P200 for gauge and absolute pressure

Dimensional drawings



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



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

1/2"-18 NPT

23

🖎 max. 20 Nm

1/2"-14 NPT

🗞 max. 20 Nm

30

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 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 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 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.

Pressure Measurement Transmitters for basic requirements SITRANS P210 for gauge pressure

ApplicationLiquids, gases and vaporsMode of operationPiezoresistive measuring cell (stainless steel diaphragm)Measuring principlePiezoresistive measuring cell (stainless steel diaphragm)Measured variableGauge pressureInputsGauge pressureMeasuring range $00 \dots 600 \text{ mbar}$ $(1.5 \dots 8.7 \text{ psi})$ OutputCurrent signalLoad $U_B - 10 V$) / 0.02 AAuxiliary power U_BDC 7 33 V (10 30 V for Ex)Voltage signal $0 10 V DC$ Load $2 10 k\Omega$ Auxiliary power U_B12 33 V DCPower consumption< 7 mA at 10 k\OmegaCharacteristic curveLinear risingMeasuring accuracy incl. hysteresis and reproducibility• Typical: 0.25 % of full-scale valueNong-term stability0.25 % of full-scale value for a measurement at limit setting spanInfluence of ambient temperature span0.25 %/10 K of full-scale value for a measuring range 100 400 mbarInfluence of power supply0.005 %/VConditions of use Process temperature with gasket made of:-15 +125 °C (+5 +257 °F) -30 +100 °C (-31 +212 °F) -20 +100 °C (-41 +212 °F) -20 +100 °C (-41 +212 °F) -20 +100 °C (-58 +257 °F) -30 +100 °C (-58 +257 °F) -30 +185 °C (-13 +185 °F) -20 +100 °C (-58 +257 °F) -30 +100 °C (-51 +257 °F) -30 +	Technical specifications	
Automatical constraintsLiquids, gases and vaporsMode of operationPiezoresistive measuring cell (stainless steel diaphragm)Measuring principlePiezoresistive measuring cell (stainless steel diaphragm)Measured variableGauge pressureInputsGauge pressureMeasuring range100 600 mbar ($1.5 8.7 psi$)OutputCurrent signal4 20 mALoad(UB - 10 V) / 0.02 AAuxiliary power UB LoadDC 7 33 V (10 30 V for Ex)Voltage signal0 10 V DCLoad2 33 V DCPower consumption< 7 mA at 10 kQ		
Measuring principlePiezoresistive measuring cell (stainless steel diaphragm)Measured variableGauge pressureInputsGauge pressure() Gauge pressure $100 \dots 600 \text{ mbar}$ $(1.5 \dots 8.7 \text{ psi})$ Output $100 \dots 600 \text{ mbar}$ $(1.5 \dots 8.7 \text{ psi})$ Output $4 \dots 20 \text{ mA}$ Current signal $4 \dots 20 \text{ mA}$ () Load $(U_B - 10 \text{ V}) / 0.02 \text{ A}$ $Auxiliary power U_B$ $DC 7 \dots 33 \text{ V} (10 \dots 30 \text{ V for Ex})$ O Load $2 10 \text{ k}\Omega$ $Auxiliary power U_B$ $12 \dots 33 \text{ V DC}$ $Power consumption$ $< 7 \text{ mA at 10 k}\Omega$ Characteristic curveLinear risingMeasuring accuracy $\cdot 15 \dots + 25 \%$ of full-scaleError in measurement at limit setting span $\cdot 15 \dots + 25 \%$ of full-scale value $\cdot Lower range value and measuringspan0.25 \% /10 \text{ K of full-scale value}\cdot Lower range value and measuringspan0.25 \% /10 \text{ K of full-scale value}\cdot Influence of ambient temperaturespan0.05 \% /10 \text{ K of full-scale value}\cdot Influence of power supply0.005 \% /VConditions of useProcess temperature with gasketmade of:-15 \dots + 125 \degree (-13 \dots + 212 \degree F)\cdot FPM (Standard)-15 \dots + 100 \degree (-3 \dots + 212 \degree F)\cdot Perbunan-25 \dots + 85 \degree (-13 \dots + 125 \degree F)\cdot Storage temperatureStorage temperature-25 \dots + 100 \degree C (-31 \dots + 212 \degree F)\cdot Perbuna-10 \degree C (-3 \dots + 212 \degree F)\cdot Perbuna-10 \degree C (-63 \dots + 212 \degree F)\cdot Perbuna-10 \degree C (-63 \dots + 212 \degree F)\cdot $	Gauge measurement	Liquids, gases and vapors
Measured variable(stainless steel diaphragm)Measuring rangeGauge pressure• Gauge pressure100 600 mbar (1.5 8.7 psi)OutputUnueCurrent signal4 20 mA• Load(U _B - 10 V) / 0.02 A• Auxiliary power U _B DC 7 33 V (10 30 V for Ex)Voltage signal0 10 V DC• Load $2 \ln k\Omega$ • Auxiliary power U _B 12 33 V DC• Power consumption< 7 mA at 10 kΩ	Mode of operation	
InputsMeasuring range• Gauge pressure100 600 mbar $(1.5 8.7 psi)$ OutputCurrent signal• Load• Load• Auxiliary power UB • Voltage signal0 10 V DC• Load• Auxiliary power UB • Power consumption• T m Aat 10 kQCharacteristic curveCharacteristic curveError in measurement at limit setting incl. hysteresis and reproducibility• Typical: 0.25 % of full-scale value• Lower range value and measuring spanInfluence of ambient temperature• Lower range value and measuring span• Influence of power supply• O.05 %/10 K of full-scale value for a measuring range 100 400 mbar• Influence of power supply• Neoprene• FPM (Standard)• FPM (Standard)• FPM (Standard)• Storage temperature • Storage temperature• Degree of protection (to EN 60529)• IP 67 with cable • IP 67 with cable quick screw connection• Electromagnetic compatibility• Cac. EN 61326-1/-2/-3 • acc. NAMUR NE21, only for ATEX versions and with a max.	Measuring principle	
Measuring range100 600 mbar $(1.5 8.7 psi)$ Output 20 mACurrent signal4 20 mALoad(U _B - 10 V) / 0.02 AAuxiliary power U _B DC 7 33 V (10 30 V for Ex)Voltage signal0 10 V DCLoad $\geq 10 k\Omega$ Auxiliary power U _B 12 33 V DCPower consumption< 7 mA at 10 kΩ	Measured variable	Gauge pressure
• Gauge pressure100 600 mbar $(1.5 8.7 psi)$ Output 20 mACurrent signal4 20 mALoad $(U_B - 10 V) / 0.02 A$ Auxiliary power U_B DC 7 33 V (10 30 V for Ex)Voltage signal0 10 V DCLoad $\geq 10 k\Omega$ Auxiliary power U_B 12 33 V DCPower consumption< 7 mA at 10 k\Omega	Inputs	
(1.5 8.7 psi)OutputCurrent signal4 20 mALoad $(U_B - 10 V) / 0.02 A$ Auxiliary power U_B DC 7 33 V (10 30 V for Ex)Voltage signal0 10 V DCLoad $\geq 10 k\Omega$ Auxiliary power U_B 12 33 V DCPower consumption< 7 mA at 10 k\Omega	Measuring range	
Current signal4 20 mA $0 Load$ $(U_B - 10 V) / 0.02 A$ $0 Auxiliary power U_B$ $DC 7 33 V (10 30 V for Ex)$ $Voltage signal$ $0 10 V DC$ $0 Load$ $\geq 10 k\Omega$ $0 Auxiliary power U_B$ $12 33 V DC$ $0 Power consumption$ $< 7 mA at 10 k\Omega$ Characteristic curveLinear rising Measuring accuracy $\cdot Typical: 0.25 \% of full-scale valueFror in measurement at limit settingincl. hysteresis and reproducibility\cdot Typical: 0.25 \% of full-scale value\cdot Lower range value and measuring span0.25 \% / 10 K of full-scale value0.25 \% / 10 K of full-scale value for a measuring range100 400 mbar0.25 \% / 10 K of full-scale value0.5 \% / 10 K of full-scale value0.5 \% / 10 K of full-scale value0.25 \% / 10 K of full-scale value0.5 \% / 10 K of full-scale value0.5 \% / 10 K of full-scale value for a measuring range100 400 mbar0.005 \% / VConditions of use-15 + 125 °C (+5 + 257 °F)Process temperature with gasketmade of:-15 + 100 °C (-31 + 212 °F)\bullet Perbunan-20 + 100 °C (-41 + 212 °F)\bullet Perbunan-25 + 85 °C (-13 + 185 °F)\bullet Storage temperature-25 + 85 °C (-13 + 185 °F)\bullet Storage temperature-15 + 100 °C (-58 + 212 °F)Perce of protection (to EN 60529)PI e67 with cablePI = 67 wit$	Gauge pressure	
Load $(U_B - 10 V) / 0.02 A$ Auxiliary power U_B DC 7 33 V (10 30 V for Ex)Voltage signal0 10 V DCLoad $\geq 10 k\Omega$ Auxiliary power U_B 12 33 V DCPower consumption $< 7 mA$ at 10 k Ω Characteristic curveLinear risingMeasuring accuracy 10 V pical: 0.25 % of full-scale valueError in measurement at limit setting incl. hysteresis and reproducibility• Typical: 0.25 % of full-scale value valueMeasuring accuracy• Maximum: 0.5 % of full-scale value valueStep response time Tg9 span $< 5 ms$ Lower range value and measuring span0.25 %/10 K of full-scale value for a measuring range 100 400 mbarInfluence of power supply0.005 %/VConditions of use Process temperature with gasket made of: $-15 \dots + 125 ^{\circ}C (+5 \dots + 257 ^{\circ}F)$ • FPM (Standard) $-15 \dots + 125 ^{\circ}C (+5 \dots + 212 ^{\circ}F)$ • EPDM $-40 \dots + 145 ^{\circ}C (-41 \dots + 212 ^{\circ}F)$ • EPDM $-40 \dots + 145 ^{\circ}C (-13 \dots + 125 ^{\circ}F)$ Ambient temperature Degree of protection (to EN 60529) $-15 \dots + 100 ^{\circ}C (-58 \dots + 212 ^{\circ}F)$ • EPCM $-25 \dots + 85 ^{\circ}C (-13 \dots + 185 ^{\circ}F)$ • Electromagnetic compatibility $-16 ^{\circ}Nth Canble$ • IP 67 with Cable • IP 67 with cable $-1F 67 ^{\circ}Nth Cable$ • IP 67 with cable • IP 67 with cable $-1F 67 ^{\circ}Nth Cable$ • IP 67 with cable $-1F 67 ^{\circ}Nth Cable$ • IP 67 with cable $-1F 67 ^{\circ}Nth Cable$	Output	
Auxiliary power UBDC 7 33 V (10 30 V for Ex)Voltage signal0 10 V DCLoad \geq 10 k Ω Auxiliary power UB12 33 V DCPower consumption $<$ 7 mA at 10 k Ω Characteristic curveLinear risingMeasuring accuracy 10 V DCError in measurement at limit setting incl. hysteresis and reproducibility• Typical: 0.25 % of full-scale valueStep response time Tg9 span $<$ 5 msLower range value and measuring span0.25 % of full-scale value/year spanInfluence of ambient temperature• 0.25 %/10 K of full-scale value of a measuring range 100 400 mbarInfluence of power supply0.005 %/VConditions of use Process temperature with gasket made of:-15 +125 °C (+5 +257 °F) -35 +100 °C (-31 +212 °F)• FPM (Standard)-15 +125 °C (-40 +293 °F), usable for drinking water• Ambient temperature-20 +100 °C (-41 +212 °F)• EPDM-40 +145 °C (-40 +293 °F), usable for drinking waterAmbient temperature-25 +85 °C (-13 +185 °F)Storage temperature-50 +100 °C (-58 +212 °F)Degree of protection (to EN 60529)PIP 67 with Cable • IP 67 with Cable • IP 67 with Cable • IP 67 with Cable • IP 67 with CableElectromagnetic compatibility-acc. EN 61326-1/-2/-3 • acc. EN 61326-1/-2/-3 • acc. NAMUR NE21, only for ATEX versions and with a max.	Current signal	4 20 mA
Voltage signal $0 \dots 10 \vee DC$ \bullet Load $\geq 10 k\Omega$ \bullet Auxiliary power UB $12 \dots 33 \vee DC$ \bullet Power consumption $< 7 \text{ mA at 10 } k\Omega$ Characteristic curveLinear rising Measuring accuracy \bullet Typical: 0.25% of full-scale valueError in measurement at limit setting incl. hysteresis and reproducibility \bullet Typical: 0.25% of full-scale value valueMaximum: 0.5% of full-scale value value \bullet Axiliary power value valueLong-term stability 0.25% of full-scale value/year spanInfluence of ambient temperature $0.25 \%/10 \text{ K of full-scale value}for a measuring range100 \dots 400 \text{ mbar}Influence of power supply0.005 \%/VConditions of useProcess temperature\bullet Perbunan-15 \dots + 125 \degree C (+5 \dots + 257 \degree F)-35 \dots + 100 \degree C (-31 \dots + 212 \degree F)Perbunan-20 \dots + 100 \degree C (-4 \dots + 212 \degree F)\bullet Proteprene-35 \dots + 100 \degree C (-4 \dots + 212 \degree F)\bullet Protection (to EN 60529)-1965 \% th connector perEIN 175301-803-A\bullet IP 67 with cable\bullet IP 67 with cable quick screwconnection\bullet Degree of protection (to EN 60529)\bullet Ref with cable quick screwconnection\bullet Perture\bullet Process and \bullet Process and Process Process and \bullet Process and \bullet Process and Process Process and Process Pro$	• Load	(U _B - 10 V) / 0.02 A
• Load≥ 10 kΩ• Auxiliary power UB12 33 V DC• Power consumption< 7 mA at 10 kΩ	 Auxiliary power U_B 	DC 7 33 V (10 30 V for Ex)
Auxiliary power U_B 12 33 V DC• Power consumption< 7 mA at 10 k Ω Characteristic curveLinear risingMeasuring accuracy• Typical: 0.25 % of full-scale valueError in measurement at limit setting incl. hysteresis and reproducibility• Typical: 0.25 % of full-scale value • Maximum: 0.5 % of full-scale valueStep response time T_{99} Long-term stability• O.25 % of full-scale value/year • Days of full-scale value (0.25 %/10 K of full-scale value) • 0.25 %/10 K of full-scale value • 0.5 %/10 K of full-scale value • 0.25 %/10 K of full-scale value • 0.5 %/10 K of full-scale value • 0.25 %/10 K of full-scale v	Voltage signal	0 10 V DC
Power consumption< 7 mA at 10 kΩCharacteristic curveLinear risingMeasuring accuracyError in measurement at limit setting incl. hysteresis and reproducibility• Typical: 0.25 % of full-scale valueStep response time T_{99} Long-term stability• Maximum: 0.5 % of full-scale value value• Lower range value and measuring span0.25 % of full-scale value/year span• Lower range value and measuring span• 0.25 %/10 K of full-scale value for a measuring range 100 400 mbar• Influence of power supply0.005 %/VConditions of use Process temperature • EPDM-15 +125 °C (+5 +257 °F) • Neoprene • 20 +100 °C (-31 +212 °F) • 20 +100 °C (-4 +212 °F) • Storage temperatureAmbient temperature • EPDM-25 +85 °C (-13 +125 °F) • Storage temperature • Lipe 65 with connector per EN 175301-803-A • IP 67 with cable •	• Load	\geq 10 k Ω
Characteristic curveLinear risingMeasuring accuracyTypical: 0.25 % of full-scale valueError in measurement at limit setting incl. hysteresis and reproducibility• Typical: 0.25 % of full-scale value • Maximum: 0.5 % of full-scale value • Maximum: 0.5 % of full-scale value • Step response time T ₉₉ Long-term stability• Lower range value and measuring span• 0.25 % of full-scale value/year • 0.25 %/10 K of full-scale value for a measuring range 100 400 mbar• Influence of power supply• 0.005 %/VConditions of use Process temperature with gasket made of:• 15 + 125 °C (+5 + 257 °F) • Neoprene • 35 + 100 °C (-31 + 212 °F)• Perbunan • EPDM-20 + 100 °C (-4 + 221 °F) • 40 + 145 °C (-40 + 293 °F), usable for drinking waterAmbient temperature • Storage temperature-25 + 85 °C (-13 + 185 °F) • 50 + 100 °C (-58 + 212 °F)Degree of protection (to EN 60529)• IP 65 with connector per EN 175301-803-A • IP 67 with cable • IP 67 with cabl	 Auxiliary power U_B 	12 33 V DC
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 • Maximum: 0.5 % of full-scale value • Step response time T ₉₉ Long-term stability • Lower range value and measuring span Influence of ambient temperature • Lower range value and measuring span • Influence of power supply • O.25 %/10 K of full-scale value of a measuring range 100 400 mbar • Influence of power supply • O.005 %/V Conditions of use Process temperature with gasket made of: • FPM (Standard) • FPM (Standard) • EPDM • EPDM Ambient temperature • Storage temperature • Degree of protection (to EN 60529) • IP 65 with connector per EN 175301-803-A • IP 67 with cable • IP 67	 Power consumption 	< 7 mA at 10 k Ω
Error in measurement at limit setting incl. hysteresis and reproducibilityTypical: 0.25 % of full-scale valueStep response time T99 Long-term stability< 5 ms	Characteristic curve	Linear rising
incl. hysteresis and reproducibilityvalueValueMaximum: 0.5 % of full-scale valueStep response time T99< 5 ms	Measuring accuracy	
lueStep response time T99< 5 ms	Error in measurement at limit setting incl. hysteresis and reproducibility	
Long-term stability0.25 % of full-scale value/yearLong-term stability0.25 % of full-scale value/year• Lower range value and measuring span0.25 %/10 K of full-scale value• Lower range value and measuring span• 0.25 %/10 K of full-scale value• Lower range value and measuring span• 0.25 %/10 K of full-scale value for a measuring range 100 400 mbar• Influence of power supply0.005 %/VConditions of useProcess 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 waterAmbient temperature-55 +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 Cable • IP 67 with cable• IP 67 with cable• IP 67 with cable • IP 67 with cable• IP 67 with cable• IP 67 with cable • IP 67 with cable• Acc. EN 61326-1/-2/-3• acc. NAMUR NE21, only for ATEX versions and with a max.		Maximum: 0.5 % of full-scale va- lue
Lower range value and measuring span0.25 % of full-scale value/yearInfluence of ambient temperature0.25 %/10 K of full-scale value 0.5 %/10K of full-scale value for a measuring range 	Step response time T ₉₉	< 5 ms
spanInfluence of ambient temperatureLower 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 supply0.005 %/VConditions of useProcess 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 waterAmbient 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 cable • IP 67 with cable• IP 67 with cable• IP 67 with cable • IP 67 with cable• IP 67 with cable• IP 67 with cable • IP 67 with cable• Acc. EN 61326-1/-2/-3 • acc. NAMUR NE21, only for ATEX versions and with a max.	Long-term stability	
 Lower range value and measuring span 0.25 %/10 K of full-scale value of solution of 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 Ambient temperature 25 +85 °C (-13 +185 °F) Storage temperature Degree of protection (to EN 60529) Electromagnetic compatibility acc. NAMUR NE21, only for ATEX versions and with a max. 		0.25 % of full-scale value/year
span• 0.5 %/10K of full-scale value for a measuring range 100 400 mbar• Influence of power supply0.005 %/VConditions of useProcess temperature with gasket made of:-15 +125 °C (+5 +257 °F)• Neoprene-35 +100 °C (-31 +212 °F)• Perbunan-20 +100 °C (-41 +212 °F)• EPDM-40 +145 °C (-40 +293 °F), usable for drinking waterAmbient 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 • IP 67 with cable quick screw connectionElectromagnetic compatibility• acc. EN 61326-1/-2/-3 • acc. NAMUR NE21, only for ATEX versions and with a max.	Influence of ambient temperature	
Conditions of useProcess temperature with gasket made of:• FPM (Standard)• Neoprene-35 +100 °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 waterAmbient 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• C. EN 61326-1/-2/-3• acc. EN 61326-1/-2/-3• acc. NAMUR NE21, only for ATEX versions and with a max.		 0.5 %/10K of full-scale value for a measuring range
Process temperature with gasket made of:-15 +125 °C (+5 +257 °F)• 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 waterAmbient 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 	 Influence of power supply 	0.005 %/V
made of: -15 + 125 °C (+5 + 257 °F) • 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 • 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.	Conditions of use	
 Neoprene St + 100 °C (-31 + 212 °F) Perbunan -20 + 100 °C (-4 + 212 °F) EPDM -40 + 145 °C (-40 + 293 °F), usable for drinking water -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 IP 67 with cable quick screw connection Electromagnetic compatibility acc. NAMUR NE21, only for ATEX versions and with a max. 		
 Neoprene Standard 100 °C (-31+212 °F) Perbunan -20+100 °C (-4+212 °F) EPDM -40+145 °C (-40+293 °F), usable for drinking water -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 IP 67 with cable quick screw connection Electromagnetic compatibility acc. NAMUR NE21, only for ATEX versions and with a max. 	 FPM (Standard) 	-15 +125 °C (+5 +257 °F)
• EPDM-40 +145 °C (-40 +293 °F), usable for drinking waterAmbient 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• Electromagnetic compatibility• acc. EN 61326-1/-2/-3 • acc. NAMUR NE21, only for ATEX versions and with a max.	Neoprene	-35 +100 °C (-31 +212 °F)
usable for drinking waterAmbient 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 M12 connector• IP 67 with cable• IP 6	• Perbunan	-20 +100 °C (-4 +212 °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 M12 connector• IP 67 with cable• IP 67 with cable <td< td=""><td>• EPDM</td><td></td></td<>	• EPDM	
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• IP 67 with cable quick screw connectionElectromagnetic compatibility• acc. EN 61326-1/-2/-3• acc. NAMUR NE21, only for ATEX versions and with a max.	Ambient temperature	-25 +85 °C (-13 +185 °F)
EN 175301-803-A IP 67 with M12 connector IP 67 with cable 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.	Storage temperature	-50 +100 °C (-58 +212 °F)
 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. 	Degree of protection (to EN 60529)	
acc. NAMUR NE21, only for ATEX versions and with a max.		IP 67 with cableIP 67 with cable quick screw
	Electromagnetic compatibility	 acc. EN 61326-1/-2/-3 acc. NAMUR NE21, only for ATEX versions and with a max.
Mounting position upright	Mounting position	0

sign	
ight	Approx. 0.090 kg (0.198 lb)
ocess connections	See dimensional drawings
ctrical 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)
	Cable quick screw connection
tted parts materials	
leasuring cell	Stainless steel, matNo. 1.4435
rocess connection	Stainless steel, mat. No. 1.4404 (SST 316 L)
asket	 FPM (Standard)
	Neoprene
	Perbunan EPDM
n wattad parts matariala	• EPDM
n-wetted parts materials	Otainland start wast New 4 4404
nclosure	Stainless steel, mat. No. 1.4404 (SST 316 L)
lack	Plastic
ables	PVC
rtificates and approvals	
assification according to pressure uipment directive ED 97/23/EC)	For gases of fluid group 1 and liquids of fluid group 1;
.0 97/23/20)	meets requirements as per article 3, paragraph 3 (good engineering practice)
yds Register of Shipping (LR)	Applied
rmanischer Lloyds Register of pping (GL)	Applied
nerican Bureau of Shipping (ABS)	Applied
reau Veritas (BV)	Applied
t Norske Veritas (DNV)	Applied
nking water approval (ACS)	Applied
DST	Applied
plosion protection	
insic safety "i" (only with current put)	Ex II 1/2 G Ex ia IIC T4 Ga/Gb Ex II 1/2 D Ex ia IIIC T125 °C Da/Db
type-examination certificate	SEV 10 ATEX 0146
nnection to certified intrinsically- e resistive circuits with maxi- m values:	$U_i \leq$ 30 V DC; $I_i \leq$ 100 mA; $P_i \leq$ 0.75 W
ective internal inductance and bacity for versions with plugs per 175301-803-A and M12	$L_i = 0 \text{ nH}; C_i = 0 \text{ nF}$

Siemens FI 01 · 2012 US Edition

SITRANS P210 for gauge pressure

Selection and Orde						a a til a		Orde	-		_		r code
SITRANS P210 pre Accuracy typ. 0.25		nitters for	gauge press	sure for low pr	essure appli	cations		D) 7MF	1566	-			
Wetted parts materi		steel + se	aling materia	1									
Non-wetted parts m	aterials: stain	less steel											
Measuring range		Overload	limit			Burst p	ressure						
		min.		max.									
For gauge pressur	e												
0 160 mbar (2.3 0 250 mbar (3.6 0 400 mbar (5.8 0 600 mbar (8.7	32 psi) 33 psi) 3 psi) 7 psi)		(-0.58 psi) (-0.58 psi) (-1.16 psi) (-1.16 psi) (-1.45 psi)	250 mbar 400 mbar 625 mbar 1000 mbar 1500 mbar	(3.63 psi) (5.8 psi) (9.06 psi) (14.5 psi) (21.76 psi)	0.5 bar 0.5 bar 1 bar 1 bar 2.5 bar	(7.25 psi) (7.25 psi) (14.5 psi) (14.5 psi) (36.26 psi)			3 A A 3 A B 3 A C 3 A D 3 A G			
Other version, add of Measuring range:			kt:							9 A A			H1Y
Output signal													
4 20 mA; two-wire 0 10 V; three-wire					C for ATEX ve	rsions)				0 1	0		
Explosion protection	on (only 4	20 mA)											
None With explosion prote	ection EEx ia I	IIC T4									0 1		
Electrical connecti	on												
Connection via fixed Cable quick screw of Connector per DIN Special version	connection PC EN 175301-80	G9 (not for 03-A, stuffi	type of prote ng box threa	ction "Intrinsic d 1/2"-14 NPT	safety i") (with coupling						0	3 4 5 6 9	N 1 Y
Process connectio	n												
G½" male per EN 83 G½" male thread an G¼" male per EN 83 7/16"-20 UNF male ¼"-18 NPT male (sta	d G1/8" fema 37-1 (¼" BSP	le thread male)			inges mbar, b	oar)						A B C D	
1/4"-18 NPT female 1/2"-14 NPT male 1/2"-14 NPT female 7/16"-20 UNF female M20x1.5 male	9											F G H J P	
Special version												z	P 1 Y
Sealing material be	etween senso	or and end	losure										
Viton (FPM, standard Neoprene (CR) Perbunan (NBR) EPDM Special version	d)											A B C D Z	Q11
Version													
Standard version												1	
Further designs													
Supplement the ord	er no. with " -2	and add	order code.										
Manufacturer's test				and ISO 8402	(calibration c	ertificate)	supplied	C11					
			N: EAR99H.										

SITRANS P210 for gauge pressure

Dimensional drawings



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





🔨 max. 20 Nm



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

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 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 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 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.

Liquids, gases and vapors

SITRANS P220 for gauge pressure

Mode of operation

Gauge pressure measurement

Technical specifications Application

•						
Measuring principle	Piezoresistive measuring cell (stainless steel diaphragm)					
Measured variable	Gauge pressure					
Inputs						
Measuring range						
Gauge pressure						
- Metric	2.5 600 bar (36 8700 psi)					
- US measuring range	30 8700 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 va- lue					
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 	-30 +120 °C (-22 +248 °F)					
• A mala is not to make a wate wa						

Conditions of use	
 Process temperature 	-30 +120 °C (-22 +248 °F)
 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 %

Design	
Weight	Approx. 0.090 kg (0.198 lb)
Process connections	See dimensional 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)
	Cable quick screw connection
Wetted parts materials	
Measuring cell	Stainless steel, matNo. 1.4016
Process connection	Stainless steel, mat. No. 1.4404 (SST 316 L)
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 liquids of fluid group 1; complies with requirements of article 3, paragraph 3 (sound engineering practice)
Lloyds Register of Shipping (LR)	Applied
Germanischer Lloyds Register of Shipping (GL)	Applied
American Bureau of Shipping (ABS)	Applied
Bureau Veritas (BV)	Applied
Det Norske Veritas (DNV)	Applied
Drinking water approval (ACS)	Applied
GOST	Applied
Explosion protection	
Intrinsic safety "i" (only with current output)	Ex II 1/2 G Ex ia IIC T4 Ga/Gb Ex II 1/2 D Ex ia IIIC T125 °C Da/Db
EC type-examination certificate	SEV 10 ATEX 0146
Connection to certified intrinsically- safe resistive circuits with maxi- mum values:	$U_i \leq$ 30 V DC; $I_i \leq$ 100 mA; $P_i \leq$ 0.75 W
Effective internal inductance and capacity for versions with plugs per EN 175301-803-A and M12	L _i = 0 nH; C _i = 0 nF

Pressure Measurement Transmitters for basic requirements SITRANS P220 for gauge pressure

Selection and	d Ordering data							Order No.	Or	der code
	20 pressure transn fully-welded versi . 0.25 %		gauge pres	sure, high	-pressure and	d refrigerat	ion (D) 7MF1567-		A
	materials: stainless	steel								
	arts materials: stain									
Measuring ra	nge	Overloa	d limit			Burst pr	essure			
incuculing ru		Mini-		Max.		Durot pr	occure			
		mum		IVIAX.						
For gauge pr	essure							-		
0 2.5 bar	(0 36.3 psi)	-0.8 bar	(-11.6 psi)	6.25 bar	(90.7 psi)	25 bar	(363 psi)	3 B	D	
0 4 bar	(0 58 psi)	-0.8 bar	(-11.6 psi)	10 bar	(145 psi)	40 bar	(870 psi)	3 B	E	
0 6 bar	(0 87 psi)	-1 bar	(-14.5 psi)	15 bar	(217 psi)	60 bar	(522 psi)	3 B	G	
0 10 bar	(0 145 psi)	-1 bar	(-14.5 psi)	25 bar	(362 psi)	60 bar	(870 psi)	3 C	A	
0 16 bar	(0 232 psi)	-1 bar	(-14.5 psi)	40 bar	(580 psi)	96 bar	(1392 psi)	3 C	в	
0 25 bar	(0 363 psi)	-1 bar	(-14.5 psi)	62.5 bar	(906 psi)	150 bar	(2176 psi)	3 C		
0 40 bar	(0 580 psi)	-1 bar	(-14.5 psi)	100 bar	(1450 psi)	240 bar	(3481 psi)	3 C		
0 60 bar	(0 870 psi)	-1 bar	(-14.5 psi)	150 bar	(2175 psi)	360 bar	(5221 psi)	3 C	G	
0 100 bar	(0 1450 psi)	-1 bar	(-14.5 psi)	250 bar	(3625 psi)	600 bar	(8702 psi)	3 D		
0 160 bar	(0 2320 psi)	-1 bar	(-14.5 psi)	400 bar	(5801 psi)	960 bar	(13924 psi)	3 D		
0 250 bar	(0 3625 psi)	-1 bar	(-14.5 psi)	625 bar	(9064 psi)		(21756 psi)	3 D		
0 400 bar 0 600 bar	(0 5801 psi)	-1 bar	(-14.5 psi)	1000 bar 1500 bar	(14503 psi)	2400 bar	(34809 psi) (36260 psi)	3 D 3 D		
	(0 8702 psi)	-1 bar	(-14.5 psi)	1500 bar	(21755 psi)	2500 bar	(36260 psi)			
	, add order code ar nge: up to bar (xt:					9 A	Α	H1Y
	inges for gauge pr		nly for UC m	orkot)				-		
measuring ra	(0 30 psi)	essure (o	(-5.8 psi)	iarkel)	(75 psi)	1	(360 psi)	4 B	F	
	(0 60 psi)		(-11.5 psi)		(150 psi)		(580 psi)	4 B		
	(0 100 psi)		(-14.5 psi)		(250 psi)		(580 psi)	4 B		
	(0 150 psi)		(-14.5 psi)		(375 psi)		(870 psi)	4 C		
	(0 200 psi)		(-14.5 psi)		(500 psi)		(1390 psi)	4 C	в	
	(0 300 psi)		(-14.5 psi)		(750 psi)		(2170 psi)	4 C		
	(0 500 psi)		(-14.5 psi)		(1250 psi)		(3480 psi)	4 C		
	(0 750 psi)		(-14.5 psi)		(1875 psi)		(5220 psi)	4 C	F	
	(0 1000 psi)		(-14.5 psi)		(2500 psi)		(5220 psi)	4 C	G	
	(0 1500 psi)		(-14.5 psi)		(3750 psi)		(8700 psi)	4 D	A	
	(0 2000 psi)		(-14.5 psi)		(5000 psi)		(13920 psi)	4 D	в	
	(0 3000 psi)		(-14.5 psi)		(7500 psi)		(21750 psi)	4 D	D	
	(0 5000 psi)		(-14.5 psi)		(12500 psi)		(34800 psi)	4 D	E	
	(0 6000 psi		(-14.5 psi)		(15000 psi)		(34800 psi)	4 D		
	(0 8700 psi)		(-14.5 psi)		(21000 psi)		(52200 psi)	4 D	G	
Other version,	, add order code ar	nd plain te	xt: Measurin	g range:	up to psi			9 A	A	H 1 Y
Output signa	I									
,	vo-wire system; pov e-wire system; pow	11.2			V DC for ATE>	(versions)			0 1 0	
Explosion pr	otection (only 4	20 mA)								
None	n protection EEx ia								0	
Electrical cor	•									
Connector pe	r DIN EN 175301-80		0			. I			1	
	ctor M12 per DIN E								2	
	a fixed mounted ca					∋ιy Γ)			0 3	
	crew connection P(r DIN EN 175301-80	· · ·	21 1		, ,	alina)			045	
	r DIN EN 175301-80 r DIN EN 175301-80		0			ung)			5	
Special versic		Jo in, stull	ing box tilled		iai ooupiiriy)				9	N 1 Y
									J	

SITRANS P220 for gauge pressure

Selection and Ordering data	Order No.	Order code
SITRANS P220 pressure transmitters for gauge pressure, high-pressure and refrigeration applications, fully-welded version Accuracy typ. 0.25 %	D) 7MF1567-	A
Wetted parts materials: stainless steel		
Non-wetted parts materials: stainless steel		
Process connection		
G ¹ ⁄ ₂ " male per EN 837-1 (½" BSP male) (standard for metric pressure ranges mbar, bar) G ¹ ⁄ ₂ " male thread and G1/8" female thread G ¹ ⁄ ₄ " 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 G H J P
Special version		Z P1Y
Version Standard version		1
Further designs		
Supplement the order no. with "-Z" and add order code.		
Manufacturer's test certificate M per DIN 55340, Part 18 and ISO 8402 (calibration certificate) supplied	C11	
Oxygen application, oil and grease-free cleaning	E10	

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

SITRANS P220 for gauge pressure

Dimensional drawings



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



7/16"-20 UNF



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

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

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



Connection with current output and connector M12x1 (Ex)

SITRANS P250 for differential pressure

Mode of operation



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

Benefits

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

Application

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

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

Design

Main components:

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

Function

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



SITRANS P250 pressure transmitter, function diagram

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

The voltage output from the measuring cell is converted by an amplifier into an output current of 4 to 20 mA or an output voltage of 0 to 5 or 10 V DC.

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

Technical specifications

SITRANS P250 differential pressu	re transmitter
Application	
Differential pressure transmitter	Liquids and neutral gases
Mode of operation	
Measuring principle	Piezo-resistive measuring cell (ceramic diaphragm)
Input	
Measured variable	Differential pressure
Measuring range	0 0.1 to 0 25 bar (0 1.45 to 0 363 psi)
Operating pressure	≤ 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	\leq 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	≤ 0.6 %/10 K of full-scale value (≤ 1.2 % / 10K for measuring cell 0 0.1 bar (1.45 psi))
Full-scale value	≤ 0.22 %/10 K of full-scale value (≤ 0.37 % / 10K for measuring cell 0 0.1 bar (1.45 psi))
Dynamic behavior	Suitable for static and dynamic measurements
Response time T ₉₉	< 5 ms
Load 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

Measurin	ng range	Max. perm. oper- ating pres- sure (on either side)	Burst pres- sure	Max. perm. oper- ating pres- sure (on one side)	Accu- racy
[bar]	[psi]				
0 0.1	0 1.45	25 bar (363 psi)	37.5 bar (544 psi)	0.6 bar (8.7 psi)	≤ 1,0 %
0 0.2	0 2.9	25 bar (363 psi)	37.5 bar (544 psi)	0.6 bar (8.7 psi)	≤ 0,8 %
0 0.25	0 3.63	25 bar (363 psi)	37.5 bar (544 psi)	0.6 bar (8.7 psi)	≤ 0,5 %
0 0.3	0 4.35	25 bar (363 psi)	37.5 bar (544 psi)	0.6 bar (8.7 psi)	≤ 0,5 %
0 0.4	0 5.8	25 bar (363 psi)	37.5 bar (544 psi)	1.2 bar (17.4 psi)	≤ 0,8 %
0 0.5	0 7.25	25 bar (363 psi)	37.5 bar (544 psi)	1.2 bar (17.4 psi)	≤ 0,5 %
0 0.6	0 8.7	25 bar (363 psi)	37.5 bar (544 psi)	1.2 bar (17.4 psi)	≤ 0,5 %
0 1.0	0 14.5	25 bar (363 psi)	37.5 bar (544 psi)	2 bar (29 psi)	≤ 0,5 %
0 1.6	0 23.2	25 bar (363 psi)	37.5 bar (544 psi)	3.2 bar (46.4 psi)	≤ 0,5 %
0 2.5	0 36.3	25 bar (363 psi)	37.5 bar (544 psi)	5 bar (72.5 psi)	≤ 0,5 %
0 4	0 58	25 bar (363 psi)	37.5 bar (544 psi)	8 bar (116 psi)	≤ 0,5 %
06	0 87	25 bar (363 psi)	37.5 bar (544 psi)	12 bar (174 psi)	≤ 0,5 %
0 10	0 145	50 bar (725 psi)	75 bar (1088 psi)	20 bar (290 psi)	≤ 0,5 %
0 16	0 232	50 bar (725 psi)	75 bar (1088 psi)	32 bar (464 psi)	≤ 0,5 %
0 25	0 363	50 bar (725 psi)	75 bar (1088 psi)	50 bar (725 psi)	≤ 0,5 %

Schematics



Connection with current output 4 ... 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)

SITRANS P250 for differential pressure

Process connections		Ø		Width across flats	L		x	
		[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_	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
t _a		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

Pressure Measurement Transmitters for basic requirements SITRANS P250 for differential pressure

Selection and Ordering data	Order No.	Order code
SITRANS P250 pressure transmitter for differential pressure	7 M F 1 6 4 1 -	- 0
Accuracy ≤ 1 %, wetted parts ceramic/stainless steel 1.4301,		
scope of delivery: transmitter, mounting bracket and instruction manual, without explosion protection		
Measuring range		
00.1 bar (01.45 psi)	3 A A	
002 bar (02.90 psi)	3 A C	
00.25 bar (03.63 psi)	3 A D 3 A E	
00.3 bar (05.35 ps) 00.4 bar (05.80 psi)	3 A F	
00.5 bar (07.25 psi)	3 A G	
00.6 bar (08.70 psi)	3 A H	
0 1.0 bar (0 14.5 psi)	3 B A	
01.6 bar (023.2 psi)	3 B B	
0 2.5 bar (0 36.3 psi)	3 B D	
04.0 bar (058.0psi)	3 B E	
0 6.0 bar (0 87.0 psi)	3 B G	
0 10.0 bar (0 145 psi)	3 C A	
0 16.0 bar (0 232 psi)	3 C B	
0 25.0 bar (0 363 psi)	3 C D	
Output signal		
4 20 mA	0	
0 5 V DC	1	
0 10 V DC	2	
Electrical connection		
Plug acc. to EN 175 301-803-A (suitable coupling included in scope of delivery)		1
Round connector acc. to EN 60139-9		2
Cable 1.5 m with cable gland		3
Process connection		
Without connections, female thread 1/8-27 NPT		A
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 CuZn nickel-plated, for pipe Ø 8 mm 		FG
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 \emptyset 6 mm		м
• Outer, G1/8 (stainless steel), with union nut, for pipe \varnothing 6 mm		N
Sealing material	_	
Fluoro rubber (Viton/FPM)		Δ
Ethylene propylene diene monomer rubber (EPDM)		B
Nitrile butadiene rubber (NBR)		c
Silicone rubber (MVQ)		D
Neoprene (CR)		E
Further designs	Order Code	
Please add "-Z" to Order No. and specify Order code(s).		
	C11	
Factory calibration certificate to IEC 60770-2	C11	

2

SITRANS P MPS (submersible sensor) Transmitter for hydrostatic level

Overview



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

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

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

Benefits

- Compact design
- Simple installation
- Small error in measurement (0,3 %)
- Degree of protection 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.

Function

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



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

On one side of the sensor, the diaphragm is exposed to the hydrostatic pressure which is proportional to the submersion depth. This pressure is compared with atmospheric pressure. Pressure compensation is carried out using the vent pipe in the connection cable.

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

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

The cable of the 7MF1570 transmitter must always be connected in the supplied junction box. The junction box has to be installed near the measuring point.

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

Integration



Junction box 7MF1570-8AA, opened

Long-term stability

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 measur (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

Zero and span	
• 1 6 mH ₂ O (3 18 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 protection to DIN EN 60529	IP68
Design	
Weight	
 Pressure transmitter 	≈ 0.4 kg (≈ 0.88 lb)
• Cable	0.08 kg/m (≈ 0.054 lb/ft)
Electrical connection	Cable with 2 conductors with screen and vent pipe, strength cord (max. 300 N (67.44 lbf)
Material	
Seal diaphragm	Stainless steel, mat. no. 316L/ 316 Ti
• Enclosure	Stainless steel, mat. no. 316L/ 316 Ti
• Gasket	Viton
Connecting cable	Either PE/HFFR sheath (non-halogen) or FEP sheath
Power supply	
Terminal voltage on pressure transmitter $U_{\rm B}$	10 33 V DC
Certificates and approvals	
The transmitter is not subject to the	
pressure equipment directive (PED 97/23/EC)	
(PED 97/23/EC)	TÜV 03 ATEX 2004X
(PED 97/23/EC) Explosion protection	TÜV 03 ATEX 2004X Ex II 1 G EEx ia IIC T4
(PED 97/23/EC) Explosion protection • Intrinsic safety "i"	
(PED 97/23/EC) Explosion protection • Intrinsic safety "i" - Marking	
(PED 97/23/EĆ) Explosion protection • Intrinsic safety "i" - Marking Junction box	Ex II 1 G EEx ia IIC T4 for connecting the transmitter
(PED 97/23/EĆ) Explosion protection • Intrinsic safety "i" - Marking Junction box Application	Ex II 1 G EEx ia IIC T4 for connecting the transmitter
(PED 97/23/EĆ) Explosion protection • Intrinsic safety "i" - Marking Junction box Application Design	Ex II 1 G EEx ia IIC T4 for connecting the transmitter cable
(PED 97/23/EĆ) Explosion protection • Intrinsic safety "i" - Marking Junction box Application Design Weight	Ex II 1 G EEx ia IIC T4 for connecting the transmitter cable 0.2 kg (0.44 lb)
(PED 97/23/EĆ) Explosion protection • Intrinsic safety "i" - Marking Junction box Application Design Weight Electrical connection	Ex II 1 G EEx ia IIC T4 for connecting the transmitter cable 0.2 kg (0.44 lb) 2 x 3-way (28 to 18 AWG)
(PED 97/23/EĆ) Explosion protection • Intrinsic safety "i" - Marking Junction box Application Design Weight Electrical connection Cable entry	Ex II 1 G EEx ia IIC T4 for connecting the transmitter cable 0.2 kg (0.44 lb) 2 x 3-way (28 to 18 AWG) 2 x M20 x 1.5
(PED 97/23/EC) Explosion protection • Intrinsic safety "i" - Marking Junction box Application Design Weight Electrical connection Cable entry Enclosure material	Ex II 1 G EEx ia IIC T4 for connecting the transmitter cable 0.2 kg (0.44 lb) 2 x 3-way (28 to 18 AWG) 2 x M20 x 1.5
(PED 97/23/EC) Explosion protection • Intrinsic safety "i" • Marking Junction box Application Design Weight Electrical connection Cable entry Enclosure material Vent pipe for atmospheric pressure	Ex II 1 G EEx ia IIC T4 for connecting the transmitter cable 0.2 kg (0.44 lb) 2 x 3-way (28 to 18 AWG) 2 x M20 x 1.5
(PED 97/23/EĆ) Explosion protection • Intrinsic safety "i" - Marking Junction box Application Design Weight Electrical connection Cable entry Enclosure material Vent pipe for atmospheric pressure Screw for cable strength cord	Ex II 1 G EEx ia IIC T4 for connecting the transmitter cable 0.2 kg (0.44 lb) 2 x 3-way (28 to 18 AWG) 2 x M20 x 1.5
(PED 97/23/EĆ) Explosion protection • Intrinsic safety "i" - Marking Junction box Application Design Weight Electrical connection Cable entry Enclosure material Vent pipe for atmospheric pressure Screw for cable strength cord Rated conditions Degree of protection to	Ex II 1 G EEx ia IIC T4 for connecting the transmitter cable 0.2 kg (0.44 lb) 2 x 3-way (28 to 18 AWG) 2 x M20 x 1.5 polycarbonate
(PED 97/23/EĆ) Explosion protection • Intrinsic safety "i" - Marking Junction box Application Design Weight Electrical connection Cable entry Enclosure material Vent pipe for atmospheric pressure Screw for cable strength cord Rated conditions Degree of protection to DIN EN 60529	Ex II 1 G EEx ia IIC T4 for connecting the transmitter cable 0.2 kg (0.44 lb) 2 x 3-way (28 to 18 AWG) 2 x M20 x 1.5 polycarbonate
(PED 97/23/EĆ) Explosion protection • Intrinsic safety "i" - Marking Junction box Application Design Weight Electrical connection Cable entry Enclosure material Vent pipe for atmospheric pressure Screw for cable strength cord Rated conditions Degree of protection to DIN EN 60529 Cable hanger	Ex II 1 G EEx ia IIC T4 for connecting the transmitter cable 0.2 kg (0.44 lb) 2 x 3-way (28 to 18 AWG) 2 x M20 x 1.5 polycarbonate
(PED 97/23/EĆ) Explosion protection • Intrinsic safety "i" - Marking Junction box Application Design Weight Electrical connection Cable entry Enclosure material Vent pipe for atmospheric pressure Screw for cable strength cord Rated conditions Degree of protection to DIN EN 60529 Cable hanger Application	Ex II 1 G EEx ia IIC T4 for connecting the transmitter cable 0.2 kg (0.44 lb) 2 x 3-way (28 to 18 AWG) 2 x M20 x 1.5 polycarbonate
(PED 97/23/EĆ) Explosion protection • Intrinsic safety "i" - Marking Junction box Application Design Weight Electrical connection Cable entry Enclosure material Vent pipe for atmospheric pressure Screw for cable strength cord Rated conditions Degree of protection to DIN EN 60529 Cable hanger Application Design	Ex II 1 G EEx ia IIC T4 for connecting the transmitter cable 0.2 kg (0.44 lb) 2 x 3-way (28 to 18 AWG) 2 x M20 x 1.5 polycarbonate IP54 for mounting the transmitter

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

Selection and Ordering data	Order No. Orde	r code	Selection and Ordering data	Order No.	Order code
SITRANS P MPS pressure transmit- C ter for gauge pressure (submersible sensor))7MF1570- A0		SITRANS P MPS pressure transmit- C) 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 rangeCable length L0 2 mH2O10 m	1 C		Measuring range Cable length L	5 C	
0 2 mH ₂ O 10 m 0 4 mH ₂ O 10 m	1 D		0 2 mH ₂ O 10 m 0 4 mH ₂ O 10 m	5 D	
05 mH ₂ O 25 m	1 B		$0 \dots 5 \text{ mH}_2 \text{O}$ 25 m	5 B	
0 6 mH ₂ O 25 m	1 E		0 6 mH ₂ O 25 m	5 E	
0 10 mH ₂ O 25 m	1 F		0 10 mH ₂ O 25 m	5 F	
0 20 mH ₂ O 25 m	1 G		0 20 mH ₂ O 25 m	5 G	
0 6 ftH ₂ O 32 ft	1 K		0 6 ftH ₂ O 32 ft	5 K	
0 12 ftH ₂ O 32 ft	1L		0 12 ftH ₂ O 32 ft	5 L	
0 18 ftH ₂ 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 range ¹⁾	9 A	Η	Special cable lenght/Special measuring range ¹⁾	9 A	Н +
Please add "-Z" to Order No. and specify		+ Y 0 1	Please add "-Z" to Order No. and specify		¥ 0 1
Order code and plain text.			Order code and plain text.		
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		H 1 B H 1 C	5 m 7 m		H 5 B H 5 C
10 m		H1D	10 m		H 5 D
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		HIH	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		H 5 L
70 m		H1M	70 m		H 5 M
80 m		H1N	80 m		H 5 N
90 m		H1P	90 m		H 5 P
100 m		H1Q	100 m		H 5 Q
125 m		H1R	125 m		H 5 R
150 m		H1S	150 m		H 5 S
175 m		H1T	175 m		H 5 T
200 m		H 1 U H 1 V	200 m		H 5 U H 5 V
225 m			225 m		
250 m 275 m			250 m 275 m		H 5 W
275 m 300 m		H 1 X H 2 A	300 m		H 5 X H 6 A
350 m		H2B	350 m		H6B
400 m		H 2 C	400 m		H 6 C
450 m		H 2 D	450 m		H 6 D
500 m		H2E	500 m		H 6 E
550 m		H 2 F	550 m		H 6 F
600 m		H 2 G	600 m		H 6 G
650 m		H 2 H	650 m		H 6 H
700 m		H 2 J	700 m		H 6 J
750 m		H 2 K	750 m		H 2 K
800 m		H 2 L	800 m		H 6 L
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 co	de
SITRANS P MPS pressure transmit- C 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 EEx ia IIC T4) 	2	
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 $tH_2O^{"}$	Y01	
Accessories (as spare part)	Order No.	
Junction box for connecting the transmitter cable	7MF1570-8AA	
Cable hanger for attachment of transmitter	7MF1570-8AB	
Power supply units see Chap. 8 "Supplem	nentary Components".	
1) Special measuring ranges of between 0	. 1 mH ₂ O (0 3 ftH ₂ O)	

¹⁾ Special measuring ranges of between 0 ... 1 mH₂O (0 ... 3 ftH₂O) and 0 ... 200 mH₂O (0 ... 656 ftH₂O) 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.

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

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

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 29, 145, 725, 2900 and 5800 psi (0 to 2, 10, 50, 200 and 400 bar).

The sensor is integrated into the transmitter housing.

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

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

Design

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

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

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

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

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

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

Function

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

Field device data received by the IE/WSN-PA LINK is transmitted to the connected systems, for example the process control system SIMATIC PCS 7. For an introduction of WirelessHART, please see the FI 01 catalogue, section 9 or http://www.siemens.de/wirelesshart.

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





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

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

Benefits

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

SITRANS P280

for gauge and absolute pressure

Integration

Connecting to SIMATIC PCS 7

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

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



Integration of a meshed network in SIMATIC PCS7

Configuration

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

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

Technical specifications

IECHNICAI Specifications SITRANS P280 WirelessHART pressure transmitter			
Mode of operation			
	piaza registiva		
Measuring principle	piezo-resistive Gauge and absolute pressure		
Measured variable	Gauge and absolute pressure		
Gauge pressure input	Overlaged limit/Durating processing		
Measuring range	Overload limit/Bursting pressure		
0 29 psi (0 2 bar)	72.5 psi (5 bar)		
0 145 psi 0 10 bar)	363 psi (50 bar)		
0 725 psi 0 50 bar)	1740 psi (250 bar)		
0 2900 psi (0 200 bar)	7250 psi (650 bar)		
0 5800 psi (0 400 bar)	7250 psi (650 bar)		
Units	mbar, bar, mmH ₂ O, inH ₂ O, atm, Torr, gcm ² , kgcm ² , mPa, KPa, Pa, psi, mmHG, mmH ₂ O, ftH ₂ O, inHG, inH ₂ O		
Absolute pressure input			
Measuring range	Overload limit/Bursting pressure		
0 29 psia (0 2 bar a)	72.5 psia (5 bar a)		
0 145 psia (0 10 bar a)	363 psia (50 bar a)		
0 725 psia (0 50 bar a)	1740 psia (250 bar a)		
0 2900 psia (0 200 bar a)	7250 psia (650 bar a)		
0 5800 psia (0 400 bar a)	7250 psia (650 bar a)		
Units	mbar, bar, mmH ₂ O, inH ₂ O, atm, Torr, gcm ² , kgcm ² , mPa, KPa, Pa, 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. ± 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 locations not protected against weather)		
Degree of protection	IP65/NEMA 4		
Allowable media temperature	-40 +85 °C (-40 +185 °F)		

SITRANS P280 for gauge and absolute pressure

F) 7MF4997-1BE

see Sec. 9 D) 7MF4997-1DA

D) 7MF4997-1DB

see Sec. 9

Design		Selection and Ordering data	Order No.
Enclosure material	low-copper die-cast aluminum, GD-AISi12	SITRANS P280 WirelessHART D) pressure transmitter) 7 M P 1 1 2 0 -
Shock resistance	in accordance with DIN EN 60068-2-29 / 03.95	(Required battery not included with delivery, see accessories)	
Resistance to vibration	in accordance with DIN EN 60068-2-6/ 12.07	Measuring cell filling Dry measuring cell	0
	$20 \le f \le 2000 \text{ Hz}$	Measuring span	
	0.01 g²/Hz	Gauge pressure 0 29 psi (0 2 bar)	D
Weight		0 29 psi (0 2 bar) 0 145 psi (0 10 bar)	DE
without battery	1.5 kg (3.31 lb)	0 725 psi (0 50 bar)	F
With battery	1.6 kg (3.53 lb)	0 2900 psi (0 200 bar)	G
Dimensions (W x H x D)	See Dimensional drawings	0 5800 psi (0 400 bar)	н
Process connection	• G½B male thread as per EN837-1	Absolute pressure 0 29 psia (0 2 bar a)	M
	• ½-14 NPT	0 145 psia (0 10 bar a) 0 725 psia (0 50 bar a)	N P
Sensor break	Is recognized	0 2900 psia (0 200 bar a)	Q
 Displays and controls 		0 5800 psia (0 400 bar a)	R
Display (with illumination)		Wetted parts	
 Size of display 	104 x 80 pixels	Ceramic	к
 Number of digits 	adjustable	Display	
 Number of spaces after comma 	adjustable	Digital display, visible	1
Setting options	 on site with 3 buttons 	Enclosure	-
	 with SIMATIC PDM or HART Communicator 	Die-cast aluminum	1
Power supply		Process connection	_
Battery	3.6 V DC	G½ as per EN 837-1 ½-14 NPT	0
Communication		Explosion protection	_
Radio	WirelessHART V7.1 conforming		А
Transmission frequency band	2.4 GHz (ISM-Band)	Without	
Transmission range under reference	Up to 250 m (line of sight) in out-	Antenna	
conditions	side areas	Variable, attached to device	A
	Up to 50 m (greatly dependent on obstacles) in inside areas	Further designs	Order code
Communication interfaces	HART communication with HART modem	Please add "-Z" to Order No. and specify Order code(s) and plain text.	
	WirelessHART	Tag number/Identification	Y15
Certificates and approvals		(max. 16 characters), specify in plain text: Y15:	
Wireless communication approvals	R&TTE	Tag description	 Y16
	FCC	(max. 27 characters), specify in plain text: Y16:	
Classification according to pressure equipment directive	Gases: Fluid group 1 Liquids: Fluid group 1;	Accessories	Order No.
(PED 97/23/EC)	meets requirements as per Sec-	Lithium battery for SITRANS TF280/P280	
	tion 3, Subsection 3 (sound engi-	Mounting bracket, steel	7MF4997-1AC
	neering practice)	Mounting bracket, stainless steel	7MF4997-1AJ
			7MF4997-1BB
			THE 4007 455

2

Cover, die-cast aluminum, with window

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

HART modem with RS232 interface HART modem with USB interface

IE/WSN-PA LINK

SIMATIC PDM

SITRANS P280 for gauge and absolute pressure

Dimensional drawings



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SITRANS P280 WirelessHART pressure transmitter, process connection G½", dimensions in mm (inch) The dimensional drawing of the mounting bracket see on page 2/147.

SITRANS P280 for gauge and absolute pressure



SITRANS P280 WirelessHART pressure transmitter, process connection $\frac{1}{2}$ - 14 NPT, dimensions in mm (inch) The dimensional drawing of the mounting bracket see on page 2/147.

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Pressure Measurement Transmitters for food, pharmaceuticals and biotechnology

SITRANS P300 for gauge and absolute pressure

Overview



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

The output signal is a load-independent direct current from 4 to 20 mA or a PROFIBUS PA or FOUNDATION Fieldbus signal, which is linearly proportional to the input pressure. Communication is via HART protocol or PROFIBUS PA 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
- · Small long-term drift
- Wetted parts made of high-grade materials (such as stainless steel, Hastelloy)
- Measuring range 0.1 psi to 5800 psi (0.008 bar to 400 bar)
- · 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" EEx version of the transmitter can be installed in hazardous areas (zone 1). The transmitters are provided with an EC type examination certificate and comply with the respective harmonized European standards of ATEX.

Gauge pressure

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

The smallest measuring span is 0.15 psi, the largest 5800 psi (0.01 bar, the largest 400 bar).

Level

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

For measuring the level in an open tank you require a gauge transmitter.

Absolute pressure

This model measures the absolute pressure of aggressive, non-aggressive and hazardous gases, vapors and liquids.

The smallest measuring span is 0.1 psia, the largest 435 psia (0.008 bar a), the largest 30 bar a).
SITRANS P300

for gauge and absolute pressure

Function

Operation of electronics with HART communication

Measuring cell 1 (5) (4 (3) (2)Digital display 2 Process connection 3 Cable gland Rating plate 4 5 Screw-on cover

Perspective view of SITRANS P300

Desian

The device comprises:

 Electronics Housing

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

Example of attached measuring points sign





- 4 Microcontroller
- 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
- 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 digital display (9), you can use this to track mode settings and other messages. The basic mode settings can be changed with a computer via the HART modem (7).

SITRANS P300 for gauge and absolute pressure

Operation of electronics with PROFIBUS PA communication



Function diagram of electronics

The input pressure is converted into an electrical signal by the sensor (1). This signal is amplified by the measuring amplifier (2) and digitalized in an analog-to-digital converter (3). The digital signal is analyzed in a microcontroller (4) and corrected according to linearity and thermal characteristics. It is then made available at the PROFIBUS PA over an electrically isolated PROFIBUS PA interface (7). The data specific to the measuring cell, the electronic data and parameter settings are stored in two non-volatile memories (6). The first memory is linked to the measuring cell, the second to the electronics.

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

Operation of electronics with FOUNDATION Fieldbus communication



Function diagram of electronics

The bridge output voltage created by the sensor (1, Figure "Function diagram of electronics") amplified by the measuring amplifier (2) and digitized in the analog-to-digital converter (3). The digital information is evaluated in the microcontroller, its linearity and temperature response corrected, and provided on the FOUNDATION Fieldbus through an electrically isolated FOUN-DATION 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 a result of this modular design, the electronics and the measuring cell can be replaced separately from each other.

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

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

Mode of operation of the measuring cells

The process connections available include the following:

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

SITRANS P300 for gauge and absolute pressure





Measuring cell for gauge pressure, function diagram

The input pressure (p_e) is transferred to the gauge pressure sensor (6) via the barrier diaphragm (4) and the fill fluid (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.

The transmitters with spans \leq 926.1 psi (\leq 63 bar) measure the input pressure against atmosphere, those with spans \geq 2352 psi (\geq 160 bar) against 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 barrier diaphragm (3) and the fill fluid (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 barrier diaphragm (4) and the fill fluid (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.

The transmitters with spans \leq 926.1 psi (\leq 63 bar) measure the input pressure against atmosphere, those with spans \geq 2352 psi (\geq 160 bar) against 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 barrier diaphragm (3) and the fill fluid (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 pushbuttons (local operation)

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

Parameterization using HART communication

Parameterization using HART communication is performed with a HART communicator or a PC.



Communication between a HART communicator and a pressure transmitter

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



HART communication between a PC communicator and a pressure transmitter

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

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

Adjustable parameters on SITRANS P300 with HART communication

communication		
Parameters	Pushbuttons	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⁾
Linear or sqare root outputs	х	х
Characterizer setup		х
Freely-programmable LCD		х
Diagnostic functions		х
1) Cancel apart from write protection		

¹⁾ Cancel apart from write protection

Diagnostic functions for SITRANS P300 with HART

communication

- Zero correction for position
- Event counter
- Transmitter output alarms
- Saturation alarm
- Min/Max registers
- Simulation functions
- Maintenance timer

Available physical units of display for SITRANS P300 with HART communication

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 P300 for gauge and absolute pressure

Parameterization through PROFIBUS PA interface

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

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

Parameterization through FOUNDATION Fieldbus interface

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

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

Adjustable parameters for SITRANS P300 PA and FF

Adjustable parameters	Push- buttons	PROFIBUS PA and FOUNDATION Field- bus 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
Linear or sqare root outputs	х	х
Characterizer setup		х
Freely-programmable LCD		х
Diagnostic functions		х

Diagnostic functions for SITRANS P300 PA and FF

- Event counter
- Min/Max registers
- Maintenance timer
- Simulation functions
- Zero correction for position
- Transmitter output alarms
- Saturation alarm

Physical dimensions available for the display

Physical variable	Physical dimensions
Pressure (setting can also be made in the factory)	Mpa, kPa, Pa, bar, mbar, torr, atm, psi, g/cm 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	%

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

SITRANS P300

2

for gauge and absolute pressure

Technical specifications

SITRANS P300 for gauge and absolute pressure

	HART PROFIBUS PA and FOUNDATION Fieldbus			JNDATION Fieldbus	
Gauge pressure input					
Measured variable	Gauge pressure				
Spans (infinitely adjustable) or nominal mea- suring range and	Span (min max.)	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure	
max. permissible test pressure	0.15 14.5 psi (0.01 1 bar)	87 psi (6 bar)	14.5 psi (1 bar)	87 psi (6 bar)	
	0.58 58 psi (0.04 4 bar)	145 psi (10 bar)	58 psi (4 bar)	145 psi (10 bar)	
	2.3 232 psi (0.16 16 bar)	464 psi (32 bar)	232 psi (16 bar)	464 psi (32 bar)	
	9.1 914 psi (0.6 63 bar)	1450 psi (100 bar)	914 psi (63 bar)	1450 psi (100 bar)	
	23.2 2321 psi (1.6 160 bar)	3626 psi (250 bar)	2321 psi (160 bar)	3626 psi (250 bar)	
	58 5802 psi (4.0 400 bar)	8700 psi (600 bar)	5802 psi (400 bar)	8700 psi (600 bar)	
	Depending on the proce may differ from these va	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 		0.44 psi a	(30 mbar a)		
Upper measuring limit					
 Measuring cell with silicone oil 	100% of max. span 100 % of the max. nominal measuring rang				
Absolute pressure input					
Measured variable	Absolute pressure				
suring range and	Span (min max.)	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure	
max. permissible test pressure	0.12 3.6 psi a (8 250 mbar a)	87 psi a (6 bar a)	3.6 psi a (250 mbar a)	87 psi a (6 bar a)	
	0.62 19 psi a (0.043 1.30 bar a)	145 psi a (10 bar a)	19 psi a (1.30 bar a)	145 psi a (10 bar a)	
	2.3 73 psi a (0.16 5 bar a)	435 psi a (30 bar a)	73 psi a (5 bar a) 435 psi a (30 bar a)		
	14.5 435 psi a (1 30 bar a)	1450 psi a (100 bar a)	435 psi a (30 bar a)	1450 psi a (100 bar a)	
Lower measuring limit					
 Measuring cell with silicone oil 		0 psia (0 mbar a)		
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			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	
Sure	0.15 14.5 psi (0.01 1 bar)	87 psi (6 bar)	14.5 psi (1 bar)	87 psi (6 bar)	
	0.58 58 psi (0.04 4 bar)	145 psi (10 bar)	58 psi (4 bar)	145 psi (10 bar)	
	2.32 232 psi (0.16 16 bar)	464 psi (32 bar) (16 bar) (32 bar)		(32 bar)	
			914 psi 1450 psi (100 bar)		
Lower measuring limit	1.45 psia (100 mbar a)				
Upper measuring limit	100% of max apap				

100% of max. span

100 % of the max. nominal measuring range

• Measuring cell with silicone oil

for gauge and absolute pressure

SITRANS P300 for gauge and absolute pressure						
	HART PROFIBUS PA and FOUNDATION Fieldbus					
Input of absolute pressure, with front-flush diaphragm						
Measured variable	Absolute pressure, front-flush					
Spans (infinitely adjustable) or nominal mea- suring range and	Span (min max.)	Max. perm pressure	n. test	Nominal measuring range	Max. perm pressure	. test
max. permissible test pressure	0.62 18.9 psia (43 1300 mbar a)	145 psia (10 bar a)		18.9 psia (1300 mbar a)	145 psia (10 bar a)	
	2.32 72.5 psia (0.16 5 bar a)	435 psia (30 bar a)		72,5 psia (5 bar a)	435 psia (30 bar a)	
	14.5 435 psia (1 30 bar a)	1450 psia (100 bar a)	435 psia (30 bar a)	1450 psia (100 bar a)	
	Depending on the proce may differ from these val		on, the span	Depending on the proce nal measuring range ma		
Lower measuring limit			0 psi a	(0 bar a)		
Upper measuring limit						
 Measuring cell with silicone oil 	100% of max. span			100 % of the max. nomin	nal measurin	g range
Output						
Output signal	4 20 mA			Digital PROFIBUS PA sig	gnal	
Physical bus	-			IEC 61158-2		
Protection against polarity reversal	Protected against shor	t-circuit and		rsal. Each connection aga voltage.	ainst the othe	er with max.
Electrical damping T ₆₃ (step width 0.1 s)			Set to 0.1 s	(0 100 s)		
Measuring accuracy	as per IEC 60770-1					
Reference conditions (All error data refer always refer to the set span)	Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, 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. hys- teresis 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	≤ (0.005 · r + 0.05) %	-	-			
Step reponse time T ₆₃		1	appro	x. 0.2 s		
Long-term stability at ±30 °C (±54 °F)	≤ (0.25 · r) %/5 years	≤ (0.1 · r) §	%/year	≤ 0.25 %/5 years	≤ 0.1 %/ye	ar
Influence of ambient temperature						
• at -10 +60 °C (14 140 °F)	$\leq (0.08 \cdot r + 0.1) \%^{1}$ $\leq (0.2 \cdot r + 0.3) \%$ $\leq 0.3 \%$		≤ 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 the medium temperature (only with front-flush diaphragm)						
Temperature difference between medium			0.04 psi/10 K	(3 mbar/10 K)		

• Temperature difference between medium temperature and ambient temperature

0.04 psi/10 K (3 mbar/10 K)

SITRANS P300 for gauge and absolute pressure

CITRANC D200 for source and abactute preserve		
SITRANS P300 for gauge and absolute pressu	HART PROFIBUS PA and FOUNDATION Fieldbus	
Rated conditions		
Installation conditions		
Ambient temperature	Observe the temperature class in areas subject to explosion hazard.	
Measuring cell with silicone oil	-40 +85 °C (-40 +185 °F)	
• Measuring cell with Neobee oil (FDA-compli- ant, with front-flush 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 $^\circ C$ (302 $^\circ F)$	
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 (with front-flush diaphragm)	-40 +150 °C (-40 +302 °F)	
 Measuring cell with Neobee oil (FDA-compliant, with front-flush diaphragm) Measuring cell with silicope oil with tempera 	-10 +150 °C (-14 +302 °F)	
 Measuring cell with silicone oil, with tempera- ture decoupler (only with front-flush dia- phragm) 	-40 +200 °C (-40 +392 °F)	
 Measuring cell with inert liquid 	-20 +100 °C (-4 +212 °F)	
 Measuring cell with high-temperature oil 	-10 +250 °C (14 482 °F)	
Design (standard version)		
Weight (without options)	Approx. 800 g (1.8 lb)	
Enclosure material	Stainless steel, mat. no. 1.4301/304	
Material of parts in contact with the medium • Connection shank		
• Oval flange	Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819	
Seal diaphragm	Stainless steel, mat. no. 1.4404/316L	
Measuring cell filling	Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819 •Silicone oil	
	•Inert filling liquid	
Process connection	•G1⁄2B to EN 837-1	
	•Female thread ½-14 NPT	
	•Oval flange PN 160 (MAWP 2320 psi) with fastening thread:	
	- ⁷ ₁₆ -20 UNF to IÉC 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	Stainless steel, mat. no. 1.4404/316L	
Seal diaphragm	Stainless steel, mat. no. 1.4404/316L	
Measuring cell filling	•Silicone oil	
	 Inert filling liquid 	
	•FDA compliant fill fluid (Neobee oil)	
Process connection	 Flanges as per EN and ASME F&B and pharmaceutical flanges 	
Surface quality touched-by-media	R_a -values $\le 0.8 \ \mu m (32 \ \mu$ -inch)/welds $R_a) \le 1.6 \ \mu m (64 \ \mu$ -inch)	
	(Process connections acc. to 3A; Ra-values \leq 0.8 μm (32 $\mu \text{-inch})/\text{welds}$ Ra \leq 0.8 μm (32 $\mu \text{-inch})$	

SITRANS P300 for gauge and absolute pressure

PROFIBUS PA and FOUNDATION Fieldbus

SITRANS Pool for gauge and absolute pressure				
	HART			
Power supply U _H				
Terminal voltage on transmitter	10.5 42 V DC for intrinsically safe operation: 10.5			
Separate power supply	-			
Bus voltage				
Without EEx	-			
 With intrinsically-safe operation 	-			
Current consumption				
Max. basic current	-			
• Start-up current \leq basic current	-			

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Supplied through bus 5 ... 30 V DC Not necessary 9... 32 V 9...24 V 12.5 mA 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 group 1; complies with requirements of Article 3, paragraph 3 (sound engineering practice) Water, waste water In preparation Explosion protection Intrinsic safety "i" PTB 05 ATEX 2048 Ex II 1/2 G EEx ia/ib IIB/IIC T4, T5, T6 Marking · 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: values: $\label{eq:stability} \begin{array}{l} \hline FISCO \ supply \ unit: \\ \hline U_i = 17.5 \ V, \ I_i = 380 \ mA, \\ P_i = 5.32 \ W \end{array}$ $U_i = 30 \text{ V}, I_i = 100 \text{ mA},$ $P_i = 750 \text{ mW}, R_i = 300 \Omega$ Linear barrier: $U_i = 24$ V, $I_i = 250$ mA, $P_i = 1.2$ W $C_i = 6 nF$ Effective inner capacitance: $C_i = 1.1 \text{ nF}$ • Effective internal inductance: $L_i = 0.4 \text{ mH}$ $L_i \leq 7 \mu H$ Explosion protection to FM for USA and Canada (cFM_{US}) Identification (DIP) or (IS); (NI) Certificate of Compliance 3025099 CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4 ... T6; CL I, DIV 2, GP ABCD T4 ... T6; CL II, DIV 2, GP FG; CL III Identification (DIP) or (IS) Certificate of Compliance 3025099C CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC 4 ... T6; CL I, DIV 2, GP ABCD T4 ... T6; CL II, DIV 2, GP FG; CL III PTB 05 ATEX 2048 Dust explosion protection for zone 20/21/22 Marking Ex II 1D Ex ia D 20 T 120 °C Ex II 2D Ex ib D 21 T 120 °C Ex II 3D Ex ib D 21 T 120 °C · Permissible ambient temperature -40 ... +85 °C (-40 ... +185 °F) (in the case of mineral glass windows only -20 ... +85 °C (-4 ... +185 °F)) - Temperature class T4 -40 ... +70 °C (-40 ... +158 °F) (in the case of mineral glass windows only -20 ... +70 °C (-4 ... +158 °F)) - Temperature class T5 -40 ... +60 °C (-40 ... +140 °F) (in the case of mineral glass windows only -20 ... +60 °C (-4 ... +140 °F))

To certified intrinsically-safe circuits with peak

 $U_i = 30 \text{ V}, I_i = 100 \text{ mA}, P_i = 750 \text{ mW}$

values

 $C_i = 6 nF$

 $L_i = 0.4 \ \mu H$

- Temperature class T6

Connection

• Effective inner capacitance:

• Effective internal inductance:

To certified intrinsically-safe circuits with peak

 $U_i = 24 \text{ V}, I_i = 380 \text{ mA}, P_i = 5.32 \text{ mW}$

values

 $C_i = 5 nF$

 $L_{i} = 10 \ \mu H$

SITRANS P300 for gauge and absolute pressure

SITRANS P300 for gauge and absolute pre	ssure		
	HART PROFIBUS PA and FOUNDATION Fieldbus		
Type of protection Ex nA/nL/ic (Zone 2)	PTB 05	5 ATEX 2048	
Marking	II 2/3 G Ex i	c IIB/IIC T4/T5/T6	
	II 2/3 G E	Ex nA T4/T5/T6	
	II 2/3 G Ex n	L IIB/IIC T4/T5/T6	
 Permissible ambient temperature 			
- Temperature class T4		C (-40 +185 °F) ows 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 mineral glass windows only -20 +60 °C (-4 +140 °F))		
• Ex nA 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/nL 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:	$C_i = 6 nF$	$C_i = 5 \text{ nF}$	
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).</p>

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		for gau	ge and absolute pressure
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 	Function block Fib
PROFIBUS PA communication		- Adaptation to customer-	Yes, linearly rising or falling
Simultaneous communication with	4	specific process variables	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, incorrect value)
Output byte	5 (one measured value) or	- Limit monitoring	Yes, one upper and lower warn-
	10 (two measured values)		ing limit and one alarm limit respectively
Input byte	0.1 or 2 (totalizer mode and reset function for dosing)	 Square-rooted characteristic for flow measurement 	Yes
 Internal preprocessing 		• PID	Standard FOUNDATION
Device profile	PROFIBUS PA Profile for Process		Fieldbus function block
	Control Devices 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-	Yes, linearly rising or falling	 Pressure transducer block 	
specific process variables - Electrical damping, adjustable	characteristic 0 100 s	 Can be calibrated by applying two pressures 	Yes
- Electrical damping, adjustable	Input /Output	- Monitoring of sensor limits	Yes
- Failure function	parameterizable (last good value,	- Simulation function: Measured	Constant value or over parame-
	substitute value, incorrect value)	pressure value, sensor temper- ature and electronics tempera-	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 sum- mation, 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		
- Characterizer	Max. 30 points		
 Simulation function for mea- sured pressure value and sen- sor temperature 	Constant value or over parame- terizable ramp function		

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Pressure Measurement Transmitters for food, pharmaceuticals and biotechnology

SITRANS P300

for gauge and absolute pressure

Selection and Ordering		Orde	er No.			
SITRANS P300 pressure transmitters for rela- tive and absolute pressure, single-chamber mea- suring housing, rating plate inscription in English						
4 20 mA/HART	7 M F 8 0 2 3 -					
PROFIBUS PA				802		
	(— —)				-	
FOUNDATION Fieldbus	(FF)			802		
				-		
Measuring cell filling	Measuring cell cleaning	9				
Silicone oil	normal		1			
Inert liquid	Cleanliness level 2 to DIN 25410		3			
Max. span (min max	.)					
0.15 14.5 psi	(0.01 1 bar)		в			
0.58 58 psi	(0.04 4 bar)		С			
2.32 232 psi	(0.1616 bar)		D			
9.14 914 psi	(0.63 63 bar)		E			
23.2 2320 psi	(1.6 160 bar)		F			
58 5802 psi	(4 400 bar)		G			
0.036 3.63 psia	(2.5 250 mbar a)	F)	Q			
0.19 18.9 psia	(13 1300 mbar a)	F)	N			
0.7 72.5 psia	(0.05 5 bar a)	F)	т			
4.35 435 psia	(0.3 30 bar a)	F)	U			
Wetted parts materials	· ·					
Seal diaphragm	Measuring cell					
Stainless steel	Stainless steel	_	A			
Hastelloy	Stainless steel	F)	В	3		
Hastelloy	Hastelloy	F)	C	;		
Version for diaphragm se	eal ¹⁾²⁾		Y	r		
Process connection						
• G1/2B to EN 837-1				0		
• ½-14 NPT				1		
 Stainless steel oval flar 						
 Mounting thread ⁷/₁₆ 				2		
- Mounting thread M10				3		
- Mounting thread M12 to DIN 19213				4		
 Male thread M20 x 1.5 Male thread ½ -14 NPT 				5		
				6		
•	Non-wetted parts materials					
 Stainless steel, deep-drawn and electrolytically polished 				4		
Version						
 Standard versions 					1	
Harzardous Area Ratin	a					
General Purpose	5				Α	
ATEX, Hazardous App	roval					
- "Intrinsic safety (EEx					в	
 FM/CSA Hazardous approval 					МJ	
- "Instrinsically safe and explosion proof (is + xp)"						
Electrical connection /						
 Screwed gland M20x1.5 (polyamide)³⁾ 					A	
Screwed gland M20x1.5 (metal)					В	
 Screwed gland M20x1.5 (stainless steel) 					C	
	• M20 connectors (stainless steel), without cable				G	

• 1/2-14 NPT stainless steel thread 4)

Selection and Ordering data	Order No.
SITRANS P300 pressure transmitters for rela- tive and absolute pressure, single-chamber mea- suring housing, rating plate inscription in English	
4 20 mA/HART	7 M F 8 0 2 3 -
PROFIBUS PA	7 M F 8 0 2 4 -
FOUNDATION Fieldbus (FF)	7 M F 8 0 2 5 -
Indicator	
 Without display, with keys, closed lid³⁾ With display and keys, closed lid 	1 2
 With display and keys, lid with plastics (Makrolon) pane (setting on HART devices: mA, on PROFIBUS devices: pressure units) 	4
• With display and keys, lid with plastics (Makrolon) pane (setting acc. to specifications, Order code "Y21" or "Y22" required)	5
 With indicator (digital display visible, setting: mA) With indicator (digital display visible, setting as specified, Order code "Y21" or "Y22" required) 	6 7

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

- Included in delivery of the device: Brief instructions (Leporello) CD-ROM with detailed documentation
- ¹⁾ When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the dia-phragm seals. The measuring accuracy of the total combination is certi-fied 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⁾ Only together with HART electronics.
- 4) Without cable gland.

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F) Subject to export regulations AL: 9I999, ECCN: N.

SITRANS P300 for gauge and absolute pressure

Selection and Ordering	g data		Orc	der N	lo.		
and absolute pressure	measuring housing, rating						
4 20 mA/HART		F)	7 M	F 8 1	2 :	3 -	
PROFIBUS PA		F)	7 M	F 8 1	2	4 -	
FOUNDATION Fieldbus	s (FF)	F)	7 M	F 8 1	2 !	5-	
		'					
Measuring cell filling	Measuring cell cleaning						
Silicone oil	normal		1				
Inert liquid	Cleanliness level 2 to DIN 25410		3				
FDA compliant fill fluid							
Neobee oil	normal		4				
Max. span (min max	•						
0.15 14.5 psi	0.01 1 bar		B				
0.58 58 psi	0.04 4 bar 0.16 16 bar		C				
2.32 232 psi 9.14 914 psi	0.63 63 bar		E				
•			_				
0.19 18.9 psia ¹⁾	13 1300 mbar a ¹⁾		S				
0.7 72.5 psia ¹⁾ 4.35 435 psia ¹⁾	0.05 5 bar a ¹⁾ 0.03 30 bar a ¹⁾		T U				
			U				
Wetted parts materials Seal diaphragm	Measuring cell						
Stainless steel	Stainless steel	-		A			
Hastelloy ²⁾	Stainless steel			в			
Process connection							
 Flange version with Or (see "Further designs" 	der Code M, N, R or Q)			7			
Non-wetted parts mate	erials						
 Stainless steel, deep-opolished 	drawn and electrolytically			4	1		
Version							
 Standard versions 						1	
Harzardous Area Ratin	g						
 General Purpose 						A	
 ATEX, Hazardous App 							
- "Intrinsic safety (EEx						В	
 FM/CSA Hazardous ap - "Instrinsically safe and 	proval l explosion proof (is + xp)"					M	J
Electrical connection /		_					
Screwed gland M20x1	.5 (polyamide) ³⁾						A
 Screwed gland M20x1 							В
 Screwed gland M20x1 							С
0	less steel), without cable						G

• 1/2-14 NPT stainless steel thread 4)

Selection and Ordering data		Order No.
SITRANS P300 pressure transmitters for relative and absolute pressure with front-flush mem- brane, single-chamber measuring housing, rating plate inscription in English		
4 20 mA/HART	F)	7 M F 8 1 2 3 -
PROFIBUS PA	F)	7 M F 8 1 2 4 -
FOUNDATION Fieldbus (FF)	F)	7 M F 8 1 2 5 -
Indicator		
 Without display, with keys, closed lid⁵⁾ 		1
 With display and keys, closed lid 		2
 With display and keys, lid with plastics (Makrolon) pane (setting on HART devices: mA, on PROFIBUS devices: pressure units) 		4
With display and keys, lid with plastics (Makrolon) pane (setting acc. to specifications, Order code "Y21" or "Y22" required)		5
• With indicator (digital display visible, setting: mA)		6
 With indicator (digital display visible, setting as specified), Order code "Y21" or "Y22" required 		7
Power supply units see Chap. 8 "Supplementary Co	m	ponents".
Included in delivery of the device:		

- 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 possible for flange with M., N. and Q. option.
- ³⁾ Only together with HART electronics.
- ⁴⁾ Without cable gland.

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- ⁵⁾ Only together with HART electronics.
- F) Subject to export regulations AL: 91999, ECCN: N.
- r) subject to export regulations AL. 91999, ECCN. N.

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 bracket (2 shackles, 4 nuts, 4 U-plates, 1 angle) made of: made completely of stainless steel, for wall or	A02	1	•	1	
pipe mounting					
Rating plate inscription					
(instead of English)	D 40	,	,	,	
• German • French	B10 B12	√ √	√ √	√ √	
Spanish	B12	· /	¥.	¥.	
• Italian	B14	√ √		~	
English rating plate	B21	1	1	1	
Pressure units in inH ₂ 0 and/or psi	021	·	•	•	
Factory calibration certificate	C11	✓	1	✓	
Material traceability certification	C12	✓	✓	~	
Factory certificate of conformance	C14	1	✓	✓	
Degree of protection IP68 (only for M20x1.5 and ½-14 NPT)	D12	1	~	1	
Brad Harrison Connector	D40	✓	✓	✓	
Degree of protection IP6k9k (only for M20x1.5)	D46	~	~	~	
Ex Approval IEC Ex (EEx ia)	E45	1	1	~	
(only for transmitter 7MF8B) Ex Approval EEx ia/ib NEPSI	E55	1	1	1	
Only for SITRANS P300 with front-flush	233	•	•	•	
diaphragm (7MF81)					
Flange to EN 1092-1, Form b1					
• DN 25, PN 40 ¹⁾	M11	✓	1	~	
• DN 25, PN 100 ⁴⁾	M21	✓	✓	✓	
• DN 40, PN 40	M13	✓	✓	✓	
• DN 40, PN 100	M23	1	1	✓	
• DN 50, PN 16	M04	1	1	1	
• DN 50, PN 40	M14 M06	1 1	√ √	√ √	
 DN 80, PN 16 DN 80, PN 40 	M06 M16	*	*	* *	
,	WIO	•	•	•	
Flanges to ASME B16.5 • 1", class 150 ⁴⁾	M40	1	1	1	
• 1½", class 150	M40 M41	1	1	· /	
• 2", class 150	M42	1	1	1	
• 3", class 150	M43	~	1	~	
• 4", class 150	M44	1	✓	✓	
• 1", class 300 ⁴⁾	M45	✓	1	✓	
• 1½", class 300	M46	✓	✓	✓	
• 2", class 300	M47	1	1	1	
• 3", class 300	M48	√ √	√ √	√ √	
• 4", class 300	M49	•	v	•	
Threaded connector to DIN 3852-2, form A, thread to ISO 228					
• G ¾"-A, front-flush ²⁾	R01	✓	✓	✓	
• G 1"-A, front-flush ⁴⁾	R02	1	1	1	
• G 2"-A, front-flush ⁴⁾	R04	1	~	~	
Tank connection ³⁾					
Sealing is included in delivery	Die				
• TG 52/50, PN 40	R10	•	v	V	

Selection and Ordering dataOrder codeFurther designsHARTPAAdd "-Z" to Order No. and specify Order Code.HARTPASanitary process connection according DIN 11851 (Dairy connection) Certified to 3A ⁴)N04✓• DN 50, PN 25N06✓• DN 80, PN 25N06✓• Tri-Clamp connection according DIN DIN 50757600 0050N04✓	FF
Add "-Z" to Order No. and specify Order Code. Image: Code and specify Order Code. Sanitary process connection according DIN 11851 (Dairy connection) Certified to 3A ⁴) Image: Code and specified to 3A ⁴) • DN 50, PN 25 N04 ✓ • DN 80, PN 25 N06 ✓ Tri-Clamp connection according Image: Code and specified to 3A ⁴)	FF
specify Order Code. Image: Code content of the system	
Sanitary process connection according DIN 11851 (Dairy connection) Certified to 3A ⁴) • DN 50, PN 25 • DN 80, PN 25 N06 Tri-Clamp connection according	
DIN 11851 (Dairy connection) Certified to 3A ⁴) • DN 50, PN 25 • DN 80, PN 25 N06 ✓ Tri-Clamp connection according	
Certified to 3A ⁴⁾ • DN 50, PN 25 • DN 80, PN 25 N06 ✓ ✓ Tri-Clamp connection according	
• DN 50, PN 25 • DN 80, PN 25 N06 ✓ ✓ Tri-Clamp connection according	
Tri-Clamp connection according	✓
	✓
DIN 32676/ISO 2852	
Certified to 3A ⁴)	
• DN 50/2", PN 16 N14 ✓	*
• DN 65/3", PN 10 N15 ✓ ✓	v
Varivent connection	
Certified to 3A and EHEDG ⁴⁾ ● Type N = 68 for Varivent housing N28 ✓ ✓	1
$DN 40 \dots 125 \text{ und } 11/2" \dots 6", PN 40$	•
Temperature decoupler up to 200 °C ⁵) P00 ✓ ✓	1
for front-flush diaphragm version	
Temperature decoupler up to 250 °C P10 ✓ ✓	1
Measuring cell filling: High-temperature oil	
(Silicone oil)	
Bio-Control sanitary process connection	
Certified to 3A and EHEDG ⁴⁾	
• DN 50, PN 16 Q53 ✓ ✓	1
• DN 65, PN 16 Q54 ✓ ✓ • DN 80 PN 16 Q55 ✓ ✓	4
	v
Sanitary process connection to DRD	,
• DN 50, PN 40 M32 ✓ ✓	v
SMS socket with union nut • 2 ["] M67 ✓ ✓	1
• 2½" M68 ✓ ✓	1
• 3" M69 ✓ ✓	1
SMS threaded socket	
• 2" M73 ✓ ✓	✓
• 2½" M74 🗸 🗸	✓
• 3" M75 🗸 🗸	✓
IDF socket with union nut ISO 2853	
• 2" M82 🖌 🖌	~
• 2 ⁴ • 2 ¹ ⁄ ₂ ⁴ M82 ✓ ✓ M83 ✓ ✓	*
• 2" M82 🖌 🖌	* * *
• 2" • 2½" M82 ✓ ✓ M83 ✓ ✓	* * *
• 2 ^a M82 ✓ ✓ • 2 ¹ / ₂ ^a M83 ✓ ✓ • 3 ^a M84 ✓ ✓ IDF threaded socket ISO 2853 ✓ ✓ • 2 ^a M92 ✓ ✓	* * *
• 2 ⁴ M82 ✓ • 2 ¹ / ₂ ⁴ M83 ✓ ✓ • 3 ⁴ M84 ✓ ✓ IDF threaded socket ISO 2853 ✓ ✓ • 2 ⁴ M92 ✓ ✓ • 2 ⁴ M92 ✓ ✓ • 2 ¹ / ₂ ⁴ M93 ✓ ✓	1
• 2 ⁴ M82 ✓ • 2½ ⁴ M83 ✓ ✓ • 3 ⁴ M84 ✓ ✓ IDF threaded socket ISO 2853 ✓ ✓ • 2 ⁴ M92 ✓ ✓ • 2 ⁴ M93 ✓ ✓ • 2 ⁴ M93 ✓ ✓ • 2 ⁴ / ₂ M93 ✓ ✓ • 3 ⁴ M94 ✓ ✓	* * * * * *
• 2 ^a M82 ✓ • 2½ ^a M83 ✓ ✓ • 3 ^a M84 ✓ ✓ IDF threaded socket ISO 2853 ✓ ✓ • 2 ^a M92 ✓ ✓ • 2½ ^a M93 ✓ ✓ • 3 ^a M93 ✓ ✓ • 3 ^a M94 ✓ ✓ Sanitary process connection to NEUMO ✓ ✓	1
• 2 ^a M82 ✓ • 2 ^b / ₂ ^a M83 ✓ • 3 ^a M84 ✓ IDF threaded socket ISO 2853 ✓ • 2 ^a M92 ✓ • 2 ^b / ₂ ^a M93 ✓ • 2 ^b / ₂ ^a M93 ✓ • 3 ^a M94 ✓ Sanitary process connection to NEUMO Bio-Connect screw connection	1
• 2" M82 ✓ ✓ • 2½" M83 ✓ ✓ • 3" M84 ✓ ✓ IDF threaded socket ISO 2853 ✓ • 2" M92 ✓ ✓ • 2½" M93 ✓ ✓ • 2½" M93 ✓ ✓ • 3" M94 ✓ ✓ Sanitary process connection to NEUMO Bio-Connect screw connection Certified to 3A and EHEDG ⁴) ✓	*
• 2" M82 ✓ • 2½" M83 ✓ • 3" M84 ✓ IDF threaded socket ISO 2853 ✓ • 2" M92 ✓ • 2½" M93 ✓ • 2½" M93 ✓ • 2½" M93 ✓ • 3" M94 ✓ Sanitary process connection to NEUMO Bio-Connect screw connection Certified to 3A and EHEDG ⁴) Image: Connect screw connection screw connection screw connection screw connection	1
• 2" M82 ✓ • 2½" M83 ✓ • 3" M84 ✓ IDF threaded socket ISO 2853 ✓ • 2" M92 ✓ • 2½" M93 ✓ • 2" M93 ✓ • 2½" M93 ✓ • 3" M94 ✓ Sanitary process connection to NEUMO Bio-Connect screw connection Certified to 3A and EHEDG ⁴) Q05 ✓ • DN 50, PN 16 Q06 ✓ ✓ • DN 65, PN 16 Q06 ✓ ✓ • DN 80, PN 16 Q07 ✓ ✓	* *
• 2" M82 ✓ ✓ • 2½" M83 ✓ ✓ • 3" M84 ✓ ✓ IDF threaded socket ISO 2853 ✓ • 2" M92 ✓ ✓ • 2½" M93 ✓ ✓ • 2½" M93 ✓ ✓ • 3" M94 ✓ ✓ Sanitary process connection to NEUMO Bio-Connect screw connection Certified to 3A and EHEDG ⁴) Q05 ✓ • DN 50, PN 16 Q06 ✓ ✓ • DN 65, PN 16 Q07 ✓ ✓ • DN 80, PN 16 Q07 ✓ ✓ • DN 100, PN 16 Q08 ✓ ✓	* * * * *
• 2" M82 ✓ ✓ • 2½" M83 ✓ ✓ • 3" M84 ✓ ✓ IDF threaded socket ISO 2853 ✓ • 2" M92 ✓ ✓ • 2½" M93 ✓ ✓ • 2½" M93 ✓ ✓ • 3" M94 ✓ ✓ Sanitary process connection to NEUMO Bio-Connect screw connection Certified to 3A and EHEDG ⁴) Q05 ✓ • DN 50, PN 16 Q06 ✓ ✓ • DN 65, PN 16 Q07 ✓ ✓ • DN 80, PN 16 Q08 ✓ ✓ • DN 100, PN 16 Q08 ✓ ✓ • DN 2", PN 16 Q13 ✓ ✓	* *
• 2" M82 ✓ • 2½" M83 ✓ • 3" M84 ✓ IDF threaded socket ISO 2853 ✓ • 2" M92 ✓ ✓ • 2½" M93 ✓ ✓ • 2½" M93 ✓ ✓ • 3" M94 ✓ ✓ Sanitary process connection to NEUMO Bio-Connect screw connection Certified to 3A and EHEDG ⁴) Q05 ✓ • DN 50, PN 16 Q06 ✓ ✓ • DN 65, PN 16 Q07 ✓ ✓ • DN 80, PN 16 Q08 ✓ ✓ • DN 100, PN 16 Q13 ✓ ✓ • DN 2", PN 16 Q13 ✓ ✓	* * * * * * *
• 2" M82 ✓ • 2½" M83 ✓ • 3" M84 ✓ IDF threaded socket ISO 2853 ✓ • 2" M92 ✓ ✓ • 2½" M93 ✓ ✓ • 2½" M93 ✓ ✓ • 3" M94 ✓ ✓ Sanitary process connection to NEUMO Bio-Connect screw connection Certified to 3A and EHEDG ⁴ Q05 ✓ • DN 50, PN 16 Q06 ✓ ✓ • DN 65, PN 16 Q07 ✓ ✓ • DN 80, PN 16 Q08 ✓ ✓ • DN 100, PN 16 Q13 ✓ ✓ • DN 2", PN 16 Q13 ✓ ✓ • DN 3", PN 16 Q15 ✓ ✓	* * * * * * * *
• 2" M82 ✓ ✓ • 2½" M83 ✓ ✓ • 3" M84 ✓ ✓ IDF threaded socket ISO 2853 ✓ • 2" M92 ✓ ✓ • 2½" M93 ✓ ✓ • 2½" M93 ✓ ✓ • 3" M94 ✓ ✓ Sanitary process connection to NEUMO Bio-Connect screw connection Certified to 3A and EHEDG ⁴) Q05 ✓ • DN 50, PN 16 Q06 ✓ ✓ • DN 65, PN 16 Q07 ✓ ✓ • DN 80, PN 16 Q08 ✓ ✓ • DN 100, PN 16 Q13 ✓ ✓ • DN 2", PN 16 Q13 ✓ ✓	* * * * * * *
• 2" M82 ✓ ✓ • 2½" M83 ✓ ✓ • 3" M84 ✓ ✓ IDF threaded socket ISO 2853 ✓ • 2" M92 ✓ ✓ • 2½" M93 ✓ ✓ • 2½" M93 ✓ ✓ • 3" M94 ✓ ✓ Sanitary process connection to NEUMO Bio-Connect screw connection Certified to 3A and EHEDG ⁴ ✓ ✓ • DN 50, PN 16 Q05 ✓ ✓ • DN 65, PN 16 Q06 ✓ ✓ • DN 80, PN 16 Q08 ✓ ✓ • DN 100, PN 16 Q13 ✓ ✓ • DN 2", PN 16 Q13 ✓ ✓ • DN 2", PN 16 Q15 ✓ ✓ • DN 3", PN 16 Q15 ✓ ✓ • DN 4", PN 16 Q16 ✓ ✓ • Sanitary process connection to NEUMO V ✓ ✓	* * * * * * * *
• 2" M82 ✓ ✓ • 2½" M83 ✓ ✓ • 3" M84 ✓ ✓ IDF threaded socket ISO 2853 ✓ • 2" M92 ✓ ✓ • 2½" M93 ✓ ✓ • 2½" M93 ✓ ✓ • 3" M94 ✓ ✓ Sanitary process connection to NEUMO Bio-Connect screw connection Certified to 3A and EHEDG ⁴ Q05 ✓ • DN 50, PN 16 Q06 ✓ ✓ • DN 80, PN 16 Q07 ✓ ✓ • DN 100, PN 16 Q08 ✓ ✓ • DN 2", PN 16 Q13 ✓ ✓ • DN 3", PN 16 Q15 ✓ ✓ • DN 4", PN 16 Q15 ✓ ✓ • DN 4", PN 16 Q16 ✓ ✓ Sanitary process connection to NEUMO Bio-Connect flange connection ✓ ✓	* * * * * * * *
• 2" M82 ✓ ✓ • 2½" M83 ✓ ✓ • 3" M84 ✓ ✓ IDF threaded socket ISO 2853 ✓ • 2" M92 ✓ ✓ • 2½" M93 ✓ ✓ • 2½" M93 ✓ ✓ • 3" M94 ✓ ✓ Sanitary process connection to NEUMO Bio-Connect screw connection Certified to 3A and EHEDG ⁴ ✓ ✓ • DN 50, PN 16 Q05 ✓ ✓ • DN 65, PN 16 Q06 ✓ ✓ • DN 80, PN 16 Q08 ✓ ✓ • DN 100, PN 16 Q13 ✓ ✓ • DN 2", PN 16 Q13 ✓ ✓ • DN 2", PN 16 Q15 ✓ ✓ • DN 3", PN 16 Q15 ✓ ✓ • DN 4", PN 16 Q16 ✓ ✓ • Sanitary process connection to NEUMO V ✓ ✓	* * * * * * * *
• 2" M82 ✓ ✓ • $2½''$ M83 ✓ ✓ • 3" M84 ✓ ✓ IDF threaded socket ISO 2853 ✓ • 2" M92 ✓ ✓ • 2½'' M93 ✓ ✓ • 2½'' M93 ✓ ✓ • 3" M94 ✓ ✓ Sanitary process connection to NEUMO Bio-Connect screw connection Certified to 3A and EHEDG ⁴) Q05 ✓ • DN 50, PN 16 Q06 ✓ ✓ • DN 65, PN 16 Q08 ✓ ✓ • DN 100, PN 16 Q13 ✓ ✓ • DN 10, PN 16 Q13 ✓ ✓ • DN 2½", PN 16 Q14 ✓ ✓ • DN 3", PN 16 Q15 ✓ ✓ • DN 4", PN 16 Q16 ✓ ✓ • DN 4", PN 16 Q16 ✓ ✓ • DN 4", PN 16 Q23 ✓ ✓ • DN 65, PN 16 Q24 ✓ ✓	** ****** **
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	** ****** ***
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	** ******* ****
• 2" M82 ✓ ✓ • 2½'' M83 ✓ ✓ • 3" M84 ✓ ✓ IDF threaded socket ISO 2853 ////////////////////////////////////	** ******* ****
• 2" M82 ✓ • 2½'' M83 ✓ • 3" M84 ✓ IDF threaded socket ISO 2853 ////////////////////////////////////	** ****** *****
• 2" M82 ✓ ✓ • 2½" M83 ✓ ✓ • 3" M84 ✓ ✓ IDF threaded socket ISO 2853 ✓ • 2" M92 ✓ ✓ • 2½" M93 ✓ ✓ • 2½" M93 ✓ ✓ • 2½" M93 ✓ ✓ • 3" M94 ✓ ✓ Sanitary process connection to NEUMO Bio-Connect screw connection Certified to 3A and EHEDG ⁴ Q05 ✓ • DN 65, PN 16 Q06 ✓ ✓ • DN 80, PN 16 Q07 ✓ ✓ • DN 100, PN 16 Q13 ✓ ✓ • DN 2", PN 16 Q14 ✓ ✓ • DN 3", PN 16 Q16 ✓ ✓ • DN 4", PN 16 Q16 ✓ ✓ • DN 4", PN 16 Q23 ✓ ✓ • DN 50, PN 16 Q24 ✓ ✓ • DN 65, PN 16 Q25 ✓ ✓ • DN 80, PN 16 Q26 ✓ ✓	** ****** *****

SITRANS P300 for gauge and absolute pressure

Selection and Ordering data Further designs	Order	code		
		HART	PA	FF
Add "-Z" to Order No. and				
specify Order Code.				
Sanitary process connection to NEUMO Bio-Connect clamp connection				
Certified to 3A and EHEDG ⁴⁾				
• DN 50, PN 16	Q39	×.	1	✓
• DN 65, PN 10	Q40	1 1	1	1
• DN 80, PN10	Q41	√ √	✓ ✓	✓ ✓
• DN 100, PN 10 • DN 2½", PN 16	Q42 Q48	√	↓	¥ ✓
• DN 3", PN 10	Q49	1	· /	1
• DN 4", PN 10	Q50	1	1	1
Sanitary process connection to NEUMO Bio-Connect S flange connection				
Certified to 3A and EHEDG				
• DN 50, PN 16	Q63	1	1	1
• DN 65, PN 10	Q64	✓.	1	1
• DN 80, PN 10	Q65	1	1	1
• DN 100, PN 10	Q66	√ √	√ √	√ √
• DN 2", PN 16 • DN 2½", PN 10	Q72 Q73	✓ ✓	✓ ✓	× ✓
• DN 3", PN 10	Q74	1	¥	1
• DN 4", PN 10	Q75	1	1	1
Aseptic threaded socket to DIN 11864-1				
Form A				
Certified to 3A and EHEDG				
• DN 50, PN 25	N33	√	√	✓.
• DN 65, PN 25	N34	√ √	1	1
 DN 80, PN 25 DN 100, PN 25 	N35 N36	*	√ √	4
,	1130	•	•	•
Aseptic flange with notch to DIN 11864-2 Form A				
Certified to 3A and EHEDG				
• DN 50, PN 16	N43	✓	1	✓
• DN 65, PN 16	N44	1	1	1
• DN 80, PN 16	N45	1	√ ✓	1
• DN 100, PN 16	N46	~	~	~
Aseptic flange with groove to DIN 11864-2 Form A				
Certified to 3A and EHEDG				
• DN 50, PN 16	N43 +	✓	1	~
• DN 65, PN 16	P11 N44 +	~	~	~
	P11 N45 +	~	~	~
• DN 80, PN 16	P11	1	~	~
• DN 80, PN 16 • DN 100, PN 16	N46 +			
	N46 + P11			
DN 100, PN 16 Aseptic clamp with groove to DIN 11864-3		·		
• DN 100, PN 16 Aseptic clamp with groove to DIN 11864-3 FormA		·		
• DN 100, PN 16 Aseptic clamp with groove to DIN 11864-3 FormA Certified to 3A and EHEDG	P11	•	✓	*
 DN 100, PN 16 Aseptic clamp with groove to DIN 11864-3 FormA Certified to 3A and EHEDG DN 50, PN 25 		*	* *	*
• DN 100, PN 16 Aseptic clamp with groove to DIN 11864-3 FormA Certified to 3A and EHEDG	P11 N53	*	* * *	* * *

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.				
Calibrated range Specify in plain text (max. 5 characters): Y01: X to Y psi, inH ₂ 0, ftH ₂ 0	Y01	1		
Tag number/Identification(max. 16 characters), specify in plain text:Y15:	Y15	*	1	~
Tag description (max. 27 characters), specify in plain text: Y16:	Y16	*	1	*
Entry of HART (TAG)	Y17	✓		
(max. 8 characters), specify in plain text: Y17:				
Pressure units for digital display	Y21	✓	✓	✓
specify in plain text: Y21: psi, inH ₂ 0, ftH ₂ 0				
Non-Pressure units for digital display ⁶) (measuring range in pressure units ("Y01"/"Y02") mandatory) specify in plain text: Y22: X to Y GPM, MGD, Feet	Y22 + Y01	1		
Preset bus address (possible between 1 126) Specify in plain text: Y25:	Y25		~	

Factory mounting of valve manifolds, see accessories.

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

= available

Ordering example

Item line:	7MF8023-1DB24-1AB7-Z
B line:	A02 + Y01 + Y21
C line:	Y01: 0 14,5 psi (0 1 bar)
C line:	Y21: psi (bar)

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

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

³⁾ The weldable socket can be ordered under accessories.

⁴⁾ 3A certification only if used in conjunction with 3A-compliant sealing rings.
 ⁵⁾ Certified to 3A.

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

⁶⁾ 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

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

Flanges to ASME

ASME B16.5

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

NuG and pharmaceutical connections

Connections to DIN

DIN 11851 (milk pipe	e union)			
	DN	PN	ØD	H ₂
	50	25	92 mm (3.6")	Approx.
	80	25	127 mm (5.0")	52 mm (2")

TriClamp to DIN 32676

Ĩ

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

Other connections

Varivent connection



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

Biocontrol connection

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

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

Sanitary process screw connection to NEUMO Bio-Connect

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

Sanitary process connection to NEUMO Bio-Connect flange connection



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

 H_2

Approx. 52 mm (2")

Sanitary process connection to NEUMO Bio-Connect clamp connection

DN	PN	ØD
50	16	77.4 mm (3.0")
65	10	90.9 mm (3.6")
80	10	106 mm (4.2")
100	10	119 mm (4.7")
2"	16	64 mm (2.5")
21/2"	16	77.4 mm (3.0")
3"	10	90.9 mm (3.6")
4"	10	119 mm (4.7")
	50 65 80 100 2" 2½" 3"	50 16 65 10 80 10 100 10 2" 16 2½" 16 3" 10

Sanitary process connection to NEUMO Bio-Connect S flange connection



ŕ

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

SITRANS P300 for gauge and absolute pressure

H₂

Approx. 52 mm (2.1")

a", G1" and G2" acc. to DIN 3852				Aseptic threaded socket	t
DN	PN	ØD	H ₂		I
3⁄4"	63	37 mm (1.5")	approx.	(*********)	Ę
		((0))	45 mm (1.8")	±	6
1"	63	48 mm (1.9")	approx. 47 mm (1.9")		8
2"	63	78 mm (3.1")	Approx. 52		
		()	mm (2")	<	

Tank connection TG 52/50 and TG52/150

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

SMS socket with union nut

Threaded connection G³/₄



ui			
DN	PN	ØD	H ₂
2"	25	84 mm (3.3")	Approx.
21⁄2"	25	100 mm (3.9")	52 mm (2.1")
3"	25	114 mm (4.5")	

SMS threaded socket

	DN	PN	ØD	H ₂
	2"	25	70 x 1/6 mm	Approx.
	21⁄2"	25	85 x 1/6 mm	52 mm (2.1")
	3"	25	98 x 1/6 mm	
≺ D				

IDF socket with union nut

+	DN	PN	ØD	H ₂
	2"	25	77 mm (3")	Approx.
	21⁄2"	25	91 mm (3.6")	52 mm (2.1")
	3"	25	106 mm (4.2")	

IDF threaded socket

H	
<u> </u>	

DN	PN	ØD	H ₂
2"	25	64 mm (2.5")	Approx.
21⁄2"	25	77.5 mm (3.1")	52 mm (2.1")
3"	25	91 mm (3.6")	

to DIN 11864-1 Form A ΡN DN ØD 50 25 78 x 1/6" 65 25 95 x 1/6" 80 25 110 x ¼" 100 25 130 x ¼"

Aseptic flange with notch to DIN 11864-2 Form A

+ (000)	DN	PN	ØD	H ₂
	50	16	94	Approx. 52 mm (2.1")
	65	16	113	52 mm (2.1°)
	80	16	133	
	100	16	159	

Aseptic flange with groove to DIN 11864-2 Form A

	-				
+ (DN	PN	ØD	H ₂
~		50	16	94	Approx. 52 mm (2.1")
		65	16	113	52 mm (2.1°)
		80	16	133	
D		100		159	

Aseptic clamp with groove to DIN 11864-3 Form A

I

 DN	PN	ØD	H ₂
50	25	77,5	Approx. 52 mm (2.1")
65	25	91	52 mm (2.1°)
80	16	106	
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
Cover without window gasket not included	7MF8997-1BA
Cover with glass window gasket not included	7MF8997-1BD
NBR enclosure sealing F)	7MF8997-1BG
Measuring point label unlabeled	7MF8997-1CA
Cable gland • metal • plastic (blue)	7MF8997-1EA 7MF8997-1EB
Weldable sockets for PMC connection • PMC Style Standard: Thread 1½" • PMC Style Minibolt: front-flush 1"	7MF4997-2HA 7MF4997-2HB
Gaskets for PMC connection (packing unit = 5 units) • PTFE seal for PMC Style Standard: Thread 1½" • Gasket made of Viton for	
PMC Style Minibolt: front-flush 1" Weldable socket for TG52/50 and TG52/150 connection	
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) F)	7MF4997-2HH
• DN 25, PN 100 (M21) F) • 1", class 150 (M40) F)	
• 1, Class 150 (10140) F)	/ 1017433/ 2011

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 A5E00414588 A5E00414589 A5E00414590
- Italian - Leporello German/English		A5E00414591 A5E00414592
CD with documentation for SITRANS P300 and SITRANS DS III		
German, English, French, Spanish, Italian		A5E00090345
Certificates (order only via SAP) instead of Internet download		
 hard copy (to order) 		A5E03252406
• on CD (to order)		A5E03252407
HART modem	_	
with RS232 interface	D)	7MF4997-1DA
with USB interface	D)	7MF4997-1DB
 You can download these operating instructions Internet site at www.siemens.de/sitransp. 	s fre	e-of-charge from ou

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

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

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

• DN 25, PN 100 (M21) F	7MF4997-2HJ
• 1", class 150 (M40) F	7MF4997-2HK
• 1", class 300 (M45) F)	7MF4997-2HL

2

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:

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

Design

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



liers	
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
Material traceability certification	C12
	Add -Z to the Order No. of the transmitter and add order codes SITRANS P300 7MF8021 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)

SITRANS P300 - Factory-mounting of valve manifolds on transmitters

Dimensional drawings

Valve manifold mounted on SITRANS P300



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 $1\frac{1}{2}$ " and 1" flush at the front, the SITRANS P300 and DS III transmitters can be used for all processes in the paper industry.

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

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

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

Various versions of the pressure transmitters are available for measuring:

- Gauge pressure
- Level
- Mass level
- Volume level

High quality and service life

Benefits

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

Application

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

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

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

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

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

SITRANS P, DS III series

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

Span (infinitely adjustable)

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

Nominal measuring range

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

SITRANS P300

Span (infinitely adjustable)

For P300 with HART: 0.433 ... 232 psi (0.03 ... 16 bar)

Nominal measuring range

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

SITRANS P DS III and P300 with PMC connection Technical description

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

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

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

Example of attached measuring points sign



SITRANS P300

The device comprises:

- Electronics
- Housing
- Measuring cell



Perspective view of the SITRANS P300

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

communication

Pressure Measurement Transmitters for gauge pressure for the paper industry

Operation of electronics with PROFIBUS PA

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 digital display (9).

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

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



- 4 Microcontroller 5
- Electrical isolation One non-volatile memory 6 each in the measuring cell and electronics PROFIBUS-PA interface 7
- 9
- 10 Power supply
- 11 DP/PA coupler or link
- Bus master 12
- Input variable p,
- Function diagram of electronics

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

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

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

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

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 FOUN-DATION 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 a result of this modular design, the electronics and the measuring cell can be replaced separately from each other.

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

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

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

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

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	Pushbuttons	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	x	х
Disabling of buttons, write protection	х	x ¹⁾
Type of dimension and actual dimension	х	х
Linear or square root output	х	х
Characterizer setup		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 for position
- Event counter
- Transmitter output alarms
- Saturation alarm
- Min/Max registers
- Simulation functions
- Maintenance timer

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

Physical variable	Physical dimensions
Pressure (setting can also be made in the factory)	Pa, MPa, kPa, bar, mbar, torr, atm, psi, g/cm ² , kg/cm ² , inH 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 FF is connected to a process control system. Communication is possible even in a potentially explosive environment.

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

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

Adjustable parameters	Pushbuttons	PROFIBUS PA and FOUNDA- TION Fieldbus interface
Electrical damping	х	х
Zero adjustment (correction of posi- tion)	x	х
Buttons and/or function disabling	x	х
Source of measured-value display	x	х
Physical dimension of display	x	х
Position of decimal point	x	х
Bus address	х	х
Linear or square root output	х	х
Characterizer setup		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
- Min/Max registers
- Maintenance timer
- Simulation functions
- Zero correction for position
- Transmitter output alarms

Saturation alarm

Physical dimensions available for the display

Physical variable	Physical dimensions
Pressure (setting can also be made in the factory)	$\begin{array}{l} \mbox{MPa, hPa, kPa, Pa, bar, mbar, torr, atm, psi, g/cm^2, kg/cm^2, mmH_2O, mmH_2O (4 \ ^{\circ}C), inH_2O, inH_2O (4 \ ^{\circ}C), tiH_2O, mmHg, inHg \end{array}$
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, lmp. gallon, bushel, barrel, barrel liquid
Temperature	K, °C, °F, °R
Miscellaneous	%

PROFIBUS PA and FOUNDATION Fieldbus

Max. perm. test

pressure

87 psi (6 bar)

145 psi (10 bar)

464 psi

Gauge pressure

range

14.5 psi

(1 bar)

58 psi

(4 bar)

232 psi

Nominal measuring

Max. perm. test

pressure

87 psi

(6 bar)

145 psi

(10 bar)

464 psi

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
	Input	
2	Measured variable	
	Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span (min max.)
		0.15 14.5 psi (0.01 1 bar)
		0.58 58 psi (0.04 4 bar)
		2.32 232 psi (0.16 16 bar)
	Lower measuring limit	
	 Measuring cell with silicone oil filling 	
	Upper measuring limit	
	Output	
	Output signal	4 20 mA

	(0.16 16 bar)	(32 bar)	(16 bar)	(32 bar)
Lower measuring limit		I		
 Measuring cell with silicone oil filling 		1.45 psi a (100 mbar a)	
Upper measuring limit		100% of	max. span	
Output				
Output signal	4 20 mA		Digital PROFIBUS PA a FOUNDATION Fieldbu	
 Lower limit (infinitely adjustable) 	3.55 mA, factory pre	eset to 3.84 mA	-	
Upper limit (infinitely adjustable)	23 mA, factory pres set to 22.0 mA	et to 20.5 mA or optionally	-	
Load				
Without HART communication	$R_{\rm B} \le (U_{\rm H} - 10.5 \text{ V})/0$ $U_{\rm H}$: Power supply in		-	
With HART communication	$R_{\rm B} = 230 \dots 500 \Omega$ $R_{\rm B} = 230 \dots 1100 \Omega$	(SIMATIC PDM) or (HART Communicator)	-	
Physical bus	-		IEC 61158-2	
Protection against polarity reversal	Protected against s	hort-circuit and polarity reve supply	rsal. Each connection ag voltage.	gainst the other with max.
Measuring accuracy		Acc. to IE	EC 60770-1	
Reference conditions (All error data refer always refer to the set span)	Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil fill- ing, room temperature 25 °C (77 °F)) r: Span ratio (r = max. span / set span)			
Error in measurement at limit setting incl. hyster- esis and reproducibility				
Linear characteristic			≤ 0.075 %	
- r ≤ 10	$\leq (0.0029 \cdot r + 0.07)^{-1}$	1) %		
- 10 < r ≤ 30	$\leq (0.0045 \cdot r + 0.07)$	1) %		
- 30 < r ≤ 100	$\leq (0.005 \cdot r + 0.05)^{\circ}$	%		
Long-term stability (temperature change \pm 30 °C (\pm 54 °F))				
1- to 4-bar measuring cell	\leq (0.25 \cdot r) % per 5	years	≤ 0.25 % per 5 years	
16-bar measuring cell	≤ (0.125 · r) % per 5	years	\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 mea	asuring range

SITRANS P DS III with PMC connection

SITRANS P, DS III series for gauge pressure v	vith PMC connection for the paper industry		
	HART	PROFIBUS PA and FOUNDATION Fieldbus	
Rated conditions			
Degree of protection (to IEC 60529)	IP65, IP68, NEMA 4X, enclosure clean	ing, resistant to lyes, steam to 150 °C (302 °F)	
Temperature of medium	-40 +100	°C (-40 +212 °F)	
Ambient conditions			
Ambient temperature	-20 +85	°C (-4 +185 °F)	
Storage temperature	-50 +85 °	°C (-58 +185 °F)	
Climatic class			
- Condensation		umidity 0 100 % Ie, suitable for use in the tropics	
 Electromagnetic Compatibility 			
- Emitted interference and interference immu- nity	Acc. to EN 613	26 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	
Netted parts materials			
 Gasket (standard) 	PTFE	E flat gasket	
• O-ring (minibolt)	FPM (Viton) or o	ptionally: 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-mounte	d, 1", minibolt design	
Power supply $oldsymbol{U}_{ee}$		Supplied through bus	
Terminal voltage on transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically-safe mode		
Separate 24 V power supply necessary	-	No	
Bus voltage			
• Not Ex	-	9 32 V	
 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	
Certificates and approvals			
Classification according to PED 97/23/EC		id group 1; complies with requirements of article 3, nd 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).

SITRANS P DS III with PMC connection

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	P		4	

HART communication	
HART	020 1100 0
Protocol	230 1100 Ω HART Version 5.x
	SIMATIC PDM
Software for computer PROFIBUS PA communication	SIMATIC PDM
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	2
 Analog input 	
 Adaptation to customer- specific 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 respec- tively
 Physical block 	1
Transducer blocks	2
Pressure transducer block	
 Can be calibrated by applying two pressures 	Yes
- Monitoring of sensor limits	Yes
- Characterizer	Max. 30 points
 Square-rooted characteristic for flow measurement 	Yes
 Gradual volume suppression and implementation point of square-root extraction 	Parameterizable

- Simulation function for mea-Constant value or over paramesured pressure value and senterizable ramp function sor temperature

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
- Standard FOUNDATION Fieldbus function block 1 resource block 1 transducer block Pressure with calibration, 1 transducer block LCD

3 function blocks analog input,

Yes, linearly rising or falling

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

parameterizable (last good value,

substitute value, incorrect value) Yes, one upper and lower warn-ing limit and one alarm limit

1 function block PID

characteristic

respectively

Yes

0...100 s

Yes

Yes Constant value or over parameterizable ramp function

SITRANS P DS III with PMC connection

Selection and Orderin				er N				
SITRANS P pressure t pressure, with PMC co		7	MF	4 1	3	3 -		
series DS III with HAR	T	P	1		1	1	1	
Measuring cell filling	Measuring cell cleaning							
Silicone oil	normal	1						
Inert liquid	Grease-free to cleanliness level 2	3						
Measuring span (min.	max.)							
0.15 14.5 psi ¹⁾	(0,01 1 bar) ¹⁾		В					
0.58 58 psi	(0.04 4 bar)		C					
2.32 232 psi	(0.16 16 bar)		D					
Wetted parts materials								
Seal diaphragm	Connection shank							
Hastelloy	Stainless steel		E	1				
Process connection								
 PMC Style Standard: ¹ 	Thread 11/2"			2				
	ont-flush 1" (not with mini-			3				
mum span: 500 mbar	(200 inH ₂ O) - version "B")							
 Housing made of die- Housing stainless stee Version				(
 Standard versions 						1		
 International version, 	English label inscriptions,					2		
documentation in 5 la								
(no order code select	,							
Hazardous area rating								
 General purpose FM/CSA Hazardous a 	approval					A	۱.	
 FIN/CSA Hazardous a - "Intrinsically Safe un 						N	с	
(is + xp) ^{"2)}							Ĵ	
Electrical connection	/ cable entry							
 Female thread M20 x 							В	
 Female thread ½-14 N 							С	
 M12 connectors (meta 	al) ²						F	
Indicator								
Without indicator								0
 Without indicator (digination setting: mA) 	ital display hidden,							1
o ,	lisplay visible, setting: mA)							6
	display visible, setting as							7
specified, Order code								
	Chap. 8 "Supplementary Co	mr	on	ent	te"			
Power supply units see	onap. o Supplementary co	1116			.0	•		

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	Orde	r No			_
SITRANS P pressure to	ransmitter for gauge					
pressure, with PMC co	nnection					
DS III with PROFIBUS	PA (PA) F)	7 M F	41;	34-		
DS III with FOUNDATIO	DN Fieldbus (FF) F)	7 M F	41;	35-		
Measuring cell filling	Measuring cell cleaning					
Silicone oil	normal	1				
Inert liquid	Grease-free to cleanliness level 2	3				
Nominal measuring ra	nge					
14.5 psi ¹⁾	(1 bar) ¹⁾	В				
58 psi	(4 bar)	С				
232 psi	(16 bar)	D				
Wetted parts materials						
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 (200 inH₂O) not available with 1-bar-measuring cell (Option B)) 			2 3			
 Non-wetted parts mate Housing made of die- Housing stainless stee 	cast aluminium		0 3			
Version • Standard versions • International version, E documentation in 5 lar (no order code selecta		-		1 2		
Hazardous area rating		-				
General purpose				A		
 FM/CSA Hazardous a "Intrinsically Safe und (is + xp)"³⁾ 				N	с	
Electrical connection /	cable entry	-				
 Screwed gland M20x1 					в	
Screwed gland 1/2-14 I					С	
M12 connectors (meta	al) ⁵⁷				F	
Indicator						
Without indicator	kal alfanaları latalıl				0	
 Without indicator (digi setting: mA) 	tai display hidden,				1	
0 /	isplay visible, setting: mA)				6	
(0	display visible, setting as				7	

- 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
- F) Subject to export regulations AL:9I999, ECCN:N

SITRANS P DS III with PMC connection

Selection and Ordering data	Order	code		
Further designs	2.2.51	HART	PA	FF
Add "- Z " to Order No. and specify Order Code.				
Plug • Angled • Han 8D (metal, gray)	A32 A33	*		
Rating plate inscription (instead of German)				
• English • French • Spanish • Italian	B11 B12 B13 B14	* * *	* * * * *	* * *
English rating plate Pressure units in inH ₂ 0 and/or psi	B21	~	~	~
Factory calibration certificate	C11	✓	✓	✓
Material traceability certificate	C12	✓	✓	1
Factory certificate of conformance	C14	1	✓	~
SIL2 certificate per IEC 61508 / 61511	C20	✓		
Output signal can be set to upper limit of 22.0mA	D05	~	~	~
Brad Harrison Connector	D40	✓	✓	1
External, 1/2" NPT	J01	✓		
 Mounting Weldable sockets for standard 1½" threaded connection 	P01	*	1	*
Weldable socket for minibolt connection 1" (incl. screw 5/16-18 UNC-2B and washer)	P02	~	~	~

Selection and Ordering data	Order	code		
Additional data		HART	PA	FF
Please add "-Z" to Order No. and specify Order code(s) and plain text.				
Calibrated range	Y01	1		
Specify in plain text (max. 5 characters): Y01: X to Y psi, inH ₂ 0, ftH ₂ 0				
Tag number/Identification	Y15	1	✓	1
(max. 16 characters), specify in plain text: Y15:				
Tag description	Y16	1	✓	1
(max. 27 characters), specify in plain text: Y16:				
Entry of HART (TAG)	Y17	✓		
(max. 8 characters), specify in plain text: Y17:				
Pressure units for digital display	Y21	✓	✓	✓
specify in plain text: Y21: psi, inH ₂ 0, ftH ₂ 0				
Preset bus address	Y25		✓	
possible between 1 and 126				
Max. 8 characters, specify in plain text: Y25:				
Only "Y01" and "Y21" can be factory preset				
✓ = available				
Ordering example				

Item line:	7MF4133-1DB20-1AB7-Z
B line:	C11 + Y01 + Y21
C line:	Y01: 14.5 145 psi (1 10 bar)
C line:	Y21: psi (bar)

SITRANS P DS III with PMC connection

= approx. 130 (5.12)

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Dimensional drawings



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

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

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

H₁ = 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 H₂ 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

PMC Style standard DN PN ØD H₂ 40.9 mm (1.6") approx. 36.8 mm (1.4")

PMC Style minibolt



SITRANS P300 with PMC connection

Technical specifications

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

	HART	-	PROFIBUS PA and FO	UNDATION Fieldbus
Input				
Measured variable		Gauge press	ure (front-flush)	
Spans (infinitely adjustable) or nominal measuring range and max. pemissible test pressure	Measuring span (min max.)	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure
	0.15 14.5 psi (0.01 1 bar)	87 psi (6 bar)	14.5 psi (1 bar)	87 psi (6 bar)
	0.58 58 psi (0.04 4 bar)	145 psi (10 bar)	58 psi (4 bar)	145 psi (10 bar)
	2.3 232 psi (0.16 16 bar)	464 psi (32 bar)	232 psi (16 bar)	464 psi (32 bar)
	Depending on the proce may differ from these va		Depending on the proc nominal measuring ran values	ess connection, the ge may differ from these
Lower measuring limit				
 Measuring cell with silicone oil 		1.45 psi a ((100 mbar a)	
Upper measuring limit				
 Measuring cell with silicone oil 	100 % of max. span		100 % of the max. nom	inal measuring range
Output				
Output signal	4 20 mA		Digital PROFIBUS PA s	ignal
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 0.1 s (0 100 s)			
Measuring accuracy	Acc. to IEC 60770-1			
Reference conditions (All error data always refer to the set span)	Increasing characteristic, 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. hyster- esis and reproducibility				
Linear characteristic			≤ 0,075 %	
• r + 10	\leq (0.0029 · r + 0.071) %			
• 10 < r ≤ 30	\leq (0.0045 · r + 0.071) %			
• 30 < r ≤ 100	≤ (0.005 · 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		≤ 0.25 %/5 years	
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	< compared with the second sec	≤ 0.25 %/10 K	
Influence of the medium temperature (only with front-flush diaphragm)				
Temperature difference between medium tem- perature and ambient temperature	3 mbar/10 K (1.2 in H ₂ O/10 K)			
Rated conditions				
Installation conditions				
Ambient temperature	Observe	•	areas subject to explosi	on hazard.
Measuring cell with silicone oil	-40 +85 °C (-40 +185 °F)			
Digital display	-30 +85 °C (-22 +185 °F)			
Storage temperature	-50 +85 °C (-58 +185 °F)			
Climatic class				
Condensation	Relative humidity 0 100 %			
Degree of protection acc. to EN 60529		Condensation permissible, suitable for use in the tropics IP65, IP68, NEMA 4X, enclosure cleaning, resistant to lyes, steam to 150 °C (302 °F)		
Electromagnetic Compatibility	11'00, 1F00, INEIVI/	, enclosure cleariling	, resistant to ryes, steam	10 10 0 (302 F)
Emitted interference and interference immunity		Acc. to EN 61326	and NAMUR NE 21	

SITRANS P300 with PMC connection

	PROFIBUS PA and FOUNDATION Fieldbus (-40 +212 °F) kg (2.2 lb)
Approx. 1	kg (2.2 lb)
Approx. 1	kg (2.2 lb)
Approx. 1	kg (2.2 lb)
Stainless steel, m	at no. 1 4201/204
	at. 110. 1.4301/304
Hastelloy C276, mat. no. 2.4819	
Silico	one oil
Ra-values ≤ 0.8 µm (32 µ inch)/welds Ra ≤ 1.6 μm (64 μ inch)
10.5 42 V DC for intrinsically safe operation: 10.5 30 V DC	Supplied through bus
-	Not necessary
-	9 32 V
-	9 24 V
-	12.5 mA
-	Yes
-	15.5 mA
-	Available
For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of Article 3, paragraph 3 (sound engineering practice)	
PTB 05 ATEX 2048	
Ex II 1/2 G EEx ia/ib IIB/IIC T4, T5, T6	
-40 +85 °C (-40 +185 °F)	
-40 +70 °C (-40 +158 °F)	
-40 +60 °C (-40 +140 °F)	
To certified intrinsically-safe circuits with peak values:	To certified intrinsically-safe circuits with peak values:
U_i = 30 V, I_i = 100 mA, P_i = 750 mW, R_i = 300 Ω	
	Linear barrier: $\overline{U_i} = 24 \text{ V}, I_i = 250 \text{ mA}, P_i = 1.2 \text{ W}$
$C_i = 6 \text{ nE}$	C _i = 1,1 nF
	$L_i \leq 7 \mu H$
CL I, DIV 1, GP ABCD T4 T6; CL II, DIV 1, 0	npliance 3025099 &P EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4 T6; T6: CL II, DIV 2. GP FG: CL III
CL I, DIV 2, GP ABCD T4 T6; CL II, DIV 2, GP FG; CL III Certificate of Compliance 3025099C CL I, DIV 1, GP ABCD T4 T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC 4 T6; CL I, DIV 2, GP ABCD T4 T6; CL II, DIV 2, GP FG; CL III	
	for intrinsically safe operation: 10.5 30 V DC - - - - - - - - - - - - -

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 P300 with PMC connection

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 Local operation (standard setting Address 126)
Cyclic data usage	
Output byte	One measured value: 5 bytes Two measured values: 10 bytes
Input byte	Register operating mode: 1 bytes Reset function due to metering. 1 bytes
Device profile	PROFIBUS PA Profile for Process Control Devices Version 3.0, Class B
Function blocks	2
 Analog input 	
 Adaptation to customer- specific process variables 	Linearly rising or falling characteristic
- Electrical damping, adjustable	0 100 s
- Simulation function	Input /Output
- Limit monitoring	One upper and lower warning limit and one alarm limit respec- tively
Register (totalizer)	Can be reset and preset Optional direction of counting Simulation function of the register 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
- Characterizer	Max. 31 points
- Characteristic curve	Linear
- Simulation function	Available
Transducer block "Electronic temperature"	
Simulation function	Available

FOUNDATION Fieldbus communication

Function blocks

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

Physical block

Transducer blocks

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

Yes, linearly rising or falling characteristic 0 ... 100 s Output/input (can be locked within the device with a bridge) parameterizable (last good value, substitute value, incorrect value) Yes, one upper and lower warning limit and one alarm limit respectively Yes

3 function blocks analog input, 1 function block PID

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
Pressure Measurement Transmitters for gauge pressure for the paper industry

SITRANS P300 with PMC connection

		_					_
Selection and Ordering		Or	de	r Nc).		
	re transmitters with PMC mber measuring housing, n English						
with 4 20 mA/HART	F)	71	ΝF	81	23	-	
with PROFIBUS PA	F)	71	ΝF	81	24	-	
with FOUNDATION Fiel	dbus (FF) F)	71	ΝF	81	25	-	
					-		
Measuring cell filling Silicone oil	Measuring cell cleaning normal	1					
Inert liquid	Cleanliness level 2 to DIN 25410	3					
Measuring span		_					
14.5 psi ¹⁾	(1 bar) ¹⁾		В				
58 psi	(4 bar)		C D				
232 psi	(16 bar)	. '	J				
Wetted parts materials Seal diaphragm	Measuring cell						
Hastelloy ²⁾ Process connection	Stainless steel	_	в				
PMC Style Standard: 1 PMC Style Minibolt: frc 500 mbar (200 inH ₂ O) 1-bar-measuring cell (nt-flush 1" (minimum span: , not available with			2 3			
 Non-wetted parts mate Stainless steel, deep-opolished 	rials drawn and electrolytically			4			
Version • Standard versions					1		
Explosion protectionNone						A	
 With ATEX, Type of pro - "Intrinsic safety (EEx 						в	
With FM + CSA, Type						Р	
- "Intrinsic Safe (is)" (p						мJ	
Electrical connection /	cable entry	-					
• Screwed gland M20 x	.5 (polyamide) ³⁾					Α	
Screwed gland M20 x						В	
 Screwed gland M20 x 1.5 (stainless steel) M20 connectors (stainless steel), without cable 						C	
 M20 connectors (stain socket) 	iess sieel), without cable					G	
 ½-14 NPT stainless steel thread⁴⁾ 						J	

Selection and Ordering data	Order No.
SITRANS P300 pressure transmitters with PMC connection, single-chamber measuring housing, rating plate inscription in English	
with 4 20 mA/HART	7 M F 8 1 2 3 -
with PROFIBUS PA	7 M F 8 1 2 4 -
with FOUNDATION Fieldbus (FF)	7 M F 8 1 2 5 -
Indicator	
 Without display, with keys, closed lid 	1
 With display and keys, closed lid 	2
• With display and keys, lid with plastics (Makrolon) pane (setting on HART devices: mA, on Profibus devices: pressure units)	4
• With display and keys, lid with plastics (Makrolon) pane (setting acc. to specifications, Order code "Y21" or "Y22" required)	5
 With indicator (digital display visible, setting: mA) With indicator (digital display visible, setting as specified) Order code "Y21" or "Y22" required 	6 7

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

Included in delivery of the device:

Brief instructions (Leporello)

CD-ROM with detailed documentation

sealing ring

1) Only with "Standard" process connection"

 $^{2)}$ Only possible for flange with M., N. and Q. option

³⁾ Only together with HART electronics.

⁴⁾ Without cable gland.

F) Subject to export regulations AL: 9I999, ECCN: N.

Pressure Measurement Transmitters for gauge pressure for the paper industry

SITRANS P300 with PMC connection

Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "-Z" to Order No. and specify Order Code.				
Rating plate inscription (instead of English)				
• German	B10	✓	✓	~
• French	B12	* *	√ √	1
SpanishItalian	B13 B14	✓ ✓	✓ ✓	~
English rating plate Pressure units in inH ₂ 0 and/or psi	B21	~	~	~
Factory calibration certificate	C11	✓	✓	✓
Material traceability certificate	C12	1	✓	~
Factory certificate of conformance	C14	1	~	~
Set output signal to upper limit of 22.0mA	D05	✓	✓	✓
Degree of protection IP68 (only for M20x1.5 and ½-14 NPT)	D12	~	✓	1
Brad Harrison Connector	D40	1	✓	✓
• Weldable sockets for standard 11/2"	P01	~	~	~
 threaded connection Weldable socket for minibolt connection 1" (incl. screw 5/16-18 UNC-2B and washer) 	P02	✓	~	~
Additional data				
Please add "-Z" to Order No. and specify Order code(s) and plain text.				
Calibrated range Specify in plain text (max. 5 characters): Y01: X to Y psi, inH ₂ 0, ftH ₂ 0	Y01	1		
Tag number/Identification (max. 16 characters), specify in plain text: Y15:	Y15	1	1	1
Tag description (max. 27 characters), specify in plain text: Y16:	Y16	~	1	1
Entry of HART (TAG)	Y17	1		
(max. 8 characters), specify in plain text: Y17:				
Pressure units for digital display	Y21	1	~	1
specify in plain text: Y21: psi, inH_20, ftH_20				
Non-Pressure units for digital display (measuring range in pressure units ("Y01"/"Y02") mandatory)	Y22 + Y01	~		
specify in plain text: Y22: X to Y GPM, MGD, Feet				
Preset bus address possible between 1 and 126 Specify in plain text: Y25:	Y25		1	
Only "Y01" and "Y21" can be factory preset				

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.



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

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

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

PMC Style Mini bolt



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 0.15 psi to 10153 psi (0.01 bar to 700 bar) for DS III with HART interface
- Nominal measuring range from 14.5 psi to 10153 psi (1 bar to 700 bar) for DS III with PROFIBUS PA and FOUNDATION Fieldbus
- 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 operated locally over 3 control buttons or programmed externally via HART or PROFIBUS PA or FOUNDATION Fieldbus interface.

SITRANS P DS III Technical description

Pressure transmitter for gauge pressure

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

Span (infinitely adjustable)

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

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

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: 0.12 ... 1450 psia (8.3 mbar a ... 100 bar a)

Nominal measuring range

for DS III with PROFIBUS PA and FOUNDATION Fieldbus: 3.63...1450 psia (250 mbar a...100 bar a)

There are two series:

- Gauge pressure series
- Differential pressure series

Pressure transmitters for differential pressure and flow

Measured variables:

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

Span (infinitely adjustable)

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

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

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: 0.363 ... 72.5 psi (25 mbar ... 5 bar)

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

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

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

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

Example for an attached measuring point label

Y01 or Y02 = max. 27 char.	to mbar
Y15 = max. 16 char.	Measuring point number (TAG No.)
Y99 = max. 10 char. Y16 = max. 27 char.	Measuring point text

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 digital display (9).

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

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



Operation of electronics with PROFIBUS PA communication

- Digital display 10 Power supply
- DP/PA coupler or link 11
 - 12 Bus master
 - Input variable p.
- 7 **PROFIBUS-PA** interface

One non-volatile memory

each in the measuring cell

Function diagram of electronics

Microcontroller

and electronics

Electrical isolation

4

5

6

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

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

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

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

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 a result of this modular design, the electronics and the measuring cell can be replaced separately from each other.

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

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

Mode of operation of the measuring cells

Measuring cell for gauge pressure



Measuring cell for gauge pressure, function diagram

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

Measuring cell for gauge pressure with front-flush diaphragm



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

The pressure $_{p}e$ 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



- 4 Body of measuring cell
- Overload diaphragm 5

- 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 pushbuttons (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	Pushbuttons (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
Linear or square root output	x ²⁾	x ²⁾
Characterizer setup		х
Freely-programmable LCD		х
Diagnostic functions		х

¹⁾ Cancel apart from write protection

2) Only differential pressure

Diagnostic functions for DS III with HART

- Zero correction for position
- Event counter
- Transmitter alarms
- Saturation alarm
- Min/Max registers
- 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	$\rm m^{3}/\rm d,m^{3}/\rm h,m^{3}/\rm s,l/min,l/s,ft^{3}/\rm d,ft^{3}/min,ft^{3}/\rm s,US$ gallon/min, US gallon/s
Mass flow	t/d, t/h, t/min, kg/d, kg/h, kg/min, kg/s, g/d, g/h, g/min, g/s, lb/d, lb/h, lb/min, lb/s, LTon/d, LTon/h, STon/d, STon/h, STon/min
Temperature	K, °C, °F, °R
Miscellaneous	%, mA

Parameterization through PROFIBUS PA interface

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

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

Parameterization through FOUNDATION Fieldbus interface

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

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

Adjustable parameters for DS III with PROFIBUS PA and FOUNDATION Fieldbus

Parameters	Push- buttons	PROFIBUS PA and FOUNDATION Field- bus interface
Electrical damping	х	Х
Zero adjustment (correction of position)	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
Linear or square root output	х	х
Characterizer setup		х
Freely-programmable LCD		х
Diagnostics functions		х

SITRANS P DS III Technical description

Diagnostic functions for DS III with PROFIBUS PA and FOUNDATION Fieldbus

- Event counter
- Min/Max registers
- Maintenance timer

2

- Simulation functions
- Zero correction for position
- Transmitter alarms
- Saturation alarm

Physical dimensions available for the display

Physical variable	Physical dimensions
Pressure (setting can also be made in the factory)	$\begin{array}{l} MPa, kPa, Pa, bar, mbar, torr, atm, psi, \\ g/cm^2, kg/cm^2, mmH_2O, mmH_2O (4 \ ^{\circ}C), \\ inH_2O, inH_2O (4 \ ^{\circ}C), ftH_2O (20 \ ^{\circ}C), \\ mmHg, inHg \end{array}$
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	m³/s, m³/min, m³/h, m³/d, l/s, l/min, l/h, l/ d, Ml/d, ft³/s, ft³/min, ft³/h, ft³/d, US gal- lon/s, US gallon/min, US gallon/h, US gal- lon/d, bbl/s, bbl/min, bbl/h, bbl/d
Mass flow	g/s, g/min, g/h, g/d, kg/s, kg/min, kg/h, kg/d, t/s, t/min, t/h, /t/d, lb/s, lb/min, lb/h, lb/d, STon/s, STon/min, STon/h, STon/d, LTon/s, LTon/min, LTon/h, LTon/d
Total mass flow	t, kg, g, lb, oz, LTon, STon
Temperature	K, °C, °F, °R
Miscellaneous	%

SITRANS P DS III for gauge pressure

Technical specifications

Imput Measured variable Measured variable Spans (infinitely adjustable) or nominal measuring range and max, permissible test pressureGauge pressure Spans (infinitely adjustable) or pressureMax, perm. test pressureNominal measuring mageMax, perm. test pressureQ35Spans (infinitely adjustable) or (0.51, 1.1.5 pri)(15, 1.4.5 pri)(14 pri)(14 pri)(14 pri)(14 pri)(16 pri)Q35SB pell1.45 pri(10 bar)(14 pri)(14 pri)(16 pri) </th <th>SITRANS P, DS III series for gauge pressure</th> <th>HART</th> <th></th> <th>PROFIBUS PA and FO</th> <th>OUNDATION Fieldbus</th>	SITRANS P, DS III series for gauge pressure	HART		PROFIBUS PA and FO	OUNDATION Fieldbus
Space (minmax.) Max. perm. test pressure Nominal measuring max. permissible (sel pressure Max. perm. test pressure Nominal measuring pressure Max. perm. test pressure	Input				
nominal measuring range and max. permissible lest pressure $\begin{tabular}{ c c c } \measure $\begin{tabular}{ c c c } \measure $\begin{tabular}{ c c c c } \measure $\begin{tabular}{ c c c c c } \measure $\begin{tabular}{ c c c c c c c } \measure $\begin{tabular}{ c c c c c c c } \measure $\begin{tabular}{ c c c c c c c } \measure $\begin{tabular}{ c c c c c c c } \measure $\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	Measured variable	Gauge pressure			
$ \begin{array}{c c c c c c c } (0.01 1 ba') & (6 ba') & (1 ba' g) & (6 ba') & (1 ba' g) & (1 ba'$	Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span (min max.)		0	
$ \begin{array}{c c c c c c } (0.4$					
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$					
$ 0.6 = .65 \ bar) (100 \ bar) (63 \ bar) (100 \ bar) (63 \ bar) (100 \ bar) (200 \ b$					
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$					
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $					
(7.0700 bar) (800 bar) (700 bar) (800 bar) Lower measuring limit 0.44 psi a (30 mbar a) 0.44 psi a (30 mbar a) • Measuring cell with silicone oil filling 0.44 psi a (30 mbar a) 0.44 psi a (30 mbar a) • Upper measuring limit 100 % of max. span (for oxygen version and inent filling liquid; max. 120 bar(1740 psi)) Output - - Output signal 4 20 mA Digital PROFIBUS PA and FOUNDATION Field bus signal • Lower limit (infinitely adjustable) 3.55 mA, factory preset to 3.84 mA - • Upper limit (infinitely adjustable) 23 mA, factory preset to 2.5 mA or optionally - Load - - - • Without HART $R_B = 230 500.0 (SIMATIC PDM)$ or $R_B = 230 500.0 (SIMATIC PDM)$ or $R_B = 230 500.0 (SIMATIC PDM)$ or $R_B = 230 100.0 (HART Communicator) - Protection against polarity reversal - - - Reference conditions - - - (All error data refer always refer to the set span) - - - - 10 < r 530$		58 5802 psi (4.0 400 bar)			
• Measuring cell with silicone oil filling0.44 pia (30 mbar a)• Measuring cell with inert filling liquid0.44 pia (30 mbar a)• Upper measuring limit100 % of max. span (for oxygen version and inert filling liquid; max. 120 bar(1740 psi))Output4 20 mADigital PROFIBUS PA and FOUNDATION Fiel• Lower limit (infinitely adjustable)3.55 mA, factory preset to 3.84 mA-• Upper limit (infinitely adjustable)3.55 mA, factory preset to 20.5 mA or optionally-• Without HART23 mA, factory preset to 20.5 mA or optionally-• Without HART $R_B < (U_1 - 10.5 V)(0.023 A in \Omega)U_4; Fower supply in V-• Within HARTR_B = 230 1100 \Omega (HART Communicator)-Physical bus-IEC 6 1158-2Protection against polarity reversal-IEC 6 1158-2Protection against polarity reversalAcc. to IEC 6 0770-1Reference conditions(All erfor adta refer always refer to the set span)Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oiling, room temperature 25 °C (77 °F)) r: Span ratio (r = max. span / set span)• Increasing characteristic< 0.075 %$					
• Measuring cell with inert filling liquid0.44 psi a (30 mbar a)Upper measuring limit100 % of max. span (for oxygen version and inert filling liquid; max. 120 bar(1740 psi)) Output	Lower measuring limit				
Upper measuring limit100 % of max. span (for oxygen version and inert filling liquid; max. 120 bar(1740 psi))OutputUpper limit (infinitely adjustable)3.55 mA, factory preset to 3.84 mADigital PROFIBUS PA and FOUNDATION Field bus signalLower limit (infinitely adjustable)3.55 mA, factory preset to 20.5 mA or optionally set to 22.0 mA-Load• Without HART $B_B \leq (U_H - 10.5 V)(0.023 A in \Omega, U_H + ROW muscle) V, V = V, V $	 Measuring cell with silicone oil filling 		0.44 psi a	(30 mbar a)	
Output Output signalOutput signalOutput signalOutput signal0.ubwer limit (infinitely adjustable)3.55 mA, factory preset to 3.84 mA-• Upper limit (infinitely adjustable)3.55 mA, factory preset to 20.5 mA or optionally set to 22.0 mA-• Upper limit (infinitely adjustable)23 mA, factory preset to 20.5 mA or optionally set to 22.0 mA-• Without HART $P_B \leq (U_H - 10.5 V)(0.023 A in \Omega)$ U_H^+ Power supply in V-• With HART $P_B \leq 30500 \Omega$ (SIMATIC PDM) or $Physical bus-Protection against polarity reversal-EC 61158-2Protection against polarity reversal-EC 61158-2Protection against polarity reversal-Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oiling, room temperature 25 °C (77 °F) r. Span ratio (r = max. span / set span)Error in measurement at limit setting incl. hyster-esis and reproducibility<$	 Measuring cell with inert filling liquid 		0.44 psi a	(30 mbar a)	
Output signal $4 \dots 20 \text{ mA}$ Digital PROFIBUS PA and FOUNDATION Field bus signal $0 \text{Lower limit (infinitely adjustable)}$ $3.55 \text{ mA, factory preset to 3.84 \text{ mA} 0 \text{Loper limit (infinitely adjustable)}23 \text{ mA, factory preset to 20.5 \text{ mA or optionally} 0 \text{Load} 0 \text{Without HART}P_B \leq (U_H + 10.5 \text{ V})(0.023 \text{ A in }\Omega_{U_H} + 10.5 \text{ V})Protection against polarity reversalProtected against short-circuit and polarity reversal. Each connection against the other with me supply intree sets and reproducibility reversalReference conditions(All error data refer always refer to the set span)Increasing characteristic, start-of-scale value 0 bar; stainless steel seal diaphragm, silicone of ing, room temperature 25 °C (77 °F)) r. Span ratio (r = max. span / set span)- for 10 \text{ C c } 30 \text{ c c c c (0.0025 r r + 0.071) \% 10 \text{ c c } 30 c c c (0.005 r r + 0.071) \% -<$	Upper measuring limit	100 % of max. spa	an (for oxygen version ar	nd inert filling liquid; max	<. 120 bar(1740 psi))
Lower limit (infinitely adjustable)3.55 mA, factory preset to 3.84 mAJust signal• Upper limit (infinitely adjustable)3.55 mA, factory preset to 20.5 mA or optionally set to 22.0 mA-• Upper limit (infinitely adjustable)3.55 mA, factory preset to 20.5 mA or optionally set to 22.0 mA-Load• Without HART $R_{B} \leq (U_{I} - 10.5 V)/0.023 A in \Omega$ U_{Y} : Power supply in V-• With HART $R_{B} = 230 100 \Omega$ (SIMATIC PDM) or $R_{B} = 230 1100 \Omega$ (HART Communicator)-Physical bus-EC 61158-2Protected against short-circuit and polarity reversal. Each connection against the other with m supply voltage.Reference conditions (All error data refer always refer to the set span)-Fror in measurement at limit setting incl. hyster- eis and reproducibility-• Linear characteristic $\leq (0.0029 \cdot r + 0.071) \%$ $< 100 < < 30$ $< 100 < < 100$ • Long-term stability (temperature change $\pm 30^{\circ C}$ $(\pm 4^{\circ} F)$) $\leq (0.25 \cdot r) \%$ per 5 years $< (0.025 \cdot r + 0.05) \%$ • 1-10 - to 4bar measuring cell $\leq (0.25 \cdot r) \%$ per 5 years $< (0.125 \cdot r) \%$ per 5 years $< 0.125 \cdot) \%$ per 5 years• 1-10 - to 2 cr and e60 cr (14 140 °F) $(at 700 bar : s(0.1 \cdot r + 0.2) \%^{21}$ $\leq 0.3 \%$ • 1-10 - to °C and +60 · +85 °C $(-40 · +14 \cdot F and 140 · +85 °F)$ $< (0.1 \cdot r + 0.15) \%/10 K$	Output				
Upper limit (infinitely adjustable)23 mA, factory preset to 20.5 mA or optionally set to 22.0 mA-Load• Without HART $R_{\rm B} \leq (U_{\rm I} - 10.5 V)0.023 A in \Omega,U_{\rm H}; Power supply in V-• Without HARTR_{\rm B} = 230 500 \Omega (SIMATIC PDM) orR_{\rm B} = 230 1100 \Omega (HART Communicator)-Physical bus-IEC 61158-2Protection against polarity reversalProtected against short-circuit and polarity reversal. Each connection against the other with masupply voltage.Measuring accuracyReference conditions(All eror data refer always refer to the set span)Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oiling, room temperature 25 °C (77 °F)) r: Span ratio (r = max. span / set span)• Linear characteristic< 0.075 %$	Output signal	4 20 mA			and FOUNDATION Field-
Loadset to 22.0 mÅImage: Without HART $P_{B} \leq (U_{H} - 10.5 V)/0.023 A in \Omega, U_{H}: Power supply in V-• With HARTP_{B} \equiv 230 500 \Omega (SIMATIC PDM) orR_{B} = 230 1100 \Omega (HART Communicator)-• With HARTP_{B} \equiv 230 1100 \Omega (HART Communicator)-Physical bus-IEC 61158-2Protection against polarity reversalProtected against short-circuit and polarity reversal. Each connection against the other with masupply voltage.Measuring accuracyProtected against short-circuit and polarity reversal. Each connection against the other with masupply voltage.Reference conditionsIncreasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil ing, room temperature 25 °C (77 °F) r: Span ratio (r = max. span / set span)Error in measurement at limit setting incl. hysteresia and reproducibility• Linear characteristic• r ≤ 10<(0.023 · r + 0.071) %$	 Lower limit (infinitely adjustable) 	3.55 mA, factory preset	to 3.84 mA	-	
• Without HART $R_B \leq (U_H - 10.5 V)(0.023 A in \Omega, U_H; Power supply in V-• With HARTR_B = 230 \dots 500 \Omega (SIMATIC PDM) or R_B = 230 \dots 100 \Omega (HART Communicator)-Physical bus-IEC 61158-2Protection against polarity reversalProtected against short-circuit and polarity reversal. Each connection against the other with masupply voltage.Measuring accuracyReference conditions(All error data refer always refer to the set span)Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oiling, room temperature 25 °C (77 °F)) r. Span ratio (r = max. span / set span)• Linear characteristic\leq (0.0029 \cdot r + 0.071) \%• Linear characteristic\leq (0.0029 \cdot r + 0.071) \%• 10 < r ≤ 30$	Upper limit (infinitely adjustable)			-	
UH Power supply in V• With HART $R_{\rm B} = 230 \dots 500 \Omega \left({\rm SIMATIC PDM} \right) {\rm or } R_{\rm B} = 230 \dots 1100 \Omega \left({\rm HART Communicator} \right)$ Physical bus-IEC 61158-2Protection against polarity reversalProtected against short-circuit and polarity reversal. Each connection against the other with me supply voltage.Measuring accuracyProtected against short-circuit and polarity reversal. Each connection against the other with me supply voltage.Measuring accuracyIncreasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil ing, room temperature 25 °C (77 °F)) r. Span ratio (r = max. span / set span)Error in measurement at limit setting incl. hyster< 0.0029 · r + 0.071) %	Load				
$h_{\rm B}^{-} = 230 \dots 1100 \Omega$ (HART Communicator)Physical bus-IEC 61158-2Protection against polarity reversalProtected against short-circuit and polarity reversal. Each connection against the other with messingly voltage.Measuring accuracyIncreasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil ing, room temperature 25 °C (77 °F)) r: Span ratio (r = max. span / set span)Reference conditions (All error data refer always refer to the set span)Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil ing, room temperature 25 °C (77 °F)) r: Span ratio (r = max. span / set span)Error in measurement at limit setting incl. hysteresis and reproducibility $\leq (0.0029 \cdot r + 0.071) \%$ - r ≤ 10 $\leq (0.0029 \cdot r + 0.071) \%$ - 10 < r ≤ 30	Without HART			-	
Protection against polarity reversalProtected against short-circuit and polarity reversal. Each connection against the other with massupply voltage.Measuring accuracyAcc. to IEC 60770-1Reference conditionsIncreasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil ing, room temperature 25 °C (77 °F)) r. Span ratio (r = max. span / set span)Error in measurement at limit setting incl. hyster- esis and reproducibility $\leq (0.0029 \cdot r + 0.071)$ % $< 10 < r \le 30$ $< 10 < r \le 30$ < 100 $\leq (0.0029 \cdot r + 0.071)$ % $< (0.005 \cdot r + 0.071)$ % $< 0.005 \cdot r + 0.05)$ % ≤ 0.075 % < 100 Long-term stability (temperature change ± 30 °C (± 54 °F)) $\leq (0.25 \cdot r)$ % per 5 years $< (0.125 \cdot r)$ % per 5 years $< 0.125 \cdot)$ % per 5 years $\leq 0.25 \cdot)$ % per 5 years $< 0.125 \cdot)$ % per 5 yearsInfluence of ambient temperature $\bullet at -10 \dots + 60$ °C (14 \dots 140 °F) $\leq (0.08 \cdot r + 0.1)$ % ¹⁾ (at 700 bar: $\le (0.1 \cdot r + 0.2)$ % ²⁾ ≤ 0.3 % $< 0.25 \%10$ K	With HART			-	
Measuring accuracyAcc. to IEC 60770-1Reference conditions (All error data refer always refer to the set span)Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil ing, room temperature 25 °C (77 °F)) r. Span ratio (r = max. span / set span)Error in measurement at limit setting incl. hyster- esis and reproducibility- r ≤ 10≤ (0.0029 · r + 0.071) % ≤ (0.0045 · r + 0.071) % ≤ 00.005 · r + 0.05) %- 10 < r ≤ 30 - to 100≤ (0.0029 · r + 0.071) % ≤ (0.005 · r + 0.05) %Long-term stability (temperature change ± 30°C (± 54 °F))≤ (0.25 · r) % per 5 years ≤ (0.125 · r) % per 5 years< 0.25 ·) % per 5 years	Physical bus	-		IEC 61158-2	
Reference conditions (All error data refer always refer to the set span)Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil ing, room temperature 25 °C (77 °F)) r. Span ratio (r = max. span / set span)Error in measurement at limit setting incl. hyster- esis and reproducibility• Linear characteristic $\leq (0.0029 \cdot r + 0.071)$ % $\leq (0.0045 \cdot r + 0.071)$ % $\leq 30 < r \le 100$ • Long-term stability (temperature change ± 30 °C (± 54 °F))• 1 - to 4-bar measuring cell $\leq (0.25 \cdot r)$ % per 5 years $\leq (0.125 \cdot r)$ % per 5 years $\leq (0.125 \cdot r)$ % per 5 years $\leq 0.125 \cdot)$ % per 5 years• 16- to 400-bar measuring cell $\leq (0.08 \cdot r + 0.1)$ %1 ($at 700 bar: \leq (0.1 \cdot r + 0.2)%2)• at -10 +60 °C (14 140 °F)\leq (0.08 \cdot r + 0.15) %/10 K• at -4010 °C and +60 +85 °C(-40 +14 °F and 140 185 °F)\leq (0.1 \cdot r + 0.15) %/10 K$	Protection against polarity reversal	Protected against short-circuit and polarity reversal. Each connection against the other with ma supply voltage.		gainst the other with max	
Index of the set spanIndex of the set spanIndex of the set spanError in measurement at limit setting incl. hysteresis and reproducibility $(0.0029 \cdot r + 0.071)$ % ≤ 0.075 % $- r \le 10$ $\leq (0.0029 \cdot r + 0.071)$ % ≤ 0.0075 % $- 10 < r \le 30$ $\leq (0.0045 \cdot r + 0.071)$ % $\leq 0.0045 \cdot r + 0.071)$ % $- 30 < r \le 100$ $\leq (0.005 \cdot r + 0.05)$ % $- 0.005 \cdot r + 0.05)$ %Long-term stability (temperature change ± 300 °C $(\pm 54 \circ F)$) $\leq (0.25 \cdot r)$ % per 5 years $-1 - to 4$ -bar measuring cell $\leq (0.25 \cdot r)$ % per 5 years $\leq 0.25 \cdot)$ % per 5 years $-16 - to 400$ -bar measuring cell $\leq (0.25 \cdot r)$ % per 5 years $\leq 0.125 \cdot)$ % per 5 years $-16 - to 400$ -bar measuring cell $\leq (0.08 \cdot r + 0.1)$ % $^{-1}$ (at 700 bar: $\leq (0.1 \cdot r + 0.2)$ % $^{-2}$) ≤ 0.3 % $-11 - 10 - r + 60$ °C ($14 - r + 140$ °F) $\leq (0.08 \cdot r + 0.15)$ %/10 K ≤ 0.25 %/10 K $-10 - r + 14 \circ F$ and $-140 - r + 85 \circ C$ $< (0.1 \cdot r + 0.15)$ %/10 K	Measuring accuracy		Acc. to IE	C 60770-1	
esis and reproducibility Linear characteristic r ≤ 10 c (0.0029 · r + 0.071) % c (0.0045 · r + 0.071) % c (0.005 · r + 0.071) % c (0.005 · r + 0.071) % c (0.005 · r + 0.05) % Long-term stability (temperature change ± 30 °C (± 54 °F)) c (0.25 · r) % per 5 years c (0.125 · r) % per 5 y	Reference conditions (All error data refer always refer to the set span)	Increasing characteristic, start-of-scale value 0 bar, stainless steel seal diaphragm, silicone oil fil ing, room temperature 25 °C (77 °F)) r: Span ratio (r = max. span / set span)			
- r ≤ 10 ≤ (0.0029 · r + 0.071) % - 10 < r ≤ 30	esis and reproducibility				
$-10 < r \le 30$ $-30 < r \le 100$ $\le (0.0045 \cdot r + 0.071) \%$ $\le (0.005 \cdot r + 0.05) \%$ $= (0.005 \cdot r + 0.05) \%$ Long-term stability (temperature change $\pm 30 ^{\circ}\mathrm{C}$ $(\pm 54 ^{\circ}\mathrm{F}))$ $\le (0.25 \cdot r) \% \text{ per 5 years}$ $\le 0.25 \cdot)\% \text{ per 5 years}$ $+1 \cdot to 4$ -bar measuring cell $\le (0.25 \cdot r) \% \text{ per 5 years}$ $\le 0.25 \cdot)\% \text{ per 5 years}$ $+16 \cdot to 400$ -bar measuring cell $\le (0.125 \cdot r) \% \text{ per 5 years}$ $\le 0.125 \cdot)\% \text{ per 5 years}$ $+16 \cdot to 400$ -bar measuring cell $\le (0.08 \cdot r + 0.1)\%^{11}$ $(at 700 \text{ bar: \le (0.1 \cdot r + 0.2)\%^{21}}\le 0.3 \%+110 \dots + 60 ^{\circ}\mathrm{C} (14 \dots + 140 ^{\circ}\mathrm{F})\le (0.1 \cdot r + 0.15) \%/10 \mathrm{K}\le 0.25 \%/10 \mathrm{K}$	Linear characteristic			≤ 0.075 %	
$-30 < r \le 100$ $\le (0.005 \cdot r + 0.05) \%$ Long-term stability (temperature change $\pm 30 ^{\circ}C$ $\le (0.05 \cdot r + 0.05) \%$ $-1 - to 4$ -bar measuring cell $\le (0.25 \cdot r) \%$ per 5 years $\le 0.25 \cdot) \%$ per 5 years $-16 - to 400$ -bar measuring cell $\le (0.125 \cdot r) \%$ per 5 years $\le 0.125 \cdot) \%$ per 5 years $-16 - to 400$ -bar measuring cell $\le (0.125 \cdot r) \%$ per 5 years $\le 0.125 \cdot) \%$ per 5 years $-16 - to 400$ -bar measuring cell $\le (0.125 \cdot r) \%$ per 5 years $\le 0.125 \cdot) \%$ per 5 years $-16 - to 400$ -bar measuring cell $\le (0.08 \cdot r + 0.1)\%^{11}$ $\le 0.3 \%$ $-10 + 60 ^{\circ}C (14 140 ^{\circ}F)$ $\le (0.08 \cdot r + 0.1)\%^{10}$ (at 700 bar: $\le (0.1 \cdot r + 0.2)\%^{20}$ $\le 0.3 \%$ $-10 + 10 ^{\circ}C$ and $+60 + 85 ^{\circ}C$ $\le (0.1 \cdot r + 0.15) \%/10 \text{K}$ $\le 0.25 \%/10 \text{K}$					
Long-term stability (temperature change \pm 30 °C (\pm 54 °F)) • 1- to 4-bar measuring cell $\leq (0.25 \cdot r) \%$ per 5 years $\leq 0.25 \cdot) \%$ per 5 years • 16- to 400-bar measuring cell $\leq (0.25 \cdot r) \%$ per 5 years $\leq 0.125 \cdot) \%$ per 5 years Influence of ambient temperature • at -10 +60 °C (14 140 °F) $\leq (0.08 \cdot r + 0.1)\%^{11}$ (at 700 bar: $\leq (0.1 \cdot r + 0.2)\%^{21}$ $\leq 0.3 \%$ • at -4010 °C and +60 +85 °C (-40 +14 °F and 140 185 °F) $\leq (0.1 \cdot r + 0.15)\%/10$ K $\leq 0.25\%/10$ K		`````			
$\begin{array}{ll} (\pm 54\ ^{\circ}\text{F})) & 1 \ ^{\circ}\text{C} \ ^$		\leq (0.005 · r + 0.05) %			
• 16- to 400-bar measuring cell $\leq (0.125 \cdot r) \%$ per 5 years $\leq 0.125 \cdot) \%$ per 5 years Influence of ambient temperature $\leq (0.08 \cdot r + 0.1)\%^{11}$ $\leq 0.3 \%$ • at -10 +60 °C (14 140 °F) $\leq (0.08 \cdot r + 0.1)\%^{11}$ $\leq 0.3 \%$ • at -4010 °C and +60 +85 °C $\leq (0.1 \cdot r + 0.15) \%/10 \text{ K}$ $\leq 0.25 \%/10 \text{ K}$	Long-term stability (temperature change \pm 30 °C (± 54 °F))				
Influence of ambient temperature • at -10 +60 °C (14 140 °F) $\leq (0.08 \cdot r + 0.1)\%^{1}$ (at 700 bar: $\leq (0.1 \cdot r + 0.2)\%^{2}$) $\leq 0,3\%$ • at -4010 °C and +60 +85 °C (-40 +14 °F and 140 185 °F) $\leq (0.1 \cdot r + 0.15)\%/10$ K $\leq 0.25\%/10$ K	 1- to 4-bar measuring cell 	\leq (0.25 · r) % per 5 years		$\leq 0.25 \cdot$) % per 5 years	
• at -10 +60 °C (14 140 °F) $\leq (0.08 \cdot r + 0.1)^{(1)}$ $\leq 0,3 \%$ • at -4010 °C and +60 +85 °C $\leq (0.1 \cdot r + 0.15) \%/10 \text{ K}$ $\leq 0.25 \%/10 \text{ K}$	16- to 400-bar measuring cell	\leq (0.125 · r) % per 5 years		\leq 0.125 \cdot) % per 5 years	
• at -4010 °C and +60 +85 °C (-40 +14 °F and 140 185 °F) $\leq (0.1 \cdot r + 0.15) \%/10 \text{ K}$ $\leq 0.25 \%/10 \text{ K}$	Influence of ambient temperature				
(-40 +14 °F and 140 185 °F)	• at -10 +60 °C (14 140 °F)				
Measured Value Resolution - 3 · 10 ⁻⁵ of nominal measuring range	• at -4010 °C and +60 +85 °C (-40 +14 °F and 140 185 °F)	≤ (0.1 · r + 0.15) %/10 k	Κ		
	Measured Value Resolution	-		3 · 10 ⁻⁵ of nominal mea	asuring range

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

	HART	PROFIBUS PA and FOUNDATION Fieldbus
Rated conditions		
Degree of protection (to IEC 60529)	IP65 (op	tional 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 (-4 +212 °F)
• In conjunction with dust explosion protection	-20 +60 °C	C (-4 +140 °F)
Ambient conditions		
Ambient temperature		
- Digital indicator	-30 +85 °C	; (-22 +185 °F)
Storage temperature	-50 +85 °C	; (-58 +185 °F)
Climatic class		
- Condensation		nidity 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)	≈ 1.5 kg (≈ 3.3 lb)	
Enclosure material	Low-copper die-cast aluminum, GD-AlSi 12 or stainless steel precision casting, mat. no. 1.4408	
Wetted parts materials		
Connection shank	Stainless steel, mat. no. 1.4404/316L or Hastelloy C4, mat. no. 2.4610	
Oval flange	Stainless steel, mat. no. 1.4404/316L	
Seal diaphragm	Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819	
Measuring cell filling	Silicone oil or inert filling liquid (maximum value with oxigen measurement pressure 120 bar (1740 psi) at 60 °C (140 °F))	
Process connection	Connection shank G½B to DIN EN 837-1, female thread ½ -14 NPT or oval flange (PN 160 (MAWP 2320 psi)) to DIN 19213 with mounting thread M10 or $^7/_{16}$ -20 UNF to IEC 61518	
Material of mounting bracket		
Steel	Sheet-steel, Mat. No	. 1.0330, chrome-plated
Stainless steel	Sheet stainless steel,	mat. no. 1.4301 (SS 304)
Power supply $m{U}_{ m H}$		Supplied through bus
Terminal voltage on transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically-safe mode	-
Separate 24 V power supply necessary	-	No
Bus voltage		
• Not Ex	-	9 32 V
With intrinsically-safe operation	-	9 24 V
Current consumption		
Basic current (max.)	-	12.5 mA
 Start-up current ≤ basic current 	-	Yes
Max. current in event of fault	-	15.5 mA
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 fluid group 1; complies with requirements of article 3 paragraph 3 (sound engineering practice)		
Explosion protection			
Intrinsic safety "i"	PTB 99	ATEX 2122	
- Marking	Ex II 1/2 G E	Ex ia/ib IIB/IIC T6	
- Permissible ambient temperature	-40 +70 °C (-40 +1	85 °F) temperature class T4; 58 °F) temperature class T5; 40 °F) temperature class T6	
- Connection	To certified intrinsically-safe circuits with peak	FISCO supply unit:	
	values: $U_{\rm i} = 30$ V, $I_{\rm i} = 100$ mA, $P_{\rm i} = 750$ mW; $R_{\rm i} = 300$ Ω	$U_{o} = 17.5 \text{ V}, I_{o} = 380 \text{ mA}, P_{o} = 5.32 \text{ W}$ Linear barrier: $U_{o} = 24 \text{ V}, I_{o} = 250 \text{ mA}, P_{o} = 1.2 \text{ W}$	
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_i = 7 \mu H, C_i = 1.1 nF$	
• Explosion-proof "d"		ATEX 1160	
- Marking		EEx d IIC T4/T6	
- Permissible ambient temperature		85 °F) temperature class T4;	
	-40 +60 °C (-40 +1	40 °F) temperature class T6	
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC	To circuits with values: $U_{\rm H}$ = 9 32 V DC	
 Dust explosion protection for zone 20 	PTB 01	ATEX 2055	
- Marking	Ex II 1 D I Ex II 1/2 D	P65 T 120 ℃ IP65 T 120 ℃	
- Permissible ambient temperature	-40 +85 °C	C (-40 +185 °F)	
- Max. surface temperature	120 °C	C (248 °F)	
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}, \ l_i = 100 \text{ mA}, \ P_i = 750 \text{ mW}, \ R_i = 300 \Omega$	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	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{\rm i} = 7 \ \mu {\rm H}, \ C_{\rm i} = 1.1 \ {\rm nF}$	
 Dust explosion protection for zone 21/22 	PTB 01	ATEX 2055	
- Marking	Ex II 2 D I	P65 T 120 °C	
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC; $P_{\rm max}$ = 1.2 W	To circuits with values: $U_{\rm H}$ = 9 32 V DC; $P_{\rm max}$ = 1.2 W	
 Type of protection "n" (zone 2) 	TÜV 01 ATEX 1696 X	Planned	
- Marking	Ex II 3 G EEx nA L IIC T4/T5/T6	-	
 Explosion protection acc. to FM 	Certificate of Co	ompliance 3008490	
- Identification (XP/DIP) or (IS); (NI)	CL I, DIV 1, GP ABCD T4T6; CL II, DIV 1, GF	P EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4T6; CL I, 5; CL II, DIV 2, GP FG; CL III	
 Explosion protection to CSA 	Certificate of Co	ompliance 1153651	
- Identification (XP/DIP) or (IS)		EFG; CL III; Ex ia IIC T4T6; CL I, DIV 2, GP ABCE DIV 2, GP FG; CL III	

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

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

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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 value) Yes, one upper and lower warn-ing limit and one alarm limit

Standard FOUNDATION Fieldbus

1 transducer block Pressure with calibration, 1 transducer block

Constant value or over parame-

terizable ramp function

characteristic

respectively Yes

function block 1 resource block

Pressure Measurement Transmitters for general requirements

SITRANS P DS III for gauge pressure

HART communication	220 1100 0	FOUNDATION Fieldbus communication	
Protocol	230 1100 Ω HART Version 5.x	Function blocks	3 function b
	SIMATIC PDM		1 function b
Software for computer PROFIBUS PA communication	SIMATIC PDM	 Analog input 	
	4	 Adaptation to customer- specific process variables 	Yes, linearly characteris
Simultaneous communication with master class 2 (max.)	4	- Electrical damping, adjustable	0 100 s
The address can be set using	Configuration tool or local opera- tion (standard setting address	- Simulation function	Output/inpu within the d
	126)	- Failure mode	parameteriz
Cyclic data usage			substitute v
Output byte	5 (one measured value) or 10 (two measured values)	- Limit monitoring	Yes, one up ing limit and
Input byte	0, 1, or 2 (register operating mode and reset function for metering)	 Square-rooted characteristic for flow measurement 	respectively Yes
Internal preprocessing		• PID	Standard F
Device profile	PROFIBUS PA Profile for Process		function blo
	Control Devices Version 3.0, Class B	 Physical block 	1 resource
Function blocks	2	Transducer blocks	1 transduce
Analog input	L		calibration, LCD
- Adaptation to customer-	Yes, linearly rising or falling	 Pressure transducer block 	
specific process variables	characteristic	- Can be calibrated by applying	Yes
- Electrical damping, adjustable	0 100 s	two pressures	
- 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- ature and electronics tempera- 	Constant va terizable ra
- 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 sum- mation, 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		
- Characterizer	Max. 30 points		
 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		

2

SITRANS P DS III for gauge pressure

Order No.

Selection and Ordering	g data	Order No).		S	election and Ordering data
Pressure transmitter for	or gauge pressure,	7 M F 4 0 3 3 -		Pressure transmitter for ga		
SITRANS P DS III with	HART		- 11		S	SITRANS P DS III with HART
Measuring cell filling Silicone oil Inert liquid ¹⁾	Measuring cell cleaning normal Grease-free to cleanliness level 2	1 3		Ι	:	ndicator Without indicator Without indicator (digital displa setting: mA) With indicator (digital display y
Measuring span (min. 0.15 14.5 psi 0.58 58 psi 2.32 232 psi 9.14 914 psi 23.2 2320 psi 58.0 5802 psi 102.0 10153 psi Wetted parts materials Seal diaphragm Stainless steel Hastelloy Hastelloy Hastelloy	max.) (0.01 1 bar) (0.04 4 bar) (0.63 63 bar) (1.6 16 bar) (1.6 160 bar) (4.0 400 bar) (7.0 700 bar) Process connection Stainless steel Stainless steel Hastelloy	B C D F G J A B C			P Ir 1) 2)	With indicator (digital display specified, Order code "Y21"/ ower supply units see Chap. Included in delivery of the dev Brief instructions (Leporello) CD-ROM with detailed docur For oxygen cleaning application When the manufacture's certifior ordered for transmitters with d is recommended only to order phragm seals. The measuring here.
Version as diaphragm s Process connection • Connection shank G½ • Female thread ½-14 N • Stainless steel oval fla - Mounting thread ⁷ / ₁₆ - Mounting thread M10 • Mole thread M20 x 1.5 • Male thread ½ -14 NP Non-wetted parts mate	B to EN 837-1 IPT nge -20 UNF to IEC 61518 0 to DIN 19213 2 to DIN 19213 5 T	Y 1 0 1 2 3 4 5 6			5) 6) 7)	respective remote seals. Not in conjunction with Electric "Han7D plug". Without cable gland, with blar With enclosed cable gland EE Not in conjunction with types of "Intrinsic safety" and "Explosio M12 delivered without cable s
 Housing made of die-o Housing stainless stee 	cast aluminium	0 3				
	English label inscriptions, nguages on CD (no order		1 2			
Hazardous area rating • General purpose • ATEX Hazardous appr - "Intrinsically safe (EE - "Explosion-proof (EE - "Intrinsically safe and (EEx ia + EEx d)" ⁶) - use in zone 2 - "Intrinsically safe, exi and dust explosion p + zone 1D/2D)" ⁶) • FM/CSA Hazardous a - "Intrinsically Safe und (is + xp)" ⁵) Electrical connection / • Screwed gland Pg 13. • Screwed gland M20 x • ½-14 NPT	ix ia)" xd)" ⁵⁾ d explosion-proof plosion-proof enclosure protection (EEx ia + EEx d pproval d explosion proof cable entry 5 (adapter) ⁷⁾	_	A E F F			
 Han 7D plug (plastic h connector⁷) M12 connectors (meta) 				D F		

Pressure transmitter for gauge pressure, SITRANS P DS III with HART	7 M F 4 0 3 3 -	
		11
Indicator		
Without indicator		0
 Without indicator (digital display hidden, setting: mA) 		1
 With indicator (digital display visible, setting: mA) 		6
 With indicator (digital display visible, setting as specified, Order code "Y21"/"Y22" required) 		7
Power supply units see Chap. 8 "Supplementary Co	mponents".	
Included in delivery of the device: • Brief instructions (Leporello) • CD-ROM with detailed documentation		

- ¹⁾ For oxygen cleaning 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 dia-phragm seals. The measuring accuracy of the <u>total</u> combination is certified here.
- ³⁾ If the acceptance test certificate 3.1. is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.
- ⁴⁾ Not in conjunction with Electrical connection "Screwed gland Pg 13.5" and "Han7D plug".
- ⁵⁾ Without cable gland, with blanking plug
- $^{\mathfrak{H}}$ With enclosed cable gland EEx ia and blanking plug
- ⁷⁾ Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".
- ³⁾ M12 delivered without cable socket

SITRANS P DS III for gauge pressure

Selection and Ordering	g data	Order No		Selection and Ordering	data
Pressure transmitter for	or gauge pressure			Pressure transmitter for	gaug
SITRANS P DS III with	PROFIBUS PA (PA)	7 M F 4 0	34 -	SITRANS P DS III with P	ROFII
SITRANS P DS III with (FF)	FOUNDATION Fieldbus	7 M F 4 0 3	35-	SITRANS P DS III with F (FF)	OUNE
Measuring cell filling Silicone oil Inert liquid ¹⁾	Measuring cell cleaning normal Grease-free to cleanliness level 2	1 3		Indicator • Without indicator • Without indicator(digital • With indicator (digital di • With indicator (digital di	splay splay
Nominal measuring ra	-			specified, Order code "	Y21" re
14.5 psi 58 psi 232 psi 914 psi 2320 psi 5802 psi 10153 psi Wetted parts materials Seal diaphragm Stainless steel Hastelloy Version as diaphragm s	Process connection Stainless steel Stainless steel Hastelloy	B C D F G J J C Y 1		 Included in delivery of the with detailed documentat ¹⁾ For oxygen cleaning app ²⁾ When the manufacture's ordered for transmitters is recommended only to phragm seals. The meas here. ³⁾ If the acceptance test or mounted diaphragm seals. ⁴⁾ Without cable gland, witt ⁵⁾ With enclosed cable glai ⁶⁾ M12 delivered without cable 	ion certific with di- order uring a ertifica ls this n blanl nd EE
Process connection					
 Connection shank G¹/₂ Female thread ¹/₂-14 N Stainless steel oval fla 	IPT inge 5-20 UNF to IEC 61518 0 to DIN 19213 2 to DIN 19213 5	0 1 2 3 4 5 6			
Non-wetted parts mate • Housing made of die- • Housing stainless stee	cast aluminium	0 3			
	English label inscriptions, nguages on CD (no order	_	1 2		
Hazardous area rating • General purpose • ATEX Hazardous appr - "Intrinsically safe (EE - "Explosion-proof (EE - "Intrinsically safe and (EEx ia + EEx d)" ⁵⁾ - use in zone 2 - "Intrinsically safe, ex and dust explosion p + zone 1D/2D)" ⁵⁾ • FM/CSA Hazardous a - "Intrinsically Safe und (is + xp)" ⁴⁾	roval Ex ia)" (xd)" ⁴⁾ d explosion-proof plosion-proof enclosure protection (EEx ia + EEx d approval		A B D P E R NC		
Electrical connection / • Screwed gland M20 x • Screwed gland ½-14 I • M12 connectors (meta	1.5 NPT		B C F		

Pressure transmitter for gauge pressure	
SITRANS P DS III with PROFIBUS PA (PA)	7 M F 4 0 3 4 -
SITRANS P DS III with FOUNDATION Fieldbus (FF)	7 M F 4 0 3 5 -
Indicator	
Without indicator	0
 Without indicator(digital display hidden) 	1
 With indicator (digital display visible) 	6
With indicator (digital display visible, setting as	7

Order No.

der code "Y21" required)

ivery of the device: Brief instructions (Leporello) CD-ROM ocumentation

- leaning application, add Order code E10.
- nufacture's certificate (calibration certificate) has to be ansmitters with diaphragm seals according to IEC 60770-2, it ded only to order this certificate exclusively with the dia-s. The measuring accuracy of the <u>total</u> combination is certified
- ance test certificate 3.1.is ordered for the transmitter with phragm seals this certificate must also be ordered with the mote seals.
- gland, with blanking plug
- d cable gland EEx ia and blanking plug
- d without cable socket

SITRANS P DS III for gauge pressure

Selection and Ordering data	Order			
Further designs Add "-Z" to Order No. and		HART	PA	FF
specify Order Code.				
Pressure transmitter with mounting				
bracket (2 shackles, 4 nuts, 4 U-plates,				
1 angle) made of: • Steel	A01	1	✓	1
Stainless steel	A02	√	1	
plug				
• Han 7D (metal, gray)	A30	~		
Han 8U (instead of Han 7D)	A31	✓		
• Angled	A32	~		
Cable sockets for M12 connectors (metal)	A50	1	1	~
Rating plate inscription				
(instead of German) • English	B11	~		
French	B12	↓	¥.	¥.
Spanish	B13	1	1	1
• Italian	B14	1	✓	1
English rating plate	B21	✓	✓	1
Pressure units in inH ₂ 0 and/or psi				
Factory calibration certificate ¹⁾	C11	✓	✓	~
Material traceability certificate ²⁾	C12	✓	✓	1
Factory certificate of conformance	C14	✓	✓	1
SIL2 certificate per IEC 61508 / 61511	C20	✓		
PROFIsafe certificate and protocol	C21		✓	
Setting of upper limit of output signal to 22.0 mA	D05	1		
Manufacturer's declaration acc. to NACE	D07	✓	✓	1
Degree of protection IP68 (only for M20x1.5 and ½-14 NPT)	D12	~	✓	~
Brad Harrison Connector	D40	✓	✓	~
External, ½" NPT	J01	✓		
Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")	E01	1	1	1
Oxygen application	E10	1	1	1
(In the case of oxygen measurement and inert liquid max. 120 bar G (1740 psi G) at 60°C (140 °F))				
Manifold Mounting assembled to Block & bleed valve (7MF9011-4FA)				
Assembled to Block & bleed valve (7MF9011-4FA)	т03			
$^{1\!\!/_2}\mbox{-}14$ NPT male, PTFE packing and pressure test				
Two coats of lacquer on casing and cover (PU on epoxy)	G10	1	~	1

	0 1			
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
Calibrated range Specify in plain text (max. 5 characters): Y01: X to Y psi, inH ₂ 0, ftH ₂ 0	Y01	~		
Tag number/Identification (max. 16 characters), specify in plain text: Y15:	Y15	*	1	1
Tag description (max. 27 characters), specify in plain text: Y16:	Y16	~	1	1
Entry of HART (TAG)	Y17	✓		
(max. 8 characters), specify in plain text: Y17:				
Pressure units for digital display	Y21	✓	✓	1
specify in plain text: Y21: psi, inH_20, ftH_20				
Non-Pressure units for digital display ³⁾ (measuring range in pressure units ("Y01"/"Y02") mandatory) specify in plain text: Y22: X to Y GPM, MGD, Feet	Y22 + Y01	~		
Preset bus address possible between 1 and 126 Specify in plain text: Y25:	Y25		•	

Factory mounting of valve manifolds, see accessories.

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

✓ = available

Ordering example

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

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.

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Pressure Measurement Transmitters for general requirements

SITRANS P DS III for gauge pressure

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
- 2)
- Not with type of protection "Explosion-proof enclosure" Not with type of protection "FM + CSA" [IS + XP]" 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)
- Process connection: Connection shank G½A or Oval flange (8)
- (9) Mounting bracket (option)

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

Technical specifications

	HART		PROFIBUS PA and FO	UNDATION Fieldbus	
nput of gauge pressure, with front-flush dia- phragm					
Measured variable		Gauge press	sure, front-flush		
Spans (infinitely adjustable) or nominal measur- ing range and max. permissible test pressure	Span (min max.)	Max. perm. test pres- sure	Nominal measuring range	Max. perm. test pres- sure	
	0.15 14.5 psi (0.01 1 bar)	87 psi (6 bar)	14.5 psi (1 bar)	87 psi (6 bar)	
	0.58 58 psi (0.04 4 bar)	145 psi (10 bar)	58 psi (4 bar)	145 psi (10 bar)	
	2.23 232 psi (0.16 16 bar)	464 psi (32 bar)	232 psi (16 bar)	464 psi (32 bar)	
	9.14 914 psi (0.6 63 bar)	1450 psi (100 bar)	914 psi (63 bar)	1450 psi (100 bar)	
ower measuring limit		1.45 psi a	(100 mbar a)		
Jpper measuring limit	100 % of max. span		100 % of the max. nom	inal measuring range	
nput of absolute pressure, with front-flush diaphragm					
Measured variable		Absolute pres	sure, front-flush		
Spans (infinitely adjustable) or nominal measur- ng range and max. permissible test pressure	Span (min max.)	Max. perm. test pressure	Nominal measuring range	Max. perm. test pressure	
	0.62 18.9 psia (43 1300 mbar a)	145 psia (10 bar a)	18.9 psia (1300 mbar a)	145 psia (10 bar a)	
	2.32 72.5 psia (0.16 5 bar a)	435 psia (30 bar a)	72.5 psia (5 bar a)	435 psia (30 bar a)	
	14.5 435 psia (1 30 bar a)	1450 psia (100 bar a)	435 psia (30 bar a)	1450 psia (100 bar a)	
ower measuring limit	100.04 (0 psi a	(0 bar a)		
Jpper measuring limit	100 % of max. span		100 % of the max. nominal measuring range		
Dutput					
Dutput signal	4 20 mA		Digital PROFIBUS PA and FOUNDATION Field- bus signal		
Lower limit (infinitely adjustable)	3.55 mA, factory preset		-		
Upper limit (infinitely adjustable)	23 mA, factory preset to set to 22.0 mA	20.5 mA or optionally	-		
Load • Without HART	R _B ≤ (U _H - 10.5 V)/0.02	3 A in O			
Without HATT	$U_{\rm H}$: Power supply in V	5 A 111 <u>52</u> ,	-		
With HART	$R_{\rm B}$ = 230 500 Ω (SIM $R_{\rm B}$ = 230 1100 Ω (HA		-		
Physical bus	-		IEC 61158-2		
Protection against polarity reversal	Protected against short		rsal. Each connection ag voltage.	ainst the other with max	
leasuring accuracy		Acc. to IE	EC 60770-1		
Reference conditions All error data refer always refer to the set span)		ing, room temperature 2	bar, stainless steel seal d 25 °C (77 °F)) r: Span ratio an / set span)		
Fror in measurement at limit setting incl. hyster- sis 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 · r + 0.071) %	≤ 0.2 %			
- 10 < r ≤ 30	\leq (0.0045 \cdot r + 0.071) %	≤ 0.4 %			
- 30 < r ≤ 100	≤ (0.005 · r + 0.05) %				
Long-term stability (temperature change \pm 30 °C \pm 54 °F))	≤ (0.25 · r) % per 5 years		\leq 0.25 % per 5 years		

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Pressure Measurement

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

	HART	PROFIBUS PA and F	OUNDATION Fieldbus
Influence of ambient temperature			
• at -10 +60 °C (14 140 °F)	$\leq (0.1 \cdot r + 0.2) \%^{1} \leq (0.2 \cdot r + 0.3) \%$	≤ 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 g (0.00145 p	osi g) per 10° inclinatior	1
Measured Value Resolution	-	3 · 10 ⁻⁵ of nominal me	asuring range
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			
nstallation conditions			
Ambient temperature	Observe the temperature class in	areas subject to explo	sion hazard.
 Measuring cell with silicone oil 	-40 +85 °C	(-40 +185 °F)	
Measuring cell with Neobee oil (with front-flush diaphragm)	-10 +85 °C	(14 +185 °F)	
 Measuring cell with inert liquid (not with front- flush diaphragm) 	-20 +85 °C	s (-4 +185 °F)	
Digital display	-30 +85 °C	(-22 +185 °F)	
Storage temperature	-50 +85 °C (in the case of Neobee: -2	(-58 +185 °F) 20 +85 °C (-4 +185	;/°F))
Climatic class			
- Condensation	Relative humidity 0 100 % Condensation permissible, suitable for use in the tropics		
Degree of protection (to IEC 60529)	IP65, IP68, NEMA 4X, enclosure cleaning	, resistant to lyes, stean	n to 150 ° C (302 °F)
 Electromagnetic Compatibility 			
- Emitted interference and interference immunity	Acc. to EN 61326	and NAMUR NE 21	
Medium conditions			
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 with front-flush dia- phragm) 	-40 +200 °C	; (-40 +392 °F)	
 Measuring cell with inert liquid 	-20 +100 °C	C (-4 +212 °F)	
Measuring cell with high-temperature oil		C (14 482 °F)	
Design		. ,	
Weight (without options)	≈ 1.5 ka	ı (≈ 3.3 lb)	
Enclosure material	Low-copper die-cast aluminum, GD-AlSi12 or	,	casting, mat. no. 1.44
Wetted parts materials		at. no. 1.4404/316L	0.
Measuring cell filling		inert filling liquid	
Process connection		per EN and ASME	
		maceutical flanges	
Surface quality touched-by-media	R_a -values $\leq 0.8 \ \mu m (32 \ \mu\text{-inch})$)/welds $R_{a)} \le 1.6 \ \mu m \ (64)$	

(Process connections according to 3A; $R_a\mbox{-values} \le 0.8~\mu\mbox{m}$ (32 $\mu\mbox{-inch})\mbox{/welds}~R_a) \le 0.8~\mu\mbox{m}$ (32 $\mu\mbox{-inch})$

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

	HART	PROFIBUS PA and FOUNDATION Fieldbus	
Power supply $U_{ m H}$		Supplied through bus	
Ferminal voltage on transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically-safe mode	-	
Separate 24 V power supply necessary	-	No	
us 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	
ault disconnection electronics (FDE) available		Yes	
ertificates and approvals	-		
	For excess of fluid evenue 1 and liquids of fluid	arous 1. complice with requirements of esticle 2	
lassification according to PED 97/23/EC		group 1; complies with requirements of article 3 engineering practice)	
plosion protection			
Intrinsic safety "i"		ATEX 2122	
- Marking		x ia/ib IIB/IIC T6	
- Permissible ambient temperature	-40 +70 °C (-40 +15	35 °F) temperature class T4; 8 °F) temperature class T5; 40 °F) temperature class T6	
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 V, l_i = 100 \text{ mA},$	FISCO supply unit: $U_0 = 17.5$ V, $I_0 = 380$ mA, $P_0 = 5.32$ W Linear barrier:	
	$P_{\rm i} = 750 \; {\rm mW}; \; R_{\rm i} = 300 \; \Omega$	$U_{\rm o}$ = 24 V, $I_{\rm o}$ = 250 mA, $P_{\rm o}$ = 1.2 W	
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{\rm i} = 7 \ \mu {\rm H}, \ C_{\rm i} = 1.1 \ {\rm nF}$	
Explosion-proof "d"	PTB 99 /	ATEX 1160	
- Marking	Ex II 1/2 G E	Ex d IIC T4/T6	
- Permissible ambient temperature	-40 +85 °C (-40 +18 -40 +60 °C (-40 +14	85 °F) temperature class T4; 40 °F) temperature class T6	
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC	To circuits with values: $U_{\rm H}$ = 9 32 V DC	
Dust explosion protection for zone 20	PTB 01 /	ATEX 2055	
- Marking		P65 T 120 ℃ IP65 T 120 ℃	
- Permissible ambient temperature	-40 +85 °C	(-40 +185 °F)	
- Max. surface temperature	120 °C	C (248 °F)	
- Connection	To certified intrinsically-safe circuits with peak values:	FISCO supply unit: U_0 = 17.5 V, I_0 = 380 mA, P_0 = 5.32 W	
	$U_{\rm i} = 30 \text{ V}, I_{\rm i} = 100 \text{ mA}, P_{\rm i} = 750 \text{ mW}, P_{\rm i} = 300 \Omega$	Linear barrier: $U_0 = 24$ V, $I_0 = 250$ mA, $P_0 = 1.2$ W	
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{\rm i} = 7 \ \mu {\rm H}, \ C_{\rm i} = 1.1 \ {\rm nF}$	
Dust explosion protection for zone 21/22	PTB 01 /	ATEX 2055	
- Marking	Ex II 2 D IF	P65 T 120 °C	
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC; $P_{\rm max}$ = 1.2 W	To circuits with values: $U_{\rm H}$ = 9 32 V DC; $P_{\rm max}$ = 1.2 W	
Type of protection "n" (zone 2)	TÜV 01 ATEX 1696 X	Planned	
- Marking	Ex II 3 G EEx nA L IIC T4/T5/T6	-	
Explosion protection acc. to FM	Certificate of Co	mpliance 3008490	
- Identification (XP/DIP) or (IS); (NI)	CL I, DIV 1, GP ABCD T4T6; CL II, DIV 1, GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4T6; CL I, DIV 2, GP ABCD T4T6; CL II, DIV 2, GP FG; CL III		
	Certificate of Compliance 1153651		
Explosion protection to CSA	CL I, DIV 1, GP ABCD T4T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4T6; CL I, DIV 2, GP ABCE T4T6; CL II, DIV 2, GP FG; CL III		

Sanitary 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

HART communication		FOUNDATION Fie communication
HART	230 1100 Ω	Function blocks
Protocol	HART Version 5.x	
Software for computer	SIMATIC PDM	 Analog input
PROFIBUS PA communication		 Adaptation to c specific proces
Simultaneous communication with master class 2 (max.)	4	- Electrical damp
The address can be set using	Configuration tool or local	- Simulation func
	operation (standard setting address 126)	Cirricication faile
Cyclic data usage	,	- Failure mode
Output byte	5 (one measured value) or	- Limit monitoring
	10 (two measured values)	
 Input byte 	0, 1, or 2 (register operating mode and reset function for metering)	0
Internal preprocessing		 Square-rooted for flow measur
Device profile	PROFIBUS PA Profile for Process	• PID
·	Control Devices Version 3.0, Class B	
Function blocks	2	Physical block
Analog input	-	Transducer blocks
- Adaptation to customer-	Yes, linearly rising or falling	
specific process variables	characteristic	 Pressure transdu
- Electrical damping, adjustable	0 100 s	 Can be calibrat two pressures
- Simulation function	Input /Output	- Monitoring of se
- Failure mode	parameterizable (last good value, substitute value, incorrect value)	 Simulation func pressure value.
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respec- tively	ature and elect
Register (totalizer)	Can be reset, preset, optional direction of counting, simulation function of register output	
- Failure mode	parameterizable (summation with last good value, continuous sum- mation, 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	
- Characterizer	Max. 30 points	
 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 parameter- izable ramp function	

l Fieldbus on	
٢S	3 function blocks analog input, 1 function block PID
t	
to customer- ocess variables	Yes, linearly rising or falling characteristic
lamping, adjustable	0 100 s
function	Output/input (can be locked within the device with a bridge)
de	parameterizable (last good value, substitute value, incorrect value)
oring	Yes, one upper and lower warning limit and one alarm limit respec- tively
oted characteristic easurement	Yes
	Standard FOUNDATION Fieldbus function block
ck	1 resource block
ocks	1 transducer block Pressure with calibration, 1 transducer block LCD
nsducer block	
librated by applying ires	Yes
of sensor limits	Yes
function: Measured alue, sensor temper- electronics tempera-	Constant value or over parameter izable ramp function

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

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

Selection and Ordering		Order No.
Pressure transmitter for pressure, front-flush d SITRANS P DS III with	iaphragm,	7 M F 4 1 3 3 -
Measuring cell filling	Measuring cell cleaning	
Silicone oil	normal	1
Inert liquid	Grease-free to cleanliness level 2	3
FDA compliant fill fluidNeobee oil	normal	4
Measuring span (min.	max.)	
0.15 14.5 psi	(0.01 1 bar)	В
0.58 58 psi	(0.04 4 bar)	С
2.32 232 psi	(0.16 16 bar)	D
9.14 914 psi	(0.63 63 bar)	E
0.19 18.9 psia ¹⁾	(13 1300 mbar a) ¹⁾	S
0.7 72.5 psia ¹⁾	$(0.05 \dots 5 \text{ bar a})^{1)}$	т
43.5 435 psia ¹⁾	$(3 \dots 30 \text{ bar a})^{1)}$	Ů
	<u> </u>	U
Wetted parts materials Seal diaphragm	Connection shank	
Stainless steel	Stainless steel	A
Hastelloy ²⁾	Stainless steel	В
Process connectionFlange version with Ord	der Code M, N, R or Q	7
		0 3 1 2
code selectable)		
General purpose		A
 ATEX Hazardous appr 	oval	
 Intrinsically safe (EE) 		В
- "Explosion-proof (EE	xd) ^{"3)}	D
 "Intrinsically safe and (EEx ia + EEx d)"⁴⁾ 	d explosion-proof	Р
- use in zone 2		E
	plosion-proof enclosure	R
and dust explosion p	protection	
(EEx ia + EEx d + zo		NO
	$d \exp[osion proof (is + xp)^{"3})]$	NC
Electrical connection /	•	
 Inner thread M20 x 1.5 	5	В
 Female thread ½-14 N M12 connectors (meta) 	-	C F
Indicator		
Without indicator		0
Without indicator (digi	tal display hidden.	1
setting: mA)		
	isplay visible, setting: mA)	6
With indicator (digital	display visible, setting as	7
specified, Order code	"Y21"/"Y22" required)	
Power supply units see	Chap. 8 "Supplementary Co	mponents".

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

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

Pressure Measurement

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

Selection and Ordering data				No.		
Pressure transmitter P for gauge and absolute pressure, front-flush diaphragm:						
SITRANS P DS III with	7 N	1F4	13	4 -		
SITRANS P DS III with	FOUNDATION Fieldbus F)	7 N	1 F 4	13	5 -	
(FF)	,					
				-		
Measuring cell filling	Measuring cell					
···· 5·· 5	cleaning					
Silicone oil	normal	1				
Inert liquid	Grease-free to	3				
	cleanliness level 2					
FDA compliant fill fluidNeobee oil	normal	4				
Medical whiteoil	normai	4				
Nominal measuring ra	•					
14.5 psi	(1 bar)	E				
58 psi 232 psi	(4 bar) (16 bar)					
914 psi	(63 bar)	E				
18.9 psia ¹⁾ 72.5 psia ¹⁾	(1300 mbar a) ¹⁾ (5 bar a) ¹⁾	5				
435 psia ¹⁾	(30 bar a) ¹⁾	1				
	. ,	Ľ	,			
Wetted parts materials						
Seal diaphragm	Connection shank					
Stainless steel	Stainless steel		A			
Hastelloy ²⁾	Stainless steel		в			
 Process connection Flange version with Order Code M., N., R. or Q 						
Non-wetted parts mate						
Housing made of die-cast aluminium				0		
 Housing stainless stee 	el precision casting			3		
Version						
 Standard versions 					1	
	English label inscriptions,	2				
code selectable)	nguages on CD (no order					
Hazardous area rating						
General purpose					Α	
ATEX Hazardous appl	roval				^	
- "Intrinsically safe (EE					в	
- "Explosion-proof (EE					D	
					Ρ	
 "Intrinsically safe and (EEx ia + EEx d)"⁴⁾ 						
- use in zone 2					E	
 "Intrinsically safe, explosion-proof enclosure and dust explosion protection (EEx ia + EEx d + zone 1D/2D)^{*4} 					R	
 FM/CSA Hazardous a 	FM/CSA Hazardous approval					
 "Intrinsically Safe un (is + xp)"³⁾ 	d explosion proof				Ν	С
· · · · · · · · · · · · · · · · · · ·						
Electrical connection						
Screwed gland M20 x	1.5					B
• ½-14 NPT	- 115)					C
 M12 connectors (meta 	ai) ⁻ /					F

• M12 connectors (met	(al) ⁵⁾
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Selection and Ordering data	C	Order No.	
Pressure transmitter P for gauge and absolute pressure, front-flush diaphragm:	Ð		
SITRANS P DS III with PROFIBUS PA (PA)	F) 7	MF413	4 -
SITRANS P DS III with FOUNDATION Fieldbus (FF)	F) 7	MF413	5 -
Indicator			
Without indicator			0
 Without indicator (digital display hidden, setting: mA) 			1
• With indicator (digital display visible, setting: mA))		6
 With indicator (digital display visible, settings as specified, Order Code "Y21" required) 	S		7
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 possible for flange with M., N., and Q., option.
- ³⁾ Without cable gland, with blanking plug
- ⁴⁾ With enclosed cable gland EEx ia and blanking plug
- ⁵⁾ M12 delivered without cable socket
- F) Subject to export regulations AL: 91999, ECCN: N.

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

	Order code			_
<i>Further designs</i> Add "- Z " to Order No. and specify Order Code.		HART	PA	
Plug				
Angled	A32	1		
Cable sockets for M12 connectors (metal)	A50	~	~	
Rating plate inscription				
(instead of German)				
• English	B11	✓	✓	
• French	B12	√	1	
• Spanish	B13	1	1	
• Italian	B14	~	✓	
English rating plate Pressure units in inH ₂ 0 and/or psi	B21	1	~	
Factory calibration certificate	C11	✓	✓	
Material traceability certificate	C12	~	✓	
Factory certificate of conformance	C14	✓	✓	
PROFIsafe certificate and protocol	C21		✓	
Two coats of lacquer on casing and cover (PU on epoxy)	G10	1	1	
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	1	1	
• DN 50, PN 16	M04 M14	4	✓ ✓	
 DN 50, PN 40 DN 80, PN 16 	M06	↓	↓	
• DN 80, PN 40	M16	1	~	
Flanges to ASME B16.5				
• Stainless steel flange 1" class 150 ¹⁾	M40	1	✓	
Stainless steel flange 11/2" class 150	M41	1	✓	
Stainless steel flange 2" class 150	M42	1	✓	
Stainless steel flange 3" class 150	M43	✓	✓	
Stainless steel flange 4" class 150	M44	✓	✓	
 Stainless steel flange 1" class 300¹⁾ 	M45	√	✓	
Stainless steel flange 11/2" class 300	M46	1	1	
Stainless steel flange 2" class 300	M47	*	✓ ✓	
 Stainless steel flange 3" class 300 Stainless steel flange 4" class 300 	M48 M49	↓	✓ ✓	
Threaded connector to DIN 3852-2.				
form A, thread to ISO 228				
• G ³ / ₄ "-A, front-flush ²)	R01	1	1	
• G 1"-A, front-flush ²⁾	R02	1	1	
• G 2"-A, front-flush ²⁾	R04	~	~	
Tank connection ³⁾				
Cooling is included in delivery				
Sealing is included in delivery • TG 52/50, PN 40	R10			

Further designs HART PA FF Add '-Z' to Order No. and specify Order Code. Sanitary process connection according DIN 11851 (Dairy connection) N04 ✓ ✓ DIN 50, PN 25 N06 ✓ ✓ ✓ DIN 80, PN 25 N06 ✓ ✓ ✓ DIN 50, PN 25 N06 ✓ ✓ ✓ DIN 3676/350 2852 N114 ✓ ✓ ✓ DIN 3676/350 2852 N114 ✓ ✓ ✓ DIN 3676/350 2852 N115 ✓ ✓ ✓ DIN 3676/350 2852 N115 ✓ ✓ ✓ DIN 3676/350 2852 N126 N128 ✓ ✓ Trype N = 68 for Varivent housing DN 40. N28 ✓ ✓ ✓ Temperature decoupler up to 250 °C Measuring cell filling: P10 ✓ ✓ ✓ Silicone oil Bio-Control sanitary process connection M32 ✓ ✓ ✓ DN 50, PN 40 M32 ✓ ✓ ✓ ✓ <th>Selection and Ordering data</th> <th>Order</th> <th>code</th> <th></th> <th></th>	Selection and Ordering data	Order	code		
specify Order Code. Image: Specify Order Code. Image: Specify Order Code. Sanitary process connection according DIN 35676/ISO 2852 N06 ✓ ✓ IDN 50, PN 25 N06 ✓ ✓ ✓ IDN 50, PN 10 N15 ✓ ✓ ✓ Varivent connection Criffied to EHEDG N28 ✓ ✓ Temperature decoupler up to 250°C Measuring cell filling silicone oil P10 ✓ ✓ ✓ Bio-Control sanitary process connection to DRD ODN 50, PN 16 Q53 ✓ ✓ IDN 50, PN 40 M32 ✓ ✓ ✓ ✓ Smaitary process connection to DRD ODN 50, PN 16 Q53 ✓ ✓ <td< td=""><td>Further designs</td><td></td><td></td><td>PA</td><td>FF</td></td<>	Further designs			PA	FF
DIN 155 (Dairy connection) N04 ✓ ✓ • DN 80, PN 25 N06 ✓ ✓ DIN 32676/ISO 2852 N06 ✓ ✓ DIN 50/27, PN 16 N14 ✓ ✓ ✓ • DN 65/37, PN 10 N15 ✓ ✓ ✓ Varivent connection Certified to EHEDG N28 ✓ ✓ ✓ • Trype N = 68 for Varivent housing DN 40 125 und 11% 6*, PN 40 P00 ✓ ✓ ✓ Temperature decoupler up to 250 °C Measuring cell filling P10 ✓ ✓ ✓ Bio-Control sanitary process connection P10 ✓ ✓ ✓ Catified to EHEDG Q53 ✓ ✓ ✓ Bio-Control sanitary process connection Q53 ✓ ✓ ✓ Catified to EHEDG Q53 ✓ ✓ ✓ ✓ DN 50, PN 16 Q54 ✓ ✓ ✓ ✓ ✓ Smitary process connection to DRD DN 50, PN 40 M32 ✓ ✓ ✓ DF socket with union nut ISO 2853 ✓ ✓ ✓ <td></td> <td></td> <td></td> <td></td> <td></td>					
• DN 50, PN 25 N04 ✓ ✓ ✓ • DN 80, PN 25 N06 ✓ ✓ ✓ • DN 80, PN 25 N06 ✓ ✓ ✓ • DN 80, PN 25 N06 ✓ ✓ ✓ • DN 55/780 2852 • ✓ ✓ ✓ • DN 55/780 2852 • ✓ ✓ ✓ • DN 55/780 2852 • ✓ ✓ ✓ • DN 56/3", PN 10 N15 ✓ ✓ ✓ Varivent connection Certified to EHEDG N28 ✓ ✓ ✓ • Temperature decoupler up to 200 °C ⁴⁰ P00 ✓ ✓ ✓ ✓ for version with front-flush diaphragm Temperature decoupler up to 250 °C P10 ✓ ✓ ✓ • DN 50, PN 16 Q53 ✓ ✓ ✓ ✓ ✓ • DN 50, PN 16 Q53 ✓ ✓ ✓ ✓ ✓ Santary process connection to DRD N68 ✓ ✓ ✓ ✓ ✓ • 2½* M67 ✓ ✓					
• DN 80, PN 25 N06 ✓ ✓ • DN 802, PN 25 N06 ✓ ✓ IN 32676/ISO 2852 N14 ✓ ✓ • DN 65/3*, PN 10 N15 ✓ ✓ Varivent connection Certified to EHEDG ✓ ✓ • Type N = 68 for Varivent housing DN 40 125 und 1½* 6*, PN 40 P00 ✓ ✓ Temperature decoupler up to 250 °C Measuring cell filling: High-temperature oil, only in conjunction with measuring cell filling: P10 ✓ ✓ Bio-Control sanitary process connection G53 ✓ ✓ ✓ Sanitary process connection to DRD UN 50, PN 16 Q53 ✓ ✓ SMS socket with union nut *2° ✓ ✓ ✓ *2%* M67 ✓ ✓ ✓ *2%** M68 ✓ ✓ ✓ *2%** M		N04	1	1	1
DIN 32876/JSO 2852 • DN 65/3", PN 16 N14 ✓ ✓ • DN 65/3", PN 10 N15 ✓ ✓ Varivent connection Certified to EHEDG N28 ✓ ✓ • Type N = 86 for Varivent housing DN 40 125 und 1½" 6", PN 40 P00 ✓ ✓ Temperature decoupler up to 200 °C ⁴ for version with front-flush diaphragm P10 ✓ ✓ ✓ Temperature decoupler up to 250 °C Measuring cell filling: High-temperature oil, only in conjunction with measuring cell filling silicone oil P10 ✓ ✓ ✓ Bio-Control sanitary process connection Certified to EHEDG Q53 ✓ ✓ ✓ DN 50, PN 16 Q54 ✓ ✓ ✓ ✓ SMS socket with union nut -2" ✓ ✓ ✓ ✓ 22% M67 ✓ ✓ ✓ ✓ ✓ SMS threaded socket -2" M73 ✓ ✓ ✓ ✓ SW Sthreaded socket ISO 2853 -2" ✓ ✓ ✓ ✓ ✓ ✓ C2% M82 ✓ ✓ ✓ ✓ ✓ <td>,</td> <td></td> <td>1</td> <td>1</td> <td>✓</td>	,		1	1	✓
• DN 50/2', PN 16 N14 ✓ ✓ ✓ • DN 56/3', PN 10 N15 ✓ ✓ ✓ Varivent connection Certified to EHEDG ✓ ✓ ✓ • Type N = 68 for Varivent housing DN 40 125 und 1½" 6", PN 40 N28 ✓ ✓ ✓ Temperature decoupler up to 200 °C ⁴) for version with front-flush diaphragm P10 ✓ ✓ ✓ Measuring cell filling: High-temperature oil, only in conjunction with measuring cell filling: Bilc-Control sanitary process connection P10 ✓ ✓ ✓ Bio-Control sanitary process connection Certified to EHEDG Q53 ✓ ✓ ✓ ✓ • DN 50, PN 16 Q53 ✓ ✓ ✓ ✓ ✓ ✓ • DN 50, PN 40 M32 ✓					
• DN 65/3°, PN 10 N15 ✓ ✓ Varivent connection Certified to EHEDG N28 ✓ ✓ Type N = 68 for Varivent housing DN 40 125 und 1½° 6°, PN 40 P00 ✓ ✓ Temperature decoupler up to 200 °C ⁴⁰ for version with front-flush diaphragm P10 ✓ ✓ ✓ Temperature decoupler up to 250 °C Measuring cell filling: High-temperature oil, only in conjunction with measuring cell filling silicone oil P10 ✓ ✓ ✓ Bio-Control sanitary process connection Certified to EHEDG Q53 ✓ ✓ ✓ DN 50, PN 16 Q54 ✓ ✓ ✓ ✓ Sanitary process connection to DRD N32 ✓ ✓ ✓ 2% M67 ✓ ✓ ✓ ✓ 2% M68 ✓ ✓ ✓ ✓ 2% M73 ✓ ✓ ✓ ✓ 2% M74 ✓ ✓ ✓ ✓ 2% M83 ✓ ✓ ✓ ✓ 2% M83 ✓ ✓ ✓ ✓ 2% M73<		N14	1	1	1
Certified to EHEDG 1Vpe N = 68 for Varivent housing DN 40 125 und 1½" 6", PN 40 N28 ✓ ✓ Temperature decoupler up to 200 °C ⁴) for version with front-flush diaphragm P00 ✓ ✓ ✓ Temperature decoupler up to 250 °C Measuring cell filling; silicone oil P10 ✓ ✓ ✓ Bio-Control sanitary process connection Certified to EHEDG Q53 ✓ ✓ ✓ • DN 50, PN 16 Q53 ✓ ✓ ✓ ✓ • DN 50, PN 40 M32 ✓ ✓ ✓ Sanitary process connection to DRD • DN 50, PN 40 M67 ✓ ✓ SMS socket with union nut - - ✓ ✓ • 2½* M68 ✓ ✓ ✓ • 2½* M73 ✓ ✓ ✓ • 2½* M73 ✓ ✓ ✓ • 2½* M73 ✓ ✓ ✓ • 2½* M82 ✓ ✓ ✓ • 2½* M74 ✓ ✓ ✓ • 2½* M82 ✓ ✓ ✓		N15	✓	✓	✓
• Type N = 68 for Varivent housing DN 40 125 und 1½" 6", PN 40 P00 ✓ ✓ Temperature decoupler up to 200 °C Measuring cell filling: High-temperature oil, only in conjunction with measuring cell filling silicone oil P10 ✓ ✓ Bio-Control sanitary process connection Certified to EHEDG Q53 ✓ ✓ ✓ Sanitary process connection to DRD 0DN 50, PN 16 Q53 ✓ ✓ ✓ SUS socket with union nut					
Temperature decoupler up to 200 °C ⁴) for version with front-flush diaphragm P00 ✓ ✓ ✓ Temperature decoupler up to 250 °C Measuring cell filling: Silicone oil P10 ✓ ✓ ✓ Bio-Control sanitary process connection Certified to EHEDG O53 ✓ ✓ ✓ Some construction with measuring cell filling Silicone oil O53 ✓ ✓ ✓ Bio-Control sanitary process connection Certified to EHEDG O53 ✓ ✓ ✓ DN 65, PN 16 Q54 ✓ ✓ ✓ Some construction to DRD DN 50, PN 40 M32 ✓ ✓ SMS threaded socket ✓ ✓ ✓ 2½ M68 ✓ ✓ ✓ ✓ 3" M67 ✓ ✓ ✓ ✓ 2½ M68 ✓ ✓ ✓ ✓ ✓ 21/2* M73 ✓ ✓ ✓ ✓ ✓ ✓ 21/2* M74 ✓ ✓ ✓ ✓	• Type N = 68 for Varivent housing	N28	1	1	1
for version with front-flush diaphragm P10 ✓ ✓ ✓ Temperature decoupler up to 250 °C P10 ✓ ✓ ✓ Measuring cell filling: High-temperature oil, only in conjunction with measuring cell filling Silcocon coll ✓ ✓ ✓ Bio-Control sanitary process connection Certified to EHEDG Q53 ✓ ✓ ✓ ✓ • DN 50, PN 16 Q54 ✓ ✓ ✓ ✓ ✓ ✓ Sanitary process connection to DRD • DN 50, PN 40 M32 ✓ <td></td> <td>Daa</td> <td></td> <td></td> <td></td>		Daa			
Measuring cell filling: High-temperature oil, only in conjunction with measuring cell filling silicone oil Image: Constant of the set of the		P00	~	~	~
only in conjunction with measuring cell filling silicone oil Image: Control sanitary process connection Bio-Control sanitary process connection Q53 ✓ ✓ ODN 50, PN 16 Q54 ✓ ✓ Sanitary process connection to DRD DN 50, PN 40 M32 ✓ ✓ SMS socket with union nut * ✓ ✓ ✓ 2" M67 ✓ ✓ ✓ 3" M69 ✓ ✓ ✓ SMS threaded socket * ✓ ✓ ✓ 2" M73 ✓ ✓ ✓ ✓ 3" M69 ✓ ✓ ✓ ✓ 2½" M73 ✓ ✓ ✓ ✓ 3" M74 ✓ ✓ ✓ ✓ 2½" M83 ✓ ✓ ✓ ✓ 21/2" M82 ✓ ✓ ✓ ✓ 21/2" M83 ✓ ✓ ✓ ✓ <t< td=""><td></td><td>P10</td><td>1</td><td>✓</td><td>✓</td></t<>		P10	1	✓	✓
Bio-Control sanitary process connection Certified to EHEDG Q53 ✓ ✓ • DN 50, PN 16 Q54 ✓ ✓ ✓ Sanitary process connection to DRD M32 ✓ ✓ ✓ Sanitary process connection to DRD M32 ✓ ✓ ✓ SMS socket with union nut ✓ ✓ ✓ 22'' M67 ✓ ✓ ✓ 3" M69 ✓ ✓ ✓ 2½'' M73 ✓ ✓ ✓ 2½'' M74 ✓ ✓ ✓ 2½'' M73 ✓ ✓ ✓ 2½'' M74 ✓ ✓ ✓ 2½'' M74 ✓ ✓ ✓ 2½'' M82 ✓ ✓ ✓ DF threaded socket ISO 2853 ✓ ✓ ✓ 2½'' M93 ✓ ✓ ✓ 2½'' M93 ✓ ✓ ✓	only in conjunction with measuring cell filling				
Certified to EHEDG Q53 ✓ ✓ • DN 50, PN 16 Q54 ✓ ✓ • DN 50, PN 16 Q54 ✓ ✓ Sanitary process connection to DRD M32 ✓ ✓ • DN 50, PN 40 M32 ✓ ✓ ✓ SMS socket with union nut					
• DN 65, PN 16 Q54 ✓ ✓ Sanitary process connection to DRD M32 ✓ ✓ • DN 50, PN 40 M32 ✓ ✓ SMS socket with union nut ✓ ✓ • 2" M67 ✓ ✓ • 2½" M68 ✓ ✓ • 3" M69 ✓ ✓ SMS threaded socket ✓ ✓ • 2" M73 ✓ ✓ · 2%" M74 ✓ ✓ · 2%" M74 ✓ ✓ · 2%" M75 ✓ ✓ · 2%" M73 ✓ ✓ · 2½" M82 ✓ ✓ · 2½" M83 ✓ ✓ · 2½" M84 ✓ ✓ · 2½" M93 ✓ ✓					
Sanitary process connection to DRD M32 ✓ ✓ SMS socket with union nut ✓ ✓ 2" M67 ✓ ✓ 2½" M68 ✓ ✓ 3" M69 ✓ ✓ SMS threaded socket ✓ ✓ 2" M73 ✓ ✓ 2%" M74 ✓ ✓ 2%" M75 ✓ ✓ 2%" M74 ✓ ✓ 2%" M74 ✓ ✓ 2%" M74 ✓ ✓ 2%" M75 ✓ ✓ 2%" M83 ✓ ✓ 2%" M83 ✓ ✓ 2%" M83 ✓ ✓ 2%" M93 ✓ ✓ 2%" M94 ✓	,				
• DN 50, PN 40 M32 ✓ ✓ SMS socket with union nut ✓ • 2" M67 ✓ ✓ • 2½" M68 ✓ ✓ • 3" M69 ✓ ✓ SMS threaded socket ✓ ✓ • 2" M73 ✓ ✓ ✓ 2%" M73 ✓ ✓ ✓ 2%" M73 ✓ ✓ ✓ • 2" M73 ✓ ✓ ✓ 2½" M74 ✓ ✓ ✓ 3" M75 ✓ ✓ ✓ 1DF socket with union nut ISO 2853 ✓ ✓ 2" M83 ✓ ✓ ✓ 2½" M83 ✓ ✓ ✓ 2" M84 ✓ ✓ ✓ 2" M93 ✓ ✓ ✓ 2" M93 ✓ ✓ ✓ 2" M93 ✓ ✓ ✓ Sanitary pro	· · · · · · · · · · · · · · · · · · ·	Q54	•	•	•
$2^{"}$ M67 \checkmark \checkmark $2^{1/2}$ M68 \checkmark \checkmark $3^{"}$ M69 \checkmark \checkmark SMS threaded socket \checkmark \checkmark $2^{"}$ M73 \checkmark \checkmark $2^{1/2}$ M73 \checkmark \checkmark $2^{1/2}$ M74 \checkmark \checkmark $2^{1/2}$ M74 \checkmark \checkmark $3^{"}$ M74 \checkmark \checkmark DF socket with union nut ISO 2853 \checkmark \checkmark $2^{1/2}$ M82 \checkmark \checkmark $2^{1/2}$ M83 \checkmark \checkmark $3^{"}$ M84 \checkmark \checkmark DF threaded socket ISO 2853 \checkmark \checkmark $2^{"}$ $3^{"}$ M92 \checkmark \checkmark 2/2'2" M93 \checkmark \checkmark \checkmark 3" M94 \checkmark \checkmark \checkmark DSanitary process connection to NEUMO Bio-Connect screw connection \sim \checkmark DN 50, PN 16 Q06 \checkmark \checkmark \checkmark <		M32	~	✓	~
• 2½" M68 ✓ ✓ ✓ • 3" M69 ✓ ✓ ✓ SMS threaded socket ✓ ✓ • 2" M73 ✓ ✓ ✓ • 2½" M74 ✓ ✓ ✓ • 3" M75 ✓ ✓ ✓ • 3" M75 ✓ ✓ ✓ • 2½" M82 ✓ ✓ ✓ • 2" 2½" M83 ✓ ✓ • 2" 2½" M83 ✓ ✓ • 2" 2½" M84 ✓ ✓ • 2½" M84 ✓ ✓ ✓ • 2½" M93 ✓ ✓ ✓ 2½" M94 <td></td> <td></td> <td></td> <td></td> <td></td>					
• 3" M69 ✓ ✓ SMS threaded socket ////////////////////////////////////					1
$2^{"}$ M73 \checkmark \checkmark $2^{1/2}$ " M74 \checkmark \checkmark $3^{"}$ M75 \checkmark \checkmark IDF socket with union nut ISO 2853 $2^{"}$ M82 \checkmark \checkmark $21/2^{"}$ M82 \checkmark \checkmark $21/2^{"}$ M83 \checkmark \checkmark $3^{"}$ M84 \checkmark \checkmark DF threaded socket ISO 2853 \checkmark \checkmark $2^{"}$ M92 \checkmark \checkmark $21/2^{"}$ M93 \checkmark \checkmark $21/2^{"}$ M94 \checkmark \checkmark $21/2^{"}$ M94 \checkmark \checkmark Sanitary process connection to Q06 \checkmark \checkmark DN 40, PN 16 Q13 \checkmark \checkmark DN 2", PN 16 Q14 \checkmark \checkmark <			~	~	~
$\begin{array}{cccccccccccccccccccccccccccccccccccc$					
• 3" M75 ✓ ✓ IDF socket with union nut ISO 2853 ////////////////////////////////////	—				1
$2^{"}$ M82 \checkmark \checkmark $2^{1/2}$ M83 \checkmark \checkmark $3^{"}$ M84 \checkmark \checkmark IDF threaded socket ISO 2853 \vee \checkmark $2^{"}$ M92 \checkmark \checkmark $2!_{2}^{"}$ M93 \checkmark \checkmark $2!_{2}^{"}$ M93 \checkmark \checkmark $2!_{2}^{"}$ M93 \checkmark \checkmark $3"$ M94 \checkmark \checkmark $3"$ M94 \checkmark \checkmark Sanitary process connection to NEUMO Bio-Connect screw connection Q05 \checkmark \checkmark Certified to EHEDG Q06 \checkmark \checkmark \checkmark \checkmark DN 50, PN 16 Q06 \checkmark \checkmark \checkmark \checkmark DN 100, PN 16 Q13 \checkmark \checkmark \checkmark \checkmark DN 3", PN 16 Q15 \checkmark \checkmark \checkmark Sanitary process connection to NEUMO Q16 \checkmark \checkmark DN 4", PN 16 Q23 \checkmark \checkmark \checkmark DN 65, PN 16 Q24<			~	~	√
• 2½" M83 ✓ ✓ ✓ • 3" M84 ✓ ✓ ✓ IDF threaded socket ISO 2853 ////////////////////////////////////					
3" M84 ✓ ✓ IDF threaded socket ISO 2853 92" ✓ ✓ 2" M92 ✓ ✓ ✓ 2½" M93 ✓ ✓ ✓ 3" M94 ✓ ✓ ✓ Sanitary process connection to NEUMO Bio-Connect screw connection Certified to EHEDG Q05 ✓ ✓ • DN 50, PN 16 Q06 ✓ ✓ ✓ • DN 65, PN 16 Q07 ✓ ✓ • DN 100, PN 16 Q08 ✓ ✓ • DN 2", PN 16 Q13 ✓ ✓ • DN 2", PN 16 Q15 ✓ ✓ • DN 3", PN 16 Q15 ✓ ✓ • DN 4", PN 16 Q16 ✓ ✓ • DN 4", PN 16 Q23 ✓ ✓ • DN 50, PN 16 Q24 ✓ ✓ • DN 80, PN 16 Q26 ✓ ✓ • DN 80, PN 16 Q26 ✓ ✓ • DN 80, PN 16 Q26 ✓ ✓ • DN 80, PN 16 Q31 ✓ ✓					1
$2^{"}$ M92 \checkmark \checkmark \checkmark $2^{1/2}$ "M93 \checkmark \checkmark \checkmark $3^{"}$ M94 \checkmark \checkmark \checkmark Sanitary process connection to NEUMO Bio-Connect screw connection Certified to EHEDGQ05 \checkmark \checkmark \circ DN 50, PN 16Q06 \checkmark \checkmark \checkmark \circ DN 65, PN 16Q07 \checkmark \checkmark \circ DN 80, PN 16Q08 \checkmark \checkmark \circ DN 100, PN 16Q13 \checkmark \checkmark \circ DN 2", PN 16Q14 \checkmark \checkmark \circ DN 3", PN 16Q15 \checkmark \checkmark \circ DN 4", PN 16Q16 \checkmark \checkmark \circ DN 50, PN 16Q23 \checkmark \checkmark \circ DN 50, PN 16Q24 \checkmark \checkmark \circ DN 50, PN 16Q25 \checkmark \checkmark \circ DN 80, PN 16Q25 \checkmark \checkmark \circ DN 50, PN 16Q26 \checkmark \checkmark \circ DN 80, PN 16Q26 \checkmark \checkmark \circ DN 80, PN 16Q26 \checkmark \checkmark \circ DN 2", PN 16Q31 \checkmark \checkmark	_,_		~	~	~
• 2½" M93 ✓ ✓ • 3" M94 ✓ ✓ Sanitary process connection to NEUMO Bio-Connect screw connection Certified to EHEDG Q05 ✓ ✓ • DN 50, PN 16 Q06 ✓ ✓ ✓ • DN 65, PN 16 Q07 ✓ ✓ • DN 100, PN 16 Q08 ✓ ✓ • DN 2", PN 16 Q13 ✓ ✓ • DN 2", PN 16 Q14 ✓ ✓ • DN 3", PN 16 Q15 ✓ ✓ • DN 4", PN 16 Q15 ✓ ✓ • DN 50, PN 16 Q24 ✓ ✓ • DN 65, PN 16 Q26 ✓ ✓ • DN 80, PN 16 Q26 ✓ ✓ • DN 100, PN 16 Q31 ✓ ✓ • DN 2", PN 16 Q32 ✓ ✓ • DN 2"					
• 3" M94 ✓ ✓ ✓ Sanitary process connection to NEUMO Bio-Connect screw connection Certified to EHEDG Q05 ✓ ✓ ✓ • DN 50, PN 16 Q06 ✓ ✓ ✓ ✓ ✓ • DN 65, PN 16 Q06 ✓ ✓ ✓ ✓ ✓ • DN 80, PN 16 Q07 ✓ ✓ ✓ ✓ ✓ ✓ • DN 100, PN 16 Q08 ✓	_				1
NEUMO Bio-Connect screw connection Certified to EHEDG Q05 ✓ ✓ • DN 50, PN 16 Q06 ✓ ✓ ✓ • DN 65, PN 16 Q07 ✓ ✓ ✓ • DN 80, PN 16 Q07 ✓ ✓ ✓ • DN 100, PN 16 Q08 ✓ ✓ • DN 2", PN 16 Q13 ✓ ✓ • DN 2", PN 16 Q15 ✓ ✓ • DN 3", PN 16 Q16 ✓ ✓ • DN 4", PN 16 Q16 ✓ ✓ • DN 4", PN 16 Q16 ✓ ✓ • DN 4", PN 16 Q16 ✓ ✓ • DN 50, PN 16 Q23 ✓ ✓ • DN 50, PN 16 Q24 ✓ ✓ • DN 80, PN 16 Q26 ✓ ✓ • DN 100, PN 16 Q31 ✓ ✓ • DN 2", PN 16 Q32 ✓ ✓ • DN 2", PN 16 Q33 ✓ ✓	2,2				~
Certified to EHEDG Q05 ✓ ✓ • DN 50, PN 16 Q06 ✓ ✓ • DN 65, PN 16 Q07 ✓ ✓ • DN 80, PN 16 Q07 ✓ ✓ • DN 100, PN 16 Q08 ✓ ✓ • DN 2", PN 16 Q13 ✓ ✓ • DN 2", PN 16 Q14 ✓ ✓ • DN 3", PN 16 Q15 ✓ ✓ • DN 3", PN 16 Q16 ✓ ✓ • DN 4", PN 16 Q16 ✓ ✓ • DN 4", PN 16 Q16 ✓ ✓ • DN 50, PN 16 Q23 ✓ ✓ • DN 65, PN 16 Q24 ✓ ✓ • DN 65, PN 16 Q26 ✓ ✓ • DN 80, PN 16 Q26 ✓ ✓ • DN 100, PN 16 Q31 ✓ ✓ • DN 2", PN 16 Q32 ✓ ✓ • DN 3", PN 16 Q33 ✓ ✓					
• DN 50, PN 16 Q05 ✓ ✓ • DN 65, PN 16 Q06 ✓ ✓ • DN 80, PN 16 Q07 ✓ ✓ • DN 100, PN 16 Q08 ✓ ✓ • DN 2", PN 16 Q13 ✓ ✓ • DN 2", PN 16 Q14 ✓ ✓ • DN 3", PN 16 Q15 ✓ ✓ • DN 4", PN 16 Q16 ✓ ✓ • DN 4", PN 16 Q16 ✓ ✓ • DN 50, PN 16 Q23 ✓ ✓ • DN 50, PN 16 Q24 ✓ ✓ • DN 50, PN 16 Q25 ✓ ✓ • DN 80, PN 16 Q26 ✓ ✓ • DN 80, PN 16 Q31 ✓ ✓ • DN 2", PN 16 Q31 ✓ ✓ • DN 2", PN 16 Q32 ✓ ✓ • DN 3", PN 16 Q33 ✓ ✓					
• DN 80, PN 16 Q07 ✓ ✓ ✓ • DN 100, PN 16 Q08 ✓ ✓ ✓ • DN 2", PN 16 Q13 ✓ ✓ ✓ • DN 2½", PN 16 Q14 ✓ ✓ ✓ • DN 3", PN 16 Q15 ✓ ✓ ✓ • DN 4", PN 16 Q16 ✓ ✓ ✓ • DN 4", PN 16 Q16 ✓ ✓ ✓ Sanitary process connection to NEUMO Bio-Connect flange connection Certified to EHEDG Q23 ✓ ✓ • DN 50, PN 16 Q24 ✓ ✓ ✓ • DN 65, PN 16 Q25 ✓ ✓ ✓ • DN 80, PN 16 Q26 ✓ ✓ ✓ • DN 100, PN 16 Q31 ✓ ✓ ✓ • DN 2½", PN 16 Q32 ✓ ✓ ✓	• DN 50, PN 16				1
• DN 100, PN 16 Q08 ✓ ✓ ✓ • DN 2", PN 16 Q13 ✓ ✓ ✓ • DN 2½", PN 16 Q14 ✓ ✓ ✓ • DN 3", PN 16 Q15 ✓ ✓ ✓ • DN 4", PN 16 Q16 ✓ ✓ ✓ Sanitary process connection to NEUMO Bio-Connect flange connection Certified to EHEDG Q23 ✓ ✓ • DN 50, PN 16 Q24 ✓ ✓ ✓ • DN 65, PN 16 Q25 ✓ ✓ • DN 80, PN 16 Q26 ✓ ✓ • DN 100, PN 16 Q31 ✓ ✓ • DN 2", PN 16 Q31 ✓ ✓ • DN 2", PN 16 Q33 ✓ ✓				4	4
• DN 2½", PN 16 Q14 ✓ ✓ ✓ • DN 3", PN 16 Q15 ✓ ✓ ✓ • DN 4", PN 16 Q16 ✓ ✓ ✓ Sanitary process connection to NEUMO Bio-Connect flange connection Certified to EHEDG Q23 ✓ ✓ ✓ • DN 50, PN 16 Q24 ✓ ✓ ✓ • DN 65, PN 16 Q25 ✓ ✓ • DN 80, PN 16 Q26 ✓ ✓ • DN 100, PN 16 Q31 ✓ ✓ • DN 2", PN 16 Q32 ✓ ✓ • DN 3", PN 16 Q33 ✓ ✓	• DN 100, PN 16	Q08	✓	✓	✓
• DN 3*, PN 16 Q15 ✓ ✓ • DN 4*, PN 16 Q16 ✓ ✓ ✓ Sanitary process connection to NEUMO Bio-Connect flange connection Q16 ✓ ✓ ✓ Certified to EHEDG Q23 ✓ ✓ ✓ ✓ • DN 50, PN 16 Q24 ✓ ✓ ✓ • DN 65, PN 16 Q25 ✓ ✓ • DN 80, PN 16 Q26 ✓ ✓ • DN 100, PN 16 Q31 ✓ ✓ • DN 2*, PN 16 Q32 ✓ ✓ • DN 3*, PN 16 Q33 ✓ ✓					
• DN 4", PN 16 Q16 ✓ ✓ ✓ Sanitary process connection to NEUMO Bio-Connect flange connection Certified to EHEDG Q23 ✓ ✓ ✓ • DN 50, PN 16 Q24 ✓ ✓ ✓ • DN 65, PN 16 Q25 ✓ ✓ ✓ • DN 80, PN 16 Q26 ✓ ✓ ✓ • DN 100, PN 16 Q31 ✓ ✓ ✓ • DN 2", PN 16 Q32 ✓ ✓ ✓ • DN 3", PN 16 Q33 ✓ ✓ ✓				✓	
Bio-Connect flange connection Certified to EHEDG Q23 ✓ ✓ • DN 50, PN 16 Q24 ✓ ✓ ✓ • DN 65, PN 16 Q25 ✓ ✓ ✓ • DN 80, PN 16 Q26 ✓ ✓ ✓ • DN 100, PN 16 Q26 ✓ ✓ ✓ • DN 2", PN 16 Q31 ✓ ✓ ✓ • DN 3", PN 16 Q33 ✓ ✓ ✓		Q16	1		~
Certified to EHEDĞ Q23 ✓ ✓ ✓ • DN 50, PN 16 Q24 ✓ ✓ ✓ • DN 65, PN 16 Q25 ✓ ✓ ✓ • DN 80, PN 16 Q26 ✓ ✓ ✓ • DN 100, PN 16 Q26 ✓ ✓ ✓ • DN 2", PN 16 Q31 ✓ ✓ ✓ • DN 3", PN 16 Q33 ✓ ✓ ✓					
• DN 65, PN 16 Q24 ✓ ✓ • DN 80, PN 16 Q25 ✓ ✓ • DN 100, PN 16 Q26 ✓ ✓ • DN 2", PN 16 Q31 ✓ ✓ • DN 2½", PN 16 Q32 ✓ ✓ • DN 3", PN 16 Q33 ✓ ✓	Certified to EHEDG				
• DN 80, PN 16 Q25 ✓ ✓ • DN 100, PN 16 Q26 ✓ ✓ • DN 2", PN 16 Q31 ✓ ✓ • DN 2½", PN 16 Q32 ✓ ✓ • DN 3", PN 16 Q33 ✓ ✓	,				
• DN 2", PN 16 Q31 ✓ ✓ • DN 2½", PN 16 Q32 ✓ ✓ • DN 3", PN 16 Q33 ✓ ✓			✓	✓	1
• DN 2½", PN 16 • DN 3", PN 16 Q32 ✓ ✓ ✓ Q33 ✓ ✓					1
• DN 3", PN 16 Q33 🖌 🖌 🗸					
• DN 4", PN 16 Q34 🗸 🗸	• DN 3", PN 16	Q33	✓	✓	✓
	• UN 4", PN 16	Q34	~	~	1

2/97

Pressure Measurement

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

Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "-Z" to Order No. and				
specify Order Code.				
Sanitary process connection to NEUMO Bio-Connect clamp connection				
Certified to EHEDG • DN 50, PN 16	000	~	~	✓
• DN 65, PN 10	Q39 Q40	↓	¥.	¥.
• DN 80, PN 10	Q41	¥	1	
• DN 100, PN 10	Q42	✓	1	✓
• DN 21/2", PN 16	Q48	✓	✓	✓
• DN 3", PN 10	Q49	✓	✓	✓
• DN 4", PN 10	Q50	1	1	✓
Sanitary process connection to NEUMO Bio-Connect S flange connection				
Certified to EHEDG	062	1	1	~
• DN 50, PN 16 • DN 65, PN 10	Q63 Q64	√	↓	√
• DN 80, PN 10	Q65		1	1
• DN 100, PN 10	Q66	1	1	1
• DN 2", PN 16	Q72	✓	✓	✓
• DN 21/2", PN 10	Q73	✓	✓	✓
• DN 3", PN 10	Q74	✓	✓	✓
• DN 4", PN 10	Q75	1	1	~
Aseptic threaded socket to DIN 11864-1 Form A				
• DN 50, PN 25	N33	1	~	~
• DN 65, PN 25	N34	1	1	1
• DN 80, PN 25	N35	✓	✓	✓
• DN 100, PN 25	N36	✓	✓	✓
Aseptic flange with notch to DIN 11864-2 Form A				
• DN 50, PN 16	N43	✓	✓	✓
• DN 65, PN 16	N44	1	1	✓
• DN 80, PN 16	N45	1	1	1
• DN 100, PN 16	N46	~	~	~
Aseptic flange with groove to DIN 11864-2 Form A				
• DN 50, PN 16	N43 + P11	1	✓	~
• DN 65, PN 16	N44 + P11	~	~	~
• DN 80, PN 16	N45 + P11	~	~	~
• DN 100, PN 16	N46 + P11	~	✓	1
Aseptic clamp with groove to DIN 11864-3 FormA				
• DN 50, PN 25	N53	✓	1	1
• DN 65, PN 25	N54	✓	✓	✓
• DN 80, PN 16	N55	1	1	1
• DN 100, PN 16	N56	✓	1	~

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.				
Calibrated range	Y01	1		
Specify in plain text (max. 5 characters): Y01: X to Y psi, inH ₂ 0, ftH ₂ 0				
Tag number/Identification	Y15	~	✓	1
(max. 16 characters), specify in plain text: Y15:				
Tag description	Y16	1	✓	1
(max. 27 characters), specify in plain text: Y16:				
Entry of HART (TAG)	Y17	✓		
(max. 8 characters), specify in plain text: Y17:				
Pressure units for digital display	Y21	✓	✓	1
specify in plain text: Y21: psi, inH ₂ 0, ftH ₂ 0				
Preset bus address	Y25		✓	
possible between 1 and 126				
Specify in plain text: Y25:				
Only "Y01" and "Y21" can be factory preset				
✓ = available				

Ordering example

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

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.

respective cell fillings.

⁴⁾ The maximum permissible temperatures of the medium depend on the

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

Dimensional drawings



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

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

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

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

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

Flanges as per EN and ASME

Flange to EN

EN 1092-1



Flanges to ASME

ASME B16.5

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

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

F&B and pharmaceutical flanges Connections to DIN

U	0	٦r	iec	tior	าร	το	וט	I

DIN 11851 (milk pipe union)					
	DN	PN	ØD	H ₂	
	50	25	92 mm (3.6")	Approx.	
	80	25	127 mm (5.0")	52 mm (2")	

TriClamp to DIN 32676



Other connections

Varivent connection



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Pressure Measurement Transmitters for general requirements

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

Biocontrol connection



DN 50

Sanitary process connection to DRD

H ²		
ļ	D	

l to	DRD		
	PN	ØD	H ₂
	40	105 mm (4.1")	Approx. 52 mm (2")

H₂

Approx. 52 mm (2")

Sanitary process connection to NEUMO Bio-Connect S flange connection

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

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

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

Tank connection TG 52/50 and TG52/150

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

SMS socket with union nut

	DN	PN	ØD	H ₂
	2"	25	84 mm (3.3")	Approx. 52 mm
	21⁄2"	25	100 mm (3.9")	52 mm (2.1")
	3"	25	114 mm (4.5")	、 ,
→ D				

SMS threaded socket



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

IDF socket with union nut

- Control	DN	PN	ØD	H ₂
	2"	25	77 mm (3")	Approx. 52 mm
	21⁄2"	25	91 mm (3.6")	52 mm (2.1")
	3"	25	106 mm (4.2")	· /

Sanitary process screw connection to NEUMO Bio-Connect $DN \quad PN \quad \oslash D \qquad H_2$

		FIN		112
	50	16	82 mm (3.2")	Approx.
т (<u>111</u>)	65	16	105 mm (4.1")	52 mm (2")
	80	16	115 mm (4.5")	
	100	16	145 mm (5.7")	
D	2"	16	82 mm (3.2")	
	21⁄2"	16	105 mm (4.1")	
	3"	16	105 mm (4.1")	
	4"	16	145 mm (5.7")	

Sanitary process connection to NEUMO Bio-Connect flange connection



Sanitary process connection to NEUMO Bio-Connect clamp connection

t	(iiiiiiiii)
τ	din line
*	

DN	PN	ØD	H ₂
50	16	77.4 mm (3.0")	Approx.
65	10	90.9 mm (3.6")	52 mm (2")
80	10	106 mm (4.2")	
100	10	119 mm (4.7")	
2"	16	64 mm (2.5")	
21⁄2"	16	77.4 mm (3.0")	
3"	10	90.9 mm (3.6")	
4"	10	779 mm (4.7")	

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

IDF threaded socket

- Finiting	DN	PN	ØD	H ₂
	2"	25	64 mm (2.5")	Approx. 52 mm
	21⁄2"	25	77.5 mm (3.1")	52 mm (2.1")
	3"	25	91 mm (3.6")	()
D				

Aseptic threaded socket to DIN 11864-1 Form A

	DN	PN	ØD	H ₂
()	50	25	94	Approx. 52 mm
±	65	25	113	52 mm (2.1")
	80	25	133	. ,
	100	25	159	
→ D				

Aseptic flange with notch to DIN 11864-2 Form A							
+	DN	PN	ØD	H ₂			
-	50	16	78 x 1/6"	Approx. 52 mm			
	65	16	95 × 1/6"	52 mm (2.1")			
	80	16	110 x 1/4"	· · /			
	100	16	130 x 1/4"				

Aseptic flange with groove to DIN 11864-2 Form A							
	DN	PN	ØD	H ₂			
T C	50	16	94	Approx. 52 mm			
	65	16	113	52 mm (2.1")			
	80	16	133	()			
D I	100	16	159				

Aseptic clamp with groove to DIN 11864-3 Form A								
1 (ministration)	DN	PN	ØD	H ₂				
	50	25	77,5	Approx. 52 mm				
I IIII	65	25	91	52 mm (2.1")				
	80	16	106	· · /				
	100	16	130					
D								

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

Technical specifications

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

	HART		PROFIBUS PA and FOUNDATION Fieldbus				
Input							
Measured variable		Absolut	e pressure				
Spans (infinitely adjustable) or nominal measuring range and max. permissible test pressure	Span (min max.)	Max. perm. test pres- sure	Nominal measuring range	Max. perm. test pres- sure			
	0.12 3.6 psia (8.3 250 mbar a)	87 psia (6 bar a)	3.6 ps a (250 mbar a)	87 psia (6 bar a)			
	0.62 18.9 psia (43 1300 mbar a)	145 psia (10 bar a)	18.9 psia (1300 mbar a)	145 psia (10 bar a)			
	2.32 72.5 psia (160 5000 mbar a)	435 psia (30 bar a)	72.5 psia (5 bar a)	435 psia (30 bar a)			
	14.5 435 psia (1 30 bar a)	1450 psia (100 bar a)	435 psia (30 bar a)	1450 psia (100 bar a)			
Lower measuring limit							
 Measuring cell with silicone oil filling 		0 psi a	(0 mbar a)				
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	t 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	$R_{\rm B}$ ≤ ($U_{\rm H}$ - 10.5 V)/0.023 A in Ω, $U_{\rm H}$: Power supply in V		-				
• With HART	$R_{\rm B}$ = 230 500 Ω (SIMATIC PDM) or $R_{\rm B}$ = 230 1100 Ω (HART Communicator)						
Physical bus	-		IEC 61158-2				
Protection against polarity reversal	Protected against shor		ersal. Each connection a v voltage.	gainst the other with max.			
Measuring accuracy		Acc. to II	EC 60770-1				
Reference conditions (All error data refer always refer to the set span)	Increasing characterist	ing, room temperature 2	bar, stainless steel seal 25 °C (77 °F)) r: Span rat oan / set span)	diaphragm, silicone oil fill· io			
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 \pm 30 °C (\pm 54 °F))	≤(0.1 · r) %/year		≤ 0.1 %/year				
Influence of ambient temperature							
• at -10 +60 °C (14 140 °F)	$\leq (0.1 \cdot r + 0.2) \%^{1)}$		≤ 0.3 %				
• at -4010 °C and 60 85 °C (-40 +14 °F and 140 185 °F)	≤ (0.1 · r + 0.15) %/10 ł	<	≤ 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 (gauge construction)

SITRANS P DS III series for absolute pressure	HABT	PROFIBUS PA and FOUNDATION Fieldbus		
Rated conditions		PROFIBUS PA and FOUNDATION Fleidbus		
Degree of protection (to IEC 60529)		IP65		
Temperature of medium				
Measuring cell with silicone oil filling		C (-40 +212 °F)		
Measuring cell with inert filling liquid		°C (-4 +212 °F)		
 In conjunction with dust explosion protection 	-20 +60 °C	C (-4 +140 °F)		
Ambient conditions				
Ambient temperature				
- Digital indicator	-30 +85 °C	C (-22 +185 °F)		
 Storage temperature 	-50 +85 °C	C (-58 +185 °F)		
Climatic class				
- Condensation		nidity 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 k	g (≈ 3.3 lb)		
Enclosure material	Low-copper die-cast aluminum, GD-AlSi 12 or	r stainless steel precision casting, mat. no. 1.4408		
Wetted parts materials				
Connection shank	Stainless steel, mat. no. 1.4404/3	16L or Hastelloy C4, mat. no. 2.4610		
Oval flange	Stainless steel, n	nat. no. 1.4404/316L		
Seal diaphragm	Stainless steel, mat. no. 1.4404/31	6L or Hastelloy C276, mat. no. 2.4819		
Measuring cell filling		ue with oxigen measurement pressure 120 bar a) at 60 °C (140 °F))		
Process connection		, female thread ½ -14 NPT or oval flange n mounting thread M10 or ⁷ / ₁₆ -20 UNF to EN 61518		
Material of mounting bracket				
• Steel	Sheet-steel, Mat. No	o. 1.0330, chrome-plated		
Stainless steel	Sheet stainless steel,	mat. no. 1.4301 (SS 304)		
Power supply $U_{ m H}$		Supplied through bus		
Terminal voltage on transmitter	10.5 45 V DC 10.5 30 V DC in intrinsically-safe mode	-		
Separate 24 V power supply necessary	-	No		
Bus voltage				
• Not Ex	-	9 32 V		
With intrinsically-safe operation	-	9 24 V		
Current consumption				
Basic current (max.)	-	12.5 mA		
 Start-up current ≤ basic current 	-	Yes		
Max. current in event of fault	-	15.5 mA		
Fault disconnection electronics (FDE) available	-	Yes		

2

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

SITRANS P DS III series for absolute pressur	e (gauge construction)			
	HART	PROFIBUS PA and FOUNDATION Fieldbus		
Certificates and approvals				
Classification according to PED 97/23/EC		group 1; complies with requirements of article 3, d engineering practice)		
Explosion protection				
Intrinsic safety "i"	PTB 99	ATEX 2122		
- Marking	Ex II 1/2 G EE	Ex ia/ib IIB/IIC T6		
- Permissible ambient temperature	-40 +70 °C (-40 +15	85 °F) temperature class T4; 58 °F) temperature class T5; 40 °F) temperature class T6		
- Connection	To certified intrinsically-safe circuits with peak values: $U_{\rm i}$ = 30 V, $l_{\rm i}$ = 100 mA, $P_{\rm i}$ = 750 mW; $R_{\rm i}$ = 300 Ω	FISCO supply unit: $U_o = 17.5 \text{ V}$, $I_o = 380 \text{ mA}$, $P_o = 5.32 \text{ W}$ Linear barrier: $U_o = 24 \text{ V}$, $I_o = 250 \text{ mA}$, $P_o = 1.2 \text{ W}$		
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{i} = 7 \mu\text{H}, C_{i} = 1.1 \text{nF}$		
 Explosion-proof "d" 		ATEX 1160		
- Marking	Ex II 1/2 G I	EEx d IIC T4/T6		
- Permissible ambient temperature	-40 +85 °C (-40 +185 °F) temperature class T4; -40 +60 °C (-40 +140 °F) temperature class T6			
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC	To circuits with values: $U_{\rm H}$ = 9 32 V DC		
Dust explosion protection for zone 20	PTB 01	ATEX 2055		
- Marking	Ex II 1 D IP65 T 120 ℃ Ex II 1/2 D IP65 T 120 ℃			
- Permissible ambient temperature	-40 +85 °C	C (-40 +185 °F)		
- Max. surface temperature	120 °C	C (248 °F)		
- Connection	To certified intrinsically-safe circuits with peak values: $U_{\rm i}$ = 30 V, $l_{\rm i}$ = 100 mA, $P_{\rm i}$ = 750 mW, $R_{\rm i}$ = 300 Ω	FISCO supply unit: $U_o = 17.5 \text{ V}$, $I_o = 380 \text{ mA}$, $P_o = 5.32 \text{ W}$ Linear barrier: $U_o = 24 \text{ V}$, $I_o = 250 \text{ mA}$, $P_o = 1.2 \text{ W}$		
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{\rm i} = 7 \ \mu {\rm H}, \ C_{\rm i} = 1.1 \ {\rm nF}$		
Dust explosion protection for zone 21/22	PTB 01	ATEX 2055		
- Marking	Ex II 2 D I	P65 T 120 °C		
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC; $P_{\rm max}$ = 1.2 W	To circuits with values: $U_{\rm H}$ = 9 32 V DC; $P_{\rm max}$ = 1.2 W		
 Type of protection "n" (zone 2) 	TÜV 01 ATEX 1696 X	Planned		
- Marking	Ex II 3 G EEx nA L IIC T4/T5/T6	-		
 Explosion protection acc. to FM 	Certificate of 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; CL I, DIV 2, GP ABCD T4T6; CL II, DIV 2, GP FG; CL III			
 Explosion protection to CSA 	Certificate of Co	ompliance 1153651		
- Identification (XP/DIP) or (IS)		EFG; CL III; Ex ia IIC T4T6; CL I, DIV 2, GP ABCD DIV 2, GP FG; CL III		

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

Pressure Measurement Transmitters for general requirements

SITRANS P DS III for absolute pressure (gauge construction)

HART communication FOUNDA HART 230 ... 1100 Ω Function HART Version 5.x Protocol SIMATIC PDM Software for computer **PROFIBUS PA communication** Simultaneous communication with 4 master class 2 (max.) The address can be set using Configuration tool or local operation (standard setting address 126) Cyclic data usage 5 (one measured value) or Output byte 10 (two measured values) 0, 1, or 2 (register operating mode Input byte and reset function for metering) Internal preprocessing • PID Device profile **PROFIBUS PA Profile for Process** Control Devices Version 3.0, Class B 2 Function blocks Analog input Yes, linearly rising or falling characteristic Adaptation to customerspecific process variables - Electrical damping, adjustable 0 to 100 s - Simulation function Input /Output - Failure mode parameterizable (last good value, substitute value, incorrect value) Yes, one upper and lower warning - Limit monitoring 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 2 Transducer blocks Pressure transducer block - Can be calibrated by applying Yes two pressures - Monitoring of sensor limits Yes - Characterizer Max. 30 points - Square-rooted characteristic Yes for flow measurement - Gradual volume suppression Parameterizable and implementation point of square-root extraction - Simulation function for mea-Constant value or over parametersured pressure value and senizable ramp function

sor temperature

FOUNDATION Fieldbus communication	
Function blocks	3 function blocks analog input, 1 function block PID
 Analog input 	
 Adaptation to customer- specific process variables 	Yes, linearly rising or falling characteristic
- Electrical damping, adjustable	0 100 s
- Simulation function	Output/input (can be locked within the device with a bridge)
- Failure mode	parameterizable (last good value, substitute value, incorrect value)
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respec- tively
 Square-rooted characteristic for flow measurement 	Yes
• PID	Standard FOUNDATION Fieldbus function block
Physical block	1 resource block
Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block LCD
Pressure transducer block	
 Can be calibrated by applying two pressures 	Yes
- Monitoring of sensor limits	Yes
- Simulation function: Measured pressure value, sensor temper- ature and electronics tempera- ture	Constant value or over parameter- izable ramp function

Order No.

Pressure Measurement Transmitters for general requirements

SITRANS P DS III for absolute pressure (gauge construction)

Selection and Ordering data

Pressure transmitters for absolute pressure F) (gauge construction), SITRANS P DS III with HART) 7 M F 4 2 3 3 -						
Measuring cell filling	Measuring cell							
Silicone oil	cleaning normal		1					
Inert liquid ¹⁾	Grease-free to		3					
	cleanliness level 2							
Measuring span (min.								
0.12 3.63 psia	(8.3 250 mbar a)		D					
0.62 18.9 psia	(43 1300 mbar a)		F					
2.32 72.5 psia	(0.16 5 bar a)		G					
14.5 435 psia	(1 30 bar a)		н					
Wetted parts materials								
Seal diaphragm	Process connection	_						
Stainless steel	Stainless steel	F)		A				
Hastelloy	Stainless steel	F)		B				
Hastelloy Version for diaphragm s	Hastelloy	F)		C Y 1				
	eal / / /			11				
Process connection	D +- EN 007 1							
 Connection shank G¹/₂ Female thread ¹/₂-14 N 				1				
 Stainless steel oval fla 				1				
	-20 UNF to IEC 61518			2	,			
- Mounting thread M1				3				
- Mounting thread M1				4				
• Male thread M20 x 1.5	5			5	5			
Male thread 1/2 -14 NP	Т			6	;			
Non-wetted parts mate	erials							
 Housing made of die- 					0			
 Housing stainless stee 	el precision casting ⁵⁾				3			
Version								
 Standard versions 						1		
International version, English label inscriptions, documentation in 5 languages on CD (no order						2		
code selectable)								
Hazardous area rating								
General purpose							Α	
ATEX Hazardous appl	oval							
- "Intrinsically safe (EB							в	
- "Explosion-proof (EE							D	
- "Intrinsically safe and	d explosion-proof						Р	
(EEx ia + EEx d)" ⁷⁾ - use in zone 2							Е	
	plosion-proof enclosure						R	
	protection (EEx ia + EEx c	ł						
+ zone 1D/2D)"/)								
FM/CSA Hazardous a								
 "Intrinsically Safe un (in un vol"6) 	d explosion proof						NC	;
$(is + xp)^{(6)}$	lashla sutur							
Electrical connection Screwed gland Pg 13								
 Screwed gland Pg 13 Screwed gland M20x⁻ 	.0"' 1 5						E	
• 3crewed giand wizox • 1⁄2-14 NPT	1.0						0	
Han 7D plug (plastic l	nousina) incl. matina							
connector ⁸⁾	-							
 M12 connectors (meta 	al) ⁹⁾						F	•

Selection and Ordering data	Order No.
Pressure transmitters for absolute pressure (gauge construction), SITRANS P DS III with HART	F) 7 M F 4 2 3 3 -
Indicator • Without indicator • Without indicator (digital display hidden, setting: mA)	0
 With indicator (digital display visible, setting: mA) With indicator (digital display visible, settings as specified, Order Code "Y21"/"Y22" required) 	

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

- Included in delivery of the device:
- Brief instructions (Leporello)
- CD-ROM with detailed documentation
- ¹⁾ For oxygen cleaning application, add Order code E10.
- ²⁾ Version 7MF4233-1DY... only up to max. span 200 mbar a (2.9 psi a).
- ³⁾ When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the <u>total</u> combination is certified here. If the acceptance test certificate 3.1. is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.
- ⁴⁾ If the acceptance test certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.
- ⁵⁾ Not in conjunction with Electrical connection "Screwed gland Pg 13.5" and "Han7D plug".
- 6) Without cable gland, with blanking plug
- 7) With enclosed cable gland EEx ia and blanking plug
- ⁸⁾ Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".
- 9) M12 delivered without cable socket
- F) Subject to export regulations AL: 91999, ECCN: N.

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

Selection and Orderin	g data		Orde	er No		
Pressure transmitters (gauge construction)	for absolute pressure					
SITRANS P DS III with	PROFIBUS PA (PA)	F)	7 M F	4 2 3	34.	•
SITRANS P DS III with (FF)	FOUNDATION Fieldbus	F)	7 M F	4 2 3	35.	•
(11)						
Measuring cell filling	Measuring cell					
	cleaning					
Silicone oil	normal		1			
Inert liquid ¹⁾	Grease-free to cleanliness level 2		3			
Nominal measuring ra	inge					
3.63 psia	(250 mbar a)		D			
18.9 psia	(1300 mbar a)		F			
72.5 psia	(5 bar a)		G			
435 psia	(30 bar a)		н			
Wetted parts materials	Process connection					
Seal diaphragm						
Stainless steel	Stainless steel	F)	A			
Hastelloy	Stainless steel	F)	B			
Hastelloy Version as diaphragm s	Hastelloy	F)	C			
the second s			•			
 Process connection Connection shank G¹/₂ 				0		
Female thread ½-14 N				1		
Stainless steel oval fla						
	₆ -20 UNF to IEC 61518			2		
- Mounting thread M1				3		
- Mounting thread M1	2 to DIN 19213			4		
Male thread M20 x 1.8	5			5		
 Male thread ½ -14 NF 	Ϋ́			6		
Non-wetted parts mate	erials					
 Housing made of die- 	cast aluminium			0		
 Housing stainless step 	el precision casting			3		
Version						
 Standard versions 					1	
	English label inscriptions, nguages on CD (no order				2	
code selectable)	riguages on CD (no order					
Hazardous area rating						
 General purpose 					4	۹
ATEX Hazardous app						
- "Intrinsically safe (El					E	
- "Explosion-proof (EE					C F	
 "Intrinsically safe an (EEx ia + EEx d)"⁶⁾ 	a explosion-proor				'	
- use in zone 2					E	
- "Intrinsically safe, e>	plosion-proof enclosure				F	2
and dust explosion + zone 1D/2D) ^{*6)}	protection (EEx ia + EEx c	1				
 FM/CSA Hazardous a 	approval					
- "Intrinsically Safe un					M	١C
(is + xp)" ⁵⁾	1 h					
Electrical connection	-					
Screwed gland M20 ×	: 1.5					В
• ½-14 NPT	- 1) 7)					C
M12 connectors (meta	aı) · /					F

(gauge	e construction)
Selection and Ordering data	Order No.
Pressure transmitters for absolute pressure (gauge construction)	
SITRANS P DS III with PROFIBUS PA (PA) F)	7 M F 4 2 3 4 -
SITRANS P DS III with FOUNDATION Fieldbus F) (FF)	7 M F 4 2 3 5 -
 Indicator Without indicator Without indicator (digital display hidden, setting: mA) With indicator (digital display visible, setting: mA) With indicator (digital display visible, settings as specified, Order Code "Y21" required) Included in delivery of the device: 	0 1 6 7
 Brief instructions (Leporello) CD-ROM with detailed documentation 	
 For oxygen cleaning application, add Order code E1 Version 7MF4233-1DY only up to max. span 200 m When the manufacture's certificate (calibration certific ordered for transmitters with diaphragm seals accord is recommended only to order this certificate exclusion phragm scale. The measuring accurate for total or operating accurate total or 	bar a (2.9 psi a). icate) has to be ding to IEC 60770-2, it vely with the dia-

- phragm seals. The measuring accuracy of the total combination is certified here. ⁴⁾ If the acceptance test certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.
- ⁵⁾ Without cable gland, with blanking plug
- ⁶⁾ With enclosed cable gland EEx ia and blanking plug
- 7) M12 delivered without cable socket
- F) Subject to export regulations AL: 91999, ECCN: N.

Pressure Measurement

Transmitters for general requirements SITRANS P DS III for absolute pressure (gauge construction)

Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "-Z" to Order No. and specify Order Code.				
Pressure transmitter with mounting bracket (2 shackles, 4 nuts, 4 U-plates, 1 angle) made of:				
Steel	A01	~	✓	~
Stainless steel	A02	✓	✓	✓
plug				
 Han 7D (metal, gray) Han 8U (instead of Han 7D) 	A30 A31	✓ ✓		
Angled	A31	✓		
Cable sockets for M12 connectors (metal)	A50	1	✓	~
Rating plate inscription				
(instead of German) • English	B11	1	1	~
• French	B12	↓	¥.	¥
• Spanish	B13	1	✓	✓
• Italian	B14	✓	~	~
English rating plate	B21	✓	✓	~
Pressure units in inH ₂ 0 and/or psi				
Factory calibration certificate ¹⁾	C11	✓	~	✓
Material traceability certificate ²⁾	C12	✓	✓	✓
Factory certificate of conformance	C14	✓	✓	~
SIL2 certificate per IEC 61508 / 61511	C20	✓		
PROFIsafe certificate and protocol	C21		✓	
Setting of upper limit of output signal to 22.0 mA	D05	1		
Manufacturer's declaration acc. to NACE	D07	✓	✓	✓
Degree of protection IP68 (only for M20 x 1.5 and ½-14 NPT)	D12	*	1	~
Supplied with oval flange	D37	✓	✓	✓
(1 item), PTFE packing and screws in thread of oval flange				
Brad Harrison Connector	D40	✓	~	1
Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")	E01	*	1	~
Oxygen application (In the case of oxygen measurement and inert liquid max. 120 bar a (1740 psi a) at 60°C (140 °F))	E10	1	~	1

Selection and Ordering data	Order code			
Further designs		HART	PA	FF
Add "-Z" to Order No. and specify Order Code.				
Two coats of lacquer on casing and cover (PU on epoxy)	G10	1	1	1
Additional data				
Please add "-Z" to Order No. and specify Order code(s) and plain text.				
Calibrated range Specify in plain text (max. 5 characters): Y01: X to Y psi, inH ₂ 0, ftH ₂ 0	Y01	1		
Tag number/Identification (max. 16 characters), specify in plain text: Y15:	Y15	1	1	1
Tag description (max. 27 characters), specify in plain text: Y16:	Y16	~	1	1
Entry of HART (TAG)	Y17	✓		
(max. 8 characters), specify in plain text: Y17:				
Pressure units for digital display	Y21	✓	✓	1
specify in plain text: Y21: psi, inH_20, ftH_20				
Pressure units for digital display				
Non-Pressure units for digital display ³) (measuring range in pressure units ("Y01"/"Y02") mandatory)	Y22 + Y01	~		
specify in plain text: Y22: X to Y GPM, MGD, Feet				
Preset bus address possible between 1 and 126 Specify in plain text: Y25:	Y25		1	
Factory mounting of valve manifolds, see acc	essories	S.		

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

✓ = available

³⁾ Preset values can only be changed over SIMATIC PDM.

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.
SITRANS P DS III for absolute pressure (gauge construction)

Dimensional drawings



- 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)

© Pressure Measurement Transmitters for general requirements SITRANS P DS III for absolute pressure (differential construction)

Technical specifications

SITRANS P, DS III for absolute pressure (differential construction)

	HART		PROFIBUS PA and FOUNDATION Fieldbu			
Input						
Measured variable		Absolute	e pressure			
Spans (infinitely adjustable) or nominal measuring range and	Span (min max.)	Maximum operating pressure	Nominal measuring range	Maximum operating pressure		
max. permissible operating pressure	0.12 3.6 psia (8.3 250 mbar a)	464 psia (32 bar a)	3.6 psia (250 mbar a)	464 psia (32 bar a)		
	0.62 18.9 psia (43 1300 mbar a)	464 psia (32 bar a)	18.9 psia (1300 bar a)	464 psia (32 bar a)		
	2.32 72.5 psia (160 5000 mbar a)	464 psia (32 bar a)	72.5 psia (5 bar a)	464 psia (32 bar a)		
	14.5 435 psia (1 30 bar a)	2320 psia (160 bar a)	435 psia (30 bar a)	2320 psia (160 bar a)		
	77 1450 psia (5.3 100 bar a)	2320 psia (160 bar a) (for connection thread M10 and $^7/_{16}$ -20 UNF in the process flanges)	1450 psia (100 bar a)	2320 psia (160 bar a) (for connection thread M10 and ⁷ / ₁₆ -20 UNF in the process flanges)		
Lower measuring limit						
 Measuring cell with silicone oil filling 		0 psi a (0 mbar a)			
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 20.5 mA or optionally - set to 22.0 mA					
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	$R_{\rm B} = 230 \dots 500 \ \Omega \ {\rm (SIN} R_{\rm B} = 230 \dots 1100 \ \Omega \ {\rm (Hz)}$		-			
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.		
Measuring accuracy		Acc. to IE	C 60770-1			
Reference conditions (All error data refer always refer to the set span)		ic, start-of-scale value 0 l nperature 25 °C (77 °F))		liaphragm, silicone oil fill- ban / 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 \pm 30 °C (\pm 54 °F))	\leq (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 mea	suring range		

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

	HART	PROFIBUS PA and FOUNDATION Fieldbus	
Rated conditions			
Degree of protection (to IEC 60529)	IP65, op	tional 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			
- Digital indicator	-30 +85 °C	(-22 +185 °F)	
Storage temperature	-50 +85 °C	(-58 +185 °F)	
Climatic class			
- Condensation		idity 0 100 %	
	Condensation permissible,	suitable for use in the tropics	
 Electromagnetic Compatibility 			
- Emitted interference and interference 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. 1.44		
Wetted parts materials			
Seal diaphragm		by C276, mat. no. 2.4819, Monel, mat. no. 2.4360, m 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		ue with oxigen measurement pressure 120 bar a) t 60 °C (140 °F))	
Process connection		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 $\textit{U}_{\!$		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	

2

Pressure Measurement

Transmitters for general requirements SITRANS P DS III for absolute pressure (differential construction)

SITRANS P, DS III for absolute pressure (diff	erential construction)	
	HART	PROFIBUS PA and FOUNDATION Fieldbus
Certificates and approvals		
Classification according to PED 97/23/EC		group 1; complies with requirements of article 3, d engineering practice)
Explosion protection		
Intrinsic safety "i"	PTB 99	ATEX 2122
- Marking	Ex II 1/2 G El	Ex ia/ib IIB/IIC T6
- Permissible ambient temperature	-40 +70 °C (-40 +1	85 °F) temperature class T4; 58 °F) temperature class T5; 40 °F) temperature class T6
- Connection	To certified intrinsically-safe circuits with peak values: $U_{\rm i}$ = 30 V, $I_{\rm i}$ = 100 mA, $P_{\rm i}$ = 750 mW; $R_{\rm i}$ = 300 Ω	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"		ATEX 1160
- Marking		EEx d IIC T4/T6
- Permissible ambient temperature		85 °F) temperature class T4; 40 °F) temperature class T6
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC	To circuits with values: $U_{\rm H}$ = 9 32 V DC
 Dust explosion protection for zone 20 	PTB 01	ATEX 2055
- Marking		IP65 T 120 ℃ IP65 T 120 ℃
- Permissible ambient temperature	-40 +85 °C	C (-40 +185 °F)
- Max. surface temperature	120 °C	C (248 °F)
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}, \ l_i = 100 \text{ mA},$ $P_i = 750 \text{ mW}, \ R_i = 300 \Omega$	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	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; $P_{\rm max}$ = 1.2 W
 Type of protection "n" (zone 2) 	TÜV 01 ATEX 1696 X	Planned
- Marking	Ex II 3 G EEx nA L IIC T4/T5/T6	-
 Explosion protection acc. to FM 	Certificate of Co	ompliance 3008490
- Identification (XP/DIP) or (IS); (NI)		GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4T6; .T6; CL II, DIV 2, GP FG; CL III
 Explosion protection to CSA 	Certificate of Co	ompliance 1153651
- Identification (XP/DIP) or (IS)		EFG; CL III; Ex ia IIC T4T6; CL I, DIV 2, GP ABCD DIV 2, GP FG; CL III

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

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

2

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 Process Control Devices Version 3.0, Class B
Function blocks	2
 Analog input 	
 Adaptation to customer- specific 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 sum- mation, summation with incorrect value)
- Limit monitoring	One upper and lower warning limit and one alarm limit respec- tively
 Physical block 	1
Fransducer blocks	2
Pressure transducer block	
 Can be calibrated by applying two pressures 	Yes
- Monitoring of sensor limits	Yes
- Characterizer	Max. 30 points
 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

	(differential construction)
FOUNDATION Fieldbus	
communication	
Function blocks	3 function blocks analog input, 1 function block PID
 Analog input 	
 Adaptation to customer- specific process variables 	Yes, linearly rising or falling characteristic
- Electrical damping, adjustable	0 to 100 s
- Simulation function	Output/input (can be locked within the device with a bridge)
- Failure mode	parameterizable (last good value, substitute value, incorrect value)
- Limit monitoring	Yes, one upper and lower warn- ing limit and one alarm limit respectively
 Square-rooted characteristic for flow measurement 	Yes
• PID	Standard FOUNDATION Fieldbus function block
Physical block	1 resource block
Fransducer blocks	1 transducer block Pressure with calibration, 1 transducer block LCD
 Pressure transducer block 	
 Can be calibrated by applying two pressures 	Yes
- Monitoring of sensor limits	Yes
- Simulation function: Measured pressure value, sensor temper- ature and electronics tempera- ture	Constant value or over parame- terizable ramp function

Order No.

F

Pressure Measurement Transmitters for general requirements

SITRANS P DS III for absolute pressure (differential construction)

Selection and Ordering data

Pressure transmitters for absolute pressure F) (differential conctruction), SITRANS P DS III with HART			M F				-	
Measuring cell filling	Measuring cell							
	cleaning							
Silicone oil	normal		1					
Inert liquid ¹⁾	Grease-free to cleanliness level 2		3					
Measuring span (min.	max.)							
0.12 3.63 psia	(8.3 250 mbar a)	E)		D				
0.62 18.9 psia	(43 1300 mbar a)	E)		F				
2.32 72.5 psia	(0.16 5 bar a)	E)		G				
14.5 435 psia	(1 30 bar a)			н				
76.9 1450 psia	(5.3 100 bar a)			KE				
Wetted parts materials								
Seal diaphragm	Parts of measuring cell	_						
Stainless steel	Stainless steel			A	۱.			
Hastelloy	Stainless steel			E	3			
Hastelloy	Hastelloy			C	;			
Tantalum	Tantalum			E				
Monel	Monel	E)		H				
Gold	Gold			L				
Version for diaphragm s	eal ²⁾³⁾⁴⁾			Y	'			
Process connection								
Female thread 1/4-18 NP	T with flange connection							
 Sealing screw opposit 	e process connection							
- Mounting thread 7/16	-20 UNF to IEC 61518				2			
- Mounting thread M10					0			
(only for replacemen								
• Vent on side of proces	s flange 5)							
 Mounting thread ⁷/₁₆ 					6			
- Mounting thread M10					4			
(only for replacemen								
Non-wetted parts mate								
process flange screws	Electronics housing	-				_		
Stainless steel	Die-cast aluminum					2		
Stainless steel	Stainless steel precision casting ⁶⁾					3		
Version	ousting							
VersionStandard versions							1	
	English label inscriptions,						2	
	iguages on CD (no order						-	
code selectable)	3							
Hazardous area rating								
 General purpose 								Α
• ATEX Hazardous appr	oval							
- "Intrinsically safe (EE								в
- "Explosion-proof (EE	xd)" ⁷⁾							D
- "Intrinsically safe and	l explosion-proof							Р
(EEx ia + EEx d)" ⁸⁾								
- use in zone 2								E
	plosion-proof enclosure							R
+ zone 1D/2D) ^{*8)}	protection (EEx ia + EEx d							
 FM/CSA Hazardous a 	pproval							
- "Intrinsically Safe und								NC
$(is + xp)^{*7}$								
Electrical connection /	cable entry							
Screwed gland Pg 13.								A
 Screwed gland M20 x 								В
• ½-14 NPT	-							c
 Han 7D plug (plastic h connector⁹⁾ 	ousing) incl. mating							D
connector ^{9)^a}	-							

• M12 connectors (metal)¹⁰⁾

Selection and Ordering data	Order No.	
Pressure transmitters for absolute pressure F) (differential conctruction), SITRANS P DS III with HART	7 M F 4 3 3 3 -	
Indicator • Without indicator • Without indicator (digital display hidden, setting: mA) • With indicator (digital display visible, setting: mA) • With indicator (digital display visible, settings as specified, Order Code "Y21" required)		0 1 6 7

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

- Included in delivery of the device:
- Brief instructions (Leporello)
 CD-ROM with detailed documentation
- Sealing plug(s) or sealing screw(s) for the process flanges(s)
- ¹⁾ For oxygen cleaning applications, add Order code E10.
- ²⁾ Version 7MF4333-1DY... only up to max. span 200 mbar a (2.9 psi a).
- ³⁾ When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the dia-phragm seals. The measuring accuracy of the total combination is certified here.
- ⁴⁾ If the acceptance test certificate 3.1 is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.
- ⁵⁾ Not for span "5.3 ... 100 bar a (76.9 ... 1450 psia)". Position of the top vent valve in the process flange (see dimensional drawings).
- ⁶⁾ Not in conjunction with Electrical connection "Screwed gland Pg 13.5" and "Han7D plug".
- 7) Without cable gland, with blanking plug
- ⁸⁾ With enclosed cable gland EEx ia and blanking plug
- ⁹⁾ Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".
- ¹⁰⁾M12 delivered without cable socket
- E) Combinations of the versions marked with E) are subject to the export regulations AL: 2B230, ECCN: N.
- F) Subject to export regulations AL: 91999, ECCN: N.

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

n · ···	g data		0	rde	er N	10.	
	or absolute pressure						
(differential construct	ion)						
SITRANS P DS III with	PROFIBUS PA (PA)	F)	7	MF	4	33	4 -
SITRANS P DS III with	FOUNDATION Fieldbus	F)	7	MF	4	33	5 -
(FF)							
				1		-	
Measuring cell filling	Measuring cell						
	cleaning						
Silicone oil	normal		1				
Inert liquid ¹⁾	Grease-free to		3				
	cleanliness level 2						
Nominal measuring ra	-						
3.63 psia	(250 mbar a)	E)		D			
18.9 psia	(1300 mbar a)	E)		F			
72.5 psia	(5 bar a)	E)		G			
435 psia	(30 bar a)			H K E			
1450 psia	(100 bar a)						
Wetted parts materials							
Seal diaphragm	Parts of measuring cell	_					
Stainless steel	Stainless steel			A			
Hastelloy	Stainless steel			E			
Hastelloy	Hastelloy			C			
Tantalum	Tantalum			E			
Monel	Monel	E)		H			
Gold	Gold			L			
Version as diaphragm s	seal -/-/ ·/			ľ			
Process connection							
	T with flange connection						
Sealing screw opposi							
	₆ -20 UNF to IEC 61518				2		
 Mounting thread M1 					0		
(only for replacement							
Vent on side of proces	_a -20 UNF to IEC 61518						
	-				6		
 Mounting thread M1 (only for replacement 					4		
Non-wetted parts mate process flange screws							
		-					
Stainless steel	Die-cast aluminum					2	
Stainless steel	Stainless steel precision casting					3	
Version	0						
Version • Standard versions		_					1
 Standard versions 	English label inscriptions.						1 2
 Standard versions International version, documentation in 5 la 	English label inscriptions, nguages on CD (no order						
Standard versionsInternational version,							
 Standard versions International version, documentation in 5 la 	nguages on CD (no order						
 Standard versions International version, documentation in 5 la code selectable) Hazardous area rating General purpose 	nguages on CD (no order						
 Standard versions International version, documentation in 5 la code selectable) Hazardous area rating General purpose ATEX Hazardous app 	nguages on CD (no order						2 A
 Standard versions International version, documentation in 5 la code selectable) Hazardous area rating General purpose ATEX Hazardous app "Intrinsically safe (El 	nguages on CD (no order roval Ex ia)"						2 A B
 Standard versions International version, documentation in 5 la code selectable) Hazardous area rating General purpose ATEX Hazardous app "Intrinsically safe (El - "Explosion-proof (EE 	nguages on CD (no order roval Ex ia)" Exd)" ⁶⁾						2 A B D
 Standard versions International version, documentation in 5 la code selectable) Hazardous area rating General purpose ATEX Hazardous app "Intrinsically safe (EI - "Explosion-proof (EE - "Intrinsically safe an 	nguages on CD (no order roval Ex ia)" Exd)" ⁶⁾						2 A B
 Standard versions International version, documentation in 5 la code selectable) Hazardous area rating General purpose ATEX Hazardous app "Intrinsically safe (El - "Explosion-proof (EE 	nguages on CD (no order roval Ex ia)" Exd)" ⁶⁾						2 A B D
 Standard versions International version, documentation in 5 la code selectable) Hazardous area rating General purpose ATEX Hazardous app "Intrinsically safe (EI "Explosion-proof (EE "Intrinsically safe an (EEx ia + EEx d)"⁷) use in zone 2 "Intrinsically safe, ex 	nguages on CD (no order roval Ex ia)" Exd)" ⁶⁾ d explosion-proof						2 A B D P
 Standard versions International version, documentation in 5 la code selectable) Hazardous area rating General purpose ATEX Hazardous app - "Intrinsically safe (Eff "Explosion-proof (Eff - "Explosion-proof (Eff - "Intrinsically safe an (EEx ia + EEx d)"⁷) use in zone 2 "Intrinsically safe, exand dust explosion 	nguages on CD (no order roval Ex ia)" Exd)" ⁶⁾						2 A D P E
 Standard versions International version, documentation in 5 la code selectable) Hazardous area rating General purpose ATEX Hazardous app - "Intrinsically safe (El - "Explosion-proof (EE - "Intrinsically safe an (EEx ia + EEx d)"⁷) use in zone 2 - "Intrinsically safe, ex and dust explosion + zone 1D/2D)"⁷) 	nguages on CD (no order roval Ex ia)" Exd)" ⁶⁾ d explosion-proof explosion-proof enclosure protection (EEx ia + EEx d						2 A D P E
 Standard versions International version, documentation in 5 la code selectable) Hazardous area rating General purpose ATEX Hazardous app - "Intrinsically safe (Eff - "Explosion-proof (Eff - "Intrinsically safe an (EEx ia + EEx d)"⁷) use in zone 2 "Intrinsically safe, ex and dust explosion + zone 1D/2D)"⁷ FM/CSA Hazardous a 	nguages on CD (no order roval Ex ia)" (xd)" ⁶⁾ d explosion-proof eplosion-proof enclosure protection (EEx ia + EEx d approval						2 A D P E R
 Standard versions International version, documentation in 5 la code selectable) Hazardous area rating General purpose ATEX Hazardous app - "Intrinsically safe (Eff - "Explosion-proof (Eff - "Intrinsically safe an (EEx ia + EEx d)"⁷) use in zone 2 "Intrinsically safe, ex and dust explosion + zone 1D/2D)"⁷ FM/CSA Hazardous a 	nguages on CD (no order roval Ex ia)" Exd)" ⁶⁾ d explosion-proof explosion-proof enclosure protection (EEx ia + EEx d						2 A D P E
 Standard versions International version, documentation in 5 la code selectable) Hazardous area rating General purpose ATEX Hazardous app "Intrinsically safe (EI "Explosion-proof (EE "Intrinsically safe an (EEx ia + EEx d)"⁷) use in zone 2 "Intrinsically safe, ex and dust explosion + zone 1D/2D)"⁷ FM/CSA Hazardous a "Intrinsically Safe unc 	nguages on CD (no order roval Ex ia)" Exd)" ⁶⁾ d explosion-proof protection (EEx ia + EEx d approval d explosion proof (is + xp)" ⁶ / cable entry						2 A D P E R
 Standard versions International version, documentation in 5 la code selectable) Hazardous area rating General purpose ATEX Hazardous app "Intrinsically safe (EI "Explosion-proof (EE "Intrinsically safe an (EEx ia + EEx d)"⁷) use in zone 2 "Intrinsically safe, ex and dust explosion + zone 1D/2D)"⁷ FM/CSA Hazardous afe und 	nguages on CD (no order roval Ex ia)" Exd)" ⁶⁾ d explosion-proof protection (EEx ia + EEx d approval d explosion proof (is + xp)" ⁶ / cable entry						2 A D P E R

Selection and Ordering data Pressure transmitter for absolute p	ressure	Order No.
(differential construction)	lessure	
SITRANS P DS III with PROFIBUS F	PA (PA) F)	7 M F 4 3 3 4 -
SITRANS P DS III with FOUNDATIO (FF)	N Fieldbus F)	7 M F 4 3 3 5 -
()		
Indicator		
 Without indicator Without indicator (digital display hid setting: mA) 	dden,	0 1
 With indicator (digital display visible, With indicator (digital display visible specified, Order Code "Y21" require 	e, settings as	6 7
Included in delivery of the device: • Brief instructions (Leporello) • CD-ROM with detailed documentat • Sealing plug(s) or sealing screw(s)		s flanges(s)
1) For oxygen cleaning application, add	d Order code E1	10.
²⁾ Version 7MF4334-1DY only up to m		
³⁾ When the manufacture's certificate (c ordered for transmitters with diaphrag is recommended only to order this ce phragm seals. The measuring accura here.	gm seals accord ertificate exclusi	ding to IEC 60770-2 vely with the dia-
⁴⁾ If the acceptance test certificate 3.1. mounted diaphragm seals this certific respective remote seals.	is ordered for th cate must also b	e transmitter with be ordered with the
5) Not for nominal measuring range 100 vent valve in the process flange (see	bar a (1450 ps dimensional dr	i a). Position of the to awings).
6) Without cable gland, with blanking pl	lug	
7) With enclosed cable gland EEx ia an	d blanking plug	
⁸⁾ M12 delivered without cable socket		
 E) Combinations of the versions marked regulations AL: 2B230, ECCN: N. F) Subject to export regulations AL: 999 	,	ject to the export
) Subject to export regulations AL. 313.	33, LOON. N.	

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

Selection and Ordering data	Order	code		
Further designs	oraor	HART	PA	FF
Add "-Z" to Order No. and specify Order Code.				
Pressure transmitter with mounting bracket (2 shackles, 4 nuts, 4 U-plates,				
1 angle) made of: • Steel	A01	~	~	~
Stainless steel	A02	1	1	~
O-rings for process flanges (instead of FPM (Viton))				
PTFE (Teflon)	A20	√	✓	1
• FEP (with silicone core, approved for food)	A21 A22	√ √	√ √	√ √
 FFPM (Kalrez, compound 4079) NBR (Buna N) 	A22 A23	v √	¥ •	↓
plug	A20		·	•
• Han 7D (metal, gray)	A30	1		
Han 8U (instead of Han 7D)	A31	✓		
Angled	A32	✓		
Sealing screw	A40	✓	✓	~
1/4-18 NPT, with valve in mat. of process flanges				
Cable sockets for M12 connectors (metal)	A50	1	✓	✓
Rating plate inscription				
(instead of German)	D 44	,	,	,
EnglishFrench	B11 B12	√ √	√ √	√ √
Spanish	B12	¥	~	~
• Italian	B14	1	1	1
English rating plate	B21	1	✓	~
Pressure units in inH ₂ 0 and/or psi				
Factory calibration certificate ¹⁾	C11	✓	1	✓
Material traceability certificate ²⁾	C12	✓	✓	✓
Factory certificate of conformance	C14	✓	✓	✓
SIL2 certificate per IEC 61508 / 61511	C20	✓		
PROFIsafe certificate and protocol	C21		✓	
Setting of upper limit of output signal to 22.0 mA	D05	1		
Manufacturer's declaration acc. to NACE (only together with seal diaphragm made of Hastelloy and stainless steel)	D07	1	~	~
Degree of protection IP68 (only for M20 x 1.5 and ½-14 NPT)	D12	~	✓	~
Supplied with oval flange	D37	1	1	1
(1 item), PTFE packing and screws in thread of process flange	501			·
Brad Harrison Connector	D40	✓	1	~
Use in or on zone 1D/2D	E01	✓	✓	1
(only together with type of protection "Intrinsic safety (EEx ia)")				
Oxygen application	E10	✓	1	1
(In the case of oxygen measurement and inert liquid max. 120 bar a (1740 psi a) at 60°C (140 °F))				

Selection and Ordering data	Order	code		
Further designs Add "-Z" to Order No. and specify Order Code.		HART	PA	FF
Two coats of lacquer on casing and cover (PU on epoxy)	G10	1	✓	1
Interchanging of process connection side	H01	✓	✓	✓
Vent on side for gas measurements	H02	✓	✓	✓
 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 		* * *	* * *	* * *
Surge Protection	J01			
External, 1/2" NPT				
Manifold Mounting				
Assembled for 3-valve manifold 7MF9411-5BA-Z+K36,Chromized steel screws, PTFE-gaskets, and pressure test	U01			
 Assembled for 3-valve manifold 7MF9411-5BA-Z+K46, Stainless stelle 	U02			

7MF9411-5BA-Z+K46, Stainless stelle screws, PTFE-gaskets, and pressure test

SITRANS P DS III for absolute pressure (differential construction)

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.				
Calibrated range	Y01	✓		
Specify in plain text (max. 5 characters): Y01: X to Y psi, inH ₂ 0, ftH ₂ 0				
Tag number/Identification	Y15	✓	✓	✓
(max. 16 characters), specify in plain text: Y15:				
Tag description	Y16	1	✓	1
(max. 27 characters), specify in plain text: Y16:				
Entry of HART (TAG)	Y17	✓		
(max. 8 characters), specify in plain text: Y17:				
Pressure units for digital display	Y21	✓	✓	✓
specify in plain text: Y21: psi, inH ₂ 0, ftH ₂ 0				
Pressure units for digital display				
Non-Pressure units for digital display ³⁾ (measuring range in pressure units ("Y01"/"Y02") mandatory)	Y22 + Y01	1		
specify in plain text: Y22: X to Y GPM, MGD, Feet				
Preset bus address	Y25		~	
possible between 1 and 126				
Specify in plain text:				
Y25:				

Factory mounting of valve manifolds, see accessories.

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

✓ = available

- When the manufacture's certificate (calibration certificate) has to be ordered for transmitters with diaphragm seals according to IEC 60770-2, it is recommended only to order this certificate exclusively with the diaphragm seals. The measuring accuracy of the total combination is certified here.
- If the acceptance test certificate 3.1.is ordered for the transmitter with mounted diaphragm seals this certificate must also be ordered with the respective remote seals.
- ³⁾ Preset values can only be changed over SIMATIC PDM.
- F) Subject to export regulations AL: 91999, ECCN: N.

SITRANS P DS III for absolute pressure (differential construction)

Dimensional drawings



4) 92 mm (3.62 inch) for minimum distance to permit rotation with indicator

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

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

SITRANS P DS III for differential pressure and flow

Technical specifications

SITRANS P, DS III for differential pressure and	d flow					
	HART		PROFIBUS PA and F	OUNDATION Fieldbus		
Input						
Measured variable	Differential pressure ar	1	.			
Spans (infinitely adjustable) or nominal measuring range and max. permissible operating pressure	Span (min max.)	Maximum operating pressure	Nominal measuring range	Maximum operating pressure		
	0.4 8 inH ₂ O (1 20 mbar)	464 psi (32 bar)	8 inH ₂ O (20 mbar g)	464 psi (32 bar)		
	0.4 24 inH ₂ O (1 60 mbar)	2320 psi (160 bar)	24 inH ₂ O (60 mbar)	2320 psi (160 bar)		
	1 100 inH ₂ O (2.5 250 mbar)		100 inH ₂ O (250 mbar)			
	2.4 240 inH ₂ O (6 600 mbar)		240 inH ₂ O (600 mbar)			
	6.4 642 inH ₂ O (16 1600 mbar)		642 inH ₂ O (1600 mbar)			
	20 2000 inH ₂ O (50 5000 mbar)		2000 inH ₂ O (5 bar)			
	4.35 435 psi (0.3 30 bar)		435 psi (30 bar)			
	1 100 inH ₂ O (2.5 250 mbar)	6091 psi (420 bar)	100 inH ₂ O (250 mbar)	6091 psi (420 bar)		
	2.4 240 inH ₂ O (6 600 mbar)		240 inH ₂ O (600 mbar)			
	6.4 642 inH ₂ O (16 1600 mbar)		642 inH ₂ O (1600 mbar)			
	20 2000 inH ₂ O (50 5000 mbar)		2000 inH ₂ O (5 bar)			
	4.35 435 psi (0.3 30 bar)		435 psi (30 bar)			
Lower measuring limit		I				
Measuring cell with silicone oil filling	-100% of max. spa	an (-33% with 435 psi (30) bar) measuring cell or (0.44 psia (30 mbar a))		
Upper measuring limit	100% of max. spa	an (for oxygen version a	nd inert filling liquid; max	k. 1740 psi(120 bar))		
Output	4 00 4					
Output signal	4 20 mA		Digital PROFIBUS PA FOUNDATION Fieldbu			
Lower limit (infinitely adjustable)	3.55 mA, factory prese		-			
Upper limit (infinitely adjustable)	23 mA, factory preset t set to 22.0 mA	to 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	$R_{\rm B} = 230 \dots 500 \Omega$ (SII $R_{\rm B} = 230 \dots 1100 \Omega$ (H		-			
Physical bus	-		IEC 61158-2			
Protection against polarity reversal	Protected against shor		ersal. Each connection a y voltage.	gainst the other with max.		
Measuring accuracy		Acc. to	EC 60770-1			
Reference conditions (All error data refer always refer to the set span)) bar, stainless steel seal) r: Span ratio (r = max. s	diaphragm, silicone oil fill- span / set span)		
Error in measurement at limit setting incl. hyster- esis and reproducibility						
Linear characteristic	(0.0000	,	≤ 0.075 %			
- r ≤ 10 - 10 < r ≤ 30 - 30 < r ≤ 100	$\leq (0.0029 \cdot r + 0.071) \% \\\leq (0.0045 \cdot r + 0.071) \% \\\leq (0.005 \cdot r + 0.05) \%$					
 Square-rooted characteristic (flow > 50 %) 	_ (0.000 * 1 + 0.00) //		≤ 0,1 %			
- r ≤ 10 - 10 < r ≤ 30	≤ 0.1 % ≤ 0.2 %		0, 1 /0			

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SITRANS P DS III for differential pressure and flow

SITRANS P, DS III for differential pressure and flow

PROFIBUS PA and FOUNDATION Fieldbus HART Square-rooted characteristic < 0.2(flow > 25 ... 50 %) - r ≤ 10 ≤ 0.2 % -10 < r < 30< 0.4 % Long-term stability (temperature change \pm 30 °C \leq (0.25 \cdot r)% every 5 years ≤ 0.25 % every 5 years (±5 4 °F)) static pressure max. 1015 psi (70 bar) static pressure max. 1015 psi (70 bar) • 8 inH₂O (20 mbar)-measuring cell \leq (0.2 · r) per year ≤ 0.2 per year • 100, 240, 640 et 2000 inH₂O (250, 600, 1600 \leq (0.125 · r) per year ≤ 0.125 per year and 5000 mbar)-measuring cell Influence of ambient temperature • at -10 ... +60 °C (14 ... 140 °F) $\leq (0.08 \cdot r + 0.1) \%^{1}$ < 0.3 % • at -40 ... -10 °C and 60 ... 85 °C \leq (0.1 · r + 0.15)%/10 K (Twice the value with ≤ 0.25 %/10 K (-40 ... +14 °F and 140 ... 185 °F) 8 inH₂O (20-mbar) measuring cell) Influence of static pressure • on the zero point (PKN) ≤ (0.15 · r)% per 1015 psi (70 bar) ≤ 0.15 % per 1015 psi (70 bar) - 8 inH₂O (20 mbar)-measuring cell ≤ (0.15 · r)% per 464 psi (32 bar) ≤ 0.15 % per 464 psi (32 bar) ≤ 0.14 % per 1015 psi (70 bar) on the span (PKS) - 8 inH₂O (20 mbar)-measuring cell ≤ 0.2 % per 464 psi (32 bar) 3 · 10⁻⁵ of nominal measuring range Measured Value Resolution **Rated conditions** Degree of protection (to IEC 60529) IP65, optional 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 (-4 ... +212 °F) -20 ... +60 °C (-4 ... +140 °F) · In conjunction with dust explosion protection Ambient conditions Ambient temperature Digital indicator -30 ... +85 °C (-22 ... +185 °F) -50 ... +85 °C (-58 ... +185 °F) Storage temperature Climatic class - Condensation Relative humidity 0 ... 100 % Condensation permissible, suitable for use in the tropics Electromagnetic Compatibility - Emitted interference and interference Acc. to EN 61326 and NAMUR NE 21 immunity 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 Stainless steel, mat. no. 1.4404/316L or Hastelloy C276, mat. no. 2.4819, Monel, mat. no. 2.4360, Seal diaphragm tantalum or gold Silicone oil or inert filling liquid (maximum value with oxigen measurement pressure 1740 psia) Measuring cell filling (120 bar a) at 60 °C (140 °F)) Process connection Female thread 1/4-18 NPT and flange connection with mounting thread M10 to DIN 19213 or 7,16-20 UNF to IEC 61518 Material of mounting bracket Steel Sheet-steel, Mat. No. 1.0330, chrome-plated Sheet stainless steel, mat. no. 1.4301 (SS 304) Stainless steel 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

9 ... 32 V

9...24 V

With intrinsically-safe operation

Not Ex

SITRANS P DS III for differential pressure and flow

SITRANS P, DS III for differential pressure and	d flow			
	HART	PROFIBUS PA and FOUNDATION Fieldbus		
Current consumption				
Basic current (max.)	-	12.5 mA		
 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 paragraph 3 (sound engineering practice)			
PN 420 (MAWP 6092 psi)	For gases of fluid group 1 and liquids of fluid group 1; complies with basic safety requirements Article 3, paragraph 1 (appendix 1); assigned to category III, conformity evaluation module H to the TÜV Nord.			
Explosion protection				
Intrinsic safety "i"	PTB 99 /	ATEX 2122		
- Marking	Ex II 1/2 G EE	x ia/ib IIB/IIC T6		
- Permissible ambient temperature	-40 +70 °C (-40 +15	5 °F) temperature class T4; 8 °F) temperature class T5; 10 °F) temperature class T6		
- Connection	To certified intrinsically-safe circuits with peak values:	FISCO supply unit: $U_0 = 17.5 \text{ V}, I_0 = 380 \text{ mA}, P_0 = 5.32 \text{ W}$		
	$U_{\rm i} = 30 \text{ V}, I_{\rm i} = 100 \text{ mA}, P_{\rm i} = 750 \text{ mW}; R_{\rm i} = 300 \Omega$	Linear barrier: $U_0 = 24 \text{ V}, I_0 = 250 \text{ mA}, P_0 = 1.2 \text{ W}$		
- Effective internal inductance/capacitance	$L_{\rm i} = 0.4 {\rm mH}, C_{\rm i} = 6 {\rm nF}$	$L_{\rm i} = 7 \ \mu {\rm H}, \ C_{\rm i} = 1.1 \ {\rm nF}$		
 Explosion-proof "d" 	PTB 99 ATEX 1160			
- Marking	Ex II 1/2 G E	Ex d IIC T4/T6		
- 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		Р65 Т 120 °C Р65 Т 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: $U_0 = 17.5 \text{ V}, I_0 = 380 \text{ mA}, P_0 = 5.32 \text{ W}$		
	$P_{\rm i} = 750 \text{ mW}, R_{\rm i} = 300 \Omega$	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		ATEX 2055		
- Marking		°65 Т 120 °С		
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC; $P_{\rm max}$ = 1.2 W	To circuits with values: $U_{\rm H}$ = 9 32 V DC; $P_{\rm max}$ = 1.2 W		
 Type of protection "n" (zone 2) 	TÜV 01 ATEX 1696 X	Planned		
- Marking	Ex II 3 G EEx nA L IIC T4/T5/T6	-		
 Explosion protection acc. to FM 	Certificate of Con	mpliance 3008490		
- Identification (XP/DIP) or (IS); (NI)		GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4T6; T6; CL II, DIV 2, GP FG; CL III		
Explosion protection to CSA	Certificate of Con	mpliance 1153651		
- Identification (XP/DIP) or (IS)		FG; CL III; Ex ia IIC T4T6; CL I, DIV 2, GP ABCD V 2, GP FG; CL III		
1)				

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

SITRANS P DS III for differential pressure and flow

HART communication	
HART	230 1100 Ω
Protocol	HART Version 5.x
PROFIBUS PA communication	
Simultaneous communication with master class 2 (max.)	4
The address can be set using	Configuration tool or local opera- tion (standard setting address 126)
Cyclic data usage	
Output byte	5 (one measured value) or 10 (two measured values)
Input byte	0, 1, or 2 (register operating mode and reset function for metering)
Internal preprocessing	
Device profile	PROFIBUS PA Profile for Process Control Devices Version 3.0, Class B
Function blocks	2
 Analog input 	
 Adaptation to customer-specif- ic process variables 	Yes, linearly rising or falling char- acteristic
- 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 sum- mation, 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
- Characterizer	Max. 30 points
 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

FOUNDATION Fieldbus communication

Function blocks

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

Physical block

Transducer blocks

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

3 function blocks analog input, 1 function block PID

Yes, linearly rising or falling characteristic

0 ... 100 s

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

parameterizable (last good value, substitute value, incorrect value)

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

Yes

Standard FOUNFATION 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

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

Selection and Orderin	0	Order No.	Selection and Ordering data	Order No.
	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 MAWP 464/2320 psi (F			mitters for differential pressure and flow, MAWP 464/2320 psi (PN 32/160)	
Measuring cell filling	Measuring cell cleaning		Electrical connection / cable entry • Screwed gland Pg 13.5 ⁹⁾	
Silicone oil	normal	1		A
Inert liquid ¹⁾	Grease-free to	3	Screwed gland M20 x 1.5	В
inen ilquid ?	cleanliness level 2	3	• ½-14 NPT	С
			 Han 7D plug (plastic housing) incl. mating connector⁹⁾¹⁰⁾ 	D
Measuring span				
MAWP 464 psi (PN 32)	2)		• M12 connectors (metal) ¹¹⁾	F
0.4 8 inH ₂ O ²⁾	(1 20 mbar) ²⁾	В	Indicator	
MAWP 2320 psi			 Without indicator 	
(PN 160)			 Without indicator (digital display hidden, 	
0.4 24 inH ₂ O	(1 60 mbar)	С	setting: mA)	
1 100 inH ₂ O	(2.5 250 mbar)	D	 With indicator (digital display visible, setting: mA) 	
2.4 240 inH ₂ O	(6 600 mbar)	E	 With indicator (digital display visible, settings as 	
6.4 642 inH ₂ O	(16 1600 mbar)	F	specified, Order Code "Y21"/Y22" required)	
20 2000 inH ₂ O	(50 5000 mbar)	G	Power supply units see Chap. 8 "Supplementary C	omponents".
4.35 435 psi	(0.3 30 bar)	н		
Wetted parts materials			Included in delivery of the device: • Brief instructions (Leporello)	
•			CD-ROM with detailed documentation	
(stainless steel process	0,		 Sealing plug(s) or sealing screw(s) for the process 	ss flanges(s)
Seal diaphragm	Parts of measuring cell			/
Stainless steel	Stainless steel	A	¹⁾ For oxygen cleaning application, add Order code E	
Hastelloy	Stainless steel	В	²⁾ Not suitable for connection of remote seal. Position	of the top vent val
Hastelloy	Hastelloy	С	the process flanges (see dimensional drawings). ³⁾ Not in conjunction with max. span 20 and 60 mbar	(8 und 24 inH (0))
Tantalum ³⁾	Tantalum	E	⁴⁾ When the manufacture's certificate (calibration cert	
Monel ³⁾	Monel	н	ordered for transmitters with diaphragm seals acco	ding to IEC 60770
Gold ³⁾	Gold	L	is recommended only to order this certificate exclusion	
Version for diaphragm	seal ⁴⁾⁵⁾	Y	phragm seals. The measuring accuracy of the total	combination is cert
Process connection			here.	
	T with flange connection		⁵⁾ If the acceptance test certificate 3.1.is ordered for t	he transmitter with
 Sealing screw opposi 	8		mounted diaphragm seals this certificate must also respective remote seals.	be ordered with th
	₆ -20 UNF to IEC 61518	2	⁶⁾ Not in conjunction with Electrical connection "Screw	od aland Pa 12 5"
- Mounting thread M1		0	"Han7D plug".	eu gianu i g 15.5
(only for replacement		Ū	7) Without cable gland, with blanking plug	
Vent on side of proces			⁸⁾ With enclosed cable gland EEx ia and blanking plu	2
	₆ -20 UNF to IEC 61518	6	 ⁹⁾ Not in conjunction with types of protection "Explosic 	
- Mounting thread M1		4	"Intrinsic safety" and "Explosion-proof".	n-proor and exin
(only for replacemer			¹⁰⁾ Permissible only for crimp-contact of conductor cro	ss soction 1 mm ²
Non-wetted parts mat	erials	_	¹¹⁾ M12 delivered without cable socket	55-560101111111
process flange screws	Electronics housing			
Stainless steel	Die-cast aluminum	2		
Stainless steel	Stainless steel precision casting ⁶⁾	3		
Version				
 Standard versions 		1		
	English label inscriptions,	2		
code selectable)	nguages on CD (no order			
Hazardous area rating	l			
General purpose ATEX Hazardous app	rougl	А		
ATEX Hazardous app				
- "Intrinsically safe (El		В		
- "Explosion-proof (EE		D		
 "Intrinsically safe an (EEx ia + EEx d)"⁸⁾ 	u explosion-proof	Р		
(EEX Ia + EEX d) ³		Е		
	plosion-proof enclosure	B		
and dust explosion	protection (EEx ia + EEx d	n		
+ zone 1D/2D) ^{*8)}				
 FM/CSA Hazardous a 	approval			
- "Intrinsically Safe und	d explosion proof (is + xp)"//	NC		

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

Selection and Ordering		Order No.	Selection and Ordering data	Order No.
Pressure transmitters and flow MAWP 464/23	for differential pressure 20 psi (PN 32/160)		Pressure transmitters for differential pressure and flow MAWP 464/2320 psi (PN 32/160)	
SITRANS P DS III with	• • •	7 M F 4 4 3 4 -	SITRANS P DS III with PROFIBUS (PA)	7 M F 4 4 3 4 -
	FOUNDATION Fieldbus	7 M F 4 4 3 5 -	SITRANS P DS III with FOUNDATION Fieldbus	7 M F 4 4 3 5 -
(FF)			(FF)	
Measuring cell filling	Measuring cell		Electrical connection / cable entry	
• •	cleaning		• Screwed gland M20 x 1.5	B
Silicone oil	normal	1	• ½-14 NPT	C
Inert liquid ¹⁾	Grease-free to cleanliness level 2	3	• M12 connectors (metal) ⁸⁾	F
Nominal measuring rai	nge (min max.)	-	Indicator • Without indicator	
MAWP 464 psi (PN 32)			 Without indicator Without indicator (digital display hidden, 	
8 inH ₂ O ²⁾	(20 mbar) ²⁾	В	setting: mA)	
MAWP 2320 psi (PN 160))		 With indicator (digital display visible, setting: mA) 	
24 inH ₂ O	(60 mbar)	С	 With indicator (digital display visible, settings as specified, Order Code "Y21"/Y22" required) 	
100 inH ₂ O	(250 mbar)	D		
240 inH ₂ O	(600 mbar	E	Included in delivery of the device:Brief instructions (Leporello)	
642 inH ₂ O 2000 inH ₂ O	(1600 mbar) (5 bar)	FG	 CD-ROM with detailed documentation 	
2000 INH ₂ O 435 psi	(30 bar)	H	 Sealing plug(s) or sealing screw(s) for the proces 	s flanges(s)
Wetted parts materials	· · · ·		1) For oxygen cleaning application, add Order code E	10.
(stainless steel process			²⁾ Not suitable for connection of remote seal. Position	
Seal diaphragm	Parts of measuring cell		the process flanges (see dimensional drawings).	
Stainless steel	Stainless steel	А	³⁾ Not in conjunction with max. span 20 and 60 mbar (⁴⁾ When the manufacture's certificate (calibration certificate)	
Hastelloy	Stainless steel	В	⁴⁾ When the manufacture's certificate (calibration certificate ordered for transmitters with diaphragm seals according to the second seco	icate) has to be ding to IEC 60770
Hastelloy	Hastelloy	с	is recommended only to order this certificate exclus	vely with the dia-
Tantalum ³⁾	Tantalum	E	phragm seals. The measuring accuracy of the total of here.	ombination is cert
Monel ³⁾	Monel	н	⁵⁾ If the acceptance test certificate 3.1.is ordered for th	e transmitter with
Gold ³⁾	Gold	L	mounted diaphragm seals this certificate must also	be ordered with th
Version as diaphragm s	eal 400	Y	respective remote seals.	
Process connection	- a		⁶⁾ Without cable gland, with blanking plug	
	T with flange connection		⁷⁾ With enclosed cable gland EEx ia and blanking plug ⁸⁾ M12 delivered without cable socket	1
 Sealing screw opposit Mounting thread ⁷/₁₆ 	20 LINE to IEC 61518	2	WITZ delivered without cable socket	
 Mounting thread M10 Mounting thread M10 		0		
(only for replacemen	t requirement)			
Venting on side of pro	cess flanges ²⁾			
- Mounting thread 7/16	-20 UNF to IEC 61518	6		
 Mounting thread M10 (only for replacement 		4		
Non-wetted parts mate				
process flange screws Stainless steel	Electronics housing Die-cast aluminum	2		
Stainless steel	Stainless steel precision casting	3		
Version				
 Standard versions International version 	English label inscriptions,	1		
	nguages on CD (no order	2		
Hazardous area rating				
General purpose	ovol	А		
 ATEX Hazardous appr - "Intrinsically safe (EE 		в		
- "Explosion-proof (EE		D		
 "Intrinsically safe <u>and</u> 	d explosion-proof	P		
(EEx ia + EEx d)" ⁷⁾				
- use in zone 2		E		
	plosion-proof enclosure	R		
and dust explosion p + zone 1D/2D)"7)	protection (EEx ia + EEx d			
 FM/CSA Hazardous a 	pproval			

SITRANS P DS III for differential pressure and flow

Selection and Ordering data	Order	code		
Further designs	Gruer	HART	PA	FF
Add "-Z" to Order No. and specify Order Code.				
Pressure transmitter with mounting bracket (2 shackles, 4 nuts, 4 U-plates,				
1 angle) made of: • Steel	A01	1	1	1
Stainless steel	A02	1	1	1
 O-rings for process flanges (instead of FPM (Viton)) PTFE (Teflon) FEP (with silicone core, approved for food) 	A20 A21	*	* *	*
• FFPM (Kalrez, compound 4079)	A22	1	1	× .
• NBR (Buna N)	A23	✓	✓	✓
plug • Han 7D (metal, gray) • Han 8U (instead of Han 7D) • Angled	A30 A31 A32	* * *		
	A40	1	1	1
Sealing screws (2 unit(s) 1/4-18 NPT, with valve in mat. of process flanges	A40	•	•	•
Cable sockets for M12 connectors (metal)	A50	✓	✓	✓
Rating plate inscription (instead of German)				
• English	B11	√.	1	1
• French	B12 B13	√ √	√ √	4
SpanishItalian	втз B14	↓	¥.	¥
English rating plate	B21		· •	
Pressure units in inH ₂ O and/or psi	521	·	·	•
Factory calibration certificate ¹⁾	C11	✓	✓	✓
Material traceability certificate ²⁾	C12	✓	✓	✓
Factory certificate of conformance	C14	✓	✓	✓
SIL2 certificate per IEC 61508 / 61511	C20	✓		
PROFIsafe certificate and protocol	C21		✓	
Setting of upper limit of output signal to 22.0 mA	D05	1		
Manufacturer's declaration acc. to NACE (only together with seal diaphragm made of Hastelloy and stainless steel)	D07	*	1	1
Degree of protection IP68 (only for M20 x 1.5 and ½-14 NPT)	D12	~	~	~
Process flange screws made of Monel (max. nominal pressure PN20)	D34	~	~	~
Supplied with oval flange set (2 items), PTFE packings and screws in thread of process flanges	D37	1	1	1
Brad Harrison Connector	D40	✓	✓	✓
Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")	E01	1	1	1
TÜV approval to AD/TRD (only together with type of protection "Intrinsic safety (EEx ia)")	E06	1		

Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "-Z" to Order No. and specify Order Code.				
Overfilling safety device for flammable and non-flammable liquids	E08	~	~	1
(max. PN 32 (MVWP 464 psi), basic device with type of protection "Intrinsic safety (EEx ia)", to WHG and VbF, not together with measuring cell filling "inert liquid")				
Oxygen application	E10	✓	✓	✓
(In the case of oxygen measurement and inert liquid max. 120 bar a (1740 psi a) at 60°C (140 °F))				
Two coats of lacquer on casing and cover (PU on epoxy)	G10	1	~	~
Interchanging of process connection side	H01	✓	✓	✓
Vent on side for gas measurements	H02	✓	✓	✓
Stainless steel process flanges for vertical	H03	✓	✓	✓
differential pressure lines (not together with K01, K02 and K04) ³⁾				
Process flange				
Hastelloy	K01	✓	✓.	✓
Monel Otaialaga ata aluuitta DV(DE inagart	K02	1	1	1
 Stainless steel with PVDF insert max. PN 10 (MAWP 145 psi), max. temperature of medium 90 °C (194 °F) 	K04	v	v	v
Surge Protection				
External, 1/2" NPT	J01			
Manifold Mounting				
Assembled for 3-valve manifold 7MF9411-5BA-Z+K36, Chromized steel screws, PTFE-gaskets, and pressure test	U01			
Assembled for 3-valve manifold 7MF9411-5BA-Z+K46, Stainless steel screws, PTFE-gaskets, and pressure test	U02			
Assembled for 5-valve manifold 7MF9411-5CA-Z+K36, Chromized steel screws, PTFE-gaskets, and pressure test	U03			
Assembled for 5-valve manifold 7MF9411-5CA-Z+K46, Stainless steel screws, PTFE-gaskets, and pressure test	U04			
Factory mounting of valve manifolds, see acc	essories	6.		
Supplementary electronics for 4-wire connect	ion, see	access	sories	
For ½-14 NPT inner process connection on th process flanges, vent valve not possible	e side ir	n the mi	ddle o	of the

- ✓ = 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

	0 1			
Selection and Ordering data	Order			
Additional data Please add "-Z" to Order No. and specify Order code(s) and plain text.		HART	PA	FF
Calibrated range Specify in plain text: • in the case of linear characteristic curve (max. 5 characters): Y01: X to Y psi, inH ₂ 0, ftH ₂ 0	Y01	4		
 in the case of square rooted characteristic (max. 5 characters): Y02: up to mbar, bar, kPa, MPa, psi 	Y02	1		
Tag number/Identification (max. 16 characters), specify in plain text: Y15:	Y15	*	1	1
Tag description (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:				
Pressure units for digital display	Y21	✓	✓	✓
specify in plain text: Y21: psi, inH ₂ 0, ftH ₂ 0				
Pressure units for digital display				
Non-Pressure units for digital display ¹⁾	Y22 ²⁾ +			
(measuring range in pressure units ("Y01"/"Y02") mandatory) specify in plain text: Y22: X to y GPM, MGD, Feet	Y01 or Y02			
Preset bus address possible between 1 and 126 Specify in plain text: Y25:	Y25		•	

Factory mounting of valve manifolds, see accessories.

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

✓ = available

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

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

SITRANS P DS III for differential pressure and flow

Selection and Orderin	ig data	Orde	er No.	Selection and Ordering data	Order No.
SITRANS P DS III with HART pressure trans-		7 M F	4533-	SITRANS P DS III with HART pressure trans-	7 M F 4 5 3 3 -
mitters for differential MAWP 6092 psi (PN 4	pressure and flow,			mitters for differential pressure and flow, MAWP 6092 psi (PN 420)	
Measuring cell filling	Measuring cell cleaning			Indicator • Without indicator	0
Silicone oil	normal	1		• Without indicator (digital display hidden,	1
Measuring span (min.	max.)			setting: mA)	6
100 inH ₂ O	(2.5 250 mbar)	D		With indicator (digital display visible, setting: mA) With indicator (digital display visible, settings as	7
2.4 240 inH ₂ O	(6 600 mbar)	E		 With indicator (digital display visible, settings as specified, Order Code "Y21"/Y22" required) 	'
5.4 642 inH ₂ O	(16 1600 mbar)	F			
20 2000 inH ₂ O	(50 5000 mbar)	G		Power supply units see Chap. 8 "Supplementary C	omponents".
4.35 435 psi	(0.3 30 bar)	н		Scope of delivery: Pressure transmitter as ordered	Instruction Manual
Netted parts materials	s	_		extra ordering item)	
(stainless steel process	s flanges)			¹⁾ Not in conjunction with max. span 600 mbar (240 in	H ₂ O)
Seal diaphragm	Parts of measuring cell			2) Not in conjunction with Electrical connection "Screw	ed gland Pg 13.5" ar
Stainless steel	Stainless steel	A	۱	"Han7D plug".	
Hastelloy	Stainless steel	E	3	³⁾ Without cable gland, with blanking plug	
Gold ¹⁾	Gold	L		4) With enclosed cable gland EEx ia and blanking plug	
Connection of remote s	seal possible on request			⁵⁾ Not in conjunction with types of protection "Explosic "Intrinsic safety" and "Explosion-proof".	n-proof" and "Ex nA"
Process connection				 ⁶) Permissible only for crimp-contact of conductor cro 	
Female thread 1/4-18 NF	PT with flange connection			⁷⁾ M12 delivered without cable socket	
 Sealing screw opposi 	ite process connection				
- Mounting thread 7/1	₆ -20 UNF to IEC 61518		3		
- Mounting thread M1			1		
(only for replacement					
	ocess flanges, location of				
vent valve at top of pr	rocess flanges (see dimen-				
sional drawing)			-		
 Mounting thread 71 Mounting thread M1 	6-20 UNF to IEC 61518		7 5		
(only for replaceme			Ð		
Non-wetted parts mat		-			
process flange screws					
Stainless steel	Die-cast aluminum		2		
Stainless steel	Stainless steel precision casting ²⁾		3		
Version	g	-			
Standard versions			1		
	English label inscriptions,		2		
documentation in 5 la					
Hazardous area rating	3				
General purpose	-		А		
 ATEX Hazardous app 	oroval				
- "Intrinsically safe (El			в		
- "Explosion-proof (EE			D		
			P		
 "Intrinsically safe an (EEx ia + EEx d)"⁴⁾ 					
- use in zone 2			E		
	xplosion-proof enclosure		R		
	protection (EEx ia + EEx d				
+ zone 1D/2D)"4)					
FM/CSA Hazardous a					
	d explosion proof (is $+ xp)^{(3)}$	_	NC		
 Electrical connection Screwed gland Pg 13 					
			A		
Screwed gland M20x	C.I.S		В		
• ½-14 NPT	le sue le sub le sub de la		C		
 Han 7D plug (plastic connector⁵⁾⁶⁾ 	nousing) incl. mating		D		
M12 connectors (met			-		
 wirz connectors (met 	ai) '		F		

Pressure Measurement Transmitters for general requirements SITRANS P DS III

for differential pressure and flow

Selection and Ordering	a data	Orde	er No.			
Pressure transmitters						
and flow, MAWP 6092						
SITRANS P DS III with	PROFIBUS PA (PA)	7 M F	4534	4 -		
SITRANS P DS III with	FOUNDATION Fieldbus	7 M F 4 5 3 5 -				
(FF)						
		1	-			
Nominal measuring ra	nge					
100 inH ₂ O	(250 mbar)	D				
240 inH ₂ O	(600 mbar)	E				
642 inH ₂ O	(1600 mbar)	F				
2000 inH ₂ O	(5 bar)	G				
435 psi	(30 bar)	н				
Wetted parts materials						
(stainless steel process	flanges)					
Seal diaphragm	Parts of measuring cell					
Stainless steel	Stainless steel	A				
Hastelloy	Stainless steel	В	:			
Gold 1)	L					
Connection of remote se	eal possible on request					
Process connection						
Female thread 1/4-18 NP	T with flange connection					
 Sealing screw opposit 						
	-20 UNF to IEC 61518		3			
- Mounting thread M1			1			
(only for replacemer						
	cess flanges, location of					
	ocess flanges (see dimen-					
sional drawing).						
	-20 UNF to IEC 61518		7			
 Mounting thread M1 (only for replacement 			5			
Non-wetted parts mate	erials	-				
Process flange screws	Electronics housing					
Stainless steel	Die-cast aluminum		2			
Stainless steel	Stainless steel precision		3			
	casting					
Version						
 Standard versions 			1			
 International version, I documentation in 5 lai 	English label inscriptions, nguages on CD		2	2		
Hazardous area rating						
 General purpose 				Α		
 ATEX Hazardous appr 						
 "Intrinsically safe (EB) 				В		
- "Explosion-proof (EE				D		
 "Intrinsically safe and (EEx ia + EEx d)"³⁾ 			Р			
- use in zone 2				E		
	plosion-proof enclosure			R		
+ zone 1D/2D)" ³⁾	protection (EEx ia + EEx d					
 FM/CSA Hazardous a 	pproval					
	explosion proof (is + xp) ^{*2)}			NC		
Electrical connection /	•			P		
Screwed gland M20 x 16 14 NPT	G.1			B		
 ½-14 NPT M12 connectors (meta) 	4)			C F		
	arj					

Selection and Ordering data	Order No.
Pressure transmitters for differential pressur and flow, MAWP 6092 psi (PN 420)	e
SITRANS P DS III with PROFIBUS PA (PA)	7 M F 4 5 3 4 -
SITRANS P DS III with FOUNDATION Fieldbus (FF)	5 7 M F 4 5 3 5 -
	1
Indicator	
Without indicator	0
 Without indicator (digital display hidden, setting: mA) 	1
• With indicator (digital display visible, setting: mA	.) 6
 With indicator (digital display visible, settings a specified, Order Code "Y21" required) 	is 7
Included in delivery of the device: • Brief instructions (Leporello) • CD-ROM with detailed documentation	

• Sealing plug(s) or sealing screw(s) for the process flanges(s)

¹⁾ Not in conjunction with max. span 600 mbar (240 in H_2O)

²⁾ Without cable gland, with blanking plug

 $^{\rm 3)}$ With enclosed cable gland EEx ia and blanking plug

 $^{\rm 4)}$ M12 delivered without cable socket

SITRANS P DS III for differential pressure and flow

Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add "-Z" to Order No. and specify Order Code.				
Pressure transmitter with mounting bracket (2 shackles, 4 nuts, 4 U-plates, 1 angle) made of: • Steel	A01			
Stainless steel	A01 A02	↓	¥.	1
O-rings for process flanges (instead of FPM (Viton)) • PTFE (Teflon) • EEP (with silicone core, approved for food) • FFPM (Kalrez, compound 4079)	A20 A21 A22	* * *	✓ ✓ ✓ ✓	* *
• NBR (Buna N)	A23	✓	✓	√
Plug • Han 7D (metal, gray) • Han 8U (instead of Han 7D) • Angled	A30 A31 A32	* * *		
Sealing screws (2 unit(s) ¼-18 NPT, with valve in mat. of process flanges	A40	~	1	*
Cable sockets for M12 connectors (metal)	A50	✓	✓	✓
Rating plate inscription (instead of German)		,	,	,
EnglishFrench	B11 B12	✓ ✓	✓ ✓	× •
Spanish	B12		¥	~
• Italian	B14	✓	✓	✓
English rating plate Pressure units in inH ₂ O and/or psi	B21	~	✓	*
Factory calibration certificate	C11	✓	✓	✓
Material traceability certificate	C12	✓	✓	✓
Factory certificate of conformance	C14	✓	✓	✓
SIL2 certificate per IEC 61508 / 61511	C20	✓		
PROFIsafe certificate and protocol	C21		✓	
Setting of upper limit of output signal to 22.0 mA	D05	1		
Manufacturer's declaration acc. to NACE (only together with seal diaphragm made of Hastelloy and stainless steel)	D07	*	1	~
Degree of protection IP68 (only for M20 x 1.5 and ½-14 NPT)	D12	~	1	1
Brad Harrison Connector	D40	1	✓	~
Use in or on zone 1D/2D (only together with type of protection "Intrinsic safety (EEx ia)")	E01	~	~	1

Selection and Ordering data	Order			
Further designs		HART	PA	FF
Add "-Z" to Order No. and specify Order Code.				
Two coats of lacquer on casing and cover (PU on epoxy)	G10	~	~	~
Interchanging of process connection side	H01	✓	✓	✓
Stainless steel process flanges for vertical differential pressure lines	H03	~	✓	1
Surge Protection				
External, 1/2" NPT	J01			
Manifold Mounting				
Assembled for 3-valve manifold	U01			
7MF9411-5BA-Z+K36, Chromized steel screws, PTFE-gaskets, and pressure test				
Assembled for 3-valve manifold	U02			
7MF9411-5BA-Z+K46, Stainless steel screws, PTFE-gaskets, and pressure test				
Assembled for 5-valve manifold	U03			
7MF9411-5CA-Z+K36, Chromized steel				
screws, PTFE-gaskets, and pressure test Assembled for 5-valve manifold	U04			
7MF9411-5CA-Z+K46, Stainless steel screws,	004			
PTFE-gaskets, and pressure test				
Additional data				
Please add "-Z" to Order No. and specify Order code(s) and plain text.				
Calibrated range				
Specify in plain text:	Vod	,		
 in the case of linear characteristic curve (max. 5 characters): 	Y01	•		
Y01: X to Y psi, inH ₂ 0, ftH ₂ 0				
 in the case of square rooted characteristic (max. 5 characters): 	Y02	~		
Y02: up to mbar, bar, kPa, MPa, psi				
Tag number/Identification	Y15	✓	✓	✓
(max. 16 characters), specify in plain text:				
Y15:			,	
Tag description (max. 27 characters), specify in plain text:	Y16	•	•	•
Y16:				
Entry of HART (TAG)	Y17	~		
(max. 8 characters), specify in plain text: Y17:				
Pressure units for digital display	Y21	~	1	~
specify in plain text: Y21: psi, inH ₂ 0, ftH ₂ 0				
Pressure units for digital display				
Non-Pressure units for digital display ¹⁾	Y22 +	~		
(measuring range in pressure units	Y01 or			
("Y01"/"Y02") mandatory) Specify in plain text:	Y02			
Y22: .X to Y GPM, MGD, Feet				
Preset bus address	Y25		1	
possible between 1 and 126				
Specify in plain text: Y25:				
Factory mounting of valve manifolds, see acc.	ossorio	_		

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 differential pressure and flow

Dimensional drawings



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

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

SITRANS P DS III for differential pressure and flow



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

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



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

© 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				
	o ()	1	evel	
Spans (infinitely adjustable) or nominal measuring range and max. permissible operating pressure	Span (min max.)	Maximum operating pressure	Nominal measuring range	Maximum operating pressure
	10 100 inH ₂ O (25 250 mbar)	See "Mounting flange"	100 inH ₂ O (250 mbar)	See "Mounting flange"
	10 240 inH ₂ O (25 600 mbar)	See "Mounting flange"	240 inH ₂ O (600 mbar)	See "Mounting flange"
	21 642 inH ₂ O (53 1600 mbar)	See "Mounting flange"	642 inH ₂ O (1600 mbar)	See "Mounting flange"
	64 2000 inH ₂ O (160 5000 mbar)	See "Mounting flange"	2000 inH ₂ O (5000 mbar)	See "Mounting flange"
Lower measuring limit		1		1
 Measuring cell with silicone oil filling 	-100% of ma	x. span or 0.44 psi a (30	mbar), depending on m	ounting flange
Upper measuring limit	100 % of max. span		100 % of the max. nom	inal measuring range
Output				
Output signal	4 20 mA		Digital PROFIBUS PA a FOUNDATION Fieldbus	
 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	$R_{\rm B} = 230 \dots 500 \Omega ({\rm SIN} R_{\rm B} = 230 \dots 1100 \Omega ({\rm Hz})$		-	
Physical bus	-		IEC 61158-2	
Protection against polarity reversal	Protected against short		rsal. Each connection ag voltage.	ainst the other with max.
Measuring accuracy		Acc. to IE	EC 60770-1	
Reference conditions (All error data refer always refer to the set span)			bar, stainless steel seal d r: Span ratio (r = max. sp	
Error in measurement at limit setting incl. hyster- esis and reproducibility				
Linear characteristic			≤ 0.15 %	
- r ≤ 10	≤ 0.15 %			
- 10 < r ≤ 30	≤ 0.3 %			
- 30 < r ≤ 100	$\leq (0.0075 \cdot r + 0.075) \%$	b		
Long-term stability (temperature change \pm 30 °C (± 54 °F))	≤ (0.25 · r)% every 5 ye static pressure max. 70		≤ 0.25 % every 5 years static pressure max. 70	bar (1015 psi)
Influence of ambient temperature				
• at -10 +60 °C (14 140 °F)				
- 100 inH ₂ O (250-mbar) measuring cell	$\leq (0.5 \cdot r + 0.2) \%^{(1) 4)}$		≤ 0.7 %	
- 240 inH ₂ O (600-mbar) measuring cell	$\leq (0.3 \cdot r + 0.2) \%^{2)4}$		≤ 0.5 %	
 - 642 and 2000 inH₂O (1600 and 5000 mbar) measuring cells 	$\leq (0.25 \cdot r + 0.2) \%^{(3)(4)}$		≤ 0.45 %	
• at -4010 °C and 60 85 °C (-40 +14 °F and 140 185 °F)				
- 100 inH ₂ O (250-mbar) measuring cell	\leq (0.25 \cdot r + 0.15) %/10 doubled values at 10 <		≤0.4 %/10 K	
- 240 inH ₂ O (600-mbar) measuring cell	\leq (0.15 \cdot r + 0.15) %/10 doubled values at 10 <		≤ 0.3 %/10 K	
- 642 and 2000 inH ₂ O psi (1600 and 5000 mbar) measuring cells	\leq (0.12 · r + 0.15) %/10 double values at 10 < r		≤ 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			
- 100 inH ₂ O (250-mbar) measuring cell	\leq (0.3 · r) % per nominal pressure	≤ 0.3 % per nominal pressure	
- 240 inH ₂ O (600-mbar) measuring cell	\leq (0.15 · r) % per nominal pressure	≤ 0.15 % per nominal pressure	
- 642 and 2000 inH ₂ O (1600 and 5000 mbar) measuring cells	≤ (0.1 · r) % per nominal pressure	≤ 0.1 % per nominal pressure	
on the span	\leq (0.1 · r) % per nominal pressure	≤ 0.1 % per nominal pressure	
Measured Value Resolution		$3 \cdot 10^{-5}$ of nominal measuring range	
Rated conditions			
	IP65 opt	ional IP69	
Degree of protection (to IEC 60529) Temperature of medium		ional IP68 max. permissible operating temperature to max.	
		f the respective flange connection!	
 Measuring cell with silicone oil filling 	-40 +100 °C	(-40 +212 °F)	
- High-pressure side	. 400	175 °C (-40 +347 °F)	
		80 °C (-40 +176 °F)	
- Low-pressure side		(-40 +212 °F)	
	-20 +60 °C (-4 +140 °F) in conju	unction with dust explosion protection	
Ambient conditions			
Ambient temperature			
- Digital indicator		(-22 +185 °F)	
Storage temperature	-50 +85 °C ((-58 +185 °F)	
Climatic class			
- Condensation		dity 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)			
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, ma tellov C276 mat. no. 2.4819 Hastellov C4	1. no. 2.4360, Hastelloy B2, mat. no. 2.4617, Has 4, mat. no. 2.4610, tantalum, PTFE, ETCFE	
Measuring cell filling		one oil	
Process connection			
High-pressure side	Elando to El	N and ASME	
Low-pressure side	Female thread 1/4-18 NPT and flange connect	ion with mounting thread M10 to DIN 19213 or	
Dewer europhy //	'/ ₁₆ -20 UNF	to IEC 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	
Fault disconnection electronics (FDE) available	-	res	

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		group 1; complies with requirements of article 3, I engineering practice)
Explosion protection		
Intrinsic safety "i"	PTB 99	ATEX 2122
- Marking	Ex II 1/2 G EE	x ia/ib IIB/IIC T6
- Permissible ambient temperature	-40 +70 °C (-40 +15	85 °F) temperature class T4; 88 °F) temperature class T5; 40 °F) temperature class T6
- Connection	To certified intrinsically-safe circuits with peak values: $U_{\rm i}$ = 30 V, $l_{\rm i}$ = 100 mA, $P_{\rm i}$ = 750 mW; $R_{\rm i}$ = 300 Ω	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 .	ATEX 1160
- Marking	Ex II 1/2 G E	Ex d IIC T4/T6
- Permissible ambient temperature	-40 +85 °C (-40 +18 -40 +60 °C (-40 +14	35 °F) temperature class T4; 40 °F) temperature class T6
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC	To circuits with values: $U_{\rm H}$ = 9 32 V DC
Dust explosion protection for zone 20	PTB 01 .	ATEX 2055
- Marking		P65 T 120 ℃ IP65 T 120 ℃
- Permissible ambient temperature	-40 +85 °C	(-40 +185 °F)
- Max. surface temperature	120 °C	C (248 °F)
- Connection	To certified intrinsically-safe circuits with peak values: $U_{\rm i}$ = 30 V, $l_{\rm i}$ = 100 mA, $P_{\rm i}$ = 750 mW, $R_{\rm i}$ = 300 Ω	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 II	P65 T 120 °C
- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC; $P_{\rm max}$ = 1.2 W	To circuits with values: $U_{\rm H}$ = 9 32 V DC; $P_{\rm max}$ = 1.2 W
 Type of protection "n" (zone 2) 	TÜV 01 ATEX 1696 X	TÜV 01 ATEX 1696 X
- Marking	Ex II 3 G EEx nA L IIC T4/T5/T6	Ex II 3 G EEx nA L IIC T4/T5/T6
 Explosion protection acc. to FM 	Certificate of Co	mpliance 3008490
- Identification (XP/DIP) or (IS); (NI)		GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4T6; T6; CL II, DIV 2, GP FG; CL III
 Explosion protection to CSA 	Certificate of Co	mpliance 1153651
- Identification (XP/DIP) or (IS)		FG; CL III; Ex ia IIC T4T6; CL I, DIV 2, GP ABCE IV 2, GP FG; CL III

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

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

 $^{(4)}$ 0.32 instead of 0.16 at 10 < r < 30

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

			for love
			for leve
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-	Yes, linearly rising or falling
Simultaneous communication with master class 2 (max.)	4	specific process variables - Electrical damping, adjustable	characteristic 0 100 s
The address can be set using	Configuration tool or local operation (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
Output byte	5 (one measured value) or		value, substitute value, incorrect 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 (register operating mode and reset function for metering)	Course restard share staristic	respectively
Internal preprocessing		 Square-rooted characteristic for flow measurement 	Yes
Device profile	PROFIBUS PA Profile for Process Control Devices Version 3.0,	• PID	Standard FOUNDATION Fieldbus function block
	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- specific 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	Yes
- Failure mode	parameterizable (last good value, substitute value, incorrect value)	 Simulation function: Measured pressure value, sensor temper- ature and electronics tempera- 	Constant value or over parame- terizable ramp function
- Limit monitoring	Yes, one upper and lower warn-	ture	
	ing limit and one alarm limit 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 with	- DN 80	PN 40
	last good value, continuous sum- mation, summation with incorrect	- DN100	PN16, PN40
	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		
- Characterizer	Max. 30 points		
 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 Orderin	g data	С)rde	er No	0.
Pressure transmitter f		7	MF	4 6	33-
SITRANS P DS III with	HART		Y	1	
Measuring cell filling	Measuring cell cleaning			Π	
Silicone oil	normal	1			
Measuring span (min.	max.)	-			
10 100 inH ₂ O	(25 250 mbar)		D		
10 240 inH ₂ O	(25 600 mbar)		Е		
22 640 inH ₂ O	(53 1600 mbar)		F		
64 2 000 inH ₂ O	(0.16 5 bar)		G		
Process connection o	f low-pressure side	-			
Female thread 1/4-18 NF	T with flange connection				
 Mounting thread ⁷/₁₆- 	20 UNF to IEC 61518			2	
 Mounting thread M10 				0	
(only for replacement					
Non-wetted parts mate	erials	-			
process flange screws	Electronics housing				
Stainless steel	Die-cast aluminum			2	
Stainless steel	Stainless steel precision			3	
	casting ¹⁾				
Version					
 Standard versions 					1
	English label inscriptions,				2
documentation in 5 la	nguages on CD (no order				
code selectable)		_			
Hazardous area rating					
 General purpose 					Α
 ATEX Hazardous app 	roval				
 "Intrinsically safe (El 					В
- "Explosion-proof (EE	Exd)" ²⁾				D
 "Intrinsically safe an (EEx ia + EEx d)"³⁾ 	d explosion-proof				Р
- use in zone 2					E
	plosion-proof enclosure				R
	protection (EEx ia + EEx d				
	approval				
 FM/CSA Hazardous a 					NC
	d explosion proof (is + xp)" ²⁾				
		-			
- "Intrinsically Safe und	/ cable entry				A
- "Intrinsically Safe und Electrical connection	/ cable entry .5 ⁴⁾	_			-
 "Intrinsically Safe und Electrical connection Screwed gland Pg 13 	/ cable entry .5 ⁴⁾				E
 "Intrinsically Safe und Electrical connection Screwed gland Pg 13 Screwed gland M20x ½-14 NPT 	/ cable entry .5 ⁴⁾ 1.5				E
 "Intrinsically Safe und Electrical connection a Screwed gland Pg 13 Screwed gland M20x 	/ cable entry .5 ⁴⁾ 1.5 housing) incl. mating				A E C C

Selection and	d Ordering data	Order No.
	nsmitter for level, PS III with HART	7 M F 4 6 3 3 - Y
setting: mA)With indicatoWith indicato	cator (digital display hidden,	0 1 6 7
	rmation : Pressure transmitter 7MF4633 n: Mounting flange 7MF4912-3	
B line: C line:	7MF4633-1DY22-1AC1-Z Y01	bar)
Power supply	units see Chap. 8 "Supplementary C	omponents".
 Brief instruc CD-ROM wi 	elivery of the device: tions (Leporello) th detailed documentation g(s) or sealing screw(s) for the proces	ss flanges(s)
 Not in conju "Han7D plug 	nction with electrical connection "Screw J".	ed gland Pg 13.5" ar

- $^{\mbox{2)}}$ Without cable gland, with blanking plug
- $^{\rm 3)}$ With enclosed cable gland EEx ia and blanking plug
- ⁴⁾ Not in conjunction with types of protection "Explosion-proof" and "Ex nA", "Intrinsic safety" and "Explosion-proof".
- ⁵⁾ M12 delivered without cable socket

SITRANS P DS III for level

Selection and Orderin	g data	Orde	er No			
Pressure transmitters	for level					
SITRANS P DS III with	PROFIBUS PA (PA)	7 M F	463	34 -		
SITRANS P DS III with FOUNDATION Fieldbus		7 M F 4 6 3 5 -				
(FF)						
		1 Y				
Nominal measuring ra	•					
100 inH ₂ O	(250 mbar)	D				
240 inH ₂ O	(600 mbar)	E				
640 inH ₂ O 2 000 inH ₂ O	(1600 mbar) (5 bar)	G				
	· · /	u				
Process connection of Female thread ¹ / ₄ -18 NF	T with flange connection					
 Mounting thread ⁷/₁₆-2 			2			
 Mounting thread M10 			0			
(only for replacement	requirement)					
Non-wetted parts mate						
process flange screws	Electronics housing					
Stainless steel	Die-cast aluminum		2			
Stainless steel	Stainless steel precision casting		3			
Version	Casting					
Standard versions				1		
	English label inscriptions,			2		
documentation in 5 la	nguages on CD (no order					
code selectable)						
Hazardous area rating						
General purpose ATEX Hozardous appr	roval			Α		
 ATEX Hazardous applied on the second s				в		
- "Explosion-proof (EE				D		
- "Intrinsically safe and				P		
(EEx ia + EEx d)" ²⁾						
- use in zone 2				E		
	plosion-proof enclosure protection (EEx ia + EEx d			R		
+ zone 1D/2D)"2)						
FM/CSA Hazardous a	approval					
- "Intrinsically Safe und	l explosion proof (is + xp)" ¹⁾			N C	;	
Electrical connection	•					
Screwed gland M20 x	1.5			В		
1⁄2-14 NPTM12 connectors (meta)	3)			C F		
Without indicator					0	
Without indicator (digi	tal display hidden.				1	
setting: mA)						
	lisplay visible, setting: mA)				6	
 With indicator (digital specified, Order Code 	display visible, settings as e "Y21"" required)				7	
specified, Older Code						

2

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)

1) Without cable gland, with blanking plug

- $^{\rm 2)}$ With enclosed cable gland EEx ia and blanking plug
- $^{\rm 3)}$ M12 delivered without cable socket

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

Only other and Only in the	0			
Selection and Ordering data	Order			
Further designs		HART	PA	FF
Add " -Z " to Order No. and specify Order Code.				
O-rings for process flanges on				
low-pressure side (instead of FPM (Viton))				
PTFE (Teflon)	A20	1	1	~
• FEP (with silicone core, approved for food)	A21	✓	√ √	✓
 FFPM (Kalrez, compound 4079) 	A22	1	1	✓
• NBR (Buna N)	A23	~	~	~
Plug				
Han 7D (metal, gray)	A30 A31	1		
Han 8U (instead of Han 7D)Angled	A31 A32	* -		
0	A02			
Sealing screw 1/4-18 NPT, with valve in mat. of process flanges	A40	~	~	~
Cable sockets for M12 connectors (metal)	A50	1	1	1
Rating plate inscription				
(instead of German)				
• English	B11	✓	✓	✓
• French	B12	1	1	√
• Spanish	B13	1	√ √	1
• Italian	B14		*	•
English rating plate Pressure units in inH ₂ 0 and/or psi	B21	~	•	~
Factory calibration certificate	C11	✓	✓	✓
Material traceability certificate	C12	1	✓	✓
Factory certificate of conformance	C14	✓	✓	✓
SIL2 certificate per IEC 61508 / 61511	C20	✓		
PROFIsafe certificate and protocol	C21		✓	
Setting of upper limit of output signal to 22.0 mA	D05	✓		
Degree of protection IP68	D12	~	~	~
(only for M20x1.5 and ½-14 NPT)				
Supplied with oval flange	D37	1	✓	✓
(1 item), PTFE packing and screws in thread of process flange				
Brad Harrison Connector	D40	~	1	~
Use on zone 1D / 2D	E01	✓	✓	✓
(only together with type of protection "Intrinsic safety (EEx ia)")				
Overfilling safety device for flammable and non-flammable liquids	E08	~	1	
(max. PN 32 (MVWP 464 psi), basic device with type of protection "Intrinsic safety (EEx ia)")				
Two coats of lacquer on casing and cover (PU on epoxy)	G10	1	~	✓
Replacement of process connection side	H01	1	✓	✓
Surge Protection				
External, ½" NPT	J01	1		

Selection and Ordering data	Order	code		
Further designs		HART	PA	FF
Add " -Z " to Order No. and specify Order Code.				
Additional data				
Please add "-Z" to Order No. and specify Order code(s) and plain text.				
Calibrated range Specify in plain text (max. 5 characters):	Y01	1		
Yo1: X to Y psi, in H_20 , ft H_20				
Tag number/Identification	Y15	✓	✓	1
(max. 16 characters), specify in plain text: Y15:				
Tag description	Y16	~	~	1
(max. 27 characters), specify in plain text: Y16:				
Entry of HART (TAG)	Y17	✓		
(max. 8 characters), specify in plain text: Y17:				
Pressure units for digital display	Y21	✓	✓	✓
specify in plain text: Y21: psi, inH_20, ftH_20				
Pressure units for digital display				
Non-Pressure units for digital display ²⁾	Y22 ¹⁾	✓		
(measuring range in pressure units("Y01"/"Y02") mandatory)	+ Y01			
specify in plain text:				
Y22: X to Y GPM, MGD, Feet				
Preset bus address	Y25		~	
possible between 1 and 126 Specify in plain text				
Y25:				

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

✓ = available

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.

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

Selection and Orderin	g data	0	rder I	Vo.			
Mounting flange	D) 7	M F 4	8 1	2 -	•	
Directly mounted on the transmitter (converter p series		3	ľ		ľ		
Connection to EN 109	2-1						
Nominal diameter	Nominal pressure						
DN 80	PN 40		D				
DN 100	PN 16		G				
	PN 40		н				
Connection to ASME							
Nominal diameter	Nominal pressure		~				
3 inch	Class 150 Class 300		Q R				
4 inch	Class 300 Class 150		n T				
4 111011	Class 300		U				
Other version, add	01030 000		-				v
Order Code and plain t			z			J 1	Ŷ
Nominal diameter:; N	lominal press.:						
Wetted parts material	6						
 Stainless steel 316L 			Α				
 Coated with PFA 			D				
- Coated with PTFE			E 0				
 Coated with ECTFE¹⁾ 			F				
• Monel 400, mat. no. 2	.4360		G				
 Hastelloy B2, mat. no 			н				
 Hastelloy C276, mat. 			J				
Hastelloy C4, mat. no	. 2.4610		U				
 Tantalum 			K				
Other version, add			z		k	(1	Y
Order Code and plain t	ext: tact with the medium:						
Sealing face, see "Tech							
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			9		L	. 1	Y
Order Code and plain t	ext:						
tube length:		_					
Filling liquid							
Silicone oil M5 Silicone oil M5				1			
Silicone oil M50				2			
 High-temperature oil Halocarbon oil (for Ogenerature) 	moscuromont)			3 4			
 Glycerin/water²⁾ 	prineasurement)			4 6			
Food oil (FDA-listed)				7			
					N	/ 1	Y
Other version, add Order Code and plain t	ext.			9			
filling liquid:	o						
1)							

1) For vacuum on request

²⁾ Not suitable for use in low-pressure range

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

Selection and Ordering data	Order	code		
Further designs		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			
Factory calibration certificate	C11	✓	✓	
Material traceability certificate	C12	✓	✓	
Vacuum-proof design (for use in low-pressure range) Note: suffix "Y01" required with pressure transmitter!	V04	~	~	

✓ = available

SITRANS P DS III for level

Dimensional drawings



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

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

Connection to EN 1092-1

Nominal diameter	Nominal pressure	L	D	h	d ₂	d ₄	d ₅	d _M	j	k	n	L
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
DN 80	PN 40	24	200	90	18	138	76	72 ¹⁾	2	160	8	0, 50, 100,
DN 100	PN 40	20	220	115	18	158	94	89	2	180	8	150 or 200
	PN 40	24	235	115	22	162	94	89	2	190	8	

Connection to ASME B16.5

Nominal diameter	Nominal pressure	L	D	d ₂	d ₄	d ₅	d _M	j	k	n	L
		mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)		mm (inch)
3 inch	150	0.94 (24.3)	7.5 (190)	0.75 (19.0)	5 (127)	3 (76)	2.81 ¹⁾ (72)	0.06 (2)	6 (152,4)	4	0, 2, 3.94,
	300	1.12 (29)	8.25 (210)	0.87 (22.2)	5 (127)	3 (76)	2.81 ¹⁾ (72)	0.06 (2)	6.69 (168,3)	8	5.94 or 7.87
4 inch	150	0.94 (24.3)	9 (230)	0.75 (19.0)	6.19 (157.2)	3.69 (94)	3.5 (89)	0.06 (2)	7.5 (190,5)	8	(0, 50, 100,
	300	1.25 (32.2)	10 (255)	0.87 (22.2)	6.19 (157.2)	3.69 (94)	3.5 (89)	0.06 (2)	7.88 (200)	8	150 or 200)

d: Internal diameter of gasket to DIN 2690

d_M: Effective diaphragm diameter

 1) 89 mm = 3½ inch with tube length L=0.

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

Selection and Ordering data		Ord	Order No.			
Replacement measuring cell for pressure for		7 M	7 M F 4 9 9 0 -			
SITRANS P DS III	SITRANS P DS III		P	0 - 0 D B 0		
Measuring cell fillir	ng Measuring cell cleaning					
Silicone oil	Normal	1				
Inert liquid	Grease-free to cleanliness level 2	3				
Measured span (mi	n max.)					
0.15 14.5 psi	(0.01 1 bar)	В				
0.6 58 psi	(0.04 4 bar)	С				
2.32 232 psi	(0.16 16 bar)	D				
9.14 914 psi	(0.63 63 bar)	E				
23.2 2320 psi	(1.6 160 bar)	F				
58.0 5802 psi	(4.0 400 bar)	G				
102.0 10153 psi	(7.0 700 bar)	J				
Wetted parts mater	ials					
Seal diaphragm	Process connection					
Stainless steel	Stainless steel	_	Α			
Hastelloy	Stainless steel		в			
Hastelloy	Hastelloy		С			
Process connection	n	_				
Connection shank	G1⁄2B to EN 837-1		0			
• Female thread 1/2-1	4 NPT		1			
Oval flange made	of stainless steel,					
max. span 160 bar						
	⁷ / ₁₆ -20 UNF to IEC 61518		2			
- Mounting thread	M10 to DIN 19213		3			
Further designs		Ord	er (code		
Please add "-Z" to O Order code.	rder No. and specify					
Material traceability	/ certificate	C12				

Selection and Order	ing data	С)rde	r No.		
Replacement measu	ring cell for absolute F IS P DS III (gauge construc-	· ·	7 M F 4 9 9 2 - 0 - 0 D C 0			
Measuring cell filling Silicone oil Inert liquid	J Measuring cell cleaning Normal Grease-free to cleanliness level 2	1 3				
Measured span (min 0.12 3.63 psia 0.62 18.9 psia 2.32 72.5 psia 14.5 435 psia	max.) (8.3 250 mbar a) (43 1300 mbar a) (0.16 5 bar a) (1 30 bar a)		D F G H			
Wetted parts materia Seal diaphragm Stainless steel Hastelloy Hastelloy	IIS Process connection Stainless steel Stainless steel Hastelloy		A B C			
 Process connection Connection shank G Female thread ½-14 Oval flange made o max. span 160 bar (Mounting thread 7/ Mounting thread N 	NPT f stainless steel, (2320 psi) / ₁₆ -20 UNF to IEC 61518			0 1 2 3		
<i>Further designs</i> Please add " -Z " to Ord Order code.	der No. and specify	С)rde	r code		
Material traceability	certificate	С	12			
F) Subject to export reg	gulations AL: 91999, ECCN: N.					

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

Selection and Ordering	ng data		Order No.			
Spare parts / Access	ories					
Replacement measur pressure for SITRANS struction)	7 M F 4 9 9 3 -					
Measuring cell filling	Measuring cell cleaning					
Silicone oil	Normal		1			
Inert liquid	Grease-free to cleanliness level 2		3			
Measured span (min.	max.)					
0.12 3.63 psi a	(8.3 250 mbar a)	E)	D			
0.62 18.9 psi a	(43 1300 mbar a)	E)	F			
2.32 72.5 psi a	(0.16 5 bar a)	E)				
14.5 435 psi a	(1 30 bar a)		H			
76.9 1450 psi a	(5.3 100 bar a)		KE			
Wetted parts material	ls					
Seal diaphragm	Parts of measuring cell					
Stainless steel	Stainless steel	-	A			
Hastelloy	Stainless steel		в			
Hastelloy	Hastelloy		С			
Tantalum	Tantalum		E			
Monel	Monel	E)	н			
Gold	Gold		L			
 Sealing screw oppose Mounting thread M Mounting thread ⁷/. Vent on side of proce Mounting thread M 	16 ⁻ 20 UNF to IEC 61518 ess flange ¹⁾ 10 to DIN 19213 16 ⁻ 20 UNF to IEC 61518 terials		0 2 4 6 2			
Further designs Please add "-Z" to Orde	<u> </u>		Order code			
Order code.	· · · · · · · · · · · · · · · · · · ·					
O-rings for process fil (instead of FPM (Viton) • PTFE (Teflon) • FEP (with silicone co • FFPM (Kalrez, compo • NBR (Buna N))) re, approved for food)		A20 A21 A22 A23			
Material traceability of	ertificate		C12			
Process connection	G1⁄2B		D16			
Remote seal flanges (not together with K01,	. K02 and K04)		D20			
Vent on side for gas i		H02				
•	Process flanges					
without			K00			
 with process flange r 	mada of		NUU			
- Hastelloy	hade of		K01			
- Monel			K02			
- Stainless steel with	PVDF insert		K04			
max. PN 10 (MAWF						
	of medium 90 °C (194 °F)					
	r process connection on the of the process flange, vent					
valve not possible	and process hange, vent					
¹⁾ Not for span "5.3 1	00 bar (76.9 1450 psi)"					

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

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

Spare parts / Accessories 7MF 4 9 9 4 - Peplacement measuring cell for differential pressure and PN 32/160 (MAWP 464/2320 psi) 7MF 4 9 9 4 - Of STTRANS P DS III - 0 D C 0 Measuring cell filling Measuring cell cleaning 1 Silicone oil Normal Inert liquid Grease-free to cleanliness level 2 Measured span (min max.) PN 32 (MAWP 464 psi) O 4 24 inH ₂ O 1 (1 60 mbar) D 2.4 240 inH ₂ O (6 600 mbar) E G 4 240 inH ₂ O (6 600 mbar) E G 2 200 inH ₂ O (50 500 mbar) E G 2 200 inH ₂ O (50 500 mbar) E G 3 305 psi (0.3 30 bar) H Wetted parts materials Glad Stainless steel Stainless steel Hastelloy Hastelloy Tantalum ²) Tantalum Monel Gold Process connection F Female thread ¼-18 NPT with flange connection Sealing screw opposite process connection Sealing screw opposite process connection Nounting thread 7/16-20 UNF to IEC 61518 Non-wetted parts materials Stainless stele					
Replacement measuring cell for differential pressure and PN 32/160 (MAWP 464/2320 psi) 7MF 4 9 9 4 - 0 0 C 0 Measuring cell filling Measuring cell cleaning Silicone oil Normal 1 Inert liquid Grease-free to cleanliness level 2 1 Measuring cell filling Measuring cell cleaning 1 Inert liquid Grease-free to cleanliness level 2 1 Measured span (min max.) PN 32 (MAWP 464 psi) 0.48 (InH ₂ O ¹) 120 mbar) VA		-	Order No.		
Silicone oil Normal 1 Inert liquid Grease-free to cleanliness level 2 3 Measured span (min max.) PN 32 (MAWP 464 psi) 0 0.4 48 inH ₂ O ⁻¹ (1 20 mbar) B PN 160 (MAWP 2320 psi) 0.4 24 inH ₂ O (1 60 mbar) C 0.4 24 inH ₂ O (6 600 mbar) C D 2.4 240 inH ₂ O (6 600 mbar) G G 1.3. 100 inH ₂ O (50 5000 mbar) G G 4.3.5 435 psi (0.3 30 bar) H Wetted parts materials (stainless steel Stainless steel A Hastelloy Hastelloy C C Tantalum ²) Tantalum H G Monel ²) Gold C C Process connection Saling screw opposite process connection H G Nounting thread 7/16-20 UNF to IEC 61518 P C C Nounting thread 7/16-20 UNF to IEC 61518 G G G Nonuting thread 7/16-20 UNF to IEC 61518 G G G Non-wetted parts materials	Replacement measure pressure and PN 32/	Replacement measuring cell for differential pressure and PN 32/160 (MAWP 464/2320 psi)			
Inert liquid Grease-free to cleaniliness level 2 3 Measured span (min max.) PN 32 (MAWP, 464 ps)) 4 8 inH ₂ O ¹ (1 20 mbar) B OA 24 inH ₂ O (1 60 mbar) C C 1 100 inH ₂ O (2.5 250 mbar) C C 24 240 inH ₂ O (6 600 mbar) E F 20 2000 inH ₂ O (50 5000 mbar) C E 23 435 psi (0.3 30 bar) H Wetted parts materials (stainless steel Stainless steel A Stainless steel Stainless steel B Hastelloy Hastelloy C E Tantalum ²) Tantalum B C Monel ² Gold L L Process connection Monel H L Sealing screw opposite process flange 0 2 2 Mounting thread M10 to DIN 19213 6 2 2 Mounting thread 7/ ₁₆ -20 UNF to IEC 61518 C 2 2 Vent on side of process flange screws 2 2 2 Further designs Order code<	Measuring cell filling	Measuring cell cleaning			
cleanliness level 2 Measured span (min max.) PN 32 (MAWP 464 psi) 04 81 mH ₂ O ¹ (1 20 mbar) B PN 160 (MAWP 2320 psi) 04 24 inH ₂ O (1 60 mbar) C 24 240 inH ₂ O (6 600 mbar) C 1 100 inH ₂ O (2.5 250 mbar) C 24 240 inH ₂ O (6 1600 mbar) E 1 100 inH ₂ O (50 5000 mbar) G 4.3.5 435 psi (0.3 30 bar) H Vetted parts materials (stainless steel Stainless steel (stainless steel Stainless steel B Hastelloy Hastelloy E Hastelloy Hastelloy Hastelloy Frances connection H L Process connection H L Fremale thread ¼-18 NPT with flange connection Sainless steel process flanges 0 · Mounting thread 7/16°20 UNF to IEC 61518 0 2 Vent on side of process flange -Mounting thread 7/16°20 UNF to IEC 61518 0 Vent on side of ProCess flanges 2 0 Prize for process					
Measured span (min max.) PN 32 (MAWP 464 psi) 0.4 8 inH ₂ 0 ¹¹ (1 20 mbar) B PN 160 (MAWP 2320 psi) 0.4 24 inH ₂ 0 (2.5 250 mbar) C 1 100 inH ₂ O (2.5 250 mbar) C 2.4 240 inH ₂ O (6 600 mbar) E 1 100 inH ₂ O (50 5000 mbar) E 2.4 240 inH ₂ O (50 5000 mbar) G 4.35 435 psi (0.3 30 bar) H Wetted parts materials (stainless steel process flanges) G Seal diaphragm Parts of measuring cell A Stainless steel Stainless steel Hastelloy Stainless steel Hastelloy Hastelloy Tantalum ²) Tantalum Monel? Monel Gold ² Gold Process connection H Female thread ¼-18 NPT with flange connection Saling screw opposite process connection • Mounting thread M10 to DIN 19213 0 • Mounting thread 7/16-20 UNF to IEC 61518 2 Vent on side of process flanges 2 (instead of FPM (Viton)) A20 • FEP (with silicone core, approved for food) A21	Inert liquid		3		
PN 160 (MAWP 2320 psi) C 0.4 24 inH ₂ O (1 60 mbar) C 1 100 inH ₂ O (2.5 250 mbar) E 2.4 240 inH ₂ O (6 600 mbar) E 1 100 inH ₂ O (50 5000 mbar) E 2.4 240 inH ₂ O (6 1600 mbar) E 2.4 240 inH ₂ O (50 5000 mbar) G 4.35 psi (0.3 30 bar) H Wetted parts materials (stainless steel A (stainless steel process flanges) Seal diaphragm Parts of measuring cell A Stainless steel Stainless steel A B C Tantalum ²) Tantalum E C C Monel ² Gold L L C Process connection Monel H L C C Sealing screw opposite process connection • Mounting thread 7/ ₁₆ -20 UNF to IEC 61518 C C Vent on side of process flanges Order code C C C Stainless steel process flanges Order code C C Procesing flanges	PN 32 (MAWP 464 psi	max.)	в		
0.4 24 inH ₂ O (1 60 mbar) C 1 100 inH ₂ O (2.5 250 mbar) D 2.4 240 inH ₂ O (6 600 mbar) E 1 100 inH ₂ O (5 500 mbar) E 2.4 240 inH ₂ O (6 1600 mbar) F 20 2000 inH ₂ O (5 30 bar) H Wetted parts materials (3 30 bar) H Wetted parts materials (3 30 bar) H Stainless steel process flanges) Seal diaphragm Parts of measuring cell Stainless steel Stainless steel B Hastelloy Hastelloy C C Tantalum ² Tantalum E B Monel ² Gold C C Process connection Ferale thread ¹ / ₁ 8 20 UNF to IEC 61518 C C Vent on side of process flange screws 2 C C Vent on side of process flange screws 2 C C Pricess and ¹ -2" to Order No. and specify Order code. C C Prices and ¹ -2" to Order No. and specify Order code. C C Prices and ¹ -2"	E				
(stainless steel process flanges) A Seal diaphragm Parts of measuring cell Stainless steel Stainless steel Hastelloy Stainless steel Hastelloy Hastelloy Tantalum ²) Tantalum Monel ²) Gold Process connection E Female thread ¼-18 NPT with flange connection 6 Sealing screw opposite process connection 0 - Mounting thread 71 ₁₆ -20 UNF to IEC 61518 0 Vent on side of process flange 0 - Mounting thread 71 ₁₆ -20 UNF to IEC 61518 0 Vent on side of process flanges 0 - Mounting thread 71 ₁₆ -20 UNF to IEC 61518 0 Vent on side of process flanges 0 Further designs Order code Please add *2" to Order No. and specify Order code. 0 PIFE (Teflon) A20 + FFPM (Kalrez, compound 4079) A22 NBR (Buna N) A23 Material traceability certificate C12 Remote seal flanges D20 (not together with K01, K02 and K04) H03 Process flanges H03	0.4 24 inH ₂ O 1 100 inH ₂ O 2.4 240 inH ₂ O 16.4 642 inH ₂ O 20 2000 inH ₂ O	(1 60 mbar) (2.5 250 mbar) (6 600 mbar) (6 1600 mbar) (50 5000 mbar)	D E F G		
Seal diaphragmParts of measuring cellStainless steelStainless steelHastelloyStainless steelHastelloyHastelloyTantalum2)TantalumMonel2)MonelGold2)GoldProcess connectionFemale thread ¼-18 NPT with flange connection• Sealing screw opposite process connection• Mounting thread M10 to DIN 19213• Mounting thread 7/16-20 UNF to IEC 61518• Vent on side of process flange• Mounting thread 7/16-20 UNF to IEC 61518Non-wetted parts materialsStainless steel process flange screwsFurther designsPlease add "-Z" to Order No. and specify Order code.Orings for process flanges(instead of FPM (Viton))• PTFE (Teflon)• EEP (with silicone core, approved for food)• FEPM (Kalrez, compound 4079)• NBR (Buna N)Material traceability certificateRemote seal flanges(not together with K01, K02 and K04)Vent on side for gas measurementsStainless steel process flanges for verticaldifferential pressure lines(not together with K01, K02 and K04)Process flanges• with out• with process flange made of• Hastelloy• With process flange made of• Hastelloy• Nonel• No	Wetted parts materia	ls			
Stainless steelStainless steelA B B C E HastelloyA B B C E E HastelloyHastelloyHastelloyTantalumMonel2)MonelB C C E EGold2)GoldH C EProcess connectionFemale thread ¼-18 NPT with flange connection• Sealing screw opposite process connection • Mounting thread 71/16-20 UNF to IEC 615180• Mounting thread 71/16-20 UNF to IEC 615180• Mounting thread 71/16-20 UNF to IEC 615186Non-wetted parts materials Stainless steel process flange screws2Further designs Please add *-2" to Order No. and specify Order code.0Prize (reflon)A20• EEP (with silicone core, approved for food) • FFPM (Kalrez, compound 4079)A21• FFPM (Kalrez, compound 4079)A23Material traceability certificate Remote seal flanges (not together with K01, K02 and K04)D20Vent on side for gas measurements tifferential pressure lines (not together with K01, K02 and K04)H02Process flanges (not together with K01, K02 and K04)H03Process flanges (not together with K01, K02 and K04)K00• with process flange made of • Hastelloy • With process flange made of • Hastelloy • Monel • Stainless steel with PVDF insert max. PN 10 ((MAWP 145 psi)K01	(stainless steel proces	o ,			
Hastelloy Tantalum20 Tantalum20 Monel20 GoldC E E H Gold20C E E H H Gold20C E E H H H Gold20C E E E H H H H Collad20C E E E H H H H H Collad20C E E E H H H H H H H Collad20C E E E H H H H H H Collad20C E E E E H H H H H H Collad20C E E E H	Stainless steel	Stainless steel			
Tantalum ²)TantalumEMonel ²)GoldHGold ²)GoldLProcess connectionFemale thread ¼-18 NPT with flange connection• Sealing screw opposite process connection0• Mounting thread M10 to DIN 192130• Mounting thread M10 to DIN 192130• Mounting thread M10 to DIN 192134• Mounting thread T/ ₁₆ -20 UNF to IEC 615186Non-wetted parts materials6Stainless steel process flange screws2Further designs Please add "-Z" to Order No. and specify Order code.Prefe (reflon)A20• FEP (with silicone core, approved for food)A21• FFPM (Kalrez, compound 4079)A22• NBR (Buna N)A23Material traceability certificateC12Remote seal flanges (not together with K01, K02 and K04)H03Vent on side for gas measurementsH02Stainless steel process flange sfor vertical differential pressure lines (not together with K01, K02 and K04)H03Process flanges • withoutK00• withoutK01• withoutK02• Monel • MonelK02• Stainless steel with PVDF insert max. PN 10 (MAWP 145 psi)K01	,				
GoldLProcess connectionFemale thread ¼-18 NPT with flange connection• Sealing screw opposite process connection• Mounting thread M10 to DIN 19213• Mounting thread $7/_{16}$ -20 UNF to IEC 61518• Vent on side of process flange• Mounting thread M10 to DIN 19213• Mounting thread $7/_{16}$ -20 UNF to IEC 61518Non-wetted parts materialsStainless steel process flange screwsPlease add "-Z" to Order No. and specify Order code.Order codeOrder codeOrder codeOrder codeOrder for process flanges(instead of FPM (Viton))• PTFE (Teflon)• FEP (with silicone core, approved for food)• FFPM (Kalrez, compound 4079)• NBR (Buna N)Material traceability certificateRemote seal flanges(not together with K01, K02 and K04)Vent on side for gas measurementsStainless steel process flanges for vertical differential pressure lines (not together with K01, K02 and K04)Process flanges• without• without• without• with process flange made of • Hastelloy• Monel• Stainless steel with PVDF insert max. PN 10 (MAWP 145 psi)	Tantalum ²⁾	,			
Process connectionFemale thread ¼-18 NPT with flange connection• Sealing screw opposite process connection• Mounting thread M10 to DIN 19213• Mounting thread T/16-20 UNF to IEC 61518Non-wetted parts materialsStainless steel process flange screwsFurther designsPlease add "-Z" to Order No. and specify Order code.Order codeOrings for process flanges(instead of FPM (Viton))• PTFE (Teflon)• FEP (with silicone core, approved for food)• FEP (with silicone core, approved for food)• FFPM (Kalrez, compound 4079)• NBR (Buna N)A23Material traceability certificateRemote seal flanges(not together with K01, K02 and K04)Vent on side for gas measurementsH02Stainless steel process flanges for vertical differential pressure lines (not together with K01, K02 and K04)Process flanges• without• without• with process flange made of - Hastelloy• Monel• Stainless steel with PVDF insert max. PN 10 (MAWP 145 psi)	Monel ²⁾				
Female thread ¼-18 NPT with flange connection• Sealing screw opposite process connection- Mounting thread M10 to DIN 19213- Mounting thread M10 to DIN 19213• Vent on side of process flange- Mounting thread M10 to DIN 19213- Mounting thread M10 to DIN 19213- Mounting thread T/16-20 UNF to IEC 61518Non-wetted parts materialsStainless steel process flange screwsFurther designsPlease add "-Z" to Order No. and specify Order code.Order codeOrings for process flanges(instead of FPM (Viton))• FFF (Teflon)• FEP (with silicone core, approved for food)• FFPM (Kalrez, compound 4079)• NBR (Buna N)Material traceability certificateRemote seal flanges(not together with K01, K02 and K04)Vent on side for gas measurementsStainless steel process flanges for vertical differential pressure lines (not together with K01, K02 and K04)Process flanges• without• without• with out• without• without• without• With process flange made of - Hastelloy• Monel• Stainless steel with PVDF insert max. PN 10 (MAWP 145 psi)		Gold	L		
Stainless steel process flange screws2Further designs Please add "-Z" to Order No. and specify Order code.Order codeOrings for process flanges (instead of FPM (Viton))A20• PTFE (Teflon)A20• FEP (with silicone core, approved for food)A21• FFPM (Kalrez, compound 4079)A22• NBR (Buna N)A23Material traceability certificateC12Remote seal flanges (not together with K01, K02 and K04)D20Vent on side for gas measurementsH02Stainless steel process flanges for vertical differential pressure lines (not together with K01, K02 and K04)H03Process flanges • withoutK00• with process flange made of - Hastelloy • MonelK01• Stainless steel with PVDF insert max. PN 10 (MAWP 145 psi)K04	Female thread ¼-18 N • Sealing screw oppose - Mounting thread M - Mounting thread ⁷ / • Vent on side of proce - Mounting thread M	2			
Order codePurther designs Please add "-Z" to Order No. and specify Order code.O-rings for process flanges (instead of FPM (Viton))A20• PTFE (Teflon)A20• FEP (with silicone core, approved for food)A21• FEP (with silicone core, approved for food)A21• FEP (with silicone core, approved for food)A22• NBR (Buna N)A23Material traceability certificateC12Remote seal flanges (not together with K01, K02 and K04)D20Vent on side for gas measurementsH02Stainless steel process flanges for vertical differential pressure lines (not together with K01, K02 and K04)H03Process flanges • withoutK00• with process flange made of - Hastelloy • MonelK01 K02• Stainless steel with PVDF insert max. PN 10 (MAWP 145 psi)K01	•				
Please add "-Z" to Order No. and specify Order code. O-rings for process flanges (instead of FPM (Viton)) • PTFE (Teflon) • FEP (with silicone core, approved for food) • FEP (with silicone core, approved for food) • FEP (With silicone core, approved for food) • FFPM (Kalrez, compound 4079) • NBR (Buna N) • A23 Material traceability certificate C12 Remote seal flanges (not together with K01, K02 and K04) Vent on side for gas measurements H02 Stainless steel process flanges for vertical differential pressure lines (not together with K01, K02 and K04) Process flanges • without K00 • without K01 • without K02 • Stainless steel with PVDF insert max. PN 10 (MAWP 145 psi) K04		s flange screws			
(instead of FPM (Viton))A20• PTFE (Teflon)A20• FEP (with silicone core, approved for food)A21• FFPM (Kalrez, compound 4079)A22• NBR (Buna N)A23Material traceability certificateC12Remote seal flangesD20(not together with K01, K02 and K04)H02Vent on side for gas measurementsH02Stainless steel process flanges for vertical differential pressure lines (not together with K01, K02 and K04)H03Process flangesK00• withoutK00• withoutK01• MonelK02- Stainless steel with PVDF insert max. PN 10 (MAWP 145 psi)K04	Please add "-Z" to Ord				
 PTFE (Teflon) FEP (with silicone core, approved for food) FEP (with silicone core, approved for food) A21 FFPM (Kalrez, compound 4079) A22 NBR (Buna N) A23 Material traceability certificate C12 Remote seal flanges D20 (not together with K01, K02 and K04) Vent on side for gas measurements H02 Stainless steel process flanges for vertical differential pressure lines (not together with K01, K02 and K04) Process flanges without without with process flange made of Hastelloy Monel Stainless steel with PVDF insert max. PN 10 (MAWP 145 psi) 		-			
 FFPM (Kalrez, compound 4079) NBR (Buna N) A23 Material traceability certificate C12 Remote seal flanges D20 (not together with K01, K02 and K04) Vent on side for gas measurements H02 Stainless steel process flanges for vertical differential pressure lines (not together with K01, K02 and K04) Process flanges without Wond with process flange made of Hastelloy K01 Monel Stainless steel with PVDF insert max. PN 10 (MAWP 145 psi) 	PTFE (Teflon)		A20		
 NBR (Buna N) A23 Material traceability certificate C12 Remote seal flanges (not together with K01, K02 and K04) Vent on side for gas measurements H02 Stainless steel process flanges for vertical differential pressure lines (not together with K01, K02 and K04) Process flanges without With process flange made of Hastelloy K01 Monel Stainless steel with PVDF insert max. PN 10 (MAWP 145 psi) 					
Material traceability certificateC12Remote seal flanges (not together with K01, K02 and K04)D20Vent on side for gas measurementsH02Stainless steel process flanges for vertical differential pressure lines (not together with K01, K02 and K04)H03Process flangesK00• withoutK00• with process flange made of - Hastelloy - MonelK01 K02• Stainless steel with PVDF insert 		ouna 4079)			
Remote seal flanges (not together with K01, K02 and K04)D20Vent on side for gas measurementsH02Stainless steel process flanges for vertical differential pressure lines (not together with K01, K02 and K04)H03Process flangesK00• withoutK00• with process flange made of - HastelloyK01 K02• MonelK02• Stainless steel with PVDF insert max. PN 10 (MAWP 145 psi)K04	()	certificate			
Vent on side for gas measurements H02 Stainless steel process flanges for vertical differential pressure lines H03 (not together with K01, K02 and K04) H03 Process flanges K00 • without K00 • with process flange made of K01 - Hastelloy K02 - Stainless steel with PVDF insert max. PN 10 (MAWP 145 psi) K04	Remote seal flanges				
Stainless steel process flanges for vertical differential pressure lines (not together with K01, K02 and K04) H03 Process flanges * • without K00 • with process flange made of * - Hastelloy K01 - Monel K02 - Stainless steel with PVDF insert max. PN 10 (MAWP 145 psi) K04		. ,	H02		
 without with process flange made of Hastelloy Monel Stainless steel with PVDF insert max. PN 10 (MAWP 145 psi) 	Stainless steel proce differential pressure (not together with K01	ess flanges for vertical lines			
with process flange made of Hastelloy Monel K02 Stainless steel with PVDF insert max. PN 10 (MAWP 145 psi)	•		KOO		
- Hastelloy K01 - Monel K02 - Stainless steel with PVDF insert K04 max. PN 10 (MAWP 145 psi)		made of	NUU		
- Stainless steel with PVDF insert K04 max. PN 10 (MAWP 145 psi)			K01		
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	max. PN 10 (MAWI max. temperature of 1/2-14 NPT inner pro in the middle of the	P 145 psi) of medium 90 °C (194 °F)For pocess connection on the side	к04		

Not suitable for connection of remote seal
 Only together with max. spans 250, 1600, 5000 and 30000 mbar (100 inH₂O, 642 in H₂O, 2000 in H₂O and 435 psi).

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

Selection and Ordering	g data	Order N	lo.			
Spare parts / Accesso	ries					
Replacement measuring cell for differential pressure and PN 420 (MAWP 6092 psi) for SITRANS P DS III		7 M F 4 9 9 5 -				
Measuring cell filling Silicone oil	Measuring cell cleaning Normal	1				
Measured span (min 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	(2.5 250 mbar) (6 600 mbar) (16 1600 mbar) (50 5000 mbar) (0.3 30 bar)	D E F G H				
Wetted parts materials (stainless steel process						
Seal diaphragm	Parts of measuring cell					
Stainless steel Hastelloy Gold ¹⁾	Stainless steel Stainless steel Gold	A B L				
Process connection Female thread ¹ / ₄ -18 NP connection • Sealing screw opposit - Mounting thread M1: - Mounting thread ⁷ / ₁₆ • Vent on side of proces - Mounting thread M1: - Mounting thread ⁷ / ₁₆	e process connection 2 to DIN 19213 -20 UNF to IEC 61518 is flange 2 to DIN 19213 -20 UNF to IEC 61518	1 3 5 7				
 Non-wetted parts mate Stainless steel process 		2	2			
Further designs Please add "-Z" to Order code.	r No. and specify Order	Order c	ode			
O-rings for process fla (instead of FPM (Viton)) • PTFE (Teflon) • FEP (with silicone core • FFPM (Kalrez, compou • NBR (Buna N) Material traceability ce Stainless steel process	e, approved for food) und 4079) rtificate	A20 A21 A22 A23 C12 H03				
differential pressure lin	nes	К00				
and process indige		1100				

 $^{\rm 1)}\,$ Not together with max. span 600 mbar (240.9 inH_2O) $\,$
Pressure Measurement Transmitters for general requirements SITRANS P DS III Accessories/Spare Parts

Selection and Odering data	Order No.	Selection and Odering data	Order No.
Spare parts / Accessories		Digital indicator	7MF4997-1BF
Mounting bracket and fastening parts		Including mounting material	
For pressure transmitters		for SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION	
SITRANS P DS III with HART, DS III with		Fieldbus	
PROFIBUS PA and DS III with FOUNDATION		Measuring point label	
Fieldbus (7MF403C.)		without inscription (5 units)	7MF4997-1C
For absolute pressure transmitters		Printed (1 unit)	7MF4997-1C
SITRANS P DS III with HART, DS III with		Data according to Y01 or Y02, Y15 and Y16	Y.::
PROFIBUS PA and DS III with FOUNDATION		(see "Pressure transmitters")	
Fieldbus		Mounting screws	
(7MF423C.)	7ME4007 1AD	5	
 made of steel made of stainless steel 	7MF4997-1AB 7MF4997-1AH	For measuring point label, grounding and con- nection terminals or for digital indicator (50	7MF4997-1C
	/WF455/-TAN	units)	
Mounting bracket and fastening parts		· · · · · · · · · · · · · · · · · · ·	
For pressure transmitters SITRANS P DS III with HART, DS III with		Sealing screws (1 set = 2 units) for process flange	
PROFIBUS PA and DS III with FOUNDATION		made of stainless steel	7MF4997-1C
Fieldbus (7MF403A.,B.,D. andF.)		made of Hastelloy	7MF4997-1C
For absolute pressure transmitters			
SITRANS P DS III with HART, DS III with		Sealing screws with vent valve Complete (1 set = 2 units)	
PROFIBUS PA and DS III with FOUNDATION		made of stainless steel	7MF4997-1C
(7MF423A.,B.,D. andF.)		made of Hastelloy	7MF4997-1C
• made of steel	7MF4997-1AC	Electronics	
 made of stainless steel 	7MF4997-1AJ	• for SITRANS P DS III with HART	7MF4997-1D
Mounting and fastening brackets	-	for SITRANS P DS III with PROFIBUS PA	7MF4997-1D
For differential pressure transmitters with		for SITRANS P DS III with FOUNDATION	7MF4997-1D
flange thread M10		Fieldbus	7101 4007 10
SITRANS P DS III with HART, DS III with		Connection board	-
PROFIBUS PA and DS III with FOUNDATION Fieldbus		• for SITRANS P DS III	7MF4997-1D
(7MF433 and 7MF443)		for SITRANS P DS III PROFIBUS PA and	7MF4997-1D
 made of steel 	7MF4997-1AD	FOUNDATION Fieldbus	1111 1001 12
 made of stainless steel 	7MF4997-1AK	O-rings for process flanges made of:	-
Mounting and fastening brackets	-		7MF4997-2D
For differential pressure transmitters with			7MF4997-2D
flange thread M12			7MF4997-2D
SITRANS P DS III with HART, DS III with		• FFPM (Kalrez, compound 4079) F)	7MF4997-2D
PROFIBUS PA and DS III with FOUNDATION Fieldbus		• NBR (Buna N) F)	7MF4997-2D
(7MF453)		Sealing ring for process connection	see "Fitting
made of steel	7MF4997-1AE	Weldable sockets for PMC connection	J
 made of stainless steel 	7MF4997-1AL	PMC Style Standard: Thread 1½"	7MF4997-2H
Mounting and fastening brackets		PMC Style Standard. Thread 1/2 PMC Style Minibolt: front-flush 1"	7MF4997-2H
For differential and absolute pressure transmit-			7101 4557-20
ters with flange thread 7/16 -20 UNF		Gaskets for PMC connection (packing unit = 5 units)	
SITRANS P DS III with HART, DS III with			7MF4997-2H
PROFIBUS PA and DS III with FOUNDATION Fieldbus		Thread 11/2"	7111 4557-211
(7MF433, 7MF443 and 7MF453)		Gasket made of Viton for PMC Style Minibolt: F)	7MF4997-2H
• made of steel	7MF4997-1AF	front-flush 1"	
 made of stainless steel 	7MF4997-1AM	Weldable socket for TG52/50 and TG52/150	
Cover		connection	
		TG52/50 connection	7MF4997-2H
made of die-cast aluminum, including gasket, for SITRANS P DS III with HART, DS III with		TG52/150 connection	7MF4997-2H
PROFIBUS PA and DS III with FOUNDATION		Seals for TG 52/50 and TG 52/150 made of	7MF4997-2H
Fieldbus		silicone	
) 7MF4997-1BB	Seals for flange connection with front-flush	
• with window F) 7MF4997-1BE	diaphragm	
Cover		Material FPM (Viton), 10 units	
made of stainless steel, including gasket,			7MF4997-2H
for SITRANS P DS III with HART, DS III with			7MF4997-2H
		 1", class 150 (M40) F) 	7MF4997-2H
PROFIBUS PA and DS III with FOUNDATION			71454007 011
PROFIBUS PA and DS III with FOUNDATION Fieldbus) 7MF4997-1BC	• 1", class 300 (M45) F)	7MF4997-2H

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

Selection and Odering data	Order No.
Operating Instructions ¹⁾	
 for SITRANS P DS III with HART German English French Spanish Italian for SITRANS P DS III with PROFIBUS PA 	A5E00047090 A5E00047092 A5E00053218 A5E00053219 A5E00053220
 German English French Spanish Italian for SITRANS P DS III with FOUNDATION Fieldbus 	A5E00053275 A5E00053276 A5E00053277 A5E00053278 A5E00053279
- German - English - French (planned) - Spanish (planned) - Italian (planned)	A5E00279629 A5E00279627 A5E00279630 A5E00279632 A5E00279631
Brief instructions (Leporello)	·
for SITRANS P DS III with HART	A5E00047093
 German, English for SITRANS P DS III with PROFIBUS PA 	A5E00053274
- German, English	A020000214
 for SITRANS P DS III with FOUNDATION Fieldbus German, English 	A5E00282355
CD with documentation	-
for SITRANS P, P300 series, SITRANS P DS III with HART, DS III with PROFIBUS PA and DS III with FOUNDATION Fieldbus series	
German, English, French, Spanish, Italian	A5E00090345
Certificates (order only via SAP)	-
instead of Internet download	
 hard copy (to order) 	A5E03252406
 on CD (to order) 	A5E03252407
Operating Instructions for replacement of electronics, measuring cell and connection board (only available from the Internet) ¹⁾	A5E00078060
HART modem	
with RS232 interface with USB interface	'

Power supply units see Chap. 8 "Supplementary Components". You can download these operating instructions free-of-charge from our Internet site at www.siemens.de/sitransp.

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

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)

Pressure Measurement Transmitters for general requirements

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

Overview

SITRANS P transmitters

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

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

- 7MF9011-4FA 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 7MF9011-4FA 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.

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 the Bit	SITRANS P DSIII 7MF4031, 7MF4231	T03
	With process connection female thread ½-14 NPT in-sealed with PTFE sealing tape	
	Delivery incl. high-pressure test certified by test report to EN10204-2.2	
	Further designs:	
	Delivery includes mounting brackets and mounting clips made of stainless steel (instead of the mounting bracket supplied with the transmitter)	A02
	Material traceability certificate	C12
ME9011-4EA		

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



Add -Z to the Order No. of the transmitter and add order codes	Order code
SITRANS P DSIII 7MF4030, 7MF4230 with process connection collar G1/2 A to EN 837-1 with gasket made of PTFE between valve manifold and transmitter	T02
Alternative sealing material: • Soft iron • Stainless steel, Mat. No. 14571 • copper	A70 A71 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
Material traceability certificate	C12

7MF9411-5BA

valve manifold on absolute and differential pressure transmitters

	•	
The mail	Add -Z to the Order No. of the transmitter and add order codes	Order code
C.	SITRANS P DSIII 7MF433, 7MF443 and 7MF453 ¹⁾ mounted with gaskets made of PTFE and screws made of	
	 chromized steel made of stainless steel 	U01 U02
	Delivery incl. high-pressure test certified by test report to EN 10204-2.2	002
	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
	Material traceability certificate	C12

7MF9411-5CA

valve manifold on differential pressure transmitters

A.A.	Add -Z to the Order No. of the transmitter and add order codes	Order code
Co of	SITRANS P DSIII 7MF443 and 7MF4531 ¹⁾ mounted with gaskets made of PTFE and screws made of • chromized steel • Stainless 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 • Stainless steel (instead of the mounting bracket supplied with the transmitter)	A01 A02
	Material traceability certificate	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 manifold mounted on SITRANS P DS III



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 0.018 to 18 psi (1.25 to 1250 mbar)
- 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: 0.5 to 502 inH₂O (1.25 to 1250 mbar)

Pressure transmitters for level

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

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

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

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

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

Design



- Process flange with process connection
- 6 Lock screws (on two sides) for the measuring cell
- Approval plate
- 8 Safety catch

- 13 Nameplate
- Cable inlet, optionally with cable gland or plug-in connection 14

- 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)
- 9 Digital display
- Output current
- Û Auxiliary power

Function diagram of electronics

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

Operation

- The three local pushbuttons enable you both to navigate and carry out configuration and to visually track messages and process values, provided a display is available.
- If you have a device without a display, you can carry out zero adjustment using the three local pushbuttons. It is possible to retrofit a display at any time.
- You can also carry out settings by computer via a HART 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
- 3 O-Rina
- 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 it makes contact with the body of the measuring cell. This protects the sensor model 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



- 4 Silicon pressure sensor
- 5 Overload diaphragm
- 6 Filling liquid of the measuring cell
- 7 Capillary tube with filling liquid of the mounting flange
- 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 it makes contact with the body of the measuring cell. This protects the silicon pressure sensor 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

Physical dimensions available for the SITRANS P500 HART display

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 liquid/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		

Differential pressure and flow

rating pres-

sure (static pressure)

2320 psi

(160 bar)

Span (min. ... max.)

0.5 ... 100 inH₂O

2.5 ... 500 inH₂O

(1.25 ... 250 mbar)

(6.25 ... 1250 mbar)

0.44 psia (30 mbar a)

100 % of max. span

adjustable)

4 ... 20 mA

3.55 ... 23 mA

ting 3.6 mA

ting 22.8 mA

• Without HART communication $R_{\rm B} \leq (U_{\rm H} - 10.5 \text{ V})/0.023 \text{ A in } \Omega$,

-100 % of max. span and/or

Between measuring limits (freely

3.55 mA, factory setting 3.8 mA

23 mA, factory setting 20.5 mA

0... 100 s in steps of 0.1 s, factory-seting: 2 s

adjustable within limits:

U_H : Power supply in V

Rising characteristic curve

Stainless steel seal diaphragm

filling

Start of scale 0 bar

 $R_{\rm B}=230\ldots 1100~\Omega$

 $R_{\rm B} = 230 \dots 500 \,\Omega$

user-specific

≤ 0,03 %

≤ (0,003[.] r) %

 $I_{pp} \leq 0.4$ % of max. output current

SITRANS P500 for differential pressure and flow

Measured variable

Lower range limit

Upper range limit

Output current signal

Lower current limit

(freely adjustable)

Upper current limit

communication)

current transmitter

With HART communication

- HART Communicator

- HART modem

Characteristic curve

Measuring accuracy

Reference conditions (in accordance with IEC 60770-1)

Error in measurement at limit

(r: Span ratio (r = max. span /

setting incl. hysteresis and

reproducibility

Linear characteristic

r: Span ratio

set span))

• r ≤ 10

• r> 10

Failure signal

Load

(freely adjustable)

Ripple (without HART

adjustable damping

Start of scale

filling

Output

• Measuring cell with silicone oil

Input

Technical specifications

Span (infinitely adjustable)

Square-rooted characteristic • Flow > 50% - r ≤ 10 Maximum ope-≤ 0,03 % -r > 10≤ (0,003[.] r) % • Flow 25 % ... 50 % - r ≤ 10 ≤ 0,06 % - r > 10 ≤ (0,006 · r) % Influence of ambient tempera-≤ (0.01 x r + 0.035) %/28 °C (50 °F) ture per 28° C Influence of static pressure • On the zero point (PKN)¹⁾ ≤ 0.007 % per 70 bar ≤ 0.03 % per 70 bar • On the span (PKS) Total accuracy (Total Performance)²⁾ Linear characteristic ≤ 0.09 % • r + 5 • 5 < r ≤ 10 ≤ 0,14 % Square-rooted characteristic • Flow > 50 % - r + 5 < 0.09 % -5 < r < 10< 0.14 % • Flow 25 % ... 50 % - r + 5 ≤ 0,18 % ≤ 0,28 % $-5 < r \le 10$ Step response time T_{63} without ≤ 88 ms Lower: 3.55 ... 3.7 mA (factory setelectrical damping Long-term stability ≤ 0.05 % per 5 years • Upper: 21.0 ... 23 mA (factory set-≤ 0.08 % per 10 years Influence of power supply ≤ 0.005 %/1 V **Rated conditions** Mounting position Any Ambient conditions • Ambient temperature (Note: Observe the temperature class in areas subject to Linearly rising, linearly falling, square explosion hazard.) rooted characteristic rising, bidirectio--40 ... +85 °C (-40 ... +185 °F) - Total device nal square rooted characteristic and - Readable display -20 ... +85 °C (-4 ... +185 °F) -50 ... +90 °C (-58 ... +194 °F) - Storage temperature Climatic class Condensation Relative humidity 0 ... 100 % (condensation permissible) Degree of protection IP66/IP 68 and NEMA 4X (with corres-· Measuring cell with silicone oil filling (to IEC 60529) ponding cable gland) Room temperature (25 °C (77 °F)) Electromagnetic Compatibility Emitted interference and inter- Acc. to EN 61326 and NAMUR NE 21 ference immunity Permissible pressures According to 97/23/EC pressure equipment directive Temperature of medium Measuring cell with silicone oil -40 ... +125 °C (-40 ... +257 °F)

Siemens AG 2012 Pressure Measurement Transmitters for High Perfomance requirements SITRANS P500

		for di	ifferential pressure and flow
			-
Design		 Explosion-proof "d" Marking 	BVS 09 ATEX E 027 Ex II 1/2 G Ex d IIC T4/T6
Weight (without options)	Approx. 3.3 kg (7.3 lb)	0	-40 +85 °C (-40 +185 °F)
Material of parts in contact with the medium		rature	temperature class T4; -40 +60 °C (-40 +140 °F)
Seal diaphragm	Stainless steel, mat. no. 1.4404/316L		temperature class T6
 Process connection and sealing screw 	PN 160: stainless steel, matNo. 1.4404/316L	- Connection	To circuits with values: $U_{\rm m}$ = DC 10.5 45 V
• O-Ring	Standard: Viton (FKM (FPM)) optional: NBR	 Dust explosion protection for zone 20 	PTB 09 ATEX 2004 X
Material of parts not in contact with media			Ex II 1 D Ex iaD 20 T 120 °C -40 +85 °C (-40 +185 °F)
Electronics housing	Low copper die-cast aluminum AC-AlSi12 (Fe) or AC-AlSi 10 Mg (Fe) to DIN EN 1706	rature - Max. surface temperature	120 °C (248 °F)
	Lacquer on polyurethane base, opti- onal epoxy-based primer	- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}, I_i = 100 \text{ mA},$
	Stainless steel name plates (mat. no. 1.4404/316L)	- Effective internal induc-	$P_{i} = 750 \text{ mW}, R_{i} = 300 \Omega$ L _i = 400 µH
Process connection screws	Stainless steel, mat. no. 1.4404/316L	tance: - Effective inner capacitance:	C _i = 6 nF
Mounting bracket	Steel or stainless steel mat. no. 1.4301	Dust explosion protection for zone 21/22	BVS 09 ATEX E 027
Measuring cell filling Process connection	Silicone oil 1⁄4-18 NPT female thread and flange	- Marking	Ex II 2 D Ex tD A21 IP68 T120 °C Ex ia D21
	connection with M10 to DIN 19213 or 7/16-20 UNF mounting thread to IEC 61518	- Connection	To circuits with values: $U_{\rm m} = 10.5 \dots 45 \text{ V DC}; P_{\rm max} = 1.2 \text{ W}$
Electrical connection	Screw terminals	 Type of protection "n" (zone 2) Marking 	PTB 09 ATEX 2004 X Ex II 3 G Ex nA II T4/T6
	 Cable entry via the following scre- wed glands: 	Marting	Ex II 2/3 G Ex ib/nL IIC T4/T6 Ex II 2/3 G Ex ib/ic IIC T4/T6
	- M20 x 1.5 - ½-14 NPT	 "nA" connection "nL, ic" connection 	$U_m = 45 \text{ V DC}$
	- Han 7D/Han 8D connector - M12 plug	 TIL, ic connection Effective internal induc- tance: 	$U_i = 45 V$ $L_i = 400 \ \mu H$
Displays and controls		- Effective inner capacitance:	C _i = 6 nF
Pushbuttons	3 for local programming directly on transmitter	Explosion protection for USA (to FM)	
Display	With or without integrated displayCover with or without window	Certificate of Compliance	No. 3033013
Auxiliary power supply		 Identification (XP/DIP) or (IS) 	XP CL I, DIV 1, GP ABCDEFG T4 / T6 DIP CL II, III, DIV1, GP EFG T4/T6
Terminal voltage on transmitter	• DC 10.6 44 V		IS CL I, II, III, DIV1, GP ABCDEFG T4
J. J	With intrinsically-safe operation DC 10.6 30 V		CL I, Zone 0, AEx ia IIC T4 CL I, Zone 1, AEx ib IIC T4
Certificates and approvals		 Permissible Ambient Tem- perature 	T _a = T4: -40 +85 °C (-40 +185 °F)
Classification according to PED 97/23/EC		perature	$T_a = T6: -40 \dots +60 \text{ °C}$ (-40 \ldots +140 °F)
• PN 160 (MAWP 2320 psi)	For gases of fluid group 1 and liquids of fluid group 1; complies with requi-	- Entity parameters	According to "control drawing": A5E02189134N
	rements of article 3, paragraph 3 (sound engineering practice)		$\begin{array}{l} U_m = 30 \ \text{V}, \ \text{I}_m = 100 \ \text{mA}, \\ P_i = 750 \ \text{mW}, \ \text{L}_i = 400 \mu\text{H} \ \text{,} \ \text{Ci} = 6 \ \text{nF} \end{array}$
Explosion protection		 Marking (NI/NO) 	NI CL I, DIV 2, GP ABCD T4/T6 NI CL I, Zone 2, GP IIC T4/T6
Explosion protection for Europe (to ATEX)			S CL II, III, GPFG T4/T6 NI CL I, DIV 2, GP ABCD T4/T6, NIFW
 Intrinsic safety "i" Marking 	PTB 09 ATEX 2004 X Ex II 1/2 G Ex ia/ib IIC T4		NI CL I, Zone 2, GP IIC T4/T6, NIFW NI CLII, III, DIV 2, GP FG T4/T6, NIFW
 Permissible ambient temperature 	-40 +85 °C (-40 +185 °F)	 Permissible Ambient Tem- perature 	T _a = T4: -40 +85 °C (-40 +185 °F)
- Connection	To certified intrinsically-safe circuits with peak values:	policiaro	$T_a = T6: -40 \dots +60 \ ^{\circ}C$ (-40 \ldots +140 \ ^F)
	$U_{\rm i}$ = 30 V, $I_{\rm i}$ = 100 mA, $P_{\rm i}$ = 750 mW; $R_{\rm i}$ = 300 Ω	- (NI/S) parameters	According to "control drawing": A5E02189134N
 Effective internal induc- tance: 	L _i = 400 μH		$U_{\rm m} = 45$ V, $L_{\rm i} = 400 \ \mu$ H, $C_{\rm i} = 6$ nF,
- Effective inner capacitance:	C _i = 6 nF		

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SITRANS P500 for differential pressure and flow

Explosion protection for Canada (to _CCSA_{LIS})

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 temperature	$\begin{array}{l} T_a = T4: -40 \ \ +85 \ ^\circ C \ (-40 \ \ +185 \ ^\circ F) \\ T_a = T6: -40 \ \ +60 \ ^\circ C \ (-40 \ \ +140 \ ^\circ F) \end{array}$
- 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 temperature	T _a = T4: -40 +85 °C (-40 +185 °F)
- Entity parameters	$\begin{array}{l} U_i = 30 \; \text{V}, \; I_i = 100 \; \text{mA}, \; P_i = 750 \; \text{mW}, \\ R_i = 300 \; \Omega \; , \; L_i = 400 \; \mu\text{H}, \; C_i = 6 \; \text{nF} \end{array}$
• Marking (NI/n)	CL I, DIV 2, GP ABCD T4/T6 CL II, III, DIV 2, GP FG T4/T6 Ex nA IIC T4/T6 AEx nA IIC T4/T6 Ex nL IIC T4/T6 AEx nL IIC T4/T6
- Permissible ambient tempe- rature	$\begin{array}{l} T_a = T4: -40 \ \ +85 \ ^\circ C \ (-40 \ \ +185 \ ^\circ F) \\ T_a = T6: -40 \ \ +60 \ ^\circ C \ (-40 \ \ +140 \ ^\circ F) \end{array}$
- 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
- Perm. ambient temperature	40 +85 °C (-40 +185 °F)
- Connection	To certified intrinsically-safe circuits with maximum values:
	$U_i = 30 \text{ V} \text{ I}_i = 100 \text{ mA}, \text{ P}_i = 750 \text{ mW}$
- Effective internal inductance	$L_{i} = 400 \text{ mH}$
- Effective inner capacitance	C _i = 6 nF
 Explosion-proof "d" 	GYJ111112
- Marking	Ex dia IIC T4/T6
- Permissible ambient tempe- rature	-40 +85 °C (-40 +185 °F) temperature class T4; -40 +60 °C (-40 +140 °F) temperature class T6
- Connection	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
- Marking - Connection	DIP A21 TA,T120 °C IP68 D21 To circuits with values: $U_m = DC 10.5 \dots 45 V$
-	To circuits with values: $U_m = DC \ 10.5 \dots 45 \ V$
- Connection	To circuits with values: $U_m = DC \ 10.5 \dots 45 \ V$
 Connection Type of protection "n" (zone 2) Marking Connection 	To circuits with values: $U_m = DC \ 10.5 \dots 45 \ V$ GYJ111111X Ex nL IIB/IIC T4/T6 Ex nA II T4/T6 $U_i = 45 \ V \ DC$
 Connection Type of protection "n" (zone 2) Marking Connection Effective internal inductance 	To circuits with values: $U_m = DC \ 10.5 \dots 45 \ V$ GYJ111111X Ex nL IIB/IIC T4/T6 Ex nA II T4/T6 $U_i = 45 \ V \ DC$ $L_i = 400 \ mH$
 Connection Type of protection "n" (zone 2) Marking Connection 	To circuits with values: $U_m = DC \ 10.5 \dots 45 \ V$ GYJ111111X Ex nL IIB/IIC T4/T6 Ex nA II T4/T6 $U_i = 45 \ V \ DC$ $L_i = 400 \ mH$

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.
 The total performance includes the errors caused by temperature effects, static pressure effects and conformity error, including hysteresis and

repeatability.

HART communication	
Load with connection of	
 HART communicator 	<i>R</i> _B = 230 1100 Ω
HART modem	$R_{\rm B}=230~~500~\Omega$
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

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

Selection and Ordering	data		0	Order No.		
Pressure transmitters for SITRANS P500 HART, P			D) 7	MF54	-	0
Enclosure		Thread for cable gland				
Die-cast aluminum, dual	compartment	M20x1.5		0		
Die-cast aluminum, dual	compartment	1/2-14 NPT		1		
Output						
4 20 mA, HART Measuring cell filling	Measuring cell clea	ning		3		
Silicone oil	normal				1	
Measuring span						
0.5 100.4 inH ₂ O	(1.25 250 mbar)				D	
2.5 502 inH ₂ O	(6.25 1250 mbar)				E	
Wetted parts materials (stainless steel process f	langes)					
Seal diaphragm	Process connection					
stainless steel	stainless steel				A	
Hastelloy	stainless steel				В	
Monel	stainless steel				С	
Process connection						
Female thread 1/4-18 NPT						
 Sealing screw opposite Mounting thread 7/16 Mounting thread M10 	- 20 UNF according to E	N 61518			0 1	
Voolnting thread M10 to DIN 19213 Vent on side of process flange ¹⁾ Mounting thread 7/16 - 20 UNF according to EN 61518 Mounting thread M10 to DIN 19213				4		

¹⁾ Not in conjunction with remote seals

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

SITRANS P500

for differential pressure and flow

Selection and Ordering data	Order code	
<i>Further designs</i> 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)		
German	B10	
French	B12	
Spanish	B13	
Italian	B14	
Chinese	B15	
Russian	B16	
Japanese	B17	
English with units psi/inH ₂ O/°F	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	

Selection and Ordering data	Order code	
Further designs		
Add "-Z" to Order No. and specify Order Code.		
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 ($_{C}CSA_{LS}$) (T4)	E02	
Ex ia/ib protection (NEPSI) (T4)	E02	
	200	
Degree of protection approvals: Ex d (flameproof)	500	
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)	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)	E60	
Use in Zone 20/21/22 (Ex iaD) (ATEX)	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 ($FM/_CCSA_{US}$)	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	
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⁾	V00	
(For premounted valve manifolds see page 2/175)		
 Enclosed in print or as CD: see page 2/173. 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. When also ordering the acceptance test certificate according to EN 1020 3.1 for transmitters with mounted diaphragm seals. Order this certificate with diaphragm 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) Please select a remote seal separately.
- Also refer to the information under 2).
- 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.

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

Selection and Ordering data	Order coc
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: up to l/min, m ³ /h, m, USgpm, (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	Y22 + Y01 or Y(
Customer-specific settings	
Damping setting (range: 0 100 s) (Standard setting: 2 s)	Y30

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Pressure Measurement Transmitters for High Perfomance requirements

SITRANS P500 for differential pressure and flow

Dimensional drawings



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

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Technical specifications

Level
Span (min max.) Maximum opera- ting pressure
0.5 100 inH ₂ O See "Mounting (1.25 250 mbar) flange"
2.5 500 inH ₂ O (6.25 1250 mbar)
-100 % of max. span or 0.44 psia (30 mbar a) vacuum resistance (available as an option)
100% of max. span
Between measuring limits (freely adjustable)
4 20 mA
3.55 mA, factory setting 3.8 mA
23 mA, factory setting 20.5 mA
$I_{pp} \le 0.4$ of max. output current
0 100 s in steps of 0.1 s, factory set- ting 2 s
3.55 23 mA
adjustable within limits: • Lower: 3.55 3.7 mA (factory setting 3.6 mA)
• Upper: 21.0 23 mA (factory setting 22.8 mA)
$R_{\rm B} \leq (U_{\rm H} - 10.5 \text{ V})/0.023 \text{ A in } \Omega, U_{\rm H}$: Power supply in V
$R_{\rm B} = 230 \dots 1100 \ \Omega$
$R_{\rm B} = 230 \dots 500 \ \Omega$
Linearly rising or linearly falling and user-specific
Rising characteristic curve
Start of scale 0 bar
 Stainless steel seal diaphragm Measuring cell with silicone oil filling
 Room temperature (25 °C (77 °F))
≤ 0.03 %
≤ (0.003 · r) %
≤ 0.05 % per 5 years
≤ 0.08 % per 10 years
≤ 0.08 % per 10 years ≤ (0.01 · r + 0.035) % / 28 °C

Influence of static pressure	
 On the zero point (PKN)²⁾ 	≤ (0.007 · 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 tempe- rature class in areas subject to explosion hazard.) total device 	-40 +85 °C (-40 +185 °F)
 Readable display Storage temperature 	-20 +85 °C (-4 +185 °F) -50 +90 °C (-58 +194 °F)
Climatic class	
Condensation	Relative humidity 0 100 %
Condensation	(condensation permissible)
Degree of protection to IEC 60529	IP66/IP68 and NEMA 4X (with corresponding cable gland)
Electromagnetic Compatibi- lity	
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 minus side	
Measuring cell with silicone oil filling	-40 +125 °C (-40 +257 °F)
Design	
Design Weight	
-	approx. 9.8 11.8 kg (21.6 26.0 (lb)
Weight • To EN (pressure transmitter with mounting flange, wit-	approx. 9.8 11.8 kg (21.6 26.0 (lb) approx. 9.8 16.8 kg (21.6 37.0 lb)
 Weight To EN (pressure transmitter with mounting flange, without tube) To ASME (pressure transmitter with mounting flange, 	
 Weight To EN (pressure transmitter with mounting flange, without tube) To ASME (pressure transmitter with mounting flange, without tube) Material of parts in contact with the medium High-pressure side 	approx. 9.8 16.8 kg (21.6 37.0 lb)
 Weight To EN (pressure transmitter with mounting flange, without tube) To ASME (pressure transmitter with mounting flange, without tube) Material of parts in contact with the medium 	approx. 9.8 16.8 kg (21.6 37.0 lb) Stainless steel , mat. no. 1.4404/316L, Monel 400, W-Nr. 2.4360, Hastelloy B2, mat. no. 2.4617, Hastelloy C276, mat. no. 2.4819, Hastelloy C4, mat. no.
 Weight To EN (pressure transmitter with mounting flange, wit- hout tube) To ASME (pressure trans- mitter with mounting flange, without tube) Material of parts in contact with the medium High-pressure side Seal diaphragm of moun- 	approx. 9.8 16.8 kg (21.6 37.0 lb) Stainless steel , mat. no. 1.4404/316L, Monel 400, W-Nr. 2.4360, Hastelloy B2, mat. no. 2.4617, Hastelloy C276, mat.
 Weight To EN (pressure transmitter with mounting flange, without tube) To ASME (pressure transmitter with mounting flange, without tube) Material of parts in contact with the medium High-pressure side Seal diaphragm of mounting flange Sealing face Sealing material in the pro- 	approx. 9.8 16.8 kg (21.6 37.0 lb) Stainless steel , mat. no. 1.4404/316L, Monel 400, W-Nr. 2.4360, Hastelloy B2, mat. no. 2.4617, Hastelloy C276, mat. no. 2.4819, Hastelloy C4,mat. no. 2.4610, Tantal, PTFE, ECTFE 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
 Weight To EN (pressure transmitter with mounting flange, without tube) To ASME (pressure transmitter with mounting flange, without tube) Material of parts in contact with the medium High-pressure side Seal diaphragm of mounting flange Sealing face 	approx. 9.8 16.8 kg (21.6 37.0 lb) Stainless steel , mat. no. 1.4404/316L, Monel 400, W-Nr. 2.4360, Hastelloy B2, mat. no. 2.4617, Hastelloy C276, mat. no. 2.4819, Hastelloy C4,mat. no. 2.4610, Tantal, PTFE, ECTFE 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
 Weight To EN (pressure transmitter with mounting flange, without tube) To ASME (pressure transmitter with mounting flange, without tube) Material of parts in contact with the medium High-pressure side Seal diaphragm of mounting flange Sealing flange Sealing face Sealing material in the process connections For standard applications For vacuum application of 	approx. 9.8 16.8 kg (21.6 37.0 lb) Stainless steel , mat. no. 1.4404/316L, Monel 400, W-Nr. 2.4360, Hastelloy B2, mat. no. 2.4617, Hastelloy C276, mat. no. 2.4819, Hastelloy C4, mat. no. 2.4610, Tantal, PTFE, ECTFE 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
 Weight To EN (pressure transmitter with mounting flange, without tube) To ASME (pressure transmitter with mounting flange, without tube) Material of parts in contact with the medium High-pressure side Seal diaphragm of mounting flange Sealing face Sealing material in the process connections For standard applications For vacuum application of mounting flange 	approx. 9.8 16.8 kg (21.6 37.0 lb) Stainless steel , mat. no. 1.4404/316L, Monel 400, W-Nr. 2.4360, Hastelloy B2, mat. no. 2.4617, Hastelloy C276, mat. no. 2.4819, Hastelloy C4, mat. no. 2.4610, Tantal, PTFE, ECTFE 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
 Weight To EN (pressure transmitter with mounting flange, without tube) To ASME (pressure transmitter with mounting flange, without tube) Material of parts in contact with the medium High-pressure side Seal diaphragm of mounting flange Sealing face Sealing material in the process connections For standard applications For vacuum application of mounting flange Low-pressure side 	approx. 9.8 16.8 kg (21.6 37.0 lb) Stainless steel , mat. no. 1.4404/316L, Monel 400, W-Nr. 2.4360, Hastelloy B2, mat. no. 2.4617, Hastelloy C276, mat. no. 2.4819, Hastelloy C4,mat. no. 2.4610, Tantal, PTFE, ECTFE 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 PTFE copper Stainless steel, mat. no. 1.4404/316L • Stainless steel, mat. no. 1.4404/316L
 Weight To EN (pressure transmitter with mounting flange, without tube) To ASME (pressure transmitter with mounting flange, without tube) Material of parts in contact with the medium High-pressure side Seal diaphragm of mounting flange Sealing face Sealing material in the process connections For standard applications For vacuum application of mounting flange Low-pressure side Seal diaphragm Process connection and 	approx. 9.8 16.8 kg (21.6 37.0 lb) Stainless steel , mat. no. 1.4404/316L, Monel 400, W-Nr. 2.4360, Hastelloy B2, mat. no. 2.4617, Hastelloy C276, mat. no. 2.4819, Hastelloy C4,mat. no. 2.4610, Tantal, PTFE, ECTFE 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 PTFE copper Stainless steel, mat. no. 1.4404/316L

SITRANS P500 for level

2

Material of parts not in con-		• Explosion-proof "d"	BVS 09 ATEX E 027
tact with media		- Marking	Ex II 1/2 G Ex d IIC T4/T6
Electronics housing	 Low copper die-cast aluminum AC- AlSi12 (Fe) or AC-AlSi 10 Mg (Fe) to DIN EN 1706 Lacquer on polyurethane base, optio- 	- Permissible ambient tem- perature	-40 +85 °C (-40 +185 °F) temperature class T4; -40 +60 °C (-40 +140 °F) temperature class T6
	nal epoxy-based primerStainless steel serial plate	- Connection	To circuits with values: $U_{\rm m}$ = DC 10.5 45 V
Process connection screws Measuring cell filling	Stainless steel Silicone oil	 Dust explosion protection for zone 20 	PTB 09 ATEX 2004 X
Liquid mounting flange	Silicone oil or other material	- Marking	Ex II 1 D Ex iaD 20 T 120 °C
Process connection		- Permissible ambient tem-	-40 +85 °C (-40 +185 °F)
High-pressure side	Flange to EN and ASME	perature	
Low-pressure side	1/4-18 NPT female thread and flange con-	- Max. surface temperature	120 °C (248 °F)
	nection with M10 to DIN 19213 or 7/16- 20 UNF mounting thread to IEC 61518	- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}, I_i = 100 \text{ mA},$
Electrical connection	Screw terminals Cable entry via the following coroured		$P_{\rm i} = 750$ mW, $R_{\rm i} = 300 \ \Omega$
	 Cable entry via the following screwed glands: M20 x 1.5 	 Effective internal induc- tance: 	L _i = 400 μH
	 ½-14 NPT Han 7D/Han 8D connector M12 plug 	 Effective inner capaci- tance: 	C _i = 6 nF
Displays and controls		 Dust explosion protection for zone 21/22 	BVS 09 ATEX E 027
Push buttons	3; for operation directly on the device	- Marking	Ex II 2 D Ex tD A21 IP68 T120 °C Ex ia D21
Display	With or without integrated displayCover with or without window	- Connection	To circuits with values: $U_{\rm H}$ = 10.5 45 V DC; $P_{\rm max}$ = 1.2 W
Auxiliary power supply		 Type of protection "n" (zone 2) 	PTB 09 ATEX 2004 X
Terminal voltage on transmit- ter	• DC 10,6 44 V • With intrinsically-safe operation DC 10.6 30 V	- 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
Certificates and approvals	2010.0001	- "nA" connection	$U_{m} = 45 \text{ V DC}$
Classification according to		- "nL, ic" connection	U _i = 45 V
 PED 97/23/EC PN 160 (MAWP 2320 psi) 	For gases of fluid group 1 and liquids of	 Effective internal induc- tance 	L _i = 400 µH
	fluid group 1; complies with require- ments of article 3, paragraph 3 (sound engineering practice)	 Effective inner capaci- tance 	C _i = 6 nF
Explosion protection	engineening practice)	Explosion protection for USA (to FM)	
Explosion protection for		Certificate of Compliance	No. 3033013
Europe (to ATEX)		 Identification (XP/DIP) or 	XP CL I, DIV 1, GP ABCDEFG T4 / T6
 Intrinsic safety "i" Marking 	PTB 09 ATEX 2004 X Ex II 1/2 G Ex ia/ib IIC T4	(IS)	DIP CL II, III, DIV1, GP EFG T4/T6 IS CL I, II, III, DIV1, GP ABCDEFG T4
U U	-40 +85 °C (-40 +185 °F)		CL I, Zone 0, AEx ia IIC T4 CL I, Zone 1, AEX ib IIC T4
- Connection	To certified intrinsically-safe circuits with peak values:	 Permissible Ambient Tem- perature 	$\begin{array}{l} T_a = T4: -40 \ \ +85 \ ^\circ C \ (-40 \ \ +185 \ ^\circ F) \\ T_a = T6: -40 \ \ +60 \ ^\circ C \ (-40 \ \ +140 \ ^\circ F) \end{array}$
	$U_{\rm i} = 30 \text{ V}, l_{\rm i} = 100 \text{ mA}, P_{\rm i} = 750 \text{ mW};$ $R_{\rm i} = 300 \Omega$	- Entity parameters	According to "control drawing": A5E02189134N $U_{\rm m}$ = 30 V, I _m = 100 mA,
 Effective internal induc- tance: 	L _i = 400 μH	• Marking (NUNC)	$P_i = 750 \text{ mW}, L_i = 400 \mu\text{H}$, $C_i = 6 \text{ nF}$
- Effective inner capaci- tance:	C _i = 6 nF	• Marking (NI/NO)	NI CL I, DIV 2, GP ABCD T4/T6 NI CL I, Zone 2, GP IIC T4/T6 S CL II, III, GPFG T4/T6 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
			T T4 40 05 00 (40 405 05)
		 Permissible Ambient Iem- perature 	$\begin{array}{l} T_a = T4: -40 \ + 85 \ ^\circ C \ (-40 \ + 185 \ ^\circ F) \\ T_a = T6: -40 \ + 60 \ ^\circ C \ (-40 \ + 140 \ ^\circ F) \end{array}$

SITRA	NS	P500
	for	level

Explosion protection for Canada		HART communication	
(to _C CSA _{US})		Load with connection of	
Certificate of Compliance	No. 2280963	 HART Communicator 	<i>R</i> _B = 230 1100 Ω
Marking (XP/DIP)	CL I, DIV 1, GP ABCD T4 /T6; CL II, DIV 1, GP EFG T4/T6	• HART modem Cable	$R_{\rm B} = 230 \dots 500 \Omega$ 2 wire shielded:
- Permissible Ambient Tem- perature	$T_a = T4: -40 \dots +85 \text{ °C} (-40 \dots +185 \text{ °F})$ $T_a = T6: -40 \dots +60 \text{ °C} (-40 \dots +140 \text{ °F})$		≤ 3.0 km (1.86 miles), multiwire shielded: ≤ 1.5 km (0.93 miles)
- Entity parameters	According to "control drawing": A5E02189134N, U _m = 45 V	Protocol	HART Version 6.0
• 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	PC/laptop requirements	IBM compatible, RAM > 32 MByte, hard disk > 70 MByte, depending on modem type: RS 232-interface or USB connection,
 Permissible Ambient Tem- perature 	T _a = T4: -40 +85 °C (-40 +185 °F)	Software for computer	VGA graphics SIMATIC PDM 6.0
- Entity parameters	$\begin{array}{l} {U_i} = 30 \text{ V}, {I_i} = 100 \text{ mA}, {P_i} = 750 \text{ mW}, \\ {R_i} = 300 \ \Omega \ , {L_i} = 400 \ \mu\text{H}, {C_i} = 6 \text{ nF} \end{array}$		
• 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: $U_i = 30 V I_i = 100 mA, P_i = 750 mW$		
- Effective internal induc-	$L_{i} = 400 \text{ mH}$		
- Effective inner capaci-	C _i = 6 nF		
 Explosion-proof "d" 	GYJ11112		
- Marking	Ex dia IIC T4/T6		
 Permissible ambient tem- perature 	-40 +85 °C (-40 +185 °F) tempera-		
perature	ture class T4; -40 +60 °C (-40 +140 °F) tempera- ture class T6		
- Connection	To circuits with values: U _m = DC 10.5 45 V		
 Dust explosion protection for zone 21/22 	GYJ111112		
- Marking	DIP A21 TA,T120 °C IP68 D21		
- Connection	To circuits with values: U _m = DC 10.5 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- Effective inner capaci- 	$L_i = 400 \text{ mH}$ $C_i = 6 \text{ nF}$		
1) 0 1 1 1 1 1			

1) Only relevant for the pressure transmitter. The temperature error of the

remote seal must calculated separately. 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. 2)

SITRANS P500 for level

Selection and Ordering of				Order No.			der code
Pressure transmitters fo	r level, SITRANS P50	00 HART	D)	7 M F 5 6 -	0		
Enclosure		Thread for cable gland					
Die-cast aluminum, dual c		M20x1.5		0			
Die-cast aluminum, dual c	compartment	1/2-14 NPT		1			
Output							
4 20 mA, HART				3			
Measuring cell filling	Measuring cell cl	leaning					
Silicone oil	normal			1			
Measuring span (min 0.5 100.4 inH ₂ O	(1.25 250 mbar			D			
2.5 502 inH ₂ O	(6.25 1250 mba			E			
Wetted parts of the low- (stainless steel process fla	oressure side	,		-			
	0,						
Seal diaphragm stainless steel	Process connection stainless steel				A		
Hastelloy	stainless steel				В		
Monel	stainless steel				c		
Process connection of lo					-		
Female thread 1/4-18 NPT							
 Sealing screw opposite Mounting thread 7/16 Mounting thread M10 thread	- 20 UNF according to	DIEC 61518			0 1		
 Vent on side of process Mounting thread 7/16 Mounting thread M10 thread	- 20 UNF according to	DIEC 61518			4 5		
Wetted parts materials (I							
• •	ligh-pressure side)						
Stainless steel/316L						0	
Hastelloy C276						1	
Monel Tantalum						2	
PFA coated on steel/316L						4	
PTFE on stainless steel/31		on with an extension)				6 A	
Other version						9 Y	N 1 Y
Add order code and plain	text:					•	
Material: ; Extension ler Process connection on I		Extension length					
None						Α	
50 mm (1.97 inch)						в	
100 mm (3.94 inch)						С	
150 mm (5.90 inch)						D	
200 mm (7.87 inch)						E	
Other version: See option	"9" for "Wetted parts r	materials"					
Process connection on I	nigh-pressure side: I	Nominal diameter/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⁾						L	
2", class 300 ⁶⁾						М	
3", class 150						Q	
3", class 300						R	
4", class 150						T	
4", class 300						U	
,						_	.
Other version, add Order Code and plain text	+•					z	Q 1 Y

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Selection and Ordering data	Order No.	Order co
Pressure transmitters for level, SITRANS P500 HART	D) 7MF56	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
Order Code and plain text:		
Filling liquid:		

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

SITRANS P500 for level

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)	E02
Ex ia/ib protection (NEPSI) (T4)	E06

Selection and Ordering data	Order code
Further designs	
Add "-Z" 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) Ex d explosion-proof (NEPSI)(T4/T6)	E22 E26
Degree of protection approvals: n/NI	220
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 ($_{\rm C}$ CSA _{US}) (T4/T6)	E41
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 (CCSALIS)	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
Drain/Vent valve (1 set = 2 units)	
2 ventilation valves 1/4- 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 2/173. When also ordering the quality inspection certificate (factory according to IEC 60770-2 for transmitters with mounted diap Order this certificate only together with the remote seals. The 	hragm seals:

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.

Siemens AG 2012 Pressure Measurement Transmitters for High Perfomance requirements SITRANS P500 for level

Selection and Ordering date	Order code
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)	
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	Y22 +
Specify in plain text:	Y01
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

2

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SITRANS P500 for level

Dimensional drawings



2

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

for level

Connection to EN 1092-1

Nominal diameter	Nominal pressure		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	47 ²⁾	2	125	4	
DN 80	PN 40	24	200	90	18	138	76	72 ¹⁾	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)	2.32(59.0)	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)	2.32(59.0)	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 ¹⁾ (72)	0.079 (2.0)	6 (152.4)	4	(0, 50, 100, 150
	Class 300	1.14 (29.0)	8.27 (210)	0.87 (22.2)	5 (127)	3.0 (76)	2.83 ¹⁾ (72)	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⁾ 89 mm = $3\frac{1}{2}$ inch with tube length L=0.

 $^{2)}$ 59 mm with tube length L=0.

SITRANS P500 - Accessories/Spare pa	arts
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Selection and Ordering	data		Orde	r No.	
Replacement measurin pressure SITRANS P pressure trar pressure and flow, P500 (MAWP 2320 psi)	nsmitters for differential	D)	7 M F	5994- 1	
Measuring cell filling Silicone oil	Measuring cell cleaning normal	g	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)		D E		
Wetted parts materials (stainless steel process	flanges)				
Seal diaphragm	Parts of measuring cell				
stainless steel	stainless steel		A		
Hastelloy	stainless steel		В		
Monel	stainless steel		С		
Female thread ¼-18 NPT • Sealing screw opposite - Mounting thread ⁷ / ₁₆ - Mounting thread M10 • Vent on side of process - Mounting thread ⁷ / ₁₆ - Mounting thread M10	e process connection -20 UNF to IEC 61518 0 to DIN 19213 s flange -20 UNF to IEC 61518			0 1 4 5	
Further designs			Orde	r code	
Add "-Z" to Order No. an	d specify Order Code.				
Acceptance test certific Acc. to EN 10204-3.1	cate		C12		
Without process flanges			K00		
Vent on side for gas mea	asurements ¹⁾		L32		
Process flanges, O-ring Standard: Viton (FKM (g, special material FPM))				
Process connection seal (Teflon), virginal	ling rings made of PTFE		L60		
Process connection seal (Teflon), glass fiber-reinfe			L61		
Process connection seal (Kalrez)	ling rings made of FFPM		L62		
Process flanges, O-rings	s made of NBR		L63		
1)			_		

 $^{1)}\,$ Only in conjunction with process connection code 4 or 5.

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

SITRANS P500 - Accessories/Spare parts

	Order No.		Order No.
Mounting brackets		Operating Instructions ¹⁾	
For differential pressure transmitters with		German	A5E02344527
flange thread M10 (7MF5410 and 7MF5450)			
• made of steel	7MF5987-1AA	English	A5E02344528
made of stainless steel	7MF5987-1AD	French	A5E02344529
Mounting brackets		Italian	A5E02344530
For differential pressure transmitter with		Spanish 1	A5E02344531
flange thread 7/16-20 UNF (7MF5400 and 7MF5440)		Compact operating instructions ¹⁾	
 made of steel made of stainless steel 	7MF5987-1AC 7MF5987-1AF	English, German, Spanish, French, Italian, Dutch	A5E02344532
Cover		— English, Estonian, Latviaan, Lithuanian, Polish, Romanian	A5E02307339
Made of die-cast aluminum, including O-ring without window 	7MF5987-1BE	English, Bulgarian, Czech, Finnish, Slovakian, Slovenian	A5E02307340
with window Digital indicator	7MF5987-1BF 7MF5987-1BR	English, Danish, Greek, Portuguese, Swe- dish, Hungarian	A5E02307341
Including mounting material		Russian	A5E02307338
TAG plate (incl. fastening material)		Brief instructions (Leporello)	
without inscription (5 pcs.) C)	7MF5987-1CA	German, English	A5E02344536
Printed (1 pc.) C)	7MF5987-1CB-Z	French, English	A5E02344537
Data according to Y01 or Y02, Y15 and Y16 (see "SITRANS P transmitters")	Y:	Italian, English	A5E02344538
Mounting screws		Spanish, English	A5E02344539
•	7MF5987-1CC	Chinese, English	A5E02344540
terminals and securing and locking screws	/WF5907-1CC	, Ç	
(30 units)		Russian, English CD with documentation	A5E02556625
Sealing plugs for process flange (1 set = 2 units)			45500044505
made of stainless steel	7MF4997-1CG	German, English, French, Spanish, Italian Service Instructions ¹⁾	A5E02344535
made of Hastelloy	7MF4997-1CH	for replacement of electronics, measuring	
Vent valve		cell and terminal board	
Complete (1 set = 2 units) • made of stainless steel	7MF4997-1CP	• german	A5E02822443
made of Hastelloy	7MF4997-1CQ	• english	A5E02344534
Electronics module		HART modem	
HART, intrinsically safe Ex ia C)	7MF5987-1DC	• with RS232 interface D)	7MF4997-1DA
for installation in transmitter casing (observe		• with USB interface D)	
warranty conditions) Connection board (incl. fastening mate-		Supplementary electronics for 4-wire con- nection	A5E00322799
rial) HART, intrinsically safe Ex ia	7MF5987-1DM	Certificates (order only via SAP) additio- nal to internet download	
for installation in transmitter casing (observe		 hard copy (to order) 	A5E03252406
warranty conditions)		• on CD (to order)	A5E03252407
O-rings for process flanges made of: • Viton (FKM (FPM)) (10 pcs.) F)	7MF5987-2DA	¹⁾ You can download these operating instructions	
• NBR (Buna N) (10 pcs.) F)	7MF5987-2DE	Internet site at www.siemens.com/sitransp.	nee of onalge from ou
Push buttons assembly (incl. fastening material)	7MF5987-2AF	C) Subject to export regulations AL: N, ECCN: EAF D) Subject to export regulations AL: N, ECCN: EAF	
For replacement of operating keys for on- site operation of the transmitter		F) Subject to export regulations AL: 91999, ECCN: For power supply units, see catalog FI01	Ν.
Sealing ring for • Process connection	See catalog Fl01, "Fittings"	pontents".	ouppiententary OC
 NBR sealing ring for screw cover (10 pcs.) NBR sealing ring for interface measuring F) cell/housing (10 pcs.) 	7MF4997-2EA 7MF5987-2EB		

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

Design

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

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 factory certificate 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



A	Add -Z to the Order No. of the transmitter and add order codes	Order Code
I	SITRANS P500 7MF54	
	mounted with gaskets made of PTFE and screws made of	
	 chromized steel 	U01
	 stainless steel 	U02
	Delivery incl. high-pressure test certified by factory certificate to EN10204-2.2	
	Further designs:	
	Delivery includes mounting bracket and mounting clips made of	
	• steel	A01
	 stainless steel 	A02
	(instead of the mounting bracket supplied with the transmitter)	
	Supplied acceptance test certificate to EN10204-3.1 for transmitters and mounted valve manifold	C12

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

1	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

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



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



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

Pressure Measurement Remote seals for transmitters and pressure gauges

Technical description

Application

The remote seals 7MF48.. can be fitted to SITRANS P transmitters for

- *pressure* (7MF4033 and 7MF4034),
- *absolute pressure* (7MF4233, 7MF4234, 7MF4333, 7MF4334) and
- *differential pressure and flow* (7MF4433, 7F4434 and 7MF5403 and 7MF5413).

Design and mode of operation

A remote seal system consists of a transmitter, one or two remote seals, an appropriate transmission liquid, and a connection between the transmitter and remote seal (direct mounting or capillary).

The volume in contact with the measured medium is defined by an flexible diaphragm. The volume between this diaphragm and the pressure transmitter is completely filled with a transmission fluid. If a pressure is now applied to the remote seal, this is transmitted via the flexible diaphragm and the fill fluid to the pressure transmitter.

In many cases, a capillary is located between the remote seal and the pressure transmitter in order e.g. to minimize temperature effects from the hot medium on the latter. However, the capillary line influences the response time and the temperature response of the complete remote seal system. When fitting remote seals to differential pressure transmitters, two capillaries of the same length must always be used.

Fields of use

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

- The temperature of the medium is outside the limits specified for the transmitter.
- The medium is *corrosive* and requires diaphragm materials in the transmitter which are not available.
- The medium is *highly viscous* or *contains solids* which would block the measuring chambers of the transmitter.
- The medium may freeze in the measuring chambers or impulse line.
- The medium is *heterogeneous* and *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 site, e.g. in a batch process.

Constructional designs

A differentiation is made between diaphragm seals and inline seals.

With the diaphragm seals, the pressure is measured via a flat convoluted diaphragm welded to a convoluted backup.

With the inline seals, the pressure is measured via a cylindrical diaphragm positioned in a pipe, and transmitted to the transmitter via the filling liquid.

The inline 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.



Diaphragm seal of pancake design, and also with extended diaphragm (extension)



Diaphragm seal of flush flange design, and also with extended diaphragm (extension)



Tri-Clamp sanitary remote seal

Diaphragm seals

The following types of diaphragm seals exist:

- Pancake design, and pancake design with extended diaphragm (extension) to DIN or ANSI which are secured using a backup blind flange.
- Flush flange design, and flange design with extended diaphragm (extension) to DIN or ANSI which are installed by using holes in the flange.
- Sanitary remote seals, e.g. to DIN 11851, Cherry Burrell, APC connection, Tri-clamp connection, etc.

The sanitary remote seals are common designs in the food industry. Their design means that the measured medium cannot accumulate in dead volumes. The sanitary clamp present on the remote seal means that quick dismounting is possible for cleaning.

- Button diaphragm seal with male thread for screwing into tapped holes.
- · Remote seals with customer-specific process connections.

Pressure Measurement Remote seals for transmitters and pressure gauges

Technical description

Clamp-on seals

The following types of clamp-on seals exist:

- Sanitary inline seals, e.g. to DIN 11851, Cherry Burrell, triclamp connection etc.
 The sanitary facility enables the seal to be removed quickly for
- cleaning purposes.
- Inline seals for positioning between DIN or ANSI flanges.
- Inline seals with customer-specific process connections.

Transmission response

Temperature errors occur if the fill fluid in the remote seal and in the capillaries expands or contracts as a result of temperature effects. The temperature error depends on the diaphragm charateristic, the influence of the fill fluid, and the influence of the fill fluid under the process flanges or in the flanges on the transmitter (volume minimized for remote seals).

Diaphragm characteristic

The charateristic of the remote seal is of great importance. The larger the diaphragm diameter, the softer it is. In comparison to a smaller diaphragm, this means that it can respond far easier to temperature-based expansions of the filling liquid. The result is that low measuring ranges are only possible with large diaphragm diameters. In addition, the diaphragm thickness, its material, and any coatings which may be present must also be considered.

Fill fluid

All fill fluids expand or contract when the temperature varies. Temperature-independent errors can be minimized by selecting a suitable filling liquid, but it must also be ensured that the filling liquid is appropriate for the temperature limits and operating pressure. For food and beverage as well as pharmaceutical applications see reference for FDA approved fill fluids.

Since the fill fluid is present under the remote seal diaphragm, in the capillaries and under the process flanges of the transmitter, the temperature error must be calculated separately for each combination.

Response time

The response time depends on the internal diameter of the capillaries, the viscosity of the filling liquid, the capillary extension length, and the pressure in the measuring system:

Internal diameter:

The response time decreases as the internal diameter increases, but the temperature error increases due to increased oil volume.

Viscosity:

The response time increases as the viscosity increases.

Capillary length:

The capillary length has a proportional effect on the response time and the temperature error.

Measuring system pressure:

The response time decreases as the pressure in the measuring system increases.

Recommendations

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

- The remote seal diameter, and thus the effective diameter of the diaphragm, should be selected as large as possible in order to keep the temperature-dependents errors as low as possible.
- The capillaries should be selected as short as possible in order to keep the response time and the temperature-dependent errors as low as possible.



Button diaphragm seal with diaphragm flush with front



Sanitary tri-clamp seal and for flange pancake mounting

- A filling liquid should be selected which has the lowest viscosity and the lowest coefficient of expansion, and which simultaneously fulfills the process requirements with respect to pressure/vacuum and temperature. The filling liquid must also be compatible with the process medium.
- When installing the equipment for vacuum applications, the transmitter must always be located <u>below</u> the lowest tap.
- It should also be noted that some of the filling liquids are very limited with respect to the permissible temperature of the medium for vacuum applications.
- When operating permanently at a vacuum, the remote seal must be designed in the version resistant to those vacuum applicaton.
- Recommendations on the minimum span can be found in the tables on pages 2/180 and 2/181.

Note

The remote seals listed in this catalog are a selection of the most common designs. As a result of the large variety of process connections, it may nevertheless be the case that certain remote seals which are not listed in the catalog are still available.

Other versions could be:

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

Please contact your Siemens Regional Office for more information.

Pressure Measurement Remote seals for transmitters and pressure gauges

Technical description

Technical data

loonnour auta			
Nominal diameter, nominal pressure, pressure connection	See Ordering data	Sealing material in the transmitter pressure flanges	
Sealing face (only for pancake and flanged remote seals)	To ANSI B16.5 RF 250 RMS for stainless steel or solid materials or	 For absolute pressure transmitters and vacuum applications For other applications 	Copper Viton
	ANSI B16.5 RFSF (smooth finish) for other materials	Max. pressure	See nominal pressure of remote seal and transmitter
Materials		Capillary	
Main body for pancake and flange remote seals	Stainless steel, mat. No. 1.4435/316L	• Length	Max. 30 ft. longer lengths on inquiry
 Wetted parts materials 	See Ordering data	 Internal bore 	0.079 inch
 Housing and diaphragm for Inline seals 	Stainless steel, mat. No. 1.4435/ 316L or stainless steel,	Smallest bending radius	6.0 inch
	7MF4880 and 7MF4883	Fill fluid	
Capillary	Stainless steel, mat. No. 1.4571/316Ti	 For pancake and flange remote seals 	See Ordering data
• Armor	Spiral sheath made of stainless	 For sanitary remote seals 	Neobee M20 or glycerine/water
	steel, mat. No. 304	Ambient temperature	See transmitter and filling liquid
		Certificates and approvals Classification according to pressure equipment directive (DGRL 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)

Measuring errors based on physical properties always result when using remote seals

Temperature errors of diaphragm seals when connected to pressure, absolute pressure or level transmitters, and with single-sided connection to differential pressure transmitters

	Nominal diameter/ design	Effective diaphragm diameter [in]	Temperature error of remote seal [inH ₂ O/25 °F]	Temperature error of capillary [inH ₂ O/25 °F/3 ft]	Temperature error of transmitter flange connection [inH ₂ O/25 °F]	Recommended values, min. spans (observe tempera- ture error) [psi]
Flange to ANSI B16.5	2" flush flanged 2" with extension 3" flush flanged 3" with extension 4" flush flanged 4" with extension 5" flush flanged 5" with extension	2.32 1.89 3.5 2.83 3.5 3.5 4.88 4.88	1.69 2.81 0.23 0.58 0.23 0.23 0.23 0.12 0.12	2.04 5.1 0.21 0.53 0.21 0.21 0.21 0.07 0.07	2.04 5.1 0.21 0.53 0.21 0.21 0.21 0.07 0.07	7.5 7.5 1.5 3.5 1.5 1.5 0.3 0.3
Flange to DIN 2501	DN 50 flush flanged DN 50 with extension DN 80 flush flanged DN 80 with extension DN 100 flush flanged DN 100 with extension DN 125 flush flanged DN 125 with extension	2.32 1.89 3.5 2.83 3.5 3.5 4.88 4.88	1.69 2.81 0.23 0.58 0.23 0.23 0.23 0.12 0.12	2.04 5.1 0.21 0.53 0.21 0.21 0.21 0.07 0.07	2.04 5.1 0.21 0.53 0.21 0.21 0.21 0.07 0.07	7.5 7.5 1.5 3.5 1.5 1.5 0.3 0.3
Sanitary Tri-Clamp	1 1/2" 2" 2 1/2" 3" 4"	1.26 1.57 2.32 2.83 3.5	9.51 3.93 1.69 0.58 0.23	35.73 7.67 2.57 0.53 0.21	35.73 7.67 2.57 0.53 0.21	60 30 7.5 3.5 1.5
Button Seal	1 NPT-male 1 ½ NPT-male 2" NPT-male	0.98 1.57 2.05	13.97 3.93 2.23	81.7 7.67 2.57	81.7 7.67 2.57	90 30 7.5

Temperature errors of diaphragm seals (part 1)

Remarks:

• Values apply to fill fluid: silicone oil DC 200, high-temperature oil, halocarbon oil and Neobee M20.

• Values apply to stainless steel as the diaphragm material.
Technical description

Temperature errors of diaphragm seals with double-sided connection to differential pressure transmitters

	Nominal diameter/ design	Effective diaphragm diameter [in]	Temperature error of remote seal [inH ₂ O/25 °F]	Temperature error of capillary [inH ₂ O/25 °F/3 ft]	Temperature error of transmitter flange connection [inH ₂ O/25 °F]	Recommended values, min. spans (observe tempera- ture error) [psi]
Flange to ANSI B16.5	2" flush flanged 2" with extension 3" flush flanged 3" with extension 4" flush flanged 4" with extension 5" flush flanged 5" with extension	2.32 1.89 3.5 2.83 3.5 3.5 4.88 4.88	0.384 0.692 0.077 0.154 0.077 0.077 0.038 0.038	0.42 1.051 0.042 0.126 0.042 0.042 0.017 0.017	0.42 1.051 0.042 0.126 0.042 0.042 0.042 0.017 0.017	3.5 3.5 1 1.5 1 0.3 0.3
Flange to DIN 2501	DN 50 flush flanged DN 50 with extension DN 80 flush flanged DN 80 with extension DN 100 flush flanged DN 100 with extension DN 125 flush flanged DN 125 with extension	2.32 1.89 3.5 2.83 3.5 3.5 4.88 4.88	0.384 0.692 0.077 0.154 0.077 0.077 0.038 0.038	0.42 1.051 0.042 0.126 0.042 0.042 0.017 0.017	0.42 1.051 0.042 0.126 0.042 0.042 0.042 0.017 0.017	3.5 3.5 1 1.5 1 0.3 0.3
Sanitary Tri-Clamp	2" 2 1/2" 3" 4"	1.57 2.32 2.83 3.5	0.961 0.384 0.154 0.077	1.849 0.42 0.126 0.042	1.849 0.42 0.126 0.042	30 3.5 1.5 1

Temperature errors of diaphragm seals (part 2)

Remarks:

Values apply to fill fluids: silicone oil DC 200, high-temperature oil, halocarbon oil and Neobee M20.

• Values apply to stainless steel as the diaphragm material.

Temperature errors of clamp-on seals when connected to pressure or absolute pressure transmitters, and with single-sided connection to differential pressure transmitters

Nominal diameter/design	Temperature error of remote seal [inH ₂ O/25 °F]		transmitter flange con-	Recommended values, min. spans (observe tem- perature error) [psi]
1 inch	3.345	5.17	5.17	14.5
1 ½ inch	2.499	2.732	2.732	3.5
2 inch	2.23	1.849	1.849	1.5
3 inch	5.305	3.068	3.068	1.5
4 inch	0.461	1.849	1.849	1.5

Temperature errors of clamp-on seals with double-sided connection to differential pressure transmitters

Nominal diameter/design	Temperature error of remote seal [inH ₂ O/25 °F]		Temperature error of transmitter flange con- nection [inH ₂ O/25 °F]	Recommended values, min. spans (observe tem- perature error) [psi]
1 inch	1.269	1.093	1.093	14.5
1 ½ inch	0.461	0.168	0.168	3.5
2 inch	0.154	0.084	0.084	1.5
3 inch	1.692	0.294	0.294	1.5
4 inch	0.577	0.084	0.084	1.5

Temperature errors of clamp-on seals

Remarks:

· Values apply to fill fluids: silicone oil DC 200, high-temperature oil, halocarbon oil and Neobee M20.

- · Values apply to stainless steel as the diaphragm material.
- Diaphragm thickness: 1" & 1 ½" & 2":0.002 inch 3" & 4": 0.004 inch

Technical description

Calculation of temperature error for remote seals

The following equation is used to calculate the temperature error for remote seals:

dp :	= (\mathbf{t}_{RS} - \mathbf{t}_{Cal}) . \mathbf{f}_{RS} + (\mathbf{t}_{Cap} - \mathbf{t}_{Cal}) . \mathbf{I}_{Cap} . \mathbf{f}_{Cap} + (\mathbf{t}_{TR} - \mathbf{t}_{Cal}) . \mathbf{f}_{PF}
dp	Additional temperature error (inH ₂ O)
t _{RS}	Temperature on remote seal diaphragm (generally corresponds to temperature of medium)
t _{Cal}	Reference (calibration) temperature 68 °F
f _{RS}	Temperature error of remote seal (see tables on pages 2/180 and 2/181)
t _{Cap}	Ambient temperature on the capillaries
I _{Cap}	Capillary extension length (error given per 3 ft)
f _{Cap}	Temperature error of capillaries (see tables on pages 2/180 and 2/181)
t _{TR}	Ambient temperature on transmitter
f_{PF}	Temperature error of oil filling in process flanges of transmitter (see tables on pages 2/180 and 2/181)

Example of calculation of temperature error for remote seals

Existing conditions:	
SITRANS P transmitter for differential pressure, 100 inH ₂ O, set to 0 to 40 inH ₂ O with 3 in flush flanged remote seal, diaphragm made of stainless steel, mat. No. 1.4535/316L	f _{RS} = 0.054 inH ₂ O/25 °F
Capillary 2 x 15 ft	I _{Cap} = 2 x 15 ft
Capillaries fitted on both sides	f_{Cap} = 0.042 inH ₂ O/25 °F/3 ft
Filled with silicone oil DC 200-10	$f_{PF} = 0.042 \text{ inH}_2\text{O}/25 ^{\circ}\text{F}$
Temperature of medium 212 °F	t _{RS} = 212 °F
Temperature on capillaries 122 °F	t _{Cap} = 122 °F
Temperature on transmitter 122 °F	t _{TR} = 122 °F

Required:

Additional temperature error of remote seal: dp

Calculation:

 $dp = (212 \ ^\circ\text{F} - 68 \ ^\circ\text{F}) \cdot 0.077 \ inH_2O/25 \ ^\circ\text{F} + (122 \ ^\circ\text{F} - 68 \ ^\circ\text{F}) \cdot 15 \ \text{ft} \\ 2 \cdot 0.042 \ inH_2O/25 \ ^\circ\text{F} / 3 \ \text{ft} + (122 \ ^\circ\text{F} - 68 \ ^\circ\text{F}) \cdot 0.042 \ inH_2O/25 \ ^\circ\text{F} \\ dp = 0.444 \ inH_2O + 0.907 \ inH_2O + 0.091 \ inH_2O$

Result:

dp = 1.442 inH₂O (corresponds to 3.605 % of set span)

Note:

The temperature error determined above only applies to the error resulting from connection of the remote seal.

The transmission response of the respective transmitter is 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.

Dependence of temperature error on diaphragm material

The errors listed in the tables on pages 2/180 and 2/181 refer to the use of stainless steel as the diaphragm material. If a different material is used, the listed values change by the amount shown in the following table.

Diaphragm material	Change in temperature error of remote seal
Stainless steel	Values as specified in tables on pages 2/180 and 2/181
Hastelloy C4, mat. No. 2.4610	Increase in values by 50%
Hastelloy C276, mat. No. 2.4819	Increase in values by 50%
Monel 400, mat. No. 2.4360	Increase in values by 60%
Tantalum	Increase in values by 50%
Titanium	Increase in values by 50%
Teflon lining on stainless steel diaphragm	Increase in values by 120%
Halar coating or PFA coating on stainless steel diaphragm	Increase in values by 100%
Gold coating on stainless steel diaphragm	Increase in values by 40%

Response times (approximate)

The listed values are the response times (in seconds, per meter of capillary extension) for a change in pressure which corresponds to the set span.

The listed values must be multiplied by the respective length of the capillary extension, or with transmitters for differential pressure and flow by the total length of both capillary extensions.

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 145 psi (10 bar). The response time of the transmitter has not been considered.

Technical description

Filling liquid	Density		Temperat	ure on capillary	Response time in s/m (s/ft) with max. span of transmitter					
	kg/dm ³	(lb/in ³)	°C	(°F)	250 mbar	(3.63 psi)	600 mbar	(8.7 psi)	1600 mbar	(23.2 psi)
Silicone oil DC 200-10	0.934	(0.033)	+60 +20 - 20	(140) (68) (-4)	0.06 0.11 0.3	(0.018) (0.034) (0.091)	0.02 0.02 0.12	(0.006) (0.006) (0.037)	0.01 0.02 0.05	(0.003) (0.006) (0.015)
Silicone oil DC 200-50	0.966	(0.035)	+60 +20 - 20	(140) (68) (-4)	0.6 0.61 1.69	(0.183) (0.186) (0.515)	0.25 0.26 0.71	(0.076) (0.079) (0.216)	0.09 0.1 0.27	(0.027) (0.030) (0.082)
Syltherm 800	0.935	(0.034)	+60 +20 - 20	(140) (68) (-4)	0.06 0.11 0.3	(0.018) (0.034) (0.091)	0.02 0.02 0.12	(0.006) (0.006) (0.37)	0.01 0.02 0.05	(0.003) (0.006) (0.015)
High-temperature oil	1.07	(0.039)	+60 +20 -10	(140) (68) (14)	0.14 0.65 3.96	(0.043) (0.198) (1.207)	0.06 0.27 1.65	(0.018) (0.082) (0.503)	0.02 0.1 0.62	(0.006) (0.030) (0.189)
Halocarbon oil	1.968	(0.071)	+60 +20 - 20	(140) (68) (68)	0.07 0.29 2.88	(0.021) (0.088) (0.878)	0.03 0.12 1.2	(0.009) (0.037) (0.366)	0.01 0.05 0.45	(0.003) (0.015) (0.137)
Fluorolube	1.866	(0.068)	+60 +20 - 20	(140) (68) (-4)	0.07 0.29 2.88	(0.021) (0.088) (0.878)	0.03 0.12 1.2	(0.009) (0.037) (0.366)	0.01 0.05 0.45	(0.003) (0.015) (0.137)
Neobee M20	0.917	(0.033)	+60 +20 - 20	(140) (68) (-4)	0.18 0.43 1.19	(0.055) (0.131) (0.363)	0.08 0.18 0.5	(0.024) (0.055) (0.152)	0.03 0.07 0.18	(0.009) (0.021) (0.055)
Glycerine/water	1.22	(0.044)	+60 +20 0	(140) (68) (32)	0.13 0.76 9.72	(0.040) (0.232) (2.963)	0.05 0.32 4.05	(0.015) (0.098) (12.34)	0.02 0.12 1.51	(0.006) (0.037) (0.460)
Medicinal white mineral oil (food grade)	0.92	(0.033)	+60 +20 - 20	(140) (68) (-4)	0.75 4 20	(0.229) (1.22) (6.1)	0.33 1.75 8.5	(0.101) (0.534) (2.593)	0.17 0.67 3.25	(0.052) (0.204) (0.991)

Technical data of filling liquid

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 with the measured medium. For example, only food grade filling liquids may be used in the food industry. A special case are oxygen and chlorine as the measured media; the fill fluid must not react with them, otherwise an explosion or fire may occur if there is a leak in the remote seal.

Filling liquid				Density at 20 °C (68 °F)		Viscosity at 20 °C (68 °F)		Expansio coefficier		
	p _{abs} <1 bar	(p _{abs} <14.5 psi)	p _{abs} >1 bar	(p _{abs} >14.5 psi)	kg/dm ³	(lb/in ³)	m²/s⋅10 ⁶	(ft ² /s⋅10 ⁶)	1/°C	(1/°F)
	°C	(°F)	°C	(°F)						
Silicone oil DC200-10	-40 to +121	(-40 to +248)	-40 to +200	(-40 to +392)	0.934	(0.03)	10	(107.6)	0.00108	(0.00060)
Silicone oil DC 200-50	-20 to +150	(-4 to +302)	-20 to +250	(-4 to +482)	0.96	(0.03)	50	(538)	0.00104	(0.00058)
Syltherm 800	-40 to +121	(-40 to +250)	-40 to +205	(-40 to +400)	0.935	(0.034)	10.03	(107.9)	0.00109	(0.00061)
High-temp. oil	-10 to +200	(+14 to +392)	-10 to +350	(+14 to +662)	1.07	(0.04)	39	(420)	8000.0	(0.00044)
Halocarbon oil	-40 to +80	(-40 to +176)	-40 to +175	(-40 to +347)	1.968	(0.07)	14	(151)	0.00086	(0.00048)
Fluorolube	Not possible	Not possible	-40 to +175	(-40 to +347)	1.866	(0.068)	15.5	(167)	0.000864	(0.00048)
Neobee M20	10 to +90	(+14 to +195)	-10 to +200	(+14 to +392)	0.917	(0.03)	9.8	(105)	0.00082	(0.00045)
Glycerine/water	Not possible	Not possible	-10 to +120	(+14 to +248)	1.22	(0.04)	88	(947)	0.0005	(0.00028)
Med. white mine- ral oil (food grade)	-20 +160	-4 +320	-20 to +200	(-4 to +392)	0.92	(0.03)	10	(107)	0.0008	(0.00044)

Maximum temperature of medium

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

Material	p _{abs} < (14.5 p	1 bar si)	p _{abs} > 1 bar (14.5 psi)		
	°C	(°F)	°C	(°F)	
Stainless steel, mat. No. 1.4571/316Ti	200	(392)	350	(662)	
PTFE coating	100	(212)	150	(302)	
ECTFE/PFA coating	100	(212)	150	(302)	
Hastelloy C4, mat. No. 2.4610	200	(392)	350	(662)	
Hastelloy C276, mat. No. 2.4819	200	(392)	350	(662)	
Monel 400, mat. No. 2.4360	200	(392)	350	(662)	
Tantalum	200	(392)	300	(572)	

Maximum capillary length (guidance values for diaphragm seals and inline seals)

Nominal diameter		Max. length of capillary						
		Diaphragn	n seal	Inline seal				
DN 25	(1 inch)	2.5 m	(8.2 ft)	2.5 m	(8.2 ft)			
DN 32	(1¼ inch)	2.5 m	(4.9 ft)	2.5 m	(8.2 ft)			
DN 40	(1½ inch)	4 m	(13.1 ft)	6 m	(19.7 ft)			
DN 50	(2 inch)	6 m	(19.7 ft)	10 m	(32.8 ft)			
DN 65	(21/2 inch)	8 m	(26.2 ft)	10 m	(32.8 ft)			
DN 80	(3 inch)	10 m	(32.8 ft)	10 m	(32.8 ft)			
Size	4 inch		(30.0 ft)	-				
Size	5 inch		(30.0 ft)	-	-			

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Pancake type diaphragm seal with flexible capillary tube

Overview



Pancake type diaphragm seal

Dimensions (Connection to ASME B16.5)



Pancake type diaphragm seal, dimensions

Size	Class	D	DM	F	A [in ²]
2"		3.94	2.32	0.79	12.2
3"	150 - 2500	5.28	3.50	0.79	21.9
4"	150 - 2500	6.22	3.50	0.79	30.4
5"		7.32	4.80	0.87	42.1

Size = Nominal pipe size DM = Effective diaphragm diameter Class = Flange rating per ASME B16.5 All dimensions in inches unless otherwise noted

		_						
Selection and Ordering data		Orde	er N	lo.	Ord	er c	00	de
Pancake type diaphragm seal								
with flexible capillary extension, connected to a SITRANS P transmitter (order separately)								
	2)	7 M I	E /	8 0	0 -			
· · · · · · · · · · · · · · · · · · ·	· /							
•	<i>'</i>	7 M I						
•	C)	7 M I	F 4	8 0	3 -			
dual seals for DP		1		-	B			
Size and class								
• 2 inch class 150 2500 • 3 inch class 150 2500		E						
• 4 inch class 150 2500		ï						
• 5 inch class 150 2500		N						
Special design, customer inform. to be supplied		z				J	1	Y
Materials and wetted parts								
• SST 316L		-	A					
 SST 316L with carbon pigmented Teflon lined diaphragm (good upto 500 °F) 			E 0					
• Monel 400, mat. No. 2.4360		(3					
 Hastelloy C276, mat. No. 2.4819 			J					
• Tantal			K					
Special design, customer inform. to be supplied			z			K	1	J
Extension length (316SS standard)								
Without extension (standard version)			0				,	
Special design, customer information to be supplied for extension			9			L	1	Y
System fill	-							
Medicinal white mineral oil, FDA approved				0				
Silicone oil DC 200-10				1				
Silicone oil DC 200-50				2				
High temperature oil				3				
 Halocarbon (for O₂-application) Silicone oil M5 				4 5				
• Syltherm 800				6				
DC704 silicone oil				7				
• Fluorolube				8				
Special design, customer inform. to be supplied	_			9		M	1	Y
Length of capillary								
 3 ft 5 ft 					2 3			
• 10 ft					4			
• 15 ft					5			
• 20 ft • 25 ft					6 7			
• 30 ft					8			
Special design, customer inform. to be supplied					9	N	1	Y
Further designs				_				
Please add "-Z" to Order No. and specifiy								
Order code								
for 7MF4800							Ī	
Integrated flame path restriction						Α		
Certificate of calibration N.I.S.T. (20% steps)						С		
Material conformance certificate								2
Vacuum service (must be specified with HT oil)								1
Calculation of span of transmitter (completed						Y	0	5
questionnaire to be attached) for 7MF4801								
Integrated flame path restriction						A		
Certificate of calibration N.I.S.T. (20% steps)								1
Material conformance certificate								2 5
Calculation of span of transmitter (completed questionnaire to be attached)						Y	U	9
for 7MF4803								
							0	2
Integrated flame path restriction Certificate of calibration N.I.S.T. (20% steps)								2
Material conformance certificate								2
Vacuum service (must be specified with HT oil)								2
Calculation of span of transmitter (completed								5
questionnaire to be attached)							Ĵ	Ĩ
C) Subject to expert regulations AL: N_ECCN: EAL		2						

Flange-type diaphragm seal directly connected



Flange-type diaphragm seal, without extension

Dimensions (connection to ASME B16.5)



Flange-type diaphragm seal without extension for flanges \leq 1"



Flange-type diaphragm seal without extension for flanges ≥ 1.5 "

Size	Class	Α	в	С	DM	Е	F	G	Х	Weight
DN										lbs
1/2"	150	3.50	2.38	1.38	1.3	0.85	0.06	0.62	4	2.2
72	300	3.75	2.62	1.38	1.6	0.85	0.06	0.62	4	2.2
3/4"	150	3.88	2.75	1.69	1.6	0.85	0.06	0.62	4	2.4
74	300	4.62	3.25	1.69	1.6	0.85	0.06	0.75	4	3.5
1"	150	4.25	3.12	2.00	2.1	0.85	0.06	0.62	4	3.1
	300	4.88	3.50	2.00	2.1	0.85	0.06	0.75	4	3.7
	150	5.00	3.55	2.88	1.9	0.69	0.06	0.62	4	3.5
	300	6.12	4.50	2.88	1.9	0.81	0.06	0.88	4	5.5
1.5"	600	6.12	4.50	2.88	1.9	1.13	0.25	0.88	4	7.3
	1500	7.00	4.88	2.88	1.9	1.50	0.25	1.12	4	13.0
	2500	8.00	5.75	2.88	1.9	2.00	0.25	1.25	4	22.9
	150	6.00	4.75	3.62	2.4	0.75	0.06	0.75	4	5.9
	300	6.50	5.00	3.62	2.4	0.88	0.06	0.75	8	8.1
2"	600	6.50	5.00	3.62	2.4	1.25	0.25	0.75	8	12.5
	1500	8.50	6.50	3.62	2.4	1.75	0.25	1.00	8	29.0
	2500	9.25	6.75	3.62	2.4	2.25	0.25	1.12	8	43.6
	150	7.50	6.00	5.00	3.5	0.94	0.06	0.75	4	11.7
	300	8.25	6.62	5.00	3.5	1.12	0.06	0.88	8	17.2
3"	600	8.25	6.62	5.00	3.5	1.50	0.25	0.88	8	24.2
5	900	9.50	7.50	5.00	3.5	1.75	0.25	1.00	8	36.7
	1500	10.53	8.00	5.00	3.5	2.13	0.25	1.25	8	53.9
	2500	12.01	9.00	5.00	3.5	2.87	0.25	1.38	8	93.9
	150	9.00	7.50	6.19	3.5	0.94	0.06	0.75	8	16.9
	300	10.04	7.88	6.19	3.5	1.25	0.06	0.88	8	27.9
	400	10.4	7.88	6.19	3.5	1.63	0.25	1.00	8	38.3
4"	600	10.83	8.50	6.19	3.5	1.75	0.25	1.00	8	47.3
	900	11.51	9.25	6.19	3.5	2.00	0.25	1.25	8	60.9
	1500	12.30	9.50	6.19	3.5	2.37	0.25	1.38	8	81.4
	2500	14.00	10.75	6.19	3.5	3.25	0.25	1.62	8	144.5

DN = Nominal pipe size

DM = Effective diaphragm diameter

Class = Flange rating per ASME B16.5

X = Number of bolt holes

All dimensions in inches unless otherwise noted

Flange-type diaphragm seal, without extension, dimensions

Flange-type diaphragm seal with extension

Overview



Flange-type diaphragm seal, with extension

Dimensions



Size	Class	Α	В	С	DM	E ¹⁾	F	G	Н	X		I	L	
DN	1													
2"	150	6.00	4.75	3 62	1.8	1.90	0.75		0.75	4				
	300	6.50	5.00	0.0Z	1.0	1.30	0.88		0.75	8				
3"	150	7.50	6.00	5.00	20	2.99	0.94	0.06	0.75	4	20	20	4.0	60
	300	8.25	6.62	5.00	2.0	2.99	1.12	0.00	0.88	8	2.0	3.0	4.0	0.0
4"	150	9.00	7.50	6 10	25	3.70	0.94		0.75	8				
	300	10.04	7.88	0.19	3.5	3.70	1.25		0.88	8				

1) based on schedule 40

DN = Nominal pipe size DM = Effective diaphragm diameter Class = Flange rating per ASME B16.5 X = Number of bolt holes

All dimensions in inches unless otherwise noted

Flange-type diaphragm seal, with extension, dimensions

Selection and Ord	ering data	Ord	er I	۷o.	Orde	r coo	de
Flange-type diaph	-		-	-			
directly connected SITRANS P 7MF40 (order separately)		7 M			0 -		
Process connection vertical (transmitter horizontal		0					
Size and class							
 2 inch 2 inch 2 inch 2 inch 	class 150 class 300 class 600 class 1500	L M P					
3 inch3 inch3 inch	class 150 class 300 class 600	Q R S					
 4 inch 4 inch 4 inch Special design, cus 	class 150 class 300 class 400 stomer information to be	T U V Z				J 1	Y
supplied							
Materials and wett • SST 316L • SST 316L with car diaphragm (good • Monel 400, mat. N • Hastelloy C276, m • Tantal	bon pigmented Teflon lined upto 500 °F) No. 2.4360		A E 0 G J K				
Special design, cus supplied	stomer information to be		z			K 1	Y
Extension length (Without extension (2" 4" 6" 8" Special design, cus supplied for extens	standard version)		0 1 2 3 4 9			L1	Y
System fill • Medicinal white m • Silicone oil DC 20 • Silicone oil DC 20 • High temperature • Halocarbon (for C • Silicone oil M5 • Syltherm 800 • DC704 silicone oi • Fluorolube	nineral oil, FDA approved 0-10 0-50 oil 0_2 -application)	-		0 1 2 3 4 5 6 7 8 9		М1	Y
Further designs Please add "-Z" to Order code	Order No. and specifiy						
Integrated flame pa	ath restriction					A 0	1
Rotatable Flange						В 0	1
	pration N.I.S.T. (20% steps)					C 1	
Material conforman						C1	
	ust be specified with HT oil) of transmitter (completed attached)					V 0 Y 0	

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

2

Flange-type diaphragm seal with extension

Selection and	Ordering data		Ordor No	Order code	Selection and	d Ordering da	ha	Ordor N	lo. Ord	lor oodo
Mounting flan	-		Sider NO.			0	ide, Flange-Type	Gruer N	.o. oiu	
•	ed at SITRANS I	P for Level C	7 M F 4 8	12-	Seal, w/o ext	ension Flange ension on low	e-type seal via			
Flange	Size	Class				^{>} for differentia		C) 7 M F 4	813-	
ANSI B16.5	2 inch	150 300	L		· · · · · ·	rder separately)	1	1	- B	
	3 inch	150	Q		Flange	Size	Class			
		300 150	R T		ANSI B16.5	2 inch	150 300	L		
	4 inch	300	Ú			3 inch	150	Q		
Special desigr supplied	n, customer infor	rmation to be	Z	J 1 Y		4 inch	300 150 300	R T U		
Materials and • SST 316L	•		A		Special desig supplied	n, customer in	formation to be	z		J 1 Y
	n carbon pigmei good upto 500 °	nted Teflon lined 'F)	E 0		Materials and	d wetted parts	i			
	nat. No. 2.4360 76, mat. No. 2.4	810	GJ		 SST 316L SST 316L with 	th carbon niam	nented Teflon lined	A		
Tantal	70, mai. No. 2.4	015	ĸ		diaphragm ((aood upto 500) °F)			
Special desigr supplied	n, customer infor	rmation to be	z	K 1 Y	 Monel 400, 1 Hastelloy C2 Tantal 	mat. No. 2.436 276, mat. No. 2	0 2.4819	G J K		
	gth (316SS sta					n, customer in	formation to be	Z		K 1 Y
Without extens 2"	ion (standard ve 50 mm	ersion, 0 mm)	0		supplied					
4"	100 mm		2			ngth (316SS s	•			
6" 8"	150 mm 200 mm		3 4		2"	sion (standard 50 mm	version, 0 mm)	0 1		
Special desigr supplied for ex	n, customer infor ktension	rmation to be	9	L 1 Y	4" 6" 8"	100 mm 150 mm 200 mm		2 3 4		
System fill					Special desig	n, customer in	formation to be	4		L 1 Y
 Medicinal wh Silicone oil D 	nite mineral oil, F IC 200-10	-DA approved	0 1		supplied for e	extension		_		
Silicone oil D			2 3		System fill	bita minaral ail			0	
 High temperative Halocarbon ((for O ₂ -applicati	on)	4		 Silicone oil [, FDA approved		1	
 Silicone oil N Syltherm 800 			5		 Silicone oil [High temper 				2 3	
 DC704 silico 			7		 Halocarbon 	(for O2-applic	ation)		4	
Fluorolube Special design	n, customer infor	rmation to bo	8	M 1 Y	 Silicone oil I Syltherm 80 				5 6	
supplied	i, custorner inioi		9		 DC704 silico 				7	
	ns 2" to Order No. a	and specifiy			 Fluorolube Special desig supplied 	n, customer in	formation to be		8 9	M 1 Y
Order code					Capillary len	gth at low-side	e	_		
Rotatable Flan	ne path restrictio	וזכ		A 0 1 B 0 1	• 3 ft	-			2	
Certificates:	ge			501	 5 ft 10 ft 				3 4	
	calibration N.I.S	S.T. (20% steps)		C 1 1	• 15 ft				5	
	rmance certifica			C 1 2	• 20 ft • 25 ft				6 7	
	х 1	cified with HT oil)		V 0 4	• 30 ft		famma tiana ta t		8	
	span of transmit to be attached)	tter (completed		Y 0 5	supplied		formation to be		9	
C) Subject to ex	xport regulations	AL: N, ECCN: EAR	99.		Further design Please add "- Order code		o. and specifiy			

2

Order code

Rotatable Flange

Integrated flame path restriction

Material conformance certificate

questionnaire to be attached)

Certification of calibration N.I.S.T. (20% steps)

Vacuum service (must be specified with HT oil)

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

Calculation of span of transmitter (completed

A 0 2

B01

V 0 4

Y 0 5

Diaphragm seal "flanged off-line low-pressure type", directly connected

Overview



Diaphragm seal "flanges off-line low-pressure type"

Dimensions (Connection to ASME B16.5)



(G2	G3	х	Α	в	С	DM	Е
Size	Class							
1/2"	150#	1/2"-13UNC	4	5.91		0.06		2.36
1/2"	300#	1⁄2"-13UNC	4	5.91		0.06		2.36
1/2"	600#	1⁄2"-13UNC	4	5.91		0.25		2.55
3⁄4"	150#	1⁄2"-13UNC	4	5.91		0.06		2.36
3⁄4"	300#	5/8"-11UNC	4	5.91		0.06		2.36
3⁄4"	600#	5/8"-11UNC	4	5.91		0.25		2.55
1"	150#	1⁄2"-13UNC	4	5.91		0.06		2.36
1"	300#	5/8"-11UNC	4	5.91	5.91	0.06	3.5	2.36
1"	600#	5/8"-11UNC	4	5.91		0.25		2.55
1 1⁄2"	150#	1⁄2"-13UNC	4	5.91		0.06		2.36
1 1⁄2"	300#	3/4"-10UNC	4	6.12		0.06		2.46
1 1⁄2"	600#	3/4"-10UNC	4	6.12		0.25		2.65
2"	150#	5/8"-11UNC	4	6.00		0.06		2.36
2"	300#	5/8"-11UNC	8	6.50		0.06		2.36
2"	600#	⁵ /8"-11UNC	8	6.50		0.25		2.55

DM = Effective diaphragm diameter G1 = Instrument connection

G2 = Process connection G3 = Threaded bolt hole X = Number of bolt holes

Class = Flange rating per ASME B16.5

Size = Nominal pipe size

All dimensions in inches unless otherwise noted

Pressure Measurement Remote seals for transmitters and pressure gauges Diaphragm seal "flanged off-line low-pressure type", directly connected

Selection and Ordering data	Order No	o. Order coc
Diaphragm seal "flanged off-line low-pres- sure type"		
direct mount to transmitter, 316 stainless steel C) upper housing SITRANS P for 7MF44	7 M F 4 8 3	
7MF46 II (order separately)	•	
Size and class		
 ½ inch class 150#RF ½ inch class 300#RF 	AB	
• ½ inch class 600#RF	č	
• ³ / ₄ inch class 150#RF	E	
 ¾ inch class 300#RF ¾ inch class 600#RF 	FG	
 ¾ inch class 600#RF 1 inch class 150#RF 	J	
• 1 inch class 300#RF	ĸ	
• 1 inch class 600#RF	L	
 1 ½ inch class 150#RF 1 ½ inch class 300#RF 	N P	
• 1 ½ inch class 600#RF	Q	
• 2 inch class 150#RF	S	
2 inch class 300#RF2 inch class 600#RF	TU	
Special design, customer information to be	z	J 1
supplied	-	0.
Materials and wetted parts		
• SST 316L	Α	
SST 316L with carbon pigmented Teflon lined	E	
diaphragm (good upto 500 °F) • Monel 400, mat. No. 2.4360	G	
• Hastelloy C276, mat. No. 2.4819	J	
Tantal	к	
Special design, customer information to be	z	K 1
supplied Flushing port(s)		
None	0	
1 x ¼"NPT-female (available w/ SS, HC or MO)	2	
2 x ¹ / ₄ "NPT-female (available w/ SS, HC or MO)	4 9	L1
Special design, customer information to be supplied	9	
System fill		
 Medicinal white mineral oil, FDA approved Silicone oil DC 200-10 	0	
Silicone oil DC 200-50	2	
High temperature oil	3	
 Halocarbon (for O₂-application) Silicone oil M5 	4 5	
Syltherm 800	6	
DC704 silicone oil Fluorolube	7	
 Fluorolube Special design, customer information to be 	8	
supplied	9	IVI I
Further designs		
Please add "-Z" to Order No. and specifiy Order code		
		A 0
Integrated flame path restriction Certification of calibration N.I.S.T. (20 % steps)		A 0
Material conformance certificate		C1
Vacuum service (must be specified with HT oil)		C 1
		V 0
Calculation of span of transmitter (completed		Y 0

Flange-type diaphragm seal with flexible capillary tube

Overview



Flange-type diaphragm seal with flexible capillary extension

Dimensions (Connection to ASME B16.5)



Flange-type diaphragm seal for flanges \leq 1"



Flange-type diaphragm seal for flanges ≥ 1.5 "

Size	Class	Α	в	С	DM	Е	F	G	Х	Weight
DN										lbs
17.0	150	3.50	2.38	1.38	1.3	0.85	0.06	0.62	4	2.2
1⁄2"	300	3.75	2.62	1.38	1.6	0.85	0.06	0.62	4	2.2
378	150	3.88	2.75	1.69	1.6	0.85	0.06	0.62	4	2.4
9/4	300	4.62	3.25	1.69	1.6	0.85	0.06	0.75	4	3.5
1 "	150	4.25	3.12	2.00	2.1	0.85	0.06	0.62	4	3.1
I	300	4.88	3.50	2.00	2.1	0.85	0.06	0.75	4	3.7
	150	5.00	3.55	2.88	1.9	0.69	0.06	0.62	4	3.5
	300	6.12	4.50	2.88	1.9	0.81	0.06	0.88	4	5.5
1.5"	600	6.12	4.50	2.88	1.9	1.13	0.25	0.88	4	7.3
	1500	7.00	4.88	2.88	1.9	1.50	0.25	1.12	4	13.0
	2500	8.00	5.75	2.88	1.9	2.00	0.25	1.25	4	22.9
	150	6.00	4.75	3.62	2.4	0.75	0.06	0.75	4	5.9
	300	6.50	5.00	3.62	2.4	0.88	0.06	0.75	8	8.1
2"	600	6.50	5.00	3.62	2.4	1.25	0.25	0.75	8	12.5
	1500	8.50	6.50	3.62	2.4	1.75	0.25	1.00	8	29.0
	2500	9.25	6.75	3.62	2.4	2.25	0.25	1.12	8	43.6
	150	7.50	6.00	5.00	3.5	0.94	0.06	0.75	4	11.7
	300	8.25	6.62	5.00	3.5	1.12	0.06	0.88	8	17.2
0	600	8.25	6.62	5.00	3.5	1.50	0.25	0.88	8	24.2
3	900	9.50	7.50	5.00	3.5	1.75	0.25	1.00	8	36.7
	1500	10.53	8.00	5.00	3.5	2.13	0.25	1.25	8	53.9
	2500	12.01	9.00	5.00	3.5	2.87	0.25	1.38	8	93.9
	150	9.00	7.50	6.19	3.5	0.94	0.06	0.75	8	16.9
	300	10.04	7.88	6.19	3.5	1.25	0.06	0.88	8	27.9
	400	10.4	7.88	6.19	3.5	1.63	0.25	1.00	8	38.3
4"	600	10.83	8.50	6.19	3.5	1.75	0.25	1.00	8	47.3
	900	11.51	9.25	6.19	3.5	2.00	0.25	1.25	8	60.9
	1500	12.30	9.50	6.19	3.5	2.37	0.25	1.38	8	81.4
2"	2500	14.00	10.75	6.19	3.5	3.25	0.25	1.62	8	144.5

DN = Nominal pipe size DM = Effective diaphragm diameter Class = Flange rating per ASME B16.5 X = Number of bolt holes

All dimensions in inches unless otherwise noted

Pressure Measurement Remote seals for transmitters and pressure gauges Flange-type diaphragm seal with flexible capillary tube

Selection and Ordering data	Order N	lo. Ord	er code
Flange-type diaphragm seal			
with flexible capillary extension, connected to a SITRANS P transmitter (order separately)			
for pressure 7MF40 or 7MF42) 7 M F 4	820-	
for absolute pressure 7MF43	C) 7MF4	821-	
for differential pressure 7MF44) 7MF4	823-	
dual seals for DP	1	- B	
Size and class			
• 2 inch class 150	L		
• 2 inch class 300	М		
• 2 inch class 600	N		
2 inch class 1500 3 inch class 150	PQ		
• 3 inch class 300	R		
• 3 inch class 600	s		
• 4 inch class 150	т		
• 4 inch class 300	U		
• 4 inch class 400	VW		
 5 inch 5 inch class 150 class 300 	X		
• 5 inch class 400	Ŷ		
Special design, customer information to be	z		J 1 Y
supplied			
Materials and wetted parts			
• SST 316L	Α		
 SST 316L with carbon pigmented Teflon lined 	E 0		
diaphragm (good upto 500 °F)	~		
 Monel 400, mat. No. 2.4360 Hastelloy C276, mat. No. 2.4819 	GJ		
Tantal	ĸ		
Special design, customer information to be	Z		K 1 Y
supplied			
Extension length (316SS standard)			
Without extension (standard version)	0		
Special design, customer information to be	9		L 1 Y
supplied for extension	_		
System fill			
 Medicinal white mineral oil, FDA approved 		0	
Silicone oil DC 200-10 Silicone oil DC 200-50		1 2	
Silicone oil DC 200-50High temperature oil		3	
Halocarbon (for O ₂ -application)		4	
Silicone oil M5		5	
Syltherm 800		6	
 DC704 silicone oil Fluorolube 		7 8	
			MIV
Special design, customer information to be supplied		9	M1Y
Length of capillary	-		
• 3 ft		2	
• 5 ft		3	
• 10 ft		4	
• 15 ft		5	
• 20 ft		6	
• 25 ft • 30 ft		7 8	
Special design, customer information to be		9	N 1 Y
supplied			

Selection and Ordering data	Order code
<i>Further designs</i> Please add "-Z" to Order No. and specifiy Order code	
for 7MF4820 Integrated flame path restriction Rotatable Flange DP "H" flange service Certificate of calibration N.I.S.T. (20 % steps) Material conformance certificate Vacuum service (must be specified with HT oil) Calculation of span of transmitter (completed questionnaire to be attached)	A 0 1 B 0 1 B 0 2 C 1 1 C 1 2 V 0 1 Y 0 5
for 7MF4821 Integrated flame path restriction Rotatable Flange Certificate of calibration N.I.S.T. (20 % steps) Material conformance certificate Calculation of span of transmitter (completed questionnaire to be attached)	A 0 1 B 0 1 C 1 1 C 1 2 Y 0 5
for 7MF4823 Integrated flame path restriction Rotatable Flange Certificate of calibration N.I.S.T. (20 % steps) Material conformance certificate Vacuum service (must be specified with HT oil) Calculation of span of transmitter (completed questionnaire to be attached)	A 0 2 B 0 1 C 1 1 C 1 2 V 0 3 Y 0 5

Diaphragm seal "flanged off-line type"

Overview



Diaphragm seal "flanged off-line type"

Dimensions (Connection to ASME B16.5)



G1	C	G2	G3	Α	в	С	DM	Е
	1⁄2"	150#	4 x 1/2"-13UNC	3.75	2.38			
	1⁄2"	300#	4 x 1/2"-13UNC	3.75	2.62	1.38		
	1⁄2"	600#	4 x 1/2"-13UNC	3.75	2.62			
	1"	150#	4 x 1⁄2"-13UNC	4.25	3.12			
	1"	300#	4 x ⁵ / ₈ "-11UNC	4.88	3.50	2.00		
1/4"-NPT	1"	600#	4 x ⁵ / ₈ "-11UNC	4.88	3.50		2.1	3.74
or ½"-NPT	1 1⁄2"	150#	4 x 1⁄2"-13UNC	5.00	3.88		2.1	3.74
	1 1⁄2"	300#	4 x ¾"-10UNC	6.12	4.50	2.88		
	1 1⁄2"	600#	4 x ¾"-10UNC	6.12	4.50			
	2"	150#	4 x ⁵ / ₈ "-11UNC	6.00	4.75			
	2"	300#	8 x 0.75	6.50	5.00	3.62		
	2"	600#	8 x 0.75	6.50	5.00			

G1	(G2	G3	F	Н	J	Weight
							lbs
	1⁄2"	150#	4 x 1/2"-13UNC	1.10	0.06	2.20	4.3
	1⁄2"	300#	4 x 1⁄2"-13UNC	1.10	0.06	2.20	4.3
	1⁄2"	600#	4 x 1⁄2"-13UNC	1.26	0.25	2.36	4.4
	1"	150#	4 x 1/2"-13UNC	0.87	0.06	1.97	4.4
	1"	300#	4 x ⁵ / ₈ "-11UNC	0.87	0.06	1.97	8.5
1⁄4"-NPT or	1"	600#	4 x ⁵ / ₈ "-11UNC	1.26	0.25	2.36	8.5
1⁄2"-NPT	1 1⁄2"	150#	4 x 1/2"-13UNC	0.87	0.06	1.97	5.0
	1 1⁄2"	300#	4 x ¾"-10UNC	0.87	0.06	1.97	6.6
	1 1⁄2"	600#	4 x ¾"-10UNC	1.26	0.25	2.36	9.1
	2"	150#	4 x ⁵ / ₈ "-11UNC	0.87	0.06	1.97	6.1
	2"	300#	8 x 0.75	0.89	0.06	1.99	8.5
	2"	600#	8 x 0.75	1.28	0.25	2.38	10.0

DM = Effective diaphragm diameter

G1 = Instrument connectionG2 = Process connection

G3 = Threaded bolt hole

All dimensions in inches unless otherwise noted

Diaphragm seal "flanged off-line type", dimensions

Diaphragm seal "flanged off-line type"

Selection and Ordering data	Order No.	Orde	er co	de	Selection and Ordering data	Order No.	Orde
Diaphragm seal "flanged off-line type" MAWP depends on flange					<i>Further designs</i> Please add "-Z " to Order No. and specifiy Order code		
with flexible armored capillary, 316 stainless C) steel upper housing SITRANS P for 7MF40	7 M F 4 8 2				Integrated flame path restriction DP "H" flange service		
Seal design					Certification of calibration N.I.S.T. (20 % steps)		
Stud mount	1				Material conformance certificate		
All-welded stud mount Through-hole flange mount	2 3				Vacuum service (must be specified with HT oil)		
Size and class					Calculation of span of transmitter (completed		
• ½ inch class 150#RF	A				questionnaire to be attached)		
 ½ inch class 300#RF ½ inch class 600#RF 	B C				C) Subject to export regulations AL: N, ECCN: EAR	99.	
• ¾ inch class 150#RF	E						
• ¾ inch class 300#RF	F						
 ¾ inch class 600#RF 1 inch class 150#RF 	G J						
1 inch class 300#RF	K						
 1 inch class 600#RF 1 ½ inch class 150#RF 	L N						
• 1 ½ inch class 300#RF	Р						
• 1 ½ inch class 600#RF	Q						
 2 inch class 150#RF 2 inch class 300#RF 	S T						
• 2 inch class 600#RF	U						
Special design, customer information to be	Z		J .	1 Y			
supplied							
Materials and wetted parts							
 SST 316L SST 316L with carbon pigmented Teflon lined 	AE						
diaphragm (good upto 500 °F)							
 Monel 400, mat. No. 2.4360 Hastelloy C276, mat. No. 2.4819 	G J						
• Tantal	ĸ						
Special design, customer information to be supplied	z		K	1 Y			
Flushing port(s)							
None	0						
1 x ¹ /4"NPT-female (available w/ SS, HC or MO)	2 4						
2 x ¼"NPT-female (available w/ SS, HC or MO) Special design, customer information to be	9		1.	1 Y			
supplied	J		-	•••			
System fill							
Medicinal white mineral oil, FDA approved Oillassa sil DO 200 40	0						
 Silicone oil DC 200-10 Silicone oil DC 200-50 	1 2						
 High temperature oil (comes with metal gas- 	3						
 ket and stronger bolts) Halocarbon (for O₂-application) 	4						
• Silicone oil M5	5						
• Syltherm 800 • DC704 silicone oil	6 7						
Fluorolube	8						
Special design, customer information to be	9		M	1 Y			
supplied							
Length of capillary							
Direct mount3 ft		0 2					
• 3 ft		3					
• 10 ft		4					
• 15 ft • 20 ft		5 6					
• 25 ft		7					
		8					
 30 ft Special design, customer information to be 		9		1 Y			

2

Diaphragm seal "flanged off-line low-pressure type"

Overview



Diaphragm seal "flanged off-line low-pressure type"

Dimensions (Connection to ASME B16.5)



(G2	G3	х	Α	в	С	DM	Е
Size	Class							
1/2"	150#	1⁄2"-13UNC	4	5.91		0.06		2.36
1/2"	300#	1⁄2"-13UNC	4	5.91		0.06		2.36
1⁄2"	600#	1⁄2"-13UNC	4	5.91		0.25		2.55
3⁄4"	150#	1⁄2"-13UNC	4	5.91		0.06		2.36
3⁄4"	300#	5/8"-11UNC	4	5.91		0.06		2.36
3⁄4"	600#	5/8"-11UNC	4	5.91		0.25		2.55
1"	150#	1/2"-13UNC	4	5.91		0.06		2.36
1"	300#	5/8"-11UNC	4	5.91	5.91	0.06	3.5	2.36
1"	600#	5/8"-11UNC	4	5.91		0.25		2.55
1 1⁄2"	150#	1/2"-13UNC	4	5.91		0.06		2.36
1 1⁄2"	300#	34"-10UNC	4	6.12		0.06		2.46
1 1⁄2"	600#	34"-10UNC	4	6.12		0.25		2.65
2"	150#	⁵ /8"-11UNC	4	6.00		0.06		2.36
2"	300#	5/8"-11UNC	8	6.50		0.06		2.36
2"	600#	⁵ /8"-11UNC	8	6.50		0.25		2.55

DM = Effective diaphragm diameter

G2 = Process connection

G3 = Threaded bolt hole

X = Number of bolt holes Class = Flange rating per ASME B16.5

Size = Nominal pipe size

All dimensions in inches unless otherwise noted

Diaphragm seal "flanged off-line low-pressure type", dimensions

Diaphragm seal "flanged off-line low-pressure type"

Selection and Ordering data	Order No.	Order o	ode
Diaphragm seal "flanged off-line	older No.	Order d	Joue
low-pressure type"			
	7 M F 4 8 2	7 -	
steel upper housing SITRANS P for 7MF40	1 -	В	
Size and class			
• ½ inch class 150#RF	A		
• 1/2 inch class 300#RF	В		
 ½ inch class 600#RF ¾ inch class 150#RF 	C E		
• ¾ inch class 300#RF	F		
• ³ / ₄ inch class 600#RF	G		
 1 inch class 150#RF 1 inch class 300#RF 	J K		
1 inch class 600#RF	L		
 1 ½ inch class 150#RF 1 ½ inch class 300#RF 	N P		
• 1 ½ inch class 600#RF	Q		
• 2 inch class 150#RF	S		
 2 inch class 300#RF 2 inch class 600#RF 	TU		
Special design, customer information to be	z		J 1 Y
supplied	-		
Materials and wetted parts			
• SST 316L	A		
• SST 316L with carbon pigmented Teflon lined	E		
diaphragm (good upto 500 °F) • Monel 400, mat. No. 2.4360	G		
• Hastelloy C276, mat. No. 2.4819	J		
• Tantal	К		
Special design, customer information to be supplied	z	ł	(1 Y
Flushing port(s)			
None	0		
1 x ¼"NPT-female (available w/ SS, HC or MO) 2 x ¼"NPT-female (available w/ SS, HC or MO)	2 4		
Special design, customer information to be	9	L	. 1 Y
supplied	•		
System fill			
 Medicinal white mineral oil, FDA approved 	0		
 Silicone oil DC 200-10 Silicone oil DC 200-50 	1		
High temperature oil	3		
Halocarbon (for O ₂ -application)	4		
• Silicone oil M5 • Syltherm 800	5 6		
DC704 silicone oil	7		
• Fluorolube	8		
Special design, customer information to be supplied	9	N	// 1 Y
Length of capillary			
Direct mount		0	
● 3 ft ● 5 ft		2	
• 5 ft • 10 ft		3 4	
• 15 ft		5	
• 20 ft		6	
• 25 ft • 30 ft		7 8	
Special design, customer information to be			N 1 Y
supplied			
Further designs			
Please add "-Z" to Order No. and specifiy Order code			
Integrated flame path restriction			A 0 1
DP "H" flange service		_	302
Certification of calibration N.I.S.T. (20 % steps)			211
Material conformance certificate			012
Vacuum service (must be specified with HT oil)			/01
Calculation of span of transmitter (completed questionnaire to be attached)		١	(05
questionnale to be attached)			
C) Cubicatte concert regulations AL, NL ECON, EAD	0		

Selection and Ordering data	Order No	. Orc	der code
Diaphragm seal "flanged off-line low-pressure type"			
	7 M F 4 8	28-	
steel upper housing SITRANS P for 7MF44	1		
(order separately)			
Size and class			
 ½ inch class 150#RF ½ inch class 300#RF 	A B		
• ½ inch class 600#RF	č		
• ³ / ₄ inch class 150#RF	Ē		
• ¾ inch class 300#RF	F		
 ¾ inch class 600#RF 1 inch class 150#RF 	G J		
• 1 inch class 300#RF	ĸ		
1 inch class 600#RF	L		
 1½ inch class 150#RF 1½ inch class 300#RF 	N P		
• 1 ½ inch class 600#RF	Q		
2 inch class 150#RF	S		
 2 inch class 300#RF 2 inch class 600#RF 	TU		
Special design, customer information to be	Z		J 1 Y
supplied	-		
Materials and wetted parts			
• SST 316L	A		
SST 316L with carbon pigmented Teflon lined	E		
diaphragm (good upto 500 °F) • Monel 400, mat. No. 2.4360	G		
• Hastelloy C276, mat. No. 2.4819	J		
Tantal	К		
Special design, customer information to be	z		K 1 Y
supplied			
Flushing port(s) None	0		
1 x 1/4"NPT-female (available w/ SS, HC or MO)	2		
2 x ¹ / ₄ "NPT-female (available w/ SS, HC or MO)	4		
Special design, customer information to be supplied	9		L 1 Y
• · · · ·	_		
System fill Medicinal white mineral oil, FDA approved	0		
 Silicone oil DC 200-10 	1		
Silicone oil DC 200-50	2		
 High temperature oil Halocarbon (for O₂-application) 	3 4		
 Silicone oil M5 	5		
Syltherm 800	6		
 DC704 silicone oil Fluorolube 	7		
Special design, customer information to be	9		M 1 Y
supplied	Ŭ		
Length of capillary	-		
• 3 ft		2	
● 5 ft ● 10 ft		3 4	
• 15 ft		5	
• 20 ft		6	
• 25 ft		7	
 30 ft Special design, customer information to be 		8 9	N 1 Y
supplied		3	
Further designs			
Please add "-Z" to Order No. and specifiy			
Order code			
Integrated flame path restriction			A 0 2
Certification of calibration N.I.S.T. (20 % steps)			C 1 1
			C 1 2
Material conformance certificate			V 0 1
Material conformance certificate Vacuum service (must be specified with HT oil)			
			Y 0 5
Vacuum service (must be specified with HT oil)			Y 0 5

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

2/195

Flushing rings

Overview



Flushing ring

Flushing rings are required for flange-mounted and pancake type remote seals (Order No. 7MF4800 ... 7MF4823) if the danger exists that the process conditions and the geometry of the connection could cause the process 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 Ordering data

Design



Installation example

Technical specifications

reennear opeennearene	
Flushing ring for remote seals of	pancake and flange design
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 PN 16 PN 100
 2 inch 3 inch 4 inch 5 inch 	Class 150 class 600 Class 150 class 600 Class 150 class 600 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 thread:	• G¼ • G½ • ¼-18 NPT • ½-14 NPT
Material	Stainless steel 1.4404/316L

Dimensional drawings



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	mm (inch) n 92 (3.62) 6		di	d _i h			Weight		
inch		mm	(inch)	mm	(inch)	mm	(inch)	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)	

Flushing ring, dimension drawing

Flushing rings

Selection and Ord	ering data	Order No.	Ord. cod
Flushing ring		7 M F 4 8 2	5 -
for remote seals 7M	1F4900 to 7MF4923	1	
Nom. diam.	Nom. press.		
 2 inch 3 inch 4 inch 5 inch 	Class 150 600 Class 150 600 Class 150 600 Class 150 600	G H J K	
Other version Add Order code ar Nominal diameter:	nd plain text: ; Nominal pressure:	z	J 1 Y
Sealing face • ASME B16.5 - RF 125 250 A - RFSF - RJT ring groove Other version Add Order code ar Sealing face:		M Q R Z	K 1 Y
Flushing holes (2 • Female thread G1 • Female thread G3 • Female thread 1/2- • Female thread 1/2-	/4 /2 18 NPT	1 2 3 4	
Material • Stainless steel 31 Other version Add Order code ar Material:		0 9	M 1 Y
Further designs Please add "-Z" to Order code	Order No. and specifiy		
Acceptance test c to EN 10204, section			C 1 2

Diaphragm seal with quick connection

Overview



Diaphragm seal with quick connection, with slotted union nut

Dimensions (connection to ASME B16.5)



DN [mm]	MAWP [psi]	A [mm]	в	С	DM	E	G1	Weight [lbs]
25	600	Rd 52 x ¹ / ₆	2.48	0.83	1.0	2.36	1⁄4"-NPT	1.3
32	600	Rd 58 x ¹ / ₆	2.76	0.83	1.3	2.72	or	1.6
40	600	Rd 65 x ¹ / ₆	3.07	0.83	1.6	2.17	1/2"-NPT	2.5
50	360	Rd 78 x ¹ / ₆	3.62	0.87	2.1	2.32	female	2.8

Diaphragm seal with quick connection, with slotted union nut



DN [mm]	MAWP [psi]	A [mm]	В	С	DM	E	G1	Weight [lbs]
40	600	Rd 65 x ¹ / ₆	3.07	1.12	1.6	2.17	1⁄4"-NPT	2.8
50	360	Rd 78 x ¹ / ₆	3.62	1.42	2.1	2.24	or ½"-NPT female	3.0

DM = Effective diaphragm diameter MAWP = Maximum Working Pressure @ 250 °F G1 = Instrument connection DN = Nominal pipe size

All dimensions in inches unless otherwise noted

Diaphragm seal with quick connection, with male thread, dimensions

Overview



Diaphragm seal with quick connection, Tri-Clamp connection

Dimensions (connection to ASME B16.5)



Size [in]	MAWP [psi]	Α	В	С	DM	Е	G1	Weight [lbs]
1.5	600	1.50	1.97	1.71	1.0			1.3
2	550	1.50	2.52	2.22	1.6		1⁄4"-NPT	1.7
2.5	450	2.52	3.05	2.78	2.0	1.38	or ½"-NPT	2.0
3	350	2.31	3.58	3.28	2.8		female	2.4
4	250	2.31	4.68	4.34	3.5			2.7

DM = Effective diaphragm diameter MAWP = Maximum Working Pressure @ 250 °F, higher rating with appropriate clamping device

G1 = Instrument connection

Size = Nominal pipe size All dimensions in inches unless otherwise noted

Diaphragm seal with quick connection, Tri-Clamp connection, dimensions

Inline diaphragm seal with quick connection



Diaphragm seal with quick connection, "i"-line (Cherry Burrel - male)

Dimensions (connection to ASME B16.5)



Size	MAWP	Α	В	С	DM	Е	F	G1	Weight
[in]	[psi]								[lbs]
1.5	500		1.18	2.00	1.3	1.74	1.38	1⁄4"-NPT	1.3
2	450	1.42	1.18	2.64	1.8	2.24	1.44	or ½"-NPT	1.7
3	350		1.30	3.87	2.8	3.30	1.59	female	2.4

DM = Effective diaphragm diameter MAWP = Maximum Working Pressure @ 250 °F, higher rating with appropriate clamping device

G1 = Instrument connection

Size = Nominal pipe size All dimensions in inches unless otherwise noted

Diaphragm seal with quick connection, "i"-line (Cherry Burrel - male), dimensions

Selection and Ordering data	Or	dor	Νο	_	Ord	٥r	~	hd	
Diaphragm seal	011		140.						_
	7 N	/ F /							
Process connection DIN 11 851 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 DIN 11 851 with screw necks DN 25/PN 40 DN 32/PN 40 DN 32/PN 40 DN 40/PN 40 DN 50/PN 25 DN 65/PN 25 DN 80/PN 25 Tri-Clamp Connection 1 ½° 600 psi 2° 550 psi 2 ½° 450 psi 3° 350 psi Varivent (Tuchenhagen) Size 25132 Size 40150 Sanitary (4" Tank Spud)	1 E C 1 E E C 2 E E C								
2" extension 6" extension "I"-Line (Cherry Burrell - male) 1 ½" 500 psi 2" 450 psi 3" 350 psi Special design, customer information to be	6 E 6 C 5 V 5 V 9 Z) / /					H		
supplied System fill • Vegetable oil • Glycerin/Water 86.5/13.5 % • Neobee M20 • Mineral oil Special design, customer information to be supplied			1 2 3 4 9				м		
Length of capillary • Direct Mount • 3 ft • 5 ft • 10 ft • 15 ft • 20 ft • 25 ft • 30 ft Special design, customer information to be supplied				0 2 3 4 5 6 7 8 9			N	1	Y
<i>Further designs</i> Please add "-Z" to Order No. and specifiy Order code									
Certification of calibration N.I.S.T. (20 % steps) Material conformance certificate Vacuum service (must be specified with vege- table oil) Calculation of span of transmitter (completed questionnaire to be attached)							C C V Y	1 0	2 1
Tank Spud accessories Sanitary Tank Spud Clamp (1 pc.) Sanitary Tank Spud O-ring (1 pc.) Sanitary Tank Spud Weldolet 2" extension (1 pc.)							P P P	1	1
Sanitary Tank Spud Weldolet 6" extension (1 pc.)							Ρ	1	3

Inline diaphragm seal with quick connection

Selection and Ordering data	Order	NO.	Ord	der co	d
Diaphragm seal					
	7 M F	484	13-		
mitter SITRANS P 7MF44	A	0 🔳 -	в		l
		_	_	_	_
Process connection DIN 11 851 with slotted union nut					
DN 50/PN 25	1 E				
DN 65/PN 25	1 F				
DN 80/PN 25	1 G				
DIN 11 851 with screw necks					
DN 50/PN 25	2 E 2 F				
DN 65/PN 25 DN 80/PN 25	2 G				
Tri-Clamp Connection 2" 550 psi	4 M				
2 ½" 450 psi	4 N				
3" 350 psi	4 P				
4" 250 psi	4 Q				
"I"-Line (Cherry Burrell - male)	F 144				
3" 350 psi	5 W				
4" 200 psi	5 X				
Sanitary (4" Tank Spud)	6 B				
2" extension 6" extension	6 D				
Special design, customer information to be	9 Z			н	1
supplied	32			+ J 1	•
System fill	_				
Vegetable oil		1			
Glycerin/Water 86.5/13.5 %		2			
Neobee M20		3			
Mineral oil		4			
Special design, customer information to be		9		M 1	1
supplied	_				
Length of capillary					
• 3 ft			2		
 5 ft 10 ft 			3 4		
• 15 ft			5		
• 20 ft			6		
• 25 ft			7		
• 30 ft			8		
Special design, customer information to be			9	N 1	1
supplied					_
Further designs					
Please add "-Z" to Order No. and specifiy Order code					
					_
Certification of calibration N.I.S.T. (20 % steps)				C	
Material conformance certificate				C	
Vacuum service (must be specified with vege-				V	0
table oil)					
Calculation of span of transmitter (completed				Y (D
questionnaire to be attached)					
Tank Spud accessories					
Sanitary Tank Spud Clamp (1 pc., two required)				P	1
Sanitary Tank Spud O ring (1 no two required)					
Sanitary Tank Spud O-ring (1 pc., two required)				P 1	
Sanitary Tank Spud Weldolet 2" extension				P 1	1
(1 pc., two required)					
Sanitary Tank Spud Weldolet 6" extension				P 1	1
(1 pc., two required)					

Inline diaphragm seal with quick connection

Overview



Inline diaphragm seal with quick connector, DIN 11851 with thread

Dimensions (connection to ASME B16.5)



DN	MAWP	Α	в	С	E	G	н	J	L	MB
[mm]	[psi]									
15	600	Rd34x1/8	1.10	1.57	0.71	0.12	0.16	0.47	4.1	0.63
25	600	Rd52x1/6	1.50	2.05	1.18	0.14	0.28	0.55	5.0	1.02
40	600	Rd65x1/6	2.17	2.56	1.65	0.14	0.28	0.55	6.3	1.50
50	360	Rd78x1/6	2.68	3.07	2.13	0.14	0.28	0.55	6.7	1.97
65	360	Rd95x1/6	3.35	3.74	2.80	0.14	0.31	0.63	7.2	2.60
80	360	Rd110x1/4	4.33	4.33	3.35	0.14	0.31	0.79	7.2	3.19
100	360	Rd130x1/4	5.12	5.12	4.09	0.16	0.39	0.79	7.2	3.94

MB = Internal diameter MAWP = Maximum Working Pressure @ 250 °F, higher rating with appropriate clamping device DN = Nominal pipe size All dimensions in jackas unlose otherwise poted

All dimensions in inches unless otherwise noted

Inline diaphragm seal with quick connector, DIN 11851 with thread, dimensions



Inline diaphragm seal with quick connection, Tri-clamp

Dimensions (connection to ASME B16.5)



Size	MAWP	Α	В	С	E	L	MB
	[psi]						
3⁄4"	600	0.7	1.34	0.8	0.98	3.8	0.6
1"	600	1.4	1.97	1.7	1.97	4.5	1.0
1.5"	600	1.7	1.97	1.7	1.97	5.7	1.5
2"	550	2.2	2.50	2.2	2.50	6.1	1.9
2.5"	450	2.7	3.10	2.8	3.10	6.1	2.4
3"	350	3.2	3.60	3.3	3.60	6.1	2.9
3.5"	350	3.7	4.20	3.8	4.20	6.1	3.3
4"	250	4.3	4.70	4.3	4.70	6.1	3.8

MB = Internal diameter MAWP = Maximum Working Pressure @ 250 °F, higher rating with appropriate clamping device Size = Nominal pipe size

All dimensions in inches unless otherwise noted

Inline diaphragm seal with quick connection, Tri-clamp, dimensions

Inline diaphragm seal with quick connection

Overview



Inline diaphragm seal with quick connection, "i"-Line (Cherry Burrell - male/male)

Dimensions (connection to ASME B16.5)



Size	MAWP	Α	В	С	E	н	L	MB
	[psi]							
1.5"	500	1.68	1.97	1.74	2.00	0.203	4.79	1.38
2"	450	2.25	2.50	2.24	2.64	0.258	5.54	1.88
2.5"	350	2.75	3.10	2.74	3.31	0.312	6.38	2.37

MB = Internal diameter MAWP = Maximum Working Pressure @ 250 °F, higher rating with appropriate clamping device Size = Nominal pipe size

All dimensions in inches unless otherwise noted

Inline diaphragm seal with quick connection, "i"-Line (Cherry Burrell - male/male), dimensions

Selection and Ordering data	Order	No.	Ord	der	С	bd	le
Inline diaphragm seal							
with quick connection for transmitter C) SITRANS P for 7MF40 and 7MF42 (order separately) made of 316 SS	7 M F						
Process connection DIN 11 851 with thread [C] DN 25/PN 40 DN 40/PN 40 DN 50/PN 25 DN 65/PN 25 DN 80/PN 25 DN100/PN 25	2 B 2 D 2 E 2 F 2 G 2 H						
Tri-Clamp Connection 1" 600 psi 1 ½" 600 psi 2" 550 psi 2 ½" 450 psi 3" 350 psi	4 K 4 L 4 M 4 N 4 P						
"I"-Line (Cherry Burrell - male/male) 1" 500 psi 1 ½" 500 psi 2" 450 psi 3" 350 psi Special design, customer information to be supplied	5 R 5 U 5 V 5 W 9 Z				H		
System fill	1						
 Vegetable oil Glycerin/Water 86.5/13.5 % Neobee M20 Mineral oil 		1 2 3 4					
Special design, customer information to be supplied		9			М	1	Y
Length of capillary	_						
 Direct mount 3 ft 5 ft 10 ft 15 ft 20 ft 25 ft 			0 2 3 4 5 6 7				
• 30 ft Special design, customer information to be supplied			8 9		N	1	Y
<i>Further designs</i> Please add "-Z " to Order No. and specifiy Order code							
Certification of calibration N.I.S.T. (20 % steps)					С	1	1
Material conformance certificate					C		
Vacuum service (must be specified with vege- table oil)					۷	0	3
Calculation of span of transmitter (completed questionnaire to be attached)					Y	0	5

Diaphragm seal "threaded design"

G1	G2	Α	В	DM	E	F	Weight [lbs]
1/4"-NPT	1⁄4"-NPT or 1⁄2"-NPT		1.18	2.1	2.20	0.63	3.0
or ½"-NPT	34"-NPT	3.74	1.41	2.1	2.36	0.79	3.4
72 INI I	1"-NPT		1 77	21	3 46	1 89	3.6

G1 = Instrument connection, G2 = Process connection DM = Effective diaphragm diameter

All dimensions in inches unless otherwise noted

Diaphragm seal "threaded design"

Selection and Ordering data	Order No.	Orde	r c	oc	le
Diaphragm seal "threaded design" MAWP 3675 psi					
with flexible armored capillary, 316 stainless C) steel upper housing SITRANS P for 7MF40	7 M F 4 8 6		ł		
and 7MF42 pressure (order separately)	1	D			
Size and class					
 ¼"NPT-female ½"NPT-female 	AB				
• ¾"NPT-female	č				
• 1"NPT-female	D				
Special design, customer inform. to be supplied	z		J	1	Y
Materials and wetted parts					
• SST 316L	A				
 SST 316L with carbon pigmented Teflon lined diaphragm (good upto 500 °F) 	-				
 SST 316L with Hastelloy C276 diaphragm 	F				
• SST 316L with PFA coated diaphragm (good	D				
upto 500 °F) • Monel 400, mat. No. 2.4360	G				
 Hastelloy C276, mat. No. 2.4819 	Ĵ				
 Hastelloy C276 lower housing with Tantalum diaphragm 	к				
Special design, customer inform. to be supplied	z		к	1	Y
Flushing port(s)					
None	0				
1 x 1/4"NPT-female	2				
2 x 1/4"NPT-female	4				v
Special design, customer inform. to be supplied	9		L	1	Ŷ
System fillMedicinal white mineral oil, FDA approved	0				
Silicone oil DC 200-10	1				
Silicone oil DC 200-50	2				
 High temperature oil (comes with metal gas- ket and stronger bolts) 	3				
Halocarbon (for O ₂ -application)	4				
 Silicone oil M5 	5				
Syltherm 800DC704 silicone oil	6 7				
Fluorolube	8				
Special design, customer inform. to be supplied	9		М	1	Y
Length of capillary					
Direct mount		0			
 3 ft 5 ft 		2			
• 511 • 10 ft		3 4			
• 15 ft		5			
• 20 ft		6			
• 25 ft • 30 ft		7 8			
Special design, customer information to be		9	Ν	1	Y
supplied					
<i>Further designs</i> Please add "- Z " to Order No. and specify Order					
code					
Integrated flame path restriction				0	
DP "H" flange service				0 1	
Certification of calibration N.I.S.T. (20 % steps) Material conformance certificate				1	
Vacuum service (must be specified with HT oil)			۷	0	1
Calculation of span of transmitter (completed			Y	0	5
questionnaire to be attached)					

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

Overview



Diaphragm seal "threaded design"

Dimensions (Connection to ASME B16.5)



Modification 3/2012

Diaphragm seal "threaded, low-pressure design"

Overview



Diaphragm seal "threaded, low-pressure design"

Dimensions (Connection to ASME B16.5)



Diaphragm seal "threaded, low-pressure design, dimensions

G1	G2	Α	В	С	DM	Е	F	Weight								
								[lbs]								
	1⁄4"-NPT			1.25		3.00	0.90	14.0								
1/4"-NPT	1⁄2"-NPT	E 01	4 0 2	4.92	1.25	3.5	3.00	0.90	14.0							
or ½"-NPT	34"-NPT	5.91	5.91	5.91	5.91	5.91	5.91	5.91	1 4.92	1 4.92	5.91 4.92	1.38	3.0	3.20	1.10	14.2
	1"-NPT			1.75		3.50	1.40	14.5								

G1 = Instrument connection G2 = Process connection DM = Effective diaphragm diameter

All dimensions in inches unless otherwise noted

Selection and Ordering data	Order N	lo. C	Order	С	C	le
Diaphragm seal "threaded, low-pressure design" MAWP 1,500 psi						
with flexible armored capillary, 316 stainless C) steel upper housing SITRANS P for 7MF40 and 7MF42 pressure (order separately)	7 M F 4					
Size and class					_	
• 1/4"NPT-female	A					
 ½"NPT-female ¾"NPT-female 	B C					
• 1"NPT-female	D					
Special design, customer information to be supplied	z			J	1	Y
Materials and wetted parts						
 SST 316L SST 316L with carbon pigmented Teflon lined 	A					
diaphragm ¹⁾	E					
 SST 316L with Hastelloy C276 diaphragm 	F					
 SST 316L with PFA coated diaphragm Monel 400, mat. No. 2.4360 	G					
 Hastelloy C276, mat. No. 2.4819 	J K					
 Hastelloy C276 lower housing with Tantalum diaphragm 	ĸ					
Special design, customer information to be supplied	z			K	1	Y
Flushing port(s)						
None 1 x ¼"NPT-female	0 2					
$2 \times \frac{1}{4}$ "NPT-female	4					
Special design, customer information to be	9			L	1	Y
supplied						
System fillMedicinal white mineral oil, FDA approved		0				
Silicone oil DC 200-10		1				
Silicone oil DC 200-50		2				
 High temperature oil (comes with metal gas- ket and stronger bolts) 		3				
 Halocarbon (for O₂-application) 		4				
Silicone oil M5Syltherm 800		5 6				
DC704 silicone oil		7				
 Fluorolube Special design, customer information to be 		8 9		м	4	v
supplied		9		IVI	'	I
Length of capillary						
 Direct mount 3 ft 		0 2				
• 5 ft		3				
• 10 ft • 15 ft		4 5				
 15 ft 20 ft 		6				
• 25 ft		7				
 30 ft Special design, customer information to be supplied 		8 9		N	1	Y
Further designs Please add "- Z " to Order No. and specifiy Order code						
Integrated flame path restriction				A	0	1
Certification of calibration N.I.S.T. (20 % steps)				c		
Material conformance certificate				c		
Vacuum service (must be specified with HT oil)				۷		
Calculation of span of transmitter (completed questionnaire to be attached)				Y		
C) Subject to export regulations AL: N. ECCN: EAR	0					

Diaphragm seal "threaded, low-pressure design"

Selection and Ordering data	Orde	r No		Orde	r ci	00	łe
Diaphragm seal "threaded, low-pressure	Ciuo	1110	•		1 0		
design" MAWP 1,500 psi							
with flexible armored capillary, 316 stainless C)	7 M F	48	63	3 -			
steel upper housing SITRANS P for 7MF44	1		1	В	2		
Size and class							
• 1/4"NPT-female	A						
 ½"NPT-female ¾"NPT-female 	B C						
• 1"NPT-female	Ď						
Special design, customer information to be supplied	z				J	1	Y
Materials and wetted parts							
• SST 316L	A						
• SST 316L with carbon pigmented Teflon lined	E						
diaphragm (good upto 500 °F) • SST 316L with Hastelloy C276 diaphragm	F						
SST 316L with PFA coated diaphragm (good	Ď						
upto 500 °F) • Monel 400, mat. No. 2.4360	G						
 Hastelloy C276, mat. No. 2.4819 	Ĵ						
 Hastelloy C276 lower housing with Tantalum diaphragm 	к						
Special design, customer information to be	z				к	1	Y
supplied							
Flushing port(s)							
None 1 x ¼"NPT-female		0 2					
$2 \times 1/4$ "NPT-female		4					
Special design, customer information to be supplied		9			L	1	Y
System fill							
Medicinal white mineral oil, FDA approved		0					
 Silicone oil DC 200-10 Silicone oil DC 200-50 		1					
High temperature oil (comes with metal gas-		3					
 ket and stronger bolts) Halocarbon (for O₂-application) 		4					
 Silicone oil M5 		5					
Syltherm 800		6					
 DC704 silicone oil Fluorolube 		7 8					
Special design, customer information to be		9			м	1	Y
supplied							
Length of capillary 3 ft 							
• 5 ft			2				
• 10 ft			4	ŀ			
• 15 ft • 20 ft			5				
• 25 ft			7	'			
• 30 ft			8				
Special design, customer information to be supplied			9		N	1	Y
Further designs Please add "-Z" to Order No. and specifiy Order code							
Integrated flame path restriction					A	0	2
Certification of calibration N.I.S.T. (20 % steps)					С	1	1
Material conformance certificate					С	1	2
Vacuum service (must be specified with HT oil)					۷	0	3
Calculation of span of transmitter (completed questionnaire to be attached)					Y	0	5
C) Subject to export regulations AL: N. ECCN: EAR	20						

Inline diaphragm seal, wafer for pressure

Overview



Inline diaphragm seal, wafer for pressure

Dimensions (Connection to ASME B16.5)



Size	Class	Α	МВ	[[bs] 1.12 3.1 1.69 4.8 2.15 5.5 3.25 2.36 4.21 10.3 5.20 15.0	
1"		2.4	1.12		3.1
1.5"		3.3	1.69		4.8
2"		3.7	2.15		5.5
3"	150# - 2500#	5.1	3.25	2.36	8.8
4"		5.9	4.21		10.3
5"		7.3	5.20		15.0
6"		8.5	6.26		20.9

MB = Effective internal diameter

Class = Flange rating per ASME B16.5 Size = Nominal pipe size All dimensions in inches unless otherwise noted

Inline diaphragm seal, wafer for pressure, dimensions

Selection and Ordering data	Order	No.	0	rde	r C	ЭC	le
Inline diaphragm seals wafer assembled to							
	7 M F 4	488	30-	•			
(order separately)	1	0 🔳 -	E	3			
Size and class							_
1 inch class 150 to 2500 1 ½ inch class 150 to 2500 2 inch class 150 to 2500 3 inch class 150 to 2500 4 inch class 150 to 2500 Special design, customer information to be supplied	L M P Q Z				J	1	Y
Materials and wetted parts							
 SST 316L SST 316L with PFA-Coating (good up to 500 °F) Monel 400, mat. No. 2.4360 Hastelloy C276, mat. No. 2.4819 Tantal Special design, customer information to be supplied 	A D J K Z				ĸ	1	Y
System fill	-						
 Medicinal white mineral oil, FDA approved Silicone oil DC 200-10 Silicone oil DC 200-50 High temperature oil Halocarbon (for O₂-application) Silicone oil M5 DC704 silicone oil Fluorolube Special design, customer information to be supplied 		0 1 2 3 4 5 7 8 9			м	1	Y
Length of capillary							
 Direct mount 3 ft 5 ft 10 ft 15 ft 20 ft 25 ft 30 ft 			0 2 3 4 5 6 7 8 9		N	1	v
Special design, customer information to be supplied			9		N	1	Y
<i>Further designs</i> Please add "-2" to Order No. and specifiy Order code							
Integrated flame path restriction					A	0	1
Certification of calibration N.I.S.T. (20 % steps)					С		
Material conformance certificate					С	1	
Vacuum service (must be specified with HT oil)							
Calculation of span of transmitter (completed					۷	0 0	

Inline diaphragm seal, wafer for pressure

Selection and Ordering data	Order N	JO	Order	. CO	de
Inline diaphragm seals wafer assembled to	ondor i		0.001		
	7 M F 4	883	3 -		
	1 0				
Size and class	1 == 0				
• 1 inch class 150 to 2500	L				
• 1 ½ inch class 150 to 2500	м				
• 2 inch class 150 to 2500	N				
• 3 inch class 150 to 2500	P				
• 4 inch class 150 to 2500 Special design, customer information to be	Q Z			J 1	v
supplied	2			J	T
Materials and wetted parts					
• SST 316L	A				
 SST 316L with PFA-Coating (good up to 500 °F) 	D G				
• Monel 400, mat. No. 2.4360	J				
 Hastelloy C276, mat. No. 2.4819 	ĸ				
• Tantal					
Special design, customer information to be supplied	z			K 1	Y
System fill					
Medicinal white mineral oil, FDA approved		0			
Silicone oil DC 200-10		1			
Silicone oil DC 200-50		2			
 High temperature oil Halocarbon (for O₂-application) 		3 4			
Silicone oil M5		5			
DC704 silicone oil		7			
• Fluorolube		8			
Special design, customer information to be supplied		9		M 1	Y
Length of capillary	-				
• 3 ft		2			
• 5 ft		3			
• 10 ft • 15 ft		4			
• 20 ft		ē			
• 25 ft		7			
• 30 ft		8			
Special design, customer information to be supplied		ç)	N 1	Y
Further designs					
Please add "-Z" to Order No. and specifiy					
Order code					
Integrated flame path restriction				AC	
Certification of calibration N.I.S.T. (20 % steps)				C 1	
Material conformance certificate				C 1	
Vacuum service (must be specified with HT oil)				VC) 3
Calculation of span of transmitter (completed				ΥC) 5
questionnaire to be attached)					

Overview



Dimensions (Connection to ASME B16.5)

Radius R	To fit Pipe size	Pipe O.D.	G1
1.49	2.5	3.00	
1.77	3.0	3.50	
2.24	4.0	4.50	
2.76	5.0	5.50	1⁄4"-NPT
3.35	6.0	6.63	or ½"-NPT
4.311	8.0	8.625	female
5.374	10.0	10.75	
6.378	12.0	12.75	
7.0	14.0	14.75	

G1 = Instrument connection All dimensions in inches unless otherwise noted

Diaphragm seal, saddle, dimensions

Diaphragm seal, saddle



Diaphragm seal, saddle

2

	0.1						_		_
Selection and Ordering data Diaphragm seal, saddle, MAWP 1,500 psi	Orde	er No	Э.	C	Jrd	er c	0	de	è
with flexible armored capillary or direct mount, C) 316 stainless steel upper housing and assem- ply hardware SITRANS P for 7MF40 or 7MF42 (order separately)	7 M F 1					1			
Nominal pipe size • Not applicable (Retrofit for existing 7MF48 ■ ■) • 2.5" • 3" • 4" • 5" • 6" • 8" • Retrofit 3" Conoflow (6 bolt pattern)	N A B C D E G P								
 Retrofit 3" M&G style (8 bolt pattern) Retrofit 4" Conoflow (6 bolt pattern) Retrofit 4" M&G style (8 bolt pattern) Special design, customer information to be supplied 	Q R S Z					J	1	Y	,
 Diaphragm material SST 316L SST 316L with carbon pigmented Teflon lined diaphragm (good upto 500 °F) SST 316L with PFA coated diaphragm (good upto 500 °F) Marcel 400 met Na 0 4000 	Д Е	•							
 Monel 400, mat. No. 2.4360 Hastelloy C276, mat. No. 2.4819 Tantal Special design, customer information to be supplied 	G J K Z	l C				к	1	Y	,
Saddle Material None (Retrofit order) Carbon steel, Ni plated SST 316L Hastelloy C276, mat. No. 2.4819 Special design, customer information to be supplied		0 1 2 4 9				L	. 1	Y	,
System fill • Medicinal white mineral oil, FDA approved • Silicone oil DC 200-10 • Silicone oil DC 200-50 • High temperature oil (comes with metal gasket and stronger bolts) • Halocarbon (for O ₂ -application) • Silicone oil M5 • DC704 silicone oil • Fluorolube Special design, customer information to be supplied		0 1 2 3 3 4 5 7 7 8 9 9				M	11	Y	,
Length of capillary • Direct mount • 3 ft • 5 ft • 10 ft • 15 ft • 20 ft • 25 ft • 30 ft				0 2 3 4 5 6 7 8					
Special design, customer information to be supplied				9		N	1	Y	1
Please add "-Z" to Order No. and specifiy Order code									
Integrated flame path restriction Certification of calibration N.I.S.T. (20 % steps) Material conformance certificate Vacuum service (must be specified with HT oil)						C C V	0 1 1 0	1 2 1	2
Calculation of span of transmitter (completed questionnaire to be attached) C) Subject to export regulations AL: N, ECCN: EARS	00					Y	0	5	

Measuring setups

Measuring setups

The following pages show examples of typical measuring setups for use of SITRANS P transmitters with and without remote seals, such as:

- Setups for transmitters with connection of remote seals, with associated equations for calculation.
- <u>Questionnaires</u>

Checking of combination between transmitter and remote seal

- Setups for transmitters without remote seals, with associated equations for calculation
- <u>Questionnaires</u> For hydrostatic level measurements

Installation

Remote seals of pancake design are fitted between the connection flange of the measuring point and a blind flange. Remote seals of flanged design are fitted directly on the connection flange of the measuring point. The respective pressure rating of the blind flange or the flanged remote seal must be observed. The transmitter should always be installed below the connection flange, and below the lower connection flange in the case of differential pressure transmitters. When measuring at pressures above atmospheric, the transmitter can also be installed above the connection flange. When measuring at pressures below atmospheric, the transmitter must always be installed below the connection flange, and below the lower connection flange in the case of differential pressure transmitters.

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 results from the oil filling of the remote seal capillaries. This results in an offset of the actual measuring range and must be taken into account when adjusting the transmitter. An offset in the measuring range also occurs when combining a remote seal with a transmitter if the latter is not installed at the same height as the former.

Transmitter output

If the level, separation layer or density increase in closed vessels, the differential pressure and the output signal of the transmitter also increase. If an inverted relationship is desired between the differential pressure and the output signal, the start-ofscale and full-scale values of the SITRANS P must be interchanged.

With open vessels, an increasing pressure is usually assigned to an increasing level, separation layer or density.

Influence of ambient temperature

The capillaries between the remote seal and the transmitter should be kept as short as possible to obtain the good transmission response. Temperature differences between the individual capillaries or between the individual remote seals should be avoided.

If the complete setup is exposed to temperature variations, errors result from the thermal expansion of the filling liquid in the capillaries, in the remote seals and in the connection units of the transmitters.

Notes

- When measuring separation layers, ensure that the layer is positioned between the two spigots. Also ensure that the level in the vessel is always above the top spigot.
- When measuring density, make sure that the level of the medium remains constant. The level is usually above the top spigot.

Possible combinations of transmitter and remote seal

Installation type	Transmitter	Remote seal	
A/B	7MF4033 and 7MF4034	7MF4800, 7MF4810, 7MF4820, 7MF4826, 7MF4827, 7MF4840, 7MF4850, 7MF4861, 7MF4862, 7MF4880 and 7MF4890	
C1/C2	7MF4233 and 7MF4234	7MF4800, 7MF4810, 7MF4820, 7MF4826, 7MF4827, 7MF4840, 7MF4850, 7MF4861, 7MF4862, 7MF4880 and 7MF4890	(vacuum-proof design
	7MF4333 and 7MF4334	7MF4801 and 7MF4821	
D	7MF4433, 7MF4434, 7MF5403 and 7MF5413	7MF4803, 7MF4823, 7MF4828, 7MF4843, 7MF4863 and 7MF4883	
E	7MF4433, 7MF4434, 7MF5403 and 7MF5413	7MF4813	
G/H/J	7MF4433, 7MF4434, 7MF5403 and 7MF5413	7MF4803, 7MF4823, 7MF4828, 7MF4843, 7MF4863 and 7MF4883	

Measuring setups with remote seals

Schematics

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 A				
Start-of-scale	$p_{MA} = \rho_{FL} \cdot g \cdot H_{U} - \rho_{Oil} \cdot g \cdot H_{1}$			
Full-scale:	$p_{\text{ME}} = \rho_{\text{FL}} \cdot g \cdot H_{\text{o}} - \rho_{\text{oil}} \cdot g \cdot H_{\text{1}}$			
Installation ty	pe B			
Start-of-scale	$p_{MA} = \rho_{FL} \cdot g \cdot H_{U} + \rho_{Oii} \cdot g \cdot H_{1}$			
Full-scale:	$\mathbf{p}_{_{ME}} = \mathbf{\rho}_{_{FL}} \cdot \mathbf{g} \cdot \mathbf{H}_{_{O}} + \mathbf{\rho}_{_{Oii}} \cdot \mathbf{g} \cdot \mathbf{H}_{_{I}}$			
Legend				
р _{мА}	Start-of-scale value to be set			
р _{ме}	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			
H _u	Start-of-scale value			
H _o	Full-scale value			
H ₁	Distance between vessel flange and pressure trans.			

Installation type C₁ and C₂

Installation type D

	·			
Start-of-scale: $p_{MA} = p_{START} + \rho_{Oil} \cdot g \cdot H_1$				
Full-scale:	$\mathbf{p}_{\text{ME}} = \mathbf{p}_{\text{END}} + \mathbf{p}_{\text{Oil}} \cdot \mathbf{g} \cdot \mathbf{H}_{1}$			
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			
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.			

 $Start\text{-of-scale: } p_{_{MA}} = p_{_{START}} \text{-} \rho_{_{OII}} \ \cdot \text{g} \cdot \text{H}_{_{V}}$ Full-scale: $p_{ME} = p_{END} - \rho_{Oil} \cdot g \cdot H_V$ Legend $\boldsymbol{p}_{\text{MA}}$ Start-of-scale value to be set Full-scale value to be set $\boldsymbol{p}_{\text{ME}}$ Start-of-scale value $\mathbf{p}_{\mathsf{START}}$ Full-scale value $\boldsymbol{p}_{\text{END}}$ Density of filling oil in the capillary ρ_{Oil} to the remote seal g Local acceleration due to gravity Distance between the measuring H_v points (spigots)

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

 $H_1 \le 7$ m (23 ft), with halocarbon oil as filling liquid only $H_1 \le 4$ m (13.1 ft)

Installation type G, H and J

Start-of-scale	$: p_{_{MA}} = \rho_{_{FL}} \cdot g \cdot H_{_{U}} - \rho_{_{OII}} \cdot g \cdot H_{_{V}}$
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

р_{ма} р_{ме}

 ρ_{FL}

 ρ_{oil}

Start-of-scale value to be set Full-scale value to be set

Installation type H

- Density of medium in vessel
- Density of filling oil in the capillary to the remote seal

н

below the lower measuring point

Installation type E

inotanation typ				
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				
P _{MA}	Start-of-scale value to be set			
P _{ME}	Full-scale value to be set			
ρ_{FL}	Density of medium in vessel			
$ ho_{\text{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)			



Installation type J

between the measuring points, no vacuum

 $\rm H_{2} \leq 7$ m (23 ft), with halocarbon oil as filling liquid only $\rm H_{2} \leq 4$ 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)

•

spigot

Pressure Measurement Remote seals for transmitters and pressure gauges

ways above the top spigot.

Measuring setups without remote seals

Also you must make sure that the level in the container is al-

When measuring density, make sure that the level of the me-

dium remains constant. The level should be above the top

Overview

Notes

• For the separation layer measurement, the separation layer has to be positioned between the two spigots.

Schematics

Pressure transmitters for differential pressure, for flanging

Measuring setups for open containers









Density measurement

Separation layer measurement

Full-scale:

Legend

 \mathbf{p}_{MA}

 \mathbf{p}_{ME}

ρ₁

ρ₂

g

 H_{U}

 H_{o}

Start-of-scale: $p_{MA} = g \cdot (H_{U} \cdot \rho_1 + (H_{O} - H_{U}) \cdot \rho_2)$

Start-of-scale value to be set

Local acceleration due to gravity

Full-scale value to be set

Density of heavier liquid

Density of lighter liquid

Start-of-scale value

Full-scale value

 $p_{MF} = \rho_1 \cdot g \cdot H_0$

Start-of-scale:	$\boldsymbol{p}_{MA} = \boldsymbol{\rho}_{MIN} \cdot \boldsymbol{g} \cdot \boldsymbol{H}_{O}$
Full-scale:	$\boldsymbol{p}_{\text{ME}} = \boldsymbol{\rho}_{\text{MAX}} \cdot \boldsymbol{g} \cdot \boldsymbol{H}_{\text{O}}$
Legende	
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







ρ

Transmitter reference line



	,
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
Η _υ	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	
Δp_{MA}	Start-of-scale value to be set
Δp_{ME}	Full-scale value to be set
ρ_1	Density of heavier liquid with separation layer in vessel
ρ2	Density of lighter liquid with separation layer
ρ'2	Density of liquid in the negative pressure line
	(corresponding to the temperature existing there)
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)

SIEMENS

Questionnaire (suitable for US market) for hydrostatic level measurements

Order date:	- · · · · · · · · · · · · · · · · · · ·	
Processing date:		- <u>l</u> -
Ordering code (customer):		
Ordering code (supplier):		
Customer reference:		
Measuring point:		
Position:	-	
Dimensions:	_	
Pressure: psi		\$ <i>1</i> 7 \\$
Temperature: K G °F		X X
Measuring range: inch ft (please mark with cross)		
Order No. of transmitter ¹⁾ :		[]
<u>_7_M,F, </u>		
Y01		k`

The different pressures and temperatures (densities) in the vessel and in the reference column result in an offset in the start-of-scale and full-scale values.

The calibration data are determined in addition.

It is also checked whether – as a result of the range offset – the ordered transmitter is suitable for this measurement.

Please supply the following characteristic data so that we can calculate the measuring range, start-of-scale value, full-scale value and calibration data:

Please mark type of boiler with a cross:	Closed 1)		
	Open or not under pres	sure ²⁾	
Medium			
Licensed boiler pressure (absolute)			_ psi
Operating pressure (absolute)	Lowest		_ psi
	Normal ³⁾		_ psi
	Highest		_ psi
Temperature of reference column (cold)			°F
Distance between measuring points (dir	nension according to ske	tch) H _V =	ft
Measuring range ⁴⁾ = start-of-scale valu	e to full-scale value		
	Start-of-scale value	H _U =	ft
	Full-scale value	H _O =	ft
Position of equalizing vessel above botto point if different from H _V	om measuring		ft
Please mark pressure correction of level	with a cross: No Yes	4)	

¹⁾ Reference line filled with condensation! Falling differential pressure with increasing level.

²⁾ Reference line without gas or filled with gas (air). Rising differential pressure with increasing level.

³⁾ If not specified otherwise, this value is assumed as the calculation pressure of the level meter.

The input signal (differential pressure) depends on the density (pressure and temperature). The influence is practically negligible for a lowest liquid level of 20 to 30% of the distance between the measuring points.

⁴⁾ If a pressure correction of the level is required, the **measuring range must be the same as the distance between the measuring points**, and the transmitter is designed for the calculation pressure of 1 bar (absolute).

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

SIEMENS

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



2/216 Siemens FI 01 · 2012 US Edition *) Values must be entered here!

Pressure Measurement Fittings

Technical description

Overview

All shut-off fittings can be secured onto walls, racks (72 mm grid) and vertical and horizontal pipes.

This offers the advantage when assembling a plant that the shutoff fittings can be secured first and the lines for the medium and differential pressure connected to them. It is then possible to check all connections for leaks and to blow out or flush the pipes in order to remove dirt (welding residues, shavings etc.).

The measuring instruments can be screwed onto the shut-off fittings right at the end when all piping has been completed. If an instrument has to be removed for maintenance, the fittings and pipes remain as they are. It is only necessary to close the valves – the instrument can then be removed, and refitted following maintenance.

Material acceptance test certificate to EN 10204-3.1

If a material acceptance test certificate to EN 10204-3.1 is required when ordering valve manifolds or shut-off fittings, please note that a single certificate is sufficient for each ordered item type. This means that you will only be charged for one certificate in the cost calculations.

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 G1/2" male thread e.g. • SITRANS P200 7MF1565 • SITRANS P210 7MF1566 • SITRANS P220 7MF1567 • SITRANS P300 7MF8020 • SITRANS P DS III series 7MF4030 and 7MF4230			Double shut-off valve DN 5 for crossover ½-NPT-F to G½ nipple connection 7MF9011-4EA	2/218	
Relative and absolute pres- sure transmitter with G½"-14 NPT female thread e.g. • SITRANS P200 7MF1565 • SITRANS P210 7MF1566 • SITRANS P220 7MF1567 • SITRANS P300 7MF8021 • SITRANS P DS III series 7MF4031 and 7MF4031	Double shut-off valve DN 5 7MF9011-4FA and 7MF9011-4GA	2/218	Double shut-off valve DN 5 for process connec- tion ½-NPT 7MF9011-4DA	2/218	HIN & CON
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.	2/219			
Differential pressure transmitter 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.	2/219			

Pressure Measurement Fittings

Double shut-off valves

Overview

2

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
Double shut-off valve acc. ASME B31.1, max. permissible working pressure class 2500	
Sleeve-collar	7MF9011-4FB
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 cleaning applications, max. pressure PN 100	S12

(1450 psi) and max. temperature 60 °C (140 °F)

Dimensional drawings



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

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



- A Connection on device side: nipple to DIN 16284, G¹/₂, SW 27
- B Connection on measurement side: 1/2-14 NPT
- C Vent and test connection: 1/4-18 NPT

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

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 EN 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 M F 9 4 1 1 - 🗾 A
for liquids and gases, for flanging to pressure transmitters for absolute and differential pressure, max. working pressure 420 bar (6092 psi) (order accessory set with Order code), without certificate	
2-spindle valve manifold	5 A
3-spindle valve manifold	5 B
 5-spindle valve manifold 	5 C
Valve manifold acc. ASME B31.1, max. permissible working pressure class 2500	
3-spindle valve manifold	8 B
• 5-spindle valve manifold	8 C
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⁾	0.001 0000	0.00110.
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; stainless steel 1x gasket made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F)	K45	7MF9411-7DC
for valve manifold 7MF9411-5B. and -5C. 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), 80 °C (176 °F)	K36	7MF9411-5DB
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

Pressure Measurement Fittings - Shut-off valves for differential pressure transmitters

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

Selection and Ordering data	Order code	Order No.	Accessories
Further designs ¹⁾			Accessory set for 2-, 3- and 5-spindle valve manifolds
Please add "-Z" to Order No. and specify Order code.			2-spindle valve manifold DN 5
Accessory set to DIN ²⁾ (connection between valve manifold			 K35: 2 screws ⁷/₁₆-20 UNF x 1³/₄ inch to ASME B18.2.1, 1 flat gasket
and pressure transmitter) for valve manifold 7MF9411-5A.			 K15: 2 screws M10x45 to DIN EN 24014, 2 washers, 1 flat gasket
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	 <u>3-spindle and 5-way valve manifold DN 5</u> K36: 4 screws ⁷/₁₆-20 UNF x 1³/₄ inch to ASME B18.2.1, 2 flat gaskets
2x screws M10x45 to DIN EN 24014; stainless steel	K25	7MF9411-7BC	 K16: 4 screws M10x45 to DIN EN 24014, 4 washers, 2 flat gaskets
2x washers Ø 10.5 mm to DIN 125,			Washers Ø 10.5 to DIN 125
stainless steel; 1x gasket made of PTFE, max. permissible 420 bar (6092 psi), 90 °C (176 °E)			Flat gaskets made of PTFE, max. 420 bar (6092 psi), 80 °C (176 °F)
80 °C (176 °F) for valve manifolds 7MF9411-5B. and -5C.			Note : Flange connection with M10 screws only permissible up to PN 160!
4x screws M10x45 to DIN EN 24014;	K16	7MF9411-6BB	Mounting plate
chromized steel, 4x washers Ø 10.5 mm to DIN 125; 2x flat gas-			Made of electrogalvanized sheet-steel
kets made of PTFE, max. permissible 420 bar (6092 psi), 80 °C (176 °F) Flange connection with M10 screws only permissible up to PN 160.			 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
4x screws M10x45 to DIN EN 24014;	K26	7MF9411-6BC	M12: For pipe mounting Scope of delivery:
stainless steel 4x washers Ø 10.5 mm to DIN 125,			- 1 mounting plate M11
stainless steel;			 2 pipe brackets with nuts and washers for pipes with max. Ø 60.3 mm
2x flat gaskets made of PTFE, max. permissible 420 bar (6092 psi),			
80 °C (176 °F)			Valve manifold 100 bar, suitable for oxygen
Flange connection with M10 screws only permissible up to PN 160.			S12: For 2-way valve manifold
Mounting plate			 S13: For 3-way valve manifold S14: For 5-way valve manifold
 for valve manifold, made of electrogalvanized sheet-steel 			- 014.1 of 3 way valve manifold
 - for wall mouting or for securing on rack (72 mm grid), weight 0.5 kg Scope of delivery: 1 mounting plate with bolts for 	M11	7MF9006-6EA	Characteristic curves
mounting on valve manifold - for pipe mounting, weight 0.7 kg	M12	7MF9006-6GA	400 400 8 300
Scope of delivery: 1x mounting plate M11, 2x pipe brackets with nuts and washers (for pipe with max. Ø 60.3 mm)			
• for valve manifold, made of			8 ¹⁰⁰
 stainless steel for wall mounting or for securing on rack (72 mm grid), weight 0.5 kg 	M21	7MF9006-6EC	0 100 200 300 400 °C Operating temperature
Scope of delivery: 1 mounting plate with bolts for			
mounting on valve manifold - for pipe mounting, weight 0.7 kg	M22	7MF9006-6GC	Valve manifolds PN 5 (7MF9411-5), permissible working pressure as a function of the permissible working temperature
Scope of delivery: 1x mounting plate M11, 2x pipe brackets with nuts and washers (for pipe with max. Ø 60.3 mm)			
Valve manifold 100 bar			
Oil- and grease-free cleaning for oxygen applications, max. pressure PN 100 (1450 psi) and max. temper- ature 60 °C (140 °F)			
• for 7MF9411-5A.	S12		
for 7MF9411-5B.for 7MF9411-5C.	S13 S14		
 IOF / MF94 I I-5C. ¹⁾ When ordering accessory set or mour 			

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

²⁾ Flange connections to DIN 19213 only permissible up to 160!

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Pressure Measurement

Fitttings - Shut-off valves for differential pressure transmitters

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

Dimensional drawings $\begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \end{array}\\ \end{array}\\ \end{array}\\ \end{array}\\ \end{array}\\ \begin{array}{c} \end{array}\\ \begin{array}{c} \end{array}\\ \end{array}$

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

Pressure Measurement Fittings - Accessories

Oval flange

Overview



The oval flange 7MF9408-2C. for pressure transmitters for absolute pressure and differential pressure has a $\frac{1}{2}$ -14 NPT female thread and is designed for max. operating pressure 400 bar.

Accessories

Accessory set for oval flange

- E36: 2 screws ⁷/₁₆-20 UNF x 1¹/₂ inch to ASME B18.2.1, 1 flat gasket
- E34: 2 screws ⁷/₁₆-20 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 °C (176 °F)

O-ring to DIN 3771, 20 x 2.65 – S – FPM90, max. 420 bar, 120 $^\circ\text{C}$

Note: M10 screws only permissible up to PN 160!

Oval flange with female thread ½-14 NPT, max. wor pressure 420 bar (6092 psi) flange conr to DIN EN 61518, form A			
Material			
P250GH, mat. No.: 1.0460		7MF9	408-2CE
X 2 CrNiMo 17 13 2, mat. No. 1.4404/3	16L	7MF9	408-2CL
Coloction and Ordening data	Orderes		Order Ne
Selection and Ordering data	Order co	ae	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 1 ¹ / ₂ inch to ASME B 18.2.3; chro- mized steel	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 80 °C (176 °F) ²)	E16		7MF9408-6BA
1) When ordering accessory act together			

Order No.

 When ordering accessory set together with the oval flange, please use Order code; otherwise use Order No.
 Encode and the optimized set of the optimized

²⁾ Flange connections with M10 screws only permissible up to PN 160

Dimensional drawings

Selection and Ordering data



Oval flange 7MF9408-2C., dimensions in mm